EVERETT SAFETY ACTION PLAN

EVERETT, MA

September 2022

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Everett Safety Action Plan

Everett, MA

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September 2022

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Introduction

INTRODUCTION

LEADERSHIP COMMITMENT AND GOAL SETTING

The City of Everett completed a Complete Streets Prioritization Plan (CSPP) in September 2016. This plan was undertaken to implement the City's Complete Street policy which focuses on providing streets that are safe, convenient and comfortable for all. The CSPP analyzed the city's existing pedestrian and bicycle facilities and recommended improvements to address safety and comfort for these modes. This was especially important to safety, as crashes involving pedestrians and bicycles are more likely to result in a fatality. Building off its CSPP, the City of Everett has deepened its commitment to improving safe streets for all.

On September 2022, the Mayor set a goal to end traffic-related fatalities and serious injuries by 2030. To take steps to achieve this goal, the City of Everett has created this Safety Action Plan to provide information and direction on strategies and treatments most likely to improve roadway safety performance within the city.

PLAN PURPOSE AND NEED

In the past five years, 7 people were killed in traffic crashes in Everett. Another 656 have suffered serious injuries on Everett's roadways.[1]

> These crashes directly impacted people who may have lost time from work, had to seek medical care, incurred unexpected expenses or worse, were permanently disabled, or lost a loved one.

The Mayor has committed to an ambitious goal of ending traffic-related fatalities and serious injuries by 2030 and this Safety Action Plan maps out a course for achieving this goal.

The content of this plan was developed in collaboration with the City of Everett Transportation Planning Division, with input from the Safety Action Plan Advisory Committee representing multiple departments and divisions within the city. The plan is generally organized in two parts: safety analysis and recommendations.

[1] MassDOT IMPACT Crash Data. 2017-2022.

GUIDING PRINCIPLES & GOALS

This plan seeks to reduce crashes and crash risk in Everett by applying the principles of Vision Zero, the Safe System approach, and the city's Complete Streets policy.

Vision Zero acknowledges that even one death is unacceptable and focuses on safe mobility for all road users. Vision Zero began as Sweden's official road policy starting in 1997 and has since been adopted by governments around the world including the United States. The core principles of Vision Zero are:

- Human life and health are priorities.
- Traffic deaths and severe injuries are preventable.
- Speed is a critical factor in crash severity.
- Roadway systems should be designed to protect us.

The Safe System approach is the U.S. Department of Transportation's (USDOT) adopted paradigm to address roadway safety, which has also been adopted by MassDOT. Consistent with Vision Zero key principles the Safe System approach encourages safe speeds and reduced injury severity through roadway design and management. It also goes hand in hand with Complete Streets by considering all people on the road including drivers, motorcyclists, passengers, pedestrians, cyclists, and commercial and heavy vehicle drivers. While responsibility has historically been placed on the individual road user, the Safe System approach more heavily attributes actions and responsibilities to the system designers, including engineers, public health professionals, policymakers, and law enforcement.

With these guiding principles in mind, the goals for this plan are threefold:

1. **Use data-informed analysis and community needs to identify and prioritize opportunities to reduce crash risk.**
2. **Advance equity-related solutions that address the disproportionate burden of traffic fatalities and serious injuries on communities of concern.**
3. **Strengthen partnerships between stakeholders to promote roadway safety.**

PLANNING STRUCTURE

The Complete Streets Advisory Committee involved in the creation of the city's Complete Streets policy has been reorganized as the Safety Action Plan Advisory Committee to develop, implement, and monitor Everett's Safety Action Plan. This group consists of representatives from:

Transportation
Planning and Development
Inspectional Services
Engineering
Health
School
Police
Fire
Public Works

The Safety Action Plan Advisory Committee will meet once every quarter to track and report on plan implementation progress, oversee project evaluations and identify opportunities for partnerships to advance safety for all.

Safety Analysis

SAFETY ANALYSIS

EXISTING SAFETY PLANS AND INITITIATIVES

LOCAL EFFORTS

Complete Streets Policy and 2016 Prioritization Plan

The Complete Streets Policy, adopted by the city, resolves to design streets for all users and transportation modes with the goal of improving comfort, safety, and accessibility according to nationally recognized best practices for street design. The Complete Streets Prioritization Plan recommends specific mobility projects to improve safety, comfort, and better access for all users.[2] These projects include bicycle, pedestrian, and transit improvements.

Road Safety Audits (RSA)

Everett has conducted four road safety audits (RSAs) that evaluate a specific roadway's safety performance.[3] These audits list specific safety issues identified and possible safety improvements for the roadway. See Table 1 for the specific RSAs.

Table 1: Road Safety Audits Conducted within the City of Everett

Location	Date
Segment of MA Route 16 (Revere Beach Parkway)	2011
Lower Broadway/Alford Street, Municipalities of Boston and Everett	2016
Santilli Circle and Sweetser Circle	2016
Revere Beach Parkway Corridor from Lewis Street to Everett Avenue	2021

The recommended safety improvements varied according to each location's unique constraints and the issues they sought to address. However, the type of safety issues facing each roadway were broadly consistent. Consequently, the RSAs recommended a similar set of safety countermeasures, including:

- Adding signage (i.e., yield, guide, horizontal alignment warning signs)
- Adding signalized and unsignalized crosswalks
- Constructing sidewalks and bike lanes
- Improving traffic signal visibility
- Updating traffic signal equipment
- Modifying signal timings, clearance intervals, and detection
- Updating curb ramps to be ADA compliant

[2] Complete Streets Prioritization Plan: Everett, MA. Howard Stein Hudson. September 2016.
[3] Road Safety Audit: Segment of MA Route 16 (Revere Beach Parkway). Fay, Spofford & Thorndike for MassDOT. 2011.; Road Safety Audit: Road Safety Audit Lower Broadway/Alford Street, Municipalities of Boston and Everett. AECOM. March 2016.; Road Safety Audit: Report title: Road Safety Audit Santilli Circle and Sweetser Circle. AECOM. March 2016.; Revere Beach Parkway (Route 16) Corridor from Lewis Street to Everett Avenue. McMahon Associates, Inc. 2021.

2019 Everett Transportation Strategy

This plan focuses on improving mobility in Everett by supporting future transportation development and advocating for increased regional mobility.[4] To achieve this, the plan lays out four goals:

1. All residents should have access to jobs, goods, and services through an easy or direct quality pedestrian, bike, or transit connection.
2. All residents should have access to a frequent transit service within a ten-minute walk.
3. 100% of new and 50% of existing housing should have access to a dedicated bicycle facility that connects to a regional bike path.
4. Increase commutes by transit to 50% and decrease drive alone commutes to 30%.

Although not safety specific, the plan includes strategies and a toolkit of potential interventions many of which have safety benefits. Strategies range from establishing transit main streets to pursuing walking connections to the Silver Line. The toolkit focuses on parking, bus priority streets, parking benefit districts, and transportation management associations.

2016 Everett Transit Action Plan

The Everett Transit Action Plan focuses on existing and future transit-related issues and provides concrete recommendations for improvement.[5] The plan's goals include:

- Expand mobility
- Support economic development
- Enhance comfort and safety
- Advance equity
- Improve health and the environment
- Invest strategically

Projects focus on improving system capacity and efficiency, location and design of transit stops, and walking and biking connections to transit.

2015 Madeline English School Safe Routes to School (SRTS) Improvements

This infrastructure assessment report evaluates the Madeline English School's SRTS program. SRTS strives to "facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools."[6] This report explores current bicycle and pedestrian conditions, current travel behavior, and limitations to using active transportation for school. Pedestrian safety is addressed through a list of specific project recommendations.

[4] Everett Transportation Strategy: Improvement and Management for Everett's Future. Stantec. June 2019.
[5] Everett Transit Action Plan: Final Report. MassDOT. November 2016.
[6] Madeline English School Everett, MA: Safe Routes to School Infrastructure Program. MassDOT. April 2015. p. 1.

REGIONAL EFFORTS

In addition to local plans and projects, there are a number of regional initiatives that can inform and guide the city's plans.

2013 Northern Strand Trail Communities Bicycle and Pedestrian Network

This metro area Boston plan focuses on short-term opportunities for expanding region-wide bicycle and pedestrian networks.[7] The plan lists bicycle treatments (i.e., bike lane, buffered lane, shared lane) for specific roadways. Safety is considered through the plan's design considerations for sidewalks. Locations of new facilities focus on connecting schools, transit stations, trails, parks, multiuse development, etc.

Destination 2040 (Boston MPO Long Range Transportation Plan)

Destination 2040 is the most recent long range transportation plan published by the Boston Metropolitan Planning Organization (MPO).[8] It outlines major transportation policies and projects in communities across the Greater Boston region, including Everett. The plan mentions six specific items related to Everett, though only one has been programmed to receive funding as part of the current (FY 2022-2026) Transportation Improvement Program (TIP).[9] Table 2 below summarizes these six items. In addition, the reconstruction of Ferry and Elm Street was included in the 2021 TIP and is currently under construction.

Table 2: Destination 2040 Items Pertaining to the City of Everett

Project	Programmed Funding
Address safety issues along Route 16 in Everett, Chelsea, and Medford	None
Complete Streets rehabilitation Beacham Street	FY2025 for HSIP, STBG, and TAP funds
Wynn Resort intersection improvements	None
Complete Streets improvements to Sweetser Circle (Routes 16 and 99)	None
Silver Line BRT extension	None[10]
MBTA Orange Line extension	None

2018 MassDOT Strategic Highway Safety Plan

The 2018 Massachusetts Strategic Highway Safety Plan (SHSP) is a statewide-coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads.[11] In accordance with the State's commitment to Vision Zero, it identifies the state's key safety needs and guides investment decisions toward the strategies and countermeasures with the most potential to save lives and prevent injuries. While neither the plan nor its 2020 Action Plan Update specify any safety projects within the City of Everett, the plan does call for a range of actions that could apply to state-maintained facilities within the city, such as road safety audits, installing wet-reflective and recessed pavement markings, installing high-friction surfaces, deploying multilingual advertisements for seat belt usage, among many others. The city's own safety projects align with MassDOT's commitment to a safe transportation network for all users.

[7] Northern Strand Trail Communities Bicycle and Pedestrian Network Plan. Sustainable Metro Boston. July 2013.
[8] Destination 2040. Boston Region MPO. August 2019.
[9] Transportation Improvement Program for Boston Region MPO (Federal Fiscal Years 2022–26) as amended
[10] The Silver Line BRT extension feasibility study is funded and currently underway.
[11] Massachussettes Strategic Highway Safety Plan. Massachussettes Department of Trasnportation. 2018.

2007 Regional Bicycle Plan

In 2007, the Boston MPO published a bicycle plan that recommended policies, programs, and projects to promote bicycle use in the Boston region.[12] The plan highlights not only the safety concerns facing vulnerable road users, but also how the perception of unsafe facilities deters would-be cyclists. It outlines policies that promote bicycle safety, ranging from education programs, Safe Routes to School, and individual projects that would provide safe connections for cyclists. Two such projects were identified that affect the City of Everett, as show in Table 3. below. The Mystic River Pedestrian Bridge, an active lock and dam on the Mystic River, would be the only direct connection between Everett and the Assembly Square development in Somerville. The Northern Strand, a series of bicycle routes through several North Shore communities, is largely complete as of 2022 between Everett and Nahant.

Table 3: 2007 Regional Bicycle Plan Projects

Project	Priority	Status	Length (Miles)
Mystic River Pedestrian Bridge	Short	Design	0.1
Northern Strand (*Bike to the Sea*)	Medium	Construction[13]	9.5

SAFETY DATA SOURCES

This section describes the analysis methods and results for citywide crash patterns and trends. The crash patterns and trends analysis was conducted to identify behavioral and roadway patterns associated with injury and fatal crashes. A systemic evaluation was conducted to prioritize locations for systemic safety improvements in the city. Findings from these analyses inform the recommendations provided in part two of this plan.

CRASH DATA

For this analysis, the following crash data was assembled:

2015-2019 Crashes: MassDOT dataset including five complete years of reported crashes, representing January 1, 2015 through December 31, 2019.
2017 – 2019 Highway Safety Improvement Program (HSIP) Clusters: MassDOT dataset including the top locations in the state where reported crashes occurred at intersections. The analysis used crashes from the three-year period from 2017 to 2019.
Top 200 Highway Safety Improvement Program (HSIP) Clusters: MassDOT dataset showing the Top 200 at grade crash intersection locations. The analysis uses crashes from a three-year period and is updated on a regular basis. The four most recent Top 200 HSIP cluster datasets, include:

- 2013 – 2015 Clusters
- 2015 – 2017 Clusters
- 2016 – 2018 Clusters
- 2017 – 2019 Clusters

2010 – 2019 Pedestrian Crash Clusters: MassDOT dataset showing the top locations where reported crashes occurred between pedestrians and motor vehicles. Due to the relatively small number of reported pedestrian crashes in the state's crash data file, the analysis used crashes from the ten-year period from 2010 to 2019.
2010 – 2019 Bicycle Crash Clusters: MassDOT dataset showing the top locations where reported crashes occurred between pedestrians and motor vehicles. Due to the relatively small number of

[12] Regional Bicycle Plan. Boston Region MPO. March 2007.
[13] Construction complete between Everett and Nahant as of August 2022.

reported pedestrian crashes in the state's crash data file, the analysis used crashes from the ten-year period from 2010 to 2019.

2013 – 2017 Excess Expected Fatal Serious Injury Crashes MPO Ranking: MassDOT dataset showing crash-based network screening data for roads in the state. The analysis used the latest 5 years of closed geocoded crashes (2013-2017). Road segments were ranked from most to least crash frequency, calculated as the difference between expected and predicted average crash frequency on the MPO level. The dataset identifies sites in the Top 5% and then the next 10% of all segments by MPO.

RISK DATA

For this analysis, the following risk data was assembled:

2013 – 2017[14] Strategic Highway Safety Plan Emphasis Area Safety Risk Statewide Ranking: MassDOT dataset showing risk-based network screening data for roads in the state. The risk-based network screening data is based on risk factors identified for many of the emphasis areas of the Strategic Highway Safety Plan, including:

- Distracted Driver
- Bicycle
- Impaired Driver
- Large Truck
- Motorcycle
- Occupant Protection
- Older Driver
- Roadway Departure
- Pedestrian
- Speed Aggressive Driving
- Young Driver

A variety of statistical methods were used to identify the risk factors for each of the emphasis areas. The datasets identify primary and secondary risk sites by emphasis area for all segments statewide.

COMMUNITY FACTORS DATA

For this analysis, the following community factors data was assembled:

- **2020 Environmental Justice Populations:** Massachusetts environmental justice population data, based upon demographic criteria developed by the state's Executive Office of Energy and Environmental Affairs (EEA).
- **MBTA Transit Stops:** Massachusetts Bay Transit Authority subway, bus, and commuter rail stop data. Updated in 2021.
- **Local Destinations:** Major destinations in Everett, including employers and government buildings. Developed by Everett in 2022.
- **Care Facilities:** Massachusetts long term care residences, including licensed nursing homes, rest homes, and assisted living residences. Updated in 2019.
- **Schools:** Locations of Pre-K-12 schools in Massachusetts. Updated in 2022.
- **Parks:** Location of parks in Everett developed by the Massachusetts Department of Conversation and Recreation. Updated in 2019.

[14] Pre-COVID data was downloaded for the analysis. The most up to date Safety Plan Emphasis Area Safety Risk data includes 2020 data.

CITYWIDE CRASH PATTERNS AND TRENDS

This section presents citywide crash patterns and trends. Data sources mentioned in the previous section have been analyzed through MassDOT IMPACT database's Test of Proportions tool. The Test of Proportions tool[15] provides an automated process to identify overrepresented crash types and other data attributes within a user-defined area, such as a municipality.

The analysis focuses on identifying behavioral and roadway patterns associated with injury and fatal crashes. By analyzing reported crashes together, systemic trends across locations can be identified. Findings from this analysis helped inform the systemic evaluation and countermeasure considerations discussed later in the plan.

This analysis included reviewing reported crashes across motor vehicles, pedestrians, and bicyclists. Trends and findings are based on the following:

- Crash severity;
- Crash type;
- Driver contributing circumstances;
- Driver age; and
- Roadway functional class.

CRASH SEVERITY

MassDOT classifies crashes by severity based on the most severe outcome associated with the crash. Table 4 presents crashes by severity for all modes including bicycle and pedestrians. Compared to crashes in the state and the Metropolitan Area Planning Council (MAPC) region, two crash severity categories are overrepresented in Everett:

- Non-fatal injury – possible
- Non-fatal injury – non-incapacitating

[15] IMPACT's Test of Proportions website: https://apps.impact.dot.state.ma.us/sat/TestofProportions

Table 4. Everett Crashes by Severity for All Modes including Bicycle and Pedestrians (January 2015 – December 2019)

Maximum Severity	Count	Percent of Total
No injury	1,157	52.31%
Non-fatal injury - Possible	380	17.18%
Non-fatal injury - Non-incapacitating	238	10.76%
Not reported	170	7.69%
No Apparent Injury (O)	101	4.57%
Not Applicable	44	1.99%
Non-fatal injury - Incapacitating	42	1.90%
Unknown	36	1.63%
Suspected Minor Injury (B)	21	0.95%
Possible Injury (C)	17	0.77%
Fatal injury (K)	6	0.27%
Suspected Serious Injury (A)	0	0%
Deceased not caused by crash	0	0%
Reported but invalid	0	0%
Total	**2,212**	**100%**

CRASH TYPE

Figure 1 presents crashes by reported crash type and includes all crashes, including pedestrians and bicycles, with vehicles. Compared to crashes in the state and Metropolitan Area Planning Council region, three crash type categories are overrepresented in Everett:

- Angle
- Sideswipe, same direction
- Head-on

Figure 1. Everett Crashes by Crash Type (January 2015 – December 2019)

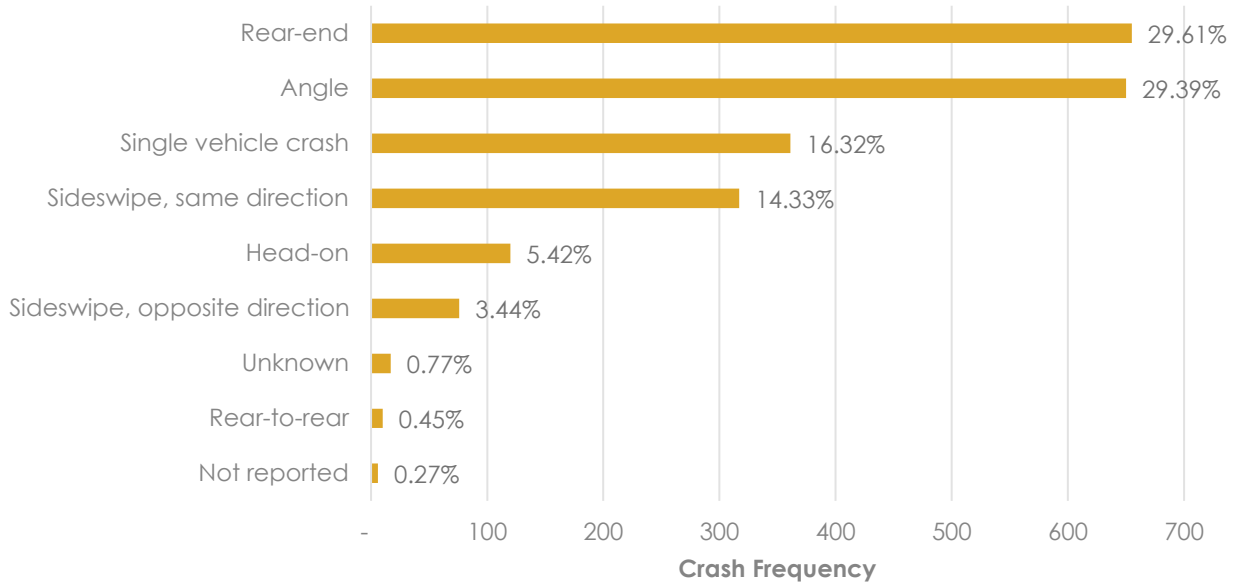


Table 5 demonstrates that Everett's fatal and severe injury crash share mostly matches reported crash share by crash type. The fatal and severe injury numbers are identified *through Maximum Injury Reported* field dataset that has been filtered down to "Fatal Injury" and "Non-fatal injury – Incapacitated".

While the ranking differs slightly, the top three categories of crash type for all crashes and all modes and for fatal and severe injuries are:

- Rear-end
- Single vehicle crash
- Angle

Table 5: Everett Fatal and Serious Injury Crashes by Crash Type (January 2015 - December 2019)

Crash Type	Fatal and Severe Injuries	Percentage of Total
Angle	14	29.17%
Single vehicle crash	14	29.17%
Rear-end	8	16.67%
Head-on	6	12.50%
Sideswipe, opposite direction	2	4.17%
Sideswipe, same direction	2	4.17%
Not reported	2	4.17%
Total	**48**	**100%**

Figure 2 displays the location of all six fatalities and their corresponding data points are included in Table 6.

Figure 2: Fatalities in Everett January 2015 – December 2019

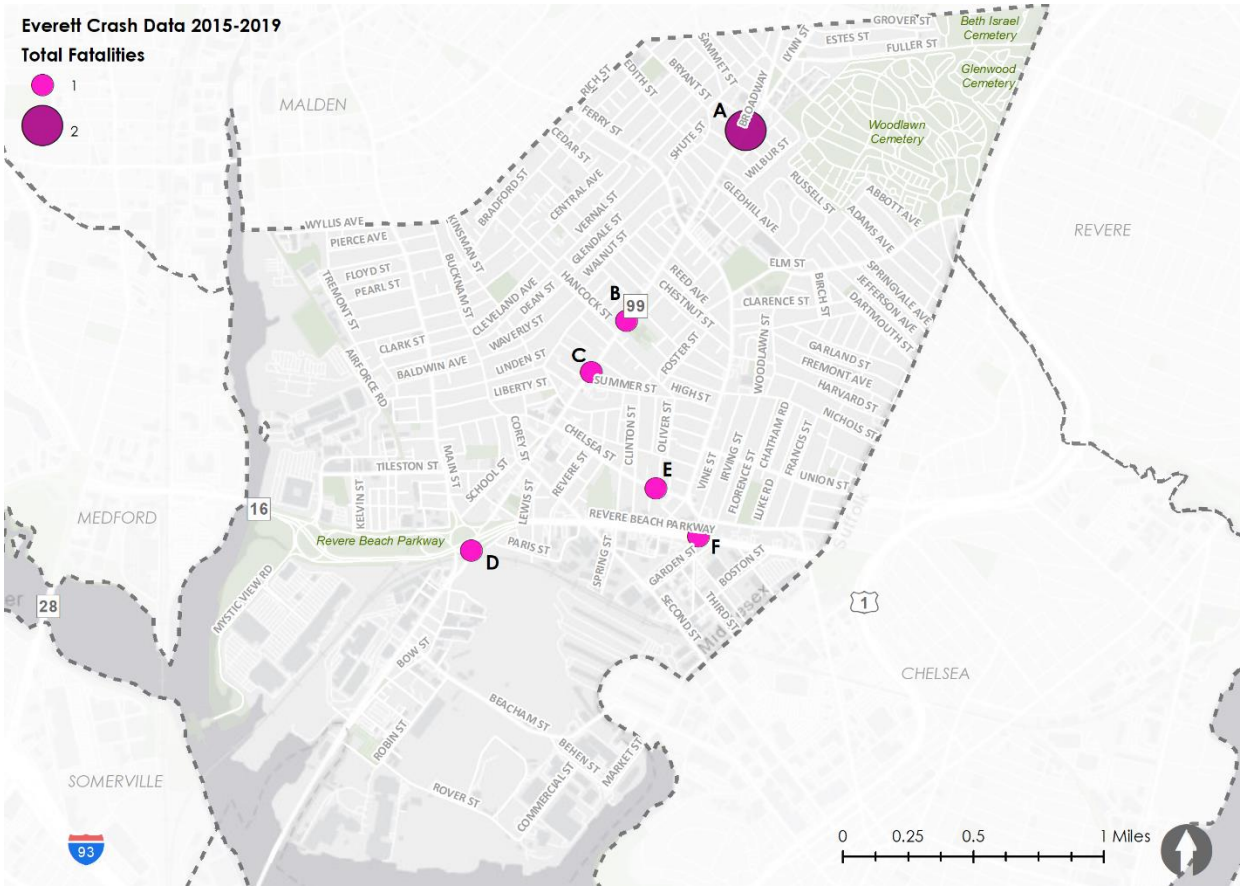


Table 6: Table of all Fatalities in Everett between January 2015 and December 2019

Map No.	Date	Crash Type	Total Fatalities	Roadway	Near Intersection	First Harmful Event	Driver Contributing Circumstance
A	01/03/2018	Angle	2	Broadway RTE SR99 N	Dunster Road	Collision with motor vehicle in traffic	D2: (Unknown)
B	10/02/2019	Not reported	1	Broadway RTE SR99 N	Hancock Street	Not reported	
C	09/27/2019	Not reported	1	Broadway RTE SR99 N	Pleasant Street	Not reported	
D	02/07/2015	Single vehicle crash	1	Broadway RTE SR99 N/ Sweetser Circle RTE SR99 N		Collision with other	D1: (Driving too fast for conditions)
E	08/13/2015	Single vehicle crash	1	Chelsea Street		Collision with pedestrian	D1: (Glare)
F	08/30/2019	Single vehicle crash	1	Revere Beach Parkway RTE SR16 W/ Vine Street		Collision with pedestrian	D2: (Unknown)

Bicycle and Pedestrian Crashes

MassDOT includes bicycle and pedestrian crashes in other crash types. Specific bicycle and pedestrian crashes are identified through a *First Harmful Event* dataset using the Test of Proportions tool from MassDOT's IMPACT website. Table 7 summarizes bicycle and pedestrian crashes in Everett by severity.

- Compared to all crashes in the state and Metropolitan Area Planning Council, both bicycle and pedestrian crashes are overrepresented in Everett.
- Pedestrian crashes represent the third most frequent *first harmful event* for total crashes and second most frequent *first harmful event* for fatal and severe injury crashes.

Table 7. Everett Bicycle and Pedestrian Crashes by Severity (January 2015 – December 2019)

Crash Type	All Crash Severities		Fatal and Severe Injuries	
Bicycle	33	1.49%*	2	4.17%**
Pedestrian	94	4.25%*	8	16.67%**

** Percentage of all crashes*
***Percentage of all fatal and severe injuries*

DRIVER CONTRIBUTING CIRCUMSTANCES

Figure 3 presents vehicle-level data on driver contributing circumstances to crashes. Crash investigation reporting forms provide fields to describe the actions of drivers and non-motorists that contribute to a crash such as speeding, distracted driving, failure to yield, improper turn, or collision with a fixed object, but they do not always address why the action occurred. Unreported or unknown driver contributed circumstance and make up a significant percentage (30%) of the dataset. This is because these actions are often difficult to observe and measure and as a result, driver contributing factors are often not reported or significantly under-reported.

Compared to crashes in the state and Metropolitan Area Planning Council region, five driver contributing circumstances are overrepresented in Everett:

- Disregarded traffic signs, signals, road markings
- Made an improper turn
- Physical impairment
- Wrong side or wrong way
- Other improper action

DRIVER AGE

MassDOT classifies crashes by the oldest and youngest known ages of involved drivers. Figure 4 presents crashes by the oldest known age of driver and Figure 5 presents crashes by the youngest known age of driver.

When considering the two datasets for oldest and youngest known age, 10% of crashes involve older drivers (65+) and 28% of crashes involve younger drivers (24 and under).

Figure 3. Everett Driver Contributing Circumstances (January 2015 – December 2019)

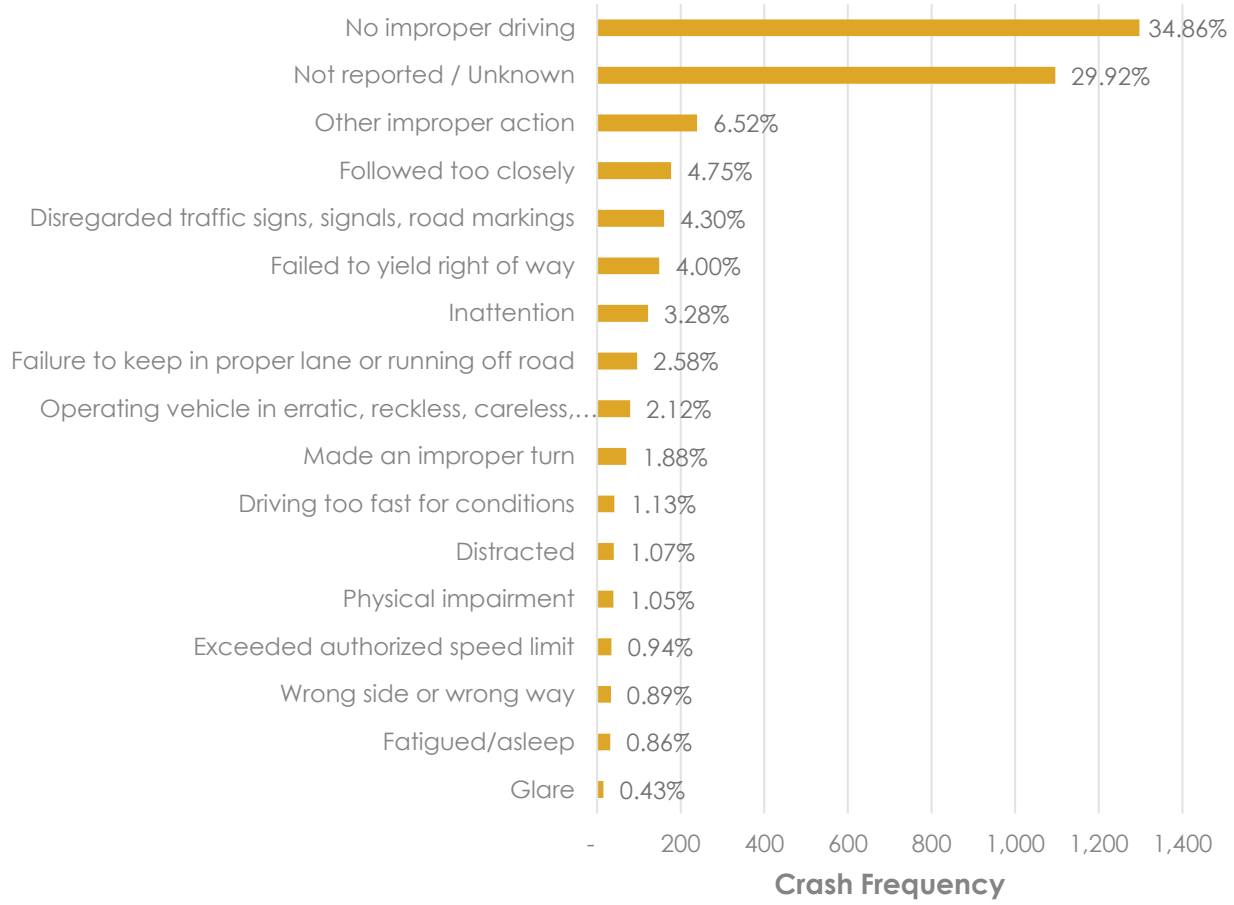


Figure 4. Everett Crashes by Oldest Known Driver (January 2015 – December 2019)

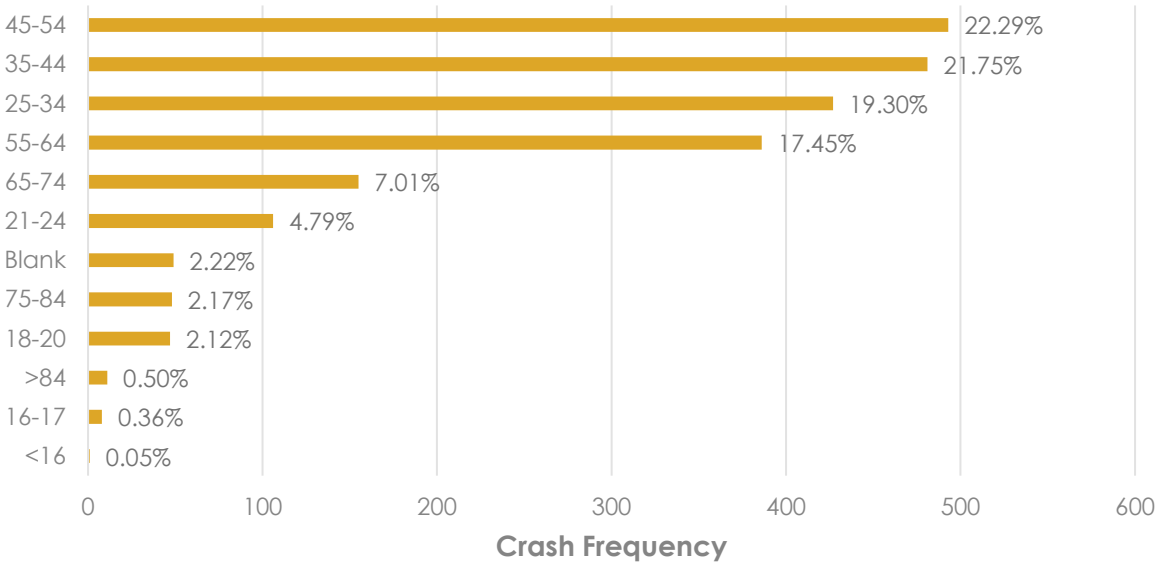
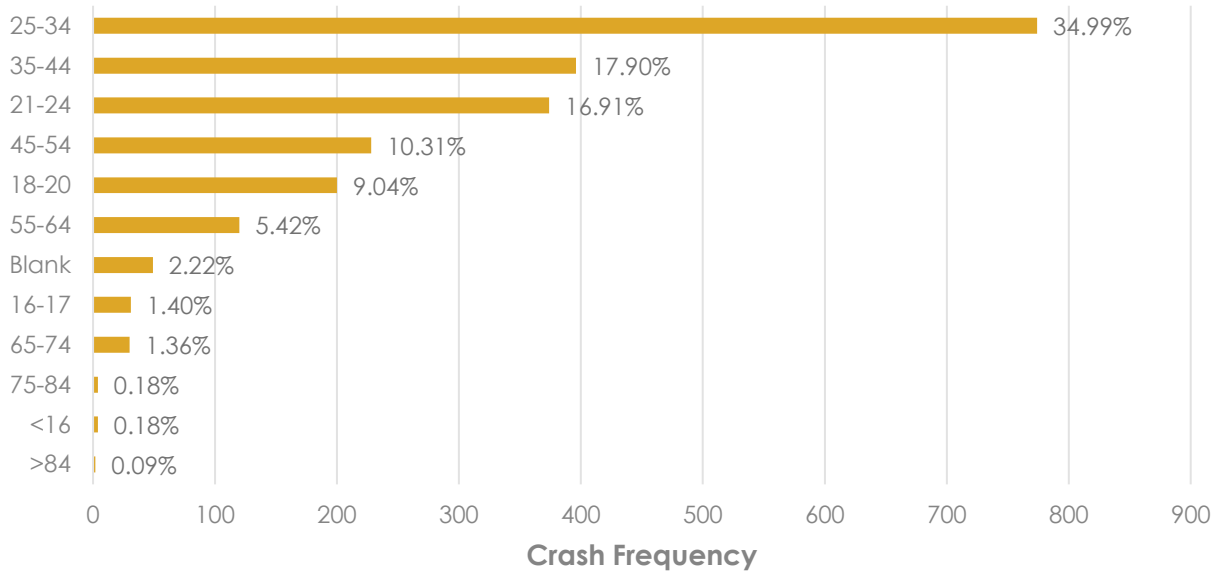


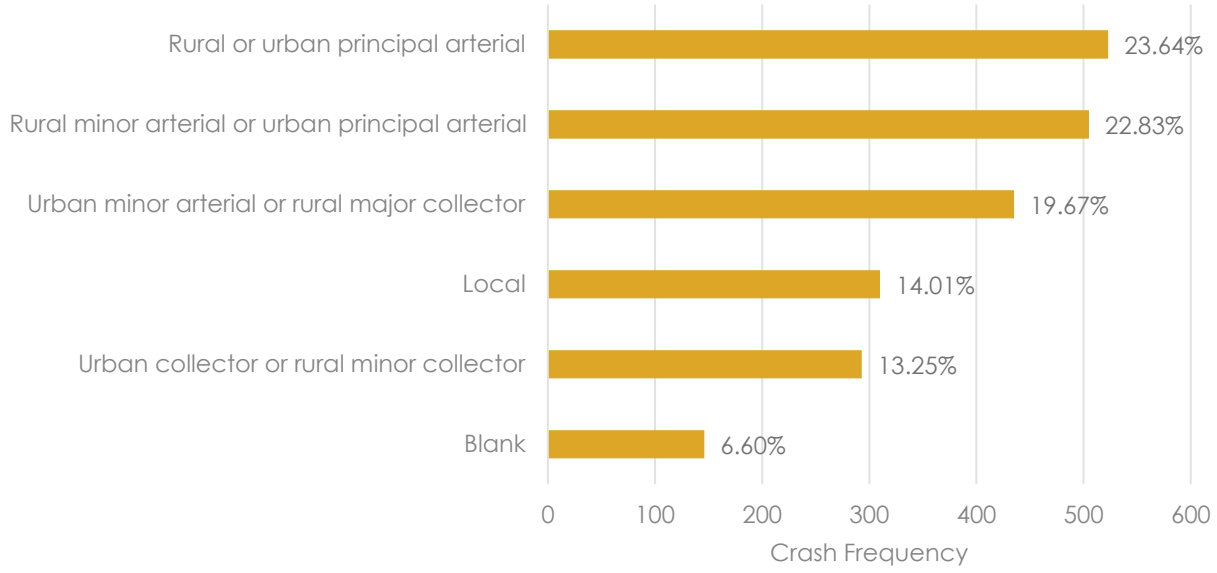
Figure 5. Everett Crashes by Youngest Known Driver (January 2015 – December 2019)



ROADWAY FUNCTIONAL CLASS

Figure 6 presents crashes by roadway functional class. Compared to crashes in the state and the Metropolitan Planning Area Council region, crashes on local, rural or urban principal arterial, and urban collector or rural minor collector are overrepresented in Everett. There are no interstate highways that run through Everett.

Figure 6. Everett Crashes by Roadway Functional Class (January 2015 – December 2019)



NETWORK ANALYSIS AND SYSTEMIC FINDINGS

This section describes the network analysis and systemic evaluation of the Everett roadway network. This analysis used MassDOT's crash- and risk-based network screening tools to identify intersections and segments with the highest crash severity and crash risk. MassDOT uses both crash-based and risk-based network screening to help identify locations that can be improved to best help reduce the numbers of fatal and serious injury crashes.

MassDOT's **crash-based network screening** helps focus on individual locations with large numbers of severe crashes. MassDOT's **risk-based network screening** highlights locations where high-risk roadway features correlate with specific severe crash types.

MassDOT's Highway Division provides detailed information on the development of the crash- and risk-based network screenings.[16]

INTERSECTION ANALYSIS & RESULTS

Approach

This type of analysis would usually include a GIS-based evaluation that ranks Everett intersections based on crash data and community factors data. However, due to the low number of intersections with crash clusters, further refinement of the data was not required. Table 8 reports intersections with high crash clusters without ranking.

For this analysis, the 2017-2019 Highway Safety Improvement Program (HSIP) Eligible Crash Clusters layer was used to create a base layer. The base layer included 7 intersections in Everett. After reviewing the intersection data and crash clusters, it was determined there are not enough crash clusters to warrant a full analysis. There is only one bicycle crash cluster reported and no pedestrian crash clusters between 2010-2019.

Intersection Data

This analysis considered the following datasets:

- Highway Safety Improvement Program (HSIP) Clusters 2017-2019
- Top 200 Highway Safety Improvement Program (HSIP) Clusters 2013 – 2015
- Top 200 Highway Safety Improvement Program (HSIP) Clusters 2015 – 2017
- Top 200 Highway Safety Improvement Program (HSIP) Clusters 2016 – 2018
- Top 200 Highway Safety Improvement Program (HSIP) Clusters 2017 – 2019
- Pedestrian Crash Clusters 2010 - 2019
- Bicycle Crash Clusters 2010 – 2019

Most crash clusters are located on intersections along Route 16. Figure 7 displays the crash clusters data retrieved from MassDOT. **Error! Reference source not found.** shows that three intersections have been c onsistently rated within the Top 200 Crash Cluster statewide for 2013 – 2015, 2015 – 2017, 2016 – 2018, 2017 – 2019:

- Revere Beach Parkway and 2nd Street
- Revere Beach Parkway and Vine Street
- Revere Beach Parkway and Everett Avenue

Note that these three intersections were also included in the 2021 RSA conducted for Revere Beach Parkway. It is notable that most of the fatalities that have been reported in Everett are along Route 99 (Broadway) but most of the crash clusters are found along Route 16 (Revere Beach Parkway).

[16] MassDOT. Network Screening Methodology Reports. 2022. https://www.mass.gov/lists/network-screening-methodology-reports#reports-

Figure 7: HSIP Eligible Crash Clusters 2017-2019 in Everett

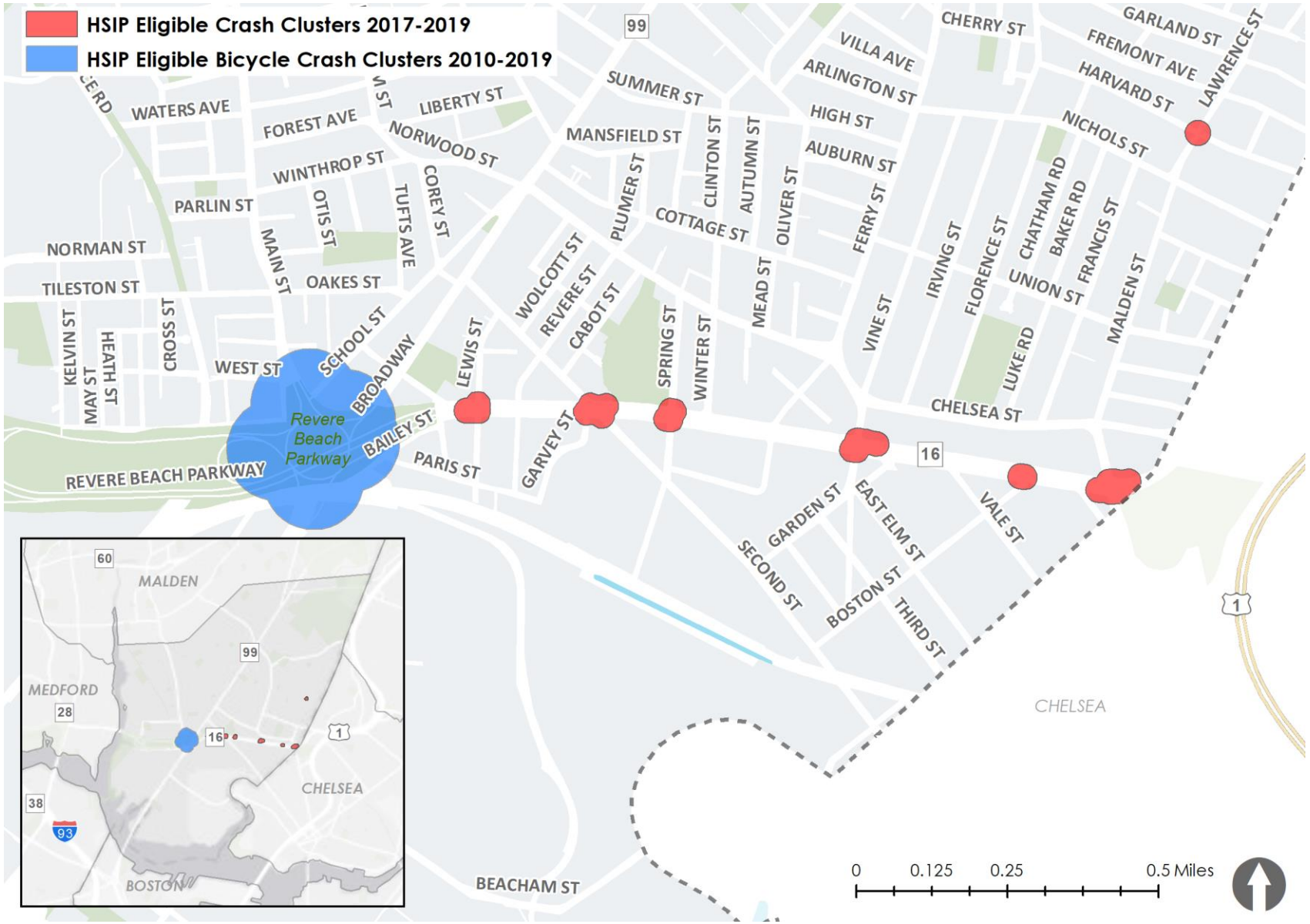


Table 8: Table of all Highway Safety Improvement Program (HSIP) Eligible Crash Clusters.

Intersection	HSIP Eligible Crash Cluster 2017-2019	HSIP Eligible Bicycle Crash Cluster 2010-2019	HSIP Eligible Pedestrian Crash Cluster 2010-2019	Top 200 Crash Clusters 2013-2015	Top 200 Crash Clusters 2015-2017	Top 200 Crash Clusters 2016-2018	Top 200 Crash Clusters 2017-2019
Revere Beach Parkway and Broadway	No	Yes	No	No	No	No	No
Revere Beach Parkway and Lewis Street	Yes	No	No	No	No	No	No
Revere Beach Parkway and 2nd Street	**Yes**	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Revere Beach Parkway and Spring Street	Yes	No	No	No	No	Yes	Yes
Revere Beach Parkway and Vine Street	**Yes**	**No**	**No**	**Yes**	**Yes**	**No**	**No**
Revere Beach Parkway and Boston Street	Yes	No	No	No	No	No	No
Revere Beach Parkway and Everett Avenue	**Yes**	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Lawrence Street and Harvard Street	Yes	No	No	No	No	No	No

CORRIDOR ANALYSIS & RESULTS

Method

A GIS-based evaluation has been conducted to rank Everett corridors based on crash and risk data.

MassDOT maintains risk-based network screening data for eleven emphasis areas of the Strategic Highway Safety Plan. Following a review of citywide crash patterns and trends, and a visual scan of the eleven risk-based datasets, six risk-based network screening datasets were selected that are relevant for analysis in Everett:

1. 2013 – 2017 Strategic Highway Safety Plan Bicycle Safety Risk Statewide Ranking
2. 2013 – 2017 Strategic Highway Safety Plan Pedestrian Safety Risk Statewide Ranking
3. 2013 – 2017 Strategic Highway Safety Plan Distracted Driving Safety Risk Statewide Ranking
4. 2013 – 2017 Strategic Highway Safety Plan Speed Aggressive Driving Safety Risk Statewide Ranking
5. 2013 – 2017 Strategic Highway Safety Plan Impaired Driving Safety Risk Statewide Ranking
6. 2013 – 2017 Strategic Highway Safety Plan Young Driver Safety Risk Statewide Ranking

Corridor Screening Datasets

- 2013 – 2017 Excess Expected Fatal Serious Injury Crashes MPO Ranking
- 2013 – 2017 Strategic Highway Safety Plan Bicycle Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Pedestrian Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Speed Aggressive Driving Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Distracted Driving Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Impaired Driving Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Large Truck Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Motorcycle Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Occupant Protection Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Older Driver Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Roadway Departure Safety Risk Statewide Ranking
- 2013 – 2017 Strategic Highway Safety Plan Young Driver Safety Risk Statewide Ranking

The MassDOT roads inventory layer was used to create a linear referencing system (LRS) for roads in Everett. The LRS served as the base layer for the analysis. After setting the base roadway layer, seven crash and risk datasets were overlaid on the base and assigned points to the resulting corridor segments based on the following factors:

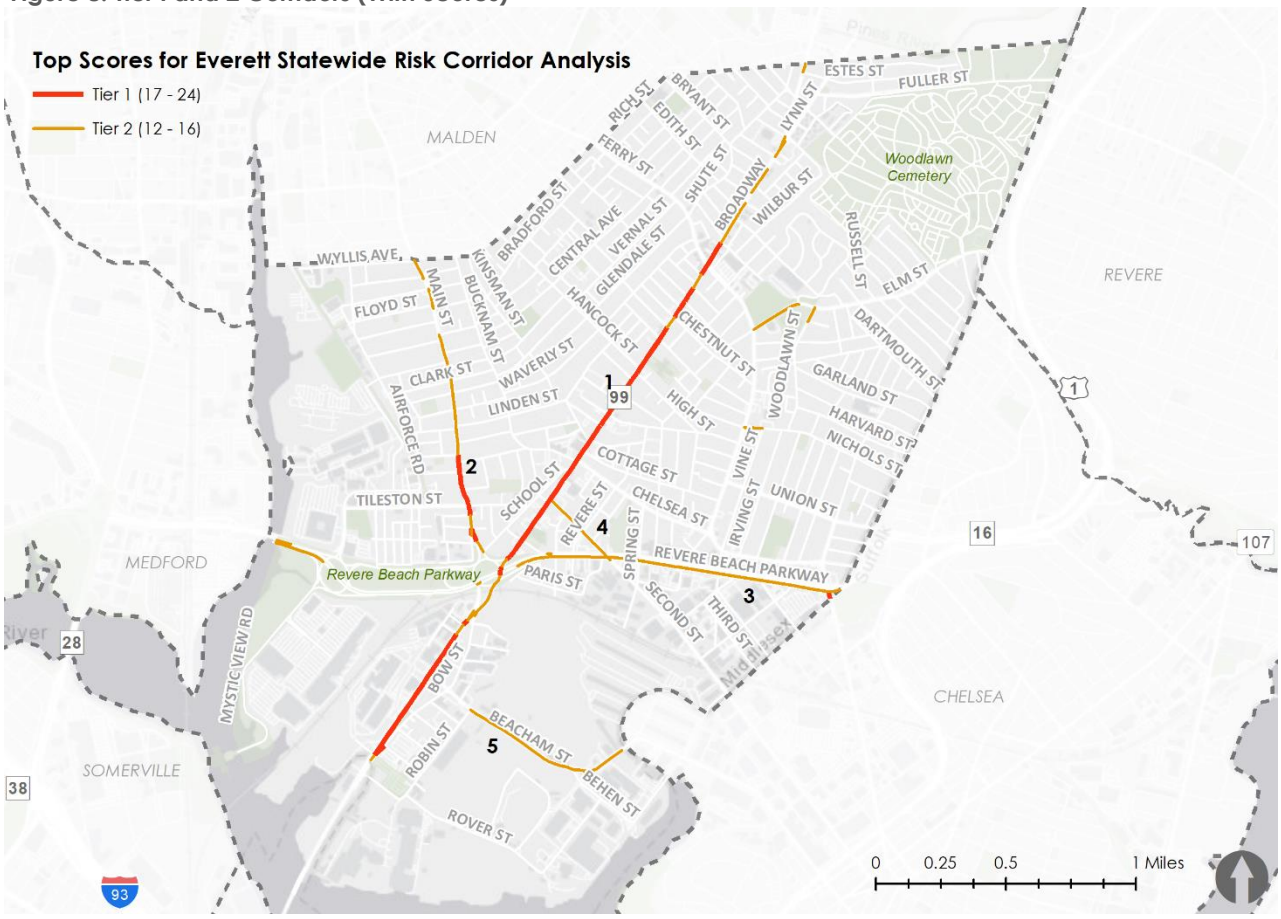
- **2013 – 2017 Excess Expected Fatal Serious Injury Crashes MPO Ranking:** 4 points per "Top 5" segment, with a maximum possible score of 4.
- **2013 – 2017 Strategic Highway Safety Plan Bicycle Safety Risk Statewide Ranking:** 2 points per "secondary risk segment" and 4 points per "primary risk segment," with a maximum possible score of 4.
- **2013 – 2017 Strategic Highway Safety Plan Pedestrian Safety Risk Statewide Ranking:** 2 points per "secondary risk segment" and 4 points per "primary risk segment," with a maximum possible score of 4.
- **2013 – 2017 Strategic Highway Safety Plan Distracted Driving Safety Risk Statewide Ranking:** 2 points per "secondary risk segment" and 4 points per "primary risk segment," with a maximum possible score of 4.

- **2013 – 2017 Strategic Highway Safety Plan Impaired Driving Safety Risk Statewide Ranking:** 2 points per "secondary risk segment" and 4 points per "primary risk segment," with a maximum possible score of 4.
- **2013 – 2017 Strategic Highway Safety Plan Young Driving Safety Risk Statewide Ranking:** 2 points per "secondary risk segment" and 4 points per "primary risk segment," with a maximum possible score of 4.
- **2013 – 2017 Strategic Highway Safety Plan Speed Aggressive Driving Safety Risk Statewide Ranking:** 2 points per "secondary risk segment" and 4 points per "primary risk segment," with a maximum possible score of 4.

A combined total score for each segment has been determined. The lowest possible score was 0 and the highest possible score was 28. High scores indicate higher risk corridors for the safety measures outlined above. The segments in the analysis had a median score of 12, a low score of 2, and a high score of 24. In Figure 8, the segments shown are those that scored above the median. The segments were symbolized by natural breaks to visually identify corridors comprised of multiple high-scoring segments and are then grouped into Tier 1 (17-24 points) and Tier 2 (12-16 points). The GIS evaluation resulted in five major Tier 1 and Tier 2 corridors. In Figure 8, the top corridors with the highest risk scores are:

1. Broadway (Route 99)
2. Main Street
3. Revere Beach Parkway (Route 16, East of Broadway)
4. 2nd Street between Route 99 and Route 16
5. Beacham Street

Figure 8: Tier I and 2 Corridors (With Scores)



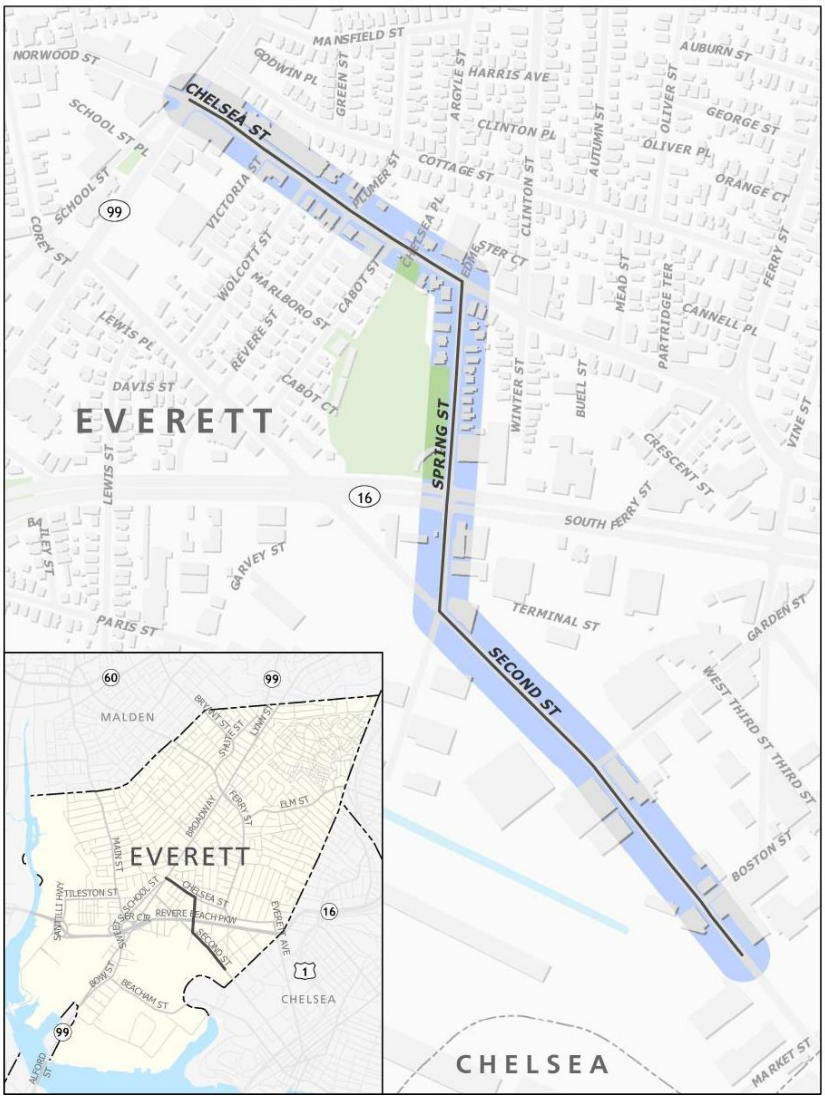
The fourth-highest segment, 2nd Street between Route 99 and Route 16, may be expected to extend to the south in the future. This is due to expected development anticipated to occur, as discussed in the following section. Traffic volumes are also generally higher to the south on 2nd Street and it is likely the southern portion did not score higher today due to current land uses and demand for pedestrian and bicycle trips.

FUTURE GROWTH AREAS

The City of Everett expects a significant increase in development activity, approximately 1,500 housing units, near 2nd Street in the next 2-3 years with the capacity to support approximately 5,000 units in the next decade. As part of this development, additional right-of-way is being acquired. This additional right-of-way is intended to be used to provide safety improvements and multi-modal facilities. Given this significant growth potential, it is anticipated that preventative safety measures would be merited. Streets that are planned to be improved are shown on **Figure 9** and include:

- Chelsea Street between Broadway and Spring Street
- Spring Street between Chelsea Street and 2nd Street
- 2nd Street between Spring Street and the railroad crossing

Figure 9: Future Growth Corridors



These roadways are also located near high-risk corridors and crash clusters along Revere Beach Parkway. Therefore, safety improvements made to support redevelopment can also serve as alternative, safer routes for people walking and biking.

EQUITY CONSIDERATIONS

State Definition

As characterized by the state Executive Office of Energy and Environmental Affairs' Environmental Justice Policy, all Census blocks within the City of Everett are classified as Environmental Justice neighborhoods due to English isolation, median household income, or racial/ethnic minority identity.[17]

Federal Definition (USDOT)

As a result of Executive Order 14008 which created the Justice40 initiative, the White House Council on Environmental Quality (CEQ) is developing a Climate and Economic Justice Screening Tool (CEJST) to help Federal agencies identify disadvantaged communities that are marginalized, underserved, and overburdened by pollution. While that tool is in development, the U.S. Department of Transportation has developed interim definitions to identify disadvantaged communities for Justice40 eligible programs[18]. Two such definitions for vulnerable populations focus on persistent poverty and historically disadvantaged communities. These terms, as they are relevant to the City of Everett, are defined below:

- **Historically Disadvantaged Community (HDC)[19]**: The Transportation Disadvantaged Census Tracts tool is the most commonly used tool in USDOT discretionary grant programs to determine disadvantaged community status. Consistent with guidance from the Office of Management and Budget[20], the federal Department of Transportation (DOT)'s HDC index identifies communities that exceeded the 50th percentile (75th for resilience) across at least four of the following six transportation disadvantaged indicators.
    - Transportation Access
    - Health
    - Environmental
    - Economic
    - Resilience
    - Social

- **Area of Persistent Poverty (APP)[21]**: Any Census Tract with a poverty rate of at least 20 percent as measured by the 2014–2018 5-year data series available from the American Community Survey of the Bureau of the Census

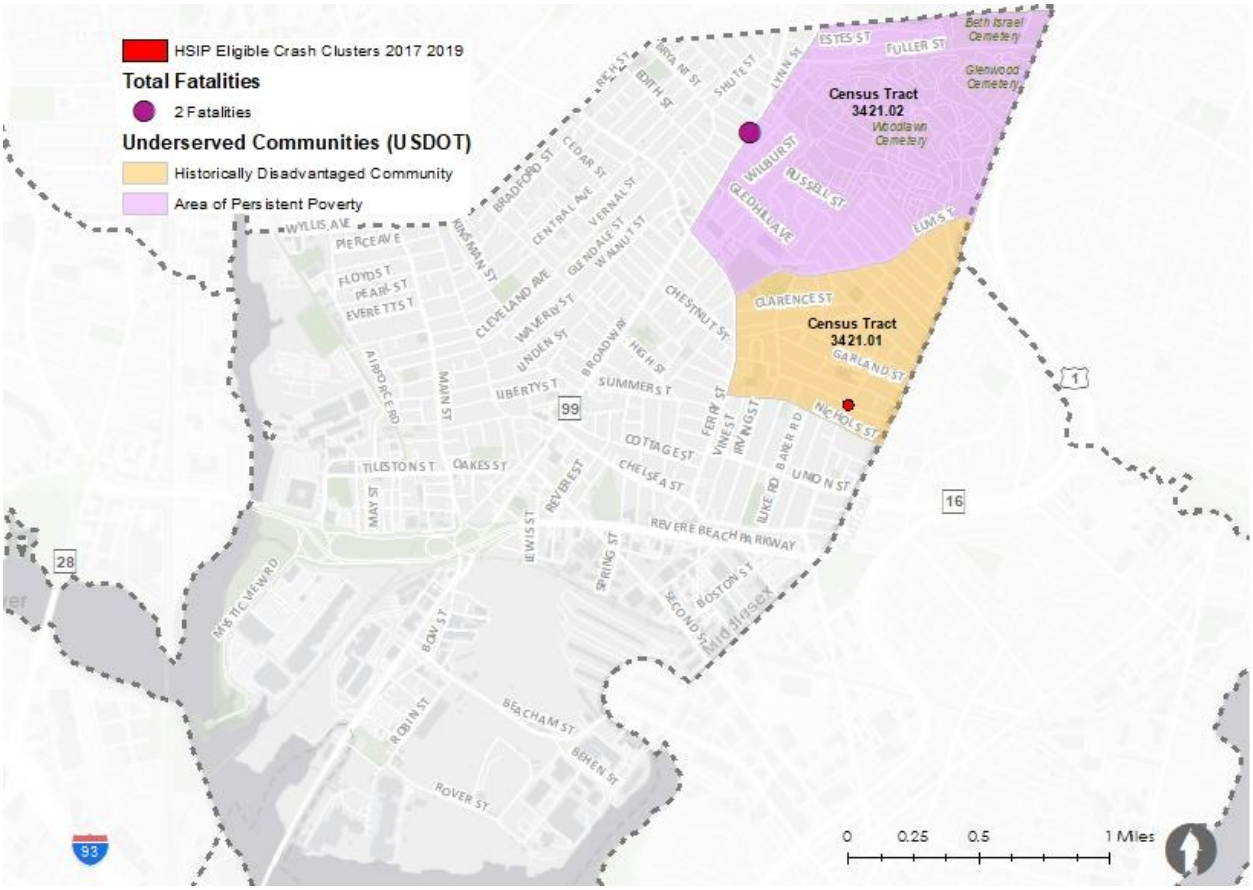
The City of Everett covers 3.4 square miles north of Boston in Massachusetts and is home to 49,500 people[22]. As shown in Figure 10, one tract in the city is identified as an area of persistent poverty under this definition and one tract is identified as a historically disadvantaged community. Combined, the tracts cover a

[17] Massachusetts Executive Office of Energy and Environmental Affairs. *Massachusetts 2020 Environmental Justice Populations*. 2020. https://mass-eoeea.maps.arcgis.com/apps/webappviewer/index.html?id=1d6f63e7762a48e5930de84ed4849212
[18] FY22 Relevant Funding Opportunities and Programs: Rebuilding American Infrastructure with Sustainability and Equity (RAISE; Port Infrastructure Development Program (PIDP); National Electric Vehicle Infrastructure (NEV).
[19] https://datahub.transportation.gov/stories/s/tsyd-k6ij
[20] M-21-28 (whitehouse.gov)
[21] Area of Persistent Poverty qualifying tracts can be found in this table

[22] 2020 US Census

contiguous .73 square miles and encompass 20% (11% HDC, 9% APP) of the city's population. One HISP crash cluster (2017 – 2019) is located within the equity area at the intersection of Harvard and Lawrence Streets. One crash resulting in two fatalities occurred near the intersection of Dunster Rd and MA-99, which represents the western boundary of the APP tract.

Figure 10: HDC and APP Map of Everett



Recommendations

RECOMMENDATIONS

POLICY AND PROCESS PRIORITIES

This section presents non-engineering transportation safety countermeasures identified to address the crash trends documented in the previous section. These countermeasures are intended to complement engineering countermeasures and generally are intended to address behavioral factors contributing to crash risk. Countermeasures are grouped into education approaches and enforcement approaches.

The strategies discussed in this section would be best implemented in coordination with the Safety Action Plan Advisory Committee. Priorities are presented below, with more detailed discussions of each countermeasure provided in subsequent sections.

EDUCATION & AWARENESS

These strategies are focused on changing behaviors through education and awareness. Based on the risk factors identified through the crash analysis and with input from local stakeholders, the following five education-related strategies have been identified.

1. Establishing a Safe Culture
2. Driver and Passenger Safety
3. Road Safety Education for Children and Families
4. Speed Monitoring Awareness
5. Vulnerable Road User Education
6. Crash Reporting Outreach for Public

Establishing a Safe Culture

Achieving the city's intended goal of zero fatalities or serious injuries by 2030 requires a commitment to establishing a culture of safety. The City of Everett will take the lead in fostering the attitude, beliefs, perceptions, and values related to safety, so that every Everett citizen can agree that serious injury or death from a vehicle crash is unacceptable.

Identifying a champion is critical to establishing a culture of safety and integrating it into ongoing city initiatives, plans, and processes. The Safety Action Plan Committee will designate this champion to coordinate the city's roadway safety efforts and report on their progress towards eliminating traffic violence. The coordinator will be responsible for promoting existing national and regional safety efforts, such as the Safe Kids, Safe Routes to School, the Massachusetts Vision Zero Coalition, and the Livable Streets Alliance.

The coordinator will also be responsible for leveraging existing city resources and efforts to communicate roadway safety goals to Everett residents. This can include utilizing city fleet vehicles as platforms for safety messaging, serving as the spokesperson for safety issues to local news media, and providing material on safe behaviors for public service announcements.

Action	Time Frame / Priority
Identify a coordinator to lead safety outreach efforts and report progress towards safety goals	2023
Establish a formal method for sharing safety data with partners (such as a website or recurring presentation)	2023
Add "How's my driving?" stickers to the city's fleet vehicles	2023
Use the city's fleet vehicles as moving billboards to promote road safety messaging	2024

Driver and Passenger Safety

A variety of factors beyond driver behavior contribute to traffic violence, including street design, vehicle design, and the prevailing safety culture. However, driver behavior remains a leading factor, and must be part of any Safe System Approach. As discussed in analysis of local crash trends, several factors related to driver behavior are overrepresented in Everett, including driver impairment, disregard of signs, signals, and markings, and improper turns. The city should proactively encourage attentive, sober driving to residents, especially younger drivers.

Action	Time Frame/Priority
Provide educational posters, social media posts, and public service announcements to inform residents about the dangers of impaired driving	2023
Conduct an audit of sign and road marking visibility	2023
Outreach in schools to educate students on the consequences of impaired driving	2024
Outreach to key employers to adopt distracted driving policies at their workplaces (The National Safety Council has a sample contract in its Distracted Driving toolkit.)	2024

Road Safety Education to School Children and Families

Road safety education to children includes strategies such as safe routes to school, walking school bus, and bicycle trains that promote road safety to all users, particularly for pedestrians and bicyclists.

A 'safe routes to school' program encourages and enables children to walk and bike to school. This can improve their health, well-being, and safety. Encouraging more students to walk and bike and providing safe routes to and from school can also result in less traffic congestion and improved air quality around schools which has additional safety benefits for all travelers. The city's schools have already taken the important step of registering to be a MassDOT Safe Routes to School Program Partner, which makes them eligible to receive support from MassDOT in the form of outreach, program support, and grants.

> MassDOT coordinated with the City of Everett in 2015 to conduct a Safe Routes to School Study for the Madeline English School. The study resulted in a series of engineering recommendations to support SRTS in Everett.

The Massachusetts (MA) SRTS program puts on several events across the state including the yearly Winter Walk to School Day and Walk, Bike, and Roll to School Day. It also provides resources for schools to adopt walking school buses (WSB) and bike trains which encourage groups of children to walk or bike to school, with one or more adults.[23]

Everett's Police Department, in collaboration with the School Department, is working on developing a map of locations where crossing guards are stationed during school arrival and dismissal times. This map could also include recommended routes to school within a mile of schools focusing on routes with complete sidewalks, bike lanes, and traffic calming measures.

Regarding educational opportunities, MA SRTS provides an interactive activity kit called Walk Across Massachusetts where students measure how far they walk over a certain period. An example of how one community has implemented safety education in schools is Cambridge, MA. Cambridge's SRTS program offers two bicycle and pedestrian safety training units for second and sixth graders. Second graders learn about how to safely cross the road and basic bicycle safety (i.e., helmet use, hand signals, rules or the road, etc.). Sixth graders receive advanced bicycle safety training where they learn how to navigate difficult areas on the roadway (I.e., pothole avoidance, using intersections while road riding, etc.) and why biking is a healthy and sustainable option.[24]

Action	Time Frame/Priority
Participate in Statewide Safe Routes to School Events, including Winter Walk to School Day and Walk, Bike, and Roll to School Day	2023
Develop Safe Routes to School walking and biking maps	2023
Organize walking school buses at Everett elementary schools	2023
Host annual safety fair at Everett public schools to promote safety education	2024

Speed Monitoring Awareness

The speed trailer is an educational device that helps drivers become more aware of their speed in relation to the posted speed. This awareness tool can also help residents survey the traffic speeds in their own neighborhood. This trailer is usually deployed in a street or neighborhood for a few days so the residents can monitor the speeds on their own streets and become aware of their own driving behaviors.

> Everett's Police Department currently has a speed trailer that can be deployed to increase driver awareness of their speed.

[23] Massachusetts Safe Routes to School Program, https://www.mass.gov/info-details/safe-routes-to-school-encouragement
[24] Cambridge, MA Safe Routes to School program, https://www.cambridgema.gov/cdd/transportation/gettingaroundcambridge/saferoutestoschool

Action	Time Frame / Priority
Schedule regular speed trailer deployments on a rotating basis at: • Tier 1 and 2 Risk Corridors (see Corridor Analysis above); • School zones; • Other areas with a concentration of vulnerable road users (children, elderly).	2023

Vulnerable Road User Education

Road safety education can improve safer roadway behavior and can place emphasis on vulnerable road users such as bicyclists and pedestrians as identified by the crash analysis. Community and school events provide opportunities to share educational information with the broader public. Information on yielding and the vulnerability of roadway users, particularly children, can be distributed to encourage safer roadway behavior. Other safety education aimed at bicyclists and driver conflicts would also benefit vulnerable users. The Police Department has also noted that non-English speakers and recent immigrants to the United States may not always be aware of local rules of the road. Furthermore, there has been concern among the Police Department about scooter and moped behavior. Targeted driving education to these populations would be beneficial, particularly as it relates to multiple modes and school zone areas.

Some examples of safety education include:

- Safety education for children including safe crossing practices, not playing behind vehicles or near streets, and the importance of adult supervision.[25]
- BikeWalk NC offers an interactive educational workshop for motorists which discusses topics such as common bicyclists' practices, impact of driving habits on vulnerable road users, avoiding typical crashes, bike lanes and Complete Streets concepts.[26]
- NHTSA provides a variety of pedestrian safety resources including child pedestrian safety curriculum, for English as second language (ESL) teachers and learners, pedestrian safety for older adults, etc.).[27]
- American Traffic Safety Services Association (ATSSA) outlines ways to design an effective vulnerable road users' program which has educational programs that focus on vulnerable road users' rights and responsibilities.[28]

> Everett's Police Department has a number of safety videos and materials that can be circulated more regularly at community events for training and awareness.

The City of Everett could consider a social media campaign (i.e., TikTok) as an option for spreading awareness of educational opportunities. In the UK, a road safety campaign was conducted using TikTok specifically focused on reducing incidences of 'dooring' which is where a bicyclist is hit because a driver opens their door in their path. 5 British influencers were a part of the campaign to help increase views which has reached 11,900.[29]

[25] Drive to Zero Safety Action Plan. Clackamas County. March 2019. p. 1-68.
[26] Educational Resources for Motorists. BikeWalk NC. https://www.bikewalknc.org/safety-education/education-resources-for-motorists/
[27] Pedestrian Safety. NHTSA. https://www.nhtsa.gov/road-safety/pedestrian-safety
[28] Developing an Effective Vulnerable Road Users (VRU) Program. American Traffic Safety Services Association. https://www.nsc.org/getmedia/ff816b5c-0d29-4c23-a6ff-307d2fd39fba/ddww-atssa-vulnerable-road-user-program.pdf
[29] Promoting Road Safety Using TikTok. Brand Content. https://brandcontent.co.uk/case-study/promoting-road-safety-using-tiktok/

A 2019 study called Social Media Practices in Traffic Safety conducted under The National Cooperative Research and Evaluation Program (NCREP) found several effective social media practices using Facebook and Twitter:[30]

- Reuse safety messaging on multiple platforms;
- Consider the tone of your safety messages;
- Use pictures, videos, and links strategically;
- Use hashtags selectively;
- Time the posting of content to meet stakeholders' needs; and
- Collaborate with other State and local accounts to increase visibility of safety messaging.

Actions	Time Frame / Priority
Conduct a social media campaign in multiple languages highlighting key safety issues, including: • Vulnerable road user bicycle/pedestrian crash statistics, which are overrepresented in Everett; • Vulnerable road users' rights and responsibilities; • Helmet use for bicyclists; • Safe behaviors for children and elderly people in public rights-of-way; • Safe crossing practices for all users.	2023
Offer safety fact sheets and education materials at regular community events	2024
Include transportation safety as an element of local public health programming	2024

Crash Reporting Outreach for Public

In coordinating with the Police Department, one issue identified was encouraging the public to report non-injury crashes. Based on input from the Police Department and national trends, non-injury crashes are under-reported. Collecting complete crash information is valuable to the Safety Action Plan Advisory Committee to be able to determine appropriate actions and countermeasures. Coordination with the Police Department to communicate to the public the importance of reporting crashes will help to streamline safety processes and analysis for the city.

Action	Time Frame / Priority
Encourage reporting non-injury crashes in safety outreach, including print media, social media, and at community events	2023

ENFORCEMENT

Even when engineering countermeasures are implemented, failing to adhere to traffic laws can result in crashes of varying severity. Police enforcement can increase driver awareness and consequently reduce

[30] Social Media Practices in Traffic Safety. The National Cooperative Research and Evaluation Program (NCREP). 2019. https://www.ghsa.org/sites/default/files/2019-06/NCREP_SocialMedia19.pdf

crashes. Potential enforcement strategies to address crash patterns and trends in Everett are presented below. However, enforcement strategies should be undertaken with due caution to avoid inequitable enforcement activities and evaluated to determine the strategy's impact. The following considerations can help lead to more successful outcomes for roadway safety enforcement strategies:

- Police officers should be trained properly beforehand.
- Campaigns should be tailored to suit the needs of different neighborhoods and demographics and should be designed and carried out to avoid targeting disadvantaged communities.
- Enforcement should be conducted with the help of staff support and awareness of the courts.
- Enforcement operations should begin with warnings and flyers before moving on to issuing citations.

Crash data can help identify priority intersections and/or road segments and the times of the day when the crashes have occurred. This information can inform and guide the type of enforcement strategy to be selected at the most appropriate locations and time periods. City staff can also help monitor the impact of the enforcement strategy by coordinating with the Police Department to obtain and analyze enforcement records to help evaluate effectiveness and equity considerations.

Progressive Ticketing

The Police Department currently focuses on driver education and verbal warnings in their traffic enforcement. This emphasis on changing behaviors through outreach and direct contact is consistent with the Safe System Approach. A similar strategy involves progressive ticketing, which introduces ticketing through a multi--stage process. Both of these strategies deemphasize the issuing of fines as the only or best means of enforcing traffic laws. Instead, ticketing should be a last resort reserved for situations where other intervention strategies have failed or in situations that pose an imminent threat to public safety. There are three main steps of an effective progressive ticketing program:

Educating - Establish community awareness of the problem. The public needs to understand that drivers are speeding and the consequences of this speeding for road safety. Raising awareness about the problem will change some behaviors and create public support for the enforcement efforts to follow.

Warning - Announce what action will be taken and why. Give the public time to change behaviors before ticketing starts. Fliers, signs, newspaper stories and official warnings from officers can all serve as reminders.

Ticketing – After the "warning" period, hold a press conference announcing when and where the police operations will occur. If offenders continue their unsafe behaviors, officers issue tickets. The Police Department generally de-emphasizes ticketing, so ticketing may be limited to only outstanding circumstances.

Action	Time Frame / Priority
Continue education and warning traffic stops with emphasis on the following locations: • Tier 1 and 2 Risk Corridors (see Corridor Analysis above); • School zones; • Other areas with a high concentration of vulnerable road users (children, elderly).	2023

PROCESS AND COLLABORATION

Many of the non-engineering solutions discussed above require collaboration across multiple agencies going beyond the city's staff. The city has already collaborated with action plan stakeholders to test some of the non-engineering solutions described above. The city should continue to work with the action plan stakeholders to build on successful past efforts and develop an approach for when and how some additional non-engineering countermeasures could be implemented.

PLANS AND POLICIES

In addition to implementing engineering and non-engineering countermeasures, Everett can consider revising existing plans, policies and guidelines to improve how existing city processes prioritize safety. The following section presents plans and guidelines identified to support the vision and goals of this action plan.

Complete Streets Plan

Everett's Complete Streets Plan presents projects, programs, and policy recommendations to achieve safe, comfortable streets for road users of all ages and abilities. While the existing plan directly relates to the two chosen SHSP emphasis areas for this action plan (bicycle and pedestrian safety), it could be revised to address the third SHSP emphasis area: speeding/aggressive driving. Higher speeds increase the likelihood that a crash will result in serious injury or death, particularly for vulnerable road users. Updating the Complete Streets Plan to include a citywide speed management program would support the city's vision for bicycling and walking while addressing a crash risk that affects all road users in Everett.

Capital Improvement Program

The Capital Improvement program should be updated to include targeted investments for projects that will help the city work towards its goal of zero roadway fatalities by 2030. Local and outside funding sources should be identified.

Design Guidelines for Public and Private Projects

Updating the city's codes, design guidance, and standards for land use and transportation projects to align with the city's Complete Streets Policy will support implementation by the city, state, and private developers. Revisions should address the diversity of street types and the differences in user needs in each context.

Actions	Time Frame / Priority
Update the Complete Streets Plan to include a citywide speed management program	2024
Require safety-based metrics as criteria for prioritizing capital projects and development reviews, such as: • Crash modification factors of proposed designs • Quantity of alternative transportation facilities proposed • Anticipated speed reduction on adjoining street(s)	2024

ENGINEERING

Infrastructure investments should focus on streets known to have concerning crash histories, have characteristics similar to those with higher number serious crashes, or provide a comparable alternative safer route for vulnerable users. The following metrics should be considered to rank projects.

- Located on a high injury corridor for a targeted mode
- Provides a comparable alternate route to Tier 1 and 2 high risk corridors
- Statistically determined over-representation of severe crashes and/or targeted crash types
- High frequency of crashes involving vulnerable road users
- Addresses equity disparities

The infrastructure list below identifies projects that have already been identified by the city from prior planning efforts. This project list should be reviewed and updated annually.

INFRASTRUCTURE PROJECT PRIORITIES

Location	Description	Time Frame / Priority
Broadway (Route 99) from Route 16 to Boston Line	Identified in Complete Streets Prioritization Plan (#6). Also ranks as a high-risk corridor based on MassDOT safety network screening. Current plans include addition of southbound shared bus and bike lane and northbound raised separated bike lane on Lower Broadway. Other corridor improvements should be considered to address safety issues.	2024
Everett Square	Identified in Complete Streets Prioritization Plan (#3). Upgrades to streetscape and pedestrian crossings to improve pedestrian comfort and safety.	2024
2nd Street between Spring Street and Railroad	Area of future growth with significant increase in pedestrian and bicycle traffic projected. Can provide safer alternative route for people walking and biking and last mile connections to transit.	2028
Beacham Street	Ranks as a high risk corridor based on MassDOT safety network screening. Included in the TIP for Complete Street redesign in FY2025.	2025

Location	Description	Time Frame / Priority
Main Street	Identified in Complete Streets Prioritization Plan (#10, 11, 12, 14, 15). Also ranks as a high risk corridor based on MassDOT safety network screening.	2025
Spring Street between 2nd Street and Chelsea Street	Area of future growth with significant increase in pedestrian and bicycle traffic projected. Can provide safer alternative route for people walking and biking and last mile connections to transit.	2028
Chelsea Street between Spring Street and Broadway	Area of future growth with significant increase in pedestrian and bicycle traffic projected. Can provide safer alternative route for people walking and biking and last mile connections to transit.	2028
2nd Street between Route 99 and Route 16	Ranks as a high-risk corridor based on MassDOT safety network screening.	2027
Bell Rock & Woodville Intersection	Identified in Complete Streets Prioritization Plan (#19). Pedestrian signal upgrades -- addition of Accessible Pedestrian Signals (APS), Countdown signals, Leading Pedestrian Interval (LPI) and concurrent phasing where appropriate.	2027
Bucknam & Linden Intersection	Identified in Complete Streets Prioritization Plan (#19). Pedestrian signal upgrades -- addition of APS, Countdown signals, LPI, and concurrent phasing where appropriate.	2026
Chelsea & Malden Intersection	Identified in Complete Streets Prioritization Plan (#19). Pedestrian signal upgrades -- addition of APS, Countdown signals LPI and concurrent phasing where appropriate.	2025

Location	Description	Time Frame / Priority
Chelsea Street between Ferry and Broadway	Identified in Complete Street Prioritization Plan (#18). Includes curb extensions, crossing improvements, and bicycle racks.	2030
Revere Beach Parkway (Route 16)	Ranks as a high-risk corridor based on MassDOT safety network screening. Three intersections consistently rank with in the Top 200 statewide crash clusters. Has been identified as a regional priority in the Boston MPO Long Range Transportation Plan. This is a state road so will require collaboration with MassDOT.	2023-2027

ENGINEERING COUNTERMEASURES TOOLBOX

The following toolbox identifies typical treatments to promote safer crossings, safer speeds, and safer streets for all users. Some treatments are inexpensive retrofits, pavement markings, and signage that can be changed and quickly implemented. Others require greater study, coordination and funding. Network improvements to complete gaps, provide alternative routes, or establish new, multi-modal facilities can shift non-motorized users are proactively mitigate roadway safety risks. Once the projects have been selected, the city should identify toolbox treatments that can be evaluated for application at specific locations.

This toolbox is broken into multiple kinds of treatments to address a wide variety of safety issues at the intersection and corridor level. These treatments are generally organized into three categories:

- Bicycle Treatments
- Pedestrian Treatments
- Roadway Treatments

Each of the treatments are discussed in more detail below, including general benefits, constraints, typical applications, and design considerations.

Bicycle Treatments

Shared Use Path

Source: MassTrails Shared Use Path Planning Primer

A shared use path is an off-road infrastructure that is physically separated from motorized vehicle traffic and designed for use by people of all ages and abilities biking and walking.

Benefits
- Combines facility for bicyclists and pedestrians
- Provides separation from vehicle traffic
- Designed for all ages and abilities

Constraints
- Requires substantial buffer to separate from roadways
- Unlit paths may not be comfortable for users
- Potential conflicts with vehicle or other crossings

Typical Applications
- Links between communities that also serve as recreational facilities
- Parallel alternative route to roads in areas where sidewalks or on-street facilities are not provided

Design Considerations
- Best for areas where crossings can be minimized, and apply high-visibility treatments where there are crossings
- Generally should be designed with a width of 10 feet

Raised Bike Lane

Source: NACTO, Raised Cycle Tracks

A raised bike lane, also known as a raised cycle track, is a bicycle facility located at sidewalk level instead of within the roadway.

Benefits
- Separates bikes from vehicle traffic, which can attract bicyclists
- Better for winter maintenance and plowing

Constraints
- Existing right-of-way width
- Additional construction may be required to move curbs

Typical Applications
- Links with adequate right-of-way and/or where curb reconstruction is being done
- Critical bike network segments where additional protection is warranted

Design Considerations
- Intersections should be designed for visibility of bicyclists and may warrant separate signal phasing depending on context.
- Buffer type varies depending on application, presence of parking, and available right-of-way

One-Way Separated Bike Lane

Source: MassDOT Separated Bike Lane Planning & Design Guide

A one-way separated bike lane, also known as a one-way protected cycle track, is a bicycle facility within the street right-of-way separated from vehicle traffic by a physical barrier such as planters, flexible posts, parked cars, or curb.

Benefits
- Separates bikes from vehicle traffic, which can attract bicyclists
- Less chance of "dooring", opening a door into a bicyclist, when parked cars are present

Constraints
- Winter maintenance and plowing
- Existing roadway width
- City prefers raised bike lanes at sidewalk level when possible.

Typical Applications
- Links with adequate right-of-way or where a road diet can be implemented
- Critical bike network segments where additional protection is warranted

Design Considerations
- Intersections should be designed for visibility of bicyclists and may warrant separate signal phasing depending on context.
- Buffer type varies depending on application, presence of parking, and available right-of-way

Two-Way Separated Bike Lane

Source: MassDOT Separated Bike Lane Planning & Design Guide

A two-way separated bike lane, also known as a two-way protected cycle track, is a bicycle facility within the street right-of-way separated from vehicle traffic by a physical barrier such as planters, flexible posts, parked cars, or curb. Two-way separated bike lanes serve bidirectional bicycle travel on one side of the street.

Benefits
- Combines right-of-way need compared to a one-way separated bike lane
- Provides separation from vehicle traffic
- Less chance of "dooring", opening a door into a bicyclist, when parked cars are present

Constraints
- May be less intuitive for users with "wrong way" travel on one side of street
- Potential conflicts with vehicle or other crossings
- Planters or curbs can increase construction costs compared to a standard bike lane

Typical Applications
- Connections between shared use paths
- Critical bike network segments where additional protection is warranted

Design Considerations
- Buffer type varies depending on application, presence of parking, and available right-of-way

Buffered Bike Lane

Source: NACTO, Buffered Bike Lanes

Buffered bike lanes are on-street lanes that include and additional striped buffer of typically 2-3 feet.

Benefits
- Less chance of "dooring", opening a door into a bicyclist, when parked cars are present
- Added separation from vehicles

Constraints
- Does not provide physical protection
- Vehicles may use additional buffer width as parking or standing zone

Typical Applications
- Links with moderate vehicle speeds or volumes
- Streets with adequate right-of-way to provide a buffer
- Important links within and between communities

Design Considerations
- Buffer may consist of diagonal striping or rumble strips to deter vehicles from using the buffer space

Standard Bike Lane

Source: MassTrails Shared Use Path Planning Primer

A standard bike lane is an on-street facility that provides space reserved for bicyclists, delineated with pavement markings.

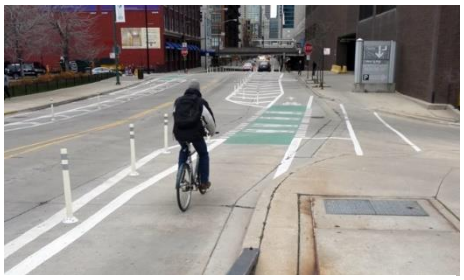
Benefits
- Provides a designated space for people biking
- Increases visibility for people biking
- Inexpensive treatment when width is available

Constraints
- Greater chance of "dooring", opening a door into a bicyclist
- Does not provide physical protection
- Vehicles may use additional buffer width as parking or standing zone

Typical Applications
- Streets without sufficient right-of-way or pavement width to provide buffered or separated bike lanes

Design Considerations
- Bike lane width is typically 6 feet, but can be reduced to 4 feet in constrained locations where parking is not present
- Striping can add visibility and awareness at intersections

Pavement Markings Through Intersections



Source: NACTO, Intersection Crossing Markings

Pavement markings through intersections are green paint that can be used in "conflict zones" where vehicles and bicycles may cross. This is an additional treatment for bike lanes.

Benefits
- Increases driver awareness of people biking
- Aids bicyclists in knowing where to cross

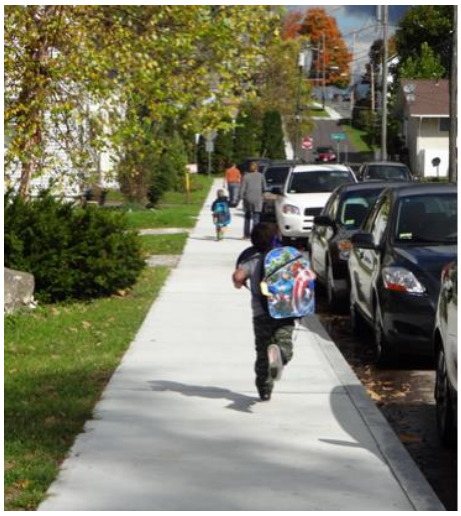
Constraints
- May require additional maintenance due to vehicles crossing pavement markings more frequently

Typical Applications
- Intersections and conflict zones

Design Considerations
- White dashed lines should be used at a minimum to extend a bike lane through an intersection or across a conflict zone
- Dashed green pavement can enhance driver awareness and bicyclist visibility

Pedestrian Treatments

Sidewalk



Source: MassDOT Municipal Resources Guide for Walkability

A sidewalk is a dedicated pedestrian facility adjacent to the roadway and separated from traffic by a curb. Sidewalks may also have an additional buffer zone between the roadway and the walking area.

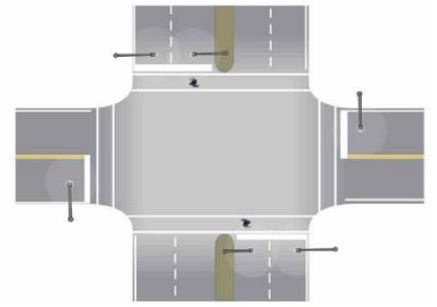
Benefits
- Provides separation from vehicle traffic
- Provides means of mobility for people using wheelchairs, strollers, or others who may not be able to travel on an unpaved surface

Constraints
- Retrofitting sidewalks onto facilities that do not currently have them may require additional right-of-way

Typical Applications
- Most streets, with the exception of limited access freeways
- Typically added to areas as redevelopment occurs

Design Considerations
- Widths may vary from 6 to 8 feet, with a minimum of 5 feet required
- Landscaped buffer or wider sidewalks may be desirable depending on surrounding land use context

Crosswalk Lighting



Source: FHWA Informational Report on Lighting Design for Midblock Crosswalks

Crosswalk lighting is additional illumination provided at locations to make drivers more aware of people in crosswalks.

Benefits
- Improves the visibility of people walking and biking in crosswalks
- Enhances drivers' sight distance
- Encourages foot traffic and can make local establishments inviting

Constraints
- Requires space in potentially busy areas, such as sidewalks or intersections

Typical Applications
- Areas of high traffic for people biking and walking, such as bus stations, shopping centers, schools, and shared use paths
- Corridors with commercial activity

Design Considerations
- Lighting should not be placed to block entrances or inhibit pedestrian flow
- Size and type of light fixture may vary depending on the surrounding context and available space

High-Visibility Crosswalk

Source: NACTO, Conventional Crosswalks

High visibility crosswalks are reflective roadway markings that may be accompanied by signage at intersections and priority pedestrian crossing locations.

Benefits
- Provides awareness to drivers that people may be crossing
- Requires motorists to stop for people walking in crosswalk
- Relatively low cost

Constraints
- Compliance not as high at uncontrolled locations compared to other treatments
- Most effective with other types of traffic control

Typical Applications
- Intersections of vehicle facilities with moderate to high vehicle volumes and speeds
- Mid-block locations, particularly when implemented with other treatments

Design Considerations
- Minimum width is 6 feet, but wider crossings may be preferred in areas with a high number of people walking

Median Island for Pedestrian Crossing

Source: MassDOT Municipal Resources Guide for Walkability

A median island for pedestrian crossing is a protected area in a middle of a crosswalk for people walking to stop while crossing the street.

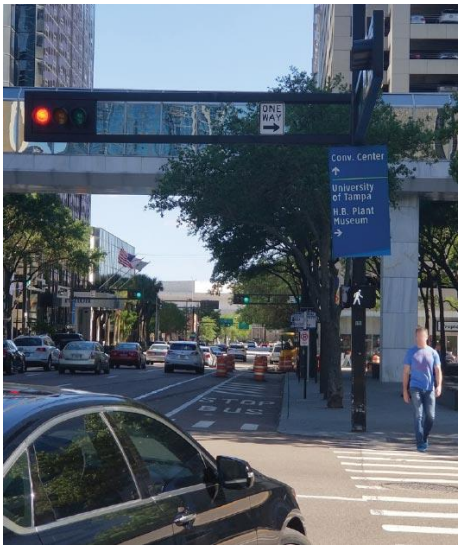
Benefits
- Reduces exposure of people walking
- Requires shorter gaps in traffic to cross street
- Allows people to cross in two stages

Constraints
- Available right-of-way or existing pavement width may not provide adequate space to add a median island

Typical Applications
- Mid-block for areas with large distances between crossings
- Intersections with high traffic volumes or with a notable crash history

Design Considerations
- Must have 6 feet of clear width to accommodate people in wheelchairs
- Can be applied with other treatments

Leading Pedestrian Interval



Source: FHWA Safety Evaluation of Leading Pedestrian Intervals on Pedestrian Safety

A leading pedestrian interval is a signal modification that allows pedestrians a head start to begin crossing during concurrent green phases with same-direction traffic. It is intended to reduce potential conflicts between vehicles and pedestrians at the end of the signal cycle.

Benefits
- Reduces pedestrian crossing time
- Increases pedestrian visibility
- Reduces pedestrian-vehicle conflicts

Constraints
- Only implemented at signals with concurrent phasing
- Reduces green time for vehicles
- May add to delays for intersections at capacity

Typical Applications
- Intersections where right-turning vehicles do not yield to pedestrians
- Intersections with a crash history of vehicle-pedestrian crashes

Design Considerations
- Pedestrian signal faces must be provided
- Interval should be 3-7 seconds

Curb Extension

Source: Boston Transportation Department

A curb extension is an extension of the sidewalk into the street, usually at an intersection, that narrows the vehicle traveled way, inhibits fast turns, and shortens the crossing distance for people walking.

Benefits
- Shortens crossing distances
- Reduces vehicular turning speeds
- Increases visibility between people driving and walking

Constraints
- Can only be used on streets with on-street parking
- Greater cost to install than standard crosswalks
- May conflict with dedicated transit lanes

Typical Applications
- Mid-block or intersection pedestrian crossings or transit stops
- Streets where on-street parking is provided

Design Considerations
- Design vehicle for determining radius
- Provide accessible curb ramps and detectable warnings

Pedestrian Countdown Signal Head

Source: FHWA Signalized Intersections Informational Guide

A pedestrian countdown signal head includes a standard pedestrian signal head with an added display showing the remaining crossing time.

Benefits
- Instructs pedestrians when to cross
- Encourages more pedestrians to use push buttons

Constraints
- Only implemented at signalized intersections

Typical Applications
- Intersections with pedestrian activity or adjacent land uses
- Intersections where no pedestrian facilities are provided

Design Considerations
- Calculations for walk and flash don't walk intervals will be displayed
- May require retiming if existing signal phasing does not provide adequate time for crossing

Pedestrian Hybrid Beacon

Source: MassDOT Municipal Resources Guide for Walkability

A pedestrian hybrid beacon (also called a HAWK signal) is a pedestrian-activated signal. It begins with a yellow light alerting drivers to slow, then displays a solid red light to allow people walking to cross the street. Flashing red indications signal to drivers that they may proceed after people have finished crossing.

Benefits
- High rate of driver yielding behavior
- Improves safety for people walking and reduces pedestrian crashes

Constraints
- Must be activated by people walking
- Can be more costly than other similar treatments

Typical Applications
- Mid-block crossings with high pedestrian or bicycle demand and high traffic volumes
- Crossing treatment for shared use paths

Design Considerations
- Push button placement should be easily accessible to people walking, in wheelchairs, and bicycling

Rapid Rectangular Flashing Beacon (RRFB)

Source: MassDOT Municipal Resources Guide for Walkability

A Rapid Rectangular Flashing Beacon (RRFB) includes signs that have a pedestrian-activated flashing light to attract driver attention and provide awareness of people walking or biking crossing the roadway.

Benefits
- Provides a visible warning to drivers at eye level
- Increases driver yielding behavior at crossings
- Allows drivers to proceed after yielding

Constraints
- Must be activated by people walking
- Driver compliance may be lower than when compared with a traffic signal

Typical Applications
- Mid-block crossings with high pedestrian or bicycle demand and high traffic volumes
- Crossing treatment for shared use paths

Design Considerations
- Push button placement should be easily accessible to people walking, in wheelchairs, and bicycling
- Can be added in median island for multi-lane crossings

Transit Stop Shelter

Source: Everett Transportation Strategy

A transit stop shelter protects waiting bus passengers from the elements. The increased comfort of shelters also can make transit a more attractive option for potential riders

Benefits
- Provides protection from elements and gives people a place to sit while waiting
- Serves as a visual cue to where a transit stop is located

Constraints
- More costly than a standard bus stop
- Requires additional sidewalk space beyond standard 6 feet

Typical Applications
- Stops with higher levels of activity or nearby land uses like senior communities, schools, or major trip generators
- May be paired with other amenities, like benches and trash cans

Design Considerations
- Shelters should be cleaned and maintained regularly
- Multiple shelters may be warranted at locations with a high number of daily boardings

Roadway Treatments

Signal Hardware Upgrades

Source: FHWA Proven Safety Countermeasures

Upgrading signal hardware can include a number of improvements to increase the visibility of the intersection. This can include adding retroreflective backplates, upgrading signal lens size, installing new signal heads, or adding yellow retroreflective sheeting to signal backplates.

Benefits
- Increases signal visibility
- Reduces driver confusion or noncompliance

Constraints
- Only limited to signalized intersections
- Provides limited benefits for modes other that vehicular

Typical Applications
- Intersections that have not been maintained or were not installed recently
- Intersections on corridors where there are high vehicular travel volumes

Design Considerations
- Consistency in types of improvement and look should be considered for long corridors
- Intersection skews may require additional improvements to ensure visibility for drivers

General Intersection Improvement

Source: FHWA Signalized Intersections Informational Guide

A general intersection improvement includes a number of measures such as repaving, new pavement markings to clarify travel through the intersection, signal retiming, equipment, and implementing automatic pedestrian recall.

Benefits
- Clarify the preferred path of travel through the intersection to help avoid potential conflicts
- Provides appropriate pedestrian signal timing

Constraints
- Signal retiming may have minimal benefits in over-saturated conditions
- Pavement markings may require regular maintenance, especially on roads with high traffic volumes

Typical Applications
- Highway Safety Improvement Program (HSIP) cluster intersections
- Roadways with high traffic volumes and/or pedestrian activity

Design Considerations
- Signal retiming should account for appropriate pedestrian crossing times
- Thermoplastic pavement markings are more durable

Mast Mounted Signal Structure

Source: FHWA Signalized Intersections Informational Guide

A mast mounted signal structure can improve visibility and aid driver perception in advance of the upcoming intersection, particularly when compared to signals mounted on pedestals or span wires.

Benefits
- Improve visibility of traffic signs and signals

Constraints
- Can be more expensive than other signal equipment

Typical Applications
- Signalized intersections in need of upgrades

Design Considerations
- New signals may also be required to place on the mast arms

All-Way Stop Control

Source: Kittelson

All-way stop control can be implemented for intersections that are signalized or only have two-way stop control existing. This type of conversion can be effective for managing traffic.

Benefits
- Facilitates frequent pedestrian crossings

Constraints
- Requires evaluating signal warrants to determine if signals should be removed

Typical Applications
- Signalized intersections where traffic volumes have decreased notably
- Unsignalized intersections where there is a demonstrated crash history that can be mitigated with an all-way stop

Design Considerations
- Pedestrian volumes should be evaluated with vehicular volumes to determine if all-way stop control is warranted

No Right Turn on Red

Source: Manual on Uniform Traffic Control Devices (MUTCD)

No right turn on red is signage placed at a signalized intersection to restrict drivers from turning right during a red light.

Benefits
- Reduces conflicts between drivers and pedestrians

Constraints
- Can reduce capacity at intersections with high right-turn volumes
- Rates of compliance may vary and require enforcement

Typical Applications
- Signalized intersections with people walking
- Signalized intersections near pedestrian or bike-trip generating uses

Design Considerations
- Location of signage should be placed so it is easily visible to drivers

Access Management

Source: FHWA Proven Safety Countermeasures

Access Management is the design, application, and control of entry and exit points along a roadway. Typical measures include installing raised medians or reducing driveway density along corridors.

Benefits
- Enhance safety for all modes of travel
- Facilitate walking and biking with fewer driveway conflicts
- Reduce trip delay and congestion with fewer driveway turning movements

Constraints
- Business access and coordination between uses may make consolidating entrances difficult
- Adequate right-of-way may not be available to provide a raised median

Typical Applications
- Corridors with a high density of driveways and uses
- Intersections with driveways located within close proximity

Design Considerations
- Internal site design providing connections via one access point should be considered
- Vehicle turn restrictions may be appropriate

Conspicuity Treatment

Source: FHWA Proven Safety Countermeasures

A conspicuity treatment is aimed at making pavement markings and signage clearer for drivers to see. This can include installing wider pavement markings, upgrading signs with fluorescent sheeting, or improving edgelines/centerlines.

Benefits
- Creates continuous delineation of travel lanes
- Increase visibility of regulatory and warning signs
- Clarify the edge of the roadway and lane boundaries

Constraints
- Limited benefits for people not driving
- More modest improvement in safety performance for vehicles

Typical Applications
- Signalized or unsignalized intersections
- Locations that require maintenance

Design Considerations
- Use of thermoplastic pavement markings will improve conspicuity
- Edge lines should not be considered on roadways that do not have centerlines

Speed Feedback Sign

Source: FHWA Methods and Practices for Setting Speed Limits Informational Report

A speed feedback sign is designed to provide a message to drivers exceeding a certain speed limit. Other names for this treatment include dynamic warning sign, radar speed/message sign, and dynamic speed display sign.

Benefits
- Makes drivers aware of their traveling speed versus the posted speed limit

Constraints
- This treatment is not self-enforcing
- This treatment may not be effective for longer stretches of roadway

Typical Applications
- High speed zones
- Areas with high pedestrian-related crash history

Design Considerations
- Generally considered when the 85th percentile speeds exceed the posted speed limit by 5 mph or more
- A speed study should first be conducted to determine if a change in speed limit is appropriate

Road Diet

Source: FHWA Proven Safety Countermeasures

A road diet reduces the number of vehicle travel lanes on a roadway to manage vehicle speeds, reduce risk of crashes, and provide additional multimodal facilities.

Benefits
- Calms vehicle speeds
- Reallocates space for bike lanes and pedestrian paths
- Provides vehicular access to commercial and business driveways

Constraints
- Depending on roadway capacity, may increase travel time
- Transit vehicles may block through traffic when stopped

Typical Applications
- Four-lane undivided roadways, which are converted to roadways with one lane in each direction and a two-way center left turn lane

Design Considerations
- Can be implemented with resurfacing projects to incorporate a road diet at minimal additional cost
- Roadway ADT less than 10,000 will typically perform with similar capacity

PROGRESS AND TRANSPARENCY

This section describes steps the city may take to evaluate the success of this plan and steps needed to ensure the plan stays relevant for the future.

PERFORMANCE MEASURES

Measurable Performance Metric	Description
Annual reduction in the total number of fatal and severe injury crashes on city roads	Fatal and severe injury crashes should be reported annually by mode, with performance evaluated within the context of the latest five-year annual average to normalize for random fluctuations in crashes on a year-over-year basis. Data should also account for crash type (i.e. bicycle, pedestrian, speed/aggressive driving).
Increase in number of roadway segments/intersections receiving safety-related improvements.	When developing the annual capital improvement program and transportation improvement program, the city should prioritize investments that have documented safety concerns and should incorporate appropriate counter measures into all roadway projects.
Reduced speeding violations and measured reduction in traffic speeds city-wide.	Ongoing speed monitoring on all roadways and intersections where counter measures have been implemented help to determine their overall effectiveness.
Regular meetings of Safety Action Plan Advisory Committee and annual updates to action plan priorities.	As new data becomes available, the city in conjunction with the Safety Action Plan Advisory Committee, can assess the plan, consider new trends and technologies, and determine if an update to the plan is needed. As new strategies are identified, the Safety Action Plan Committee may update goals and assign champions for specific projects and strategies.