FEHR PEERS

MEMORANDUM

Date: January 2019

To: Franz Loewenherz, City of Bellevue

From: Chris Breiland, Dana Weissman, Sarah Saviskas, and Bianca Popescu, Fehr & Peers

Subject: Bellevue Vision Zero Task 3 Assessment of Collision Data Final Memorandum

SE18-0634

Introduction

Bellevue is committed to building on its previous traffic safety work to improve safety across the City. In 2017, there were 1,495 police reported collisions in Bellevue, resulting in 467 injuries. Of these 467 injuries, 19 were serious injuries and two (2) were fatalities.[1] Vision Zero holds that these deaths and serious injuries are both unacceptable and preventable and the City should strive to eliminate them.

To help understand when, where, and why collisions occur in the City of Bellevue, Fehr & Peers investigated the City's collision data from 2006 to 2017 to identify collision trends and contributing factors. The trends in Bellevue are compared to Washington State, national, and peer city trends to provide context for the findings.

The collision data trends, in coordination with other considerations such as community input and political priorities, will be used in the City of Bellevue's Vision Zero Action Plan to identify specific strategies to eliminate traffic fatalities and serious injuries.

[1] A serious injury is defined by WSDOT as any injury more serious than a minor injury. Examples of minor injuries include lumps, bruises, abrasions or minor lacerations; examples of serious injuries include exposure of underlying tissues, broken extremities, significant burns, unconsciousness or paralysis. Source: https://www.wsdot.wa.gov/sites/default/files/2009/01/20/LP_WSP-Collision-Injury-Code-Meanings.pdf

Safe Systems Approach

The City of Bellevue has chosen to organize its Vision Zero Action Plan around the Safe Systems approach, which emphasizes holistic transportation system design. People make mistakes on the roadway and are vulnerable to serious injury when mistakes are made. Safer design, enforcement, rules and regulations, and transportation system operations all are required to get to zero deaths and serious injuries. As shown in Figure 1, all parts of the system must be strengthened: people who use the road, the roads themselves, driving speeds, and vehicles.

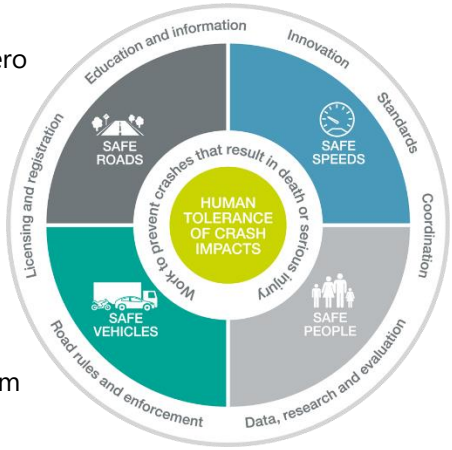


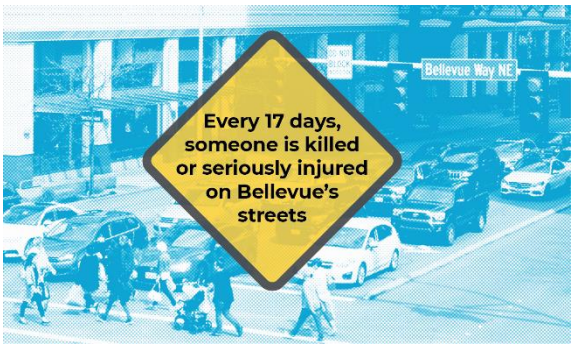
Figure 1: Safe Systems Approach.
Source: National Road Safety Strategy.

Bellevue's collision data and trends are organized into the following Safe Systems pillars:

- **General Collision Trends**
  - What are general trends in collisions over time?
  - Are certain modes more at risk than others?
  - Are vulnerable populations disproportionately represented in the collision data?
- **Safe People**
  - What individual behaviors most contribute to collisions?
- **Safe Roads**
  - What are the critical road characteristics where collisions occur?
  - Where are collisions concentrated in the City?
- **Safe Speeds**
  - Is speed disproportionately represented as a factor in collisions?
- **Safe Vehicles**
  - No key collision trends fall under this pillar in Bellevue, but nonetheless it is an important pillar to consider for safety strategies.

General Collision Trends

Every 17 days, someone is killed or seriously injured on Bellevue's streets.[2] Collisions cost Bellevue residents an estimated $30.4 million per year in economic and quality of life impacts.[3] In the United States, the economic cost for all vehicle collisions was an estimated $242 billion in 2010.



From 2006 to 2017, 233 people were seriously injured and 19 people were killed in traffic collisions on Bellevue's streets. As shown in Figure 2, the number of total annual injuries in Bellevue has remained fairly steady over the twelve-year period, with notable spikes in 2006 and 2015 and a decline in the most recent two years. Figure 3, which illustrates fatalities and serious injuries by transportation mode, shows a considerable amount of year-to-year fluctuation. Total fatalities and serious injuries range from as low as 13 to as high as 31 in a given year between 2006 and 2017. Fatalities and serious injuries by mode also fluctuate year to year, although fatalities and serious injury counts for people on bicycles and people in motor vehicles were slightly higher than average in 2016 and 2017.

[2] Calculated based on average number of fatalities and serious injuries per year over 12-year period (2006-2017), converted to number of days.

[3] Estimated based on National Safety Council report for economic cost of a traffic collision (2015), which assigns a cost of $2.6 million to fatalities, $1.7 million to serious injuries, $12.5 million to other injuries and $13.5 to non-injuries.

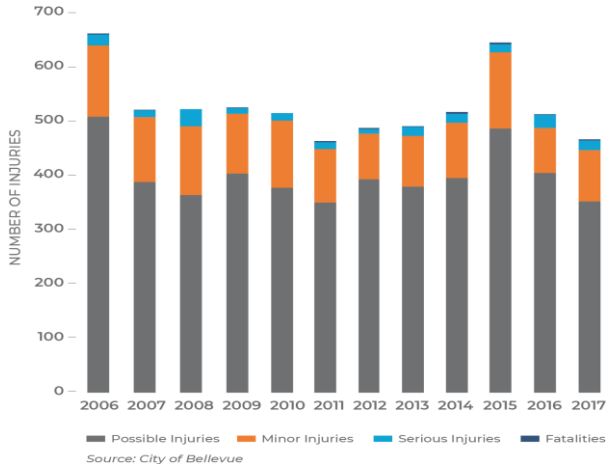


Figure 2: Possible injuries, minor injuries, serious injuries and fatalities from 2006 to 2017

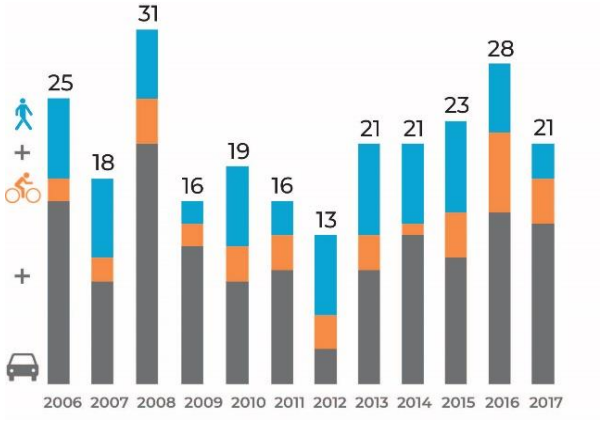


Figure 3: Fatalities and serious injuries by mode from 2006 to 2017

As shown in Figure 4 and Figure 5, the highest numbers of overall fatalities and serious injuries occur in the summer months and in December. The winter months from December through March see the highest number of pedestrian fatalities and serious injuries in Bellevue, possibly due to the fact that winter days are shorter and wetter, creating more challenging travel conditions. The winter effect was documented in New York City, where the end of daylight saving time in the fall was associated with a spike in the number of collisions and fatalities.[4] Conversely, bicyclist serious injuries in Bellevue are highest during the spring and summer months from April through August, possibly due to the warmer and dryer weather encouraging more people to ride. This is consistent with findings from the I-90 trail counter in Bellevue, which found bicycle activity was the highest in the spring and summer, and both bicycle and pedestrian activity increased when weather conditions were more favorable.[5]

[4] https://newyork.cbslocal.com/2018/11/01/dusk-and-darkness-vision-zero-safety-initiative/

[5]https://transportation.bellevuewa.gov/UserFiles/Servers/Server_4779004/File/Transportation/Publications/Ped%20Bike%20Count%20Report%202015.pdf

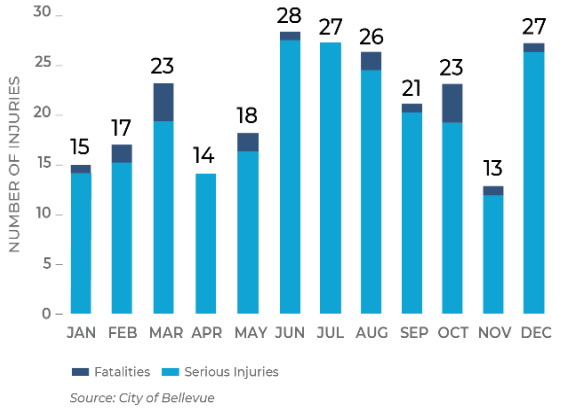


Figure 4: Fatalities and serious injuries by month from 2006 to 2017

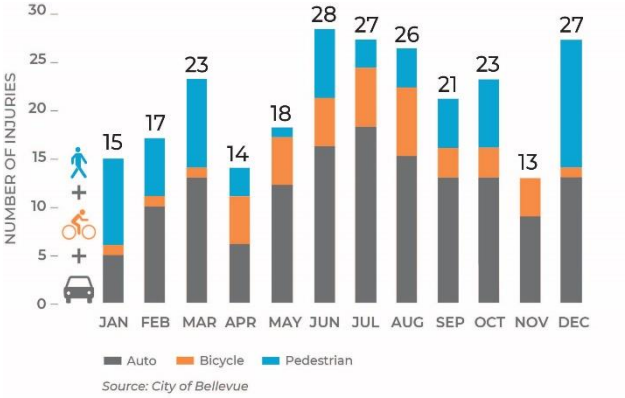


Figure 5: Fatalities and serious injuries by mode and month from 2006 to 2017

On average, there are nearly 450 injury collisions per year (collisions where an injury occurred) in Bellevue, resulting in over 500 individual injuries. This includes approximately two (2) fatalities and sixteen serious injuries per year. The severity distribution of injuries and injury collisions are shown in Figure 6.

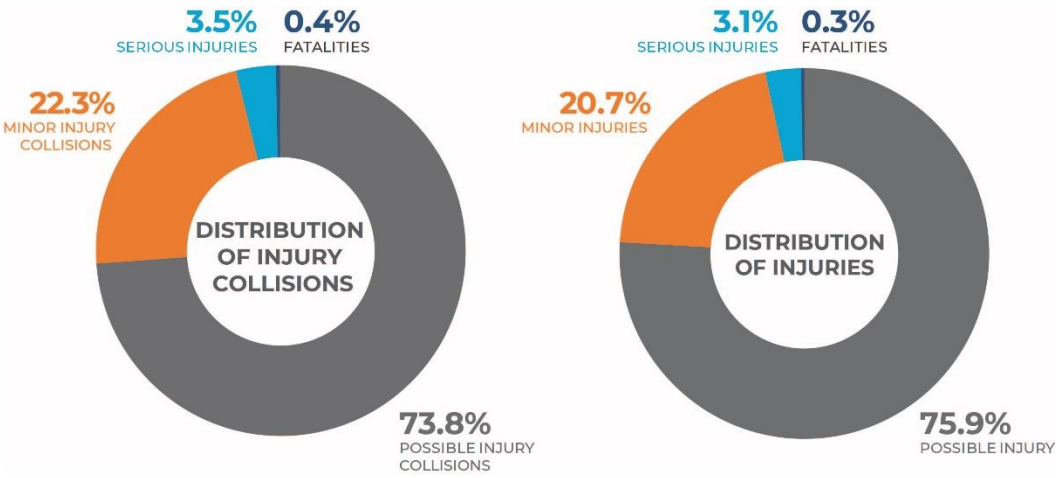


Figure 6: Average annual distribution of injury collisions and injuries in Bellevue

Bellevue's collision rates, measured as annual fatal and serious injury collisions per 1,000,000 annual VMT and 100,000 population, are shown in Figure 7a and 7b. Collision rates have steadily increased from 2010 to 2015, which is consistent with collision rate trends across the state of Washington and

nationwide. However, overall collision rates in Bellevue tend to be lower than those of other cities in Washington State.

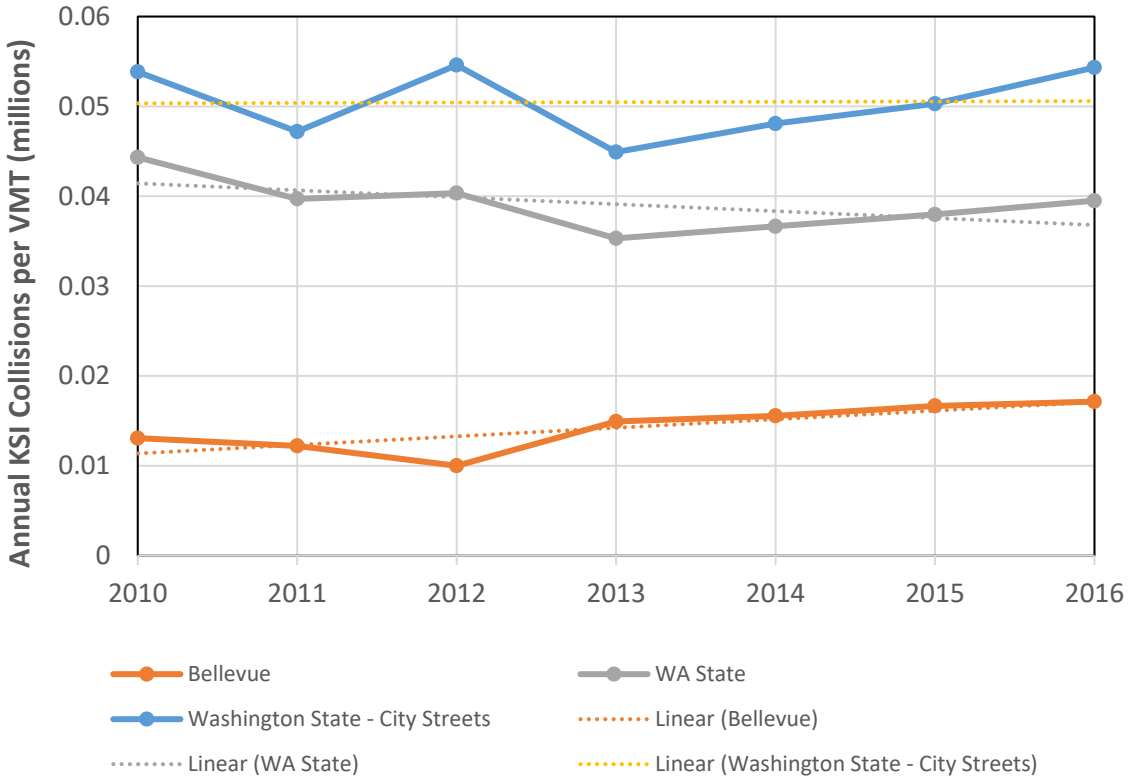


Figure 7a: Annual fatal and serious injury collisions per 1,000,000 VMT for Bellevue, Washington State and Top 5 Washington Cities (2010 – 2017)

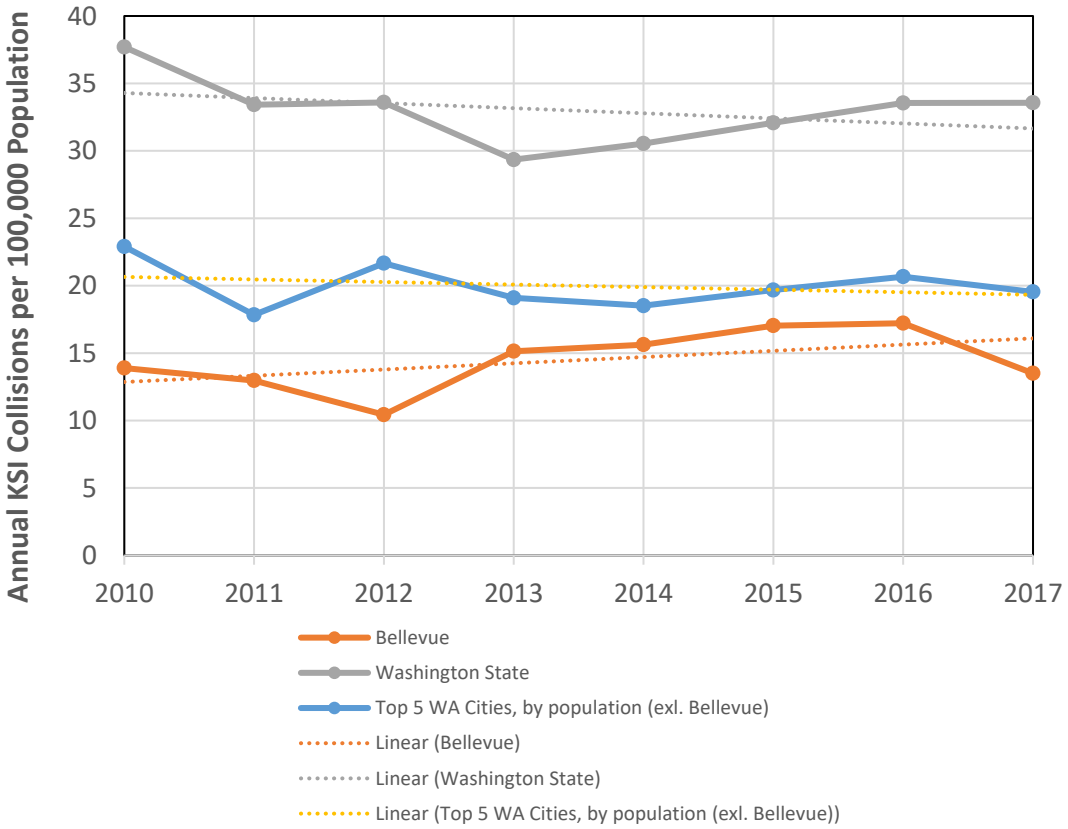


Figure 7b: Annual fatal and serious injury collisions per 100,000 population for Bellevue, Washington State and Top 5 Washington Cities (2010 – 2017)

Vulnerable Users

Vulnerable road users, such as people walking, bicycling, and riding motorcycles, are disproportionally killed or seriously injured on Bellevue's streets.

From 2006 to 2017, 43 percent of fatalities and serious injuries involved people walking or bicycling. In contrast, walking, bicycling and public transit make up only 18 percent of commute trips in Bellevue, according to 2016 ACS 5 year data. Nationally, pedestrians are also over-represented in the crash data, accounting for nearly 18 percent of all traffic fatalities but only 11 percent of trips.[6]

[6] http://www.pedbikeinfo.org/data/factsheet_crash.cfm

Among those involved in collisions, people walking and bicycling are much more likely to be killed or seriously injured compared to people in cars. As shown in Figure 8, people walking are involved in 3 percent of all collisions in Bellevue, but they account for 28 percent of fatalities and serious injuries. People bicycling are involved in 2 percent of all collisions in Bellevue, but they account for 15 percent of fatalities and serious injuries. This trend is apparent nationwide: in Los Angeles, people walking are involved in 8 percent of all collisions, but they account for 44 percent of fatalities;[7] in Seattle, people walking and bicycling are involved in 5 percent of all collisions, but they account for nearly 50 percent of fatalities;[8] and in Sunnyvale, a city similar in size and character to Bellevue, people walking and bicycling are involved in 10 percent of collisions, but they account for 56 percent of fatalities and serious injuries.[9]

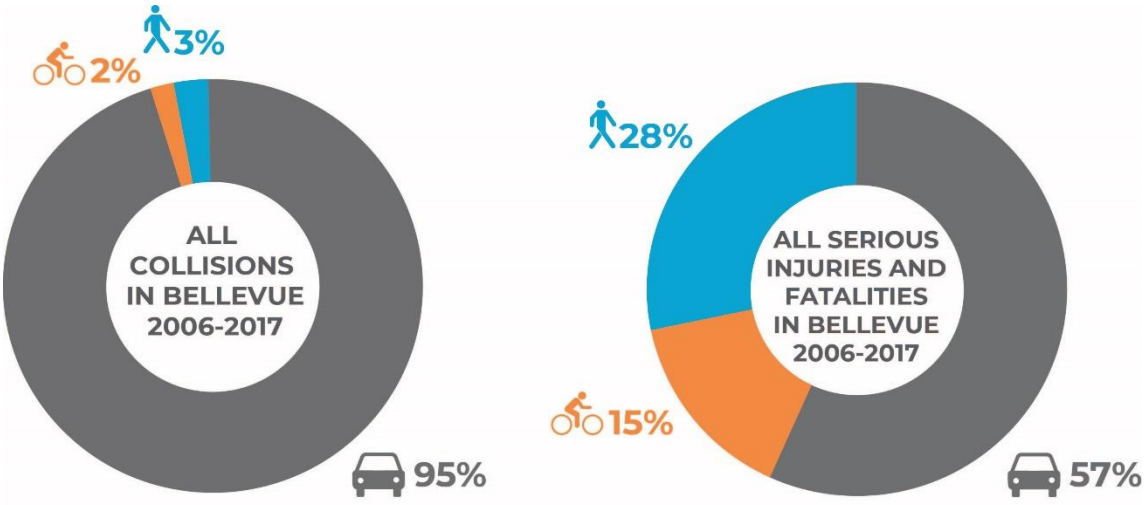


Figure 8: All collisions and all fatalities and serious injuries by mode in Bellevue

People on motorcycles are involved in 1 percent of collisions in Bellevue, but they account for 14 percent of fatal and serious injury collisions. Similarly, in Washington, motorcycles represent just 4 percent of the registered passenger vehicles, but they accounted for 17 percent of the fatalities and 18 percent of the serious injuries between 2012 and 2014. Washington has not seen a notable reduction in motorcycle fatalities in the last decade.[10]

[7] http://visionzero-prod.azurewebsites.net/wp-content/uploads/2017/04/VisionZeroActionPlan-2017.pdf
[8] https://www.seattle.gov/Documents/Departments/beSuperSafe/VisionZeroPlan.pdf
[9] Sunnyvale Draft Vision Zero Plan (2018)
[10] Target Zero: Washington State Strategic Highway Safety Plan (2016)

Time and Day

Fatalities and serious injuries are most common during the weekday peak hours in Bellevue, especially the weekday evening peak between 4:00 PM and 6:00 PM. This likely is due to the higher number of people traveling during these times. On weekends, the highest numbers of fatalities and serious injuries occur throughout the afternoon and early evening from 1:00 PM to 8:00 PM. During the weekdays, Wednesdays experience the most fatalities and serious injuries overall, but Thursdays experience the most during the PM peak. Data show a higher number of fatalities and serious injuries in the early afternoon than in the PM peak hour on Wednesdays, potentially due to the Bellevue School District finishing classes on Wednesday between 12:30 pm and 1:30 pm.

Figure 9 shows average fatalities and serious injuries from 2006 to 2017 by day of the week and time of day, as well as by weekday/weekend and time of day. The darker colors in the figure highlight the hours with the highest average frequency of incidents.

DAY \ HOUR	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
MONDAY	1	2				2	5	1		1	2	1	2	3	4	2	2	3	1	2	2	1	1	
TUESDAY	1		1	1		1	1	3	2	2		1		3	1	1	6	4	3		1			
WEDNESDAY		3			2		2	4	2	1	1	4		4	7	1	4	3	2		3	2	1	
THURSDAY	1		2	2			2		2	2	1	2	1		1	2	5	10	4	2	2	1		
FRIDAY		1		1	2	2	2	1	3				3		5	3	5	5	2	1	1	4		
SATURDAY	1			1		3				2	1		1	4	4	3	1	3		2		1	2	
SUNDAY	2	1	2				1			4		1		1	2	1		1	3	4				1

DAY \ HOUR	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
WEEKDAYS	3	6	3	4	4	5	12	9	9	6	4	8	6	10	18	9	22	25	12	5	9	8	2	
WEEKEND	3	1	2	1		3	1			6	1	1	1	5	6	4	1	4	3	6		1	2	1

Figure 9: Fatal and serious injuries by day of the week and time, and weekday/weekend and time

Other General Collision Trends

There are several general collision trends that other Vision Zero cities around the country observe that were considered in this analysis but are not included here because the factors are not significant in Bellevue.

For instance, collisions are increasing nationally among older populations. Over the past ten years, 4 percent more people were killed in crashes involving older drivers.[11] A similar pattern of increasing overrepresentation of older populations in fatalities and serious injuries was not observed in Bellevue.

Similarly, San Francisco is one of a handful of Vision Zero cities that see a large proportion of their fatalities and serious injuries occur in low-income neighborhoods.[12] This is not the case in Bellevue, with 5 percent of fatalities and serious injuries in areas where the median household income is less than $42,000.

While Bellevue's collision data do not necessarily lend themselves to a focus on older populations or a focus on low-income or other equity neighborhoods, national and state trends may justify strategies to address these concerns in Bellevue.

Safe People

Certain individual behaviors are key contributors to collisions. In Bellevue, the top five behaviors that contribute to 75 percent of all fatal and serious injury collisions are, in order of frequency, (1) failing to yield to pedestrian, (2) distraction, (3) speeding, (4) not granting right-of-way to vehicle and (5) driving under the influence of alcohol and/or drugs (see Figure 10). Seattle has similar top contributing circumstances – impairment, speeding, inattention, and failure to yield right of way.

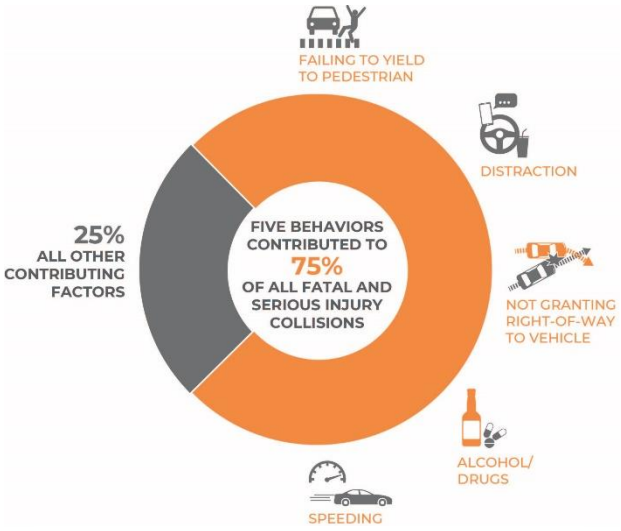


Figure 10: Top five behaviors contributing to fatal and serious injury collisions in Bellevue

Four of the top five contributing behaviors in Bellevue are discussed in this section; speeding is discussed in subsequent sections.

Failing to Yield to Pedestrian or Not Granting Right-of-Way to Vehicle

Failing to yield to pedestrians contributes to 20 percent of all fatal and serious injury collisions in Bellevue. Pedestrians are the most vulnerable to this behavior, with driver failure to yield cited as a

[11] http://www.sipotra.it/wp-content/uploads/2017/10/Road-Safety-Annual-Report-2017.pdf
[12] https://visionzerosf.org/about/two-year-action-strategy/

factor in 46.5 percent of all pedestrian fatalities and serious injuries. Failure to yield to pedestrians is a top contributing circumstance in Seattle, San Francisco and Eugene.

Not granting right-of-way to vehicle contributes to 18 percent of all fatal and serious injury collisions in Bellevue.

Distraction

Inattention or distracted driving is associated with 20 percent of fatal and serious injury collisions in Bellevue. From 2015 to 2017, distracted driving was the second highest driver-related cause of traffic fatalities in Washington State, with Driving Under the Influence (DUI) being the first.[13]

In Washington State, two thirds of drivers report recently talking on their phone while driving. One third say they do so frequently. However, nearly 70 percent disapprove of hand-held phone use.[14] The most common illegal task drivers continue to do is setting up driving directions on a cellphone or GPS while driving. [15]

Alcohol and Drugs

Driver impairment through alcohol or drugs is cited as a factor in 17 percent of all fatal and serious injury collisions in Bellevue. Looking at vehicle collisions only, one in four fatal and serious injury collisions in Bellevue involve a driver who is under the influence of alcohol or drugs. Driver impairment is not as strong of a factor in pedestrian and bicycle collisions. One in seventeen pedestrians killed or severely injured in the past 12 years in Bellevue were hit by a driver under the influence of alcohol or drugs. There were no bicyclists killed or seriously injured in the past 12 years in Bellevue by a driver under the influence of alcohol or drugs.

Nationally, 28 percent of fatal collisions in 2016 were associated with alcohol impaired driving[16]. In Portland, 56 percent of fatal collisions were drug and alcohol related[17], and in Eugene, 40 percent of fatal collisions were drug and alcohol related.[18] 37 percent (7 out of 19) of fatalities in Bellevue involved impairment.

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[13] https://www.kiro7.com/news/local/aaa-washington-parents-drivers-most-likely-to-break-e-dui-law/872789558
[14] AAA Washington Study (2015)
[15] https://www.kiro7.com/news/local/aaa-washington-parents-drivers-most-likely-to-break-e-dui-law/872789558
[16] https://www.nhtsa.gov/press-releases/usdot-releases-2016-fatal-traffic-crash-data
[17] https://www.portlandoregon.gov/transportation/71730
[18] https://www.eugene-or.gov/3239/Vision-Zero

Across all modes in Bellevue, driver impairment is particularly prevalent at night, with 94 percent of fatalities and serious injuries involving impairment occurring between 6:00 PM and 6:00 AM.

Youth Drivers

Crashes are the leading cause of teen deaths in the nation, and 20 percent of teen drivers killed in a collision have alcohol in their system.[19] In Bellevue, youth drivers account for 41 percent of all alcohol/drug, 55 percent of all speeding, and 33 percent of all distracted driving fatalities and serious injuries. One in four drivers involved in fatalities or serious injuries is under 25 years old. To put these statistics in perspective, driving age youth (16-25 years old) make up only 10.6 percent of the city's population,[20] and youth drivers in Bellevue represent only 12.9 percent of all Bellevue driver license and permit holders.[21]

Safe Roads

Fatalities and serious injuries in Bellevue tend to be concentrated in Downtown and Wilburton, as shown in Figure 11. These areas make up less than 3 percent of the City's total area but account for 19.7 percent of all fatalities and serious injuries. More specifically, among the fatalities and serious injuries that occur in Downtown, 17 percent occur at Bellevue Way NE and NE 8th Street and another 17 percent occur at Bellevue Way and Main Street. When looking at collisions by mode, pedestrian collisions are concentrated in the commercial areas of Downtown, Crossroads and Factoria, while the geographic distribution of bicycle fatalities and serious injuries is more dispersed across the City. Geographic concentrations of fatalities and serious injuries, where evident, can help cities target proactive safety projects, education, and enforcement programs. See Appendix B for additional collision heat maps in Bellevue and downtown.

[19] https://www.nhtsa.gov/road-safety/teen-driving
[20] 5.2% 15-19 years, 5.4% 20-24 years, from ACS 2016 five-year data
[21] Public records request from the Department of Licensing as of January 2018

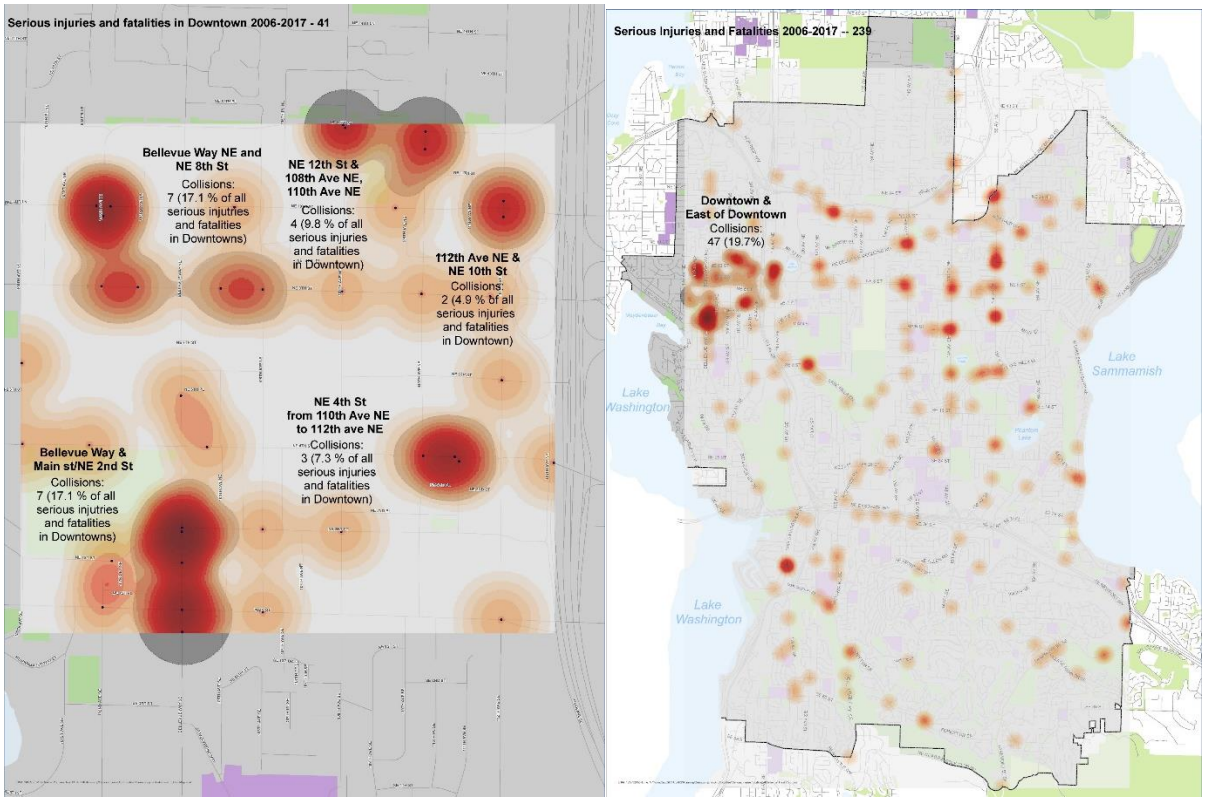


Figure 11: Fatalities and serious injuries heat maps in Bellevue and downtown Bellevue

In Bellevue, 91.7 percent of fatalities and serious injuries occur on arterials, which account for only 33.1 percent of the City's streets. This is a similar trend to Seattle, where 90 percent of fatalities and serious injuries occur on arterials, and higher than the national average, where 77 percent of fatalities in urban areas occur on arterials.[22]

The majority of fatalities and serious injuries for people walking and bicycling in Bellevue occur at intersections (as opposed to mid-block locations), with intersections experiencing 60 percent of pedestrian collisions and 55 percent of bicycle collisions. This trend is similar but slightly more pronounced in Seattle, where 70 percent of pedestrian collisions and 57 percent of bicycle collisions happen at intersections.

Turns, in particular left turns at intersections, are an especially important consideration in safe roadway design. As highlighted in a left turn study prepared by New York City, drivers often take left turns at higher speeds than right turns due to the larger turn radius, longer distance before the turn, and need to cross multiple lanes of traffic. Drivers making left turns also are more distracted,

[22] https://www.iihs.org/iihs/topics/t/roadway-and-environment/fatalityfacts/roadway-and-environment

due to the oncoming traffic. Additionally, left turns are associated with obscured pedestrian visibility for drivers due to the A frame placement in the vehicle.[23] Vehicle left turns are involved in 29 percent of fatalities and serious injuries in Bellevue, and left turns account for over 2.4 times as many fatalities and serious injuries as right turns.

Safe Speeds

Speeding is cited as the third most common factor in fatal and serious injury collisions in Bellevue. Currently, Bellevue's streets with a posted speed limit of 35 MPH or more see 40.5 percent of fatalities and serious injuries but account for only 12.5 percent of total street mileage. All but one fatal collision that reported speeding as a contributing factor occurred on city streets with posted speeds of 35 MPH or above.

In Washington State, speeding is the third-most common factor contributing to fatal and serious injury crashes, after impairment and lane departure. Nationally, it is well documented that roads with higher speed limits result in more fatalities and serious injuries than roads with lower speed limits. In 2016, 35 percent of fatalities nationwide occurred on streets with a posted speed of 40-50 MPH, and 30 percent of fatalities nationwide occurred on streets with a posted speed of 55+ MPH.[24]

Safe Vehicles

Safe vehicles are vehicles that are designed, built, and regulated to minimize the occurrence and consequence of collisions. No key collision statistics in Bellevue fall under this Safe Systems pillar, but the City still will investigate strategies to strengthen vehicle safety.

Data Limitations and Other Data Considerations in Bellevue

Collision trend analysis depends on the quality of the input safety data. In Bellevue, collisions trends are assessed based on Police reported collisions. Like in many other cities, Bellevue's collision data cannot not tell a complete story due to underreporting. The City is working to enhance its collision database by looking to other safety data sources like EMS data or Waze data for additional collision records not captured by police reports. However, there are challenges associated with integrating other data sources, including the technical challenge of joining disparate datasets and the administrative challenge of gaining access to protected health-related data.

[23] http://www.nyc.gov/html/dot/downloads/pdf/left-turn-pedestrian-and-bicycle-crash-study.pdf
[24] https://www.iihs.org/iihs/topics/t/roadway-and-environment/fatalityfacts/roadway-and-environment

Another limitation of safety data, even when complete, is that it records only the incidents that occur. A city can learn a lot about the safety conditions of its roadways by looking at near misses – incidents that almost occur but do not possibly due to luck or other fortunate conditions. The City of Bellevue is investigating strategies to record and measure near miss incidents through video analytics partnerships.

Conclusion

This assessment of Bellevue's collision data under the Safe Systems approach will be summarized and integrated into the City of Bellevue's Vision Zero Action Plan with critical takeaways highlighted. The next steps in this process of developing the Vision Zero Action Plan are to assess Bellevue's current work in safety policies, programs and practices against a benchmark of Vision Zero Cities best practices. This will inform recommendations for the Vision Zero Action Plan's goals and strategies.

Appendix A

- Key Statistics Summary Table with City, State and National Comparison Statistics

Appendix B

- Collision Heat Maps

APPENDIX

Safe System Pillar	Bellevue Statistic	Other Vision Zero Cities Statistics	WA State Statistic[1]	National Statistic
General	There were 1,495 police reported collisions in the City of Bellevue in 2017, which resulted in 467 injuries. Of these 467 injuries, 19 were serious injuries and two (2) were fatalities.	Seattle: In 2013, there were 10,310 police-reported collisions in Seattle. 155 people were seriously injured and 23 were killed. Eugene: From 2007-2015, 364 people sustained life-changing injuries in traffic crashes, and 60 people were killed. Brighton: Between 2011–2017, 58 people were severely injured in traffic crashes on city streets and 15 people were killed. Sunnyvale: Between 2012-2017, 25 people lost their lives in collisions on city streets. Between 2012-2016, 91 people were killed or seriously injured.		
General	From 2006 to 2017, 233 people were seriously injured, and 19 people were killed in a traffic collision on Bellevue's streets.			
General	**KSI frequency**: Every 17 days, someone is killed or seriously injured on Bellevue's streets.	Eugene: someone is killed or experiences life changing injuries every 8 days.		37,133 people killed in motor vehicle traffic crashes on U.S. roadways during 2017 (102 people per day). Source: NHTSA USDOT Traffic Safety Facts.[2]
General	**Economic cost**: Collisions cost Bellevue residents an estimated $37 million per year in economic costs and lost quality of life.	Sunnyvale: Between 2012 and 2016, KSI collisions cost the community $28.5 million per year.		The estimated economic cost for all motor vehicle traffic crashes in the United States in 2010 was $242 billion. Source: NHTSA 2017 Traffic Safety Facts.[3]
General	Collision rate per 1,000 VMT decreased by 20% between 2006 and 2017. During this time period, that average daily traffic on key Bellevue arterials			

[1] Unless otherwise noted, all statistics are from *Target Zero: Washington State Strategic Highway Safety Plan 2016*.
[2] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812603
[3] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812630

	stayed about the same and population increased by roughly 20%.			
Modes – walking/bicycling	43.3% of serious injuries and fatalities involve **people walking or bicycling**; walking, bicycling (and public transit) make up only 18.3% of commute trips in Bellevue. **People walking** are involved in 2.7% of all collisions in Bellevue, but they account for 28.2% of all serious injuries and fatalities. **People cycling** are involved in 1.8% of all collisions in Bellevue, but they account for 15.1% of all serious injuries and fatalities .	San Francisco: In 2016, 27% of trips were made on foot or bike, and yet 63% of fatalities are people walking and bicycling. Sunnyvale: 12% of all trips are made by foot, while 35% of KSIs involve a pedestrian. 2% of all trips are made by bicycle, but almost 20% of KSIs involve a bicyclist. Los Angeles: People walking and bicycling are involved in 14% of all collisions, but they account for 50% of all traffic deaths. Los Angeles: People walking are involved in 8% of all collisions, but they account for 44% of all people killed in collisions. Seattle: People walking/biking are involved in 5% of all collisions, but they account for nearly 50% of fatalities. Sunnyvale: People walking/biking are involved in 10% of collisions, but they account for 56% of KSI collisions.	In 2012–2014, pedestrian fatalities accounted for 15% of total traffic deaths, an increase from 14% in 2009–2011. The number of pedestrian fatalities increased by 5.2% and serious injuries increased by 3.5% compared to 2009–2011. Most pedestrian fatalities (69%) and serious injuries (67%) happen within cities. Between 2012–2014, there were 29 bicyclist fatalities and 294 bicyclist serious injuries in crashes with motor vehicles. Bicyclist fatalities represent 2.2% of total traffic deaths for this time period, an increase from 1.8% in 2009–2011. The number of bicyclists seriously injured decreased by 14%, from 339 in 2009–2011 to 294 in 2012–2014.	22% of fatal collisions between 2012 -2016 involved a pedestrian or cyclist. Source: FHWA USDOT Roadway Safety Capacity Building.[4] Pedestrians are over-represented in the crash data, accounting for nearly 18% of all traffic fatalities but only 10.9% of trips. Source: PIBC.[5] On average, a pedestrian was killed nearly every 1.6 hours and injured more than every 7.5 minutes in traffic crashes in 2015. In 2015, pedestrian deaths accounted for 15% of all traffic fatalities. Source: NHTSA Traffic Safety Facts 2015.[6] In 2015, bicyclist deaths accounted for 2.3% of all traffic fatalities. Source: NHTSA Traffic Safety Facts 2015 data.[7]
Modes - motorcycles	**People on motorcycles** are involved in 1% of all collisions in Bellevue, but they account for 15% of all serious injuries and fatalities.	Los Angeles: People on motorcycles are involved in 4% of all collisions (2012-2016), but they account for 17% of all fatal collisions.	Motorcycles represent just 4% of the registered passenger vehicles in WA, but they accounted for 17% of fatalities and 18% of serious injuries between 2012 and 2014. WA has not seen any notable reduction in motorcycle fatalities over the last decade. Training saves lives: about 60% of endorsed riders take a training course prior to riding on their own; these trained riders are far less likely to be involved in fatalities, representing only 25% of those killed in motorcycle crashes.	Motorcyclists accounted for 14% of all traffic fatalities. Source: NHTSA Traffic Safety Facts 2015 data.[8]

[4] https://rspcb.safety.fhwa.dot.gov/Dashboard/Default.aspx
[5] http://www.pedbikeinfo.org/data/factsheet_crash.cfm
[6] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812375
[7] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812382
[8] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812492

Safe People	**Youth drivers** (under 24 years of age) account for 27% of all serious injuries and fatalities, but they are only 10.6% of the population.		The leading cause of unintentional death for young people aged 16–25 in Washington is motor vehicle crashes. From 2012–2014, 32% of all traffic fatalities involved a young driver. There has been a 13% decrease in young driver involved fatalities and 24% decrease in young driver involved serious injuries since 2009–2011. Despite tremendous attention to new drivers under 18 years of age, the data continue to show that newly licensed drivers ages 18–20 are some of the riskiest drivers on the road, as demonstrated by high traffic citation issuance rates.	9% of driver fatalities involved youth 15 – 20 years old in 2016. Young drivers accounted for 5.4% of the total number of licensed drivers in the United States in 2016. Source: NHTSA Traffic Safety Facts 2016 data. In the 15- to 20-year-old age group, driver fatalities declined by 40 percent from 2007 to 2016 but had almost no change from 2015 to 2016. The number of licensed young drivers decreased by 8.8 percent in the 10-year (2007 to 2016) period but increased by 2.1 percent from 2015 to 2016.[9]
Safe People	Youth are disproportionately represented in several types of fatal and serious injury collisions in Bellevue. **Youth drivers** account for 55% of all speeding, 41% of all alcohol/drug, and 33% of all distracted driving serious injuries and fatalities in Bellevue.		Impairment was involved in nearly 57% of all young driver involved fatality crashes in 2012–2014. Male drivers 16–25 years of age are more than twice as likely to be impaired in fatal crashes as compared to men aged 36–45. Distracted driving continues to be a problem among young drivers. A Washington Healthy Youth survey conducted in 2014 found that 59% of high school seniors reported riding in the car with a driver who was texting or emailing.	20% of teen drivers who were killed in a collision had alcohol in their system. Source: NHTSA. In 2016, young drivers, male and female, were speeding at the time of the fatal crashes more than other age groups. 31% of teen driver fatal collisions were speeding-related. Source: NHTSA.[10]
Safe People	**Top behaviors contributing** to serious injuries and fatalities in Bellevue: 39% are due to drivers not granting right-of-way, 15% are due to impairment, 11% are due to inattention, 8% are due to speed, and 8% are due to improper movement. 19% are due to other factors.	Seattle: Top contributing circumstances in collisions include: impairment, speeding, inattention and failure to yield right of way. San Francisco: Top behaviors contributing to Fatal collisions: 23% driver failure to yield ROW at crosswalks; 17% unsafe speed for prevailing conditions; 15% red signal - driver or bicyclist responsibilities; 45% other. Brighton: Contributors to KSI crashes at intersections include 22% distracted driving, 21% bicycle or pedestrian involved, 18% left-		27% of fatalities in 2016 were speeding related. 28% of fatal collisions in 2016 were due to alcohol impaired driving. Fatalities in distraction affected crashes were 9.2% of total fatalities in 2016.[11]

[9] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812498
[10] https://www.nhtsa.gov/road-safety/teen-driving
[11] https://www.nhtsa.gov/press-releases/usdot-releases-2016-fatal-traffic-crash-data

		turn movements, 12% speeding and 7% right light and stop sign running. Eugene: Top collisions factors include failure to yield, speeding, reckless/careless driving, motorcyclist no helmet, no seat belt. Portland: 91% of deadly crashes (2004-13) involved speed, impairment, and/or other dangerous behaviors.		
Safe People	**Driver failure to yield** to pedestrian is cited as a factor in 46.5% of all pedestrian serious injuries and fatalities in Bellevue.	Seattle: Failure to yield to pedestrians is cited as a factor in 10% of fatal pedestrian collisions each year.		
Safe People	**Driver impairment** (through alcohol or drugs) is cited as a factor in 15% of serious injuries and fatalities in Bellevue.	Seattle: Impairment contributes to 20% of fatal collisions every year. Portland: 56% of deadly collisions were drug and alcohol related. Eugene: 40% of fatal collisions related to alcohol and drugs. Sunnyvale: 11% of KSI collisions involved drivers under the influence of alcohol or drugs.	Impairment is the most common factor in roadway fatalities. Over half (57%) of all traffic deaths from 2012–2014 involved alcohol impairment or positive drug results on behalf of an involved passenger vehicle driver, pedestrian, bicyclist, motorcyclist, or heavy truck driver. 22% of all serious injuries involved impairment — a figure that is likely underreported. 25% of drivers involved in fatal crashes were drug positive and 19% were impaired by alcohol; 8% of drivers were both drug positive and impaired by alcohol. Among impairment involved fatalities, 13% were pedestrians or bicyclists who were alcohol impaired or drug positive.	28% of fatal collisions in 2016 were due to alcohol impaired driving.[12] Driver impairment for BACs greater or equal to 0.08% was found in 27% of fatally injured drivers in 2016, and BACs greater or equal to 0.15% were found in 20% of fatally injured drivers in 2016. Source: IIHS National Data.[13] In 2017, 29% of all fatal traffic collisions involved drivers with BACs of 0.08 g/dL or greater (level over which it is illegal to drive). Source: NHTSA 2017 Traffic Safety Facts.[14]
Safe People	**Driver impairment by mode:** No bicyclists killed or seriously injured in Bellevue are hit by a driver under the influence of alcohol or drugs. One in 14 pedestrians killed or seriously injured in Bellevue are hit by a driver under the influence of alcohol or drugs.			12% of bicyclists killed were hit by a driver under the influence of alcohol, with a BAC of 0.08 g/dL or greater. Source: NHTSA Traffic Safety Facts 2015 data.[15] 15% of pedestrians killed were hit by a driver under the influence of alcohol, with a BAC of 0.08

[12] https://www.nhtsa.gov/press-releases/usdot-releases-2016-fatal-traffic-crash-data
[13] https://www.iihs.org/iihs/topics/t/alcohol-and-drugs/fatalityfacts/alcohol-and-drugs/2016
[14] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812630
[15] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812382

	One in four fatal and serious injury vehicle collisions in Bellevue are caused by a driver that is under the influence of alcohol or drugs.			g/dL or greater. Source: NHTSA Traffic Safety Facts 2015 data.[16]
Safe People	**Inattention or distracted driving** causes 11% of serious injuries and fatalities in Bellevue.	Brighton: 22% of KSI crashes and 34% of total crashes had the primary contributing factor being "driver inattention" or "distracted." Seattle: There was a 300% increase in distracted driving over the past 3 years, contributing to 3,000 crashes annually (30% of total crashes).	1/10 Washington drivers observed interacting with phones in a 2013 UW survey. Two thirds of drivers report recently talking on their phone while driving. One third say they do so frequently. However, nearly 70% disapprove of hand-held phone use. (Based on 2015 AAA Washington Study)	Fatalities in distraction affected crashes were 9.2% of total fatalities in 2016.[17] 26% of crashes involve phone distraction. 3 times increased crash risk when talking on a phone. 23 times increased crash risk when entering information into a phone.[18] 12% of fatal collisions between 2012-2016 involved a distracted driver. Source: FHWA USDOT Roadway Safety Capacity Building.[19]
Safe People	46% of serious injuries and fatalities involving impairment in Bellevue occur between **6:00 PM and 12:00 AM**.		Nearly half (52%) of fatalities involving impairment occurred at nighttime (7 p.m. – 4:59 a.m.).	
Safe Roads	**Vehicle left turns** are involved in 29% of serious injuries and fatalities in Bellevue. Left turns account for over 2.4 times as many fatal and serious injury collisions as right turns in Bellevue.	Sunnyvale: 12% of KSI collisions occur at left turns at signalized intersections. New York City: Between 2010 and 2014, 108 pedestrians and bicyclists were killed by left turning vehicles (out of 859 pedestrian and bicyclist fatalities 2010-2014). Pedestrians and bicyclists are killed or severely injured by a left-turning vehicle at over three times the rate (19%) of pedestrian and bicyclist KSI by a right-turning vehicle (6%).		
Safe Roads	91.7% of serious injuries and fatalities in Bellevue occur on **arterials**, which account for only 33.1% of the City's streets.	Eugene: 65% of life-changing and fatal collisions occur on arterials. Seattle: 90% of KSI collisions occur on arterials versus 74% of all collisions.		In 2016, 77% of crash deaths in urban areas occurred on arterials.[20]

[16] https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812375
[17] https://www.nhtsa.gov/press-releases/usdot-releases-2016-fatal-traffic-crash-data
[18] *Target Zero: Washington State Strategic Highway Safety Plan 2016.*
[19] https://rspcb.safety.fhwa.dot.gov/Dashboard/Default.aspx
[20] https://www.iihs.org/iihs/topics/t/roadway-and-environment/fatalityfacts/roadway-and-environment

Safe Roads	60% of pedestrian collisions and 55% of bicycle collisions in Bellevue occur at **intersections** (as opposed to mid-block).	Seattle: 57% of bicycle crashes happen at intersections and 45.5% of bicycle crashes happen at locations with a traffic signal. 70% of pedestrian crashes happen at intersections and 67.1 % of pedestrian crashes happen at locations with a traffic signal. Sunnyvale: 72% of pedestrian KSI collisions occurred at intersections.	Intersection related crashes are mostly found within cities, which from 2012–2014 had 64% of all KSI crashes within their jurisdictions. Intersection related crashes are involved in 21% of statewide fatalities and 35% of statewide serious injuries from 2012–2014.	In 2016, 33% of crash deaths in urban areas occurred at intersections.[21]
Safe Roads	19.7% of serious injuries and fatalities occur in **Downtown and Wilburton**; this area makes up less than 3% of the City's total area.		Intersection related crashes are mostly found within cities, which from 2012–2014 had 64% of all KSI crashes within their jurisdictions. State routes (outside cities) had 21% of these crashes, while county roads had 15%.	
Safe Speeds	City streets with a **posted speed of 35 MPH or more** see 40.5% of serious injuries and fatalities but account for only 12.5% of streets in Bellevue streets.	Sunnyvale: 60% of KSI collisions occurred in areas with speed limits greater than 35 mph. Eugene: Nearly 1 in 3 of the fatal and serious injury crashes in Eugene occur on streets signed at 25 and 30 mph. Portland: Alone or in combination with other factors, speed is a major factor in 47% of traffic deaths. Seattle: 20% of fatal crashes involve speeding.	In Washington, speeding is the third-most common factor contributing to fatal and serious injury crashes, after impairment and lane departure. Compared with 2009–2011, speeding-involved fatalities have declined 5% and serious injuries have decreased 24% in 2012–2014. Between 2012 and 2014, 508 (38%) of fatal crashes involved excessive speed; for serious injury crashes, 1,622 (27%) involved speeding.	27% of fatalities in 2016 were speeding related.[22] In 2016, 31% of crash deaths in urban areas occurred on streets with a posted speed of 35 mph or less; 35% occurred on streets 40-50 mph; and 30% occurred on streets 55+ mph. There has been a general downward trend in the proportion of crash deaths involving speeding as a contributing factor in both rural and urban areas since 2007, with the proportion declining from 31% in 2007 to 26% in 2016 in urban areas. Speeding is defined to include crashes in which the driver was issued a traffic citation for speeding or in which driver-related factors included driving too fast for conditions, racing, or exceeding the posted speed limit. [23]

[21] https://www.iihs.org/iihs/topics/t/roadway-and-environment/fatalityfacts/roadway-and-environment
[22] https://www.nhtsa.gov/press-releases/usdot-releases-2016-fatal-traffic-crash-data
[23] https://www.iihs.org/iihs/topics/t/roadway-and-environment/fatalityfacts/roadway-and-environment

All Collisions All Bellevue City Streets and LX

2010-2017

All collisions 2010-2017 - 13,133

Downtown & East of Downtown
Collisions:
3,028 (23.1%)

Crossroads & Overlake
Collisions:
2,659 (20.2%)

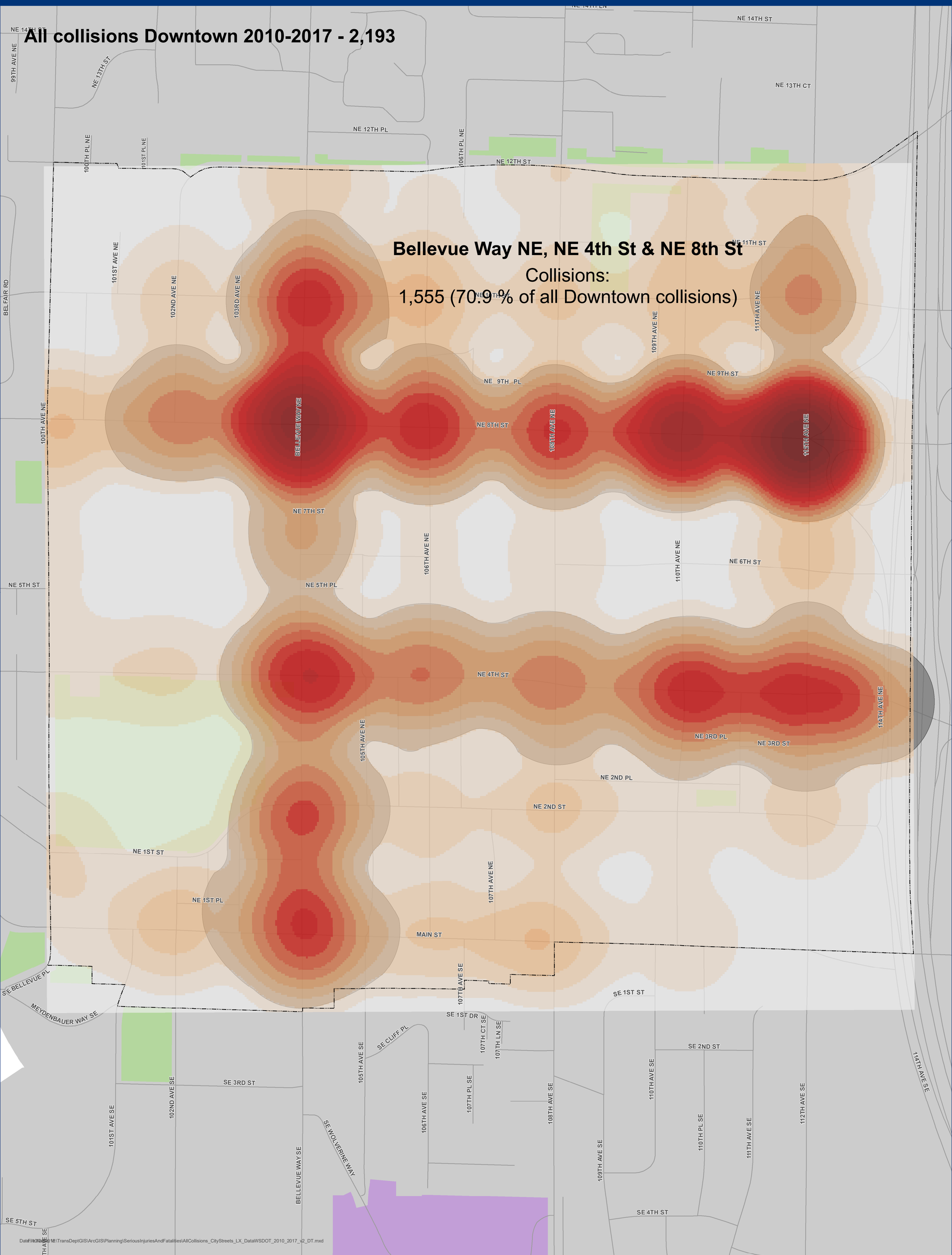
Factoria & Coal Creek
Collisions:
1,044 (7.9%)

148th Ave SE
Collisions:
753 (5.7%)

Date: 10/24/2018
File: I:\TransDeptGIS\ArcGIS\Planning\SeriousInjuriesAndFatalities\AllCollisions_CityStreets_LX_DataWSDOT_2010_2017_v2_AllBellevue.mxd

All Collisions Downtown City Streets and LX

2010-2017



Serious Injuries and Fatalities All Bellevue

2006-2017

Serious Injuries and Fatalities 2006-2017 -- 239

Downtown &
East of Downtown
Collisions:
47 (19.7%)

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Serious Injuries and Fatalities Downtown

2006-2017

Serious injuries and fatalities in Downtown 2006-2017 - 41

Bellevue Way NE and NE 8th St

Collisions:
7 (17.1 % of all serious injutries and fatalities in Downtowns)

NE 12th St & 108th Ave NE, 110th Ave NE

Collisions:
4 (9.8 % of all serious injuries and fatalities in Downtown)

112th Ave NE & NE 10th St

Collisions:
2 (4.9 % of all serious injuries and fatalities in Downtown)

NE 4th St from 110th Ave NE to 112th ave NE

Collisions:
3 (7.3 % of all serious injuries and fatalities in Downtown)

Bellevue Way & Main st/NE 2nd St

Collisions:
7 (17.1 % of all serious injutries and fatalities in Downtowns)

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Pedestrian Collisions All Bellevue City Streets and LX

2010-2017

Pedestrian collisions 2010-2017 -- 389

Downtown & East of Downtown

Collisions: 110 (28.3%)

Crossroads & Overlake

72 (18.5%)

Factoria

21 (5.4%)

Lake Sammamish

Lake Washington

Meydenbauer Bay

Yarrow Bay

Cozy Cove

Lake Bellevue

Larsen Lake

Phantom Lake

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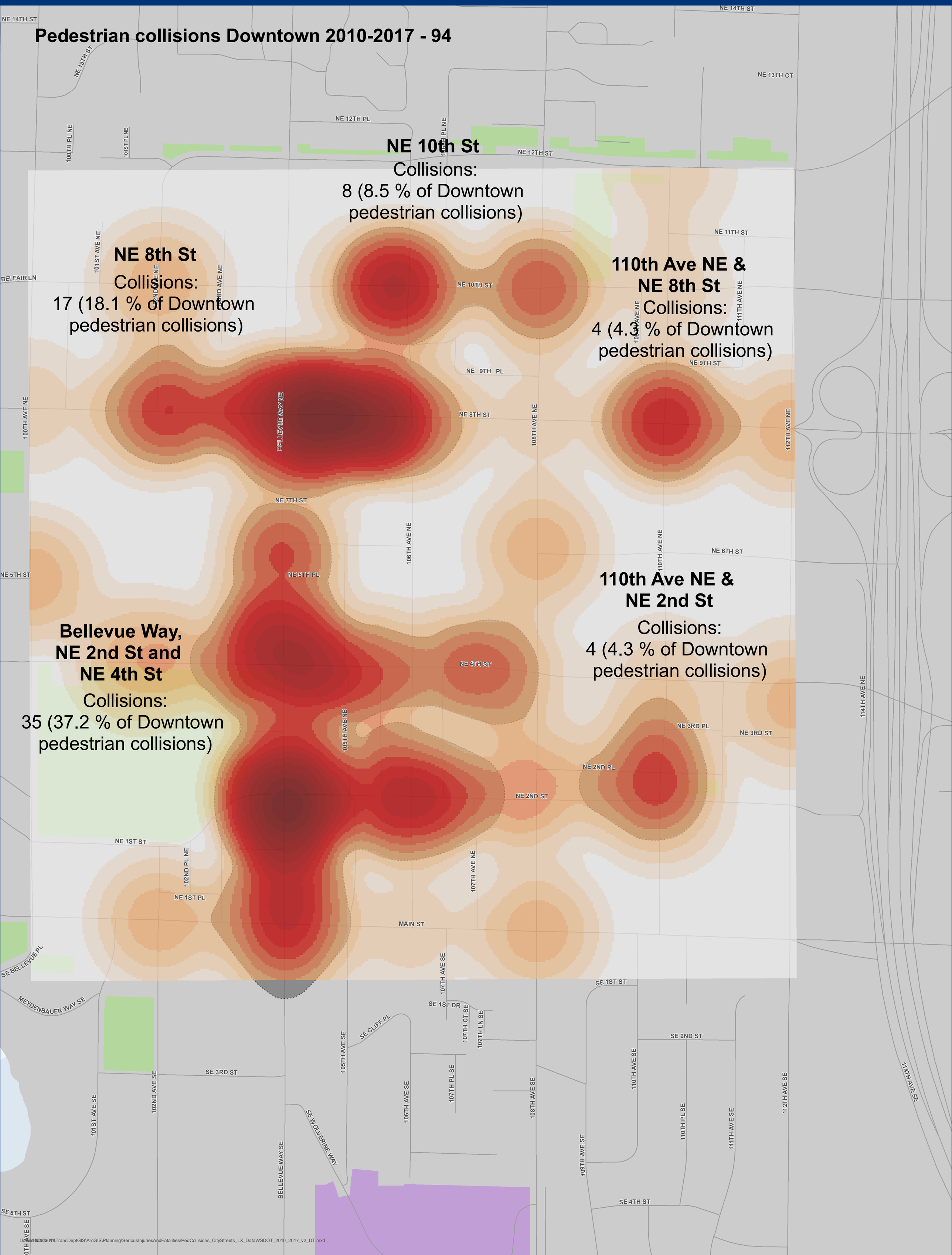
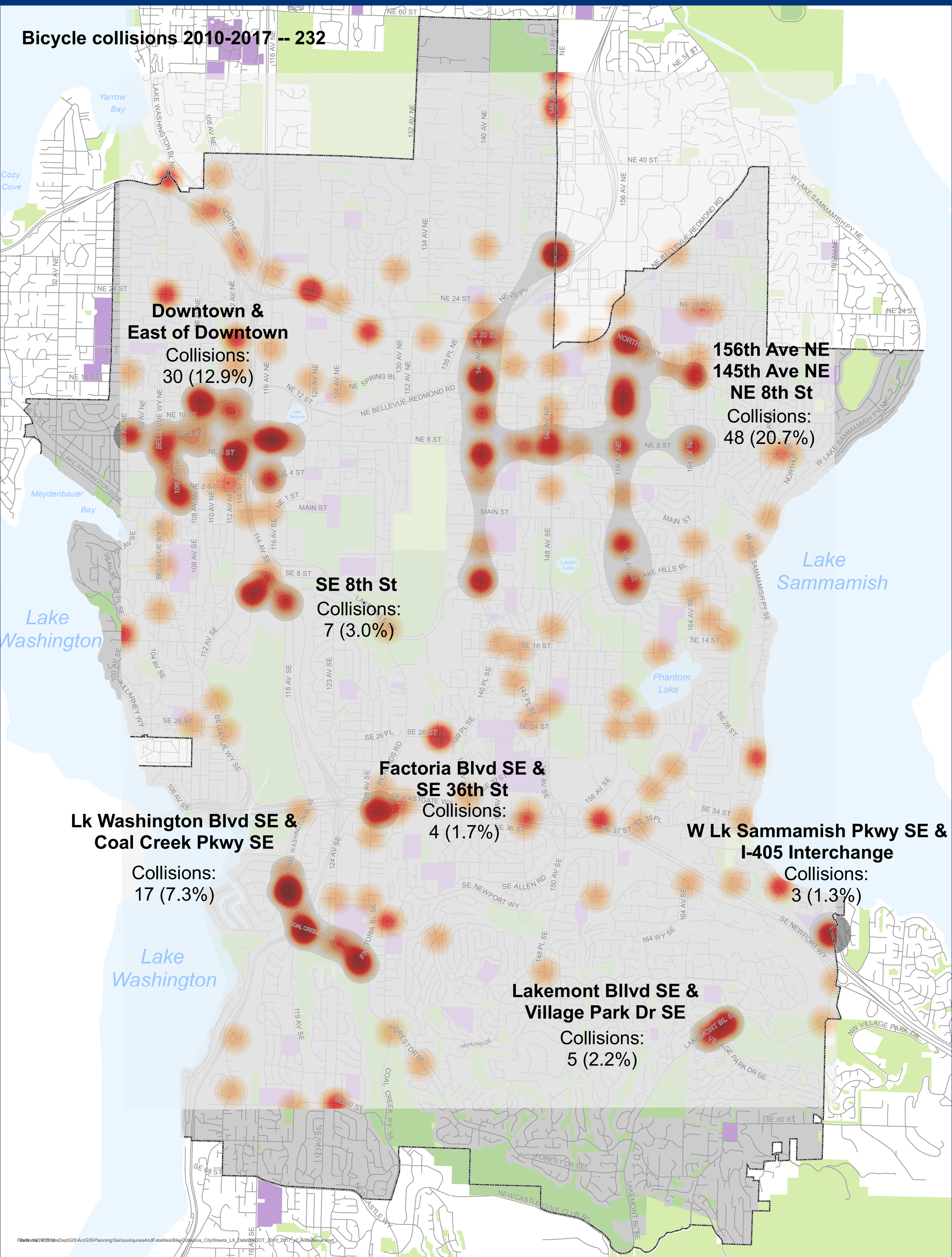
Pedestrian Collisions Downtown City Streets and LX

2010-2017



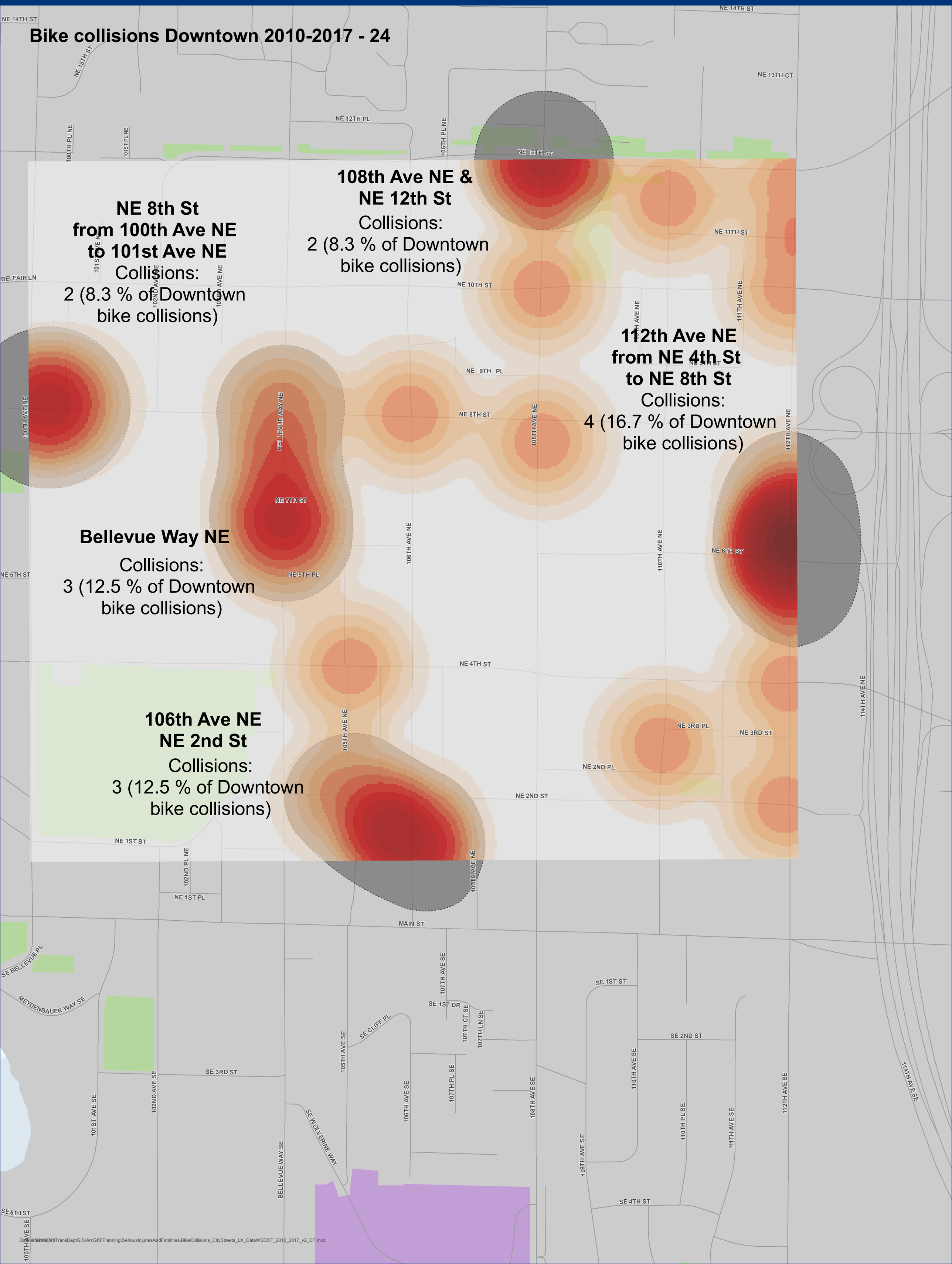
Bike Collisions All Bellevue City Streets and LX

2010-2017



Bike Collisions Downtown City Streets and LX

2010-2017



Auto Collisions All Bellevue City Streets and LX

2010-2017

Auto collisions 2010-2017 -- 12,512

Downtown & East of Downtown
Collisions:
2,894 (23.1%)

Crossroads & Overlake
Collisions:
2,543 (20.3%)

Factoria & Coal Creek
Collisions:
997 (8.0%)

148th Ave SE
Collisions:
746 (6.0%)

Data: 10/2/2018 F:\Planning\DeptGIS\ArcGIS\Planning\SeriousInjuriesAndFatalities\AutoCollisions_CityStreets_LX_DataWSDOT_2010_2017_v2_AllBellevue.mxd

Auto Collisions Downtown City Streets and LX

2010-2017