2016

St. Albert Traffic Collision Statistics



Transportation Branch
Engineering Services
City of St. Albert

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GLOSSARY OF TERMS

At-fault Driver	A driver who is responsible for a collision due to faulty driver action including following too closely, improper lane change, speeding, careless driving, failing to yield right of way (ROW), sign/signal violation, distracted driving.
Backing	Any multi-vehicle collision when at least one vehicle was in the act of backing up.
Collision	A motor vehicle collision occurs when a vehicle, as defined by the Alberta Traffic Safety Act, comes in contact or collides with another vehicle, pedestrian, cyclist, animal, road infrastructure or debris. Royal Canadian Mounted Police (RCMP) report on collisions occurring on public roadways, alleys, private and public parking lots within the City of St. Albert's jurisdiction. Current legislation in Alberta requires a traffic collision be immediately reported to the police if it results in death, injury or property damage of $2,000 or more.
Collision Severity	A classification of a collision based on the most severe result of the collision, i.e., whether someone was killed (fatal), injured (injury) or the vehicle received property damage (PDO).
Collision Type	The collision type refers to the object struck by a motor vehicle during a collision (e.g., pedestrian, motorcycle, bicycle, animal, fixed object); or to what happened to the vehicle in a single vehicle collision (e.g., ran off road, struck object) or what occurred between two vehicles in a multi-vehicle collision (e.g., rear end, left turn across path, head on, right angle).
Driver Action	A category of contributing factors attributed to actions taken or performed by a driver immediately prior to a collision occurring.
Fatal Collision	A vehicle collision which resulted in a fatality.
Fatality	A fatality is the death of a person that occurs as a result of a motor vehicle collision within 30 days of the collision.
Injury Collision	A vehicle collision which resulted in either a major or minor injury.
Intersection	An intersection is defined as extending 10 metres past the legally defined limits of the outer crosswalk lines of an intersecting roadway.
Left Turn Across Path	A driver makes a left turn and is struck by an oncoming vehicle with the right of way.
Major Injury	Persons with injuries or complaints of pain who went to a hospital and were subsequently admitted, even if for observation only.

Midblock	A section of roadway between two intersections.
Minor Injury	Persons with injuries or complaints of pain who went to a hospital and were treated in emergency (or refused treatment), but were not admitted to the hospital. This also includes people who indicated that they would seek medical treatment.
Property Damage Only (PDO) Collision	A vehicle collision which resulted in property damage exceeding CAD $2,000.
Public Roadways	For the purposes of reportable collisions, a roadway means any primary highway, secondary highway, rural road, street, avenue, parkway, alley, bridge where the public is ordinarily permitted to drive or park a vehicle (with certain rules and restrictions). Roadways are inclusive of sidewalks, boulevards and districts adjacent to and parallel with the roadway.
Rear End Collision	When a vehicle collides with another vehicle in the rear side due to many possible reasons (e.g., following too closely, failure to maintain proper safe distance between two vehicles, driver inattention, failing to account for road conditions).
Reportable Collision	A vehicle collision that occurs on a public roadway or private parking lot and results in death, injury and/or property damage exceeding CAD $2,000.
Sideswipe Opposite Direction	Two vehicles approaching opposite directions and intending to continue in opposite directions collide in a sideswiping manner due to one or both vehicles crossing the painted or unpainted centerline or divided median of the roadway.
Sideswipe Same Direction	Two vehicles travelling in the same direction that are moving alongside each other and collide, resulting in at least one of the vehicles being struck on the side.
Struck Object	A collision in which the primary collision involved a single vehicle and a fixed object.
Vehicle Wildlife Collision	A collision involving a vehicle striking any wildlife.
Vulnerable Road User	Road users who are in an unprotected state or have less external protection, i.e., pedestrian, motorcyclist or bicyclist.
Vulnerable Road User Collision	A collision involving a vehicle that collides with either a pedestrian, motorcyclist or bicyclist.

2016 COLLISION QUICK FACTS

2016 General Collision Statistics

- 961 collisions occurred on public roadways (incidents within private parking lots excluded)
- 562 collisions (58% of total collisions) occurred at intersections
- 399 collisions (42% of total collisions) occurred at midblock locations
- 0 fatal collisions occurred on public roadways
- 267 injury collisions occurred on public roadways
- The 267 injury collisions resulted in 24 major injuries and 380 minor injuries to road users
- 31 vulnerable road user collisions resulted in 26 injuries
- 11 pedestrian collisions resulted in 4 major and 6 minor injuries
- 15 bicycle collisions
- 15 collisions occurred within school zones
- The highest number of collision occurrences within neighbourhoods occurred in Lacombe Park, where 14% of total collisions occurred
- Of at-fault drivers: 56% were male and 44% were female
- Both male and female drivers within 16-20 years of age are the highest at-fault drivers
- 57% of at-fault drivers were residents of St. Albert
- Following too closely and backing unsafely were the two most common collision types
- 61% of speeding and red-light violations were issued to non-residents

General Collision Comparisons from 2015 to 2016

- 14% increase in total city-wide collisions
- 26% increase of collisions per 1,000 population
- 12% increase of collisions per 1,000 registered vehicles
- Injury collisions doubled
- 6% decrease of PDO collisions
- Increase of bicycle collisions
- 8% increase in intersection collisions

2016 Intersection Collision Statistics

- 58% of the total collisions on public roadways occurred at intersections
- 72% of injury collisions occurred at an intersection location

- The intersection of St. Albert Trail & Giroux Road/Boudreau Road has the highest number of total collisions
- Approximately 47% of all intersection collisions involved rear end collisions:
  - 35% of those rear end collisions resulted in injuries (doubled from 2015)
  - 29% of rear end collisions occurred during winter months (December, January and February)
- 78% of intersection collisions occurred on weekdays
- 32% of all intersection collisions occurred during winter months (December, January and February)
- 31% of intersection collisions occurred between the times of 15:00 - 18:00

2016 Midblock Collision Statistics

- 18% of midblock collisions were rear end collisions
- 43% of midblock injury collisions were due to rear end collisions
- 39% of midblock collisions involved a vehicle colliding with a parked car
- 77% of midblock collisions occurred on weekdays
- 28% of midblock collisions occurred during winter months (December, January and February)

2016 Collision Statistics Summary

Statistics	2015	2016	Change
Total Collisions	865	961	**+11.0%** ↑
Fatal Collisions	0	0	**---**
Injury Collisions	127	267	**---** ↑
PDO Collisions	738	694	**-6.0%** ↓
Intersection Collisions	519	562	**+8.3%** ↑
Midblock Collisions	346	399	**+15.3%** ↑
Rear End Collisions	299	336	**+12.4%** ↑
Left Turn Across Path Collisions	82	72	**-12.2%** ↓
Pedestrian Collisions	16	11	**-31.3%** ↓
Bicycle Collisions	8	15	**---** ↑
Motorcycle Collisions	6	5	**-16.7%** ↓
Vehicle Wildlife Collisions	7	3	**---** ↓
School Zone Collisions	6	15	**---** ↑
Number of Registered Vehicles	53,578	54,445	**+1.6%** ↑
Number of Licensed Drivers	50,384	51,108	**+1.4%** ↑

Note: Statistics of Collisions which occurred on public roadways
% not identified for values >100% increase
"-" indicates decrease "+" indicates increase

CHAPTER 1: INTRODUCTION

Background

This report provides a summary of motor vehicle collision incidents that were reported to have occurred from January 1, 2016 to December 31, 2016 within St. Albert. The City of St. Albert maintains a data file which contains all reportable collisions that occur on roadways (both public and private roadways). The information is collected from the provincial report form, which is completed by members of the Royal Canadian Mounted Police (RCMP) either on paper at the scene of the collision or electronically at the front counter of a divisional or community police station. The database reflects all reported collisions on public roadways that results in property damage of CAD $2,000 or greater, as well as any collision that results in a major or minor injury or fatality. The information presented in this report is based upon reportable incidents provided by Alberta Transportation at the time of printing. Due to continuing police investigations, some numbers presented in this report may be subject to revision.

Structure of the Report

Chapter 1 provides the background information of the report. In addition, an overview of St. Albert's location, road network, transit network, speed limits and playground zones, and demographic information (population, number of registered vehicles and licensed drivers) have also been illustrated.

Chapter 2 discusses city-wide historical collision statistics and trends. This section of the report contains overall collision trends which represent all collision occurrences within the city on both public (intersection and midblock) and private roadways (parking lots).

Chapter 3 describes 2016 collision statistics and trends from incidents on public roadways only (i.e., intersections and midblock). Private roadway (parking lot) information has been removed from this section of the report. Overall statistics on collisions are identified inclusive of: types and severities, highest collisions intersections, temporal distribution of collisions, collisions by neighbourhoods, vulnerable road user incidents, school zone collisions and vehicle wildlife collisions.

Chapter 4 represents the information about the identified "at-fault" drivers, including age, sex and driver actions. Statistics of distracted driving and enforcement are also provided in this chapter.

Geographical Location

St. Albert, the sixth largest city in Alberta and second-largest city (area of 49.73 km^2) in the Edmonton Capital Region with a population of 64,645 (density 1,300 per km^2), is located northwest of the city of Edmonton, Alberta[1]. Figure 1 illustrates the geographic location of St. Albert.

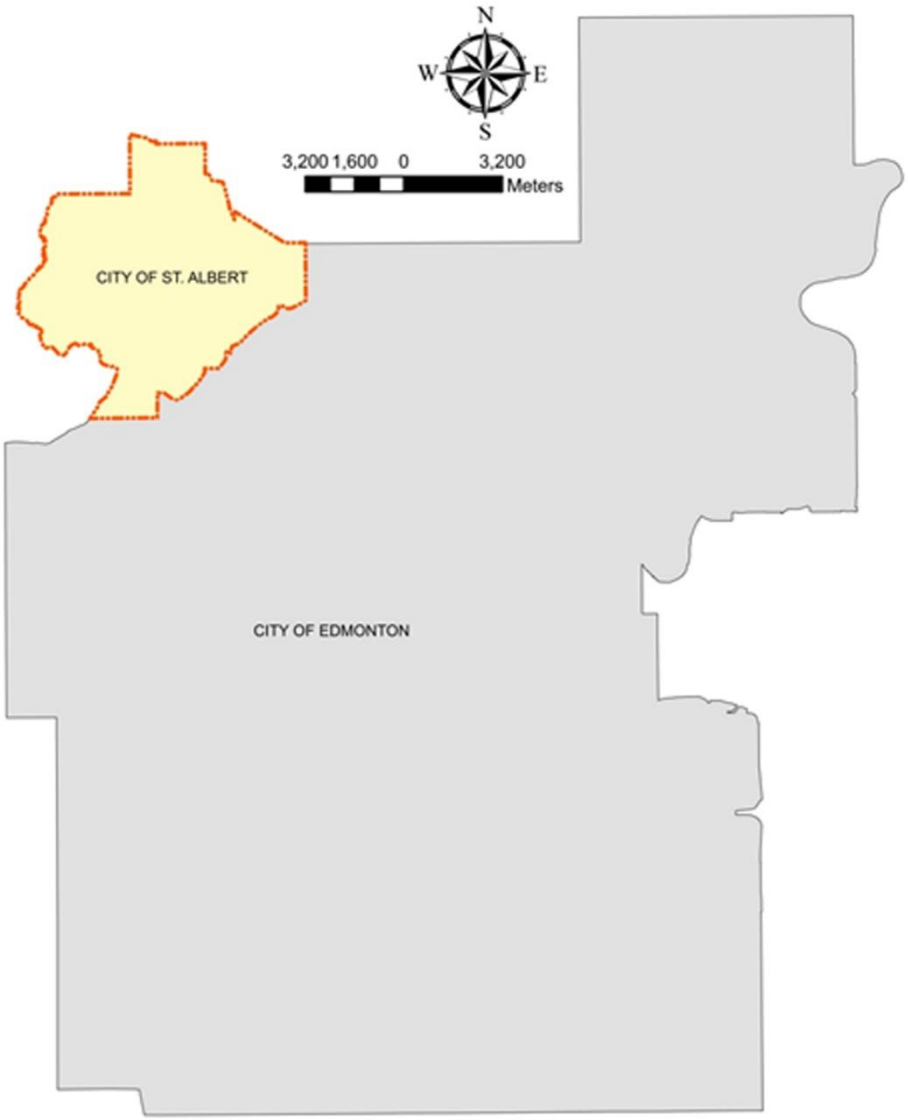


Figure 1: Geographical Location of St. Albert

Roadway Network

Figure 2 illustrates the roadway network of St. Albert. The road network is comprised of approximately 71.62 km of arterial roadway, 76.65 km of collector roadway and 165.27

[1] 2016 St. Albert Census, City of St. Albert

km of local roadway. St. Albert Trail (also known as Highway 2) is the major north south arterial corridor and acts as a primary regional connector to Edmonton. The Giroux Road/Boudreau Road corridor is the major east west arterial which links with St. Albert Trail and connects the eastern and western sections of the city.

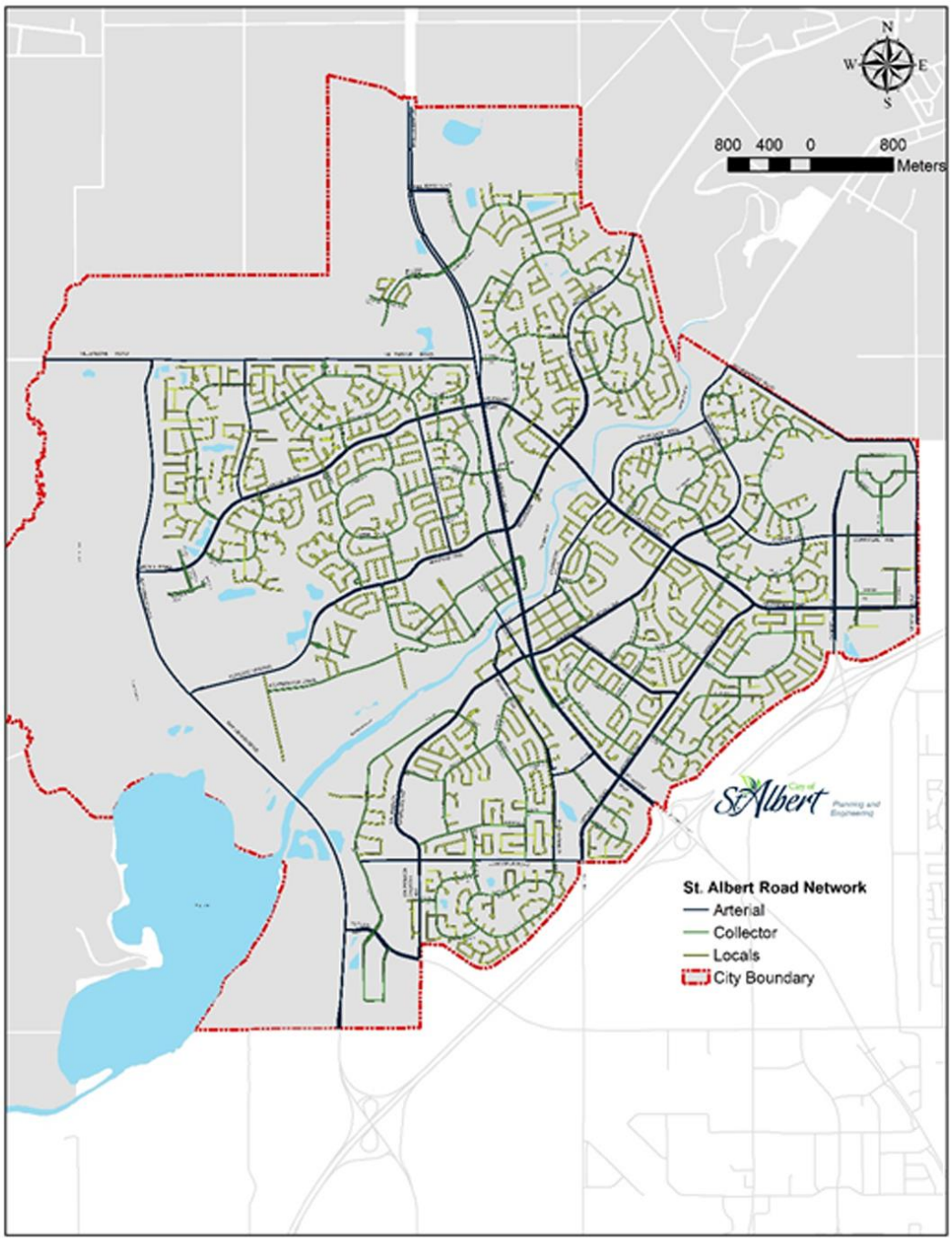
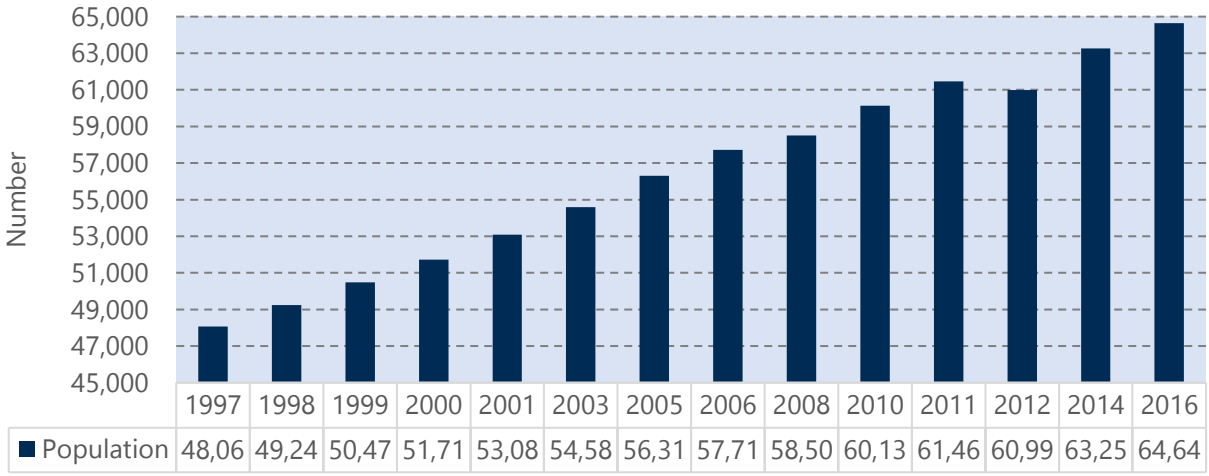


Figure 2: Road Network of St. Albert

Demographic Information

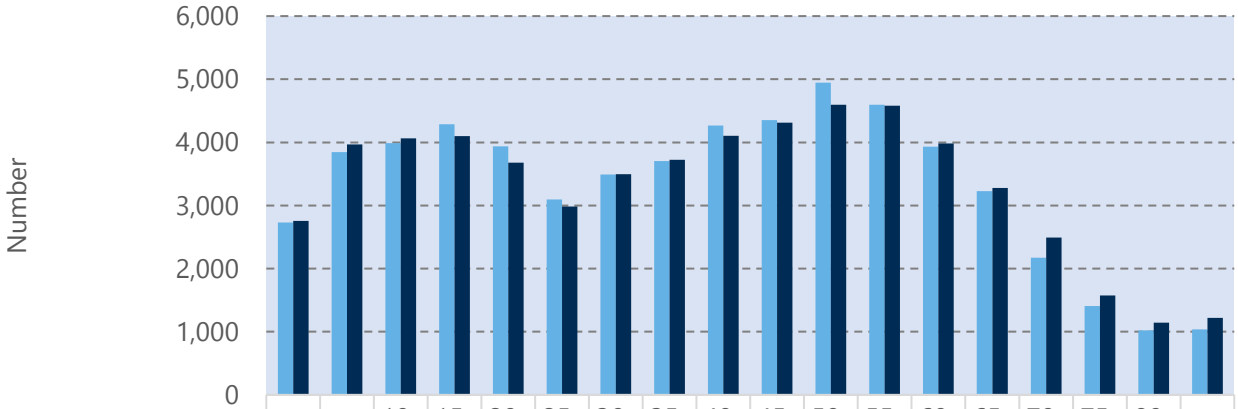
Population

The City of St. Albert has released the initial results of the 2016 Municipal Census, which shows the city's population has reached 64,645. This represents an increase of 1.1% per year and a growth of 2.2% (1,390 people) from the 2014 Census where the recorded population was 63,255 (Figure 3). The largest age category, which represents 21.91% of the population, is between 50-64 years of age (mature adults) (Figure 4). In 2014, the female population represented 51% of the overall population, while the male population was 49%[2].



	1997	1998	1999	2000	2001	2003	2005	2006	2008	2010	2011	2012	2014	2016
Population	48,06	49,24	50,47	51,71	53,08	54,58	56,31	57,71	58,50	60,13	61,46	60,99	63,25	64,64

Figure 3: Historic Population Growth of St. Albert



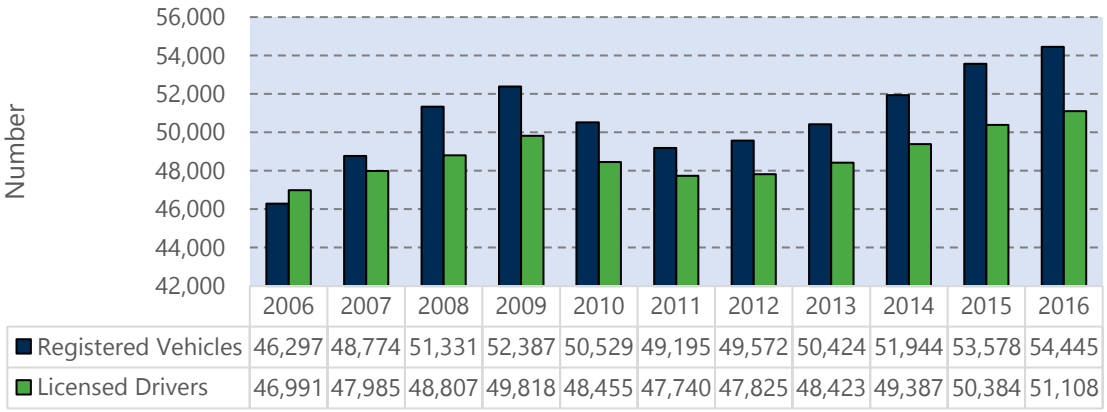
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
2014 Population	2,72	3,84	3,98	4,28	3,93	3,09	3,49	3,70	4,26	4,35	4,94	4,59	3,93	3,22	2,17	1,41	1,02	1,03
2016 Population	2,75	3,96	4,06	4,09	3,67	2,98	3,49	3,72	4,10	4,31	4,59	4,58	3,98	3,27	2,49	1,57	1,14	1,22

Figure 4: 2016 Population by Age in St. Albert

[2] 2016 St. Albert Census, Municipal Census Report, City of St. Albert

Registered Vehicles & Licensed Drivers

According to Alberta Transportation (AT), currently there are 54,445[3] registered vehicles and 51,108[4] licensed drivers in St. Albert (Figure 5). Counts for the registered motorized vehicles include all motorized vehicles that can be driven on the highway (as defined by the Alberta Traffic Safety Act); however, trailers, off-highway vehicles and dealer-plated vehicles were excluded. Counts for licensed drivers include all classes of licensed drivers, including learner's class and valid licences that have not expired. Counts do not include suspended drivers, ID card holders, or any drivers with expired licences. In 2016, there was a 1.4% increase of licensed drivers and a 1.6% increase of registered vehicles over 2016. In term of car ownership per household, the ratio of registered vehicles and occupied dwelling units was 2.29 (total dwelling units 23,802), which indicates that every household has at least two registered vehicles. These numbers act as indicators of a community's car dependency and vehicle-centric priority.



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Registered Vehicles	46,297	48,774	51,331	52,387	50,529	49,195	49,572	50,424	51,944	53,578	54,445
Licensed Drivers	46,991	47,985	48,807	49,818	48,455	47,740	47,825	48,423	49,387	50,384	51,108

Year	2015			2016		
Age Group	Male	Female	Total	Male	Female	Total
Under 16	319	271	590	300	292	592
16-20 years old	1,922	1,733	3,655	1,941	1,765	3,706
21-25 years old	2,101	2,062	4,163	2,115	1,968	4,083
25-30 years old	2,055	1,794	3,849	1,979	1,800	3,779
31-35 years old	1,990	1,984	3,974	2,060	2,075	4,135
36-40 years old	1,953	2,095	4,048	2,030	2,163	4,193
41-45 years old	2,300	2,301	4,601	2,262	2,335	4,597
46-50 years old	2,271	2,383	4,654	2,214	2,335	4,549
51-55 years old	2,555	2,641	5,196	2,577	2,619	5,196
55-60 years old	2,319	2,386	4,705	2,303	2,409	4,712
61-65 years old	1,880	1,998	3,878	1,905	2,051	3,956
65-69 years old	1,519	1,591	3,110	1,582	1,669	3,251
70-74 years old	1,020	973	1,993	1,100	1,048	2,148
75-79 years old	568	600	1,168	653	648	1,301
80-85 years old	361	287	648	354	322	676
86 and over	141	100	241	186	120	306
Total Licensed Drivers in St. Albert	25,274	25,199	50,473	25,561	25,619	51,180

The age group **16-20** represents **7%** of the total licensed drivers

Figure 5: Number of Registered Vehicles & Licensed Drivers of St. Albert

[3] Vehicle Geographical Statistics, Alberta Transportation, Office of Traffic Safety
[4] MOVES Operator Reports, Alberta Transportation, Office of Traffic Safety

Neighbourhoods

There are 24 neighbourhoods in the city. Figure 6 identifies population by neighbourhood (based upon 2016 population statistics). St. Albert's most populated neighbourhoods are:

- Lacombe Park - 11.5% of the total city population
- Grandin - 11.5% of the total city population
- Erin Ridge – 9.3% of the total city population

Since 2014 the neighbourhood with the highest population growth was North Ridge, where there was an increase in population of 791 people. North Ridge was followed by the community of Erin Ridge North, where there was a population increase of 785 people.

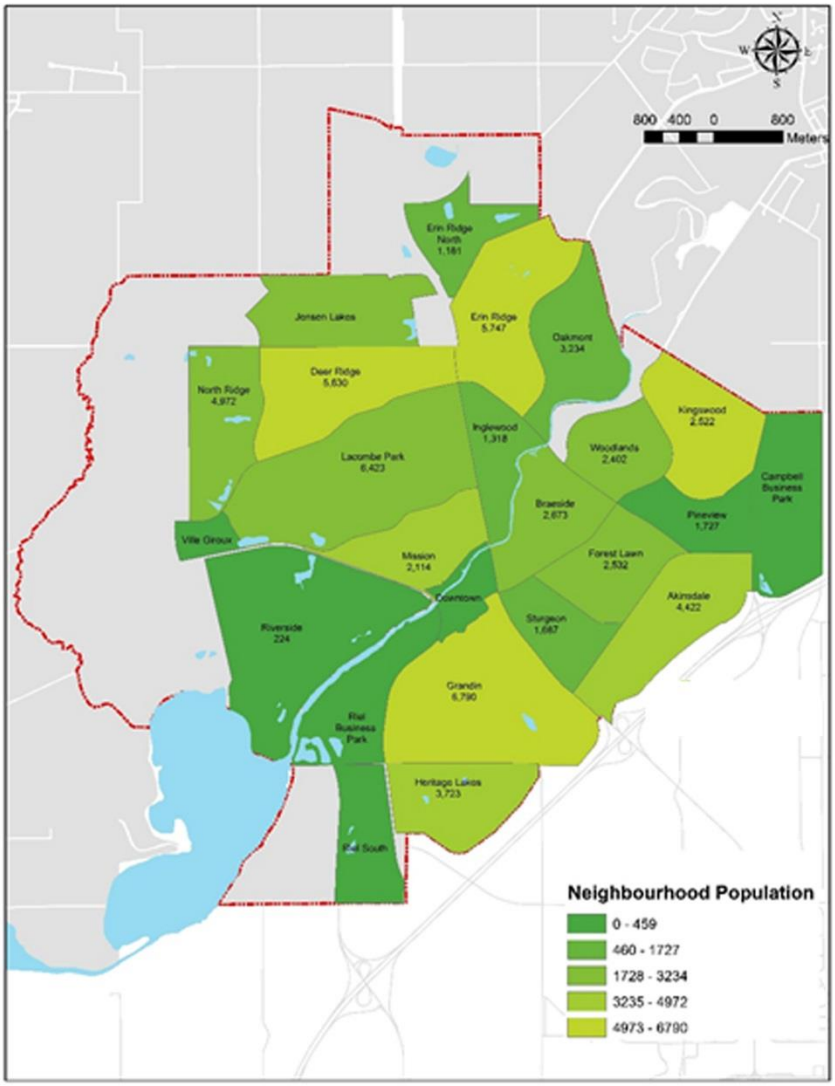


Figure 6: Population of St. Albert (2016) by Neighbourhoods

Transit Network

St. Albert Transit (StAT) has 15 local routes and 8 commuter routes to Edmonton (Figure 7). Currently StAT operates 55 buses and the fleet travels a total of 2.2 million kilometres and carries 1.25 million riders annually.

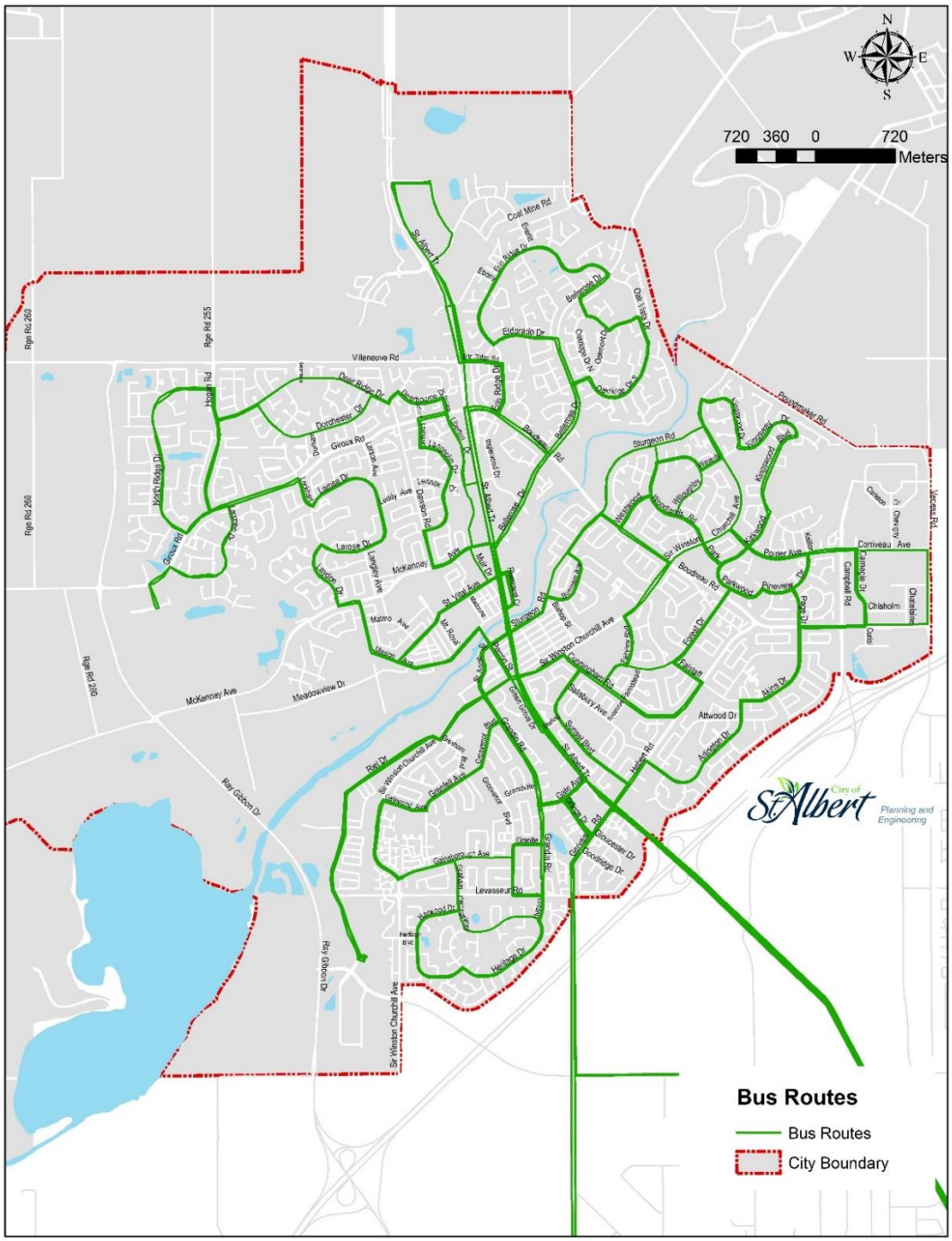


Figure 7: Transit Network of St. Albert

Speed Limits, School Zones and Playground Zones

St. Albert utilizes school zones, which is an identified section of road in proximity to a school where the speed limit is reduced to 30 km/h and is in effect on school days between the hours of 08:00 - 16:00.

The City also operates with both playground areas and playground zones. A playground area is a location identifying a playground with a warning sign; however, there is no reduction in travel speed on the roadway. A playground zone operates with an identifiable speed reduction to 30 km/h and is in effect every day of the year, starting at 08:30 and ending one hour after sunset. With the exception of school and playground zones (during specified times), all collector and local roads within St. Albert operate at 50 km/h unless otherwise posted. Figure 8 identifies posted speed limits within the city.

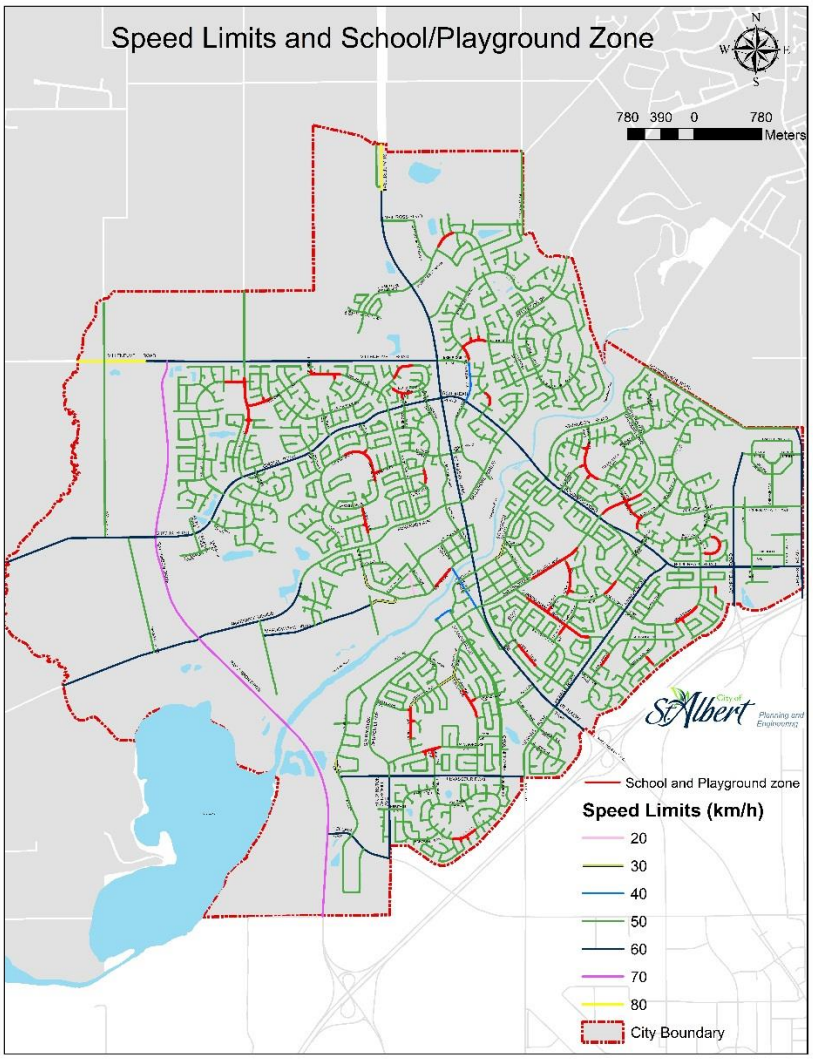


Figure 8: Speed limits and School/Playground Zones of St. Albert Road Network

CHAPTER 2: HISTORICAL COLLISION STATISTICS

City-wide Collision Trends (Public and Private Roads)

Figures 9 and 10 illustrate the city-wide total collision frequency and percentages of collision frequency change from 2005 to 2016. City-wide collision frequency includes collisions that occurred on public roadways (i.e., intersection and midblock) and within private parking lots. From 2005 to 2016 the highest number of collisions was reported in 2009 (1,862 collisions), while the lowest number occurred in 2005 (1,067 reported collisions). In 2016 (city-wide), there were 1,533 reported collisions which represent an overall 14% collision increase from 2015.

Over the past 10 years, the highest increase of collisions took place from 2006 to 2007 when there was a 21% increase in reported collisions (Figure 10).

In 2011, there was a substantial decrease recorded (approximately 18% reduction from 2010); however, this reduction was impacted by a dollar value change for reporting property damage only (PDO) collisions. Values were raised to CAD $2,000 from CAD $1,000 which may have led to a reduction of identified reportable collisions.

In 2016,
14%
Increase in Collisions compared to 2015

Several road safety initiatives/countermeasures have been implemented to address and reduce collisions.

- In 2001, red light cameras were implemented at two intersections:
  - St. Albert Trail and Hebert Road/Gervais Road intersection.
  - St. Albert Trail and McKenney Avenue/Bellerose Drive intersection.
    - Speed enforcement was added to the cameras in 2009, thus making them intersection safety devices (ISDs) with enforcement occurring for both red light violations and speed violations.
  - In 2013 ISDs were implemented at the St. Albert Trail and Giroux Road/Boudreau Road intersection.
- In 2014, protected only left turn signal phases were introduced at intersections along the St. Albert Trail corridor. Protected only left turns now operate at 11 of 14 intersections along the corridor – for the high volume north and southbound directions.

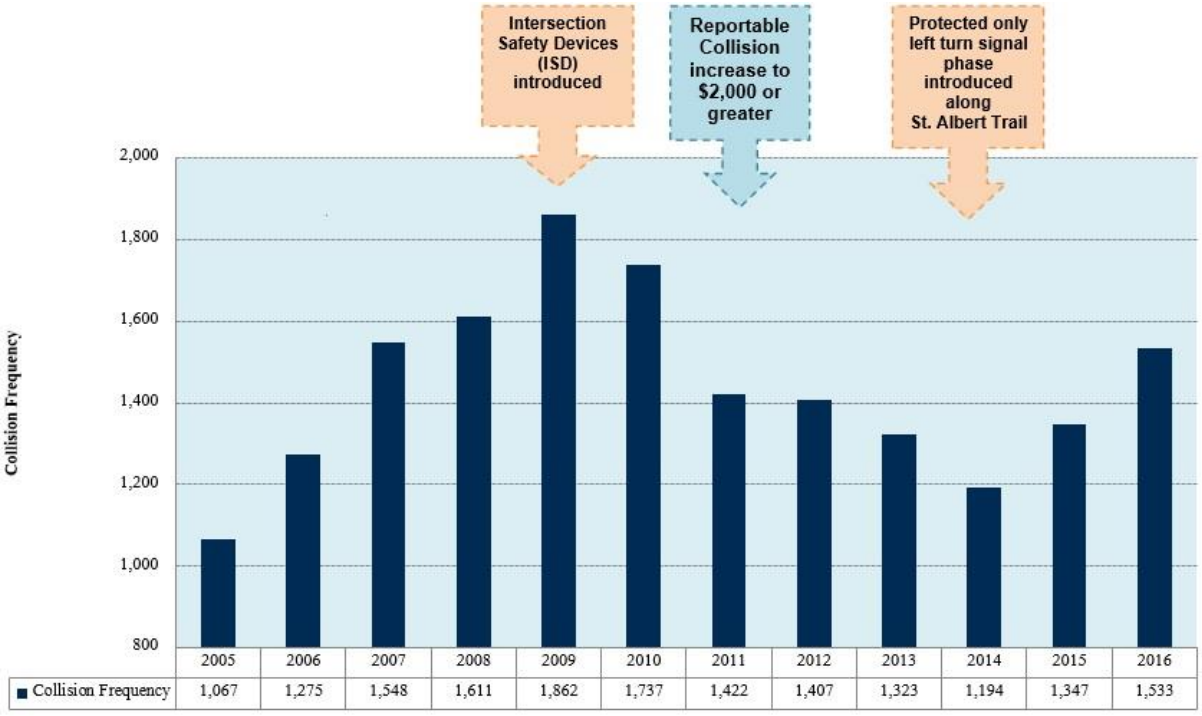


Figure 9: City-wide Historical Collision Incidents Reported (2005 - 2016)

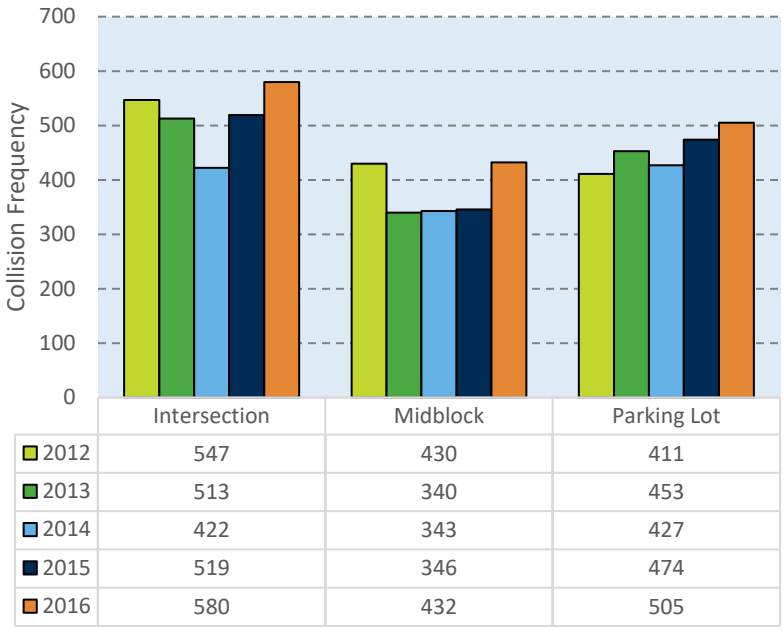


Figure 10: Percentage Variance of Annual Reported Collisions

** Change identified for the year is in comparison to the previous year*

Figure 11 represents the annual collision frequency (number of occurrences) at intersections, midblock locations and within parking lots from 2013 to 2015.

The distributions of collisions at the various locations are quite similar. In 2016, there was a 25% increase of midblock collision occurrences from 2015.



	Intersection	Midblock	Parking Lot
2012	547	430	411
2013	513	340	453
2014	422	343	427
2015	519	346	474
2016	580	432	505

2016 reported a 25% Increase of Midblock Collisions from 2015

Figure 11: 2012 - 2016 Collision Incidents by Location Type

For a better understanding of city-wide collision trends, it is important to consider city population or registered vehicles as a proxy for exposure or risk of collision occurrence. This is achieved by considering the collision occurrences per 1,000 population or per 1,000 registered vehicles, rather than focusing on simple collision frequency.

Figure 12 identifies the annual collision rates per 1,000 population in St. Albert from 2005 to 2016. From 2005 to 2010 there was an increasing trend in collision rates per 1,000 population, which led to the highest recorded value of 28.88% in 2010. In 2011 the rate decreased by 19.9%; however, it remained constant in 2011 and 2012. An 18% reduction of collisions per 1,000 population occurred in 2014 from 2012 (Figure 12); however, in 2016 the collision rate rose again by approximately 26%.

Figure 13 represents the increase of collisions per 1,000 registered vehicles in the same time frame. In 2016 there was a 12% increase of collisions per 1,000 registered vehicles in St. Albert compared to the previous year.

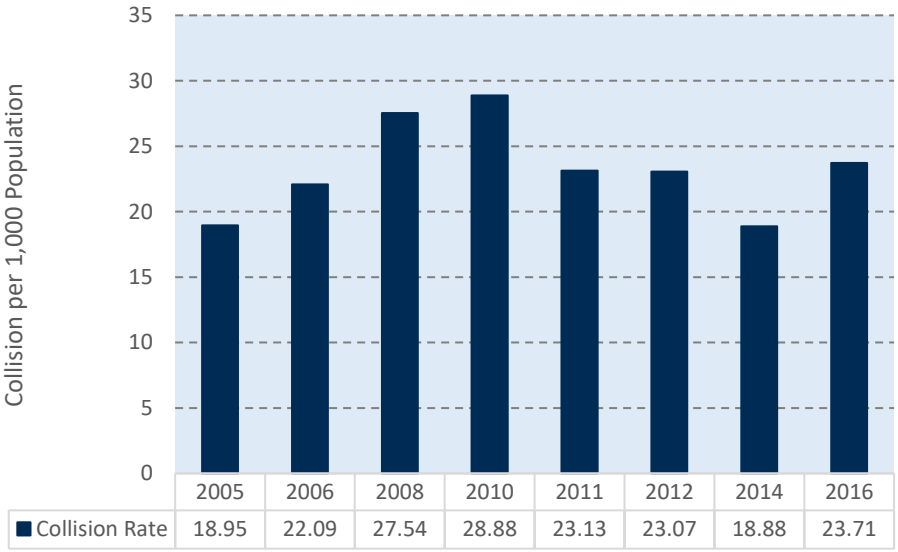


Figure 12: Collisions per 1,000 Population

26%

Increase of Collisions per 1,000 Population from 2014 to 2016

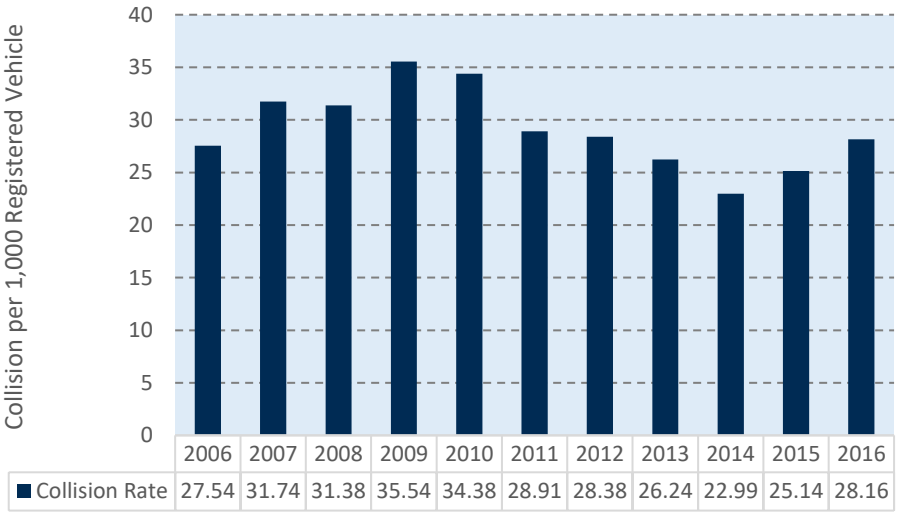


Figure 13: Collisions per 1,000 Registered Vehicles

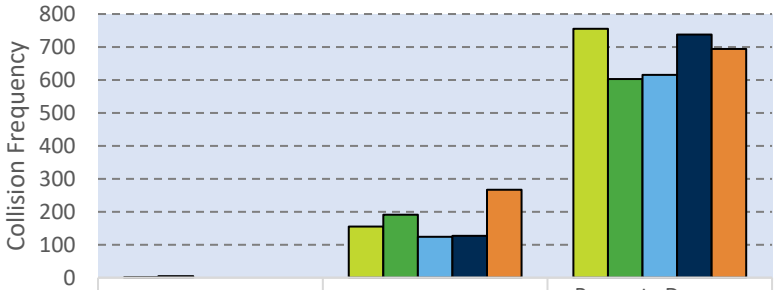
12%

Increase of Collisions per 1,000 Registered Vehicles from 2015 to 2016

CHAPTER 3: 2016 COLLISION STATISTICS ON PUBLIC ROADWAYS

Collision Trends on Public Roadways

This section discusses reported collision occurrences, severities and trends that occurred on public roadways (i.e., intersections and mid-blocks) and excludes collisions that occurred in private parking lots. Similar to 2014 and 2015, there were no fatal collisions in 2016 on public roadways (Figure 14); however, there was an increase of injury collisions from 2015.



	Fatal	Injury	Property Damage Only
2012	1	155	755
2013	5	191	603
2014		124	615
2015		127	738
2016		267	694

0 Fatal Collisions

Injury Collisions doubled from 2015

6% Decrease of PDO Collisions from 2015

Figure 14: Collisions (2012- 2016) on Public Roadways by Severity

Overview

In 2016, there were 961 total collisions that occurred on public roadways (private parking lot incidents excluded). Based on the location of the collisions, public roadways can be divided into two locations:

i) intersection locations
ii) midblock locations

Figure 15 represents the 2016 collisions by location type with identification of resulting severity. Approximately 58% of total collisions occurred at intersections, whereas 42% occurred at midblock locations.

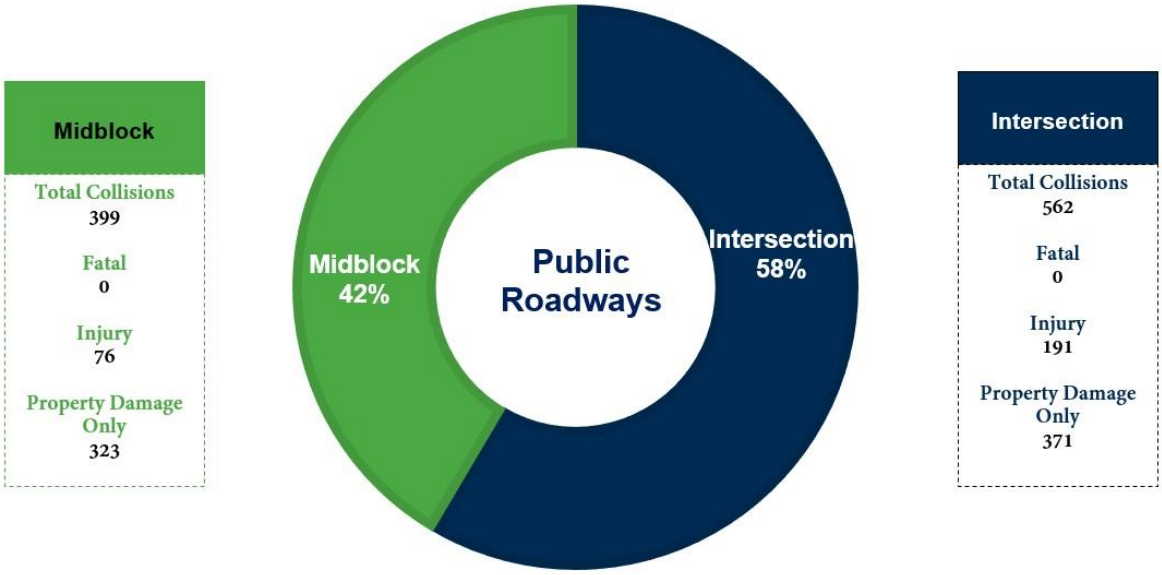


Figure 15: Distribution of Collisions by Location Type and Severity

There were no fatalities resulting from collisions in 2016.

There were 267 total injury collisions reported: 76 occurrences at midblock locations and 191 occurrences at intersection locations.

Of these 267 collisions that resulted in injuries:

- A total of 404 injuries were reported
- 24 road users reported major injuries as a result of an incident
- 380 road users reported minor injuries as a result of an incident

0
Fatal Collisions on public roadways

72% Injury Collisions occurred at Intersections

267 Injury Collisions resulted in 24 Major Injuries and 380 Minor Injuries to road users

Intersection Collisions

Intersections are the most collision prone locations in the road network due to the interaction of multiple road users and the various directions for vehicles and pedestrians that result in conflict. For example, in a 4-leg intersection there are 32 conflict points and in a 3-leg intersection (T-intersection) there are 9 conflicts points.

In 2016:

- 58% of the total collisions on public roadways occurred at intersections.
- In terms of severity, 72% of injury collisions occurred at intersections which is a decrease from 84% in 2015.

Figure 16 illustrates the density, or “hot spots”, of intersection collision incidents. It clearly identifies that most reported collisions occurred along the St. Albert Trail and Boudreau Road corridors. Figure 17 also demonstrates the density of intersection injury collisions, which is similar to the intersection collision density map and also identifies that most reported injury collisions occurred along St. Albert Trail.

St. Albert Trail and Boudreau Road are the two major arterials where traffic volume is significantly higher compared to other arterials within the city.

Previous traffic safety research has shown that there is a relationship between collision occurrence and traffic volume – as traffic volumes increase; vehicle collision frequency also typically increases.

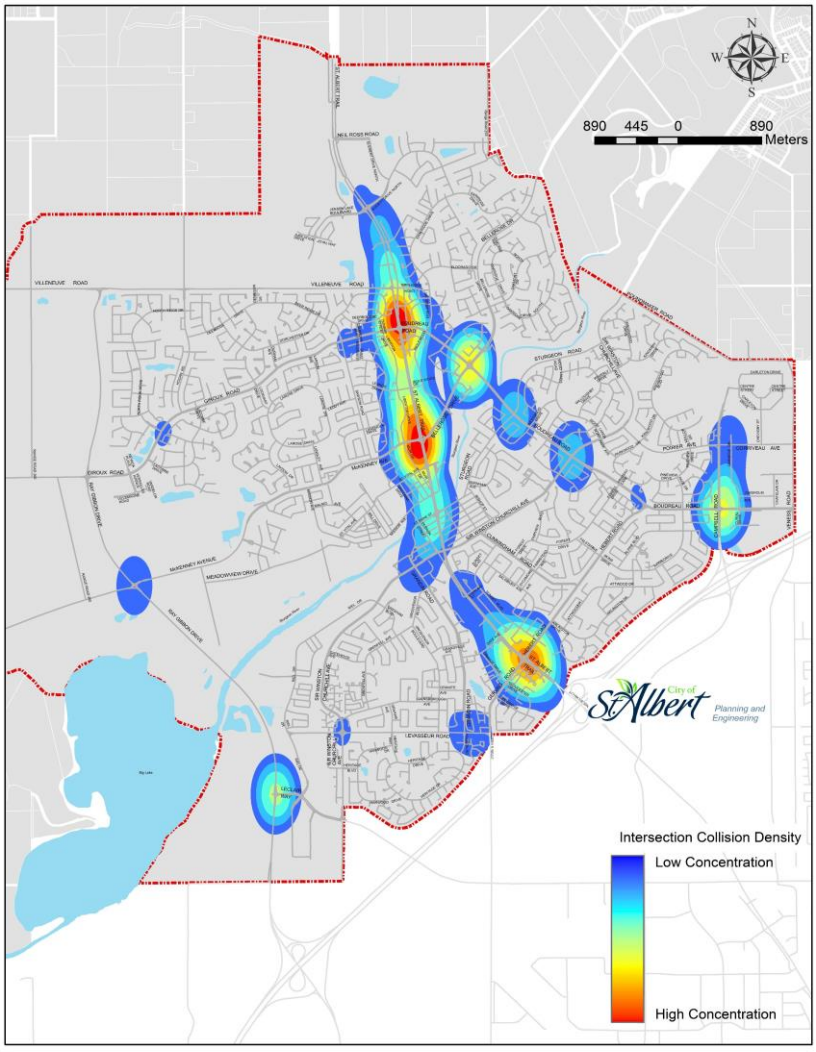


Figure 16: 2016 Intersection Collision Density

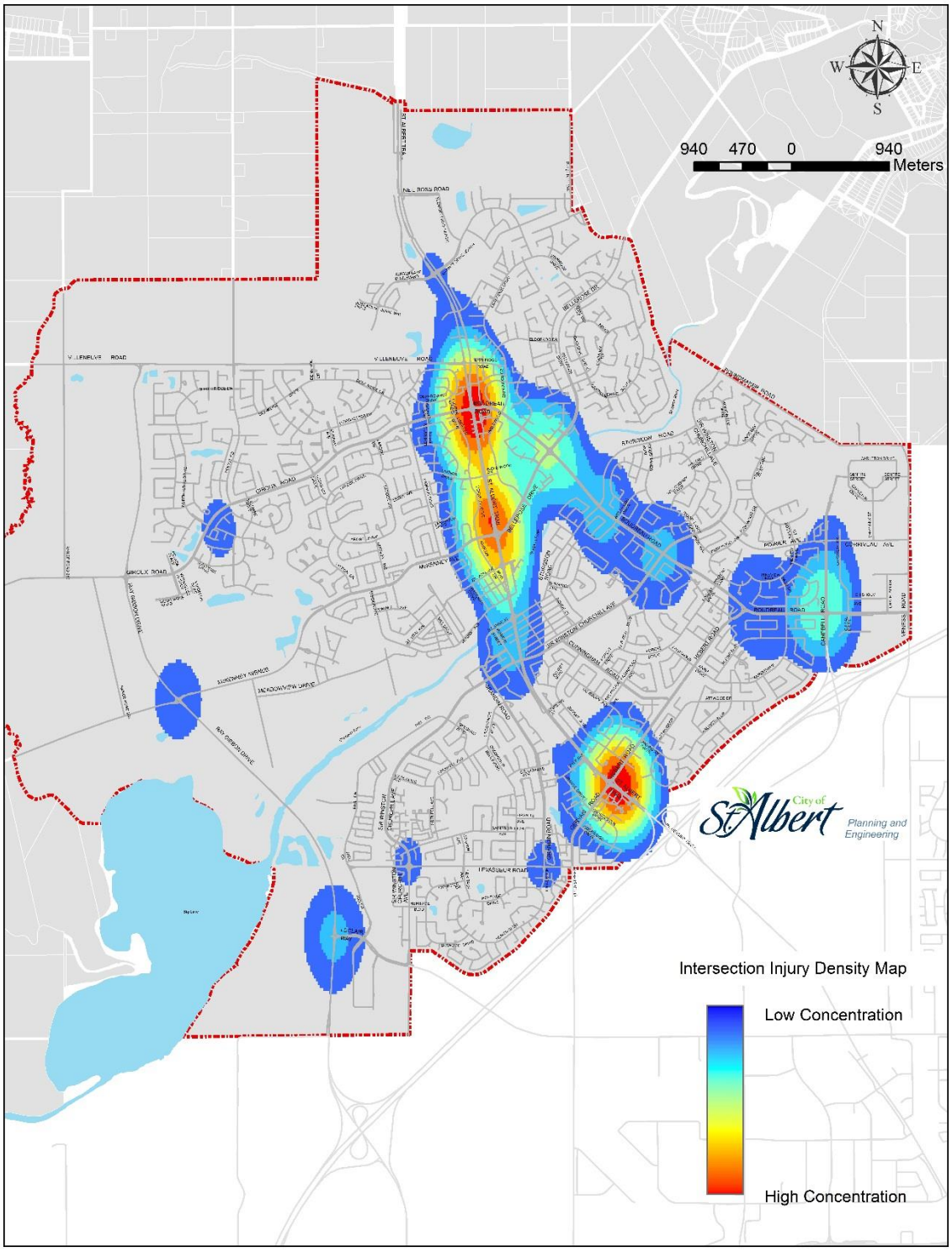


Figure 17: 2016 Intersection Injury Collision Density

Table 1 and Figure 18 identify the 10 highest collision intersections based on total collisions in 2016. For an annual comparison, Table 2 identifies the 10 highest collision intersections reported in 2015.

Seven out of the top 10 identified intersections are located on the St. Albert Trail corridor.

For the fourth year in a row (2013 – 2016), the intersection of St. Albert Trail and Giroux Road/Boudreau Road was ranked the highest in collision frequency with 35 collisions. Table 3 shows the highest injury collision intersections. St. Albert Trail and Giroux Road/Boudreau Road was also ranked first in terms of severity. Interestingly Boudreau Road and Bellerose Drive ranked second in terms of both collision frequency and severity. These roadways were previously not identified in the top ten highest collision intersections.

St. Albert Trail & Giroux Road/ Boudreau Road #1

Collision Location based on collision frequency and severity

Table 1: 2016 Top Ten Collision Intersections

Rank	Intersection Name	Collision Frequency
1	St. Albert Trail & Giroux Road/Boudreau Road	35
2	St. Albert Trail & McKenney Avenue/Bellerose Drive	29
2	Boudreau Road & Bellerose Drive	29
3	Campbell Road & Boudreau Road	22
3	Ray Gibbon Drive & LeClair Way	22
4	St. Albert Trail & Hebert Road/Gervais Road	18
5	St. Albert Trail & Lennox Drive/Inglewood Drive	16
5	St. Albert Trail & Superstore Intersection	16
6	St. Albert Trail & St. Anne Street/Sturgeon Road	15
6	Boudreau Road & Sir Winston Churchill Avenue	15

Table 2: 2015 Top Ten Collision Intersections

Rank	Intersection Name	Collision Frequency
1	St. Albert Trail & Giroux Road/Boudreau Road	32
2	St. Albert Trail & Villeneuve Road/Erin Ridge Road	26
2	St. Albert Trail & McKenney Avenue/Bellerose Drive	26
3	St. Albert Trail & Hebert Road/Gervais Road	25
4	Boudreau Road & Campbell Road	22
5	Ray Gibbon Drive & LeClair Way	16
6	St. Albert Trail & St. Vital Avenue/Rivercrest Crescent	14
7	St. Albert Trail & Lennox Drive/Inglewood Drive	13
7	St. Albert Trail & St. Anne Street/Sturgeon Road	13
8	Boudreau Road & Sir Winston Churchill Avenue	12

Table 3: High Injury Collision Intersections in 2016

Rank	Intersection Name	Injury Collision Frequency
1	St. Albert Trail & Giroux Road/Boudreau Road	12
2	Boudreau Road & Bellerose Drive	11
3	St. Albert Trail & McKenney Avenue/Bellerose Drive	10
4	Campbell Road & Boudreau Road	9
4	St. Albert Trail & Superstore Intersection	9
5	St. Albert Trail & Hebert Road/Gervais Road	8
6	St. Albert Trail & Lennox Drive/Inglewood Drive	6
6	Boudreau Road & Sir Winston Churchill Avenue	6
6	St. Albert Trail & Villeneuve/Erin Ridge Road	6
6	Boudreau Road & Sturgeon Road	6
6	Ray Gibbon Drive & LeClair Way	6
6	Hebert Road & Sunset Boulevard/Mall Exit Road (N)	6

Table 4 represents the ranking of intersections for different collision types based on the collision frequency. Although there is a protected only left turn at the intersection of St. Albert Trail and Giroux Road/Boudreau Road for the north and southbound directions of travel, 9 left turn collisions occurred at this location. Eight out of 9 of those incidents involved left turns in the east or west travel directions (left turns from Giroux Road or Boudreau Road on to St. Albert Trail), which operate as protected and then permissive left turns (advance left turn arrows that are followed by a yield to oncoming traffic).

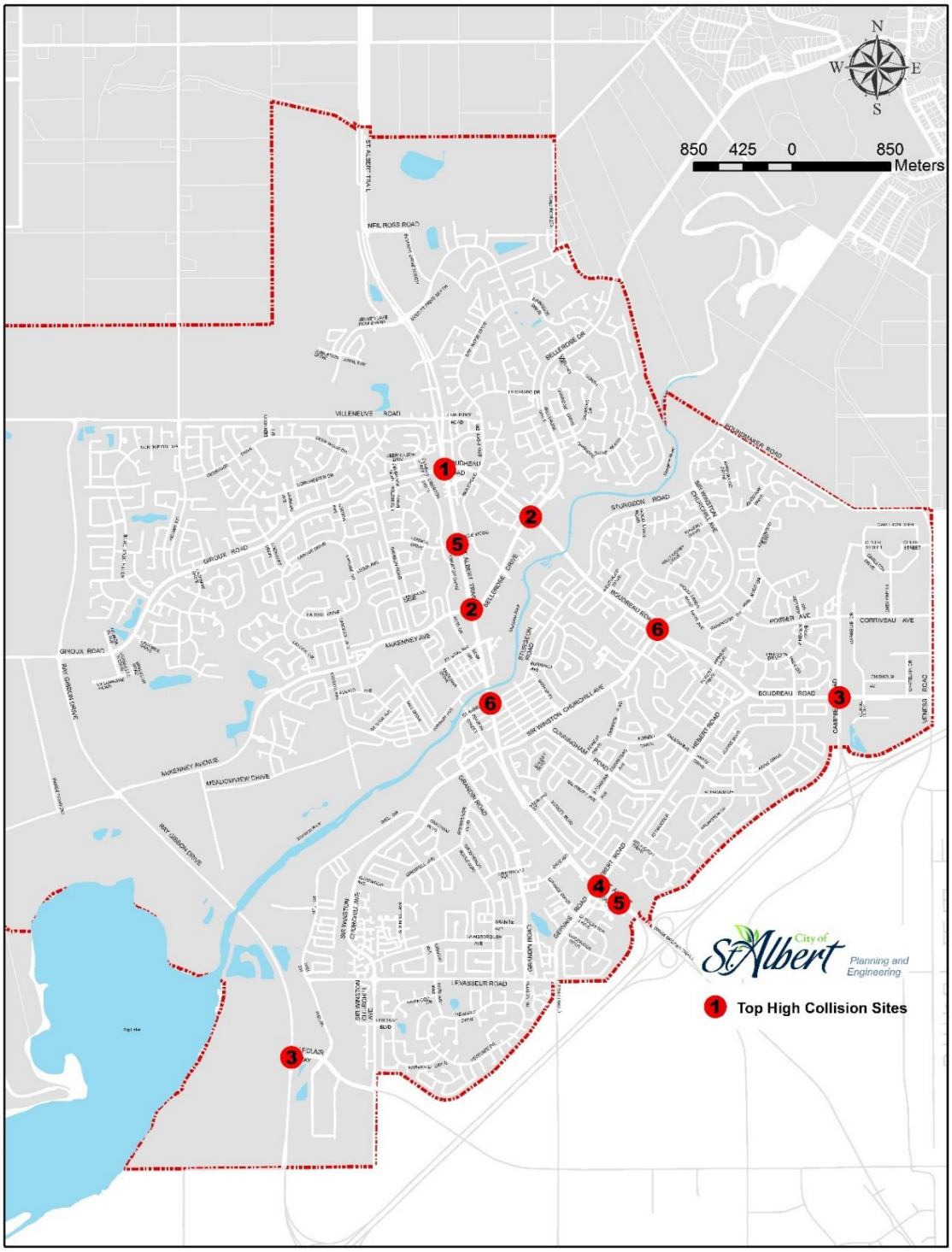


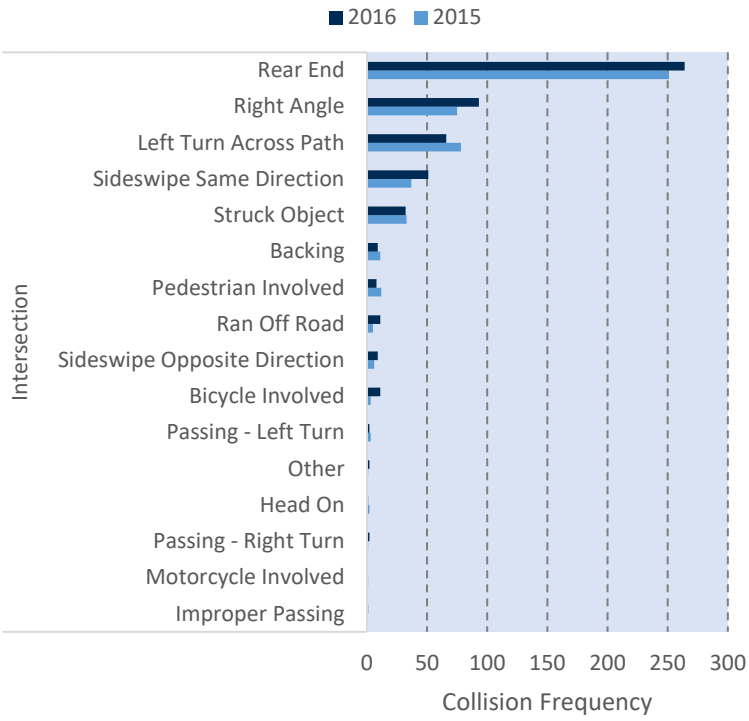
Figure 18: 2016 Top Ten Collision Intersections

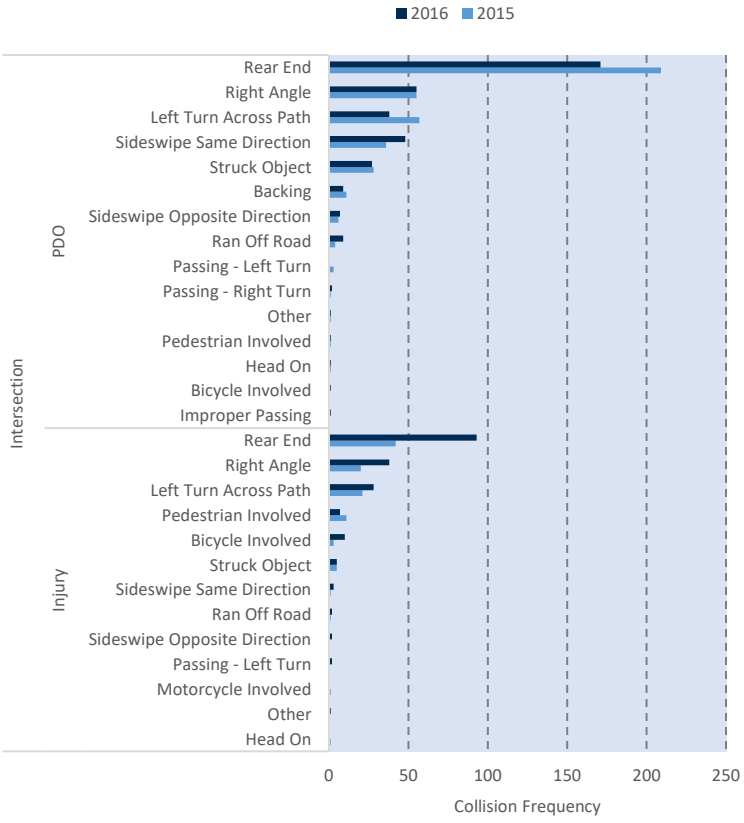
Note – The number identifies the intersection ranking based on overall collision frequency

Similarly, the intersection of Boudreau Road and Bellerose Drive operates with protected/permissive left turn signal phases and there were 7 incidents in 2016. Five out of 7 of those incidents occurred east/westbound. Of the highest volumes of rear end incidents, 5 out of 8 intersections are along the St. Albert Trail corridor. High traffic volume, speeding, following too closely and distracted driving may be some of the contributing factors of these rear end collisions. Although McKenney Avenue and Muir Drive/Liberton Drive is a signalized intersection, 5 right angle collisions occurred at that intersection. Five right angle collisions also occurred at Liberton Drive and Lennox Drive which is a two-way stop controlled intersection.

Table 4: High Collision Intersections by Collision Types

Rank	Intersection Name	Collision Frequency
Rear End		
1	St. Albert Trail & McKenney Avenue/Bellerose Drive	21
1	St. Albert Trail & Giroux Road/Boudreau Road	21
2	Boudreau Road & Bellerose Drive	19
3	Ray Gibbon Drive & LeClair Way	17
4	Campbell Road & Boudreau Road	15
5	St. Albert Trail & Hebert Road/Gervais Road	13
6	St. Albert Trail & Gate Avenue	12
6	St. Albert Trail & Lennox Drive/Inglewood Drive	12
Right Angle		
1	McKenney Avenue & Muir Drive/Liberton Drive	5
1	Liberton Drive & Lennox Drive	5
2	Levasseur Road & Sir Winston Churchill Avenue	4
2	St. Albert Trail & Superstore Intersection	4
3	Sir Winston Churchill Avenue & Grandin Road/St. Anne Street	3
3	Villeneuve Road & Walmart Exit (E)	3
3	St. Albert Trail & Villeneuve/Erin Ridge Road	3
3	Hebert Road & Sunset Boulevard/Mall Exit Road (N)	3
Left Turn Across Path		
1	St. Albert Trail & Giroux Road/Boudreau Road	9
2	Boudreau Road & Bellerose Drive	7
3	Campbell Road & Boudreau Road	5
4	Boudreau Road & Sir Winston Churchill Avenue	4
4	Levasseur Road & Grandin Road/Hudson Road	4
5	Boudreau Road & Sturgeon Road	3
5	Boudreau Road & Inglewood Drive/Erin Ridge Drive	3





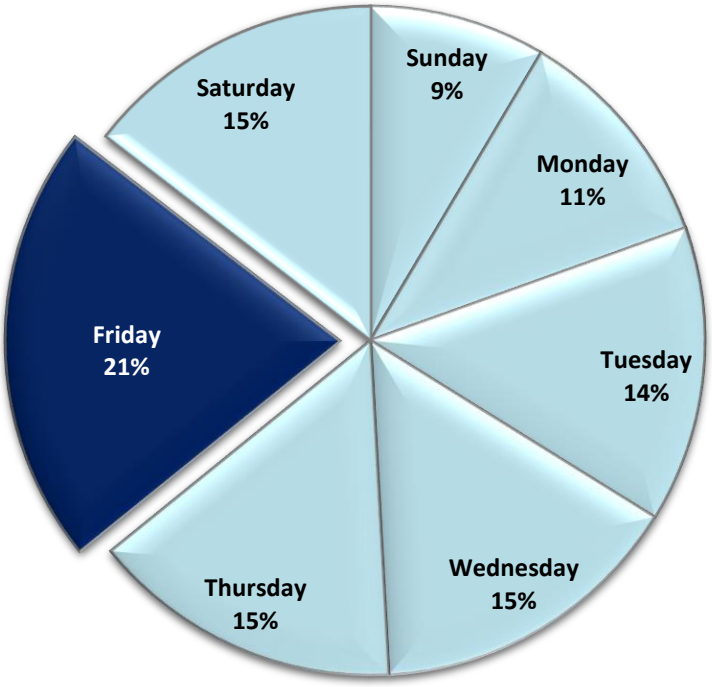
47% of Intersection Collisions involved **Rear End** Collisions (4% higher than 2015)

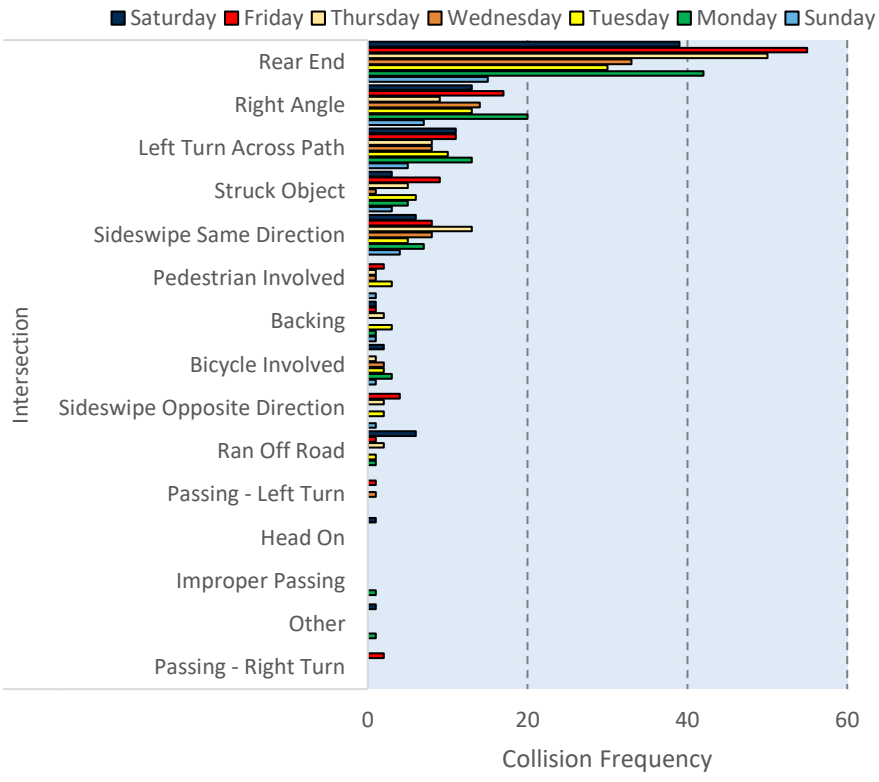
35% of **Rear End** Collisions resulted in **Injuries** (Double than 2015)

Left Turn Across Path Collisions **Decreased 15%** from 2015

Figure 19: Intersection Collisions by Severities and Types for 2015 and 2016

Temporal Distribution of Intersection Collision Occurrences



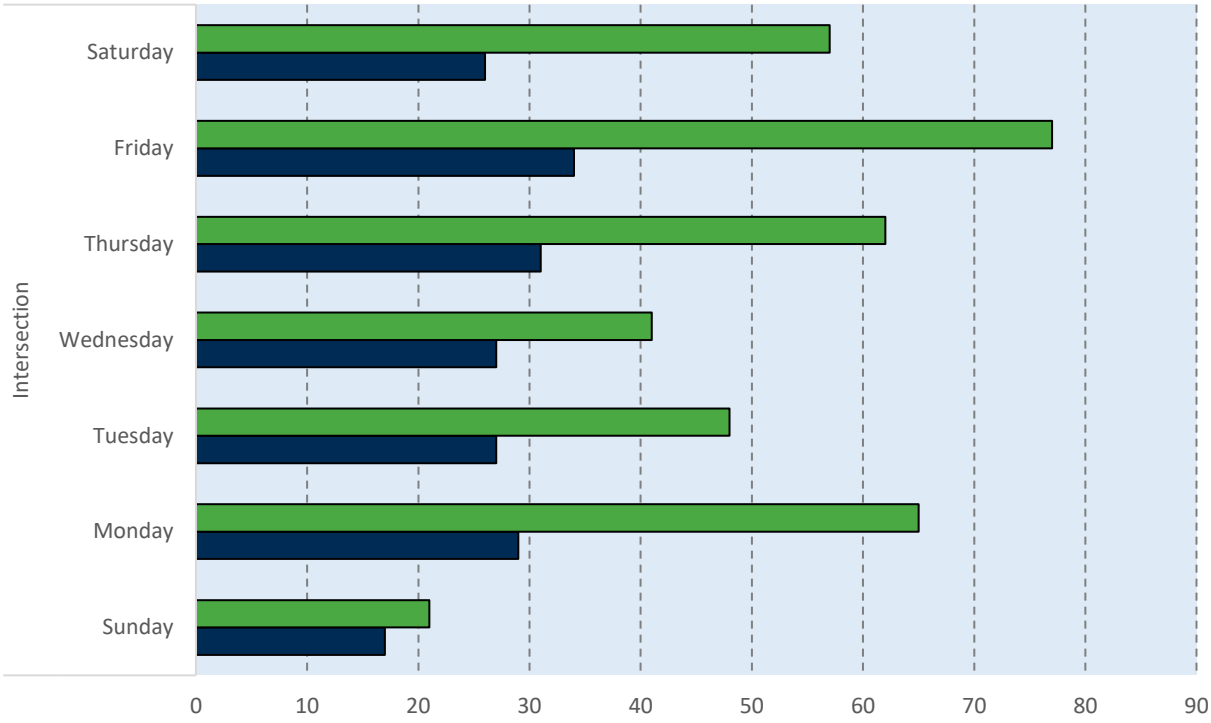


77%
Intersection Collisions occurred on
Weekdays

80%
Rear End
Collisions occurred on
Weekdays

76%
Left Turn Across Path
Collisions occurred on
Weekdays

Figure 20: Intersection Collisions by Day of the Week and Types



	Intersection						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
PDO	21	65	48	41	62	77	57
Injury	17	29	27	27	31	34	26

Figure 21: Intersection Collisions by Day of the Week and Severity

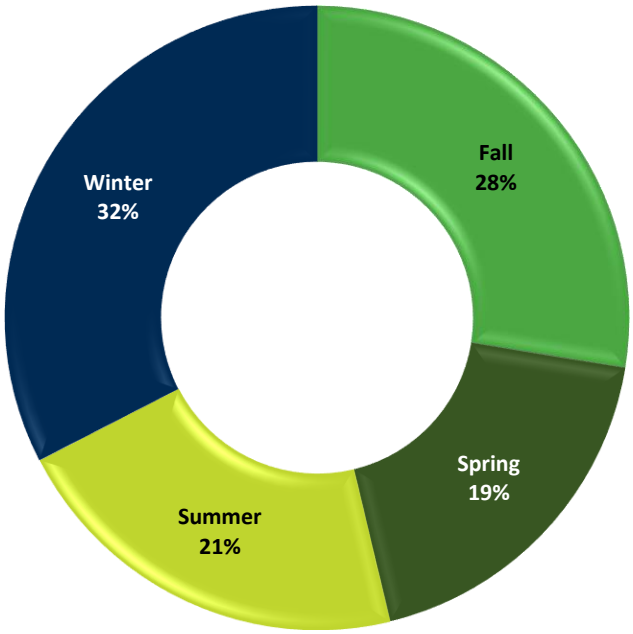
Figure 21 identifies intersection collisions by day of the week and severity.

In 2016, approximately 72% of injury collisions occurred at intersections; of which, 78% of these injury collisions occurred during weekdays.

Approximately 18% of collisions (34 out of 191 injury collisions) that resulted in major or minor injuries occurred on a Monday.

78%
Injury Collisions occurred during
Weekdays

18%
Injury Collisions occurred on
Friday



Highest frequency of Intersection Collisions occurred during **Winter Months (December/January/February)**

42% of Intersection Collisions in Winter occurred in **December**

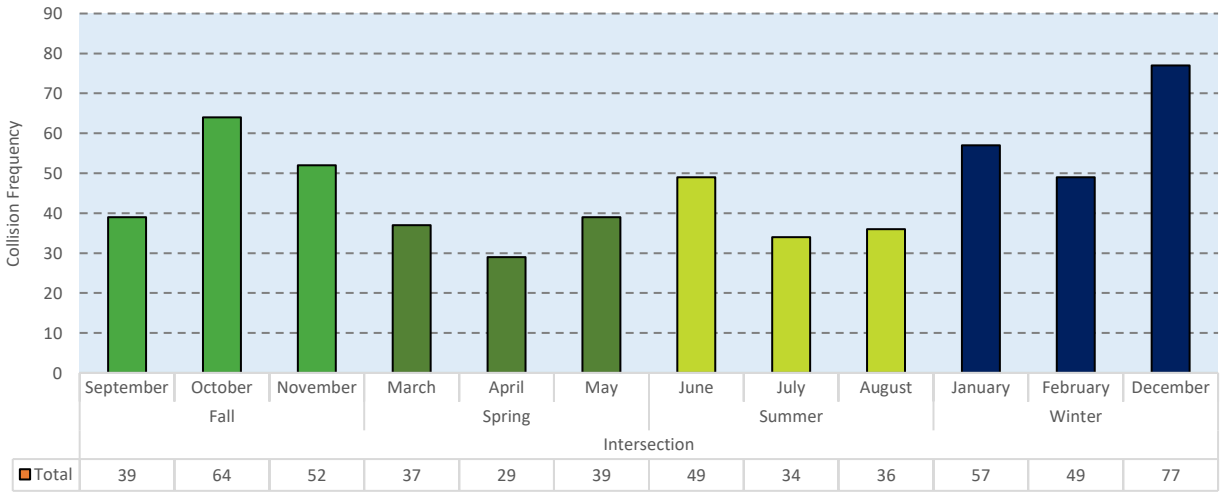


Figure 22: Intersection Collisions by Month and Season

Figure 22 represents intersection collisions by month and season throughout 2016. It shows approximately 32% of the annual collisions occurred during winter (December/January/February). From the 2016 monthly collision distribution, it also shows that 14% of total intersection collisions occurred in December alone; this may be caused

by a change in road conditions due to weather. Previous research has also shown that the onset of snow correlates with the number of collisions[5].

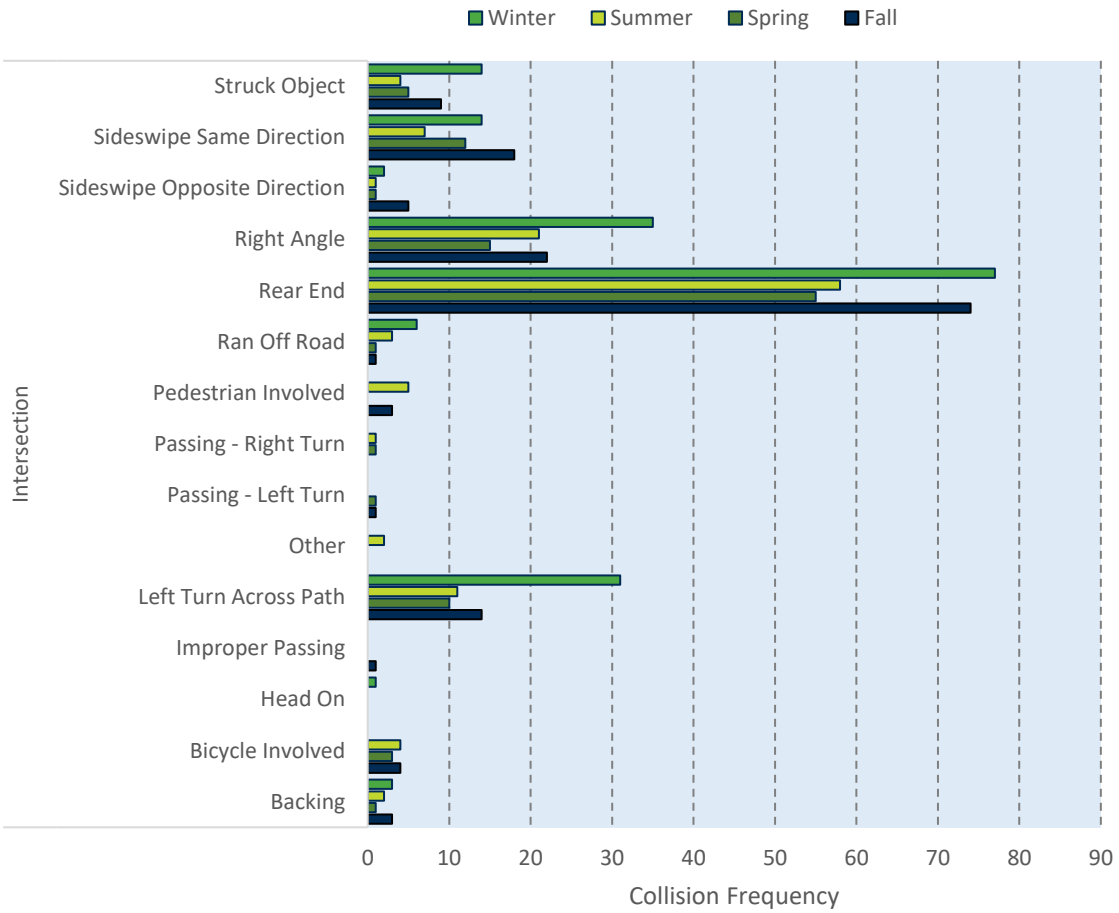


Figure 23: Intersection Collisions by Collision Type and Season

Figure 23 illustrates intersection collisions by collision type and season. About 29% of rear end collisions at an intersection occurred during winter, which is in line with the previous research finidings. Previous research has also shown that major snow events following dry weather increases the number of rear end collisions[6].

29% of Rear End Collisions occurred during Winter

[5] El-Basyouny,K., Barua, S., & Islam, T., (2014), *Investigation of time and weather effects on crash types using full Bayesian multivariate Poisson lognormal models*, Accident Analysis and Prevention, Vol. 73, pp. 91-99.

[6] El-Basyouny, K., Barua, S., Islam, T., & Li, R, (2014), *Assessing the effect of weather states on crash severity and type by use of Full Bayesian multivariate safety models*, Transportation Research Record: Journal of Transportation Research Board, No. 2432, pp. 65-73.

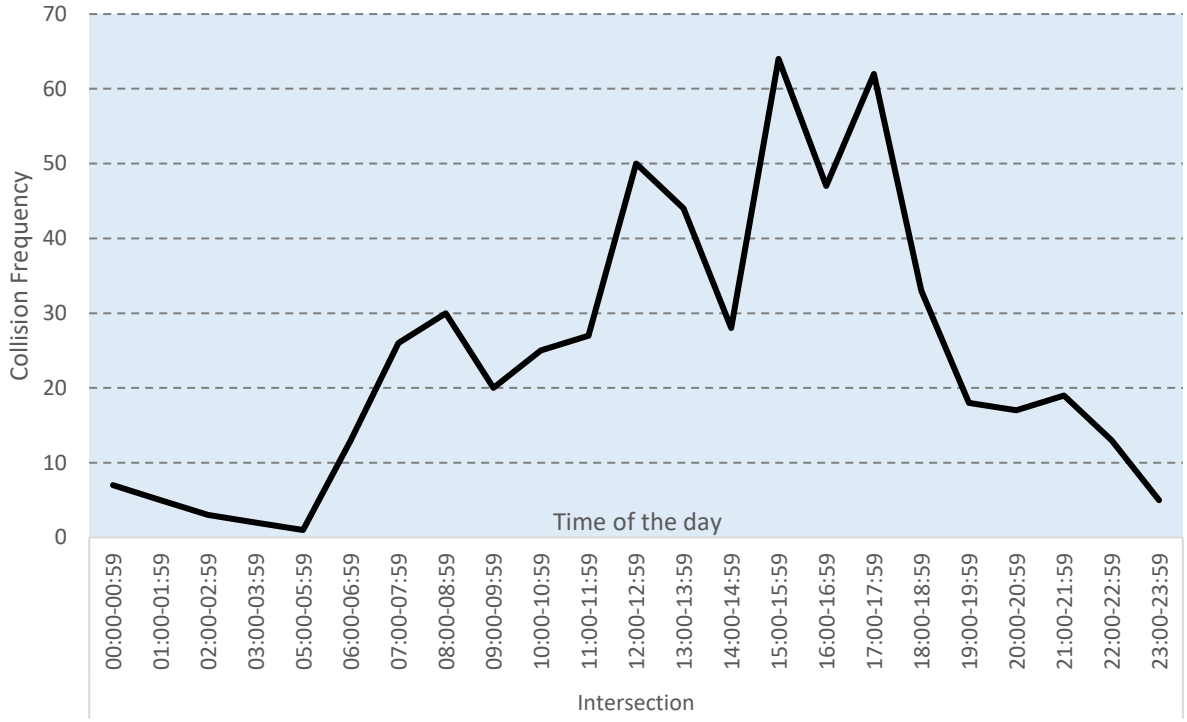


Figure 24: Intersection Collisions by Time of Day

Figure 24 illustrates intersection collisions by time of day. Similar to 2013 through 2015, the afternoon rush hour period from 15:00 to 18:00 (reaching a peak collision period between 15:00 to 16:00) accounted for the highest proportion (31%) of intersection collisions in 2016. The least collision occurrences occurred in the early morning (00:00 - 06:00).

31% of Intersection Collisions occurred from 15:00 - 18:00

Midblock Collisions

In 2016, 42% of the total collisions occurred at midblock locations. Figure 25 and Figure 27 illustrate the density of midblock collisions and injury collisions respectively in which the majority occurred along the St. Albert Trail corridor. Due to high traffic volumes and the high number of access and exit points onto the roadway, collision densities along St. Albert Trail are substantially high.

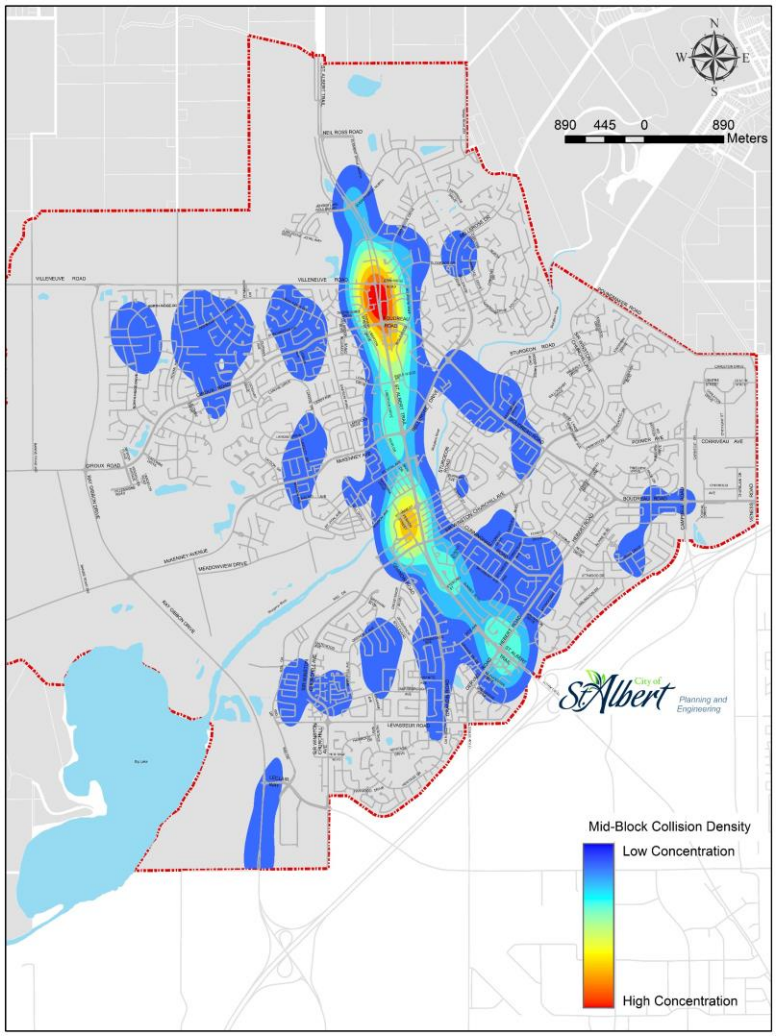
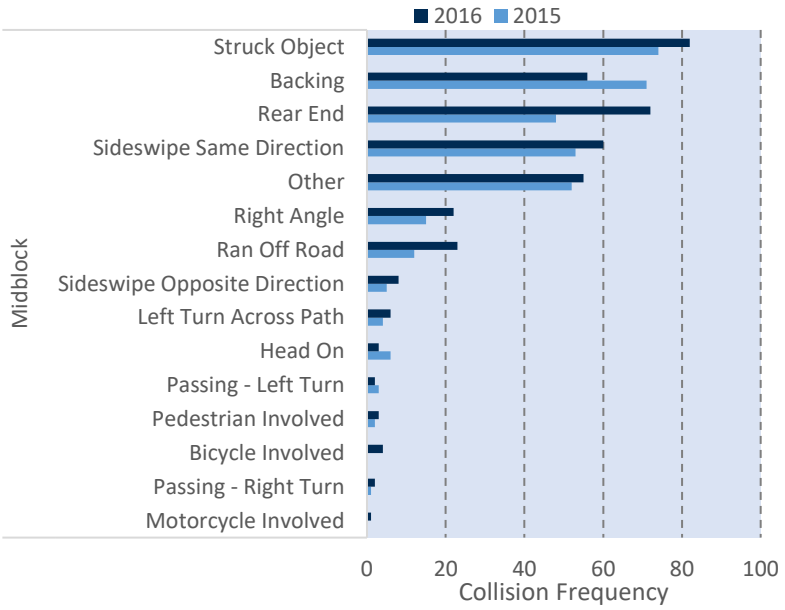


Figure 25 : Midblock Collision Density (2016)

Figure 25 also shows a high concentration of midblock collisions along Perron Street. It should be noted that the density distribution and identification of “hot spots” is relative to the overall distribution of occurrences throughout the city. 2016 collision statistics identified 7 midblock collisions on Perron Street; however, as those 7 collisions occurred within a very small road segment of Perron Street, the density becomes high compared to other road segments where the collisions were very segregated. Further, 2 collisions occurred on St. Thomas Street and 1 collision on St. Joseph Street which increased the density in downtown. Three of the 7 midblock collisions on Perron Street occurred due to unsafe backing and 4 out of these 7 midblock collisions were parked car related.



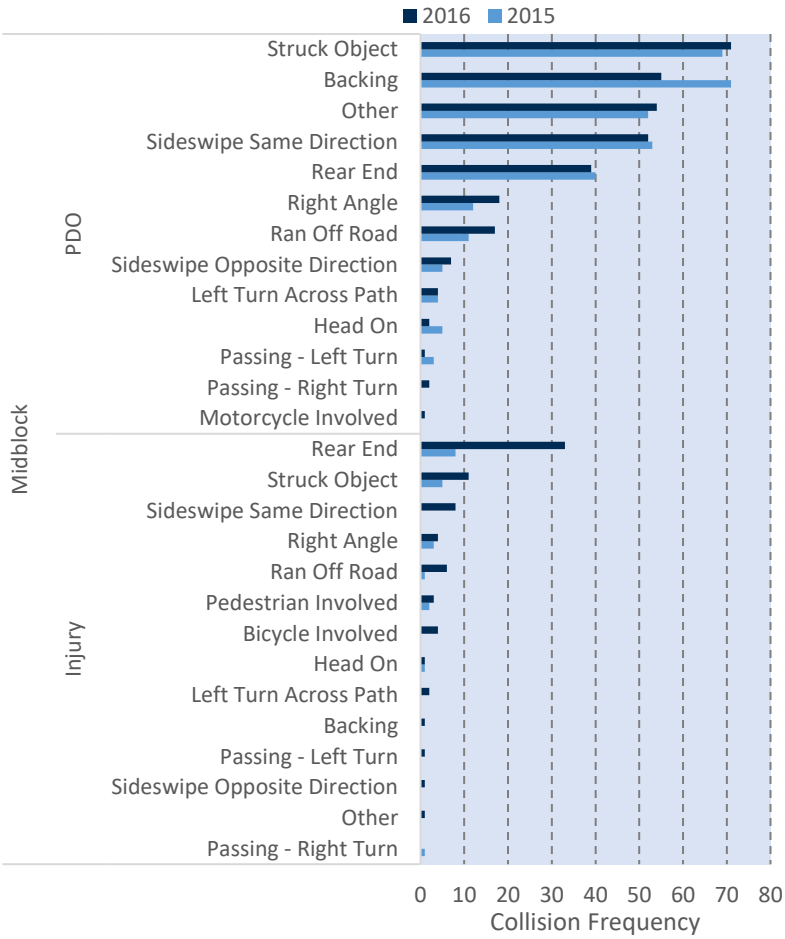


Figure 26: Midblock Collisions by Severity and Type

21% of Midblock Collisions caused by **Striking an Object**

18% of Midblock Collisions were **Rear End**

Rear End collisions almost **doubled** from last year

Injury collisions were **tripled** from 2015

43% Midblock Injury Collisions were due to **Rear End** Collisions

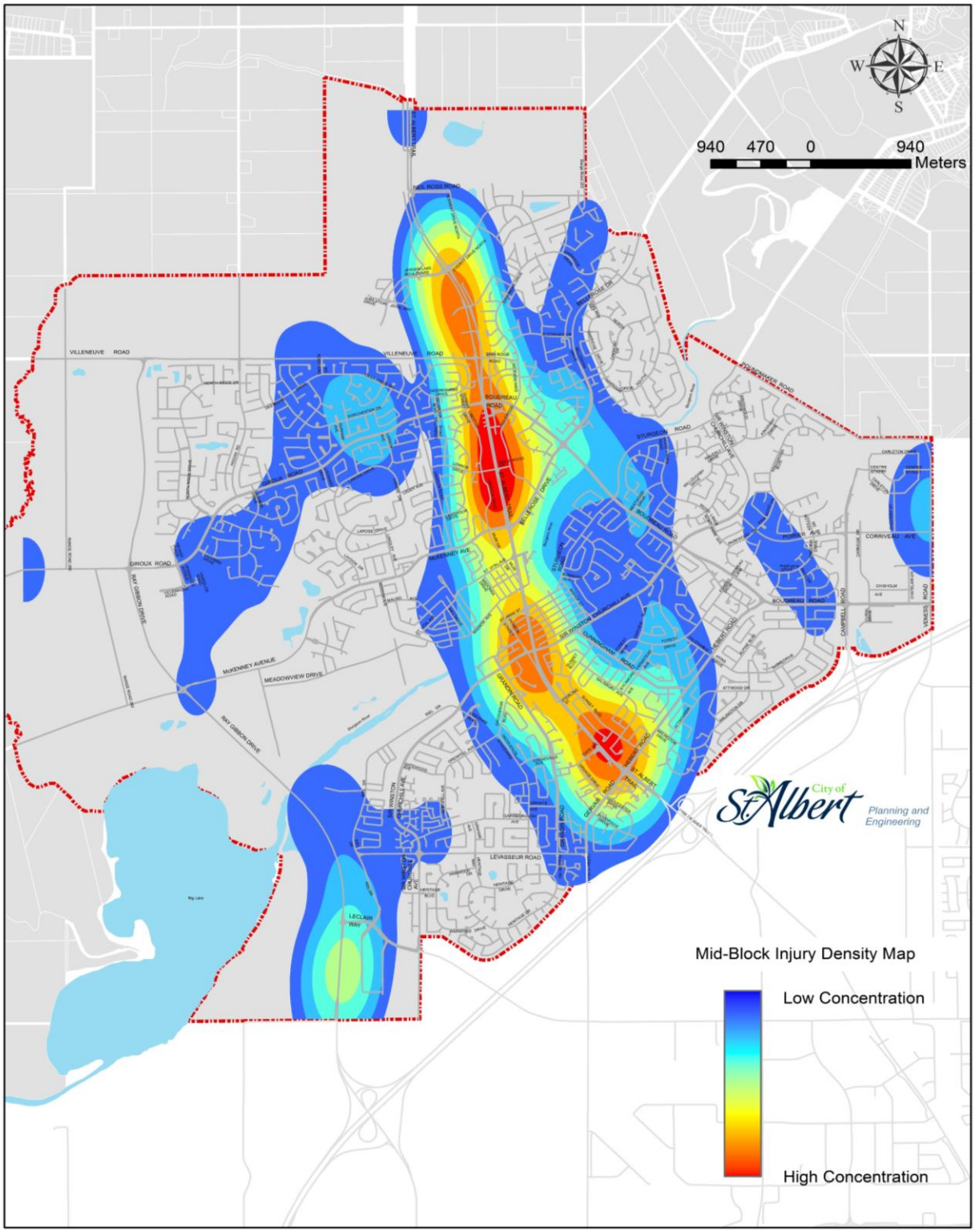
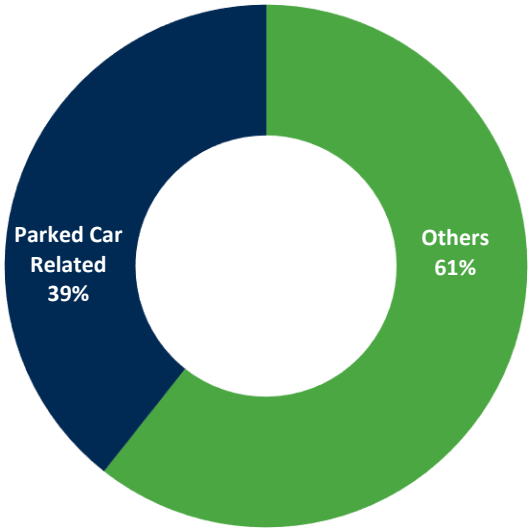


Figure 27: Midblock Injury Collision Density



39% of Midblock Collisions involved a parked car being hit

15% of Midblock Collisions involving a parked car occurred in **Grandin**

Figure 28: Midblock Collision Distribution related to Parked Cars

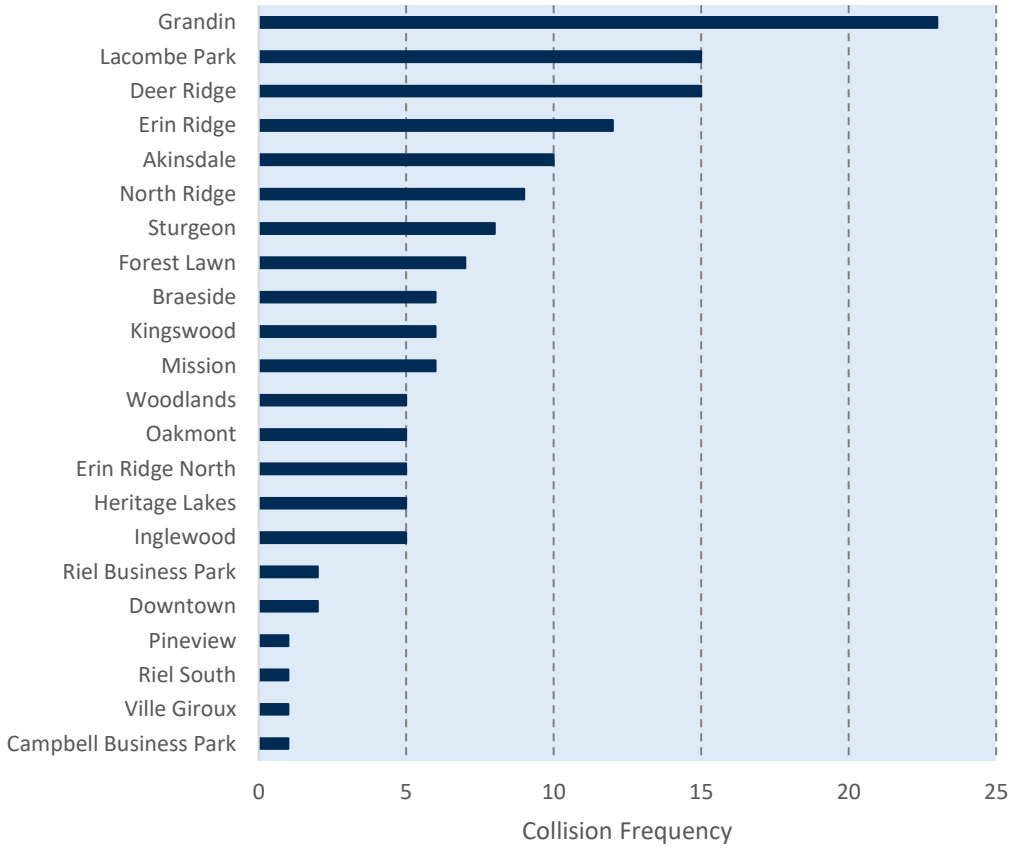
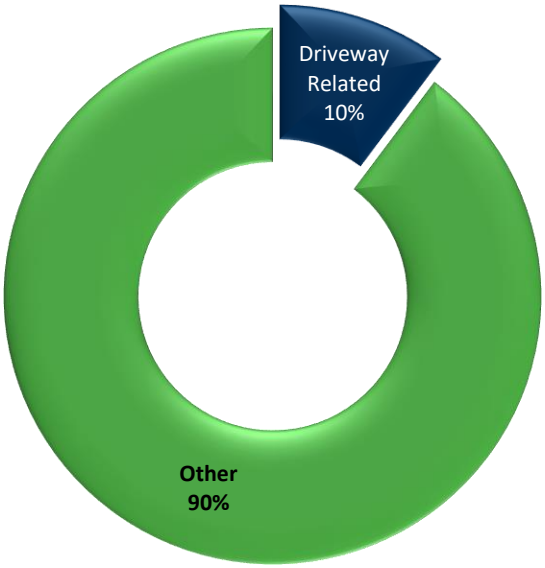


Figure 29: Neighbourhoods with Frequent Parked Car Related Collisions

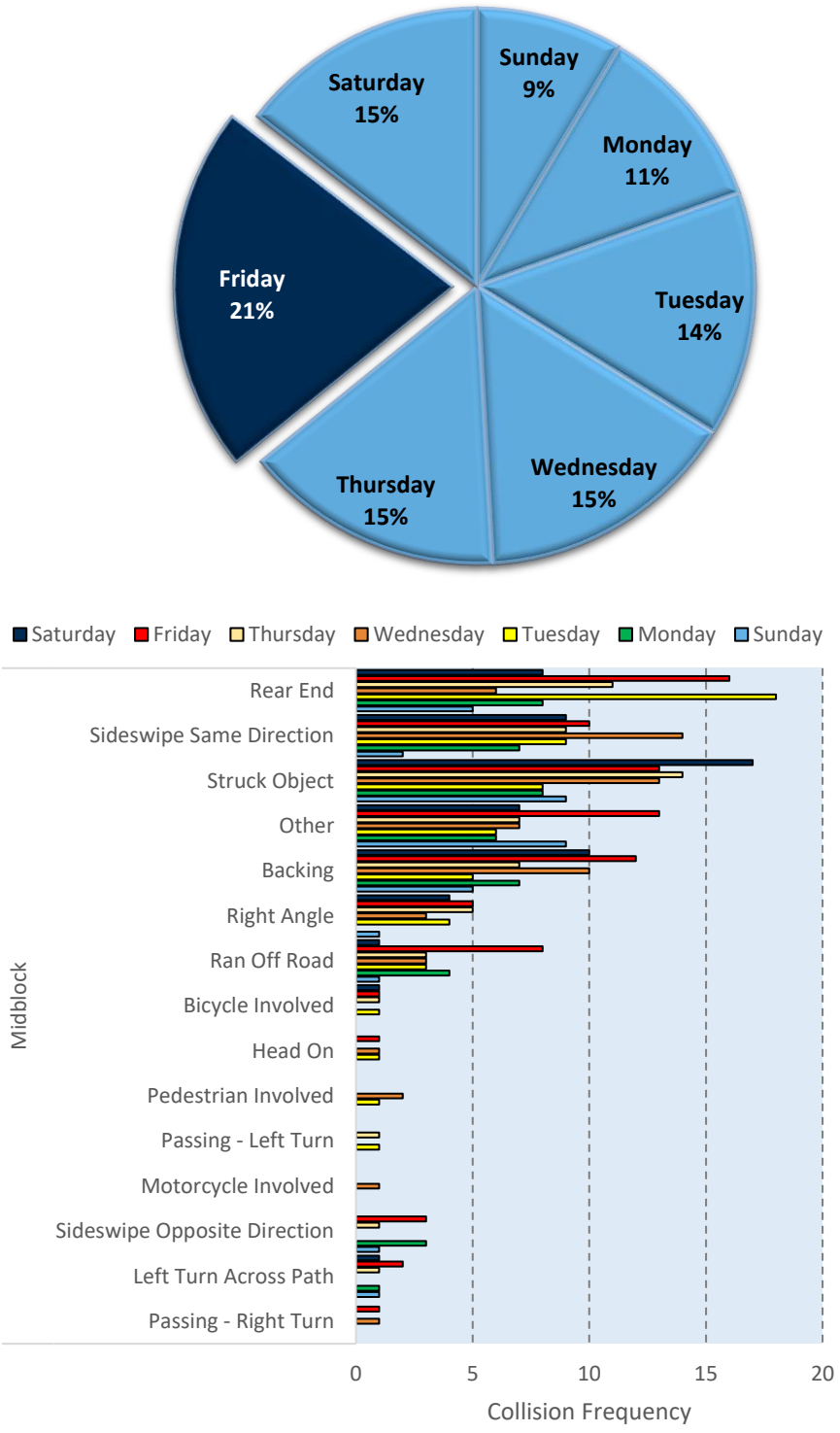


10% of Midblock Collisions were Residential Driveway related

Figure 30: Midblock Collision Distribution Related to Residential Driveways

Figure 30 represents the midblock collisions related to residential driveways. Approximately 10% of midblock collisions occurred near driveways and were caused by drivers backing up unsafely.

Temporal Distribution of Midblock Collision Occurrences



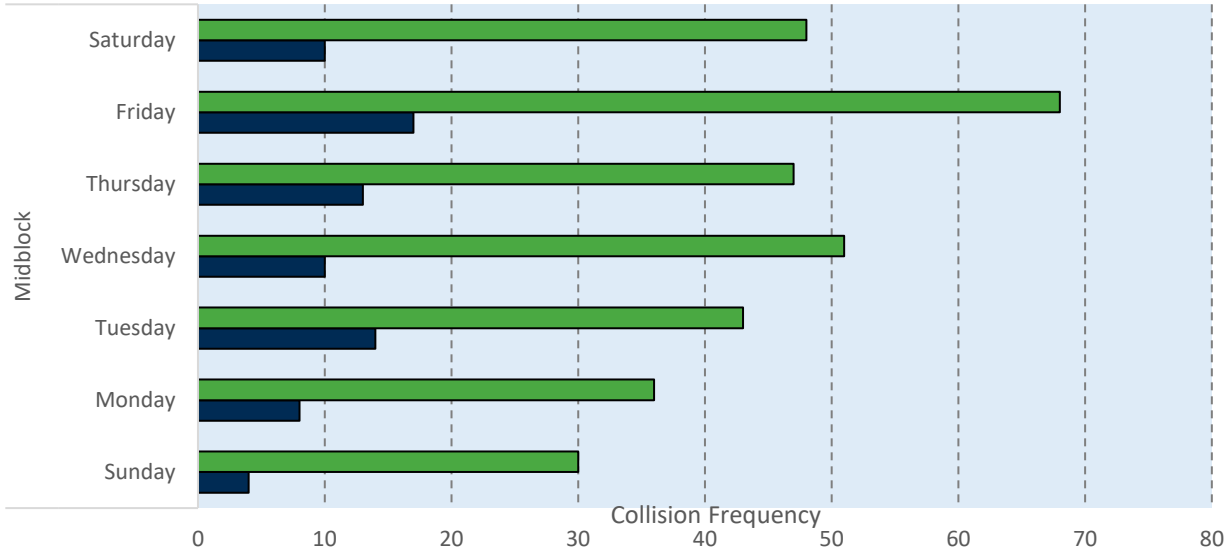
77% of Midblock Collisions occurred on **Weekdays**

21% of Midblock Collisions occurred on **Friday**

32% of **Struck Object** Collisions occurred on **Weekends**

25% of **Rear End** Collisions occurred on **Tuesday**

Figure 31: Midblock Collisions by Type and Day of the Week



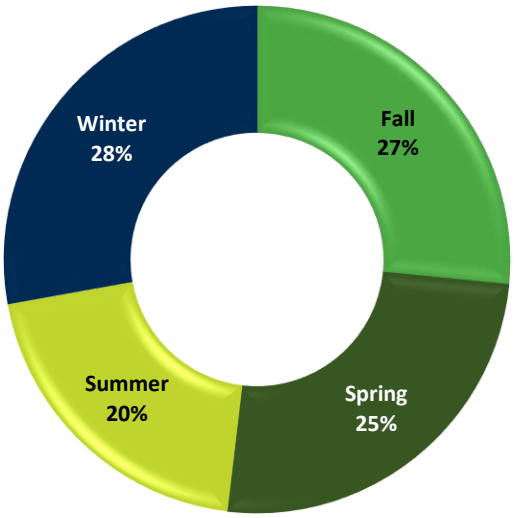
	Midblock						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
PDO	30	36	43	51	47	68	48
Injury	4	8	14	10	13	17	10

Figure 32: Midblock Collisions by Day of the Week and Severity

Figure 32 shows midblock collisions by day of the week and severity. In 2016, 82% of midblock injury collisions occurred during weekdays. Approximately 58% of collisions that resulted in major or minor injuries occurred on a Tuesday, Thursday or Friday. As well, 76% of midblock PDO collisions occurred during weekdays.

82% of Midblock Collisions resulting in Injury occurred on Weekdays

22% of Midblock Collisions resulting in Injury occurred on a Friday



28% of Midblock Collisions occurred during Winter (December/January/February)

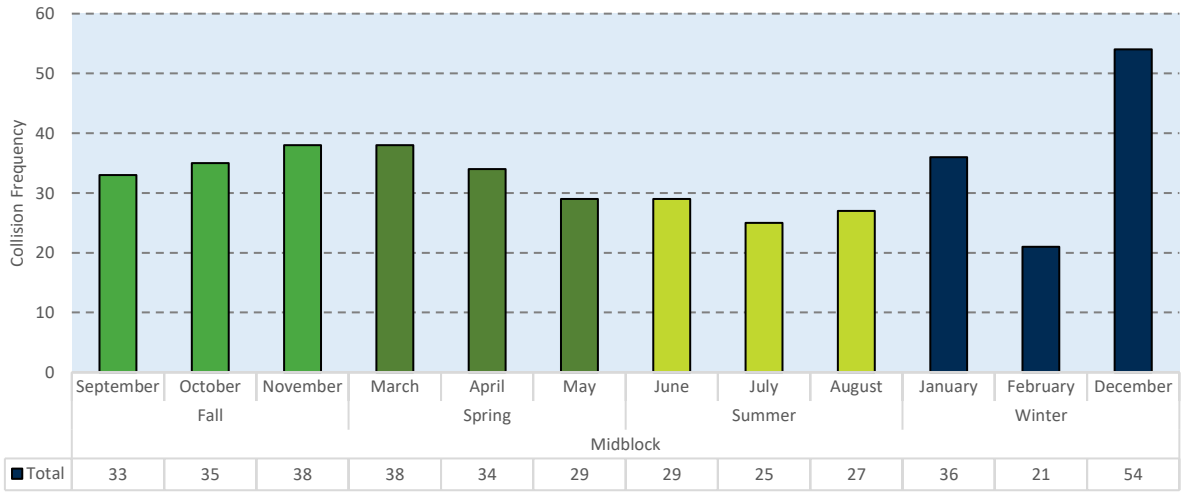


Figure 33: Midblock Collisions by Month and Season

Figure 33 represents midblock collisions by month and season. Approximately 28% of collisions occurred during winter. Further, about 49% of all collisions that occurred during winter took place in December. Heavy snowfall, extreme weather conditions and slippery road surface conditions may be some of the contributing factors of these collisions.

49% of of Midblock Collisions in Winter took place in December

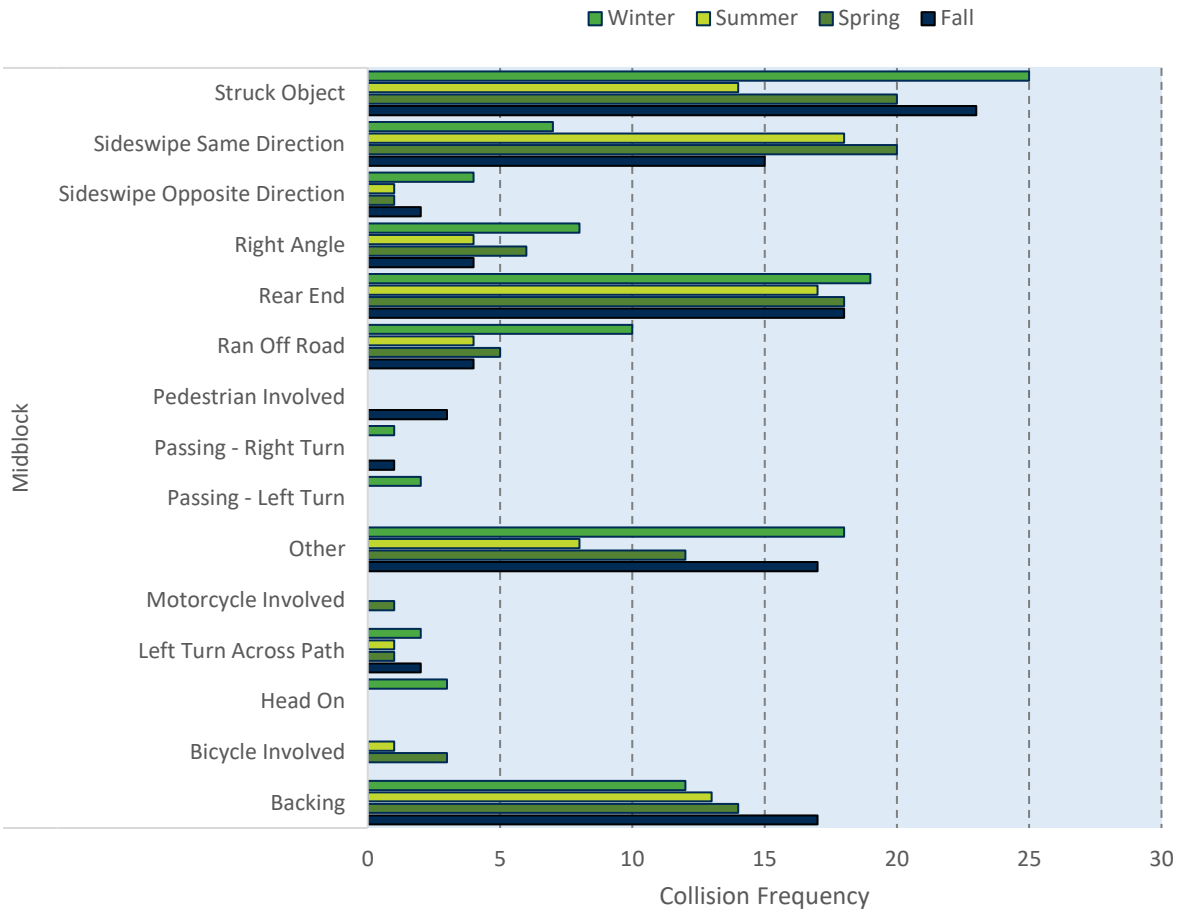


Figure 34: Midblock Collisions by Collision Type and Season

Figure 34 illustrates midblock collisions by collision type and season. Previous research has shown that major snow events, following dry weather, increases the number of struck parked vehicle collisions[7] (Figure 34). A high proportion of struck object collisions occurred in December and January when typically heavier snowfalls occur, creating icy or slippery conditions.

29%
Struck Object Collisions occurred in December & January when heavier snowfalls occur

[7] El-Basyouny, K., Barua, S., Islam, T., & Li, R, (2014), *Assessing the effect of weather states on crash severity and type by use of Full Bayesian multivariate safety models*, Transportation Research Record: Journal of Transportation Research Board, No. 2432, pp. 65-73.

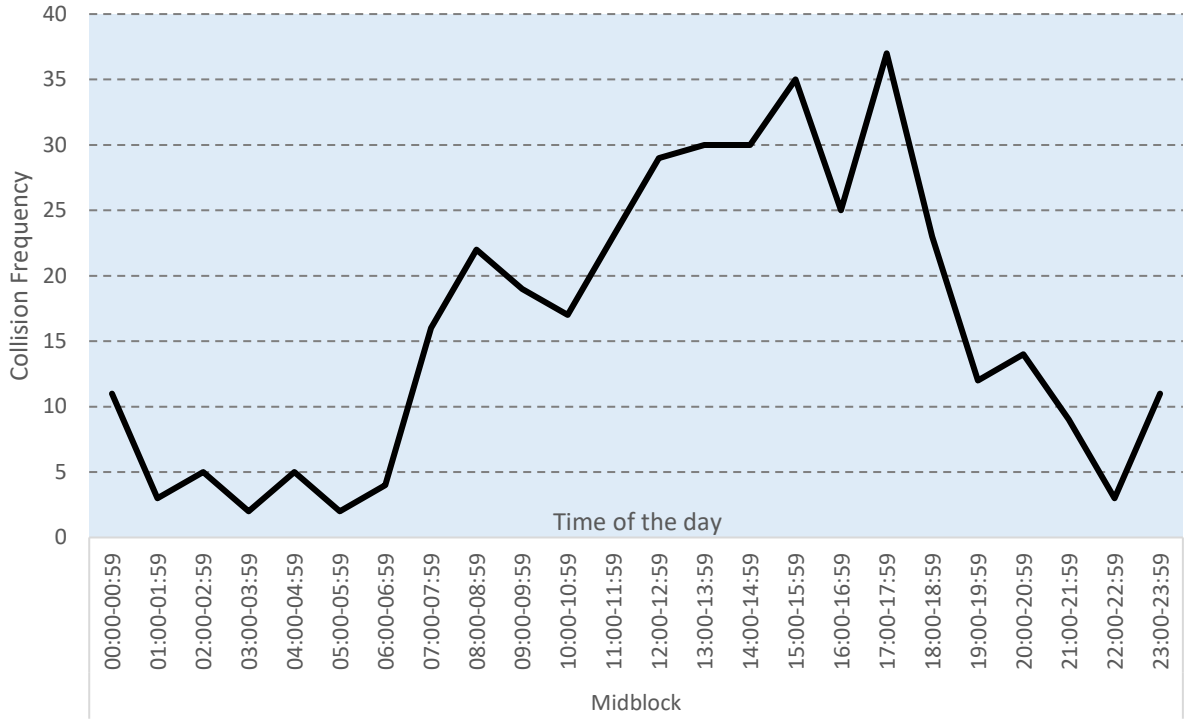


Figure 35: Midblock Collisions by Time of Day

Figure 35 illustrates midblock collisions by time of day. Similar to intersection collisions, the afternoon rush hour period from 13:00 to 18:00 (reaching a peak collision period around 17:00 - 17:59) accounted for the highest proportion (41%) of midblock collisions. The least collisions occurred in the early morning (01:00 - 07:00).

10%

Midblock Collisions occurred from

17:00 - 18:00

Collision by Neighbourhoods

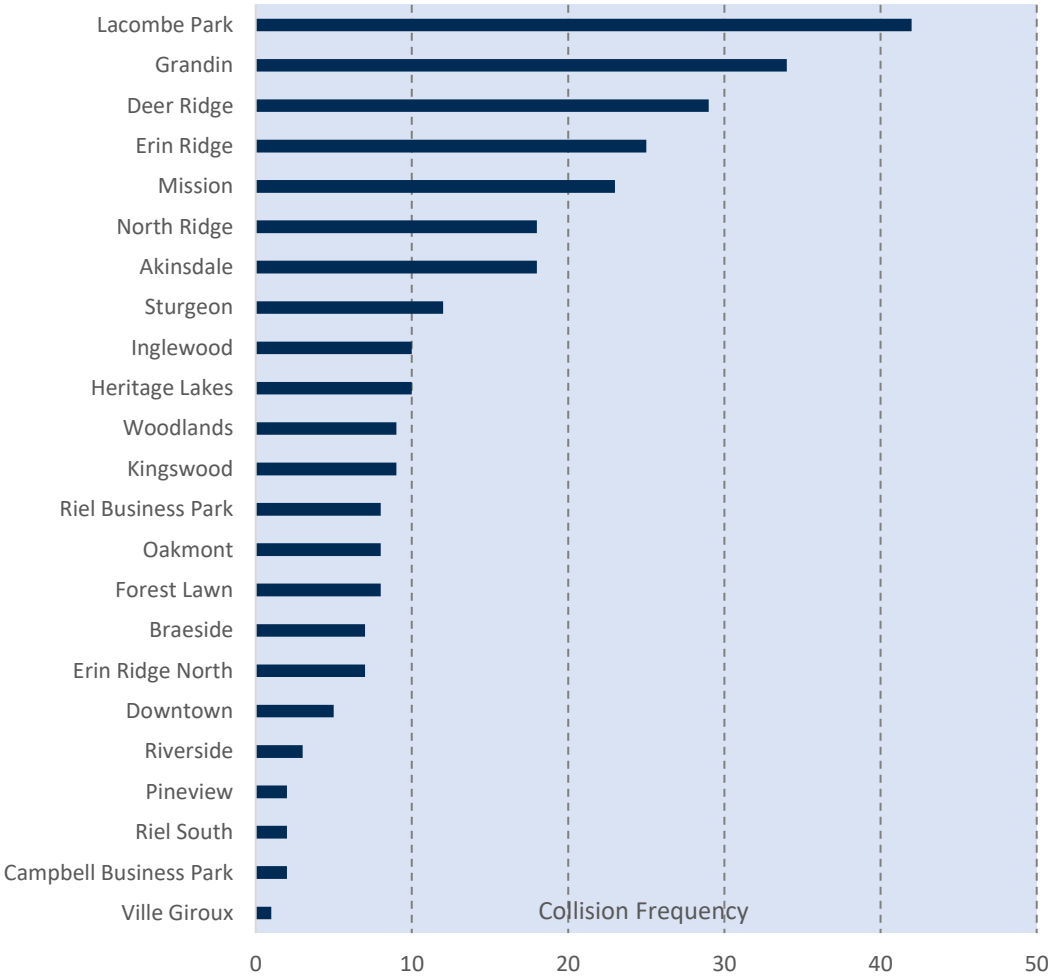


Figure 36: Collision Frequency by Neighbourhoods

Figure 36 illustrates collisions by neighbourhoods. In 2016, the highest volume of collisions occurred in Lacombe Park (14%) followed by Grandin and Deer Ridge. These results are intuitive as Lacombe Park and Grandin are the most populated neighbourhoods and the higher population increases the potential risk of collisions. To account for the population densities, collisions per 1,000 population has also been determined (Figure 37) for the neighbourhoods. It shows that Riverside has the highest collision rate followed by Downtown.

14%
Total Collisions occurred in
Lacombe Park

The population density of the Downtown area and Riverside are quite low; however, high traffic volume (the vehicle volumes generated by commercial land use and event locations) results in a high collision rate for the two communities.

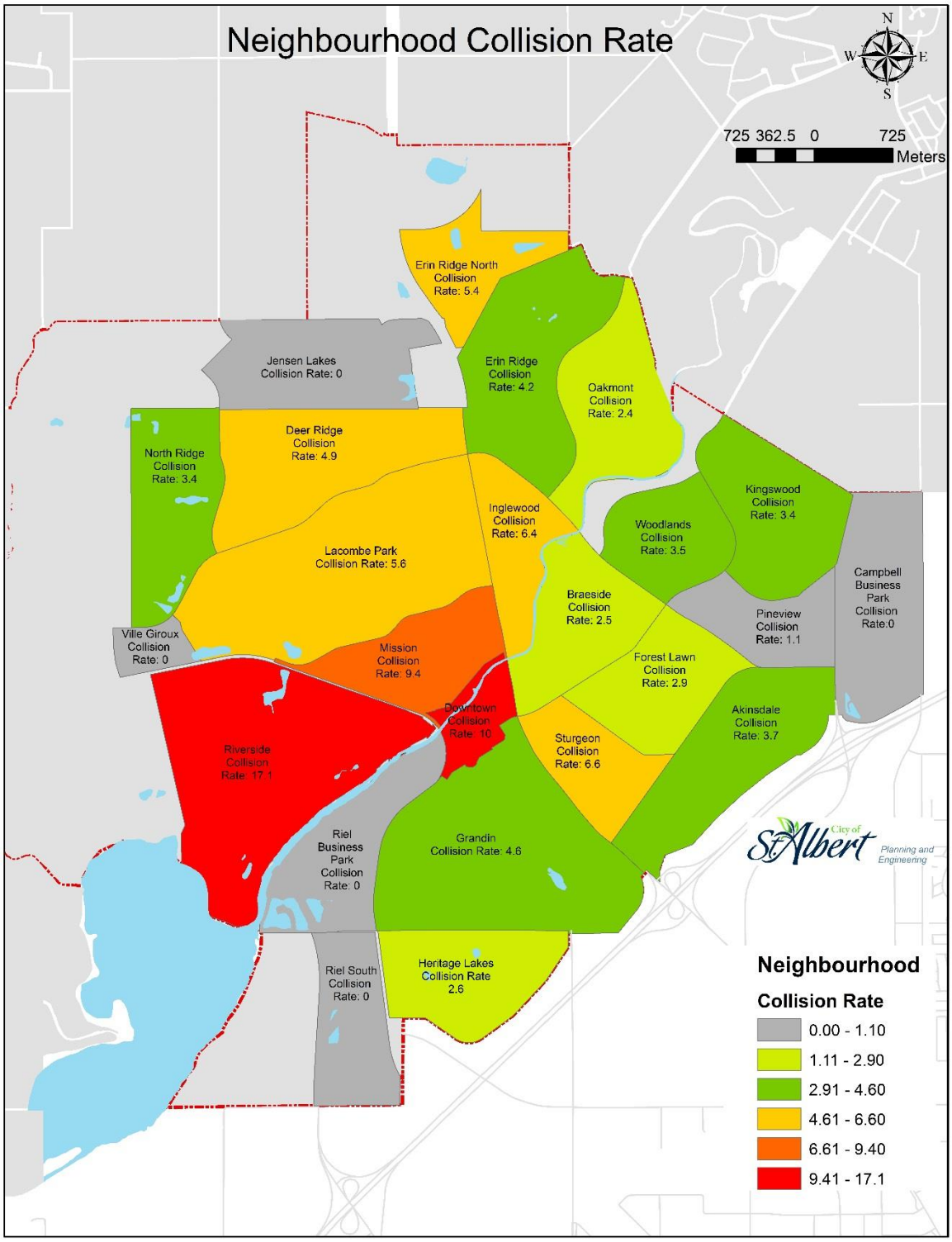


Figure 37: Neighbourhood Collisions per 1,000 Population

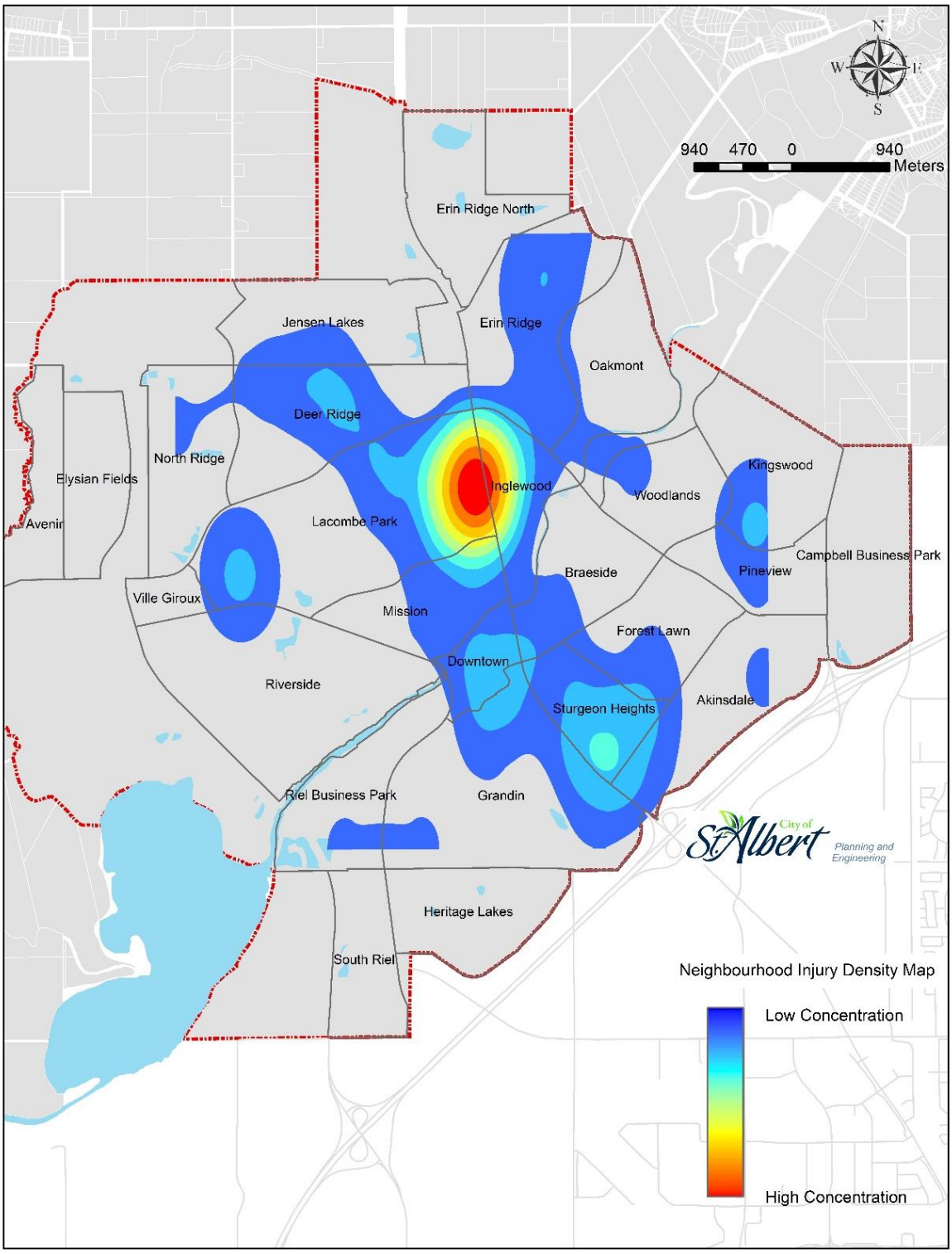
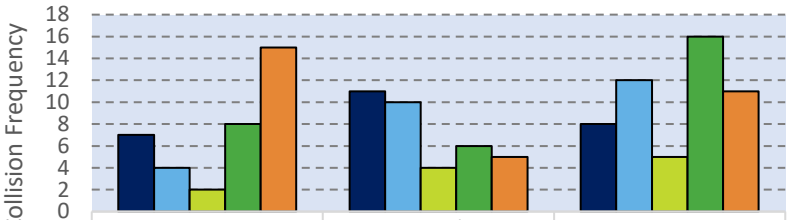


Figure 38: Neighbourhood Injury Collision Density

Figure 38 illustrates the neighbourhood injury collision density. It shows that a high concentration of injury collisions occurred in Lacombe Park along Liberton Drive. Three out of 6 injury collisions along Liberton Drive occurred at the intersection of Liberton Drive and Lennox Drive.

Vulnerable Road User Collisions

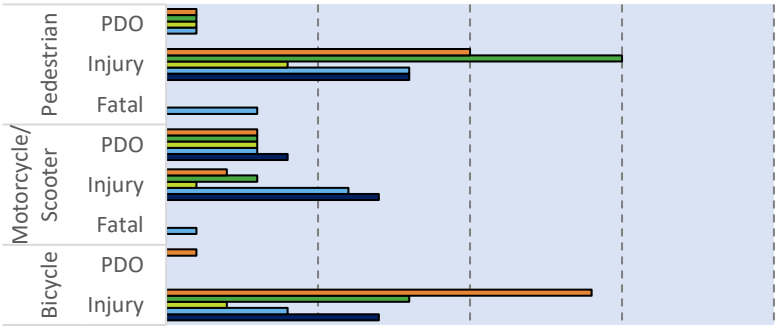
Road users who are in an unprotected state or have less external protection, (i.e., pedestrian, motorcyclist or bicyclist), are defined as vulnerable road users. Figure 39 exhibits the 2012 to 2016 vulnerable road user collisions and resulting severity on public roadways.



	Bicycle	Motorcycle/Scooter	Pedestrian
2012	7	11	8
2013	4	10	12
2014	2	4	5
2015	8	6	16
2016	15	5	11

In 2016, there was an increase (almost double) of bicycle collisions compared to 2015.

Figure 40 shows the location of vulnerable road user collisions in 2016.



	Bicycle		Motorcycle/Scooter			Pedestrian		
	Injury	PDO	Fatal	Injury	PDO	Fatal	Injury	PDO
2016	14	1		2	3		10	1
2015	8			3	3		15	1
2014	2			1	3		4	1
2013	4		1	6	3	3	8	1
2012	7			7	4		8	

Increase of Bicycle Collisions & Decrease of Pedestrian & Motorcycle Collision incidents from 2015

26 Out of 31 Vulnerable Road Users Incidents resulted in Injuries

Figure 39: 2012- 2016 Vulnerable Road User Collisions with Severity

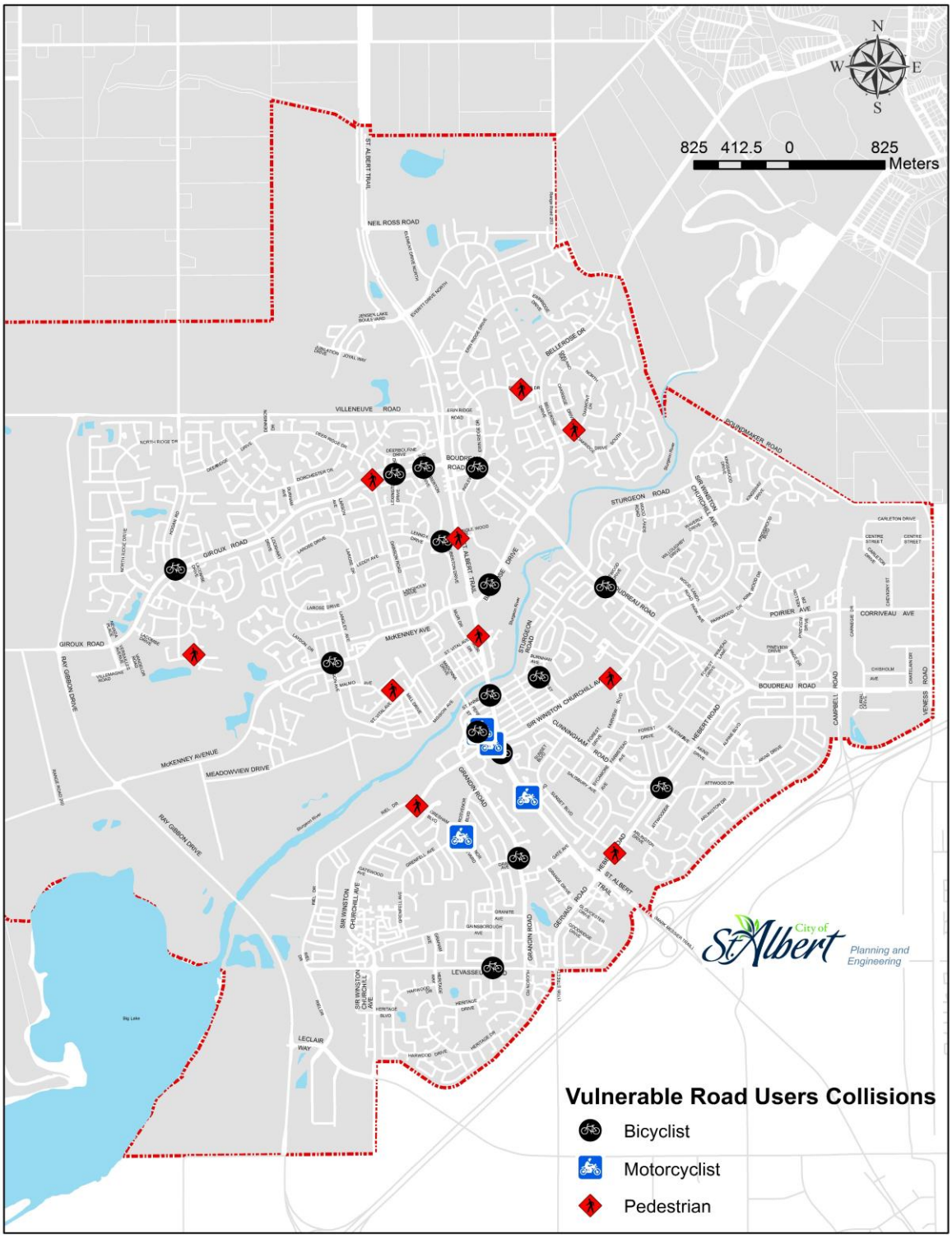


Figure 40: Vulnerable Road User Collision Locations in 2016

Pedestrian Collisions

Figure 41 illustrates the pedestrian collisions that occurred in 2012 to 2016.

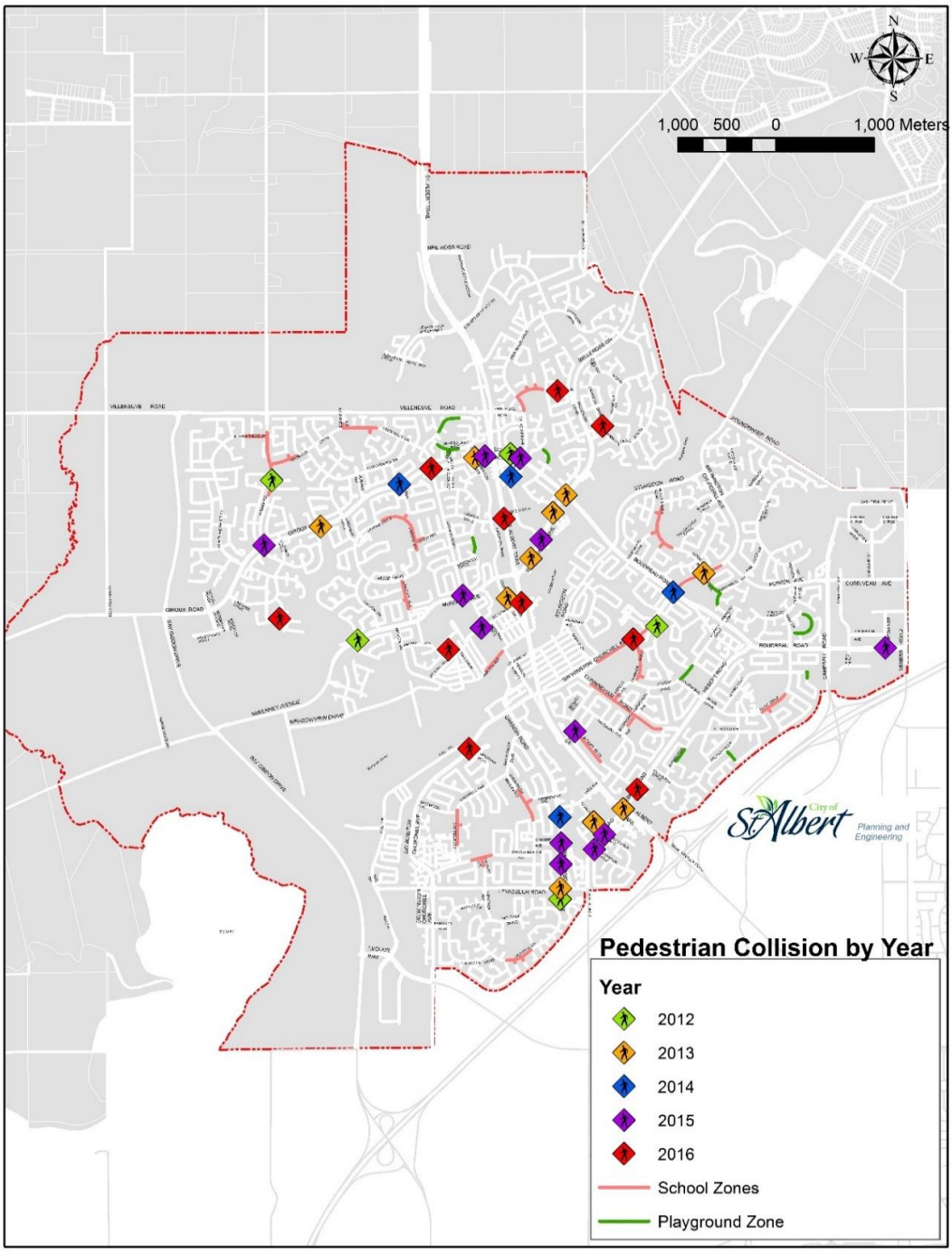
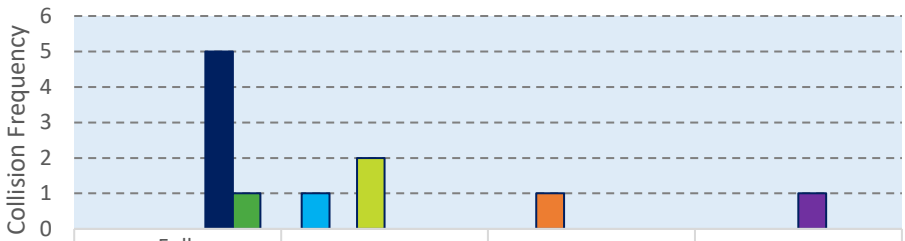


Figure 41: Pedestrian Collision Locations in 2012-2016



	Full Traffic Signal	Midblock	Sidewalk	Stop Control
Hit a Flag Person while Backing		1		
Hit Pedestrian at Sidewalk			1	
Jay walking		2		
Vehicle Going Through Collided with Pedestrian Crossing with ROW				1
Vehicle Turning Left Collided with Pedestrian Crossing with ROW	5			
Vehicle Turning Right Collided with Pedestrian Crossing with ROW	1			

Of the 11 pedestrian incidents that occurred in 2016, 8 female pedestrians were involved (73%), and 3 male pedestrians were involved (27%).



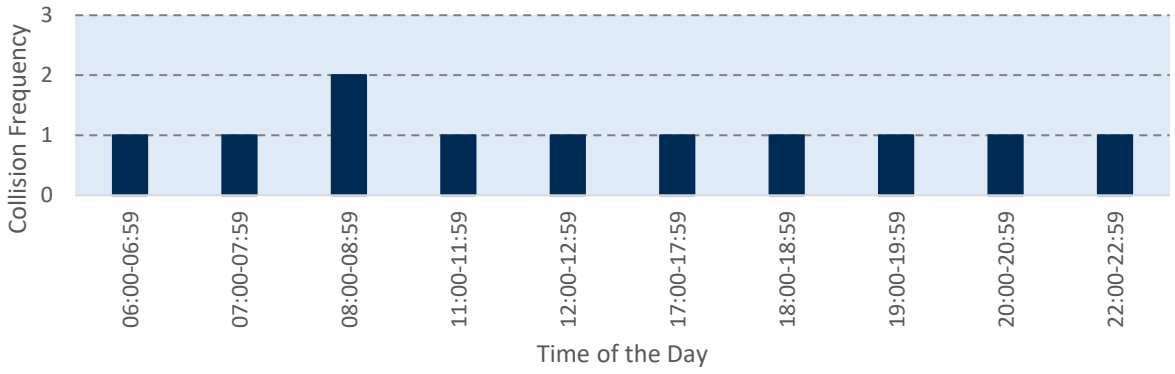


Figure 42: Detailed Information about Pedestrian Collision in 2016

In 2016, 11 pedestrian collisions occurred in St. Albert. Among the 11 collisions:

- 6 collisions occurred at full traffic signal controlled intersections.
- 5 collisions occurred when a vehicle was turning left and collided with a pedestrian while the pedestrian had the right-of-way (ROW).
- 1 collision occurred when the vehicle was turning right and collided with a pedestrian while the pedestrian had the right-of-way (ROW).
- 3 pedestrian collisions occurred midblock; 2 of these involved jay walking.

Bicycle Collisions

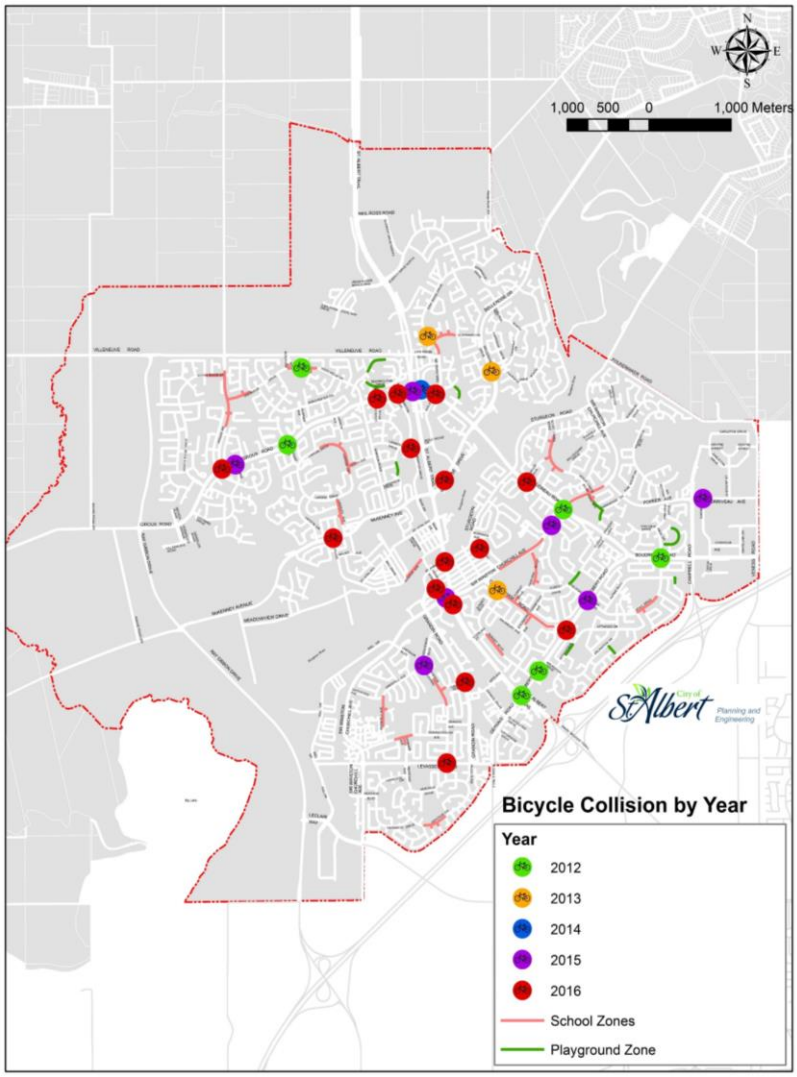


Figure 43: Bicycle Collision Locations in 2012- 2016

Bicycle
Incidents nearly
Doubled from
2015

15
Bicycle
Collisions Occurred
in 2016

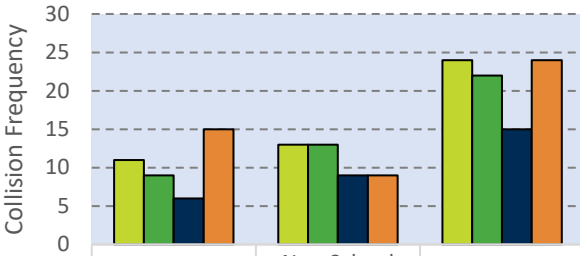
13
Bicyclists received
Minor Injuries

12 occurred on
Arterial roadways

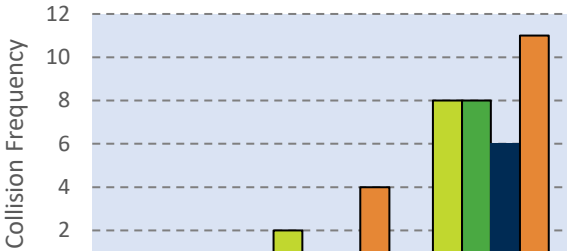
11 occurred at an
Intersection

School Zone Collision Statistics (2013-2016)

In 2016, there were 24 collisions that occurred within school zones on St. Albert public roadways, excluding collisions in parking lots or private driveways. A school zone is in effect between 08:00 and 16:00 on school days. Among the 24 collisions, 15 occurred during school hours; thus, they are called school zone collisions. The remaining 9 collisions occurred outside school hours and are excluded from school zone collisions.

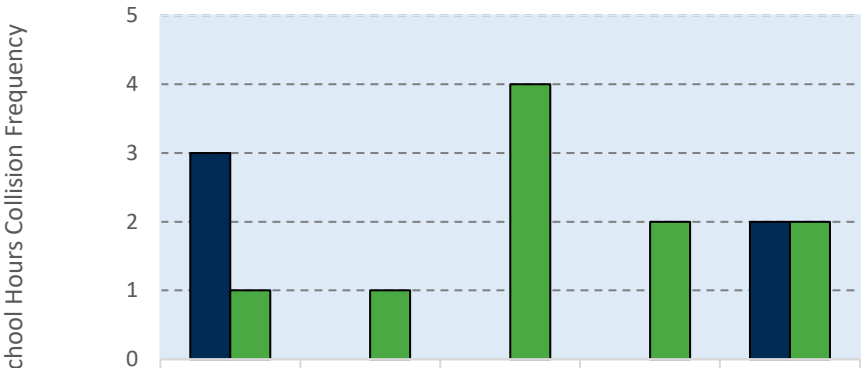


	School Time Collision	Non-School Time Collision	Total Collision
2013	11	13	24
2014	9	13	22
2015	6	9	15
2016	15	9	24



	Fatal Collision	Injury Collision	PDO Collision
2013	1	2	8
2014	0	1	8
2015	0	0	6
2016	0	4	11

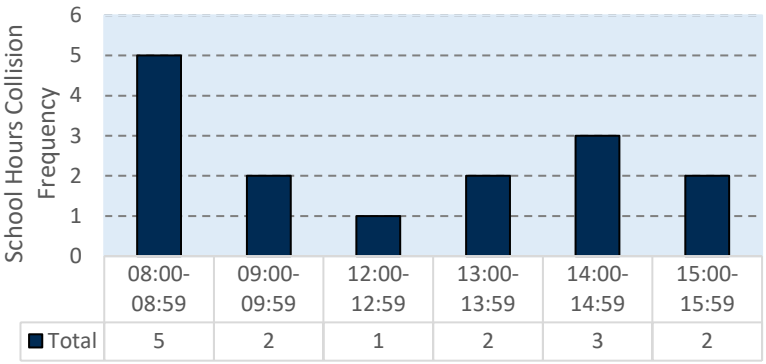
Figure 44: School Zone Collisions with Severity (2013-2016)



	Monday	Tuesday	Wednesday	Thursday	Friday
Intersection	3				2
Midblock	1	1	4	2	2

Figure 45: School Zone Collisions by Weekday in 2016

From 2013 to 2015, over 92% of school zone collisions occurred on a Monday, Wednesday and Friday, with the highest frequency happening on Fridays. This trend is also similar for 2016 (Figure 45).



School zones are in effect between 08:00 and 16:00 on school days in St. Albert.

Most collisions occurred between 08:00- 08:59.

Figure 46: School Zone Collisions by Time of Day in 2016

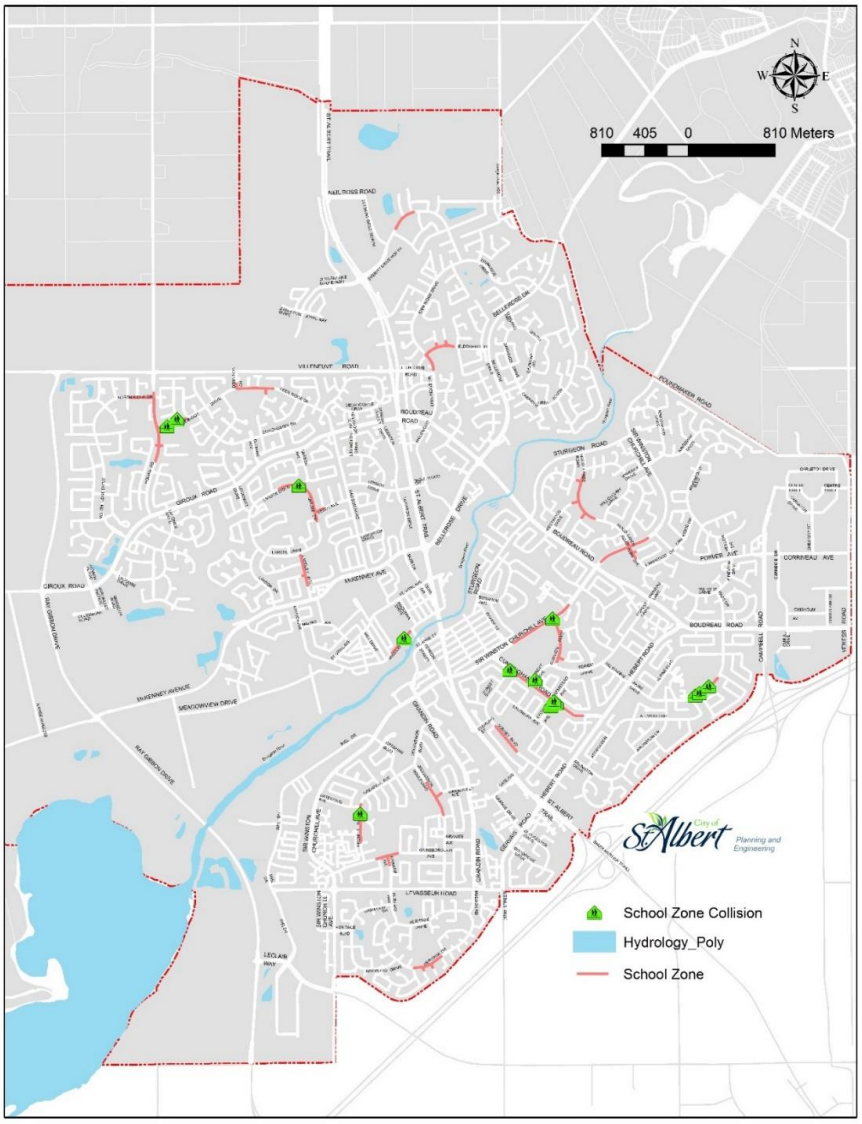


Table 5 and Figure 47 depict the number of school zone collisions in terms of the proximity to school.

In 2016, 6 school zone collisions occurred near the school zone of Leo Nickerson and Paul Kane High School.

Figure 47: School Zone Collisions Locations in 2016

Table 5: School Zone Collisions by School in 2016

School Name	Collision Frequency
Leo Nickerson School and Paul Kane High School	6
Elmer S. Gish School	3
J.J. Nearing School	2
Sir A. Mackenzie And Richard S. Fowler Schools	1
Bertha Kennedy And W.D. Cuts Schools	1
École La Mission	1
École Father Jan	1
Total	**15**

**List shows only those schools where at least one incident occurred in the school zone*

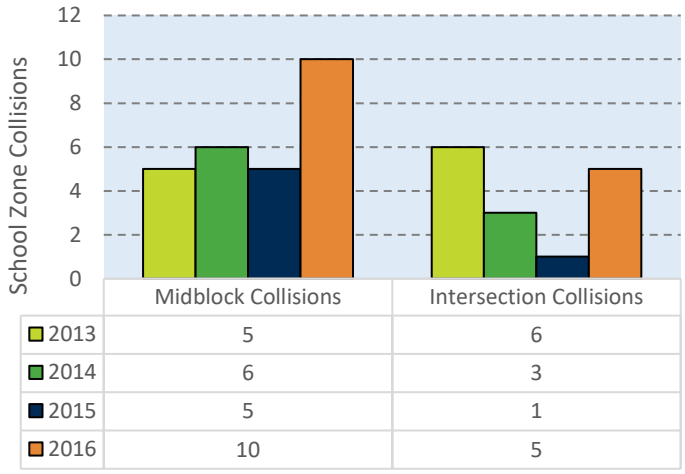


Figure 48 indicates school zone collisions increased at intersection and midblock locations in 2016. Most of the intersection collisions were right angle collisions which resulted in injuries (Figure 49). Four school zone incidents involved a collision with a parked vehicle.

Figure 48: School Zone Collisions by Location (2013-2016)

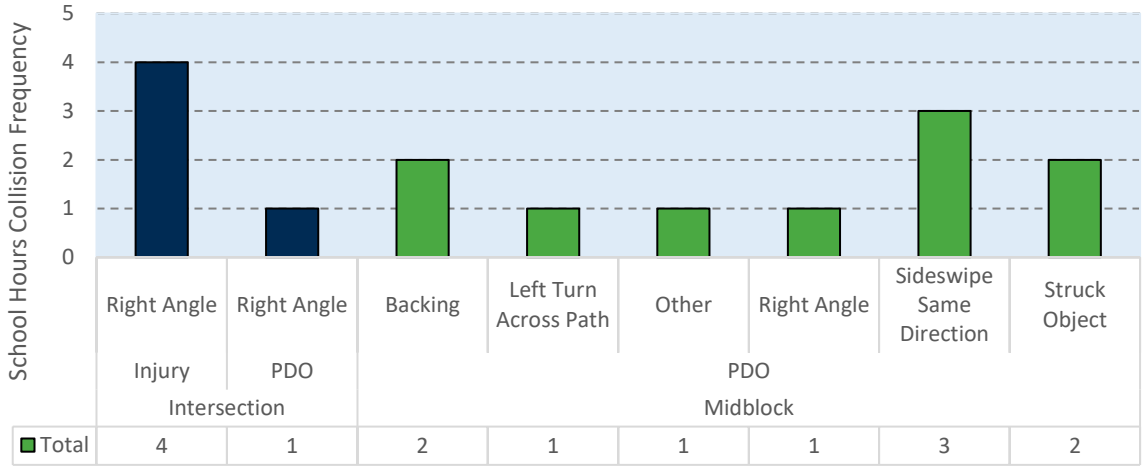


Figure 49: School Zone Collisions by Collision Types in 2016

Vehicle Wildlife Collisions

In 2016 only 3 motor vehicle collisions involved wildlife, which is 57% less than the previous year (Figure 50). All the incidents involved a vehicle striking a deer with no major and minor injuries to the drivers and passengers.

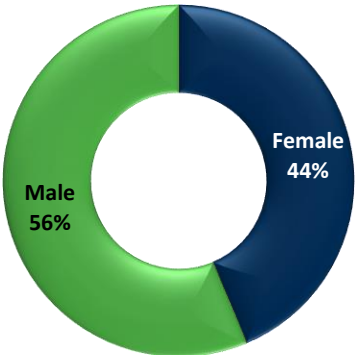


Figure 50: Vehicle Wildlife Collision Locations

CHAPTER 4: AT-FAULT DRIVERS & ENFORCEMENT STATISTICS

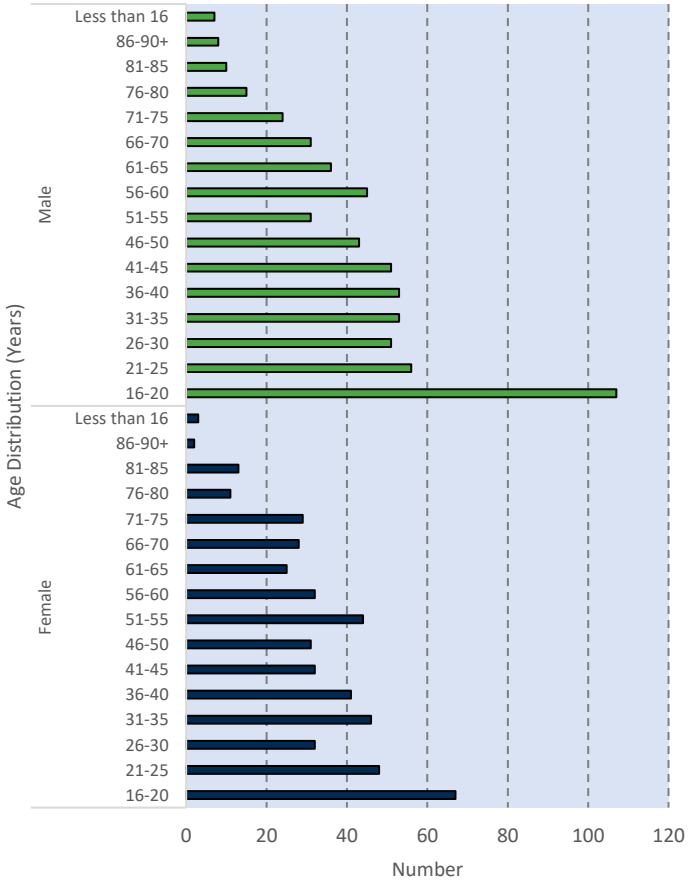
At-fault Driver's Information

At-fault driver can be defined as a driver who is responsible for a collision due to faulty driver action including following too closely, improper lane change, speeding, careless driving, failing to yield right of way (ROW), sign/signal violation, distracted driving.



491 Female

633 Male



56% of At-fault Drivers are Male

Male & Female Drivers (16-20 years) are the Most At-fault Drivers

Drivers aged 16 – 20 represent only 7% of the Licensed Drivers

Figure 51: Age and Gender Distribution of At-fault Drivers in St. Albert

Figure 51 indicates 16 to 20 year old male and female drivers are the most at-fault drivers. This age group represents only 7% of the total licensed drivers.

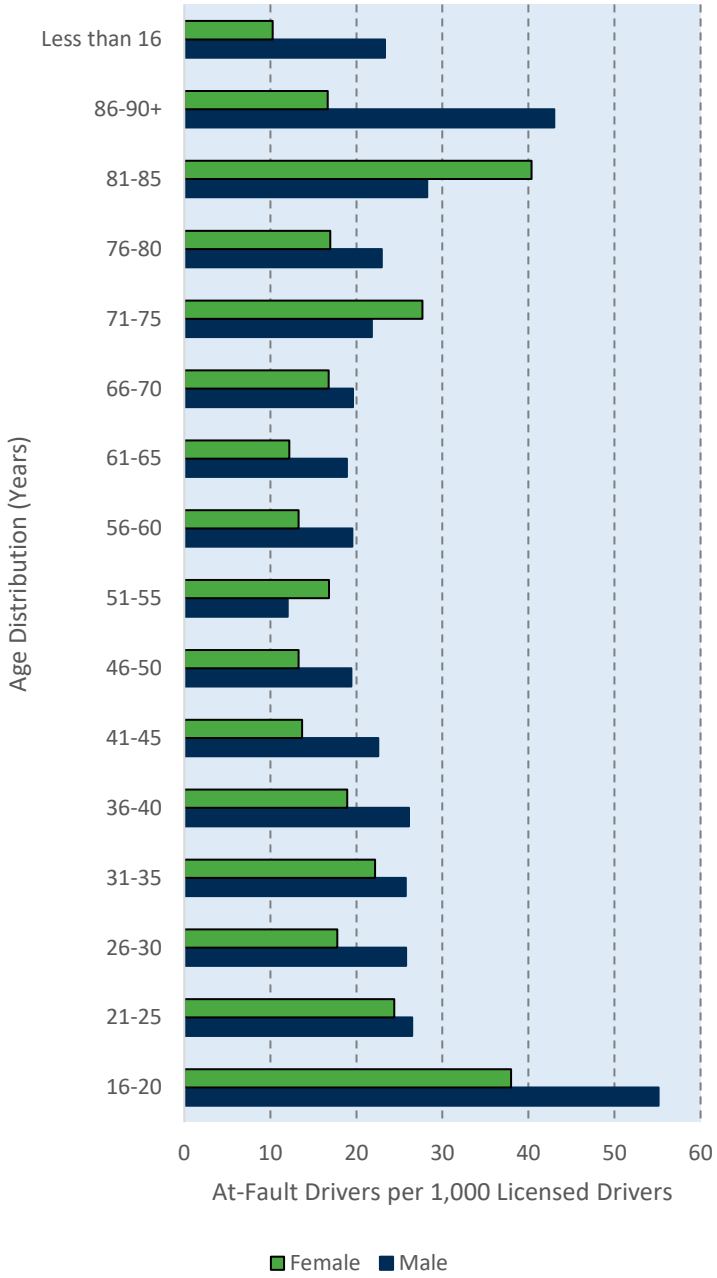
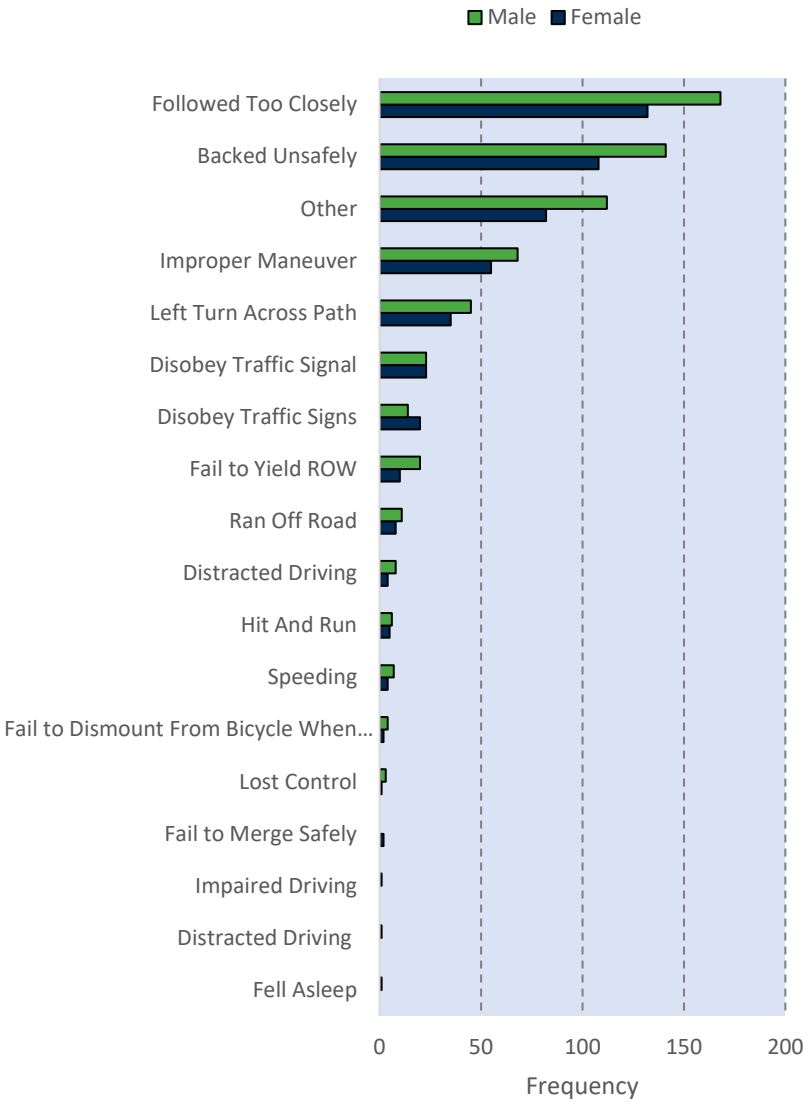


Figure 52 illustrates the number of at-fault drivers per 1,000 licensed drivers in St. Albert by age and gender. Although there are less male licensed drivers than female licensed drivers, the number of male at-fault drivers per 1,000 licensed drivers were higher for most age distributions compared to females.

Males, 16-20 years, are the most at-fault drivers per 1,000 licensed drivers.

Figure 52: At-fault Drivers per 1,000 Licensed Drivers in St. Albert by Age and Gender



Actions of
At-fault
Drivers are similar
for
Males & Females

Most Collisions
occurred due to
Following
Too Closely
&
Backing
Unsafely

Figure 53: Driver Action of At-Fault Drivers by Gender in St. Albert

Figure 54 demonstrates the at-fault drivers' residence by neighbourhoods. It shows that most of the at-fault drivers reside in Grandin, Lacombe Park and Deer Ridge.

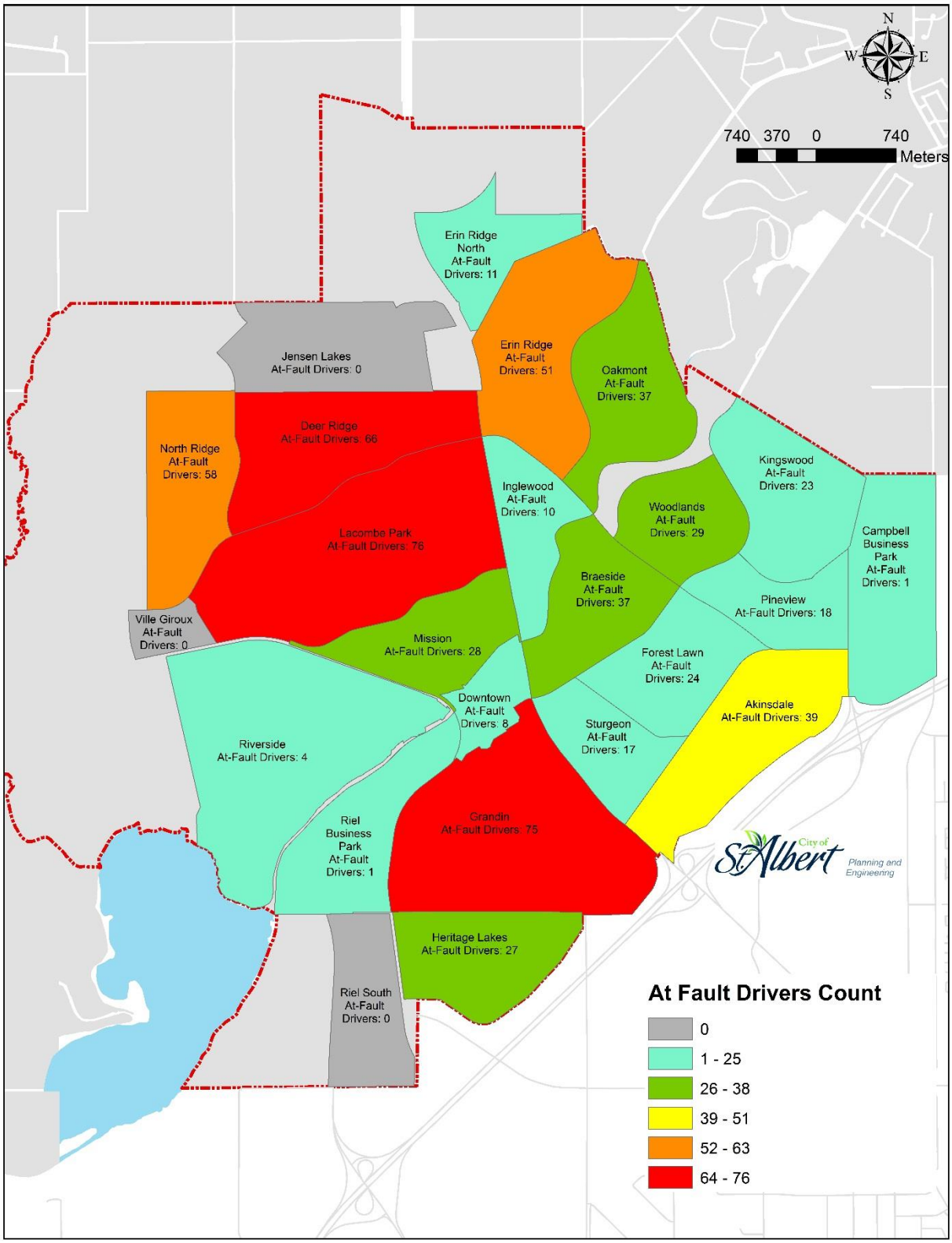
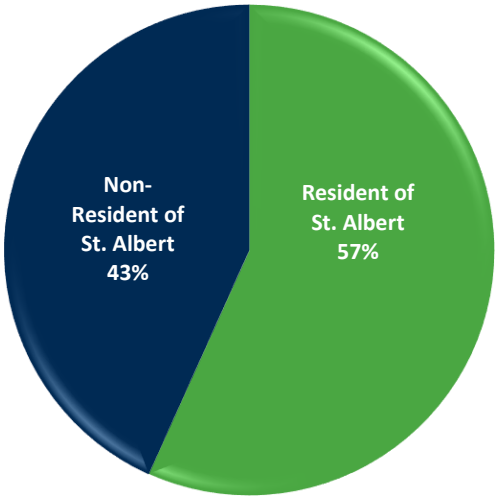
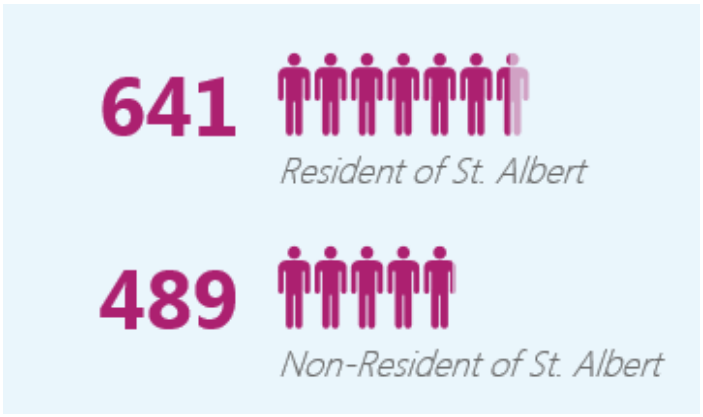
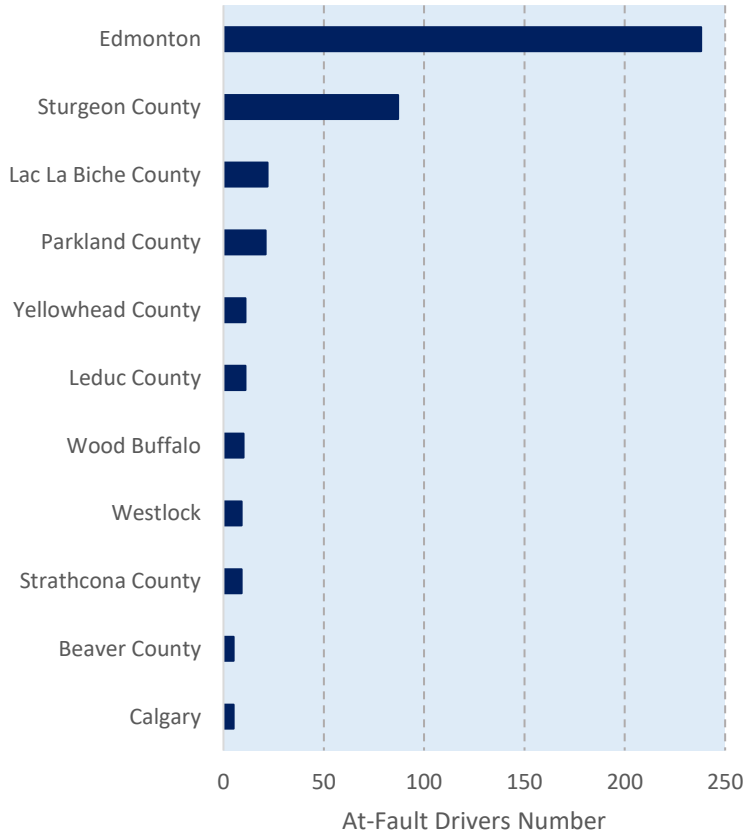


Figure 54: At-Fault Drivers' Residence by Neighbourhoods in St. Albert







57% of
At-Fault
Drivers are
Residents of St. Albert

49% of
Non-Resident
At-fault
Drivers are from
Edmonton

Figure 55: At-Fault Drivers' Residence by City/County/Town

Enforcement Statistics

The City of St. Albert utilizes photo enforcement (mobile photo enforcement and intersection safety cameras). Approved photo enforcement locations are identified in Figure 56.

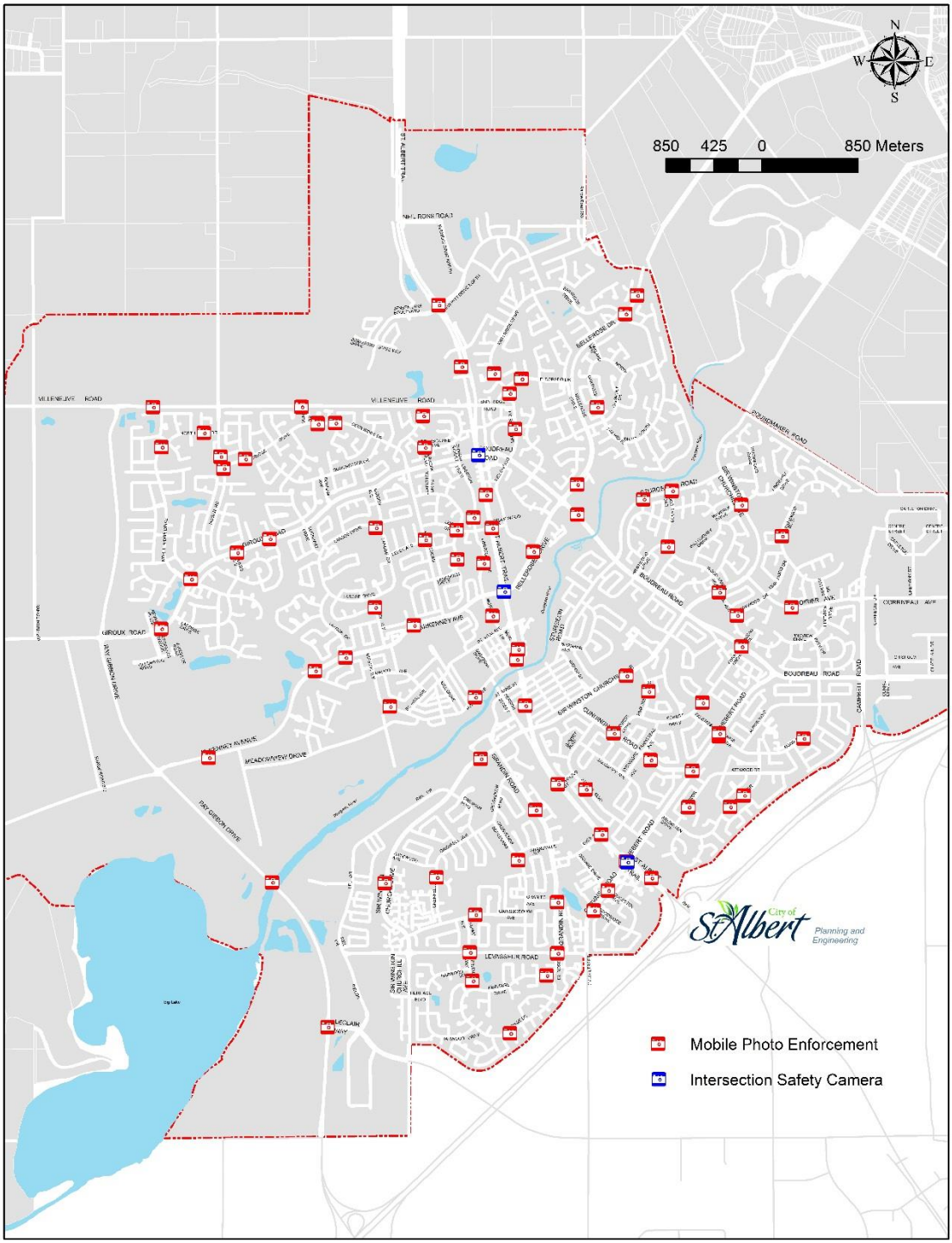
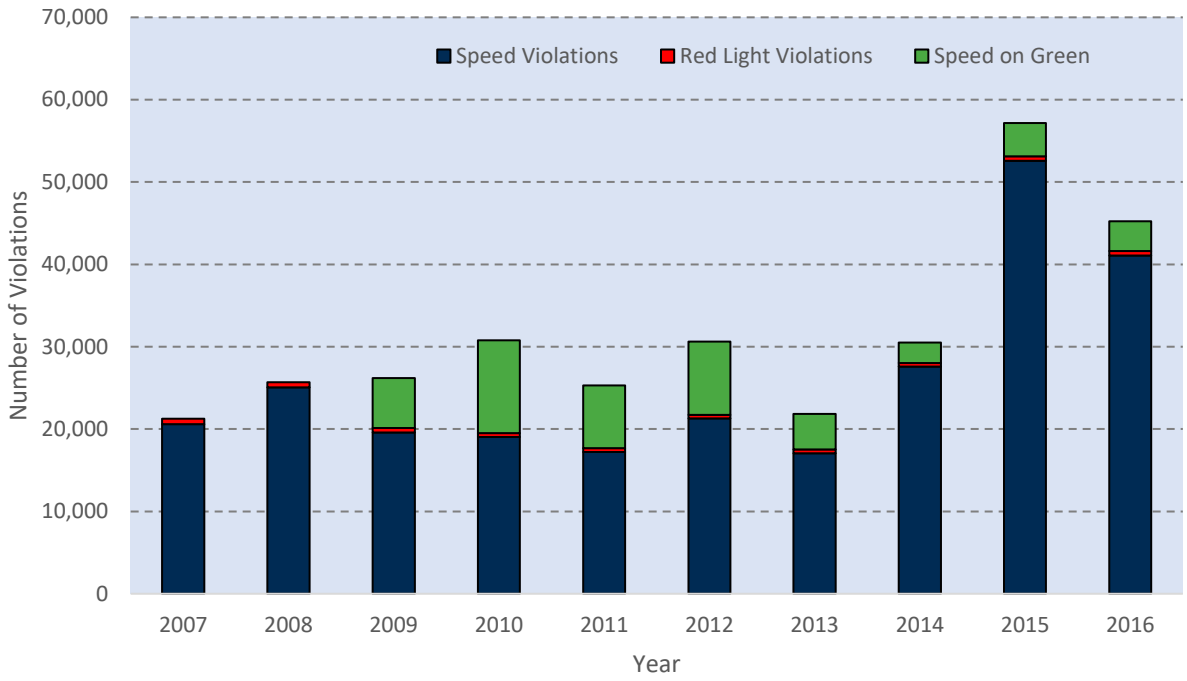


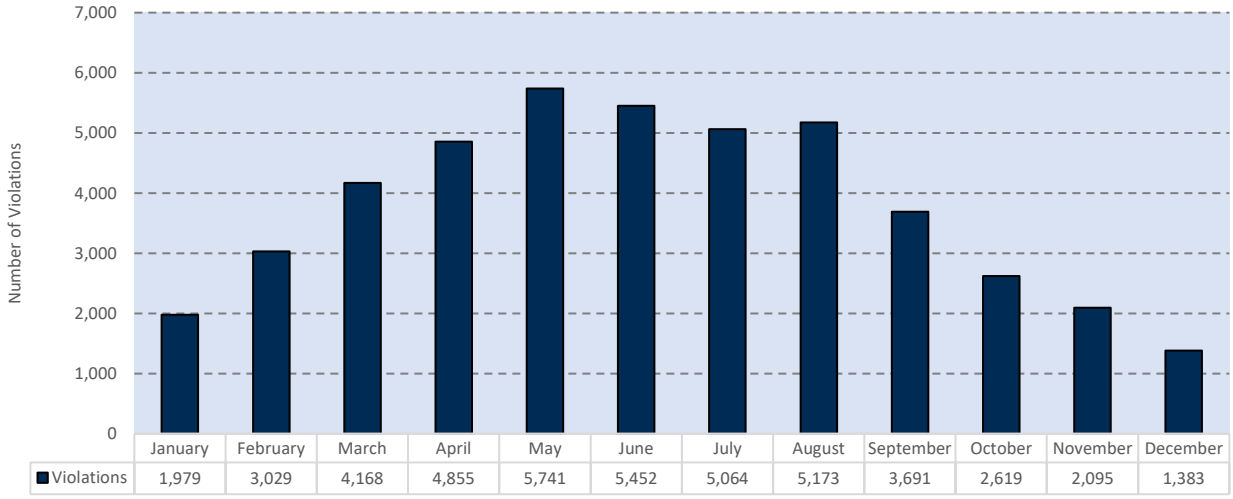
Figure 56: Locations of Intersection Safety Camera and Mobile Photo Enforcement



Year	Speed Violations	Red Light Violations	Speed on Green	Total
2007	20,591	651	-	**21,242**
2008	25,077	618	-	**25,695**
2009	19,571	568	6,050	**26,189**
2010	19,043	463	11,285	**30,791**
2011	17,214	475	7,626	**25,315**
2012	21,308	417	8,887	**30,612**
2013	17,062	470	4,322	**21,854**
2014	27,575	440	2,486	**30,501**
2015	52,582	538	4,049	**57,169**
2016	41,057	542	3,650	**45,249**

Figure 57: Yearly Trend (2007-2016) of Traffic Violations

Figure 57 demonstrates the annual trend of traffic violations issued in St. Albert from 2007 to 2016. Since the St. Albert Automated Traffic Enforcement (ATE) program has moved to the use of laser speed cameras, the number of speed violations issued in 2015 increased substantially. However, in 2016 speed violations went down 22% from 2015.

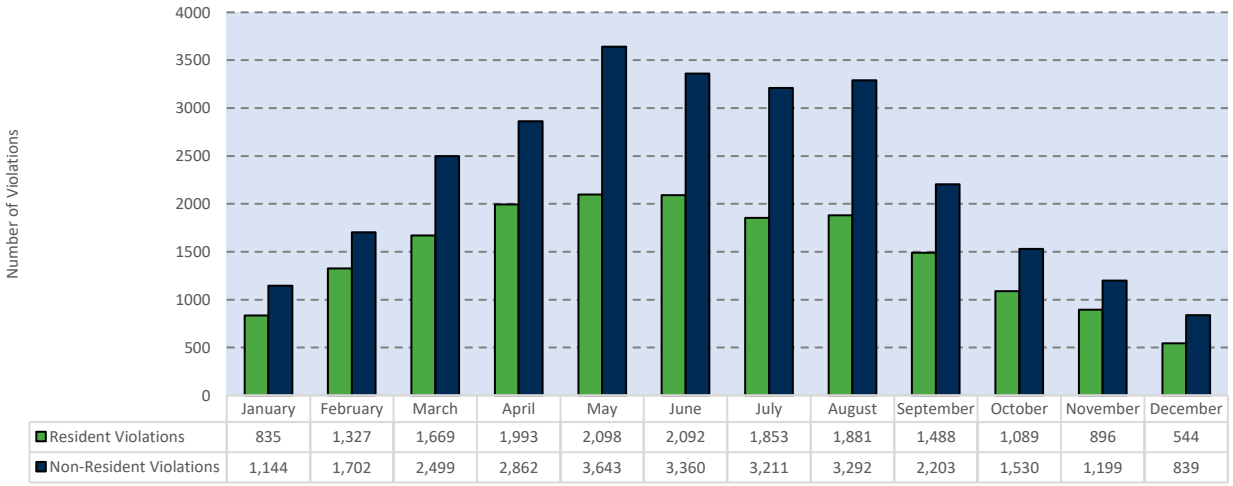


Month	Speed Violation (Mobile)	Intersection Safety Device (ISD)		Total
		Red-Light Violation	Speed on Green	
January	1765	35	179	1979
February	2711	34	284	3029
March	3780	32	356	4168
April	4437	41	377	4855
May	5239	52	450	5741
June	5001	58	393	5452
July	4631	51	382	5064
August	4751	64	358	5173
September	3303	46	342	3691
October	2295	46	278	2619
November	1902	28	165	2095
December	1242	55	86	1383
Total	**41057**	**542**	**3650**	**45249**

Figure 58: Monthly Speeding and Red-Light Violations (2016)

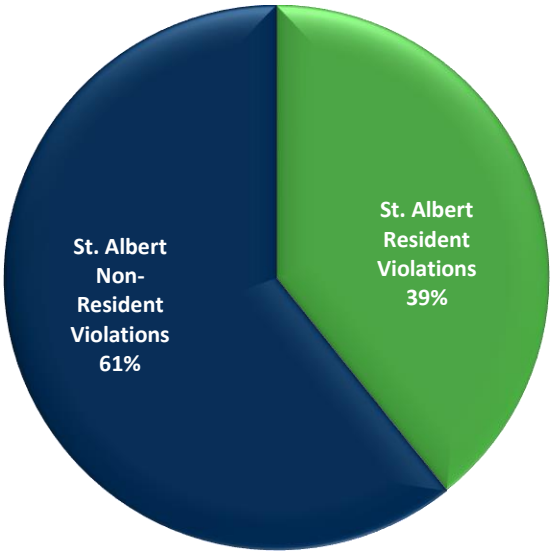
Figure 58 exhibits the speeding and red-light violations issued monthly in 2016. Violations increased in April to August when the road conditions and weather typically improved.

During winter (December, January, February), speeding violations decreased substantially which is intuitive as drivers generally slow down in those months due to bad weather and slippery road conditions.



	January	February	March	April	May	June	July	August	September	October	November	December
Resident Violations	835	1,327	1,669	1,993	2,098	2,092	1,853	1,881	1,488	1,089	896	544
Non-Resident Violations	1,144	1,702	2,499	2,862	3,643	3,360	3,211	3,292	2,203	1,530	1,199	839

Figure 59: Monthly Speeding and Red-Light Violations (2016) Resident vs. Non-Resident



61%

Violations issued to a Non-Residents

Figure 60: Resident vs Non-Resident Violations Issued (2016)

Figure 60 represents the violations issued in 2016 to residents and non-residents of St. Albert. Non-residents received 61% of the traffic violations.

Contacting the City

For questions regarding motor vehicle collision statistics, process or details, or to report concerns related to traffic safety within the City of St. Albert, contact the City Engineering Services Department at 780-459-1654 or the Manager of Transportation as per contact information below.

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Engineering Services | City of St. Albert
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P: 780-459-1649 | **F:** 780-458-1974
dschick@stalbert.ca | www.stalbert.ca