Council Meeting Date: May 17, 2010 **Agenda Item:** 6(b)

CITY COUNCIL AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Annual Traffic Report
DEPARTMENT:	Public Works and Police
PRESENTED BY:	Mark Relph, Public Works Director Daniel Pingrey, Police Chief Rich Meredith, Traffic Engineer

PROBLEM/ISSUE STATEMENT:

The purpose of this report and presentation is threefold:

1. To share with Council the data and methodology the Public Works and Police Departments use to identify and address the higher accident locations; the "Three E's" - Enforcement, Engineering improvements and Education of the public.
2. Update the Council on the effectiveness of past improvements and efforts to lower the accident rates of key intersections and corridors.
3. This process identifies potential capital projects, and Council is asked to confirm these projects for further consideration as part of the Capital Improvement Program (CIP) process, including consideration as part of the Transportation Improvement Plan (TIP). Inclusion of the projects within the TIP would establish priorities for the pursuit of grant funding in future years.

FINANCIAL IMPACT:

No financial impacts at this time. Based on the data in the report, projects identified as a priority would be handled through the CIP process, and would be presented to the Council on an individual basis. Enforcement emphasis and small works projects would be handled using existing resources.

RECOMMENDATION

No action required. This is an informational briefing

Approved By: City Manager ____ City Attorney ____

INTRODUCTION

One of the City's key missions is to provide for the safe and efficient movement of people, goods, and services. Factors affecting users of the public roadways are constantly changing as our City and the surrounding region grows and develops.

Factors affecting our mission are also constantly changing. These factors include roadway traffic volumes, speeding, pavement conditions, new development or redevelopment, roadway construction, vegetation, etc.

Attachment A is a copy of the 2009 Annual Traffic Report. This report summarizes some of the traffic data collected by the City of Shoreline on a regular basis. This data is used for many purposes, including selecting and prioritizing large and small projects, managing police resources, transportation planning, construction activities, grant funding opportunities, and addressing safety issues throughout the City. Public Works traffic engineers and the Police traffic division meet quarterly to review recent crash trends and work together to identify appropriate strategies to address and mitigate safety issues. Strategies can involve increased enforcement, an engineering solution, or education and encouragement. The City also coordinates regularly with the Shoreline School District to update safe walking route maps to and from schools, targeted enforcement of school zones, and grant funding for safety improvements.

DISCUSSION

Part I – Annual Accident Report

There are three collision reduction tools used to improve safety, commonly known as the three E's. These factors are engineering, enforcement, and education:

1. Engineering solutions include installing traffic control devices (signs, curbing, traffic circles, etc), roadway maintenance (restriping, paving, vegetation trimming, etc), and CIP projects (roadway widening, traffic signals, etc).
2. Enforcement includes special emphasis patrols targeting specific violations, such as speeding, failure to yield to pedestrians, and disobeying traffic control devices.
3. Education efforts include Neighborhood service centers, Neighborhood Traffic Action Planning (NTAP) program, Neighborhood Traffic Safety Program (NTSP), radar speed displays, and traffic services web page on the City of Shoreline website, www.shorelinewa.gov.

The City of Shoreline collision database classifies crashes as either an intersection or a mid-block segment accident. Intersection crashes are those that actually happen within the intersection, including the crosswalks whether they are marked or not. All other accidents on city streets are assigned to mid-block segments. Some agencies, such as Washington State Department of Transportation (WSDOT) classify intersection accidents as those that occur within a one-block radius around the intersection. While their method includes rear-end crashes in the intersection report, this is mostly useful when analyzing a corridor such a state route. This method is limited when applied to an urban area such as Shoreline.

In urban areas with intersections every block, there is a need to track collisions on all public roadways in the street grid network. Rear-end collisions related to an intersection are now assigned to adjacent segments. However, Public Works assigns special coding in the database to these reports so they can be included with intersection accidents if needed for a special study or grant application.

Corridor reports include intersections and mid-block collisions on the route only. The corridor segments can be grouped in many different ways, and some judgment is required in determining the limits of the corridor report. Staff chose some significant routes for the purposes of this report to illustrate how choosing different intersections as corridor study limits influences the data results. This is helpful in determining a specific subsection of a corridor that may need additional attention due to collision rates or occurrences.

Public Works regularly conducts at least 250 traffic studies annually, collecting vehicle volumes, speeds, and classification. Using vehicle volume and speed data, Public Works staff was able to develop maps showing the current 85th percentile speeds and traffic volumes on Shoreline roadways. The 85th percentile speed is a measure commonly used in engineering studies, where 85% of the vehicles measured are traveling at this speed or slower. Matching the speed information with the posted speed limits, Public Works created another map showing the difference between the actual speeds and posted speeds. This is another tool the Police Department uses to target resources to address traffic issues in the City of Shoreline. These traffic maps are included as Attachment B.

<u>High Collision Analysis Methodology</u>

Public Works staff created two reports: one of high collision intersections, and one of high collision mid-block segments. These reports list the locations with the highest number of reported accidents in descending order. The list does not consider the volume of traffic.

By adding traffic volume data to these reports, we were able to calculate collision rates. We then created two more reports listing locations by the highest collision rate, in descending order. This method suggested that a few more locations should be reviewed.

Police and Public Works staff worked together to review at least the top ten locations on these four reports. The intent of focusing on the top ten locations is to maximize the City's limited resources and ultimately address the most problematic locations, and thereby lowering the overall accident rate for the City. The top ten mid-block collision locations were all on Aurora Avenue N, so staff increased the review to the top 20. Locations are evaluated for correctable accident patterns. Using the three E's, recommendations were developed to try and address identified collision patterns. Staff also considered some near term and longer-term strategies to address the identified issues.

Lastly, staff combined the intersection and mid-block data and created a report of significant corridors in the City of Shoreline. By including volume data, and using some

judgment in determining specific corridor limits, we developed a report listing corridors by collision rate. These high collision lists with evaluations are shown in Attachment A.

Highlights of the Report.

The "Top Ten" **intersection** accident locations by rate[1] and a recommendation to address the issues are (from Attachment C):

	Location	Crash Rate	Injury Rate	Recommendation
1	Linden Ave N & N 165th St	1.01	0.76	Review visibility for obstructions and continue to monitor
2	Linden Ave N & N 175th St	0.91	0.37	Restripe N 175th St from 4 lanes to two lanes with center turn lane and bike lanes
3	25th Ave NE & NE 150th St	0.79	0.64	Review visibility for obstructions and continue to monitor
4	3rd Ave NW & NW Richmond Beach Rd	0.77	0.21	Possible retiming of the traffic signal in near term. Pursue grant funding in long term for a widening project
5	10th Ave NE & NE 175th St	0.76	0.76	increase enforcement of obeying traffic control device
6	Linden Ave N & N 182nd St	0.70	0.35	Review visibility for obstructions and increase enforcement of obeying traffic control devices
7	Meridian Ave N & N 155th St	0.68	0.32	Review for possible traffic signal operation modifications
8	Fremont Ave N & N 200th St	0.52	0.00	Review visibility for obstructions and increase enforcement of obeying traffic control devices
9	Linden Ave N & N 160th St	0.49	0.00	Explore possible restriping of N 160th St from 4 lanes to two lanes with center turn lane and bike lanes
10	Fremont Ave N & N 195th St	0.45	0.34	Review visibility for obstructions and increase enforcement of obeying traffic control devices

[1] Reported collisions from 1/1/2007 to 12/31/2009 and crash rate is per million vehicle miles per year.

The "Top Ten" **mid-block** accident locations by rate[2] and a recommendation to address the issues are (from Attachment C):

	Location	Crash Rate	Injury Rate	Recommendation
1	N 155th St from Aurora Ave N to Midvale Ave N	20.03	6.26	Review for possible placement of curbing to restrict left-turns
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Other observations from the report:

- The total number of collisions and the number of injuries have decreased 30% over the past four years.
- Rear-end and right-angle types of crashes make up around 60% of all reported collisions over the past three years.
- The top two contributing circumstances are "exceeding a reasonably safe speed" and "did not grant right-of-way."
- Approximately two-thirds of reported crashes occur during daylight on dry pavement.
- Four intersections were identified as needing further review along with some preliminary recommendations:

[2] Reported collisions from 1/1/2007 to 12/31/2009 and crash rate is per million vehicle miles per year.

- 3rd Avenue NW and NW Richmond Beach Road. A possible near-term engineering solution is to change the operation of the traffic signal to provide some protected left turns. However, this will create more overall vehicle delay and congestion, so a longer-term improvement would involve widening NW Richmond Beach Road to provide room for left turn lanes between 2nd Avenue NW and 8th Avenue NW.
- 10th Avenue NE and NE 175th Street. The near-term recommendation is more enforcement emphasis on obeying traffic control devices and speeding.
- Meridian Avenue N and N 155th Street. A possible engineering solution is to consider protected left turn phases for the existing traffic signal.
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- The prevalent collision pattern on mid-block segments is rear-end accidents, which are difficult to correct. However, there were a couple of areas identified with collision types other than rear-end crashes that were reviewed for improvements.
- The top ten mid-block collision segments were all on Aurora Avenue N. While these are primarily rear-end collisions, there are also some left-turns out of driveways that will be eliminated through Aurora corridor improvements.
- N 155th Street between Aurora Avenue N and Midvale Avenue N. There are a number of crashes related to the driveway on the south side of N 155th Street. A possible engineering treatment would be to eliminate left turns through use of curbing in the centerline of N 155th Street.
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Part II - Effectiveness of Past Improvements

One example of the potential effectiveness of CIP improvements is the reconstruction project of Aurora Avenue N between N 145th Street and N 165th Street. This project was justified in part by the potential to improve safety. Construction of the first phase began in August, 2005. Since its completion in early 2007, the number of reported collisions between N 145th Street and N 165th Street has dropped by over 50%, and the number of injuries dropped by 43%. Reviewing the mid-block section of Aurora Ave N between N 152nd Street and N 155th Street, the number of crashes and the number of injuries both decreased by almost 75%. Staff is anticipating having similar results with the reconstruction project of Aurora Ave N from N 165th Street to N 192nd Street, which is currently being built and will be completed by summer of 2011.

Another engineering solution to a safety problem was the restriping of 15th Avenue NE between NE 150th Street and NE 175th Street, which was completed in December, 2003. While the total number of accidents remained constant, the number of injuries

dropped by over 30%, showing us that the severity of the collisions in the corridor has been reduced.

The Annual Traffic Report (Attachment A) presents a historical summary of accident trends from 2004 through 2009. The general trend indicates the City has had a significant impact on reducing the number and severity of accidents:

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Property Damage Only	489	484	507	386	368	348
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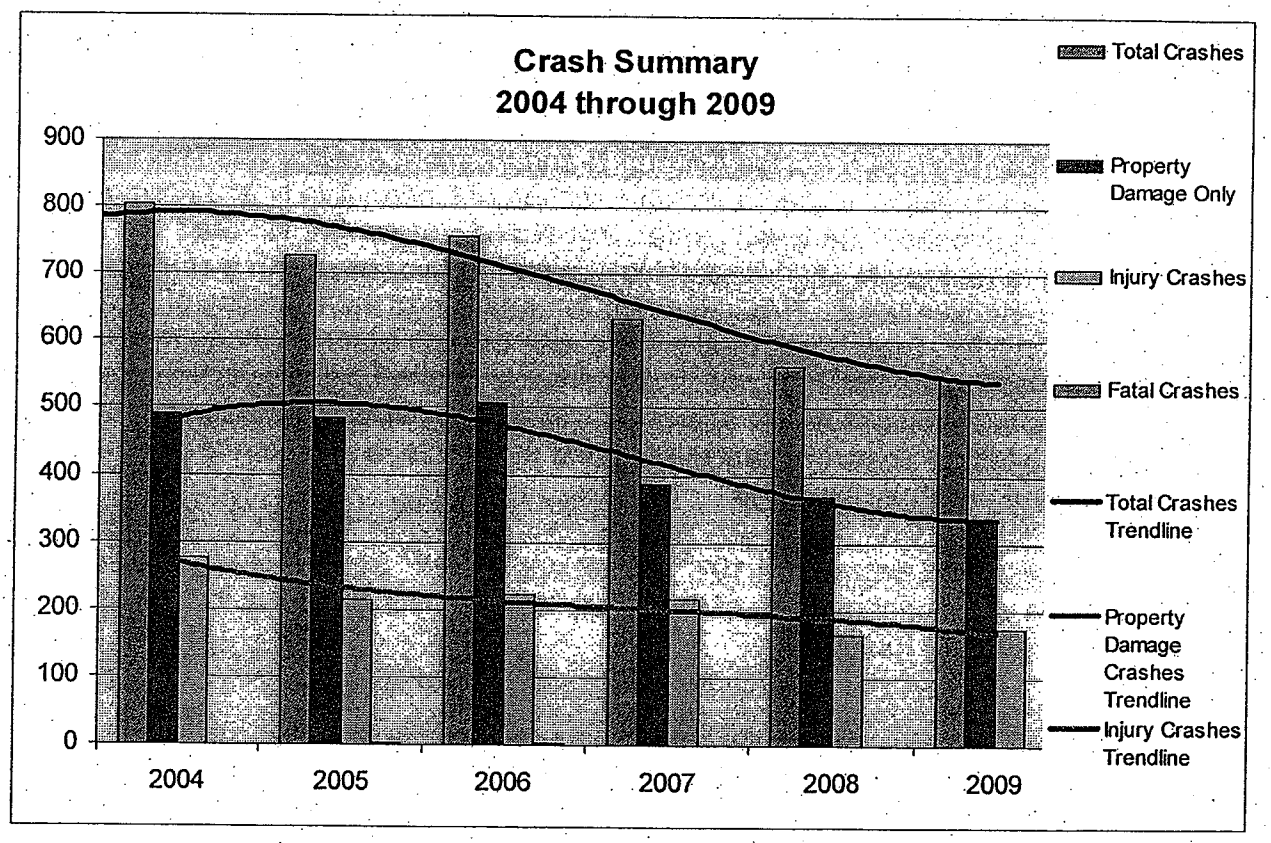

Part III - Future Projects for CIP and TIP Consideration

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which is the commercial area in Richmond Beach. Scoping for the project should also consider the operations and safety at the 5-legged Richmond Beach/8th/Innis Arden intersection. If the Point Wells development project moves forward, this section of NW Richmond Beach Rd should be included in the corridor study with potential developer mitigation. This is already in the Transportation Improvement Plan (TIP).

- N 175th Street between Aurora Avenue N and 15th Avenue NE – This corridor includes several high accident intersections (Ronald Pl N, Midvale Ave N, Meridian Ave N, I-5 Ramps, 10th Ave NE, 15th Ave NE). The entire corridor will be analyzed as part of the Transportation Master Plan for future capacity and safety projects, and a solution will be recommended. The corridor also has an incomplete sidewalk system, and has been identified by bicycle users as a potential bicycle route. The collision issues at Midvale Ave N and Ronald Place N intersections should show significant improvement once the current Aurora project is completed. Staff will explore potential low-cost improvements on the rest of the corridor/problem intersections until the TMP is adopted. This is already in the TIP.

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RECOMMENDATION

No action required. This is an informational briefing

ATTACHMENTS

Attachment A – 2009 Annual Traffic Report
Attachment B – Traffic Maps
Attachment C – Collision Location Evaluations

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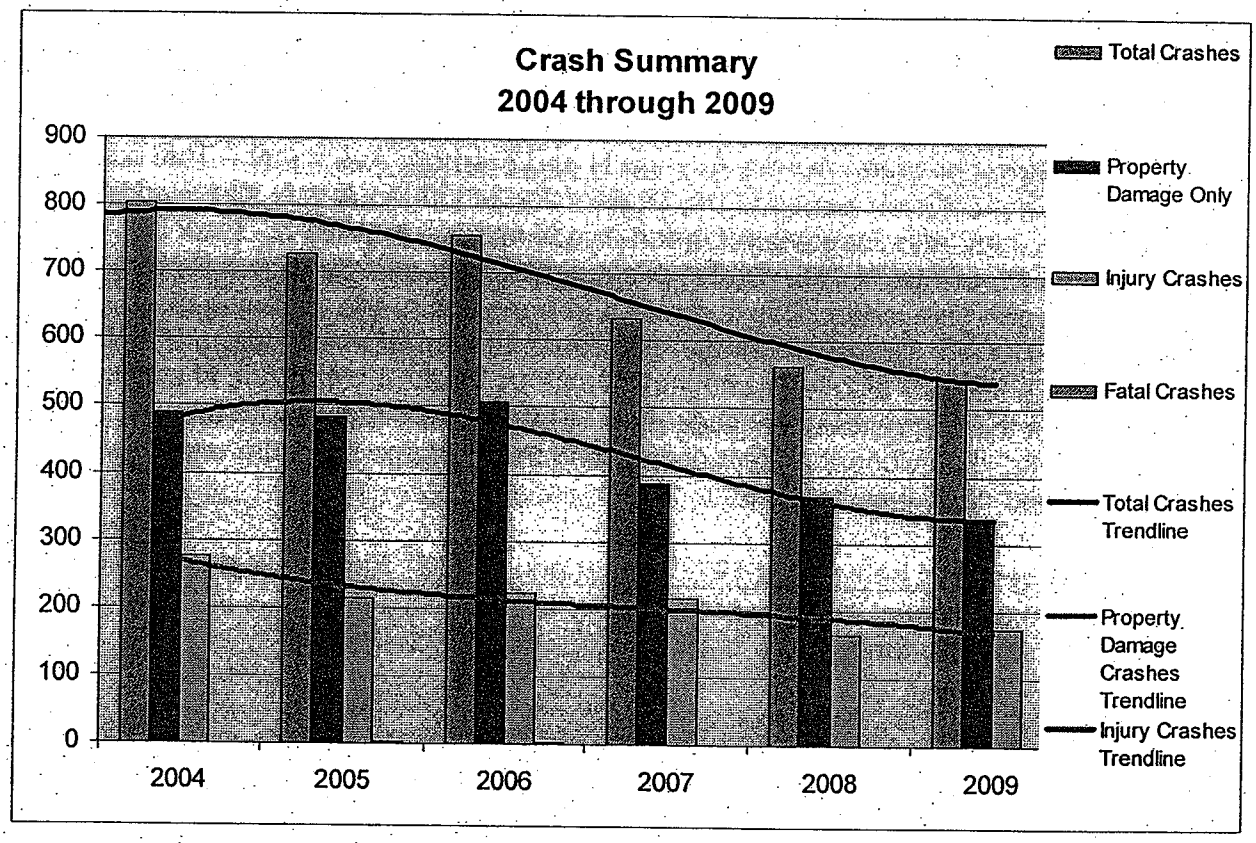

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CITY OF SHORELINE

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2009

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Introduction

The City of Shoreline Traffic Services section collects crash data for use in analyzing and evaluating traffic operations in our city. Such data is useful in many ways, including helping the Shoreline Police Department target areas for enforcement, to prioritize City resources, and to apply for grants to help finance capital improvement projects. This report contains some of that data, as well as general trend information about collisions and traffic volumes in Shoreline.

For additional information specific to locations within Shoreline, please contact our traffic services section or visit the Traffic Services web page at www.cityofshoreline.com

When reviewing crash statistics, the numbers by themselves mean very little. But when they lead to decisive action, they can help beat the odds of injury, death, and property damage. Take, for example, the Aurora Ave N project. The ability to document the safety potential of the proposal allowed the City to obtain grants to help fund the project, and City leadership supported directing resources for implementation. One measure of success can be seen in that the number of reported crashes has dropped over 75% since the roadway changes between N 145th St and N 165th St were put into effect,

Improvements to roadway safety do not fall entirely on local agencies. Individuals can also contribute to highway safety efforts. Nowhere is that more apparent than in the decision to wear safety belts. A properly worn safety belt can make the difference between brain damage and sore ribs. More and more people are wearing safety belts, but it is critical that the belts be worn properly if they are to be effective in reducing the severity of injuries in a crash, even in a vehicle equipped with air bags.

Data Sources

This report primarily summarizes data collected by the City of Shoreline Traffic Services for the years 2007-2009. The information collected for this report includes only the collisions reported on city streets. Excluded from the report are crashes on private property, on N/NE 145th St, N/NE 205th St, counter/phone reports, collisions under the threshold of $700, and other non crash vehicle incident reports.

Collision statistics analyzed in this report include police traffic collision reports from the Shoreline police department merged with data from the Washington State DOT data office, which includes crashes investigated by other agencies and citizen reports.

The data contained in this report are based on reportable crashes only, as defined below.

Definitions of various crash categories are also provided.

Definitions

Reportable Collision	A crash which involves death, injury, or property damage in excess of $700.00 to the property of any one person.
All Collisions	The total number of reportable motor vehicle crashes including fatal, injury or property damage.
Fatal Collision	Motor vehicle crash that results in fatal injuries to one or more persons.

Injury Collision	Motor vehicle crash that results in injuries, other than fatal, to one or more persons.
Property Damage Only Collision (PDO)	Motor vehicle crash 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.

As of January 1, 2000, the accident-reporting threshold for property damage accidents shall be seven hundred dollars (WAC 446-85-010)

Part I – Overview

Collision Summary

The City of Shoreline Traffic Services recorded 545 crashes reported within the city of Shoreline for the year 2009.

Year	2004	2005	2006	2007	2008	2009
Total Crashes	803	726	756	633	562	545
Property Damage Only	489	484	507	386	368	334
Injury Crashes	275	213	223	217	165	173
Number of Injuries	361	278	289	297	219	212
Fatal Crashes	0	2	2	0	0	1

Societal Costs/Economic Impacts

Traffic crashes have considerable impact not only on the people directly involved in the crash but also on the community as a whole. Below are the National Safety Council's most recent (year 2008) analysis of motor vehicle crash costs in the United States. The information provided includes estimates for the average economic cost per death (not each fatal crash), per injury (not each injury crash), and property damage crash. The economic cost estimates are a measure of the productivity lost and expenses incurred because of the crashes; they do not reflect what society is willing to pay to prevent a statistical fatality or injury.

- Motor vehicle crashes per each death, injury and property damage:
  - Death $1,300,000
  - Disabling Injury $63,500
  - Incapacitating Injury $67,200
  - Non-Incapacitating evident Injury $21,800
  - Possible Injury. $12,300
  - Property Damage Crash (including non-disabling injuries) $8,300

- The following comprehensive cost estimates include not only the economic cost components, but also a measure of the value of lost quality of life associated with the deaths and injuries; that is, what society is willing to pay to prevent them. The values of lost quality of life were obtained through empirical studies of what people actually pay to reduce their safety and health risks, such as through the purchase of air bags. These costs are on a per injured person basis.
  - Death. $4,200,000
  - Incapacitating injury. $214,200
  - Non-incapacitating evident injury $54,700
  - Possible injury $26,000
  - No injury $2,400

Source: National Safety Council® Research & Statistics http://www.nsc.org update December, 2008

Year	2007	2008	2009
Total Societal Costs	15,440,200	12,077,200	12,806,600
Property Damage Only	3,203,800	3,054,400	2,772,200
Injuries	12,236,400	9,022,800	8,734,400
Fatalities	0	0	1,300,000

High Collision Locations

For the City of Shoreline, intersections with 5 or more crashes in a year, or a 3 year collision rate higher than 4 are reviewed for changes that may reduce the collision rate. These are sometimes referred to as "High Frequency Crash Locations" or "High Collision Locations". When an intersection or section of roadway appears on the HCL list, it may be selected for corrective measures based on the crash rate and type of crash. Analysis of the crash rate at an intersection or on a section of road is one of the techniques used for identifying and prioritizing locations that may need improvement.

Collision Rates

Intersection crash rates are calculated by dividing the number of crashes at an intersection by the volume of vehicles entering the intersection. The annual number of vehicles entering an intersection is calculated by multiplying the average daily approach count (number of vehicles through the intersection) by 365 days.

Collision Reduction Factors – The 3 E's

Education:

Alerts people to ways they can help ease traffic problems, for example: Reducing their speed or using travel alternatives such as bicycles. The City of Shoreline reaches out to help inform residents about traffic issues through a number of programs such as the NTAP and NSTP, newsletters, neighborhood meetings, and information on our website.

Enforcement:

Utilizes the SPD Traffic Division to focus enforcement efforts on problem areas to increase community awareness and compliance.

Engineering:

Monitors and evaluates traffic and travel patterns within our travel network. Designs, operates and manages facilities for all modes of transportation in order to provide for the safe and efficient movement of people, goods, and services.

Of the three categories above, Education may be the most effective in reducing crashes. When we become aware of how and why crashes happen, we can then take the necessary steps towards making a change for the better.

Although not always our most favorite experience, Enforcement is very effective and very necessary. Without enforcement, we would all be tempted to push the limit of the law, which would put all of us at higher risk of getting into a crash.

Engineering envelopes all the physical elements that make traveling possible; streets, sidewalks, signs, signals, bridges and more. Engineering has made travel safer, more comfortable, rapid, and convenient.

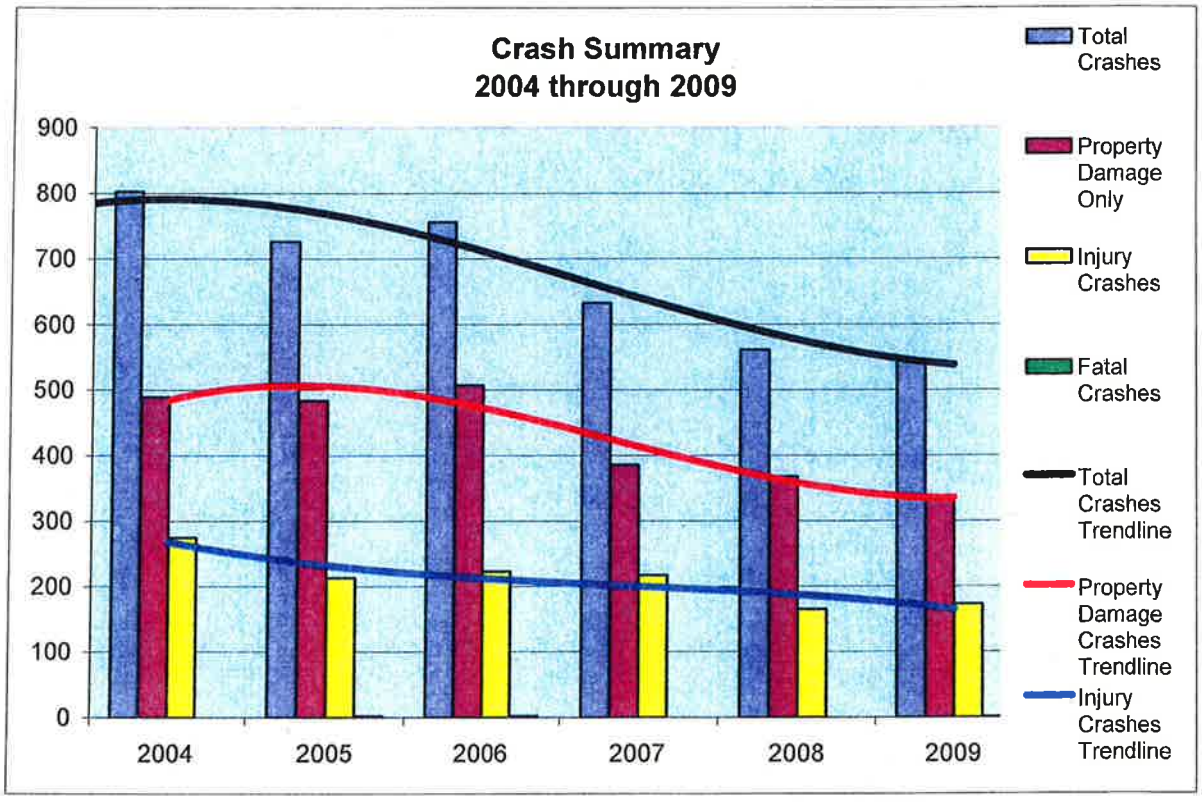
Like a three-legged stool would collapse without one of the legs, so is it with the 3 E's. All three are equally needed to support our transportation system. Ultimately, we as drivers and street users are responsible for the safety of ourselves and others.

- Educate yourself on the rules of the road. If you do not understand what a sign or road marking means, find out.
- Obey the law. The rules & the Patrol Officers are there to protect all of us.
- Always watch for pedestrians & bicyclists. Be exceptionally alert in school zones and near parks and recreational areas where children frequent!
- Be alert. Try not to drive when you are angry, tired or upset. Give yourself enough time to get where you are going without speeding. Just 5 mph. can be the difference between an injury or a fatality. Your time and your car are expendable but a life is not.
- Never drive while under the influence of alcohol and/or drugs! The consequences can be devastating.
- Be a courteous & patient driver, it will be returned to you.

Part II – 2007 - 2008 - 2009 Data

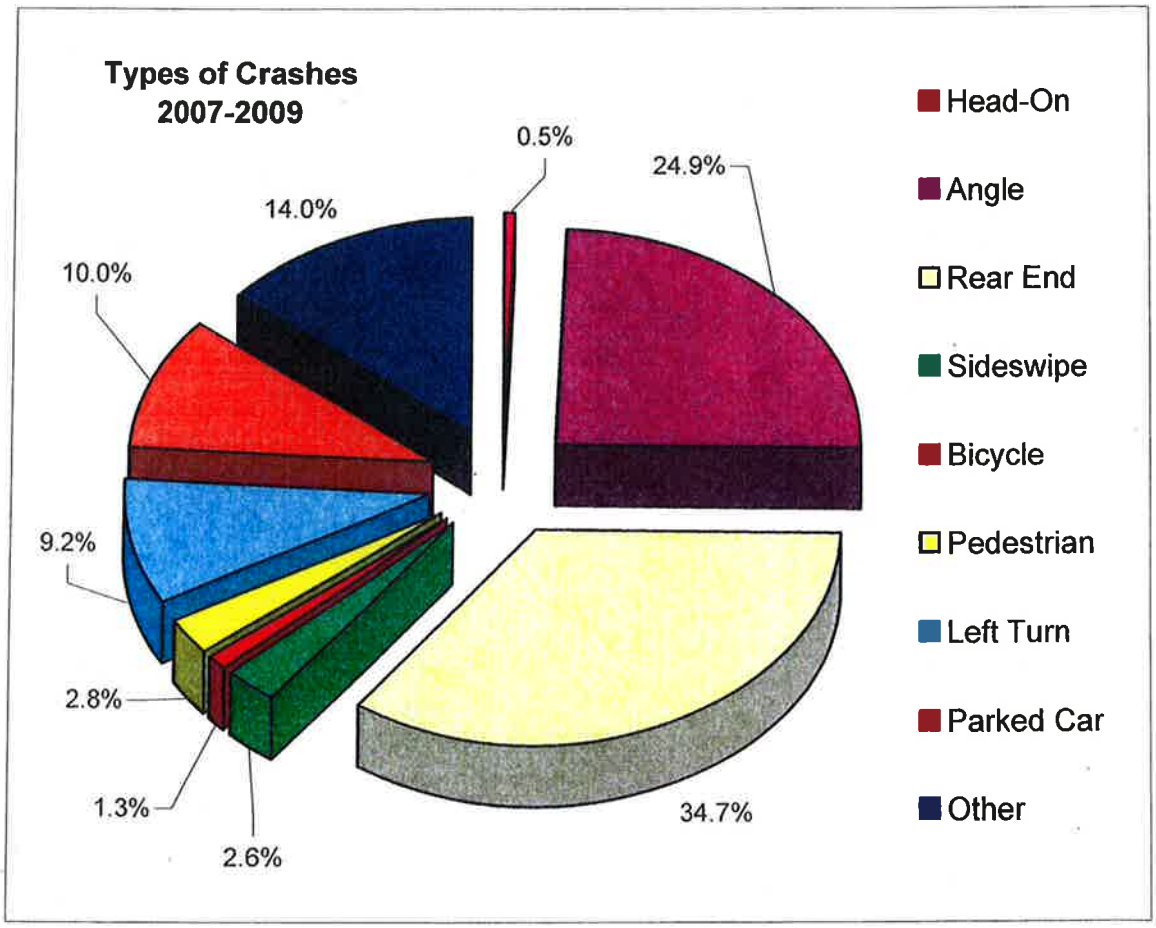
Crash Summary

Year	2004	2005	2006	2007	2008	2009
Total Crashes	803	726	756	633	562	545
Property Damage Only	489	484	507	386	368	334
Injury Crashes	275	213	223	217	165	173
Number of Injuries	361	278	289	297	219	212
Fatal Crashes	0	2	2	0	0	1



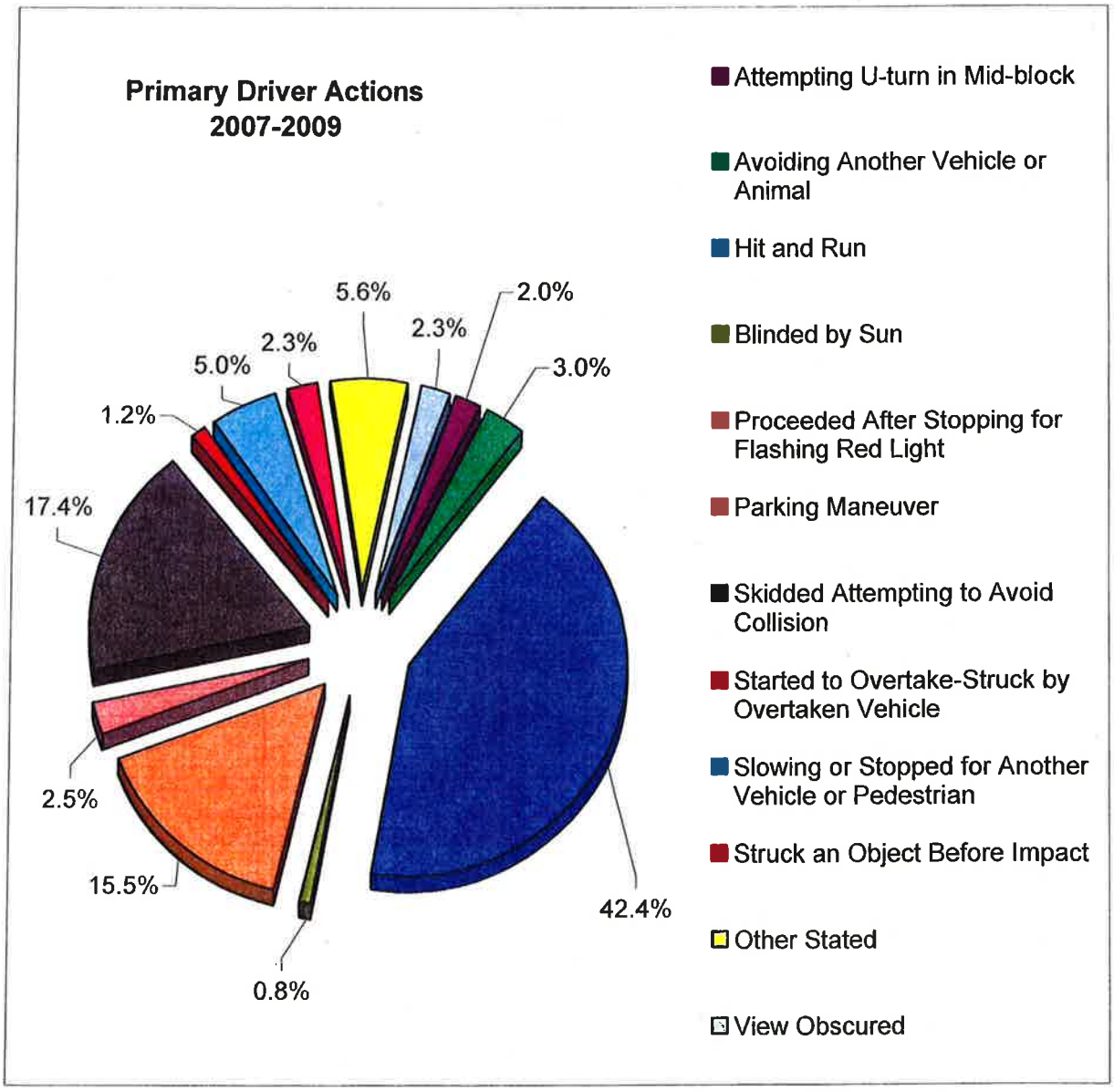
The trend lines highlight that the total crashes and injuries have been decreasing over the last four years.

Types of Crashes



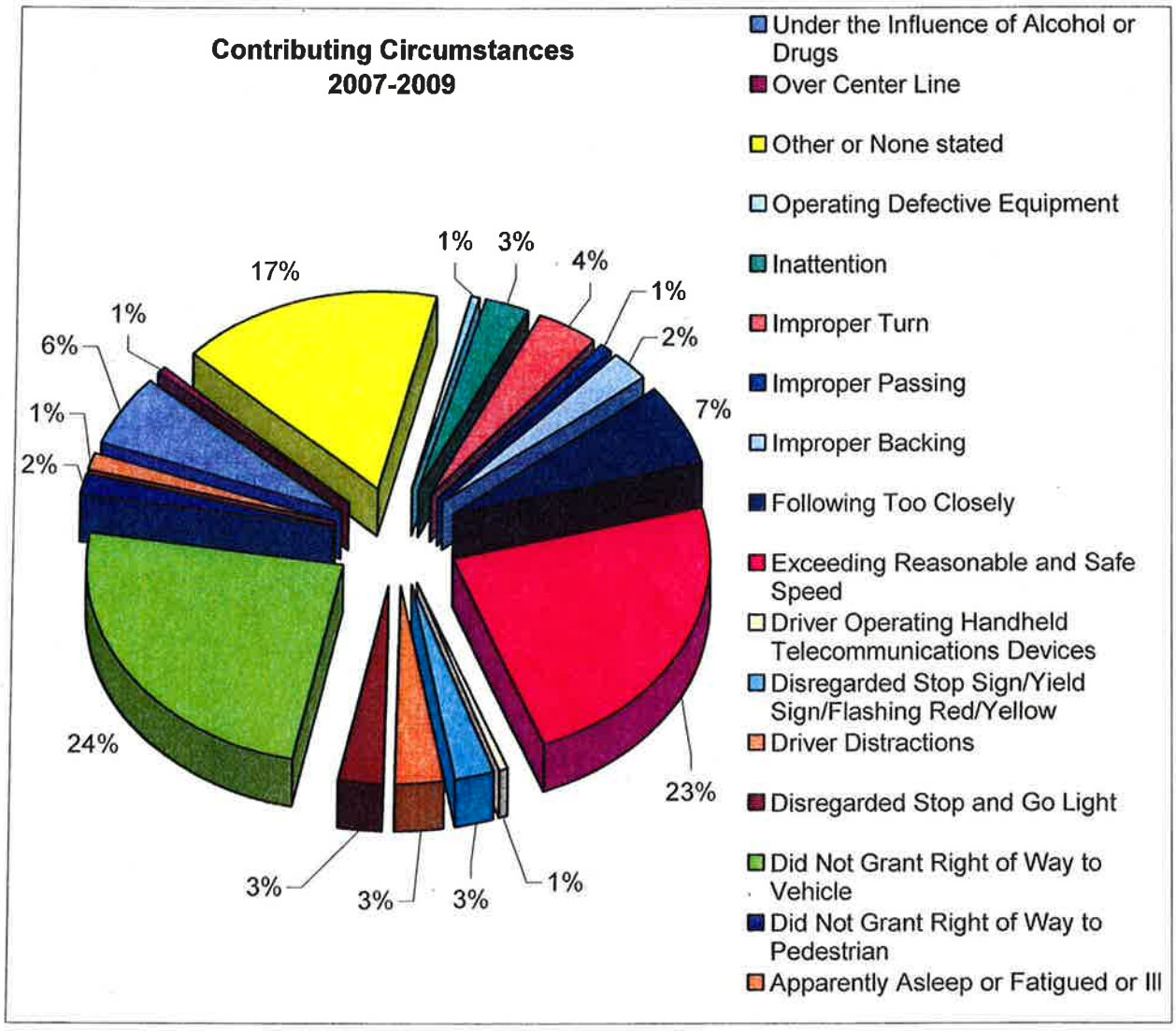
Rear-end and right-angle crashes make up around 60% of all reported collisions types on city streets. Crashes involving pedestrian or bicycles make up about 4% of all reported collision types.

First Harmful Event (Driver Actions)



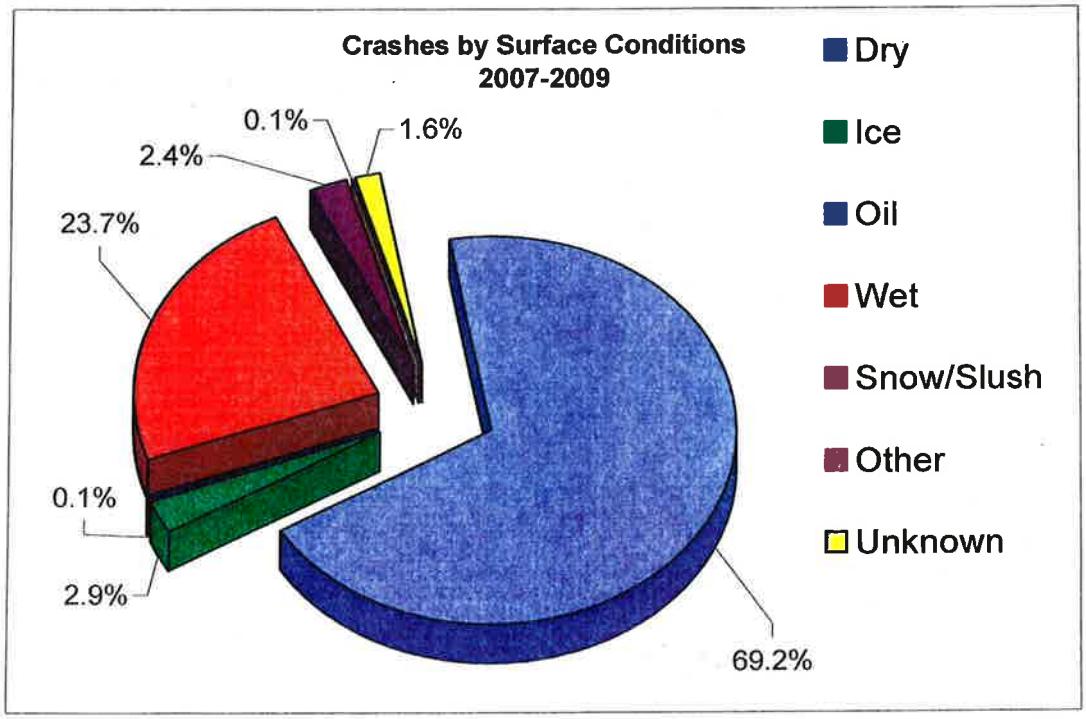
Hit and Run crashes make up over 40% of all reported collisions.

Contributing Circumstances

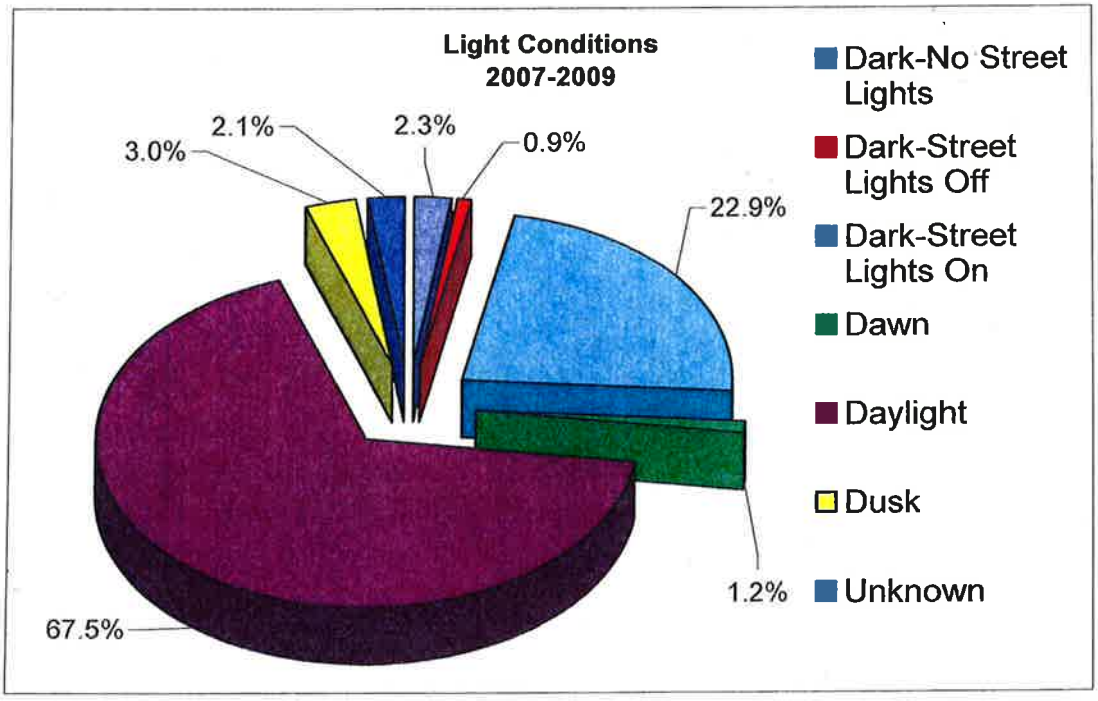


The top two contributing circumstances for crashes in Shoreline are "did not grant right-of-way", and "exceeding reasonably safe speed". Combined, they make up almost half of all reported crashes.

Surface Conditions

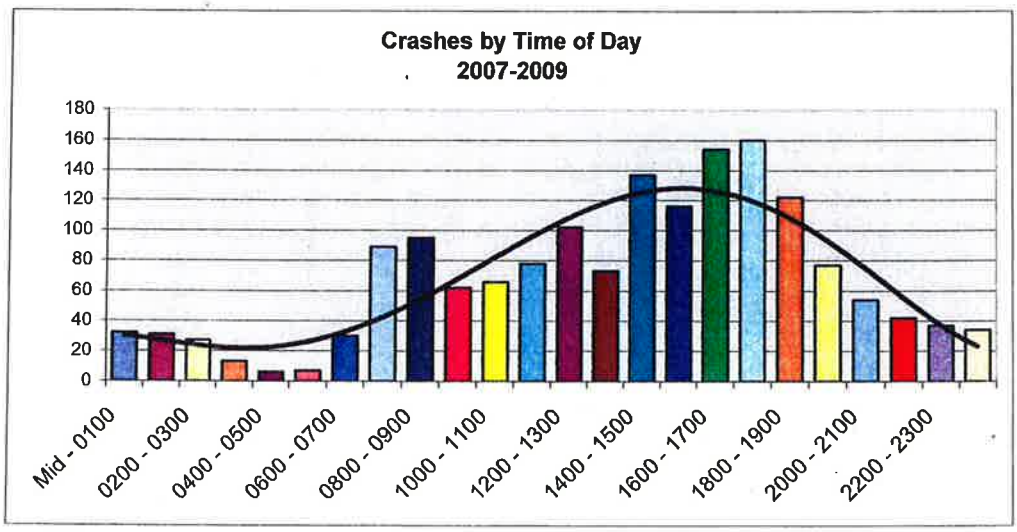


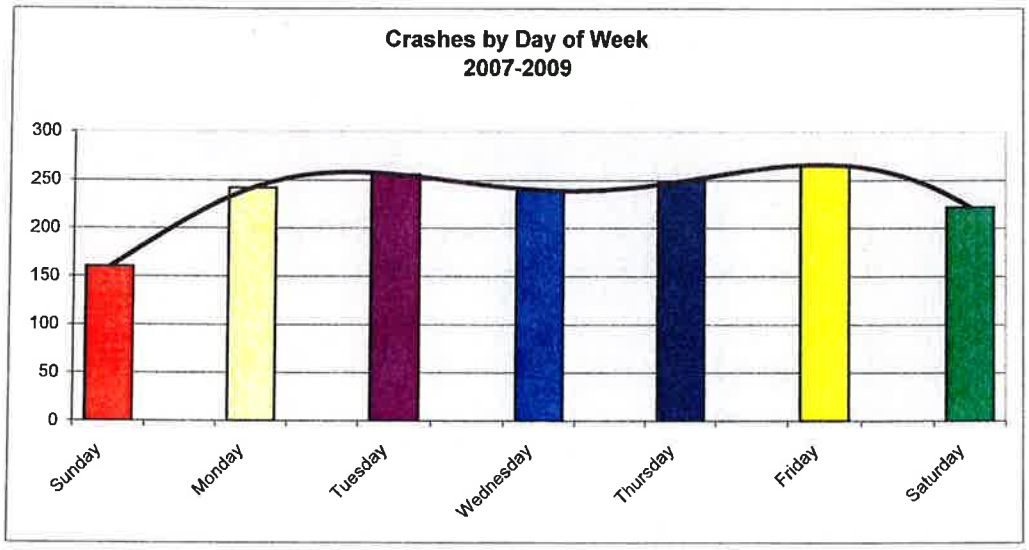
Light Conditions

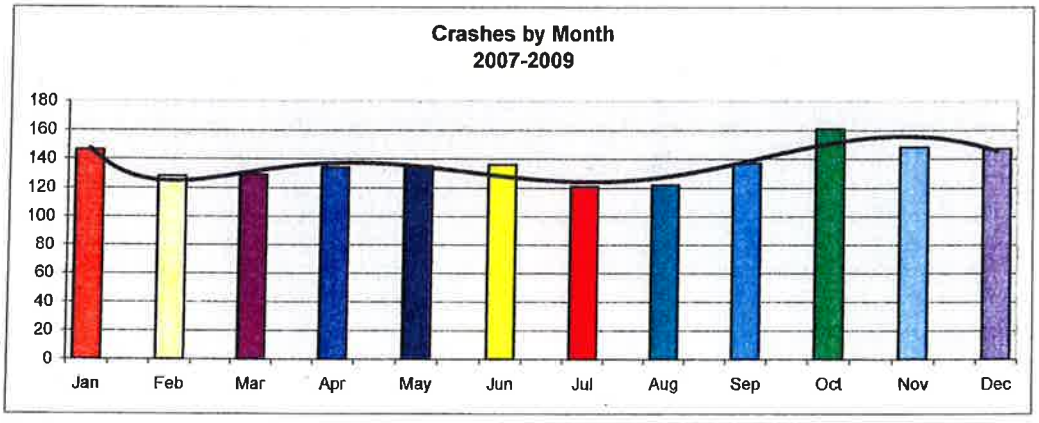


Approximately two-thirds of reported crashes occur in the daylight on dry pavement.

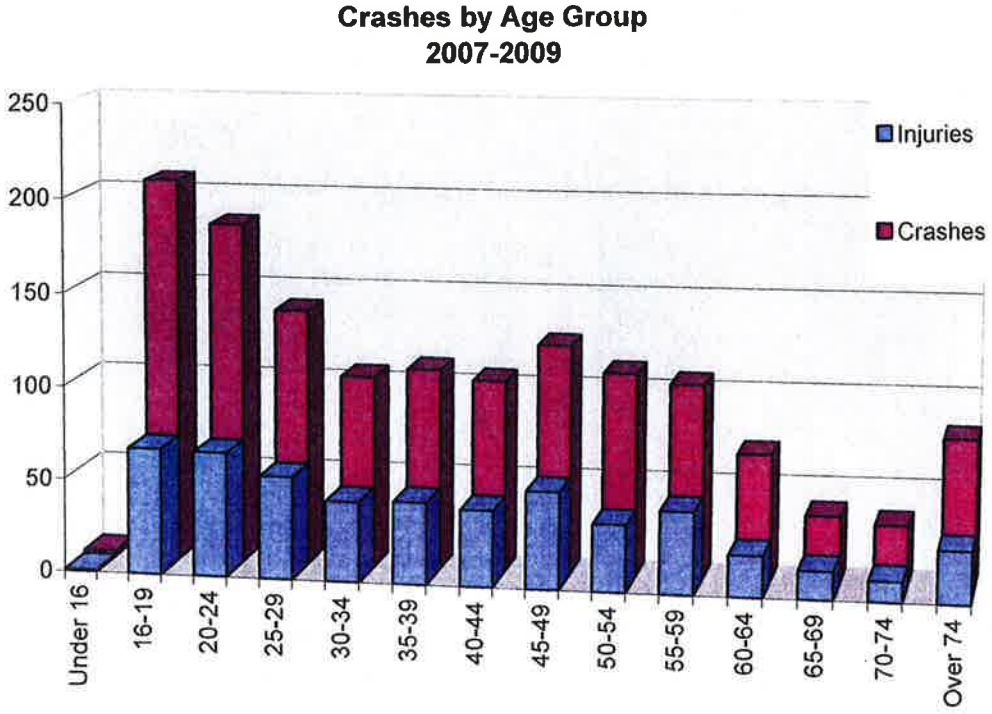
Time Periods



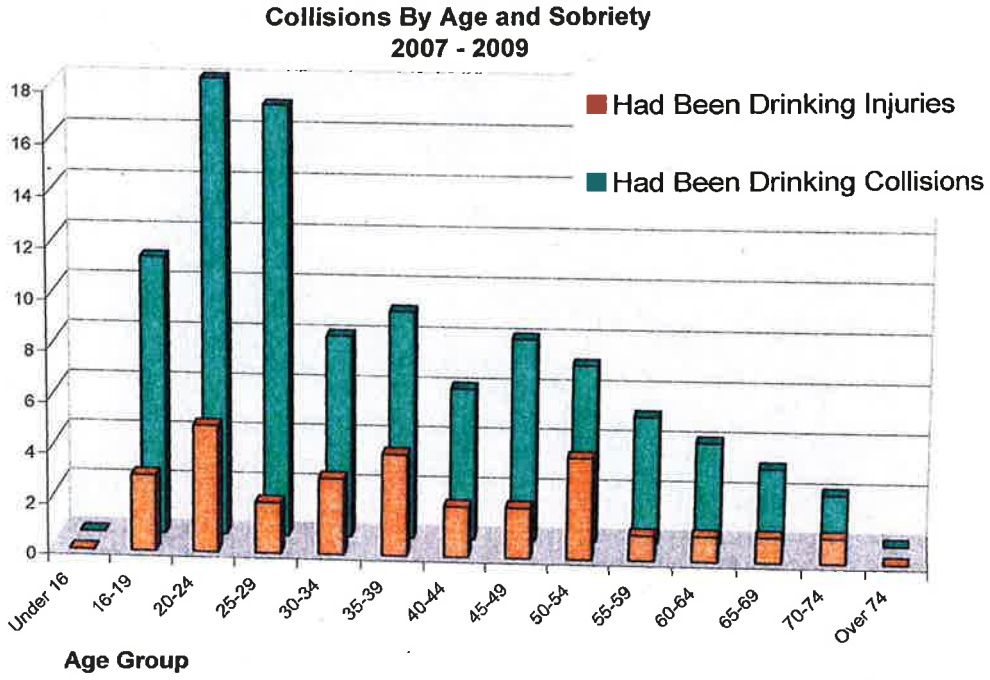




Age



Sobriety



High Accident Locations

Data from 2007 through 2009, sorted by number of reported crashes
Crash rate per million entering vehicles per year

	Location	Signal	# of Crashes	# of Injuries	# of Fatal	Crash Rate	Injury Rate	Entering Volume
1	3rd Ave NW & NW Richmond Bch Rd	y	18	5	0	0.77	0.21	21,400
2	Meridian Ave N & N 155th St	y	15	7	0	0.68	0.32	20,100
3	10th Ave NE & NE 175th St	y	14	14	0	0.76	0.76	16,930
4	15th Ave NE & Ballinger Way NE	y	11	1	0	0.30	0.03	33,200
5	Aurora Ave N & N 155th St	y	10	7	0	0.20	0.14	46,300
6	Linden Ave N & N 175th St		10	4	0	0.91	0.37	10,000
7	5th Ave NE & NE 175th St	y	10	4	0	0.43	0.17	21,200
8	Aurora Ave N & N 185th St	y	9	4	0	0.17	0.08	47,400
9	Meridian Ave N & N 175th St	y	9	3	0	0.21	0.07	38,300
10	15th Ave NE & NE Perkins Way	y	6	6	0	0.35	0.35	15,750
11	Aurora Ave N & N 165th St	y	6	1	0	0.14	0.02	39,100
12	Aurora Ave N & N 175th St	y	6	3	0	0.11	0.05	52,000
13	19th Ave NE & Ballinger Way NE	y	6	2	0	0.19	0.06	29,400
14	Westminster Way N & N 155th St	y	6	5	0	0.26	0.22	21,100
15	15th Ave NE & NE 146th St		5	2	0	0.30	0.12	15,000
16	15th Ave NE & NE 155th St	y	5	3	0	0.24	0.14	19,200
17	Meridian Ave N & N 200th St	y	5	3	0	0.26	0.16	17,500
18	Linden Ave N & N 160th St		5	0	0	0.49	0.00	9,400
19	Midvale Ave N & N 175th St	y	5	2	0	0.20	0.08	23,400
20	Midvale Ave N & N 185th St	y	5	2	0	0.38	0.15	12,150
21	Ashworth Ave N & N 185th St		5	6	0	0.37	0.44	12,400
22	Meridian Ave N & N 185th St	y	5	2	0	0.21	0.08	21,900
23	Linden Ave N & N 185th St	y	5	3	0	0.30	0.18	15,400
24	Fremont Ave N & N 185th St	y	5	3	0	0.22	0.13	21,100
25	19th Ave NE & NE 205th St	y	5	0	0	0.24	0.00	18,700
26	25th Ave NE & NE 150th St		5	4	0	0.79	0.64	5,750
27	5th Ave NE & NE 155th St	y	5	3	0	0.28	0.17	16,200
28	Fremont Ave N & N 200th St		5	0	0	0.52	0.00	8,800
29	15th Ave NE & NE 150th St	y	4	6	0	0.21	0.31	17,450
30	Aurora Ave N & N 195th St		4	6	0	0.11	0.16	34,450
31	25th Ave NE & Ballinger Way NE	y	4	0	0	0.17	0.00	21,050
32	Dayton Ave N & N 160th St	y	4	2	0	0.27	0.14	13,300
33	Aurora Vill Mall N & N 200th St	y	4	4	0	0.43	0.43	8,400
34	8th Ave NE & NE 175th St		4	1	0	0.25	0.06	14,800
35	8th Ave NW & NW Richmond Bch Rd	y	4	2	0	0.18	0.09	19,900
36	15th Ave NW & NW Richmond Bch Rd		4	0	0	0.25	0.00	14,500
37	Fremont Ave N & N 195th St		4	3	0	0.45	0.34	8,100
38	Linden Ave N & N 165th St		4	3	0	1.01	0.76	3,600
39	Linden Ave N & N 182nd St		4	2	0	0.70	0.35	5,200

High Accident Locations

Data from 2007 through 2009, sorted by crash rate
Crash rate per million entering vehicles per year

	Location	Signal	# of Crashes	# of Injuries	# of Fatal	Crash Rate	Injury Rate	Entering Volume
1	Linden Ave N & N 165th St		4	3	0	1.01	0.76	3,600
2	Linden Ave N & N 175th St		10	4	0	0.91	0.37	10,000
3	25th Ave NE & NE 150th St		5	4	0	0.79	0.64	5,750
4	3rd Ave NW & NW Richmond Bch Rd	y	18	5	0	0.77	0.21	21,400
5	10th Ave NE & NE 175th St	y	14	14	0	0.76	0.76	16,930
6	Linden Ave N & N 182nd St		4	2	0	0.70	0.35	5,200
7	Meridian Ave N & N 155th St	y	15	7	0	0.68	0.32	20,100
8	Fremont Ave N & N 200th St		5	0	0	0.52	0.00	8,800
9	Linden Ave N & N 160th St		5	0	0	0.49	0.00	9,400
10	Fremont Ave N & N 195th St		4	3	0	0.45	0.34	8,100
11	Aurora Vill Mall N & N 200th St	y	4	4	0	0.43	0.43	8,400
12	5th Ave NE & NE 175th St	y	10	4	0	0.43	0.17	21,200
13	Midvale Ave N & N 185th St	y	5	2	0	0.38	0.15	12,150
14	Ashworth Ave N & N 185th St		5	6	0	0.37	0.44	12,400
15	15th Ave NE & NE Perkins Way	y	6	6	0	0.35	0.35	15,750
16	15th Ave NE & NE 146th St		5	2	0	0.30	0.12	15,000
17	15th Ave NE & Ballinger Way NE	y	11	1	0	0.30	0.03	33,200
18	Linden Ave N & N 185th St	y	5	3	0	0.30	0.18	15,400
19	5th Ave NE & NE 155th St	y	5	3	0	0.28	0.17	16,200
20	Dayton Ave N & N 160th St	y	4	2	0	0.27	0.14	13,300
21	Meridian Ave N & N 200th St	y	5	3	0	0.26	0.16	17,500
22	Westminster Way N & N 155th St	y	6	5	0	0.26	0.22	21,100
23	15th Ave NW & NW Richmond Bch Rd		4	0	0	0.25	0.00	14,500
24	8th Ave NE & NE 175th St		4	1	0	0.25	0.06	14,800
25	19th Ave NE & NE 205th St	y	5	0	0	0.24	0.00	18,700
26	15th Ave NE & NE 155th St	y	5	3	0	0.24	0.14	19,200
27	Fremont Ave N & N 185th St	y	5	3	0	0.22	0.13	21,100
28	Meridian Ave N & N 175th St	y	9	3	0	0.21	0.07	38,300
29	15th Ave NE & NE 150th St	y	4	6	0	0.21	0.31	17,450
30	Meridian Ave N & N 185th St	y	5	2	0	0.21	0.08	21,900
31	Aurora Ave N & N 155th St	y	10	7	0	0.20	0.14	46,300
32	Midvale Ave N & N 175th St	y	5	2	0	0.20	0.08	23,400
33	19th Ave NE & Ballinger Way NE	y	6	2	0	0.19	0.06	29,400
34	8th Ave NW & NW Richmond Bch Rd	y	4	2	0	0.18	0.09	19,900
35	25th Ave NE & Ballinger Way NE	y	4	0	0	0.17	0.00	21,050
36	Aurora Ave N & N 185th St	y	9	4	0	0.17	0.08	47,400
37	Aurora Ave N & N 165th St	y	6	1	0	0.14	0.02	39,100
38	Aurora Ave N & N 195th St		4	6	0	0.11	0.16	34,450
39	Aurora Ave N & N 175th St	y	6	3	0	0.11	0.05	52,000

High Accident Roadway Segments

Data from 2007 through 2009, sorted by crash rate
Crash rate per million vehicle-miles per year

	Location	# of Crashes	# of Injuries	# of Fatal	Crash Rate	Injury Rate	volume	length
1	N 155th St from Aurora Ave N to Midvale Ave N	16	5	0	20.03	6.26	11,500	335
2	N 167th St from Aurora Ave N to Stone Ave N	4	1	0	15.38	3.85	1,900	660
3	N 185th St from Meridian Ave N to Meridian Ct N	4	3	0	14.01	10.51	10,200	135
4	19th Ave NE from NE 199th St to Ballinger Way NE	9	1	0	13.62	1.51	5,400	590
5	NW Innis Arden Way from 6th Ave NW to 9th Ave NW	8	3	0	12.50	4.69	2,100	1,470
6	3rd Ave NW from NW Richmond Bch Rd to NW 189th St	6	3	0	10.70	5.35	5,100	530
7	Meridian Ave N from N 175th St to N 176th St	5	8	0	10.30	16.49	12,000	195
8	N 185th St from Aurora Ave N to Midvale Ave N	11	5	0	9.87	4.48	11,200	480
9	N 175th St from Aurora Ave N to Ronald Pl N	9	2	0	8.89	1.97	22,200	220
10	15th Ave NE from NE 172nd St to NE 175th St	17	5	0	8.70	2.56	14,500	650
11	N 175th St from Linden Ave N to Aurora Ave N	11	5	0	8.63	3.92	9,600	640
12	N 200th St from Wallingford Ave N to Burke Ave N	4	3	0	8.61	6.46	8,000	280
13	N 160th St from Linden Ave N to Aurora Ave N	9	2	0	8.01	1.78	8,400	645
14	Aurora Ave N from N 199th St to N 200th St	19	12	0	8.00	5.05	33,700	340
15	15th Ave NE from NE 154th St to NE 155th St	6	4	0	6.66	4.44	16,400	265
16	15th Ave NE from NE 146th St to NE 147th St	7	2	0	6.24	1.78	16,400	330
17	Meridian Ave N from N 166th St to N 167th St	4	3	0	6.18	4.64	9,600	325
18	15th Ave NE from Forest Park Dr NE to NE 205th St	12	8	0	5.48	3.65	8,800	1,200
19	Aurora Ave N from N 184th St to N 185th St	21	8	0	5.44	2.07	37,200	500
20	N 185th St from Wallingford Ave N to Burke Ave N	4	0	0	5.38	0.00	11,200	320
21	1st Ave NE from NE 149th St to NE 155th St	5	2	0	5.22	2.09	3,000	1,541
22	N 200th St from Aurora Ave N to Aurora Vill Mall N	7	7	0	5.21	5.21	8,100	800
23	N 155th St from Linden Ave N to Aurora Ave N	5	1	0	5.04	1.01	12,600	380
24	Meridian Ave N from N 203rd St to N 205th St	7	1	0	4.91	0.70	10,500	655
25	Aurora Ave N from N 167th St to N 170th St	24	12	0	4.61	2.31	38,000	660

High Accident Roadway Segments

Data from 2007 through 2009, sorted by number of reported crashes
Crash rate per million vehicle-miles per year

	Location	# of Crashes	# of Injuries	# of Fatal	Crash Rate	Injury Rate	volume	length
1	Aurora Ave N from N 175th St to Ronald Pl N	40	14	0	3.90	1.36	37,200	1,330
2	Aurora Ave N from N 155th St to N 160th St	35	21	0	3.75	2.25	34,100	1,320
3	Aurora Ave N from N 152nd St to N 155th St	28	10	0	4.12	1.47	36,400	900
4	Aurora Ave N from N 185th St to N 192nd St	27	20	0	2.36	1.75	33,400	1,650
5	Aurora Ave N from N 167th St to N 170th St	24	12	0	4.61	2.31	38,000	660
6	Aurora Ave N from N 184th St to N 185th St	21	8	0	5.44	2.07	37,200	500
7	Aurora Ave N from N 170th St to Ronald Pl N	21	14	0	3.95	2.63	38,000	675
8	Aurora Ave N from N 200th St to N 205th St	20	5	0	2.27	0.57	32,000	1,325
9	Aurora Ave N from N 199th St to N 200th St	19	12	0	8.00	5.05	33,700	340
10	Aurora Ave N from N 160th St to N 163rd St	19	8	0	3.65	1.54	38,000	660
11	15th Ave NE from NE 172nd St to NE 175th St	17	5	0	8.70	2.56	14,500	650
12	N 155th St from Aurora Ave N to Midvale Ave N	16	5	0	20.03	6.26	11,500	335
13	N 175th St from Meridian Ave N to Corliss Ave N	16	7	0	2.94	1.29	31,600	830
14	Aurora Ave N from N 149th St to N 152nd St	16	12	0	2.72	2.04	36,400	780
15	Aurora Ave N from N 192nd St to N 195th St	15	11	0	2.17	1.59	33,400	1,000
16	Ballinger Way NE from 19th Ave NE to NE 205th St	15	9	0	1.93	1.16	23,000	1,630
17	N 175th St from Midvale Ave N to Ashworth Ave N	14	10	0	3.10	2.22	22,200	980
18	Aurora Ave N from Ronald Pl N to N 175th St	14	5	1	2.73	0.98	38,000	650
19	Aurora Ave N from N 145th St to N 149th St	13	1	0	1.76	0.14	36,400	980
20	15th Ave NE from Forest Park Dr NE to NE 205th St	12	8	0	5.48	3.65	8,800	1,200
21	NW Richmond Bch Rd from 12th Ave NW to 15th Ave NW	12	5	0	2.93	1.22	12,100	1,630
22	N 185th St from Aurora Ave N to Midvale Ave N	11	5	0	9.87	4.48	11,200	480
23	N 175th St from Linden Ave N to Aurora Ave N	11	5	0	8.63	3.92	9,600	640
24	Aurora Ave N from N 182nd St to N 184th St	11	7	0	3.66	2.33	37,200	390
25	Aurora Ave N from N 163rd St to N 165th St	11	2	0	2.11	0.38	38,000	660

High Accident Corridors

Data from 2007 through 2009, sorted by crash rate per million vehicle-miles

Route	# of Crashes	# of Injuries	# of Fatal	Crash Rate	Injury Rate	volume	length
N 175th St btwn Fremont Ave N and Aurora Ave N	24	11	0	10.12	4.64	8,800	1,300
N 160th St btwn Dayton Ave N and Aurora Ave N	26	6	0	7.76	1.79	8,500	1,900
NE 175th St btwn I-5 and 15th Ave NE	70	36	0	5.27	2.71	16,000	4,000
N 155th St btwn Aurora Ave N and 1st Ave NE	46	24	0	5.21	2.72	11,500	3,700
N 185th St btwn Aurora Ave N and 1st Ave NE	46	22	0	5.18	2.48	10,700	4,000
Aurora Ave N btwn N 165th St and N 185th St	178	84	0	4.32	2.04	37,500	5,300
N 200th St btwn Aurora Ave N and Meridian Ave N	19	17	0	4.15	3.71	8,500	2,600
N 175th St btwn Aurora Ave N and I-5	85	38	1	3.89	1.74	27,000	3,900
Aurora Ave N btwn N 145th St and N 165th St	145	63	0	3.77	1.64	35,000	5,300
Aurora Ave N btwn N 145th St and N 205th St	431	218	0	3.68	1.86	35,500	15,900
15th Ave NE btwn NE 145th St and NE 180th St	108	59	0	3.61	1.97	15,500	9,300
Meridian Ave N btwn N 145th St and N 175th St	59	25	0	3.60	1.53	10,000	7,900
NE 185th St btwn 1st Ave NE and 10th Ave NE	18	11	0	3.44	2.10	9,700	2,600
NW Richmond Beach Rd btwn 15th Ave NW and Aurora Ave N	93	37	0	3.40	1.35	15,000	8,800
Meridian Ave N btwn N 172nd St and N 190th St	40	22	0	3.35	1.84	12,000	4,800
Aurora Ave N btwn N 185th St and N 205th St	123	76	0	3.29	2.03	34,000	5,300
15th Ave NE btwn NE 145th St and NE 205th St	156	86	0	3.22	1.78	14,500	16,100
15th Ave NE btwn NE 180th St and NE 205th St	49	27	0	2.97	1.64	11,700	6,800
Meridian Ave N btwn N 145th St and N 205th St	106	51	0	2.92	1.41	11,000	15,900
Meridian Ave N btwn N 172nd St and N 205th St	59	32	0	2.81	1.52	11,500	8,800
Ballinger Way NE btwn 15th Ave NE and 30th Ave NE	48	20	0	2.65	1.10	23,000	3,800

High Accident Corridors

Data from 2007 through 2009, sorted by roadway name

Route	# of Crashes	# of Injuries	# of Fatal	Crash Rate	Injury Rate	volume	length
15th Ave NE btwn NE 145th St and NE 180th St	108	59	0	3.61	1.97	15,500	9,300
15th Ave NE btwn NE 180th St and NE 205th St	49	27	0	2.97	1.64	11,700	6,800
15th Ave NE btwn NE 145th St and NE 205th St	156	86	0	3.22	1.78	14,500	16,100
Aurora Ave N btwn N 145th St and N 165th St	145	63	0	3.77	1.64	35,000	5,300
Aurora Ave N btwn N 165th St and N 185th St	178	84	0	4.32	2.04	37,500	5,300
Aurora Ave N btwn N 185th St and N 205th St	123	76	0	3.29	2.03	34,000	5,300
Aurora Ave N btwn N 145th St and N 205th St	431	218	0	3.68	1.86	35,500	15,900
Ballinger Way NE btwn 15th Ave NE and 30th Ave NE	48	20	0	2.65	1.10	23,000	3,800
Meridian Ave N btwn N 145th St and N 175th St	59	25	0	3.60	1.53	10,000	7,900
Meridian Ave N btwn N 172nd St and N 190th St	40	22	0	3.35	1.84	12,000	4,800
Meridian Ave N btwn N 172nd St and N 205th St	59	32	0	2.81	1.52	11,500	8,800
Meridian Ave N btwn N 145th St and N 205th St	106	51	0	2.92	1.41	11,000	15,900
N 155th St btwn Aurora Ave N and 1st Ave NE	46	24	0	5.21	2.72	11,500	3,700
N 160th St btwn Dayton Ave N and Aurora Ave N	26	6	0	7.76	1.79	8,500	1,900
N 175th St btwn Fremont Ave N and Aurora Ave N	24	11	0	10.12	4.64	8,800	1,300
N 175th St btwn Aurora Ave N and I-5	85	38	1	3.89	1.74	27,000	3,900
NE 175th St btwn I-5 and 15th Ave NE	70	36	0	5.27	2.71	16,000	4,000
N 185th St btwn Aurora Ave N and 1st Ave NE	46	22	0	5.18	2.48	10,700	4,000
NE 185th St btwn 1st Ave NE and 10th Ave NE	18	11	0	3.44	2.10	9,700	2,600
N 200th St btwn Aurora Ave N and Meridian Ave N	19	17	0	4.15	3.71	8,500	2,600
NW Richmond Beach Rd btwn 15th Ave NW and Aurora Ave N	93	37	0	3.40	1.35	15,000	8,800

Safety Tips

Tips for proper safety restraint use:

- *Wear lap belts low – over the hips, not the stomach*
- *Adjust the head rest to the center of the passenger's ears*
- *If a shoulder belt crosses the face of a child, put it behind him or her*
- *Make sure the child safety seat is buckled into the vehicle correctly and that the child is likewise buckled properly in the seat.*

Tips for the motorist to reduce pedestrian collisions:

- *Stop for pedestrians in unmarked or marked crosswalks – it's the law! Crosswalks exist at all intersections. White lines are not needed to define a legal crosswalk*
- *Stop 20 to 50 feet before you reach the unmarked or marked crosswalk occupied by a pedestrian. This will allow other drivers to see past your vehicle.*
- *When a vehicle ahead of you or in an adjacent lane stops at an intersection, you should expect to stop for a pedestrian.*
- *When backing out of driveways and parking lots, look for pedestrians (especially children) behind you.*
- *Give older adults or disabled pedestrians extra time to get across the street*
- *Use extra caution when driving in neighborhoods where children might be playing, near schools, and near playgrounds.*
- *Obey 20 MPH school area speed limits*
- *Stop whenever you come to a stopped school bus whether its lights are flashing or not.*

Tips for pedestrians to safely cross a street:

- *Always stop at the edge of the roadway before crossing. Look left, right, then left again before entering the street.*
- *Make eye contact with drivers before crossing the street.*
- *Continue to look both left and right while crossing.*
- *On multi-lane roadways, always verify that the adjacent travel lane is clear or stopped before stepping into the next lane.*
- *Cross at corners, not mid-block. That's where drivers expect to find pedestrians and that is where legal crosswalks exist if white lines are not marked on the street.*
- *Obey the "Walk" and "Don't Walk" symbols at traffic signals, but do not assume that drivers are always going to respect your right to cross the street.*
- *Wear reflective or light colored clothing at night. Or even better, carry a flashlight.*
- *Alcohol not only alters your driving ability, but also your walking ability. Your overall judgment is hindered, such as accurately determining the distance and speed of approaching traffic*

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Attachment B

Geographic Information System

City of Shoreline Traffic Flow Map 2009

24-Hour Average Weekday Traffic
(Combined Two-Directional Totals)

Legend

Avg Weekday Traffic Vol:

- 5,000
- 10,000
- 15,000
- 20,000
- 25,000
- 30,000
- 35,000
- 40,000
- 45,000
- 50,000
- 55,000

0 500 1,000 2,000 3,000 Feet

1 inch = 1,953 feet

CITY OF SHORELINE

City of Shoreline
Mark J. Relph, Public Works Director
Rich Meredith, Traffic Engineer
17500 Midvale Ave N
Shoreline, WA 98133
(206) 801-2700
www.shorelinewa.gov

Map Data: Through December 2009

SHORELINE

Geographic Information System

City of Shoreline Traffic Speed Map 2009

24-Hour Average Weekday Traffic
(Combined Two-Directional Totals)

Legend

Traffic Speeds

- 20
- 25
- 30
- 35
- 40
- 45
- 50

0 500 1,000 2,000 3,000 Feet

1 inch = 1,952 feet

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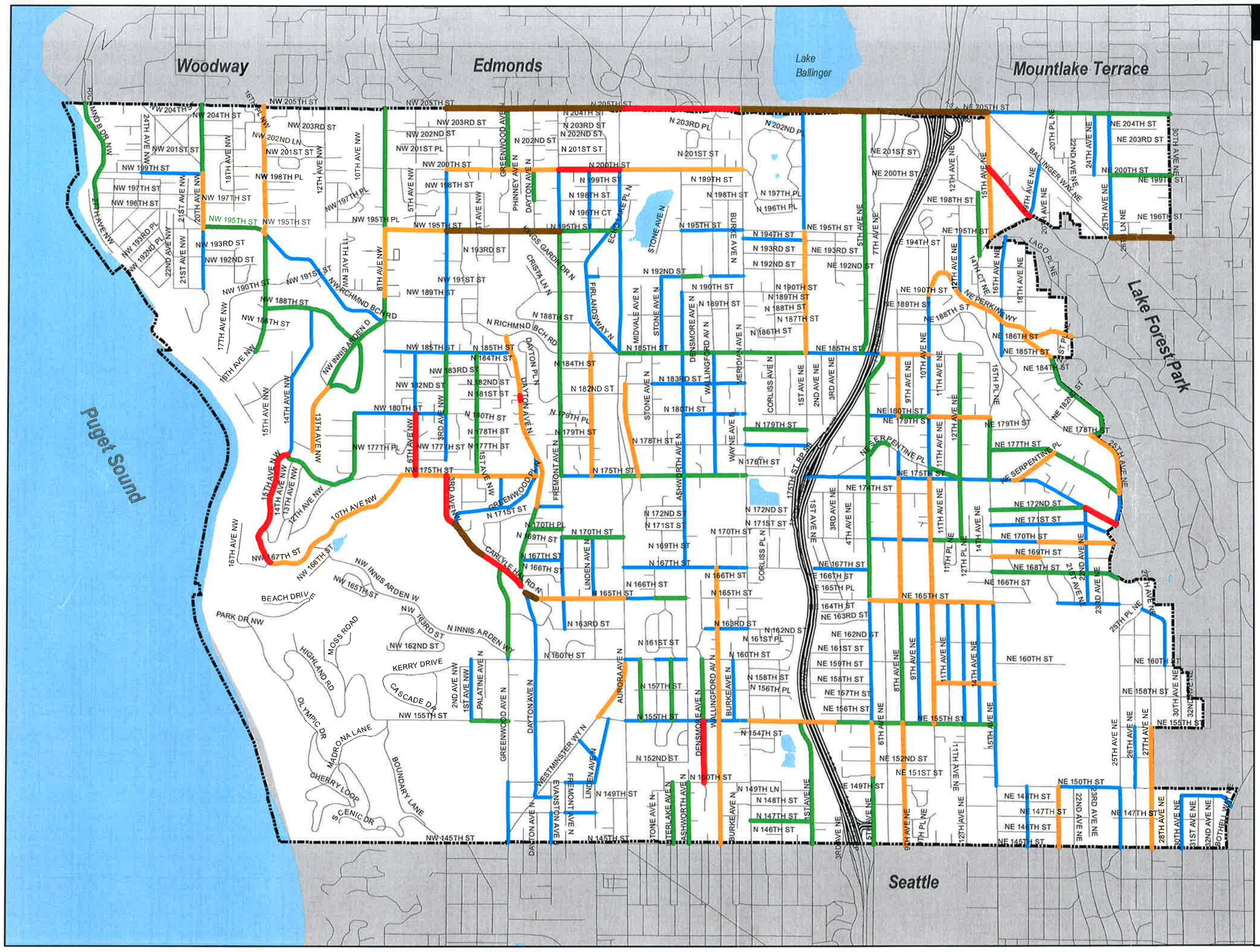
Map Data: Through December 2009

SHORELINE

Geographic Information System

Speed Differential Map

Difference Between 85th Percentile Speeds* and Posted Speed Limit**



Legend

- 12 MPH & above
- 10 - 11 MPH
- 8 - 9 MPH
- 6 - 7 MPH
- 4 - 5 MPH

* 24-Hour Average Weekday Traffic (Combined Two-Directional Totals)

** Current approved speed limits: Shoreline Municipal Code 10.20.010 Speed Limits; WAC 308-330-423

0 500 1,000 2,000 3,000 Feet

1 inch = 1,952 feet

CITY OF SHORELINE

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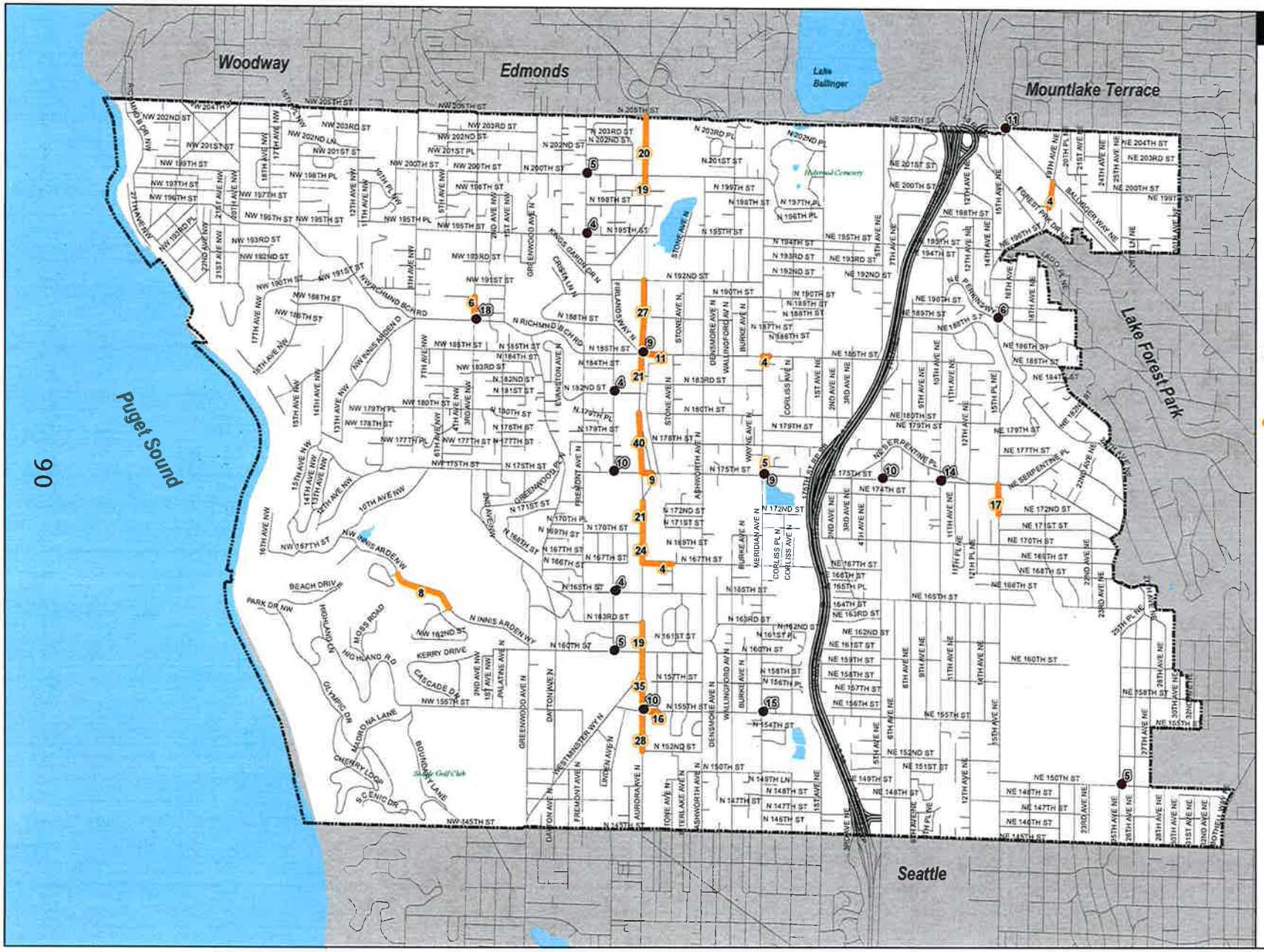

SHORELINE

Geographic Information System

Attachment C

High Collision Locations Map

(1/1/2007 - 12/31/2009)

Legend

1 Number of Intersection Collisions

1 Number of Mid-Block Collisions

0 500 1,000 2,000 3,000 Feet

1 inch = 1,990 feet

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Attachment C

City of Shoreline - High Collision Locations - sorted by rate
Reported Collisions from 1/1/2007 to 12/31/2009
Crash Rate per 10 million entering vehicles per year

	Location	Signal	# of Crashes	# of Injuries	Crash Rate	Injury Rate	Evaluation	Recommendation
1	**Linden Ave N & N 165th St**		4	3	1.01	0.76	Right angle type of collisions	Review visibility for obstructions and continue to monitor
2	**Linden Ave N & N 175th St**		10	4	0.91	0.37	Right angle and some pedestrian collisions	Restripe N 175th St from 4 lanes to two lanes with center turn lane and bike lanes
3	**25th Ave NE & NE 150th St**		5	4	0.79	0.64	Right angle type of collisions	Review visibility for obstructions and continue to monitor
4	**3rd Ave NW & NW Richmond Bch Rd**	y	18	5	0.77	0.21	Primarily opposing left turn type of collisons	Possible retiming of the traffic signal in near term. Pursue grant funding in long term for a widening project
5	**10th Ave NE & NE 175th St**	y	14	14	0.76	0.76	Primarily right angle type of collisions	increase enforcement of obeying traffic control device
6	**Linden Ave N & N 182nd St**		4	2	0.70	0.35	Primarily right angle type of collisions	Review visibility for obstructions and increase enforcement of obeying traffic control devices
7	**Meridian Ave N & N 155th St**	y	15	7	0.68	0.32	Primarily opposing left turn type of collisons	Review for possible traffic signal operation modifications
8	**Fremont Ave N & N 200th St**		5	0	0.52	0.00	Primarily right angle type of collisions	Review visibility for obstructions and increase enforcement of obeying traffic control devices
9	**Linden Ave N & N 160th St**		5	0	0.49	0.00	Primarily right angle type of collisions	Explore possible restriping of N 160th St from 4 lanes to two lanes with center turn lane and bike lanes
10	**Fremont Ave N & N 195th St**		4	3	0.45	0.34	Primarily right angle type of collisions	Review visibility for obstructions and increase enforcement of obeying traffic control devices
11	**Aurora Vill Mall N & N 200th St**	y	4	4	0.43	0.43	Primarily turning vehicles/pedestrian collisions	Review for possible traffic signal operation modifications
12	**5th Ave NE & NE 175th St**	y	10	4	0.43	0.17	Right angle and opposing left turn collisions	Review visibility for obstructions and increase enforcement of obeying traffic control devices

City of Shoreline - High Collision Locations - sorted by number
Reported Collisions from 1/1/2007 to 12/31/2009
Crash Rate per 10 million entering vehicles per year

	Location	Signal	# of Crashes	# of Injuries	Crash Rate	Injury Rate	Evaluation	Recommendation
1	**3rd Ave NW & NW Richmond Bch Rd**	y	18	5	0.77	0.21	Primarily opposing left turn type of collisons	Possible retiming of the traffic signal in near term. Pursue grant funding in long term for a widening project
2	**Meridian Ave N & N 155th St**	y	15	7	0.68	0.32	Primarily opposing left turn type of collisons	Review for possible traffic signal operation modifications
3	**10th Ave NE & NE 175th St**	y	14	14	0.76	0.76	Primarily right angle type of collisions	increase enforcement of obeying traffic control device
4	**15th Ave NE & Ballinger Way NE**	y	11	1	0.30	0.03	not in city limits - WSDOT jurisdiction	Monitor situation
5	**Aurora Ave N & N 155th St**	y	10	7	0.20	0.14	Some right angle and left turning collisions	Review for possible traffic signal operation modifications
6	**Linden Ave N & N 175th St**		10	4	0.91	0.37	Right angle and some pedestrian collisions	Restripe N 175th St from 4 lanes to two lanes with center turn lane and bike lanes
7	**5th Ave NE & NE 175th St**	y	10	4	0.43	0.17	Right angle and opposing left turn collisions	Review visibility for obstructions and increase enforcement of obeying traffic control devices
8	**Aurora Ave N & N 185th St**	y	9	4	0.17	0.08	Intersection currently being revised through Aurora Project	Monitor situation
9	**Meridian Ave N & N 175th St**	y	9	3	0.21	0.07	Left-turning sideswipe pattern of collisions	Refresh lane markings
10	**15th Ave NE & NE Perkins Way**	y	6	6	0.35	0.35	Right angle and opposing left turn collisions	Review visibility for obstructions and for possible traffic signal modifications
11	**Aurora Ave N & N 165th St**	y	6	1	0.14	0.02	Intersection currently being revised through Aurora Project	Monitor situation
12	**Aurora Ave N & N 175th St**	y	6	3	0.11	0.05	Intersection currently being revised through Aurora Project	Monitor situation

City of Shoreline - High Midblock Collisions - sorted by rate
Reported Collisions from 1/1/2007 to 12/31/2009
Crash Rate per million vehicle miles per year

	Location	# of Crashes	# of Injuries	Crash Rate	Injury Rate	Evaluation	Recommendation
1	**N 155th St from Aurora Ave N to Midvale Ave N**	16	5	20.03	6.26	Collision fall into two groups, westbound rear-end collisions due to traffic signal at Aurora Ave N, and vehicles to and from the driveway between Aurora Ave N and Midvale Ave N.	Review for possible placement of curbing to restrict left-turns
2	**N 167th St from Aurora Ave N to Stone Ave N**	4	1	15.38	3.85	Each reported collision is different. No collisions in 2009	Monitor Situation
3	**N 185th St from Meridian Ave N to Meridian Ct N**	4	3	14.01	10.51	Primarily westbound rear-end collisions due to the traffic signal at Meridian Ave N	Monitor Situation
4	**19th Ave NE from NE 199th St to Ballinger Way NE**	9	1	13.62	1.51	Primarily northbound rear-end collisions due to the traffic signal at Ballinger Way NE	Monitor Situation
5	**NW Innis Arden Way from 6th Ave NW to 9th Ave NW**	8	3	12.50	4.69	Primarily vehicles failing to negotiate roadway curves	Increase enforcement of speed limit
6	**3rd Ave NW from NW Richmond Bch Rd to NW 189th St**	6	3	10.70	5.35	Primarily southbound rear-end collisions due to the traffic signal at NW Richmond Beach Road	Monitor Situation
7	**Meridian Ave N from N 175th St to N 176th St**	5	8	10.30	16.49	Primarily southbound rear-end collisions due to the traffic signal at NW Richmond Beach Road	Monitor Situation
8	**N 185th St from Aurora Ave N to Midvale Ave N**	11	5	9.87	4.48	Primarily westbound rear-end collisions due to the traffic signal at Aurora Ave N	Monitor Situation
9	**N 175th St from Aurora Ave N to Ronald Pl N**	9	2	8.89	1.97	Primarily westbound rear-end collisions due to the traffic signal at Aurora Ave N	Monitor Situation
10	**15th Ave NE from NE 172nd St to NE 175th St**	17	5	8.70	2.56	Collisions fall into two groups, northbound rear-end collisions due to traffic signal at NE 175th St, and vehicles using the driveways between NE 175th St and the mid-block pedestrian traffic signal.	Review for possible placement of curbing to restrict left-turns
11	**N 175th St from Linden Ave N to Aurora Ave N**	11	5	8.63	3.92	Collisions fall into two groups, eastbound rear-end collisions due to traffic signal at Aurora Ave N, and vehicles using the driveway between Aurora Ave N and Linden Ave N.	Monitor Situation
12	**N 200th St from Wallingford Ave N to Burke Ave N**	4	3	8.61	6.46	Primarily westbound rear-end collisions due to the stop sign at Wallingford Ave N	Monitor Situation
13	**N 160th St from Linden Ave N to Aurora Ave N**	9	2	8.01	1.78	Primarily eastbound rear-end collisions due to the traffic signal at Aurora Ave N	Monitor Situation

City of Shoreline - High Midblock Collisions - sorted by number

Reported Collisions from 1/1/2007 to 12/31/2009

Crash Rate per million vehicle miles per year

	Location	# of Crashes	# of Injuries	Crash Rate	Injury Rate	Evaluation	Recommendation
1	**Aurora Ave N from N 175th St to Ronald Pl N**	40	14	3.90	1.36	Primarily southbound rear-end collisions due to the traffic signal at N 175th St	Monitor Situation
2	**Aurora Ave N from N 155th St to N 160th St**	35	21	3.75	2.25	Primarily rear-end collisions due to the traffic signals at N 152nd St and N 155th St	Monitor Situation
3	**Aurora Ave N from N 152nd St to N 155th St**	28	10	4.12	1.47	Primarily rear-end collisions due to the traffic signals at N 155th St and N 160th St	Monitor Situation
4	**Aurora Ave N from N 185th St to N 192nd St**	27	20	2.36	1.75	Primarily rear-end collisions due to the traffic signals at N 185th St and N 192nd St	Monitor Situation
5	**Aurora Ave N from N 167th St to N 170th St**	24	12	4.61	2.31	Primarily northbound rear-end collisions due to the traffic signal at N 170th St	Monitor Situation
6	**Aurora Ave N from N 184th St to N 185th St**	21	8	5.44	2.07	Primarily northbound rear-end collisions due to the traffic signal at N 185th St	Monitor Situation
7	**Aurora Ave N from N 170th St to Ronald Pl N**	21	14	3.95	2.63	Primarily northbound rear-end collisions due to the traffic signal at N 200th St	Monitor Situation
8	**Aurora Ave N from N 200th St to N 205th St**	20	5	2.27	0.57	Primarily rear-end collisions due to the traffic signals at N 200th St and N 205th St	Monitor Situation
9	**Aurora Ave N from N 199th St to N 200th St**	19	12	8.00	5.05	Primarily northbound rear-end collisions due to the traffic signal at N 200th St	Monitor Situation
10	**Aurora Ave N from N 160th St to N 163rd St**	19	8	3.65	1.54	Primarily southbound rear-end collisions due to the traffic signal at N 160th St	Monitor Situation
11	**15th Ave NE from NE 172nd St to NE 175th St**	17	5	8.70	2.56	Collisions fall into two groups, northbound rear-end collisions due to traffic signal at NE 175th St, and vehicles using the driveways between NE 175th St and the mid-block pedestrian traffic signal.	Review for possible placement of curbing to restrict left-turns
12	**N 155th St from Aurora Ave N to Midvale Ave N**	16	5	20.03	6.26	Collision fall into two groups, westbound rear-end collisions due to traffic signal at Aurora Ave N, and vehicles to and from the driveway between Aurora Ave N and Midvale Ave N.	Review for possible placement of curbing to restrict left-turns
13	**N 175th St from Meridian Ave N to Corliss Ave N**	16	7	2.94	1.29	Primarily rear-end collisions due to the traffic signals at Meridian Ave N and I-5 SB ramps	Monitor Situation