City of Shoreline

Annual Traffic Report

2019

Table of Contents

Introduction

This report provides an annual review and analysis of data collected by City of Shoreline Traffic Services staff and Shoreline Police Department. It summarizes collision, speed, volume, transit, pedestrian, and bike data, highlighting noteworthy trends. The data in this report guides the City's prioritization of Traffic Services capital improvement project resources, identifies potential projects for the upcoming year's Transportation Improvement and Capital Improvement plans, supports pursuit of grant opportunities, and identifies target enforcement areas for the Shoreline Police Department.

Engineering, enforcement, education and policy related improvement strategies generated by this report strive to accomplish the goal set by Washington State's Target Zero Plan to achieve zero fatal and serious injury collisions by the year 2030. In addition, this report which specifically identifies safety improvement strategies, supports many goals set by Shoreline's Comprehensive Plan, as well as City Council Goal 5 - to promote and enhance the City's safe community and neighborhood programs and initiatives.

This report strives to provide clear and usable traffic safety and operations information for reference by staff, Council, residents, and businesses of Shoreline. To request additional information, please contact the Public Works Department, Traffic Services section or visit the Traffic Services webpage at http://shorelinewa.gov/government/departments/public-works/traffic-services.

Executive Summary

In 2019, Washington State released its fifth version of the Target Zero Plan, the State's road map for achieving zero deaths and serious injuries on Washington's roadways by 2030. This most recent update shows that Washington's traffic fatality and serious injury trend is going in the wrong direction, also mirroring a national trend. With 2019 data, Shoreline's Serious and Fatal Injury trend also increased – previously striking a relatively flat trajectory at 0.11 new collisions per year, the new trend shows these types of collisions now increasing at a rate of 0.41 per year. Intersections and Pedestrian or Bicyclist collisions continue to represent the main focus areas with regard to injury collisions in Shoreline. While pedestrian and bicyclist collisions still account for a large portion of injury collisions, in 2019 they were at the lowest proportion in the 2010-2019 data set which is a step in the right direction for our most vulnerable roadway users. Notably too, the number of intersection locations averaging 3 or more collisions per year outside of the Aurora Corridor dropped from 17 to 12. Along the Aurora Corridor however, data now clearly shows the corridor's injury collisions are ticking up at a concerning rate. In 2019, Aurora corridor collisions accounted for more than 30% of the City's injury collisions, roughly doubling 2010 proportions. In 2020 and 2021, some strategic and relatively low cost mitigation strategies will be implemented (discussed in the "Location-Based Collision Reduction Strategies" section) but ultimately, broader measures such as speed limit reduction may be necessary to reduce injury collisions along the corridor, especially in consideration of the changing land uses adjacent to the corridor.

Related to changes in land use, traffic counts in Shoreline showed that daily trips increased significantly in 2019, up 3.5% in comparison to 2018. While this report focuses primarily on 2019 data, some traffic volume data for 2020 is also included this year given the significant impact COVID-19 has had on traffic patterns. Similar to regional trends, Shoreline saw a large dip in trips from March to May of 2020. It is unclear at this time whether trip patterns and volumes will return to relative "normal" or whether the global pandemic has shifted travel in a more permanent way, with many employees continuing to work remotely to reduce the costs of office space and travel. The 2020 Annual Traffic Report will provide more context on the pandemic's impact as the City works through this challenge of projecting future travel patterns during the Transportation Master Plan update starting this year.

The Transportation Master Plan update process will also present a unique opportunity for shaping how Shoreline addresses transportation safety, access and mobility citywide, setting updated policies and priorities for all modes of travel. As the City experiences significant growth over the next 20 years, we are faced with a significant challenge - to balance the efficient movement of people and goods with the safety of roadway users. If we are to reduce injury collisions on Shoreline streets in the face of increased growth, roadway user safety must be prioritized over the ability to drive fast.

Data Sources

This report summarizes collision data trends based on data from 2010 through 2019, with emphasis on years 2017 through 2019. Only collisions that occurred on City streets and are investigated by police officers are included in this report. Excluded are collisions on private property, locations outside of the City of Shoreline (i.e. N/NE 145th Street), collisions on I-5, phone reports, non-police investigated incidents, collisions under the threshold of $1000 in damages, and other non-collision vehicle incident reports.

Collision data is obtained from the Washington State Department of Transportation (WSDOT). Data from WSDOT includes collisions investigated by other agencies such as Washington State Patrol. No citizen reports are included as WSDOT stopped providing this data to local jurisdictions on January 1, 2009. The data contained in this report is based on reportable collisions only, as defined in the following section. For consistency, data reported within this report begins in 2010 which is the first available year for all data with geocoded locations, and excluding citizen reported collisions.

Traffic volume and speed data presented in this report was collected and analyzed by Shoreline Traffic Services staff or its consultants.

Transit data was provided by King County Metro.

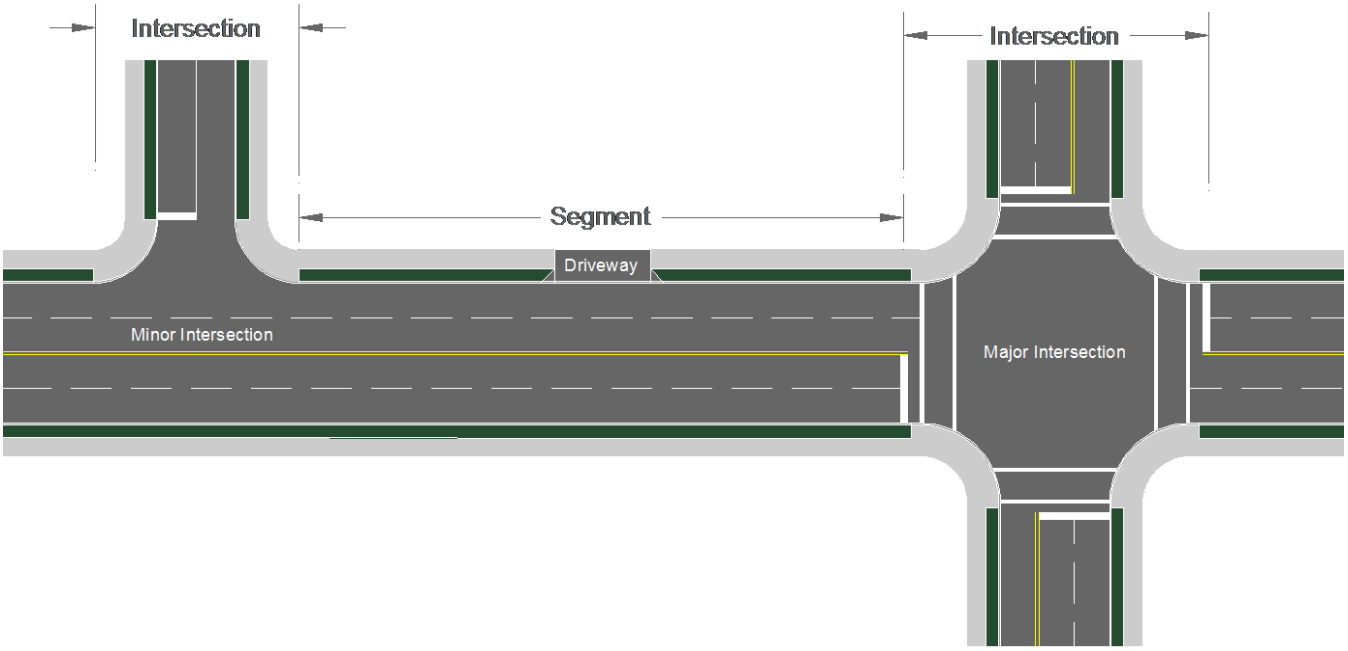
Population data was obtained from the United States Census Bureau.

Definitions

Reportable Collision	A collision which involves death, injury, or property damage in excess of $1000 to the property of any one person.
Fatal Collision	Motor vehicle collision that results in fatal injuries to one or more persons.
Suspected Serious Injury Collision	Previously Serious Injury. A motor vehicle collision resulting in an injury assessed by the investigating officer as “any injury which prevents the injured person from walking, driving, or continuing normal activities at the time of the collision.”
Suspected Minor Injury Collision	Previously Evident Injury. A collision resulting in an injury assessed by the investigating officer as “any injury other than fatal or serious at the scene. Includes broken fingers or toes, abrasions, etc. Excludes limping, complaint of pain, nausea, momentary unconsciousness, etc.”
Possible Injury Collision	A collision resulting in an injury assessed by the investigating officer as “any injury reported to the officer or claimed by the individual as momentary unconsciousness, claim of injuries not evident, limping, complaint of pain, nausea, hysteria, etc.”

No Apparent Injury	Previously Property Damage Only. Motor vehicle collision in which there is no injury to any person, but only damage to a motor vehicle, or to other property, including injury to domestic animals.
Did Not Grant Right of Way	A contributing circumstance type which indicates that the driver failed to properly yield Right of Way; for example, a driver hitting a pedestrian in a crosswalk when the walk signal is on for the pedestrian movement.
High Collision Location	Locations with the highest number of reported collisions.
Collision Rate	For intersections, the number of collisions at an intersection divided by the average annual volume of vehicles entering the intersection. The resulting unit is collisions per million entering vehicles. For segments, the number of collisions along the segment divided by the length of the segment and the average annual volume of vehicles along the segment. The resulting unit is collisions per million vehicle miles.
85th Percentile Speed	The speed at which 85% of traffic is traveling at or below; a common traffic engineering benchmark for measuring and evaluating traffic speeds.
Target Zero	Target zero is Washington State's Strategic Highway Safety Plan for zero Fatal and Serious Injury collisions by the year 2030. This plan: • Sets statewide priorities for all traffic safety partners over a 3-4 year period. • Provides various strategies to address each emphasis area and factor. • Helps guide federal and state project funding toward the highest priorities and most effective strategies. • Monitors outcomes at a statewide level for each priority area. Collision mitigation strategies include education, enforcement, engineering, policy and emergency medical service-based efforts. http://www.targetzero.com/

For Collision Location analysis, intersections and segments are categorized as shown below.



Collision Summary

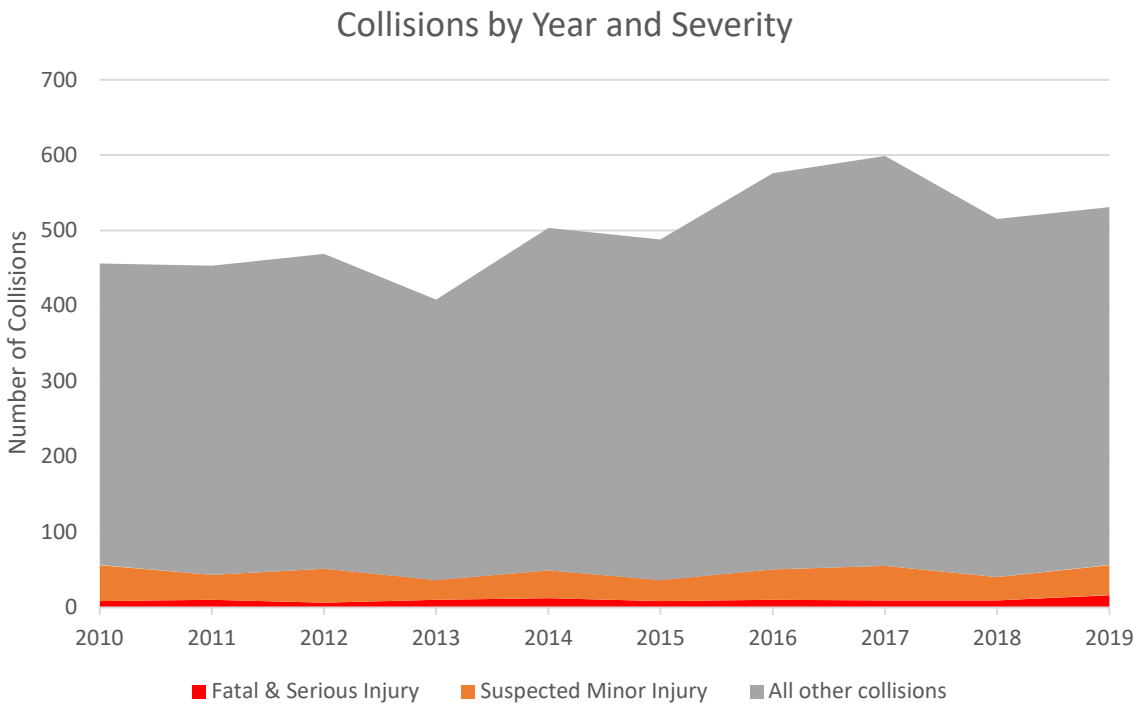
The following sections summarize collision data from public streets within the City of Shoreline from 2010 through 2019 with a focus on 2017-2019 collision data.

Total Collisions

There were 528 collisions reported on City of Shoreline streets in 2019. Below is a summary of collisions from 2010 through 2019.

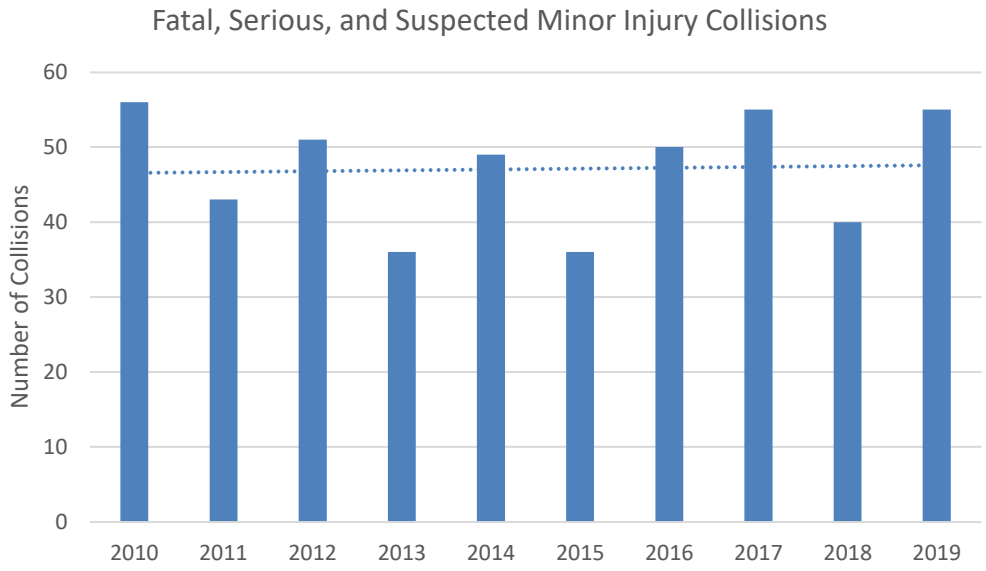
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Fatal	2	1	1	1	1	1	1	0	1	1
Suspected Serious Injury	6	9	5	9	11	7	9	9	8	14
Suspected Minor Injury	48	33	45	26	37	28	40	46	31	40
Possible Injury	103	111	108	104	121	126	140	136	105	120
No Apparent Injury	286	290	302	264	318	317	374	399	355	346
Unknown	11	9	8	4	15	9	12	9	15	7
Total	456	453	469	408	503	488	576	599	515	528

The total number of collisions in 2019 is up 2.5% from 2018 with the 10-year collision trend line resulting in an average increase of about 13.5 collisions per year. The projected trendline from 2018 was an increase of 16 collisions; the year end increase in 2019 was 13. Notably, the number of Suspected Minor Injury, Suspected Serious Injury, and Fatal collisions switched from a slightly downward trend to a slightly upward trend, generally accounting for about 10% of total collisions in 2019. Suspected Serious and Fatal Injury collisions alone account for under 3%, however the trend is rising slightly with the highest number of these collisions in the 2010-2019 data set reported in 2019.

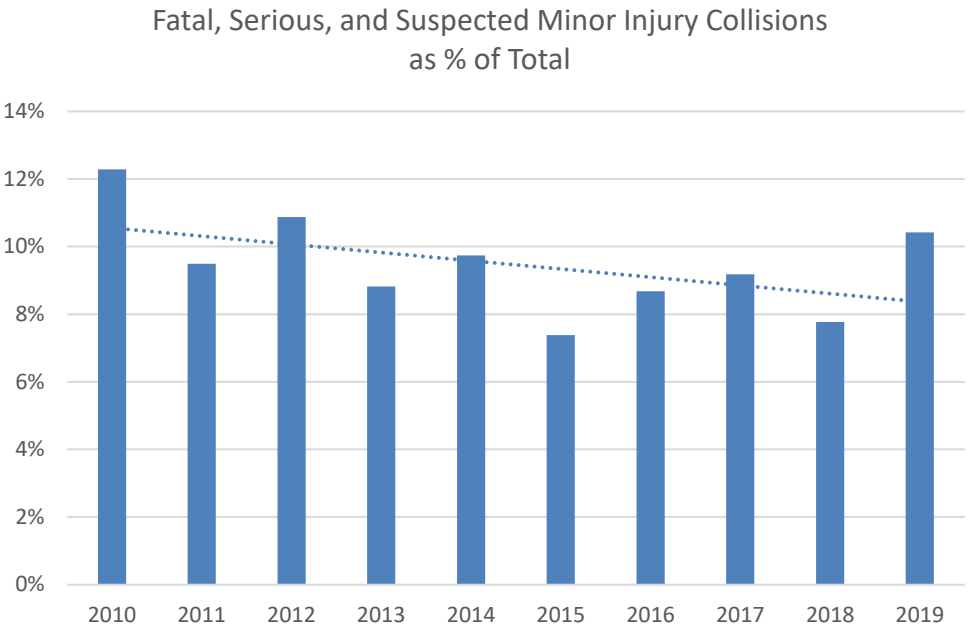


Injury Collisions

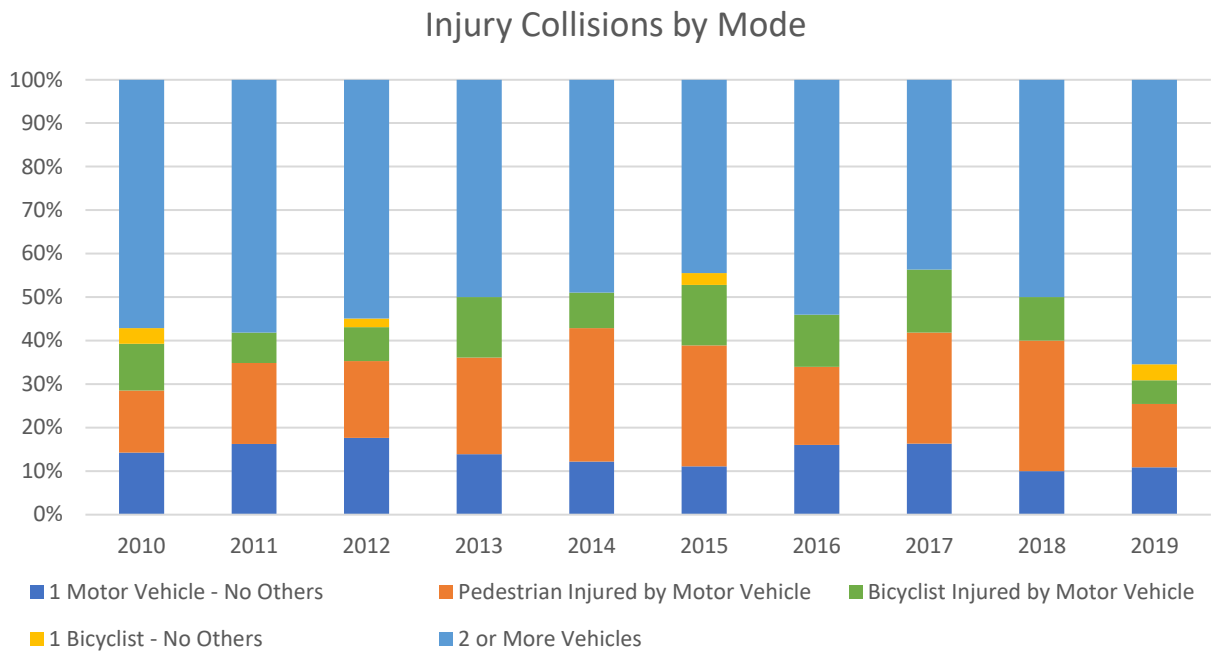
In this section, Fatal, Suspected Serious Injury, and Suspected Minor Injury collisions were analyzed, excluding Possible Injury collisions. As shown below, the trend for Injury Collisions is slightly up, with the trend increasing at about 0.10 additional injury collisions per year.



The proportion of injury collisions in comparison to total collisions continues to trend downward as shown in the chart below.

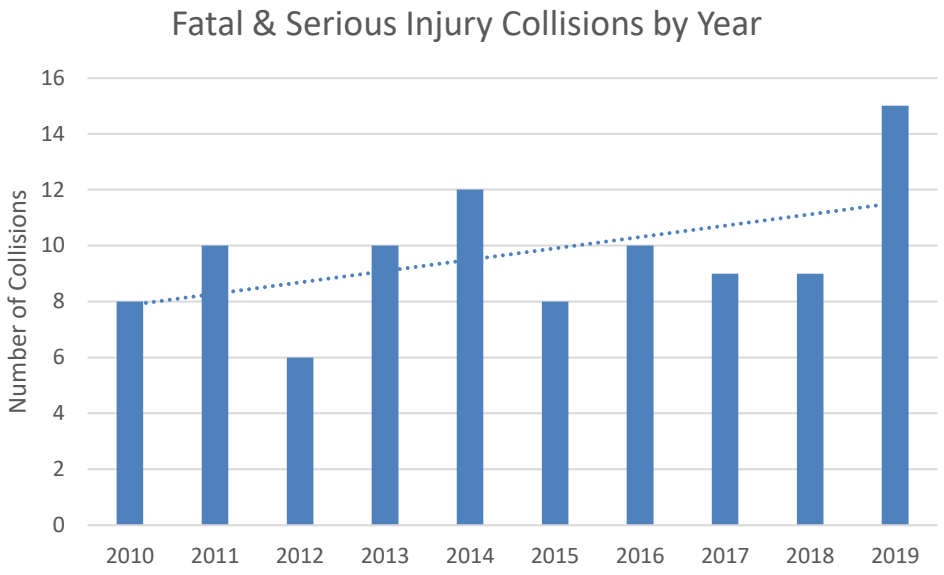


New analysis conducted this year shows injury collisions by mode, which includes collisions that involve just one driver in a single motor vehicle, pedestrians injured by a motor vehicle, bicyclists injured by a motor vehicle, bicyclists that crash (with no motor vehicles involved), and collisions involving 2 or more motor vehicles. Pedestrian collisions as a portion of all injury collisions are lowest in 2019 (in the 2010-2019 data set), with collisions involving 2 or more motor vehicles representing a higher proportion than in prior years.

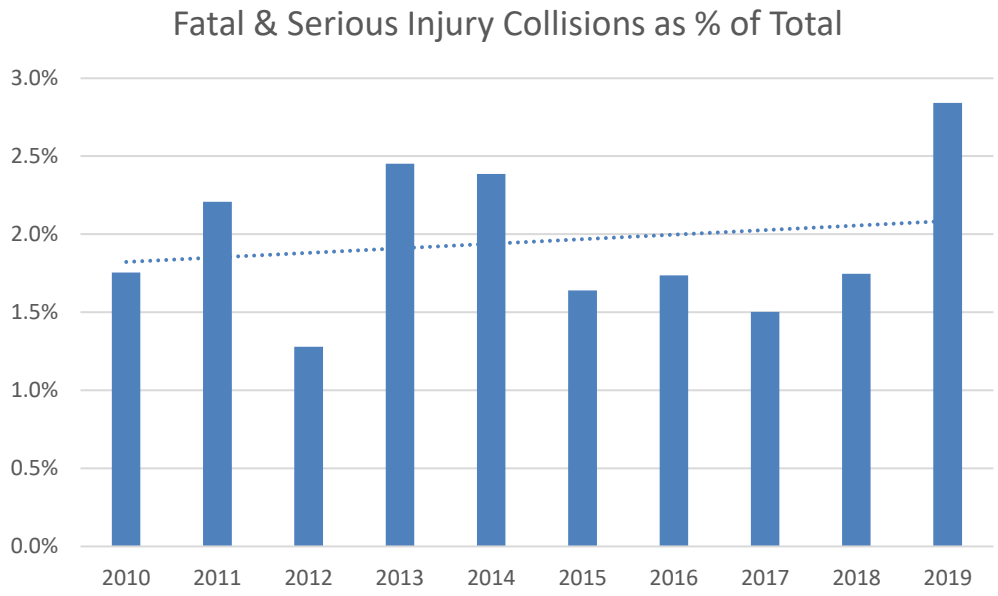


Suspected Serious & Fatal Injury Collisions

The following chart shows Fatal and Serious Injury Collisions by year. Notably, 2019 is the highest year in the 2010-2019 data set and shifts the trend from a 0.11 increase in Fatal and Serious Injury Collisions per year to a 0.41 increase in Fatal and Serious Injury Collisions per year. Additional details on contributing factors and location basis is provided in later sections.



Provided for context is the proportion of Fatal and Serious Injury Collisions as part of the total number of collisions. The average proportion moved from 1.9% to 2.0% with 2019 collision data, with 2019 accounting for the highest proportion in the 2010-2019 data set.

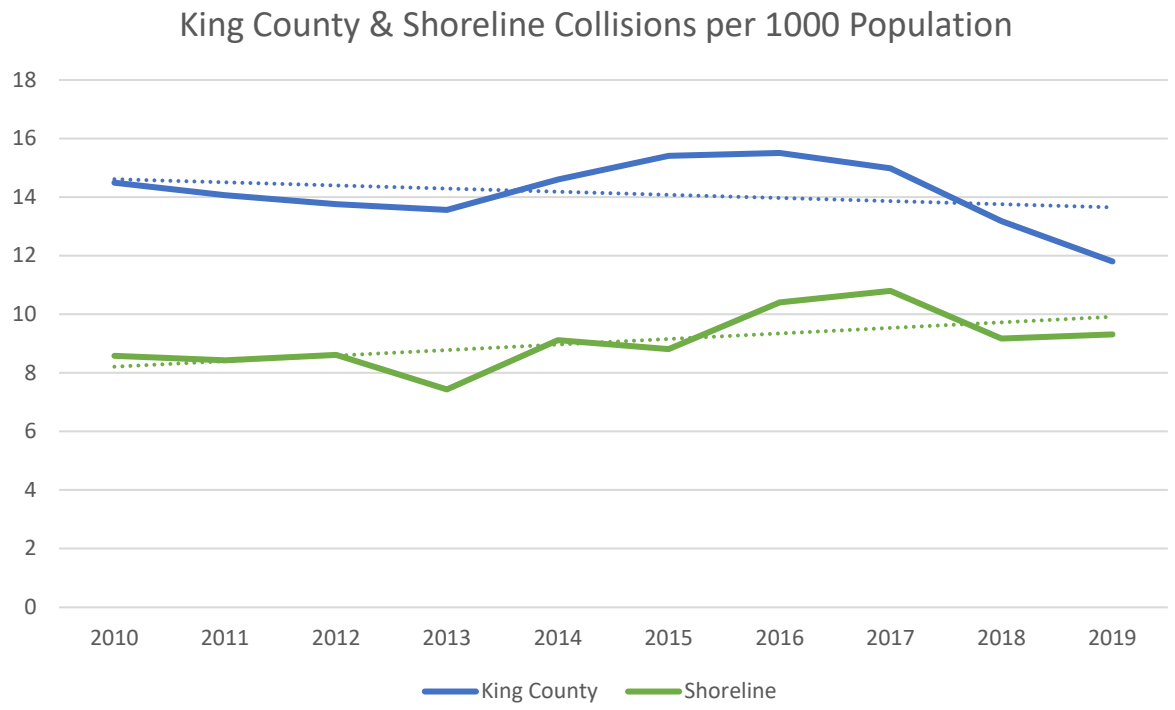


Regional Comparison

This section provides a comparison between King County collision data and cities comparable to Shoreline in population within King County.

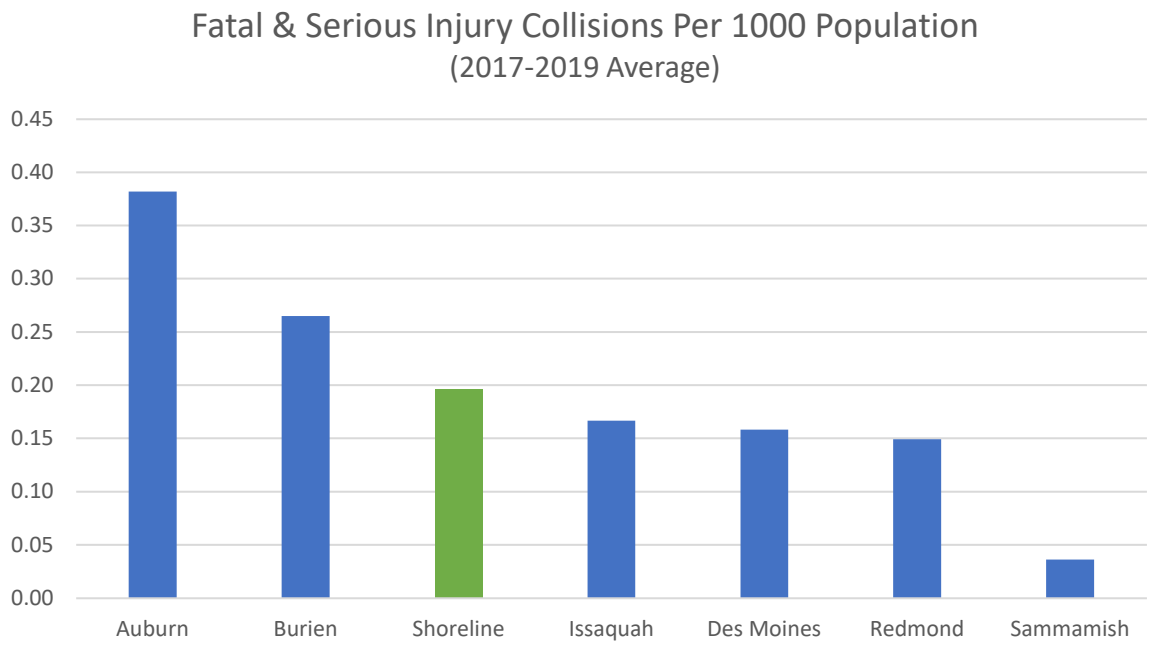
Total Collision Regional Comparison

To better understand how collision trends in Shoreline relate to the broader region, a comparison to King County collision data was prepared. Notably, with the addition of 2019 data, the trend for King County collisions per 1000 population (omitting City of Shoreline collision data and population) is showing a downward trend for the first time, while Shoreline's overall collision trend continues to rise slightly. Overall, however, Shoreline's collision per 1000 population rate remain lower than the King County rate by approximately 2.5 collisions per 1000 population in 2019.



Suspected Serious & Fatal Injury Collision Regional Comparison

Data was obtained for cities within a population range of 25,000 +/- of Shoreline within King County. The rates of Serious and Fatal Injury Collisions per thousand population were compared for the 2017-2019 analysis period. Given the significant jump in Fatal and Serious Injury Collisions in Shoreline for 2019, Shoreline has moved from the second lowest rate to the third highest rate.



Societal Costs

Traffic collisions have considerable impact not only on the people directly involved in the collision but also on the community as a whole. Below is the Washington State Department of Transportation's assessment of motor vehicle collision costs by severity. The information provided includes estimates for the average economic cost per death, per injury, and per property damage collision. The economic cost estimates are a measure of the productivity lost and expenses incurred because of the collision; they do not reflect what society is willing to pay to prevent a statistical fatality or injury.

- Fatality $2,000,000
- Suspected Serious Injury $1,000,000
- Suspected Minor Injury $100,000
- Possible Injury $70,000
- No Apparent Injury $10,000

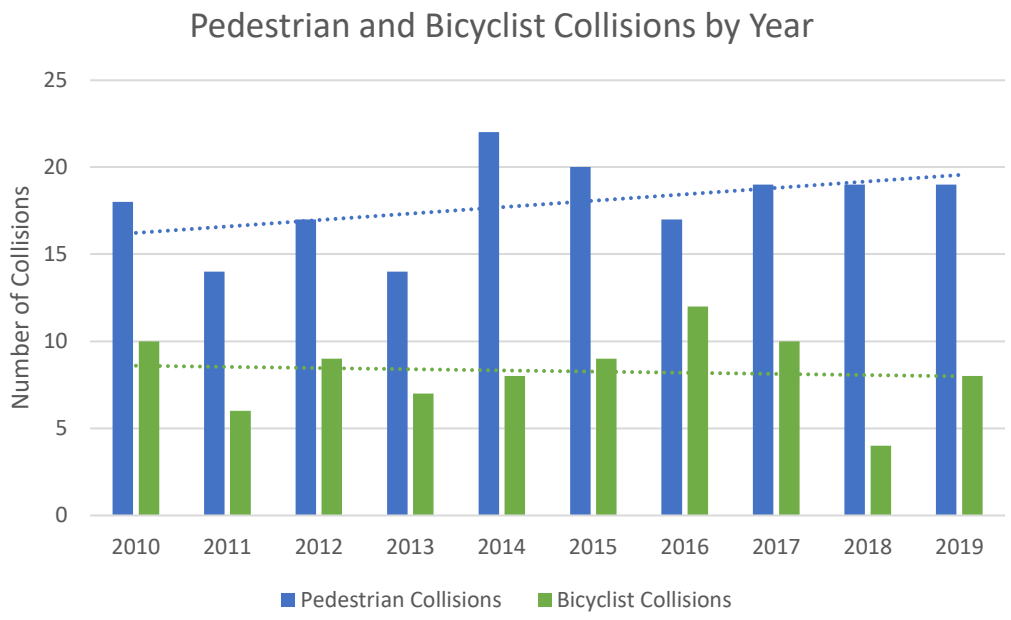
Source: WSDOT Traffic Safety Management Office

Below is a summary of societal costs for collisions in Shoreline from 2017 through 2019. The overall societal cost is up from 2017 and 2018, due to an increase in serious injury collisions.

	2017	2018	2019
Fatal	$0	$2,000,000	$2,000,000
Suspected Serious Injury	$9,000,000	$8,000,000	$14,000,000
Suspected Minor Injury	$4,600,000	$3,100,000	$4,000,000
Possible Injury	$9,520,000	$7,350,000	$8,400,000
No Apparent Injury	$3,990,000	$3,550,000	$3,460,000
Total Societal Cost	$27,110,000	$24,000,000	$31,860,000

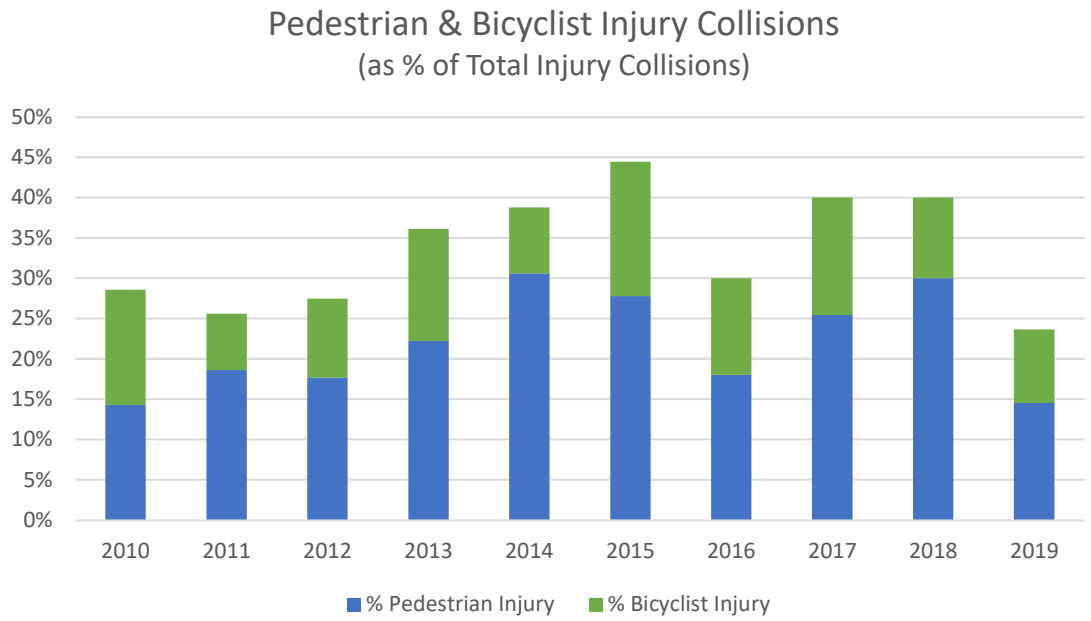
Pedestrian and Bicycle Collisions

Pedestrian versus motor vehicle collisions for 2019 remain level with 2018 numbers at 19, with a continued upward trend since 2010. In 2019, bicyclist collisions (alone or with motor-vehicle) set an encouraging new downward trend. Additional information regarding pedestrian and bicycle collision locations is provided in the *Collision Location Analysis* section of the report, and in Appendices C & D.

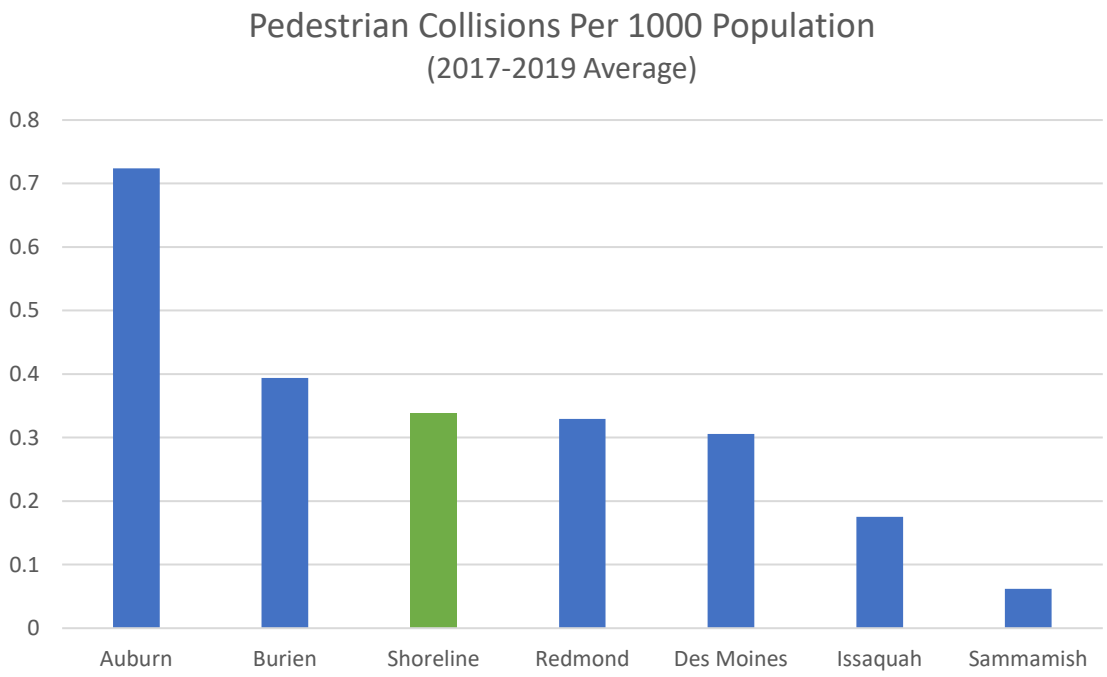


	Pedestrian Collisions	Bicyclist Collisions
2010	18	10
2011	14	6
2012	17	9
2013	14	7
2014	22	8
2015	20	9
2016	17	12
2017	19	10
2018	19	4
2019	19	8

Together, pedestrian and bicyclist injury collisions (including minor injury) accounted for the lowest proportion of injury collisions in the 2010-2019 data set, at less than 25%.



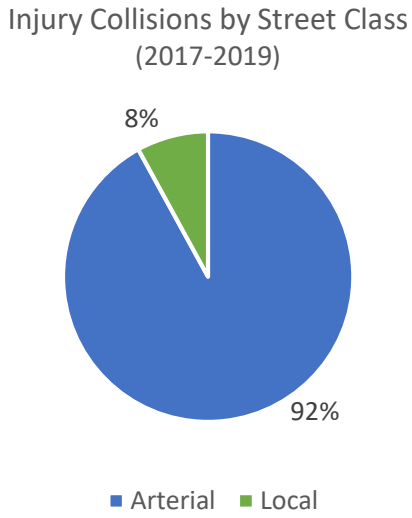
Similar to the Serious and Fatal Injury Collision comparison, Shoreline's pedestrian collision rate per 1000 population has moved from 3rd least to 3rd most, out of 7 total jurisdictions.

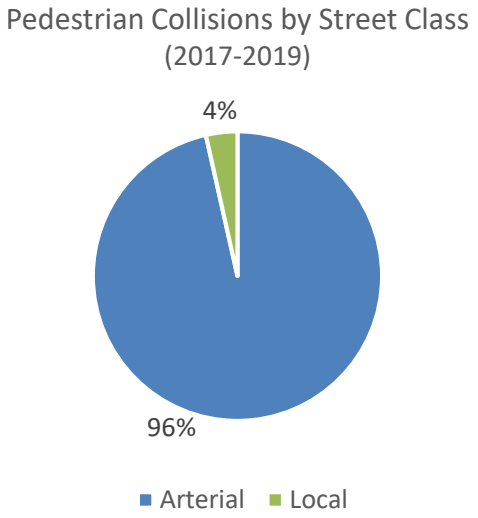


Collisions by Street Classification

In Shoreline, all local streets are 25 mph and carry significantly less traffic volume than arterial streets, representing less opportunity for collisions to occur, and less severe outcomes when they do. Arterials in Shoreline account for only 27% of the total roadway centerline miles, however from 2017-2019, 92% of injury collisions, and 96% of pedestrian collisions occurred on arterial streets as shown in the following table and charts.

	Avg Injury Collisions/Year	Avg Pedestrian Collisions/Year
Arterial	46	18
Local	4	Less than 1





In early 2020, the city's Neighborhood Traffic Safety Program (NTSP) was discontinued as an on-demand, standalone program in order to focus the limited Capital Improvement Program funds on locations with known collision history, as identified by this report. Previously, a signficant proportion of the funding and staff resource available for traffic safety efforts were being used to facilitate the on-demand NTSP, resulting in less resource to address known collision hot-spots. Additional details regarding the decision to discontinue the NTSP can be found online at:

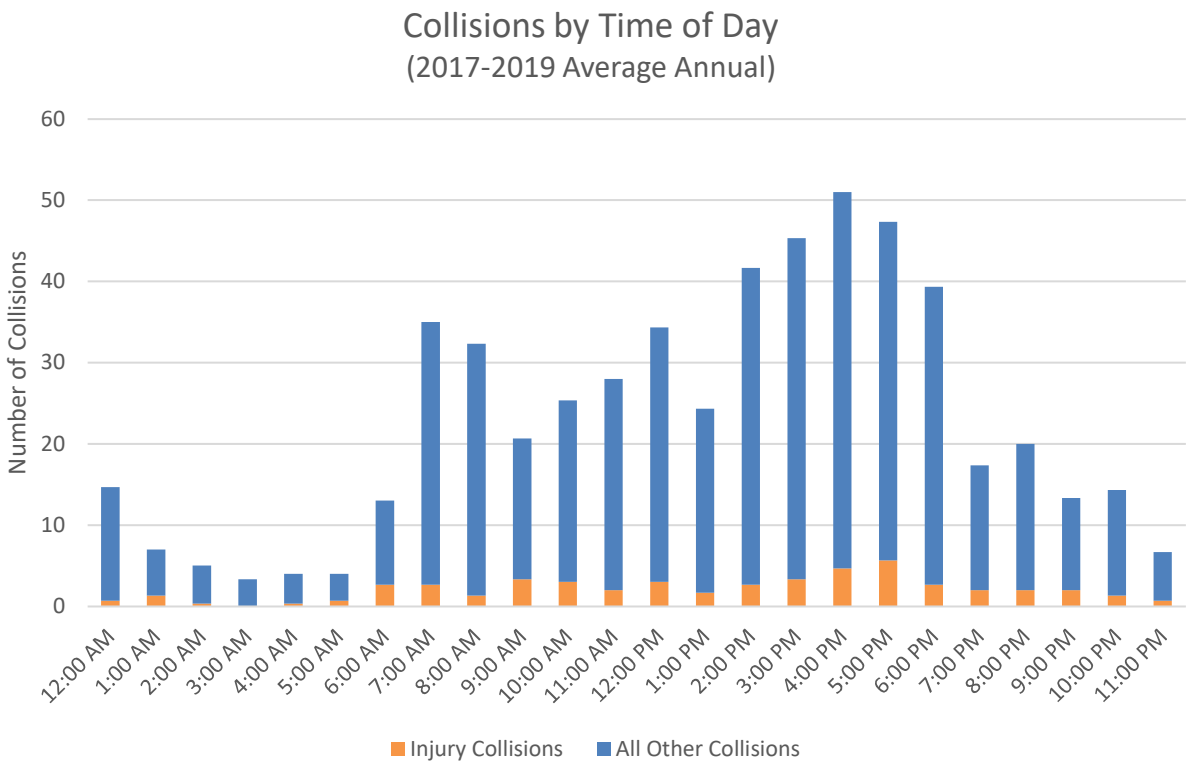
https://www.shorelinewa.gov/government/departments/public-works/traffic-services/neighborhood-traffic-safety

Other Collision Factors

Month and Time of Day

November is the month with the highest overall and injury collisions, consistent with the statewide trend. The fewest collisions occur in the month of August. Collisions in Shoreline most often occur during the PM peak hour of 5 to 6 PM. Injury collisions most often occurred during the PM peak as well.

The largest proportion of injury collisions compared to total collisions occurs at 6 AM.



Light

Most collisions occur during daylight hours, with injury collisions following a similar trend. The proportion of Pedestrian Collisions occurring during dark or dusk lighting conditions, at 10% more than the general collision rate. There is also a noteworthy spike in Serious and Fatal Injury collisions, with 39% occurring during dark or dusk lighting conditions.

	2017-2019 **All Collisions**	2017-2019 **Injury Collisions**	2017-2019 **Pedestrian Collisions**	2017-2019 **Serious/Fatal Collisions**
Dark/Dusk	27%	31%	37%	39%
Daylight/Dawn	71%	69%	63%	58%
Unknown	2%	1%	0%	3%

Collision Contributing Circumstances

This section examines factors influencing a collision such as behavior, crash type and road user focusing on priorities identified by the Washington State Target Zero Plan.

Target Zero Emphasis Priorities

Washington State's Target Zero Plan sets statewide traffic safety priorities based upon the most frequently cited contributing factors in statewide Serious and Fatal Injury collisions. The following table represents behavior, crash type and road user Target Zero priorities consistent with the 2019 Target Zero Draft Plan Update, with 1 being the highest priority.

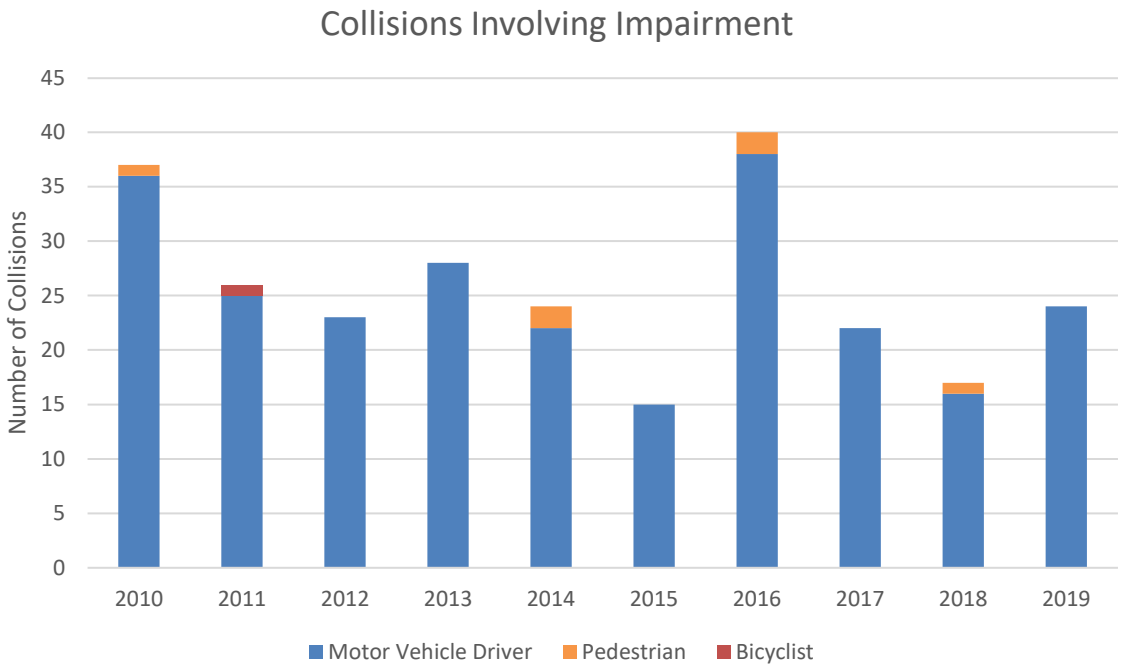
Emphasis Areas	Priority
Impairment	1
Distraction	1
Speeding	1
Lane Departure	1
Intersection	1
Young Drivers 16-25	1
Unrestrained Occupants	2
Pedestrians & Bicyclists	2
Motorcyclists	2
Older Drivers 70+	2
Heavy Truck	2

In Shoreline, the main Target Zero priorities represented within injury collision data continue to be intersections and pedestrians/bicyclists. There is also significant overlap between the two, with more than 70% of pedestrian collisions occurring at intersections.

Target Zero Emphasis Priority	TZ Priority % of Total Collisions 2017-2019 Average	TZ Priority % of Serious, Fatal, & Minor Injury Collisions 2017-2019 Average	TZ Priority % of Serious & Fatal Injury Collisions 2017-2019 Average
Intersection	56%	65%	58%
Pedestrians & Bicyclists	5%	26%	39%

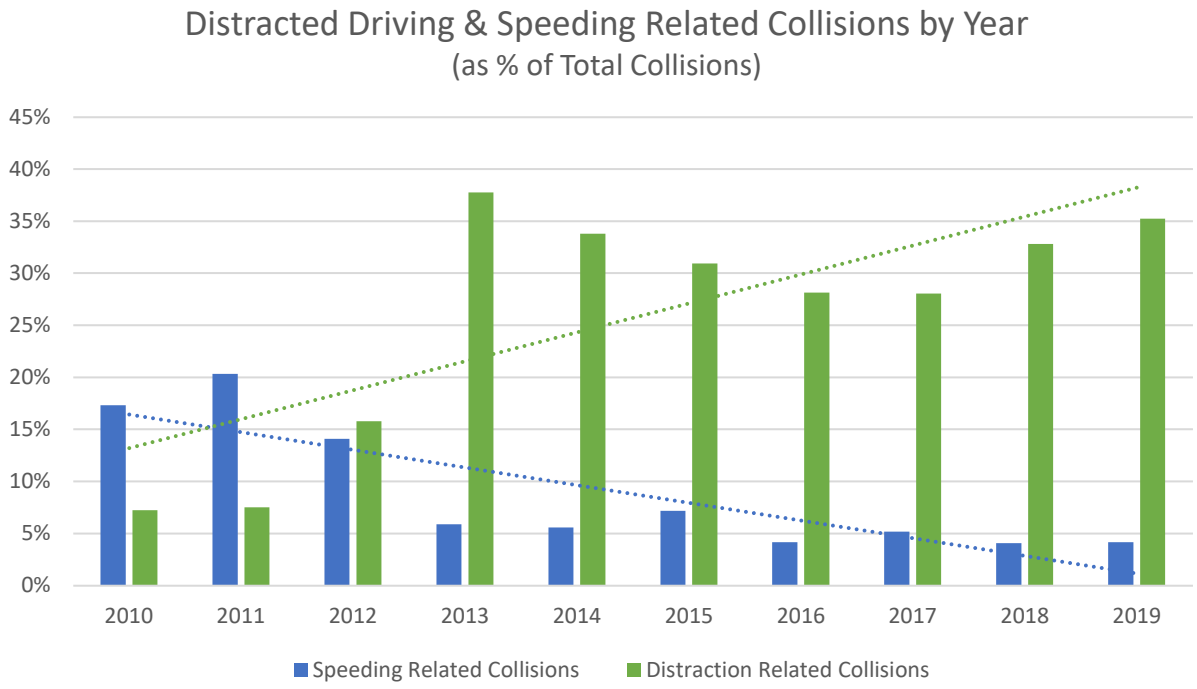
Impairment

There were 24 total collisions in Shoreline involving impairment, up from 16 in 2018. In King County, 20% of Serious and Fatal Injury collisions involve impairment. For the 2017-2019 period in Shoreline, impairment contributed to 12% of Serious and Fatal Injury collisions. It is important to note that impairment related crashes are thought to be underreported; according to the State Target Zero Plan, for Serious Injury crashes, law enforcement officers don't always interpret events as rising to the level of vehicular assault, a designation which allows for a blood draw.



Distracted Driving & Speeding

Shoreline's distribution of distracted driving related collisions is 35% in 2019, an increase in comparison to the preceding 2 years. In King County, distracted driving accounts for 29% of Serious and Fatal Injury collisions. In Shoreline, from 2017-2019, distraction was a factor in 15% of Serious and Fatal Injury collisions. The following chart displays the trend of distracted driving related collisions versus speeding related collisions as they both relate to common enforcement emphasis patrols.


Distracted Driving & Speeding Related Collisions by Year
(as % of Total Collisions)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Speeding Related Collisions
Distraction Related Collisions

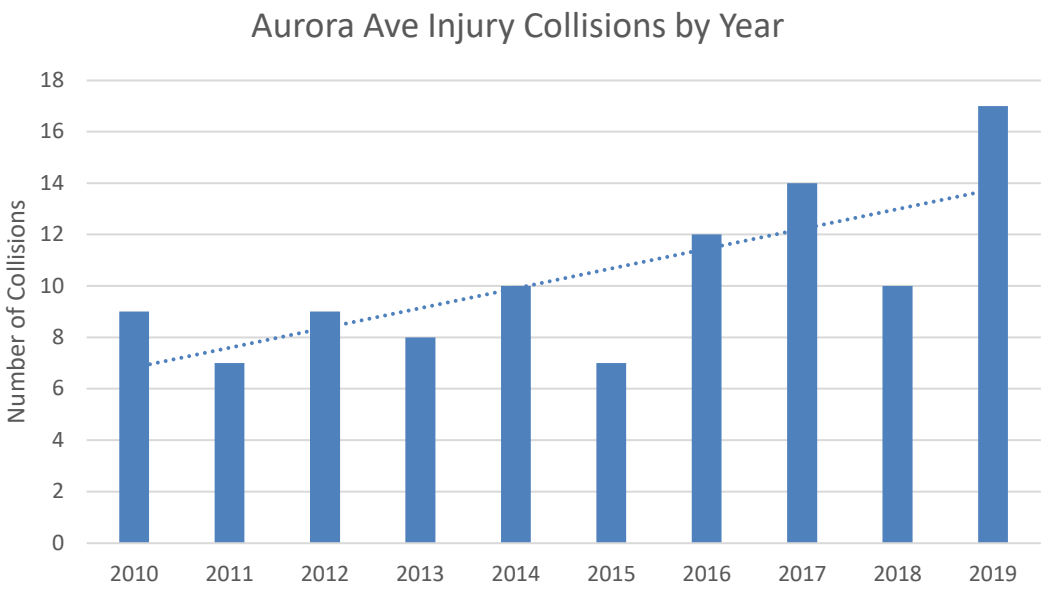
Collision Location Analysis

This section provides location-based analysis of collisions. There is no specific industry standard as to what number of collisions or collision rate is considered "high" for a location. Engineering guidelines do provide some thresholds for potential traffic control device revisions such as stop sign installation or signal phase changes based on the presence of 3 correctable collisions in 12-month period or 5 correctable collisions in a 24-month period. In order to best target mitigations, locations with an average of 3 or more collisions per year (9 total in the 3-year period) have been highlighted for additional analysis. Locations are sorted by total number of collisions and injury collision data is provided for context. Highest Injury Collision locations generally correlate to locations with highest total collisions; all locations with 3 or more injury collisions in the 3-year period are represented in the following section, with the primary goal being reduction of injury collisions. New GIS analysis enabled analysis of location collision trends using the entire 2010-2019 dataset. This 10-year analysis provides a more robust benchmark for determining whether progress is being made toward reducing overall and injury collisions at each location and will help staff to track progress on collision countermeasures.

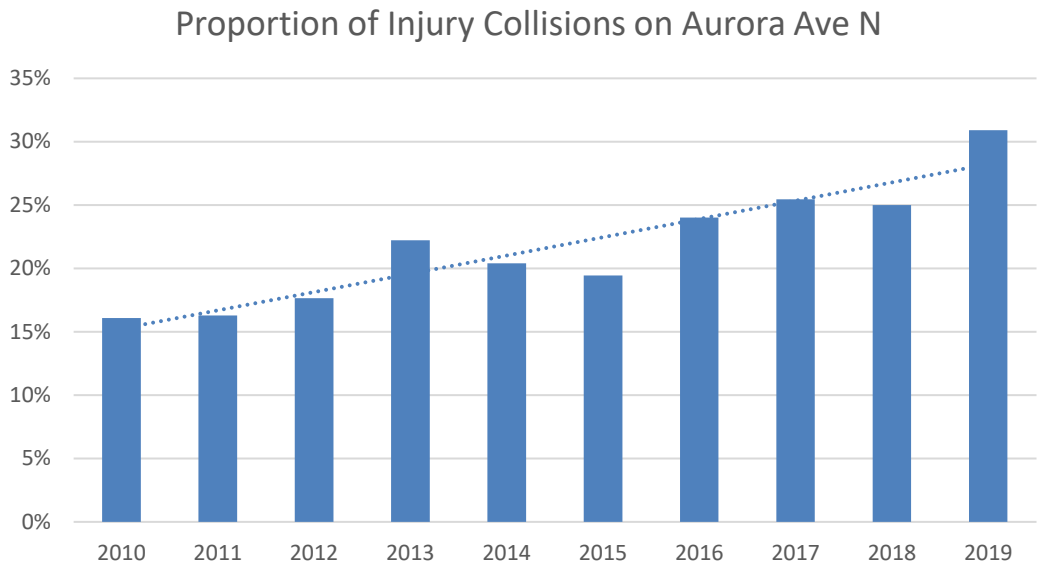
The following sections organize top collision locations as they relate to intersections, segments (sections of roadway between intersections), pedestrians, and bicyclists. Aurora Ave N collisions are also discussed in the following section as they comprise a major portion of the City's overall and injury collisions. In addition to the following tables, Total, Injury (including Minor Injury), Serious & Fatal, Pedestrian, and Bicycle collisions are displayed on maps in Appendices A-E.

Aurora Ave N Collisions (2017-2019)

With the completion of the Aurora corridor project in early 2016, injury collision trends the last several years show cause for concern. In order to reduce the number of injury collisions, some focus on additional safety measures for the corridor will be necessary. The following chart shows injury collisions along Aurora Ave N by year; revealing a clear uptick in injury collisions, and a high in 2019.



In addition, proportionally the Aurora corridor accounts for a significant and increasing amount of injury collisions in comparison to citywide totals. These increasing injury collision trends on the corridor are likely due in part to changes in adjacent land use along the corridor; with more turns to and from the corridor and an increase in pedestrian and bus ridership, there are more opportunities for collision in comparison to prior years.



There are 8 intersections and 11 segments with 9 or more collisions. The table below focuses on the locations with the highest number of injury collisions. Potential safety improvement actions are further discussed in the Location-Based Collision Reduction Strategies section.

Location	2017-2019 Total Collisior	10-Year Trend[1]	2017-2019 Injury Collisio	10-Year Injury Trend
Aurora Ave N & N 185th St	17	-0.53	5	0.24
Aurora Ave N from N 170th St to Ronald Pl N	21	0.44	3	0.10
Aurora Ave N & N 198th St	18	0.28	3	0.10
Aurora Ave N & N 160th St	19	0.40	3	0.08
Aurora Ave N & N 155th St	24	-0.19	3	-0.04
Aurora Ave N & N 175th St	18	-0.50	2	0.05
Aurora Ave N & N 163rd St	17	-0.04	2	0.01

[1] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 total collision data.
[2] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 injury collision data.

Intersection Collision Locations (2017-2019)

The following table shows intersections with 9 or more collisions over the 3-year period, excluding locations on Aurora Ave N. The number of intersections with 9 or more collisions in this 3-year period has decreased from 17 to 12 in comparison to 2016-2018. Of the 12 locations, 5 show a decrease in injury collision trend while 7 show an increase.

Location	2017-2019 Total Collisions	10-Year Trend[1]	2017-2019 Injury Collisions	10-Year Injury Trend[2]
15th Ave NE & Ballinger Way	24	-1.02	1	-0.04
3rd Ave NW & NW Richmnd Bch Rd	16	-0.28	4	-0.02
10th Ave NE & NE 175th St	15	0.42	3	0.03
Meridian Ave N & N 175th St	14	-0.53	1	0.06
Meridian Ave N & N 185th St	14	-0.01	1	-0.01
Midvale Ave N & N 175th St	14	0.38	0	-0.10
Fremont Ave N & N 200th St	13	0.39	0	0.02
15th Ave NE & NE 175th St	12	0.15	1	0.01
19th Ave NE & Ballinger Way	12	0.01	3	0.04
15th Ave NE & NE 168th St	10	-0.04	3	0.11
Ashworth Ave N & NE 185th St	9	0.35	1	0.03
Meridian Ave N & N 155th St	9	0.00	1	-0.01

[1] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 total collision data.

[2] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 injury collision data

.

Segment Collision Locations (2017-2019)

The following table shows roadway segments with 9 or more collisions from 2017-2019, Aurora locations excluded. All 6 of these segments shown an increasing trend in both total and injury collisions.

Location	2017-2019 Total Collision	10-Year Trend[1]	2017-2019 Injury Collisior	10-Year Injury Trenc
15th Ave NE from Forest Prk Dr NE to Ballinger Wy	14	0.53	0	0.02
15th Ave NE from NE 172nd St to NE 175th St	10	0.28	3	0.08
Ballinger Wy NE from 19th Ave NE to 15th Ave NE	29	0.22	2	0.05
Ballinger Way NE from 22nd Ave NE to 19th Ave NE	10	0.35	1	0.05
NE 175th St from 12th Ave NE to 15th Ave NE	9	0.24	1	0.05
NW Richmnd Bch Rd from 3rd Ave NW to 8th Ave NW	10	0.02	2	0.05

[1] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 total collision data.
[2] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 injury collision data.

Pedestrian Collision Locations (2015–2019)

The following table shows locations with 3 or more pedestrian collisions from 2015-2019, all with an increasing 10-year trend.

Location	2015-2019 Pedestrian Collisions	10-Year Tren
Aurora Ave N & N 160th St	5	0.12
Aurora Ave N & N 192nd St	5	0.16
Aurora Ave N & N 185th St	4	0.08
Aurora Ave N & N 165th St	3	0.01

[1] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 pedestrian collision data.

Bicyclist Collision Locations (2015–2019)

The following table shows locations with 3 or more bicyclist collisions from 2015-2019. Each location shows an upward 10-year trend.

Location	2015-2019 Bicyclist Collisio	10-Year Trend
Meridian Ave N & N 185th St	4	0.07
Aurora Ave N & N 160th St	3	0.04
Midvale Ave N & N 175th St	3	0.07

[1] Annual increase/decrease trend based on slope of linear trendline equation for 2010 through 2019 bicyclist collision data.

Richmond Beach Road Rechannelization Project Corridor

In 2018, the City of Shoreline implemented a traffic safety lane reduction rechannelization on the NW Richmond Beach Road/ NW 195th St/ NW 196th St corridor to address safety and mobility issues. The striping was changed from two lanes in each direction, to one lane in each direction, a center turn lane, and bike lanes in each direction. The project limits extended from 1st Avenue NW to 24th Avenue NW – a distance of approximately 1.7 miles. Construction began in April of 2018 and ended in early July 2018.

As part of the project, the City committed to studying project outcomes. The first study was presented to Council in May of 2019 and can be found online at:

http://www.shorelinewa.gov/government/projects-initiatives/richmond-beach-road-rechannelization

At the time of the first study, it was too soon to gauge the project impact on corridor collision trends. Now the City has obtained after data spanning from August 2018 to May 2020 in order to start looking at preliminary collision data results. It is still very early to gauge safety impacts as there are only 22 months of data available in the "after" period, however compared to the broader "before" data from January 2010 through March of 2018, rates for all collisions types are lower than the after period as shown in the table below.

	Total	**Injury**	**Pedestrian**	**Bicyclist**
Collisions Before Project (1/2010 - 3/2018)	165	23	12	3
Before Rate (collisions/month)	1.67	1.05	0.55	0.14
Collisions Before Project (1/2016-3/2018)	45	6	3	0
Before Rate (collisions/month)	1.67	0.22	0.11	0.00
Collisions After Project (8/2018 - 5/2020)	28	8	1	0
After Rate (collisions/month)	1.27	0.36	0.05	0.00

Looking at a smaller snapshot of before data (January 2016 through March 2018), all rates of collision are lower or the same, with the exception of injury collisions which are higher in the after. The City will provide an update to this data in the 2020 Annual Traffic Report which will provide a better comparison as additional after data will be available.

Collision Reduction Strategies

The preceding *Collision Summary* provided analysis of collisions on Shoreline's public streets, tracking overall and injury collision data from 2010 through 2018 and highlighting specific and significant contributing factors, locations, and trends. The following *Collision Reduction Strategies* section describes the City's ongoing efforts and recommended future actions for reducing collisions.

Contributing Circumstance Collision Reduction Strategies

The City of Shoreline strives to reduce overall, injury, and fatality collisions on its roadways consistent with the Washington State Strategic Highway Safety Plan's Target Zero Plan. The top two injury collision risk-factors in Shoreline continue to be collisions at intersections and collisions with pedestrians or bicyclists. To address these top priorities holistically and Citywide, staff continues to regularly update policies and design standards to align with Target Zero key countermeasures, especially as they relate to intersections, pedestrians and bicyclists. Some examples of City standards and policies created within the last few years that align with Target Zero Key Countermeasures are shown below.

Intersections:

Key TZ Countermeasure	Responsive Shoreline Policy/Design Standard
Roundabouts	• APWA 33.31 & APWA 33.20 – Require evaluation of roundabout as preferred intersection control method where traffic signal or all way stop control warrants are met.
Signal Operations Improvements	• APWA 33.22 – Describes the City's practice for reviewing performance and clearance intervals for all traffic signals on a 3-year cycle.

Pedestrians & Bicyclists:

Key TZ Countermeasure	Responsive Shoreline Policy/Design Standard
Separated infrastructure and complete networks	• SMC 12.50 Complete Streets – requires roadway improvement projects to consider how all modes of transportation will be accommodated safely or documentation of any exceptions. • Engineering Development Manual (EDM) 12.6 – requires pedestrian connections between dead end streets where applicable
Designing to reduce speeds	• EDM 12.2 – lane width standards allow for narrower lanes, based on street context. • EDM 13.4 – design curb radii reduced for slower turn speeds.
Address crossings	• EDM 7.9 – standards added for illumination of pedestrian/bicyclist crossings. • EDM Appendix F – curb bulbs required at all intersections where applicable to reduce pedestrian crossing distance, reducing pedestrian exposure.

Location-Based Collision Reduction Strategies

Shoreline Police and Public Works staff work together to review the identified highest collision locations each year. This data-driven approach to collision reduction facilitates strategic and systematic prioritization of limited City resources. The top locations were prioritized based on number of collisions, with consideration of injury collisions. The goal in prioritizing locations with significant collision history is to maximize the benefit of safety improvements in order to decrease the number of overall and injury collisions.

Referencing analysis from the Collision Summary section and drawing from specific strategies outlined in the Target Zero Plan, recommendations were developed to address identified collision patterns. In some cases, greater resource than currently available is needed to address a location's need. These locations are added to the Transportation Improvement Plan (TIP) to identify potential project funding sources and to position the City for grant opportunities.

Aurora Ave N Corridor (2017-2019)

With the completion of the Aurora corridor project in early 2016, injury collision trends the last several years show cause for concern. Two specific locations at access points at N 198th Street and N 163rd Street have shown an uptick in both total and injury collisions. Many of these collisions involve violation of the right curb lane when left turners collide with a general-purpose driver who continues straight through the intersection instead of turning right as required. To strengthen the regulatory message for the BAT Lane, the left sign assembly stating "Right Lane No Thru Except Buses" will be installed, replacing the "Right Lane Must Turn Right Message" currently present. In addition, warning signs (yellow sign) will be added to the left turn pocket to heighten awareness of the third travel lane. These signs will be in place by the end of October 2020.

Pedestrian collisions, often resulting in injury, are also disproportionately occurring along the Aurora Corridor. In 2021, staff will work to upgrade 2 to 4 signal controllers in order to implement leading pedestrian interval phasing which is shown to greatly reduce the occurrence of pedestrian collisions.

Traffic speed is a primary contributing factor to injury accidents. If injury collisions continue to trend upward, evaluating a lower speed limit, may be the most effective way to achieve a significant decrease in injury collisions. This strategy has been utilized somewhat recently on a number of other State Route corridors like SR 104 in Edmonds and SR 522 in Bothell

Intersection Collision Location Recommendations (2017-2019)

The following table provides mitigation strategies for intersections with the most collisions outside of the Aurora Corridor.

Location	Potential Action
15th Ave NE & Ballinger Way	Total & Injury collisions trending down - continue to monitor. Project need for this area of Ballinger as described in the TIP.
3rd Ave NW & NW Richmond Bch Rd	Total & Injury collisions trending down - continue to monitor. Richmond Beach Road Rechannelization completed Summer 2018.
10th Ave NE & NE 175th St	Total & Injury collisions trending slightly up - consider adding 4 to 3 lane conversion project to the TIP, which would provide a turn pocket and improve safety at this intersection.
Meridian Ave N & N 175th St	Improvement project design currently in progress - https://www.shorelinewa.gov/government/projects-initiatives/175th-street-corridor-improvements-project
Meridian Ave N & N 185th St	Signal phase changes were recently implemented as part of Sound Transit LLE project - continue to monitor. Long term, the Meridian Ave N/N 185th Street growth project will address bike improvements through at the intersection as described within the 185th Corridor Strategy.
Midvale Ave N & N 175th St	Injury collisions trending down slightly - continue to monitor and consider upgrading signal controller to implement Leading Pedestrian/Bike Interval in 2022.
Fremont Ave N & N 200th St	LED border stop signs recently implemented to improve stop sign visibility - continue to monitor.
15th Ave NE & NE 175th St	Improvements to add an eastbound right turn pocket and phase changes recently implemented. Centerline curb will be installed by Fall 2021 on south leg to mitigate driveway related collisions near this intersection.
19th Ave NE & Ballinger Way	Signal phase changes recently implemented which decreased total and injury collisions significantly over the last several years - continue to monitor. Project need for this area of Ballinger described in the TIP.
15th Ave NE & NE 168th St	Evaluate pavement marking and signage improvements.
Ashworth Ave N & NE 185th St	Pedestrian crossing improvements will be implemented by the end of 2021 which will also improve intersection visibility.
Meridian Ave N & N 155th St	Signal improvement project completed in 2019 - continue to monitor.

Segment Collision Location Recommendations (2017-2019)

The highest priority segment locations outside of the Aurora Corridor and associated recommendations are shown in the following table.

Location	Potential Action
15th Ave NE from Forest Prk Dr NE to Ballinger Wy	Pavement marking improvements completed in 2020 - continue to monitor.

15th Ave NE from NE 172nd St to NE 175th St	Centerline curb will be added to this segment by Fall 2021 to address driveway related collisions.
Ballinger Wy NE from 19th Ave NE to 15th Ave NE	Project need for this area of Ballinger described in the TIP, currently unfunded.
Ballinger Way NE from 22nd Ave NE to 19th Ave NE	Project need for this area of Ballinger described in the TIP, currently unfunded.
NE 175th St from 12th Ave NE to 15th Ave NE	Consider adding project to TIP to implement 4 to 3 lane conversion on NE 175th St from 5th Ave NE to 15th Ave NE.
NW Richmond Bch Rd from 3rd Ave NW to 8th Ave NW	Richmond Beach Road Rechannelization project completed in 2018. Additional pedestrian crossing and lighting improvements slated for 2021.

Pedestrian Collision Recommendations (2015-2019)

The table below provides collision reduction strategies for locations with 3 or more pedestrian collisions in a five-year period.

Location	Potential Action
Aurora Ave N & N 160th St	Upgrade signal controller to implement Leading Pedestrian Interval phasing.
Aurora Ave N & N 192nd St	Upgrade signal controller to implement Leading Pedestrian Interval phasing.
Aurora Ave N & N 185th St	Schedule 2022 upgrade of signal controller to potentially implement Leading Pedestrian Interval phasing.
Aurora Ave N & N 165th St	Schedule 2022 upgrade of signal controller to potentially implement Leading Pedestrian Interval phasing.

Bicyclist Collision Recommendations (2015-2019)

The table below shows locations with 3 or more bicyclist collisions in a five-year period and associated recommendations.

Location	Potential Action
Meridian Ave N & N 185th St	Long term, the Meridian Ave N/N 185th Street growth project will address bike improvements through the intersection. Consider green bike lane treatment through the intersection as part of the 2021 striping season and as Traffic Safety resources allow.
Aurora Ave N & N 160th St	Road improvement projects to be implemented with the Community Renewal Area redevelopment will improve bike connections at this location, providing a bike facility through the private lot to/from the Interurban Trail.
Midvale Ave N & N 175th St	Schedule controller upgrade for 2022 to potentially implement Leading Pedestrian/Bike Interval phasing.

Completed Transportation Safety Efforts

In addition to the ongoing efforts described in the *Contributing Circumstance Collision Reduction Strategies* section, the following section describes recently completed transportation safety roadway improvements, studies, and enforcement efforts.

Public Works

The following are traffic safety efforts completed by the City of Shoreline Public Works Department. Low-cost improvements such as pavement markings, signs, flashing beacons, or minor traffic signal phase changes are primarily completed by the Traffic Safety Program, (a CIP program funded by Roads Capital), however some of the larger efforts are typically funded by grant opportunities such as Safe Routes to School or the City Safety Program (a Federal program administered by WSDOT).

Collision Countermeasure - Improve Pedestrian Crossings

- Various pavement marking improvements including 6 new crosswalks and 3 new stop lines, and intersection alignment improvements at 3 intersections.

Collision Countermeasure – Signal Operations Improvements

- 15th Ave NE and NE 175th Street eastbound right turn pocket and signal timing and phase changes.
- The Meridian Ave N and N 155th Street Signal Improvement project was completed which converted the signal to protected/flashing yellow arrow operation, updated curb ramps for ADA compliance, and upgraded pedestrian signals.
- Meridian Ave N and NE 185th Street signal phase changes as part of Sound Transit mitigation.

Collision Countermeasure – Install Roundabouts

- 10th Ave NE and NE 185th Street converted from all way stop to roundabout as part of required Sound Transit construction mitigation.

Collision Countermeasure – Design to Reduce Speeds

- Echo Lake Elementary School Zone Flashers were implemented and will reduce driver speeds during school drop off and pick up times.

Collision Countermeasure – Speed Limits

- A review of speed limits on some key arterial corridors is nearly complete. Any recommended changes will be presented to council by early 2021.

Collision Countermeasure – Intersection Visibility

- LED border stop signs were installed at 200th and Fremont to increase stop sign visibility to address an increasing trend of collisions at the intersection.

Shoreline Police Department

Summary traffic enforcement statistics for Shoreline Police Department are provided in the table below.

	Traffic Citations	Arrest	Warning
2019	4,117	214	1,940
2018	5,196	335	2,461
2017	5,324	367	2,321
2016	3,458	411	3,969
2015	5,108	445	3,812
2014	3,649	401	2,897

Washington Traffic Safety Commission (WTSC) Grants

WTSC funded multiple grant related emphasis efforts in conjunction with Target Zero enforcement strategies. In addition, patrol officers were sent to training which educates officers on the involuntary signs/symptoms of an individual on a drug, how to determine impairment, and investigation steps.

Parking Enforcement & Abandoned Vehicles

Shoreline Police Department and the City's Code Enforcement & Customer Response Team (CECRT) created a new system to better streamline the abandoned vehicle process. Now all abandon reports are received via Coplogic and 911 calls are processed first through CECRT. Those that remain unresolved are assigned to the Police Department.

Year	Abandoned Vehicle / Impounds
2019	456/52
2018	211/25
2017	335 / 34
2016	322 / 54
2015	172 / 41
2014	196 / 48

Shoreline PD continue to respond to an increasing number of parking related complaints in 2019, as shown in the following table.

Year	Parking Tickets Issued
2019	1,110
2018	985
2017	528

The City's first parking study, which focused primarily on Light Rail Station Subareas, outlined several steps address parking related concerns and included a recommendation to fund a dedicated parking enforcement position. In 2020, the Model Traffic Ordinance was revised to increase parking violation monetary penalties in order to begin offsetting the cost of parking enforcement activities to prepare for a new dedicated enforcement position. More information is available online at:

http://cosweb.ci.shoreline.wa.us/uploads/attachments/cck/council/staffreports/2020/staffreport060120-8c.pdf

School Education

School education and outreach programs continued in 2019 at Shorecrest High School, Shorewood High School, and Shoreline Community College.

Traffic Speed Summary

The City of Shoreline Traffic Services and Police departments have been working together to identify and target speed enforcement. Speed data is collected throughout the year and compared to the posted speed limit in order to identify streets where speeding is a problem.

Appendix F is the Traffic Speed Differential Map which shows the difference between the measured 85th percentile speed and the posted speed limit. Shoreline Police will use this data, as well as a mid-year update to it, to guide speed emphasis patrols.

In addition, Traffic Services will continue to rotate radar speed trailers and radar speed carts to help with the driver education component of speed reduction on problem corridors.

The street segments shown in the table below represent the locations with the highest difference between posted and measured travel speeds.

Streets with Differential Speed 8 mph or More Over Posted Limit
20th Ave NW from NW 195th St to NW 205th St
N 200th Street from Aurora Ave N to Meridian Ave N
Midvale Ave N from N 175th St to N 185th St
Forest Park Dr NE from 15th Ave NE to 19th Ave NE
NE Perkins Way from 10th Ave NE to 15th Ave NE
NW 175th Street from 10th Ave NW to 14th Ave NW
6th Ave NW from NW 175th Street to NW 180th St
Carlyle Hall Rd from Dayton Ave N to N 175th St
15th Ave NE from NE 175th St to NE 180th St
NE 165th St from 5th Ave NE to 15th Ave NE
Dayton Ave N from N 165th St to St. Luke Pl N
N 165th St from Dayton Ave N to Aurora Ave N
5th Ave N from NE 145th St to NE 155th St

Traffic Volume Summary

Traffic volume data is regularly collected at eight (8) locations in the City. They are:

- Aurora Ave N south of N 175th St
- Meridian Ave N south of N 175th St
- NW Richmond Beach Rd east of 3rd Ave NW
- 5th Ave NE south of NE 175th St
- 15th Ave NE south of NE 172nd St
- 25th Ave NE south of NE 171st St
- NE 175th St west of 5th Ave NE
- NW 175th St west of 3rd Ave NW

Below is a summary of data collected at these locations. As shown in the table, average weekday daily traffic volumes are up significantly in 2019, compared to 2018, by 3.5%. AM peak volumes are up by 2.2% and PM peak volumes are down by -.5%, likely due to peak hour spreading. The Puget Sound Region gained another 68,740 people in the last year, a 1.7% increase from 2018-2019. (Source: Washington State Office of Financial Management)

	2015	2016	2017	2018	2019	5 Year Average
AM Peak Aggregate AAWDT	6,399	6,528	6,632	6,651	6,798	6,602
PM Peak Aggregate AAWDT	8,033	8,197	8,380	8,201	8,162	8,195
Daily Aggregate AAWDT	99,719	101,426	102,546	101,548	105,142	102,076

See Appendix G for the 2019 Traffic Flow Map which shows average daily weekday traffic volumes on additional City of Shoreline Streets.

COVID-19 Traffic Volume Impacts

The Annual Traffic Report focuses primarily on prior year data (2019) however staff has collected preliminary data on COVID-19 impacts to travel patterns in Shoreline. As shown in the following table, traffic volumes were significantly lower in 2020 from March to May but are slowly climbing back up. Shoreline's data trend mirrors regional patterns, which show the same significant dip in trips from March-May, with volumes starting to climb back up in July and August.

	Baseline Avg Weekday Daily Traffic	March	April	May	June	July	August
Aurora Ave N	35,452	26,915	21,614	25,219	28,353	30,213	29,996
		-24%	-39%	-29%	-20%	-15%	-15%
15th Ave NE	14,385	8,648	6,746	6,715	8,269	9,339	10,095
		-40%	-53%	-53%	-43%	-35%	-30%
NE 175th St	14,443	10,675	8,258	9,822	9,822	13,209	13,602
		-26%	-43%	-32%	-32%	-9%	-6%
Richmond Bch Rd	16,213	11,793	9,198	10,677	13,098	13,743	13,739
		-27%	-43%	-34%	-19%	-15%	-15%

WSDOT has created a robust data dashboard for tracking COVID-19 impacts statewide which is available to the public online at:

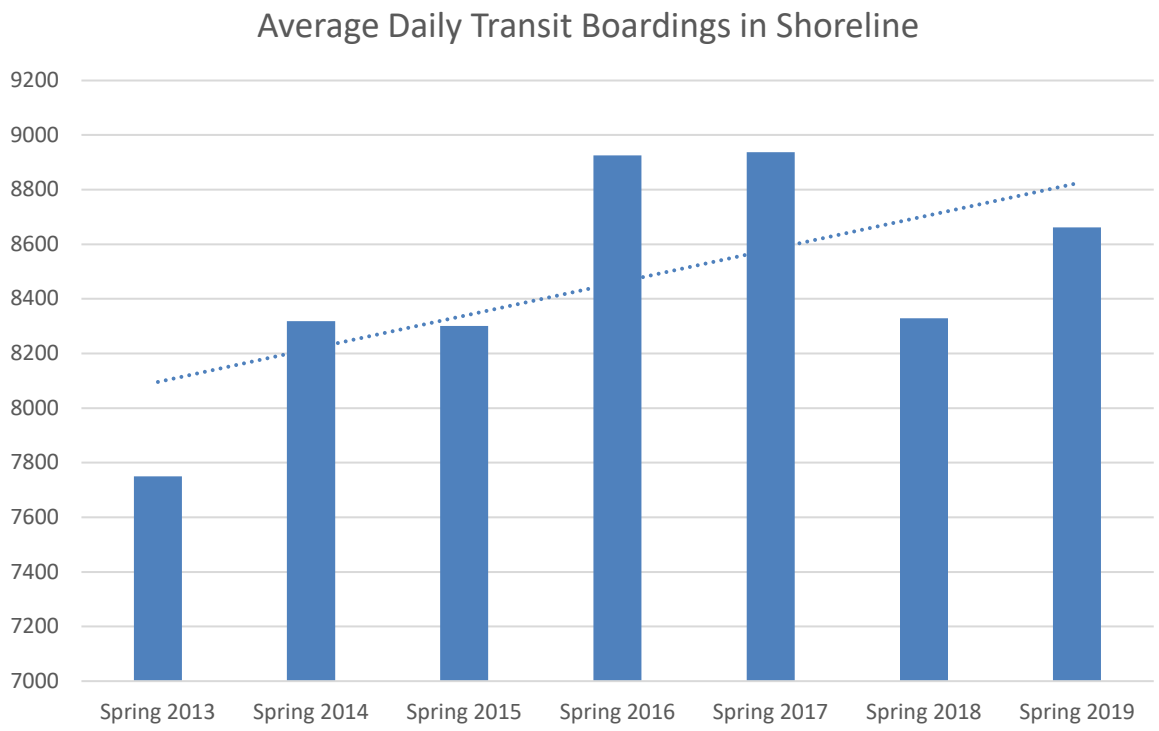
https://www.wsdot.wa.gov/about/covid-19-transportation-report/

Transit Summary

King County Metro ridership was up from 2018, however still lower than 2016 and 2017 ridership. Overall, the trendline remains on the uptick in the 2013-2019 monitoring period.

	Average Daily Transit Boardings in Shoreline	% Change
Spring 2019	8662	3.9%
Spring 2018	8329	-6.8%
Spring 2017	8937	0.13%
Spring 2016	8925	7.5%
Spring 2015	8301	-0.2%
Spring 2014	8318	7.3%
Spring 2013	7750	-

**King County Metro data only*



COVID-19 Transit Impacts

This report focuses primarily on the prior year of data however King County Metro provided some context for COVID-19 impacts to transit ridership on August 7th, 2020. Some key takeaways from this review of ridership are as follows.

- From July 27-31, the average weekday bus ridership was estimated to be about 144,000, compared to 395,000 for the same time in 2019, or a 63% drop.
- An estimated 61% fewer passengers used Metro's Access paratransit service from July 27-31 compared to a year ago. Water taxi route ridership has increased slightly recently, carrying an

estimated 80% fewer riders compared to last year—about 500 riders per weekday compared to 2,500.

- Riders continue to board primarily at the rear doors and fare collections remain suspended through August.
- Buses remain limited to 12-18 passengers depending on the size of the coach to support physical distancing and to limit the spread of COVID-19.

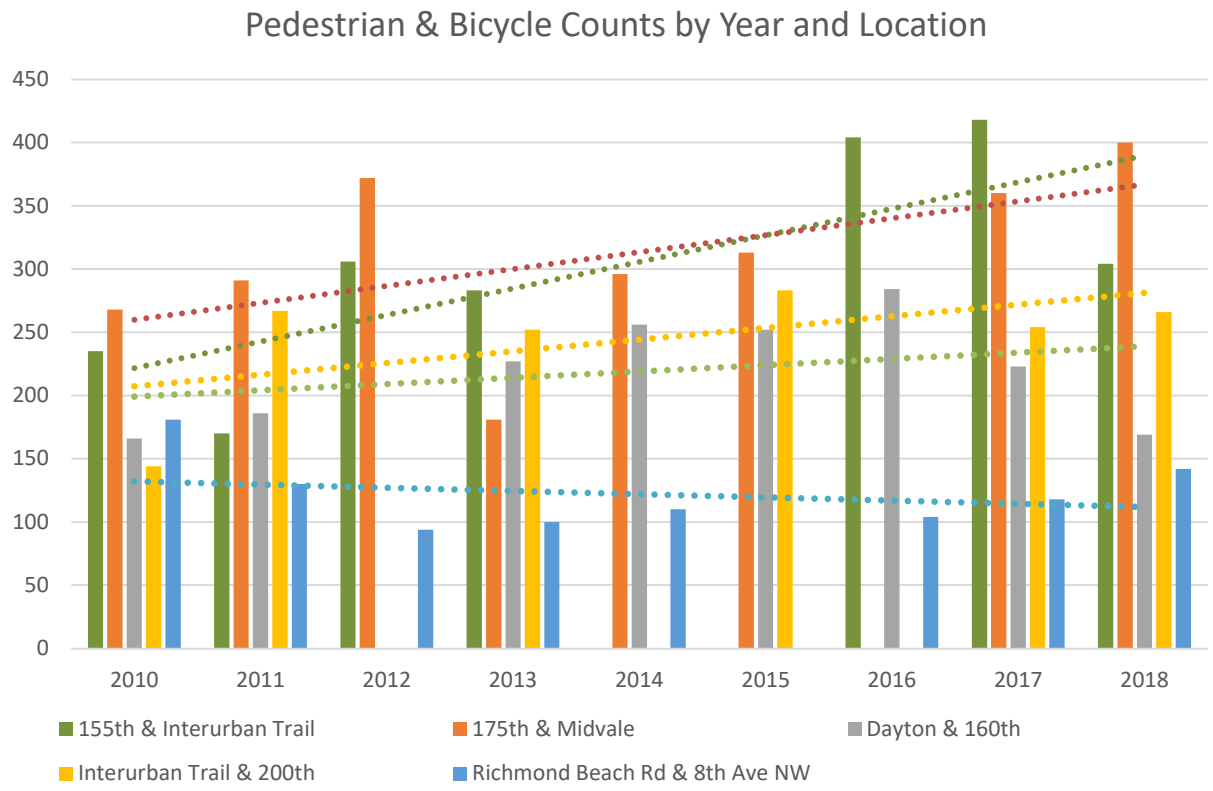
Specific data for the RapidRide E Line, which serves Shoreline, was also included in this summary and showed that 48% of normal ridership was retained in the last week of July (52% lower than normal). Additional information is available on King County Metro's blog at:

https://kingcountymetro.blog/2020/08/07/covid-19-update-summer-ridership-remains-steady-masks-required-when-riding-transit/.

Pedestrian and Bicycle Count Summary

The Washington State Bicycle and Pedestrian Documentation Project collects bicycle and pedestrian data in cities throughout the State. This typically occurs annually each fall, however no new data was collected in 2019. As such, the information shown below is a duplicate of data presented in the 2018 Annual Traffic Report, which shows that pedestrian and bicycle activity is on the rise at most locations throughout the City.

The chart summarizes 2 hours for both the AM and PM peak (4 hours total) for pedestrian and bicyclist counts at these locations.



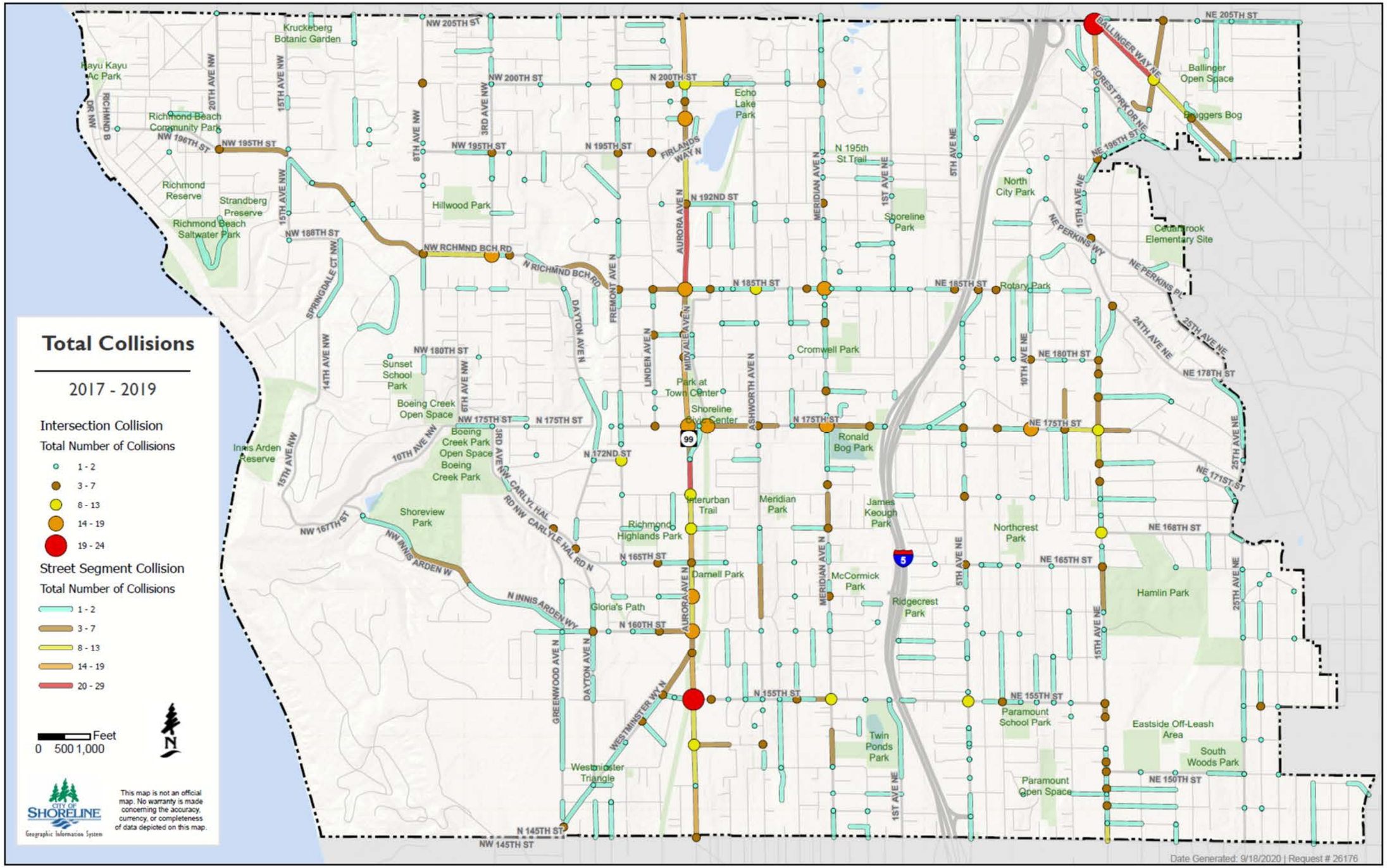
**Some years omitted due to incomplete data*

More information about the Washington State Bicycle and Pedestrian Documentation Project can be found online at: http://www.wsdot.wa.gov/bike/Count.htm

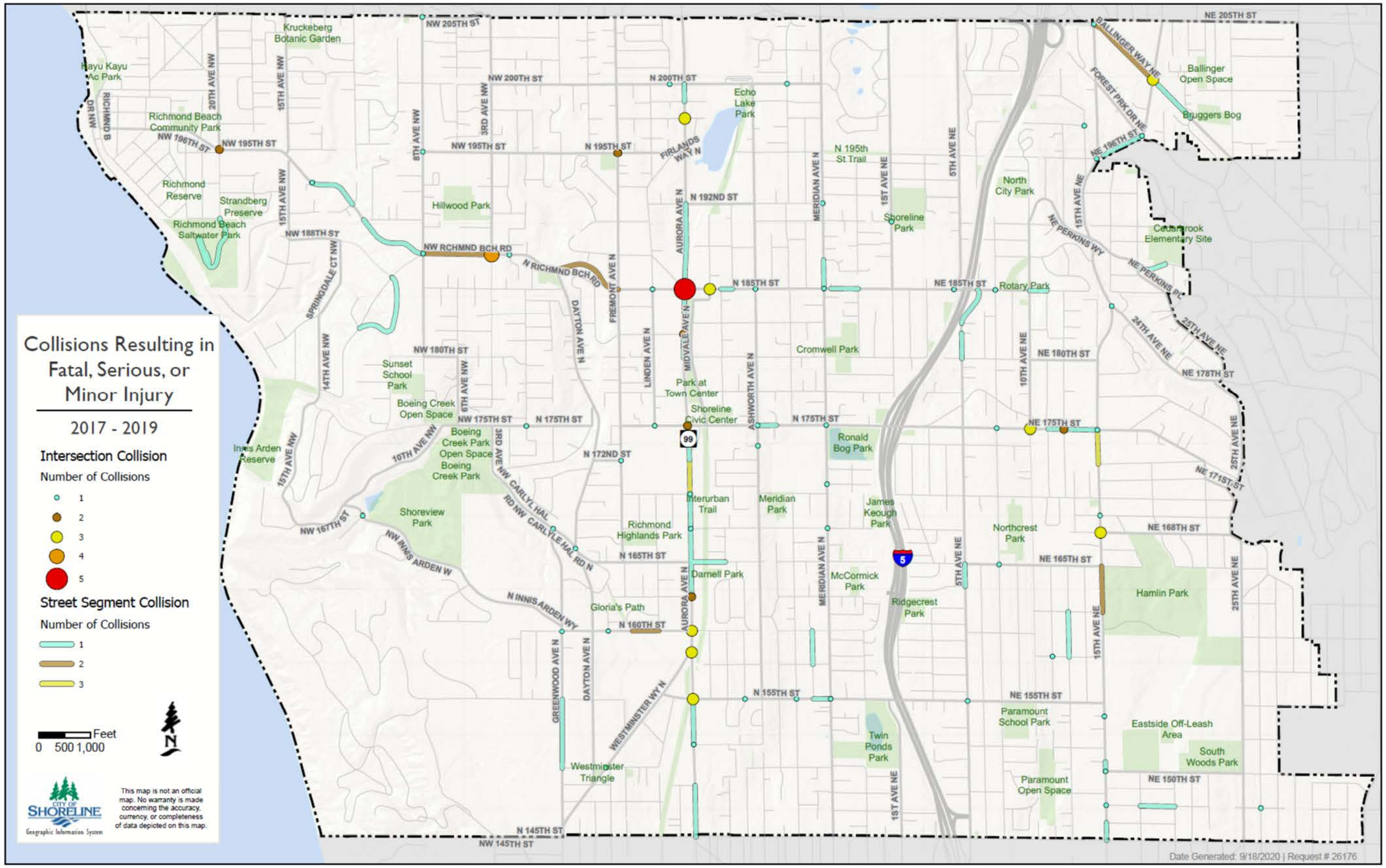
Appendix

Appendix A – 2017-2019 Total Collisions Map
Appendix B – 2017-2019 Injury Collisions Map
Appendix C – 2015-2019 Pedestrian Collisions Map
Appendix D – 2015-2019 Bicyclist Collisions Map
Appendix E – 2015-2019 Fatal and Serious Injury Collisions Map
Appendix F – 2019 Traffic Flow Map
Appendix G – 2019 Speed Differential Map

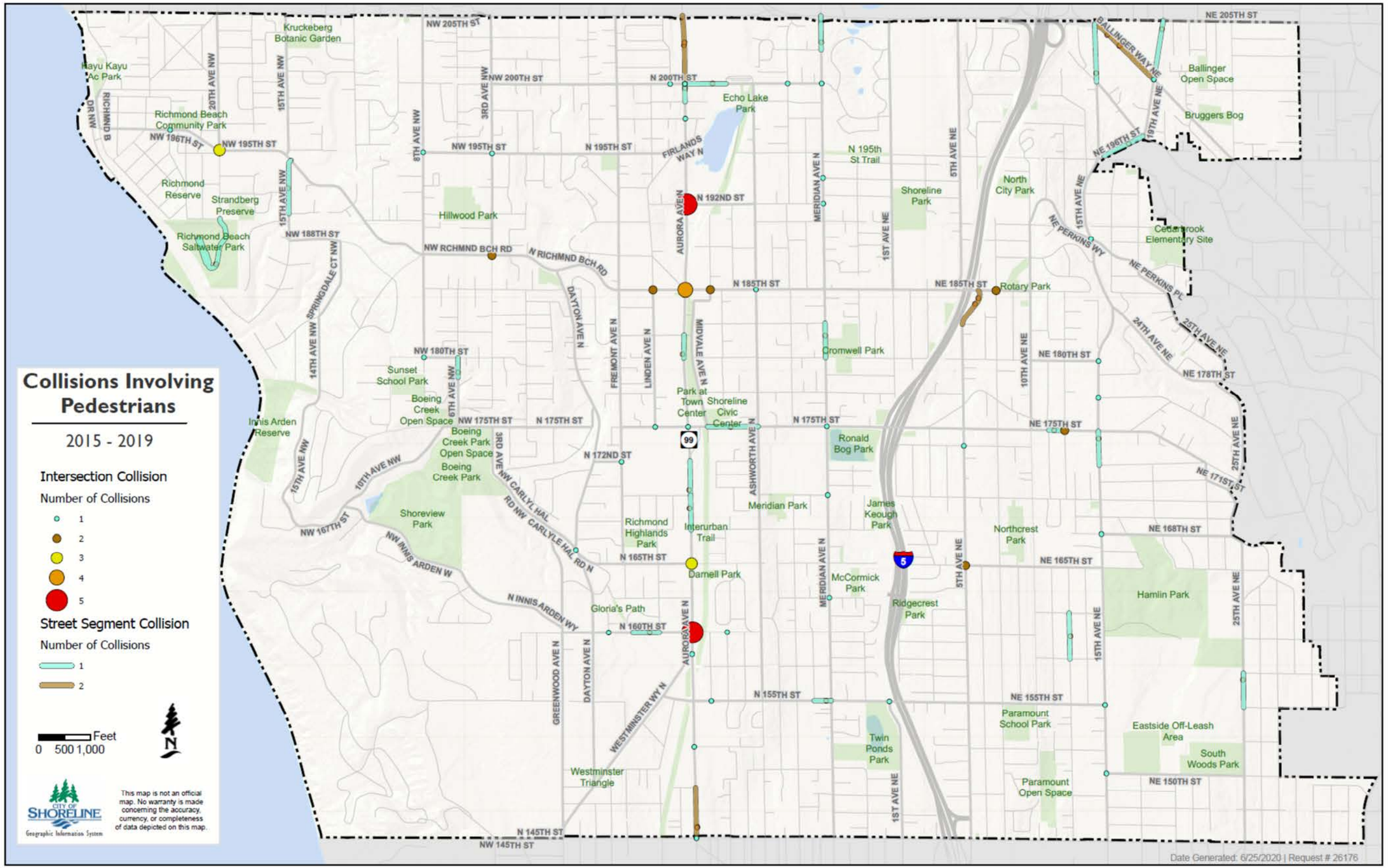
Appendix A – 2017-2019 Total Collisions Map



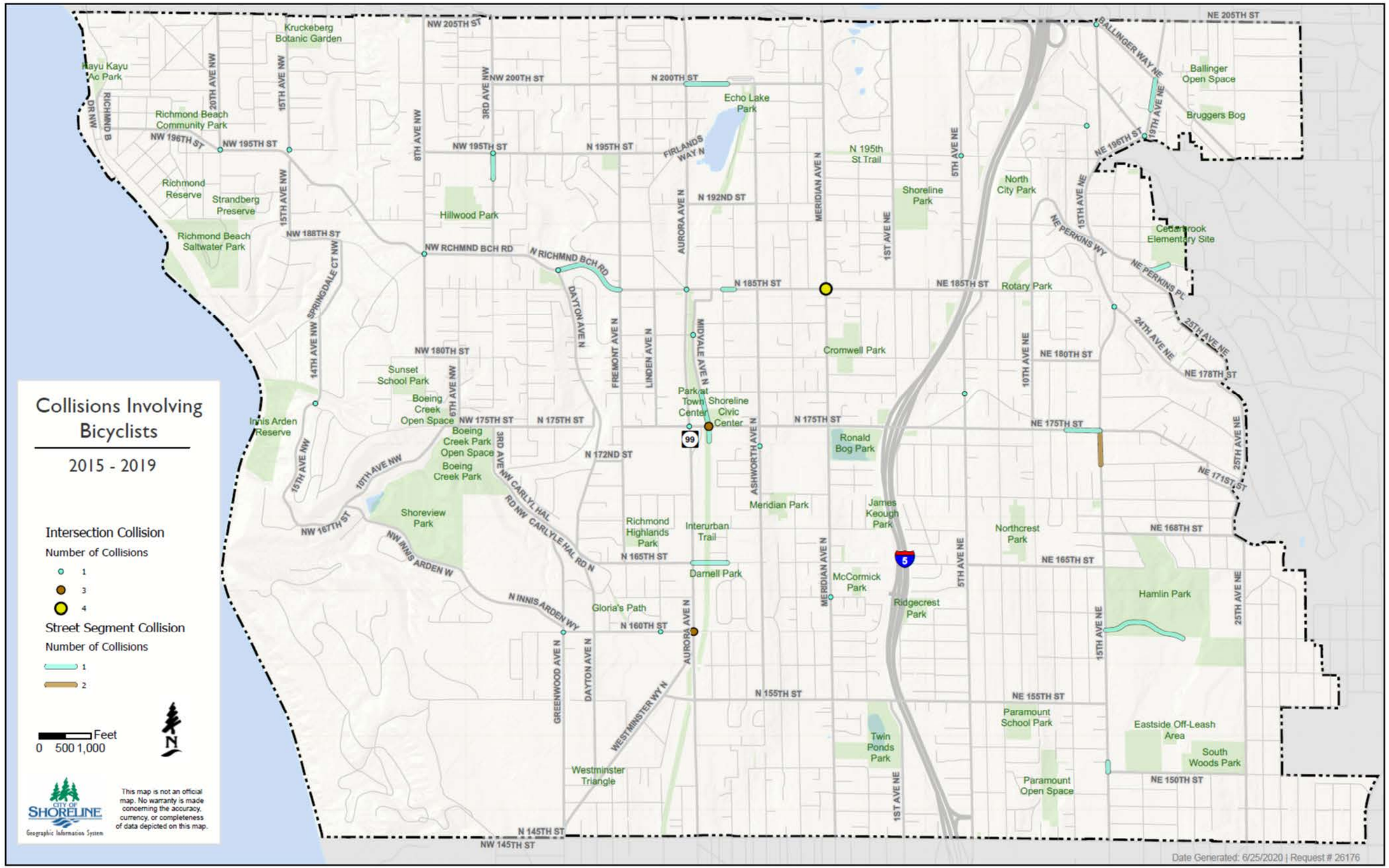
Appendix B – 2017-2019 Injury Collisions Map



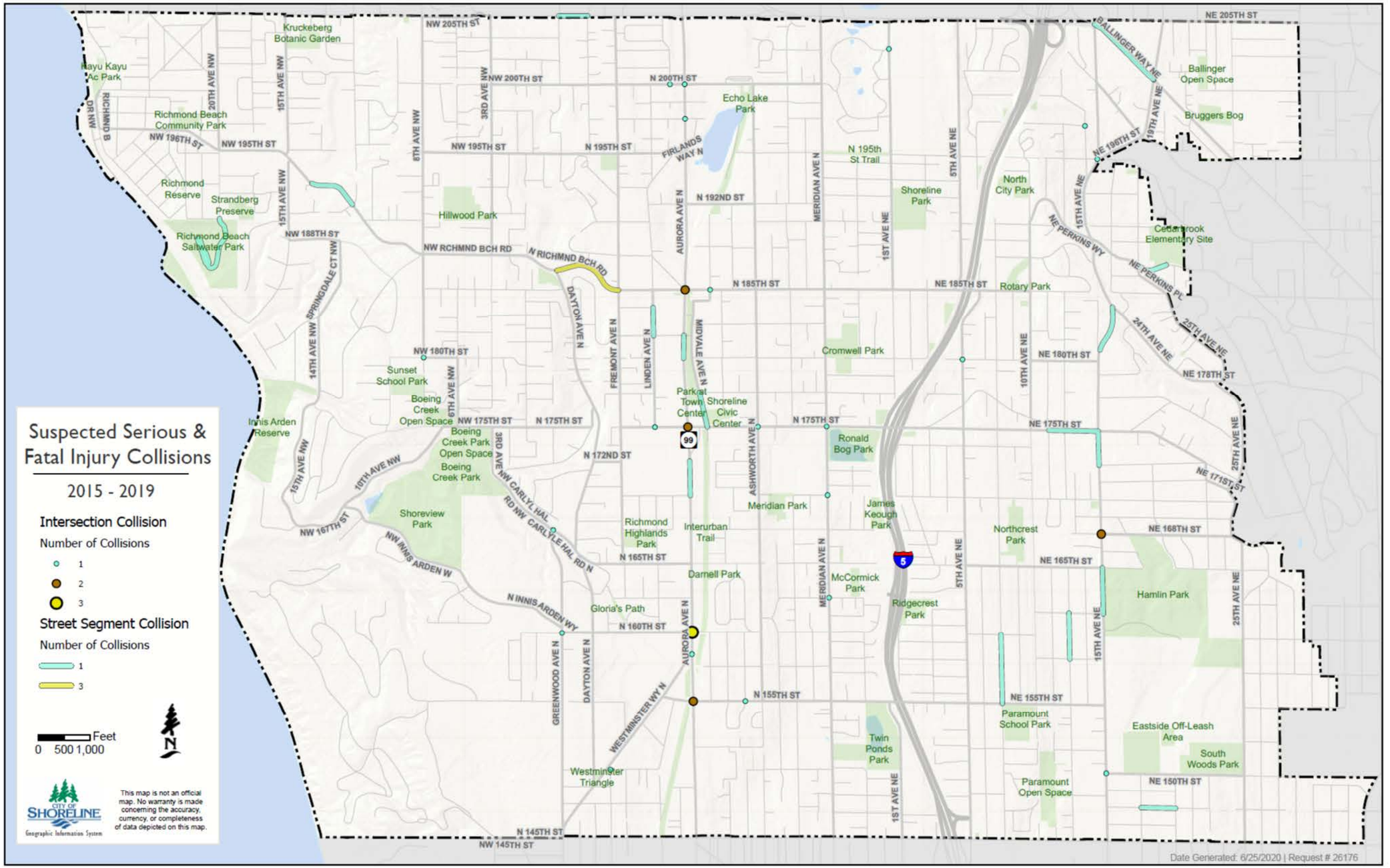
Appendix C – 2015-2019 Pedestrian Collisions Map



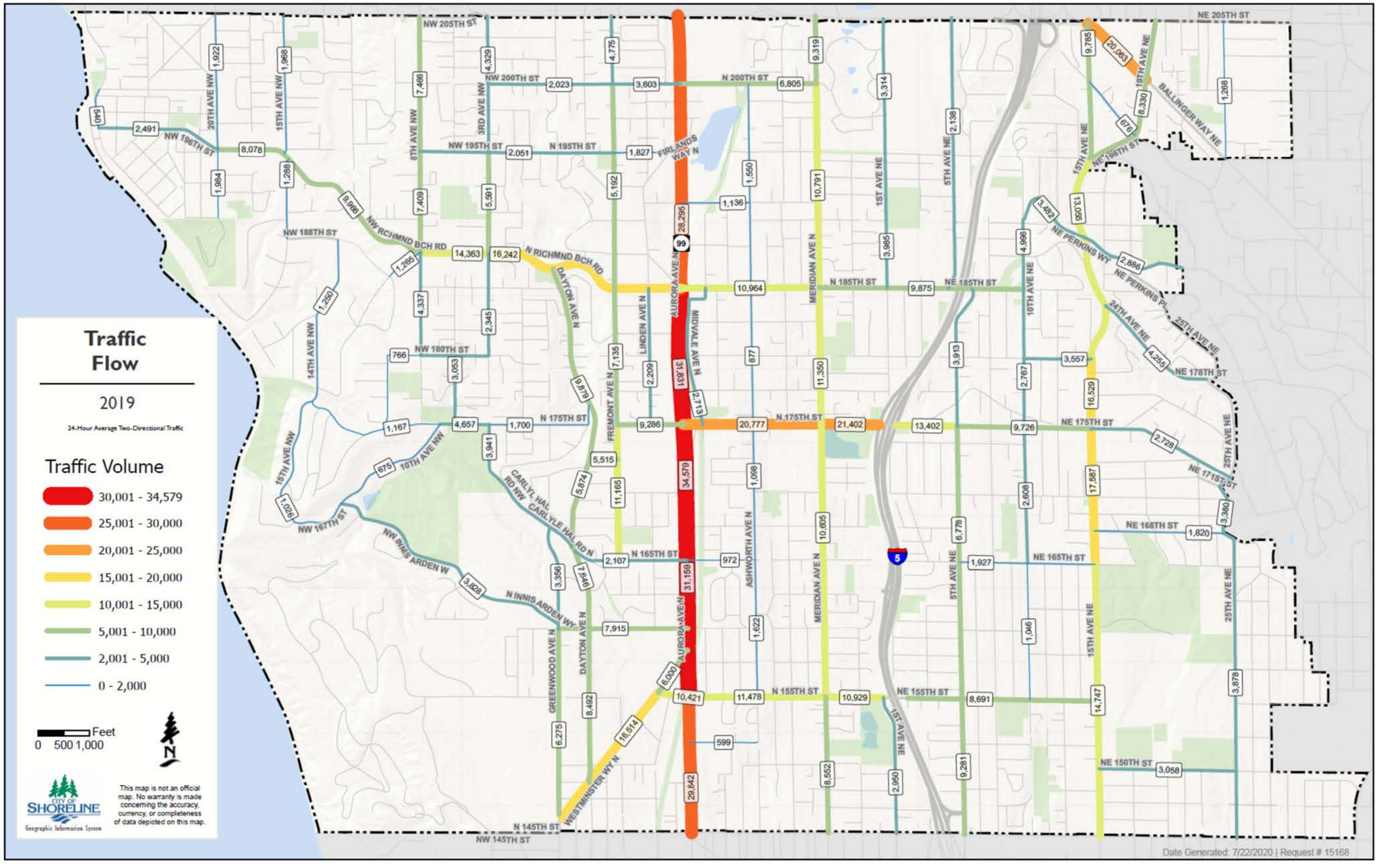
Appendix D – 2015-2019 Bicyclist Collisions Map



Appendix E – 2015-2019 Fatal and Serious Injury Collisions Map



Appendix F – 2019 Traffic Flow Map



Appendix G – 2019 Speed Differential Map