2014

St. Albert Traffic Collision Statistics



Transportation Branch
Engineering Services
City of St. Albert

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GLOSSARY OF TERMS

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.
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.
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.
Major Injury	Persons with injuries or complaints of pain who went to a hospital and were subsequently admitted, even if for observation only.
Minor Injury	Persons with injuries or complaints of pain that 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.
Fatal Collision	A vehicle collision which resulted in a fatality.
Injury Collision	A vehicle collision which resulted in either a major or minor injury.
Property Damage Only (PDO) Collision	A vehicle collision which resulted in property damage exceeding CAD $2,000.
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 property damage (PDO) occurred.
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.
Intersection	Defined as extending 10 metres past the legally defined limits of the outer crosswalk lines of an intersecting roadway.

Mid-block	A section of roadway between two intersections.
Driver Action	A category of contributing factors attributed to actions taken or performed by a driver immediately prior to a collision occurring.
Collision Type	Refers to the object struck by a motor vehicle during a collision (including: a pedestrian, a motorcycle, a bicycle, an animal and 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).
Rear End Collision	When a vehicle collides with another vehicle in the rear side due to a number of possible reasons (e.g., following too closely, failure to maintain proper safe distance between two vehicles, driver inattention, failing to account for road conditions).
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.
Sideswipe Opposite Direction	Two vehicles approaching opposite directions and intending to continue in opposite directions collide in a sideswiping manner as a result of one or both vehicles crossing the painted or unpainted centerline or divided median of the roadway.
Left Turn Across Path	A driver makes a left turn and is struck by an oncoming vehicle with the right of way.
Backing	Any multi-vehicle collision when at least one vehicle was in the act of backing.
Struck Object	A collision in which the primary collision involved a single vehicle and a fixed object.
Vulnerable Road User Collision	A collision involving a vehicle that collides with either a pedestrian, motorcyclist or bicyclist.
Vehicle Wildlife Collision	A collision involving a vehicle striking any wildlife.
At-fault Driver	A driver who is responsible for the 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.

2014 COLLISION QUICK FACTS

General Collision Statistics

- 768 collisions occurred on public roadways (incidents within private parking lots excluded) within St. Albert
- 431 collisions (56% of total collisions) occurred at intersections
- 337 collisions (44% of total collisions) occurred at mid-block locations
- 23% reduction of intersection collision occurrences from 2013
- City-wide there was 10% collision reduction and 13% collision reduction per 1,000 registered vehicles from 2013
- City-wide there was 18% collision reduction per 1,000 population from 2012
- 100% reduction of fatal collision occurrences, a 35% reduction of injury collision occurrences and a 7% reduction of PDO collision occurrences from 2013 on public roadways
- Of the 124 injury collisions that occurred on public roadways, 4 resulted in major injuries and 166 resulted in minor injuries
- a 56% motorcycle, 60% bicycle and 55% pedestrian collision reduction on public roadways from 2013
- Of at-fault drivers; 58% are male and 42% are female
- Male drivers within 16-20 years of age are the highest male at-fault drivers
- Female drivers within 16-20 and 31-40 years of age are the highest female at-fault drivers

Intersection Collision Statistics

- 77% of injury collisions occurred at intersections
- The intersection of St. Albert Trail & Giroux/Boudreau Road has the highest number of total collision occurrences
- Approximately 49% of all intersection collisions involved rear end collisions; 23% of those rear end collisions resulted in injuries
- 54% reduction in left turn across path collisions from 2013
- 70% of intersection collisions occurred on weekdays
- 34% of all intersection collisions occurred during fall (September, October, November)
- 16% of total intersection collisions occurred in November

- 43% of rear end collisions that occurred during fall, occurred in November – typical to when the first snowfall occurs
- 31% of intersection collisions occurred from 3 to 6 p.m.

Mid-block Collision Statistics

- 23% injury collisions occurred at the mid-block locations
- 46% of mid-block collisions occurred due to a vehicle colliding with a parked car
- 19% of mid-block parked car related collisions occurred in the Grandin neighbourhood
- 48% of mid-block collisions occurred mid-week (Wednesday, Thursday, Friday)
- 32% of mid-block collisions occurred during winter (December, January, February)
- 45% of mid-block collisions that occurred during winter, occurred in February
- 18% of mid-block collisions occurred from 4 to 6 p.m.

Summary

Statistics	2013	2014	Change
Total Collisions	886	768	**-13.3%**
Fatal Collisions	5	0	**-100%**
Injury Collisions	192	124	**-35.4%**
PDO Collisions	689	644	**-6.5%**
Intersection Collisions	559	431	**-23%**
Mid-block Collisions	337	337	**0.0%**
Rear End Collisions	200	209	**+5.0%**
Left Turn Across Path Collisions	109	51	**-53.2%**
Pedestrian Collisions	11	5	**-55%**
Bicycle Collisions	5	2	**-60%**
Motorcycle Collisions	9	4	**-56%**
Vehicle- Wildlife Collisions	5	7	**+40%**
Number of Registered Vehicles	50424	51944	**+3.0%**
Number of Licensed Drivers	48423	49387	**+2.0%**

Note: Statistics of Collisions which occurred on public roadways
"-" 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, 2014 to December 31, 2014 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) in St. Albert. 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. The information provided within this report is produced based upon collisions reported 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 (including population, number of registered vehicles and licensed drivers) have also been illustrated. The remainder of this report is organized into the following chapters:

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 mid-block) and private roadways (parking lots).

Chapter 3 describes 2014 collision statistics and trends from incidents occurring on public roadways only (i.e., intersections and mid-block); private roadway (parking lot) information has been removed from this section of the report. Overall statistics on various aspects of collision occurrences are identified inclusive of: types and severities, highest collisions intersections, temporal distribution of collisions, collisions by neighbourhoods, vulnerable road user incidents and vehicle-wildlife collisions.

Chapter 4 represents the information about the identified "at-fault" drivers, including age distribution, sex and driver actions.

Geographical Location

St. Albert, the second-largest city in the Edmonton Capital Region with a population of 63,255 (density 1273.4 per km^2), is located north-west of the city of Edmonton, Alberta[1]. Figure 1 illustrates the geographic location of St. Albert.



Figure 1: Geographical Location of St. Albert

[1] 2014 St. Albert Census, Municipal Census Report, City of St. Albert

Roadway Network

Figure 2 illustrates the roadway network of St. Albert. The road network is comprised of approximately 68.24 km of arterial roadway, 74.21 km of collector roadway and 162.92 km of local roadway. St. Albert Trail (also known as Highway 2) is the major north-south arterial corridor and also connects to Edmonton at the south end. The Boudreau/Giroux Road corridor is the major east-west arterial which links with St. Albert Trail and connects the eastern and western sections of the city.

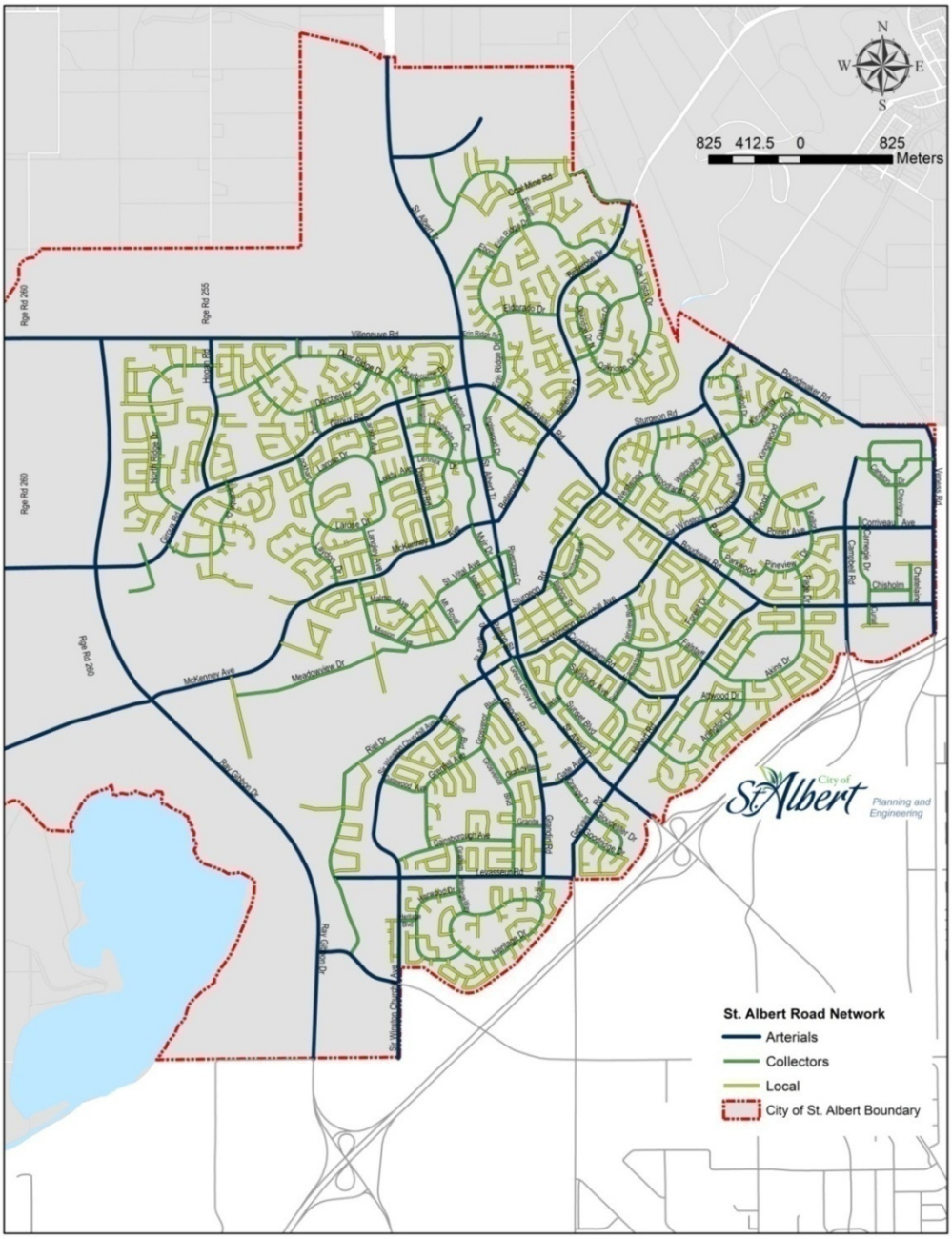
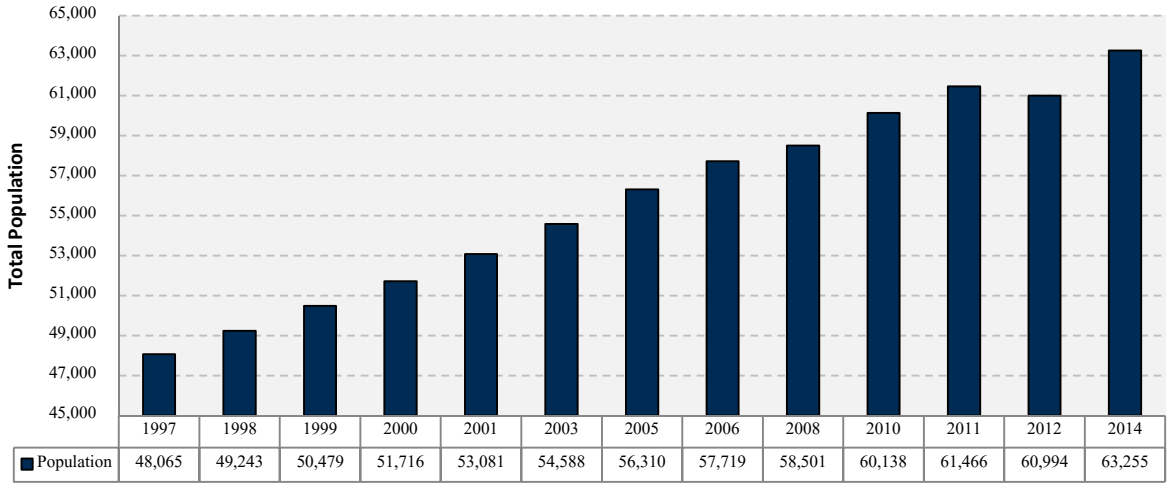


Figure 2: Road Network of St. Albert

Demographic Information

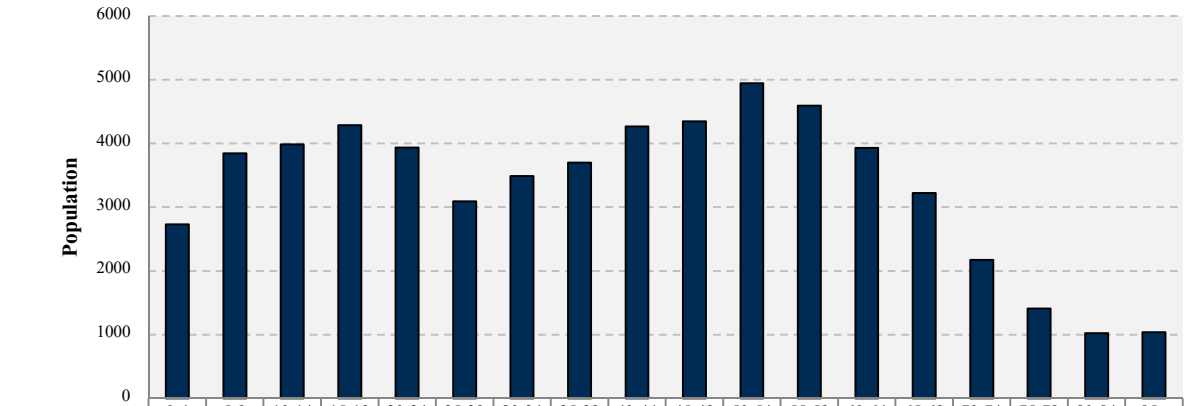
Population

The 2014 Municipal Census reported a population of 63,255 in St. Albert which represents a growth of 3.7% from the 2012 census where the recorded population was 60,994 (Figure 3). The average annual growth rate over this period was 1.85%, which is more than double the 0.71% average annual growth experienced between 2010 and 2012. The population growth rate for 2012 to 2014 is the highest growth rate since the increase from the 2000 to the 2003 census period. The largest age category, which represents 22.44% 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 male was 49%[2].



	1997	1998	1999	2000	2001	2003	2005	2006	2008	2010	2011	2012	2014
Population	48,065	49,243	50,479	51,716	53,081	54,588	56,310	57,719	58,501	60,138	61,466	60,994	63,255

Figure 3: Total Population 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	2729	3848	3987	4289	3938	3094	3490	3702	4266	4350	4946	4595	3933	3225	2173	1410	1023	1039

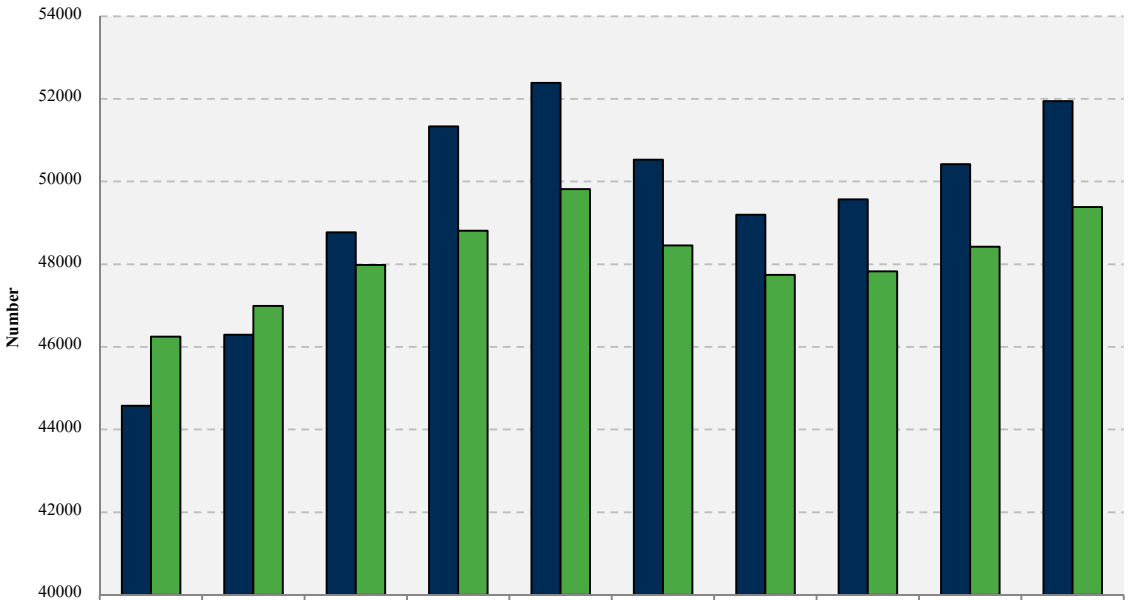
Figure 4: 2014 Population by Age of St. Albert

[2] 2014 St. Albert Census, Municipal Census Report, City of St. Albert

Registered Vehicles & Licensed Drivers

According to Alberta Transportation (AT), currently there are 51,944[3] registered vehicles and 49,387[4] licensed drivers in St. Albert (Figure 5). For the registered motorized vehicles, counts 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 from the counts. In terms of licensed drivers, counts include all classes of licensed drivers, including learner's class and valid licenses that have not expired. Counts do not include suspended drivers, ID card holders, or any drivers with expired licenses.

In 2014, there was a 2% increase of licensed drivers, whereas a 3% increase of registered vehicles from 2013. In term of car ownership per household, the ratio of registered vehicles and occupied dwelling units was 2.24 (total dwelling units 23,168) 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.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registered Vehicles	44577	46297	48774	51332	52387	50529	49195	49572	50424	51944
Licensed Drivers	46249	46991	47985	48807	49818	48455	47740	47825	48423	49387

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

Neighborhoods

There are a total of 24 neighborhoods in the city. As identified in Figure 6., St. Albert's most populated neighbourhoods are:

- Grandin at 11.7% of the total population
- Lacombe Park at 11.6% of the total population
- Deer Ridge at 9.9% of the total population

Since 2012, the neighbourhood with the highest population growth was North Ridge, where there was an increase in population of 1,029 people. North Ridge was followed by Erin Ridge North, with an increase of 498 people.

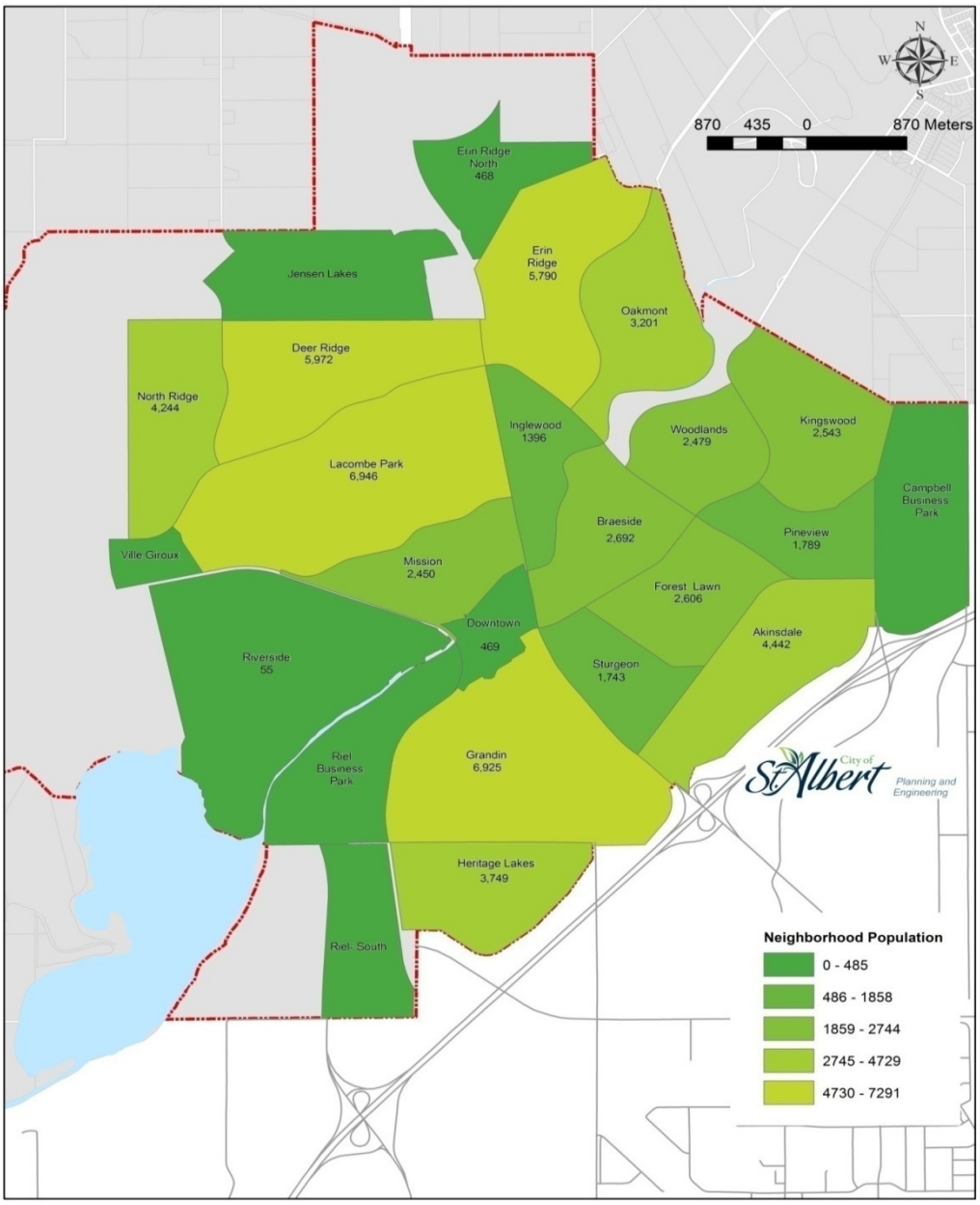


Figure 6: Population of St. Albert (2014) by Neighborhoods

Transit Network

The city runs St. Albert Transit (StAT) which 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.

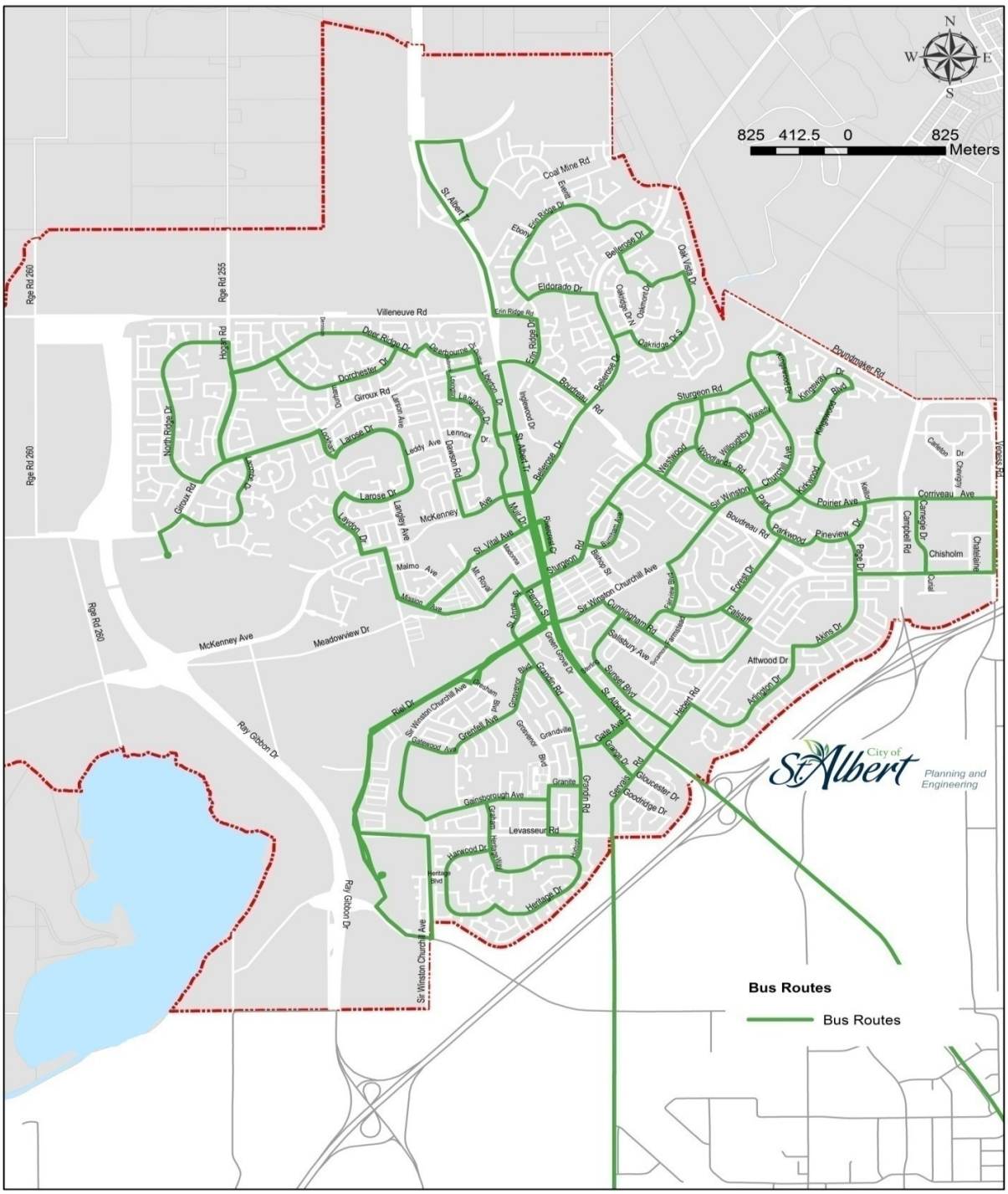


Figure 7: Transit Network of St. Albert

Speed Limits, School Zones, and Playground Zones

Similar to other municipalities, St. Albert utilizes school zones, which is an identified section of road close to a school where the speed limit is reduced to 30 km/h and is in effect on school days between the hours of 8 a.m. to 4 p.m.

The City also operates with both Playground Areas and Playground Zones. A Playground Area is a location identifying a playground; 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 starting at 8:30 a.m. 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.

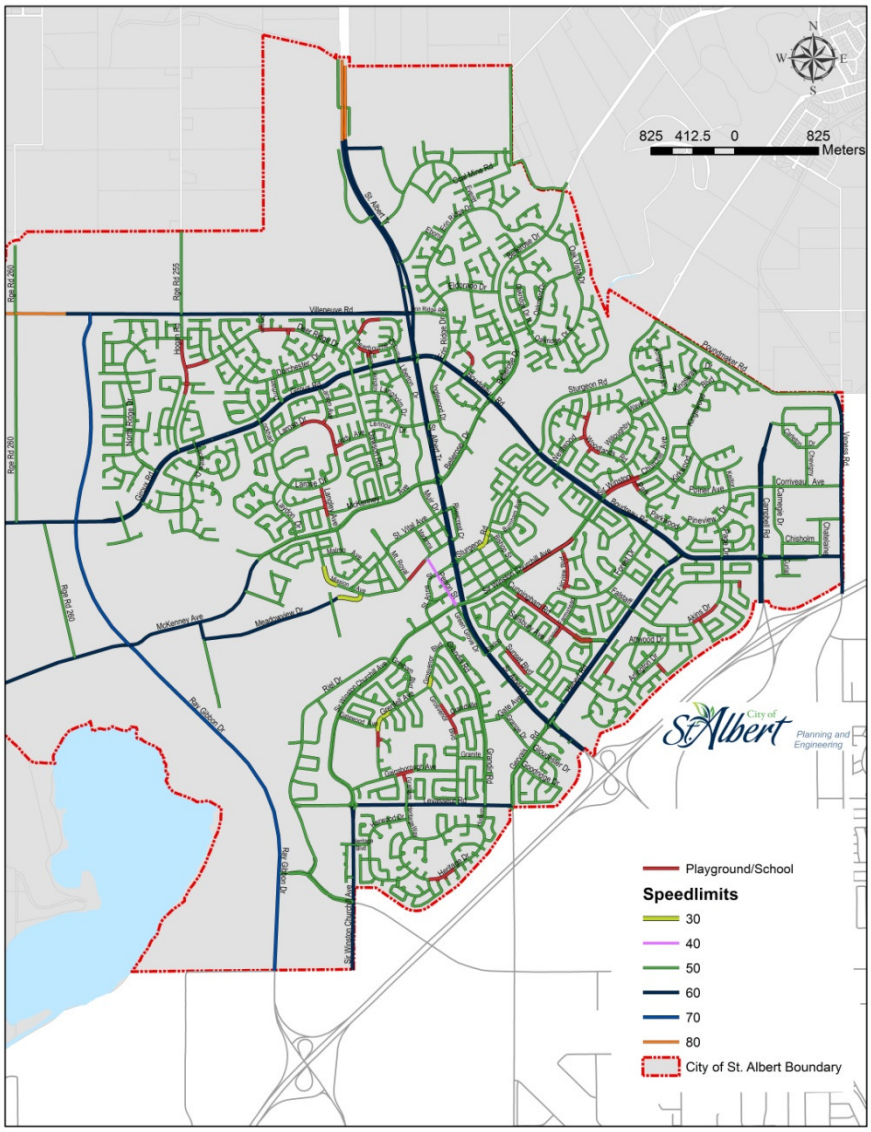


Figure 8: Speed limits and School / Playground Zones of St. Albert Road Network

CHAPTER 2: HISTORICAL COLLISION STATISTICS

City-wide Collision Trends (inclusive of both Public and Private Roads)

Figures 9 and 10 illustrate the city-wide total collision frequency and percentages of collision frequency change from 2005 to 2014. City-wide collision frequency includes collisions that occurred on public roadways (i.e., intersection and mid-block) and also in private parking lots. Within the timeframe of 2005 to 2014, the highest number of collisions was reported in 2009 (1,862 collisions), while the lowest number occurred in 2005 (1,067 reported collisions).

Over the past 10 years, the highest increase in annual collision occurrence took place from 2006 to 2007 where there was a 21% increase in reported collisions (Figure 10). In 2011, there were substantial decreases recorded (approximately 18% reduction from 2010; however, in 2011 the level of reporting property damage only (PDO) collisions was adjusted to CAD $2,000 from CAD $1,000 which may have led to a higher percentage variance.

In comparison to 2013, 2014 recorded a

10%

Collision Reduction city-wide

Several road safety initiatives/countermeasures have been implemented with the intent of addressing and reducing collision occurrences, inclusive of:

- In 2001, red light cameras were first introduced at two intersections:
  - St. Albert Trail & Hebert Road/Gervais Road intersection
  - St. Albert Trail & 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 intersection safety devices (ISDs) were implemented at the St. Albert Trail & 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.

In 2014 (city-wide), there were 1,194 reported collisions which represent an overall 10% collision reduction from 2013.

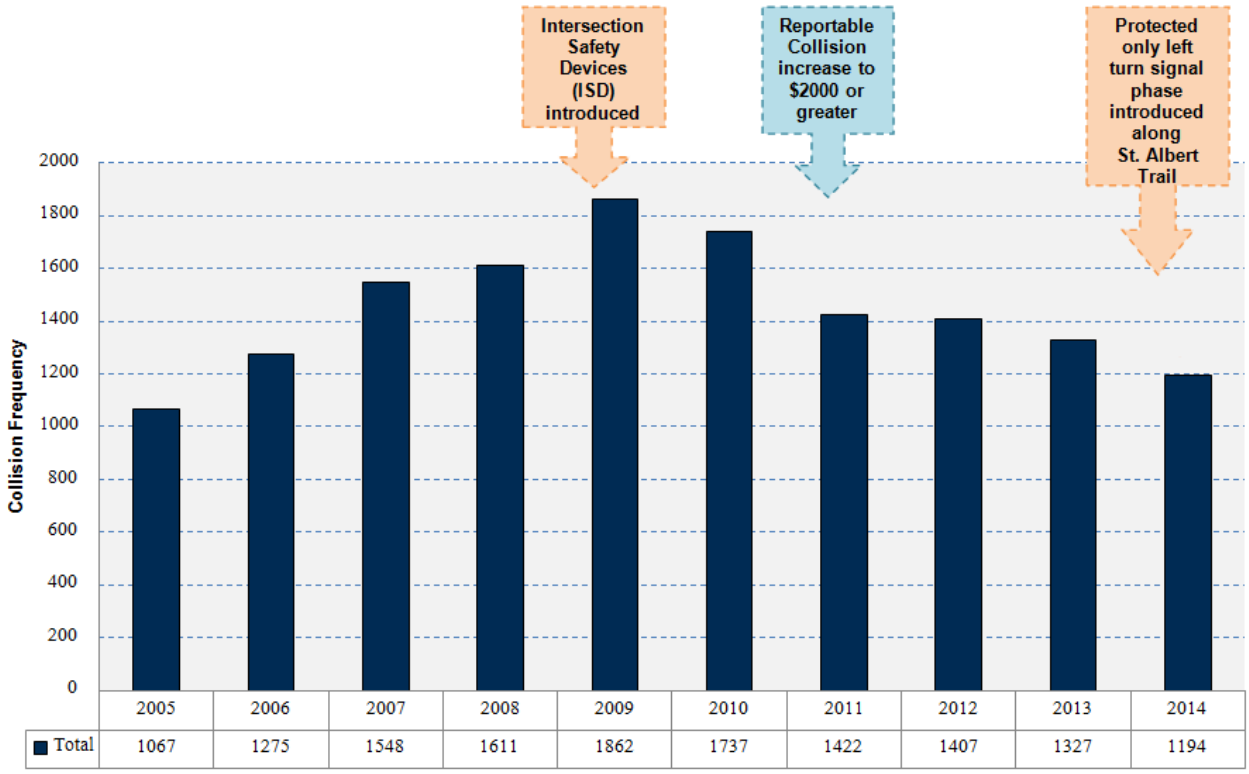


Figure 9: City-wide Historical Collision Incidents Reported (2005- 2014)

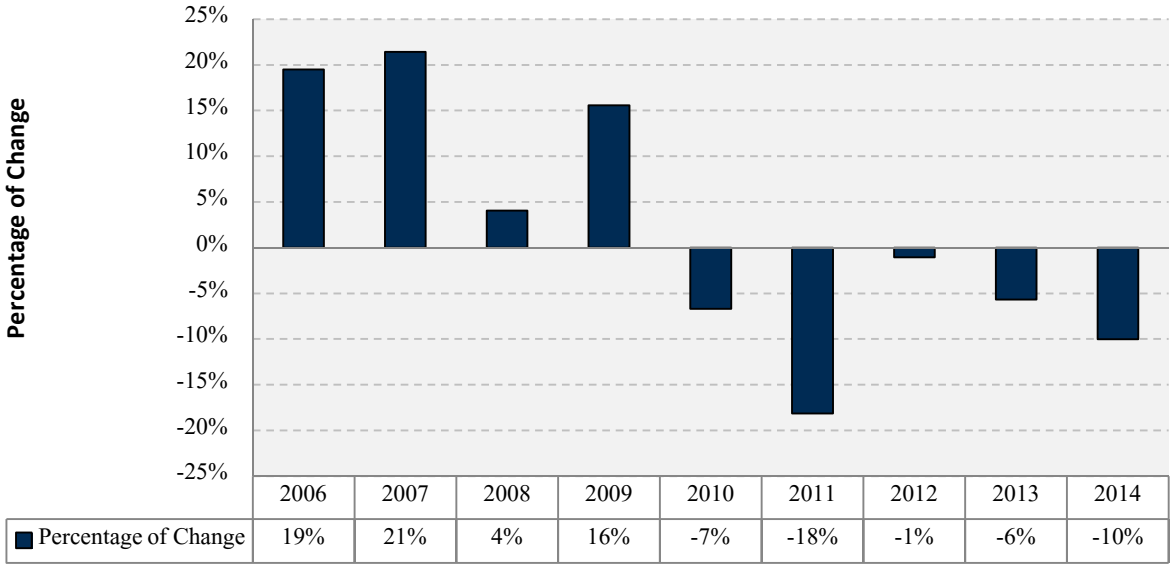
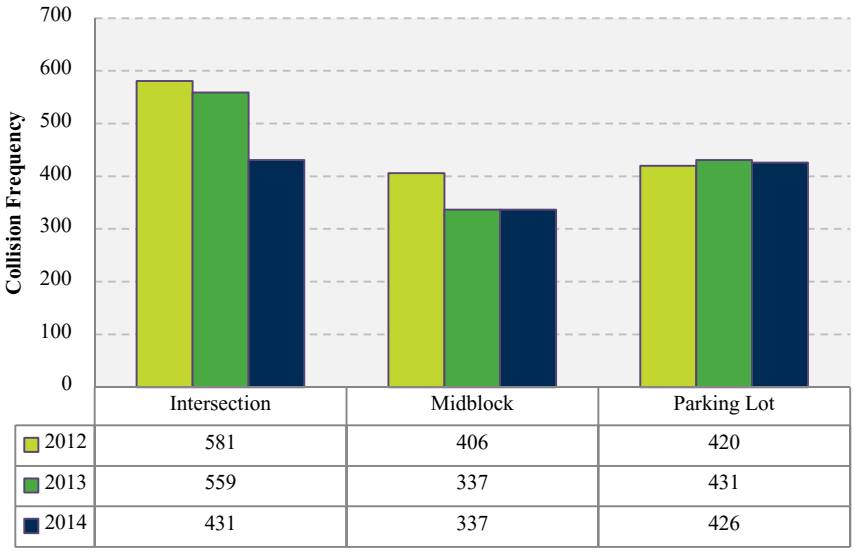


Figure 10: Percentage of Annual Collision Incidents Reported Change

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

Figure 11 represents the annual collision frequency (number of occurrences) at intersections, mid-block locations, and within parking lots from the year 2012 to 2014. The distributions of collision occurrences at the various types of locations are quite

similar. In 2014, there was a 23% reduction of intersection collision occurrences from 2013. During this period there was a substantial reduction of left turn across path collisions at intersections along St. Albert Trail following the implementation of protected only left turn signal phases.



	Intersection	Midblock	Parking Lot
2012	581	406	420
2013	559	337	431
2014	431	337	426

2014 reported a 23% Intersection Collision Reduction from 2013

Figure 11: 2012-2014 Collision Incidents by Location Type

For a better understanding of city-wide collision trends, it is important to take into account 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 rather than simple collision frequency. Figure 12 identifies the annual collision rates per 1,000 population in St. Albert from 2005 to 2014.

From 2005 to 2010 there was an increasing trend in collision rates which led to the highest recorded collision rate within this time frame, of 28.88% in 2010. In 2011 the rate decreased 19.9% from 2010; however, it remained fairly constant in the years 2011 and 2012. An 18% reduction of collision per 1,000 population occurred in 2014 from 2012 (Figure 12).

Figure 13 represents the reduction of collisions per 1,000 registered vehicles in the same time frame. In 2014 there was a 13% reduction of collisions per 1,000 registered vehicles in St. Albert from the previous year.

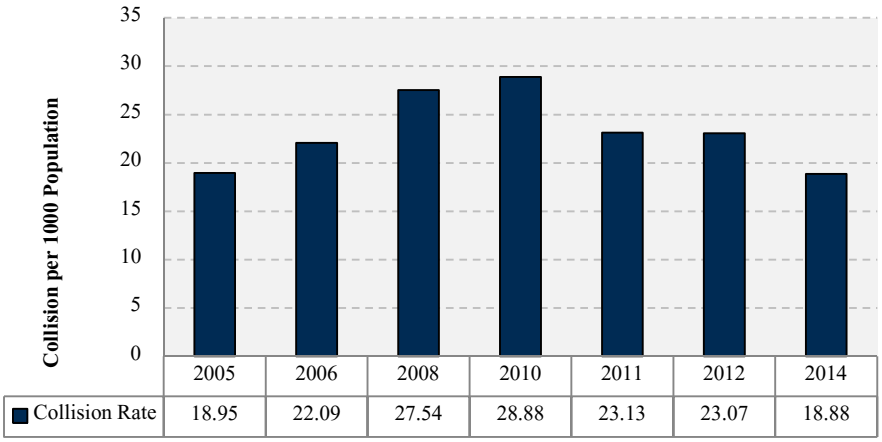


Figure 12:Collision per 1,000 Population of St. Albert

**** No population survey was conducted in 2013***

18%

Reduction of Collision per 1,000 Population from 2012 to 2014

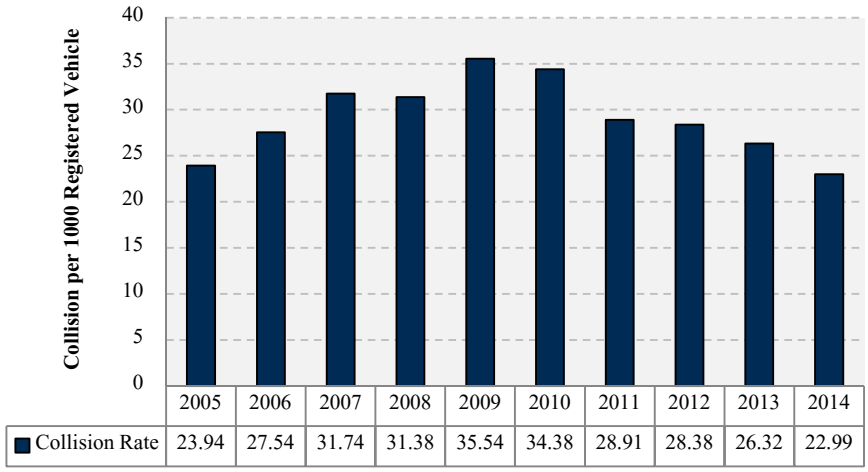


Figure 13:Collision per 1,000 Registered Vehicles of St. Albert

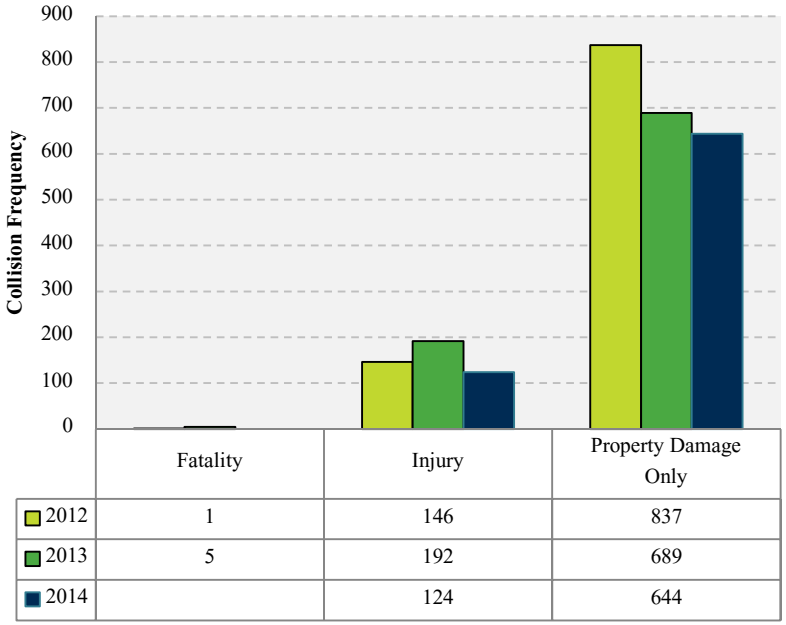
13%

Reduction of Collision per 1,000 Registered Vehicles from 2013

CHAPTER 3: 2014 COLLISION STATISTICS ON PUBLIC ROADWAYS

Collision Trends on Public Roadways

This section discusses reported collision occurrences, severities and trends that occurred only on public roadways (i.e., intersections and mid-blocks) and excludes all collisions that concurred in private parking lots. There were no fatal collision occurrences in 2014 on public roadways, which indicate a 100% reduction of fatal collisions from 2013 (Figure 14). Overall, there was a 35% and 7% reduction of injury and PDO collision occurrences respectively from 2013.



	Fatality	Injury	Property Damage Only
2012	1	146	837
2013	5	192	689
2014		124	644

100% Reduction of Fatal Collisions

35% Reduction of Injury Collisions

7% Reduction of PDO Collisions from 2013

Figure 14: Collision Occurrences (2012- 2014) in Public Roadways by Severity

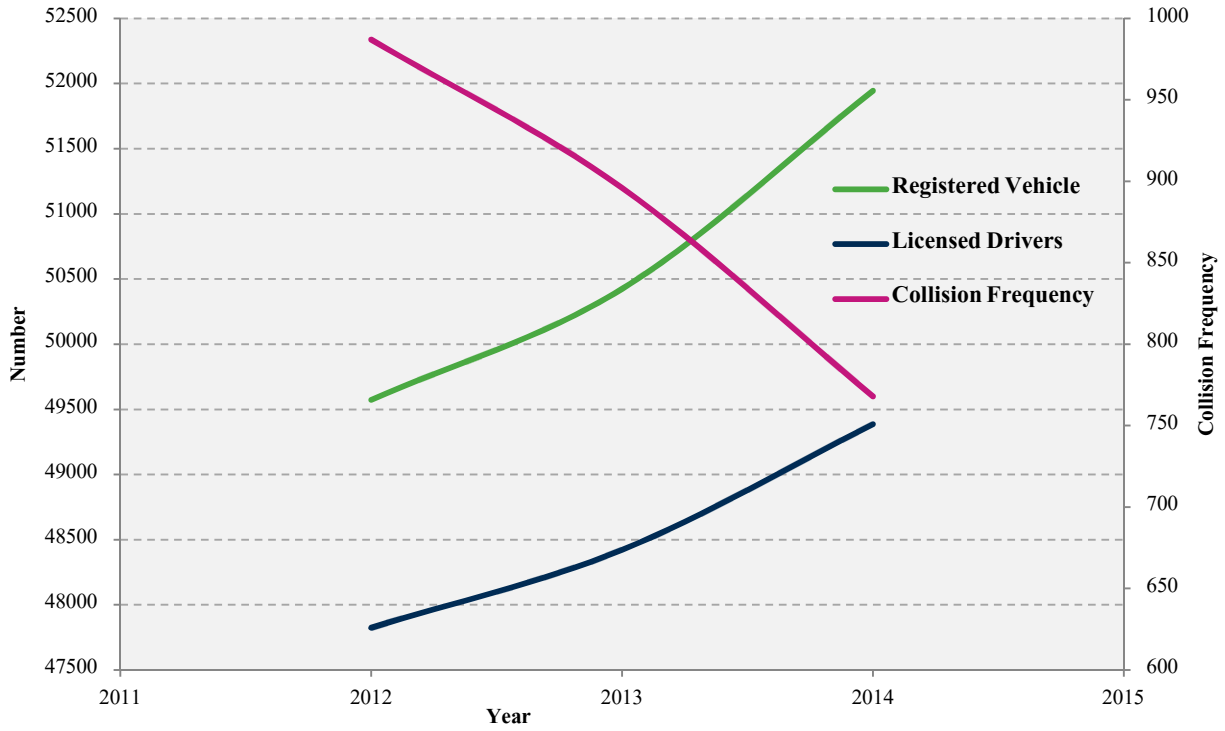


Figure 15: Registered Vehicle, Licensed Drivers and Collision Frequency Trend

Figure 15 depicts the registered vehicle, licensed drivers, and collision frequency trend from 2012 to 2014. Although the number of registered vehicles and licensed drivers increased over the past few years, collision occurrences have decreased from 2012 to 2014.

Overview

In 2014, there were 768 total collisions that occurred on public roadways (private parking lot incidents excluded). Based on the location of collision occurrences, public roadways can be divided into two locations:

i) intersection locations
ii) mid-block locations

Figure 16 represents the 2014 collision occurrences by location and severity. Approximately 56% of total collisions occurred at intersections, whereas 44% occurred at mid-block locations.

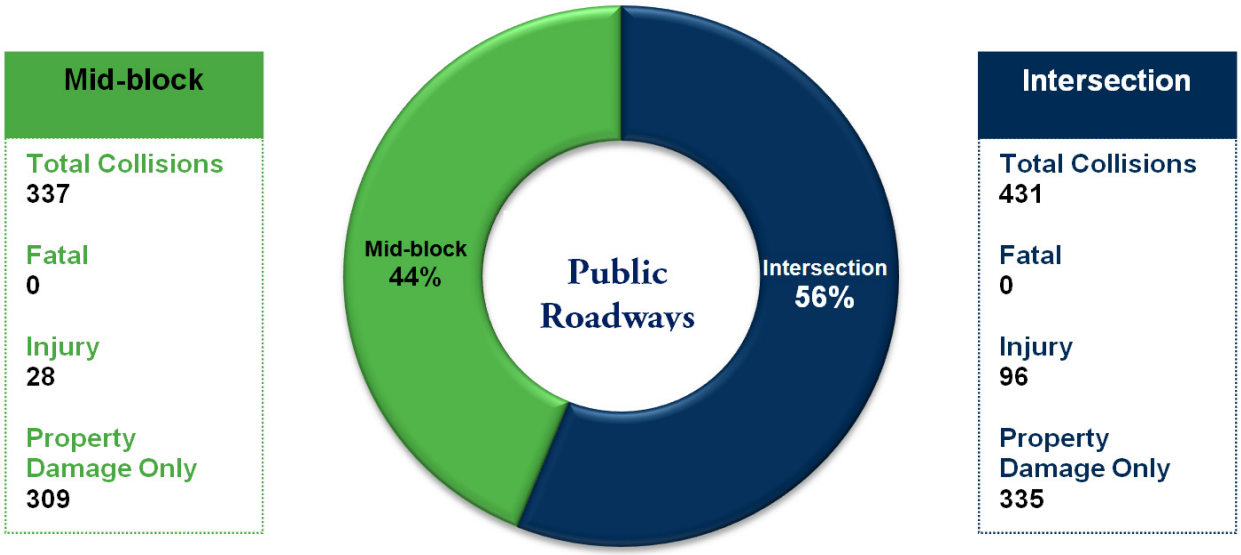


Figure 16: Distribution of Collision Occurrences by Location and Severity

There were no fatality resulting collision occurrences in 2014.

There were 124 total injury collisions reported: 28 occurrences at mid-block locations and 96 occurrences at intersection locations.

Of these 124 collisions that resulted in injuries:

- 4 road users reported major injuries as a result of an incident
- 166 road users reported minor injuries as a result of an incident

In summary, the 124 injury collisions resulted in a total of 170 road users with major or minor injuries (multiple vehicle occupants or road users may be injured in a single reported collision incident).

0 Fatal Collision occurred in public roadways

77% Injury Collision occurred at the Intersection

124 Injury Collisions resulted in 4 major injuries and 166 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 different directional vehicular/pedestrian movements that result in conflicting points. For instance, in a 4-leg intersection there are 32 conflict points and in a 3-leg intersection (T-intersection) there are 9 conflicts points.

In 2014, 56% of the total collisions that occurred on public roadways occurred at intersections. In terms of severity, 77% of injury collisions occurred at intersections. Figure 17 illustrates the density of intersection collision incidents which identifies that most reported collisions occurred along the St. Albert Trail and Boudreau Road corridors.

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 increases.

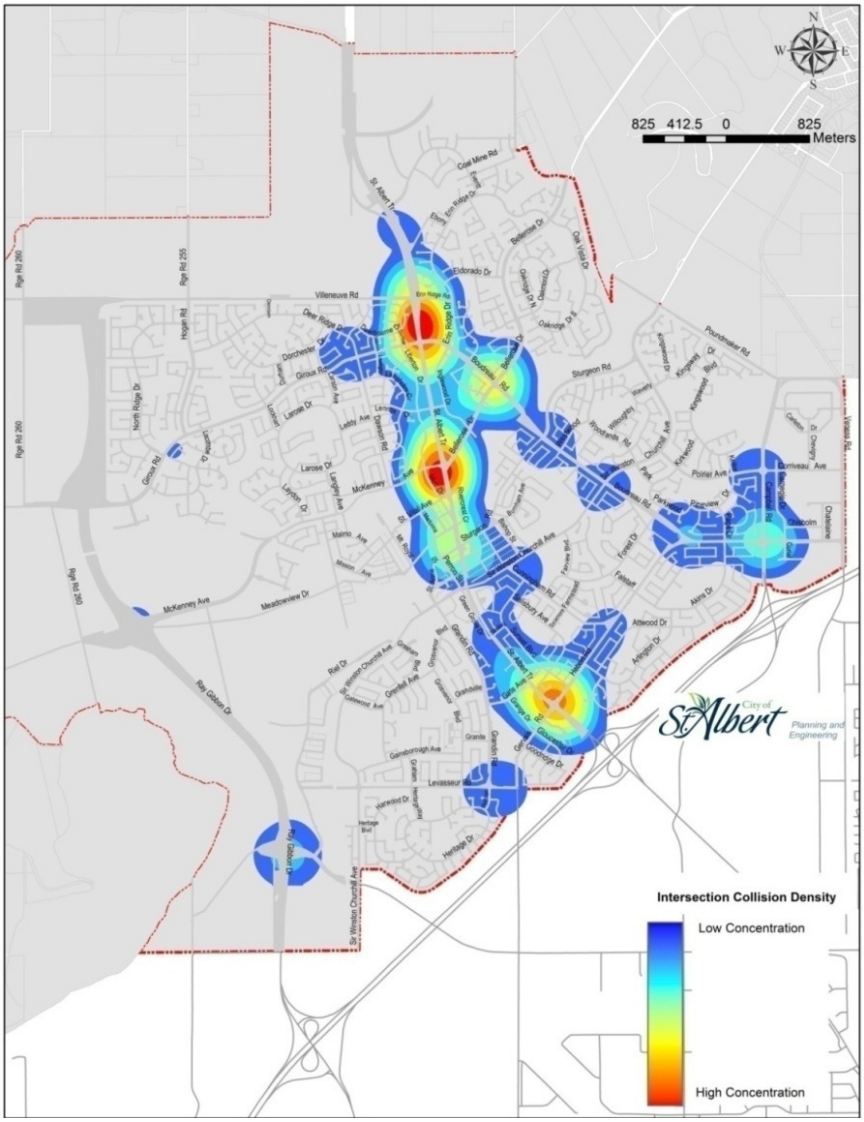


Figure 17: 2014 Intersection Collision Density

Table 1 and Figure 18 represent the ten highest collision intersections based on total collision frequency in 2014. Seven out of the top 10 identified intersections are on the St. Albert Trail corridor. In 2014, the intersection of St. Albert Trail and Giroux Road/Boudreau Road was ranked the highest in collision frequency occurrences with 30 collisions. This is the second year, the road has received this distinction. However, there was a 45.5% reduction of collisions at this intersection compared to 2013. St. Albert Trail and McKenney Avenue/ Bellerose Drive ranked second in the collision frequency ranking followed by the intersection of Boudreau Road and Bellerose Drive. For an annual comparison, Table 2 identifies the ten highest collision intersections reported in 2013.

St. Albert Trail & Giroux/ Boudreau Road

Ranked One as High Collision Intersection based upon collision frequency

Table 1: 2014 Top Ten High Collision Intersections

Rank	Intersection Name	Collision Frequency
1	St. Albert Trail & Giroux/Boudreau Road	30
2	St. Albert Trail & McKenney Avenue/Bellerose Drive	27
3	Boudreau Road & Bellerose Drive	25
3	St. Albert Trail & Villeneuve/Erin Ridge Road	25
4	St. Albert Trail & Hebert /Gervais Road	19
5	St. Albert Trail & St. Anne Street/Sturgeon Road	16
6	Boudreau Road & Campbell Road	14
7	Ray Gibbon Drive & LeClair Way	11
7	St. Albert Trail & Lennox/Inglewood Drive	11
7	St. Albert Trail & Gate Avenue	11

Table 2: 2013 Top Ten High Collision Intersections

Rank	Intersection Name	Total Collision Frequency
1	St. Albert Trail & Giroux/Boudreau Road	55
2	St. Albert Trail & Hebert /Gervais Road	42
3	St. Albert Trail & Villeneuve/Erin Ridge Road	25
4	Boudreau Road & Bellerose Drive	23
4	Boudreau Road & Campbell Road	23
5	St. Albert Trail & St. Vital Avenue/Rivercrest Crescent	21
6	St. Albert Trail & McKenney Avenue/Bellerose Drive	19
6	St. Albert Trail & St. Anne Street/Sturgeon Road	19
7	St. Albert Trail & Gate Avenue	12
8	Boudreau Rd & Sir Winston Churchill Avenue	11

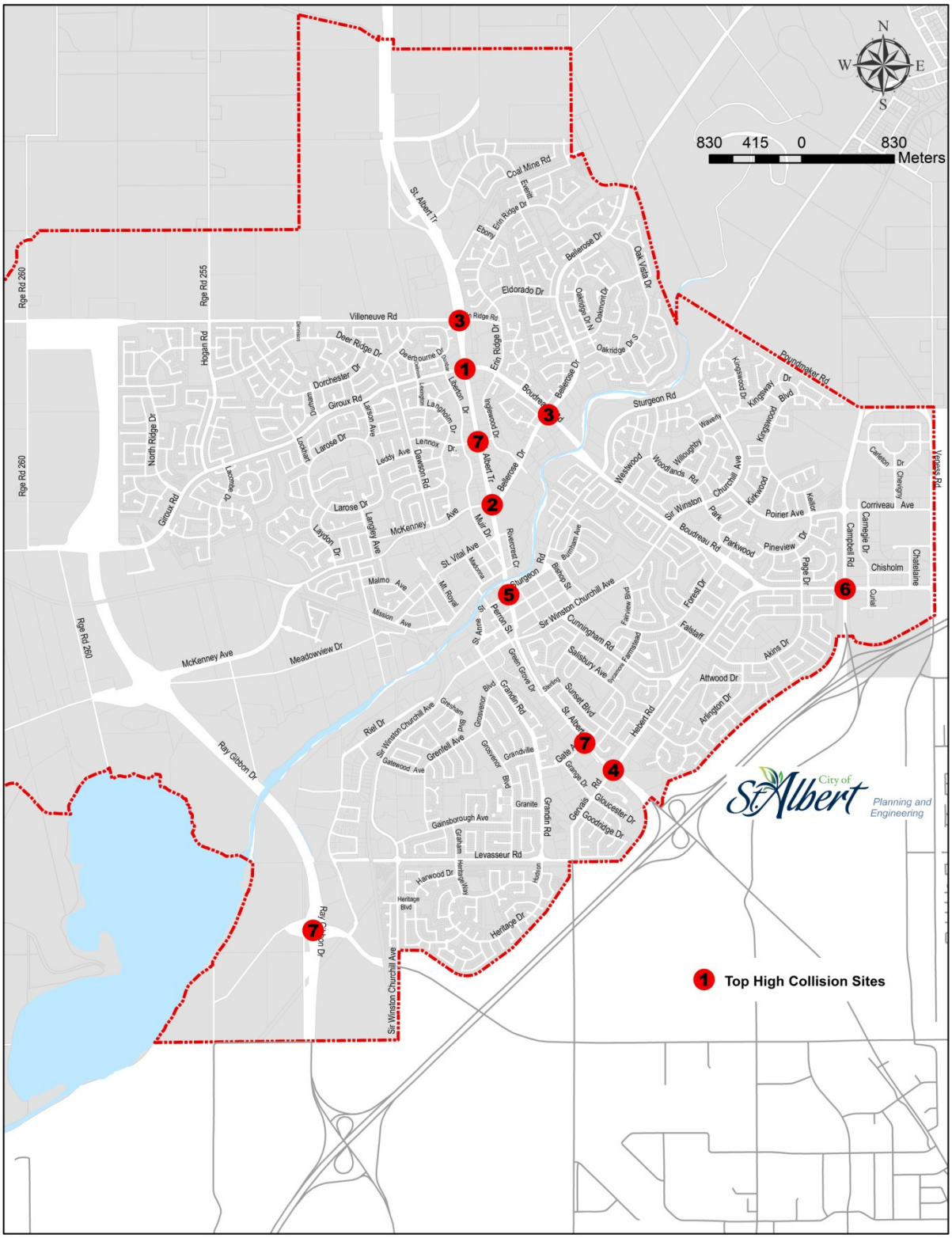
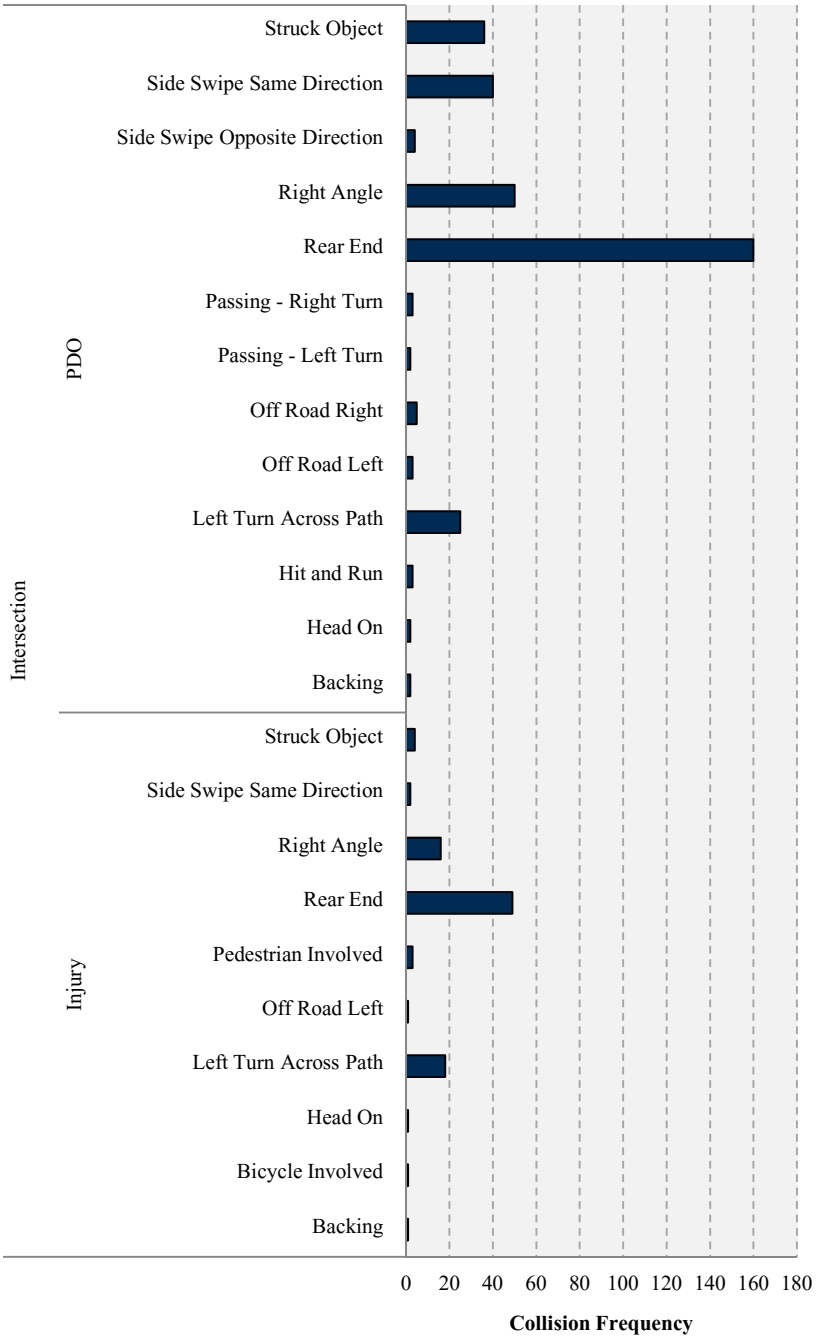


Figure 18: 2014 Top Ten Collision Intersections

Note – The number identifies the intersection ranking for collision frequency



49% **of Intersection Collisions involved**

Rear End

Collisions

23%

Rear End

Collisions resulted in

Injuries

Left Turn Across Path

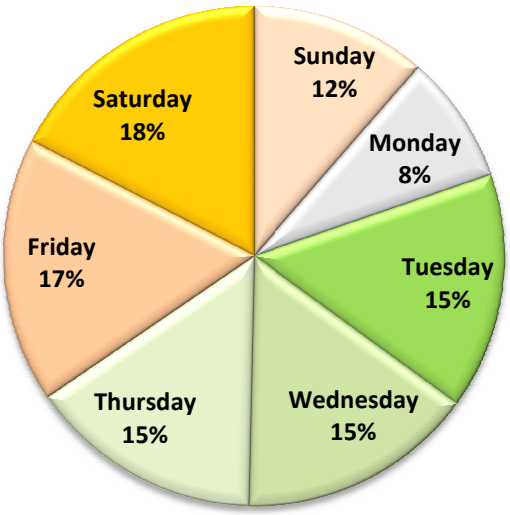
Collisions Significantly

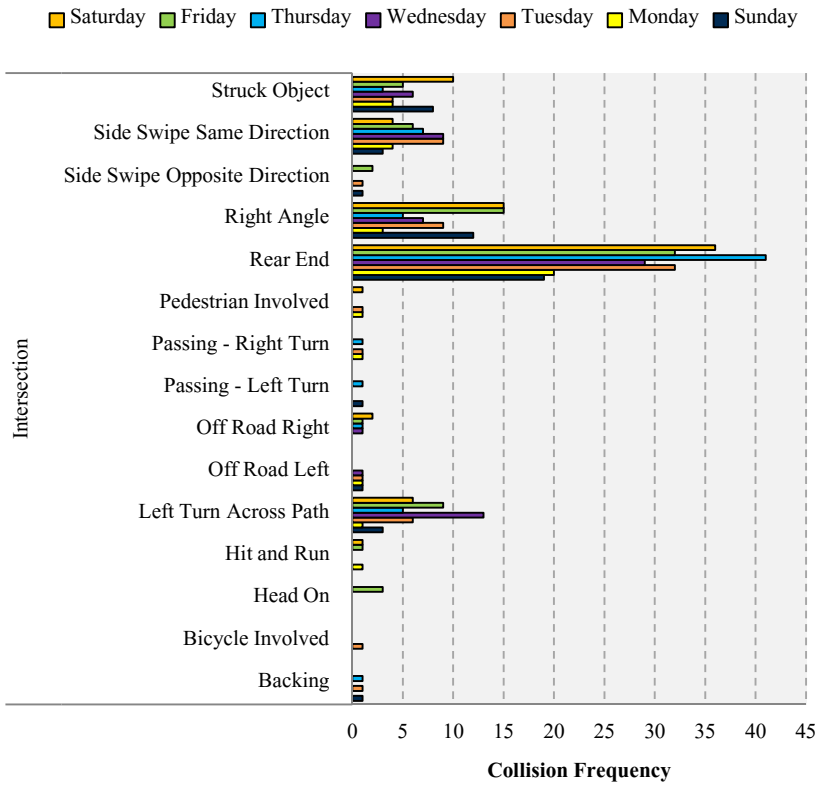
Decreased (54%)

from 2013

Figure 19: Intersection Collisions by Severities and Types

Temporal Distribution of Intersection Collision Occurrences





70%

Intersection Collisions Occurred on Weekdays

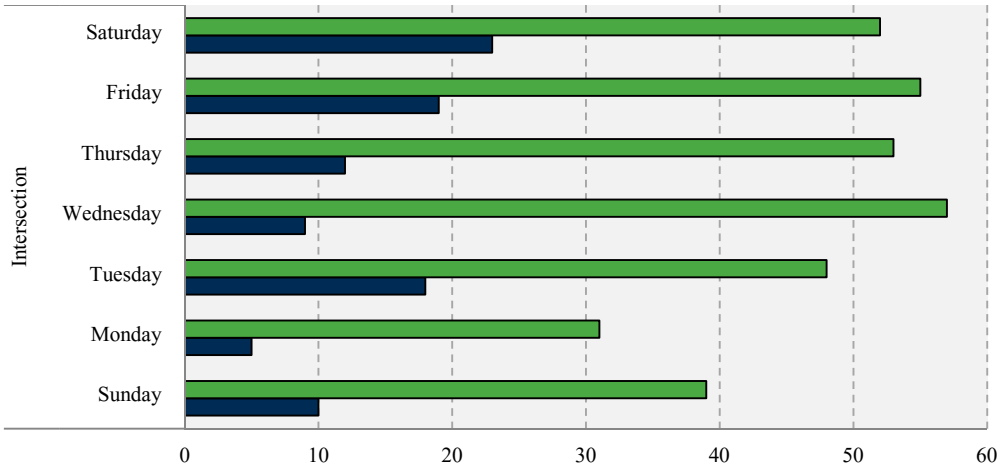
74%

Rear End Collisions Occurred on Weekdays

79%

Left Turn Across Path Collisions Occurred on Weekdays

Figure 20: Intersection Collision Occurrences by Day of the Week and Types



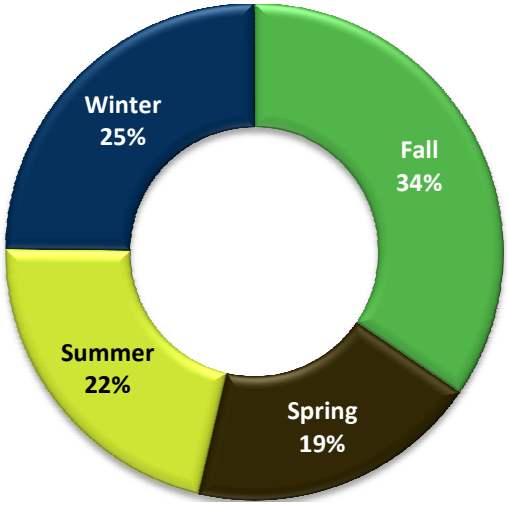
	Intersection						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
PDO	39	31	48	57	53	55	52
Injury	10	5	18	9	12	19	23

Figure 21: Intersection Collision Occurrences by Day of the Week and Severity

Figure 21 identifies intersection collision occurrences by day of the week and severity. In 2014, approximately 77% of injury collisions occurred at intersections; of which 34% of these injury collisions occurred during weekends. Approximately 24% of collisions that resulted in major or minor injuries occurred on a Saturday.

34%
Injury Collisions Occurred during Weekends

24%
Injury Collisions Occurred on Saturday



Highest frequency of Intersection Collisions Occurred during

Fall (September /October / November

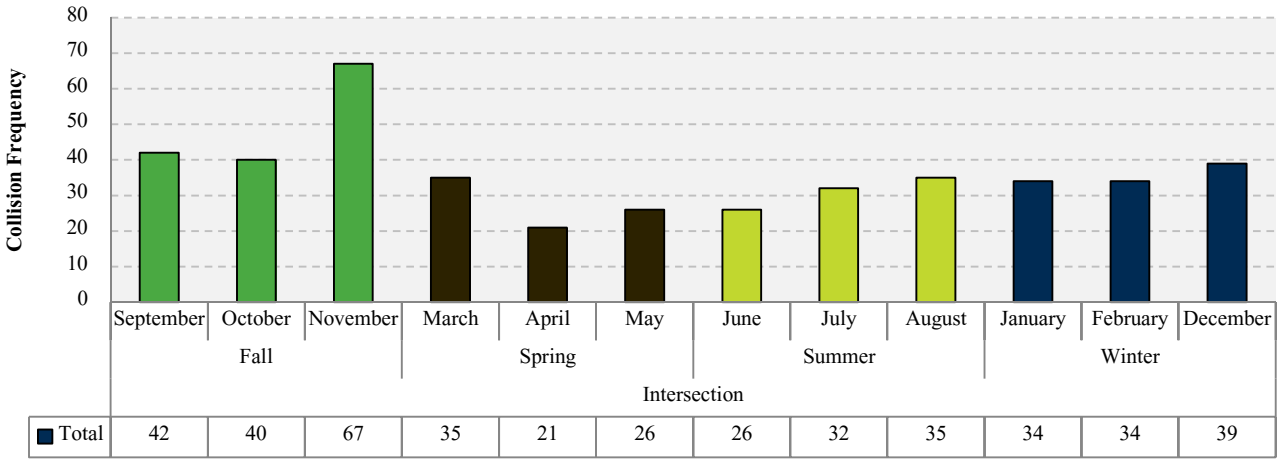


Figure 22: Intersection Collision Occurrences by Month of the Year and Seasons

Figure 22 represents intersection collision occurrences by month and season. It shows approximately 34% of collisions occurred during fall months (September/October/November). However, from the 2014 monthly collision distribution, it shows that 16% of total intersection collisions occurred in November 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].

45%

Intersection Collisions that Occurred during Fall Occurred in

November

[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.

In 2014, the Capital Region area experienced its first snow fall on September 8; however a more lasting seasonal change and snowfall occured in the first weeks of November .

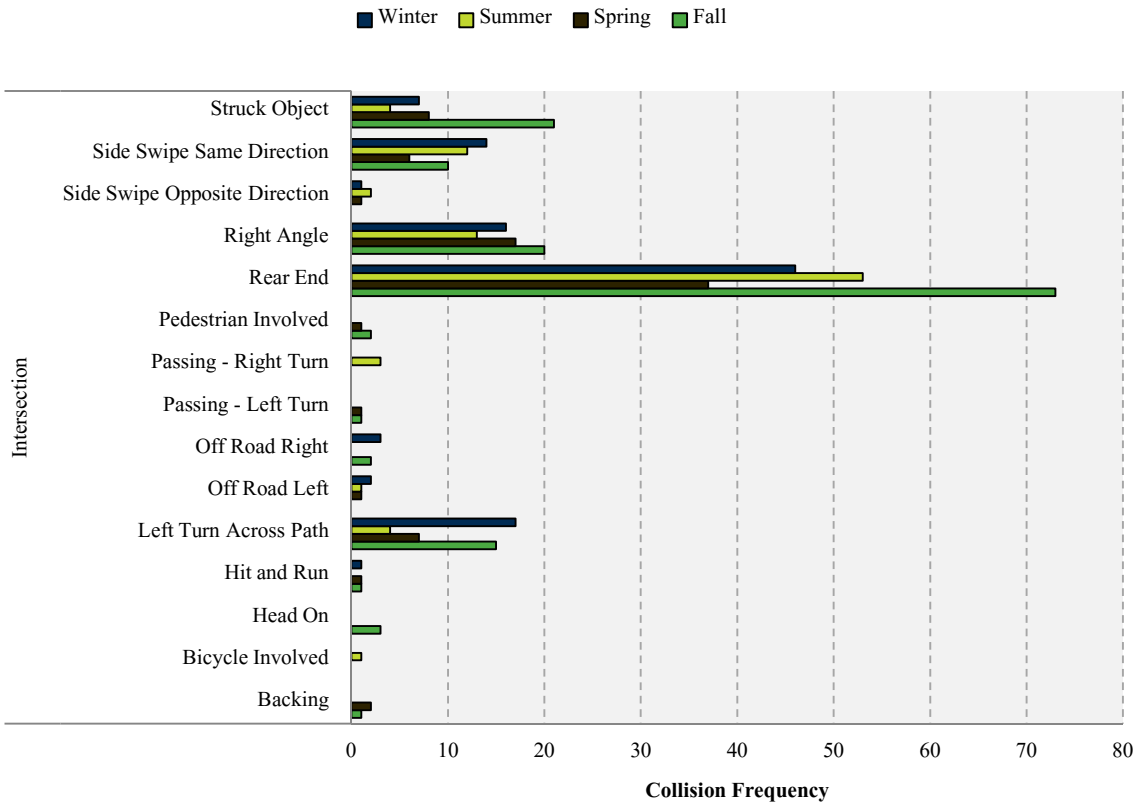


Figure 23: Intersection Collision Occurrences by Collision Types and Seasons

Figure 23 illustrates intersection collision occurrences by collision types and seasons. Previous research has shown that major snow events following dry weather increases the number of rear end collisions[6] which can also be seen in Figure 23. It identifies that 35% of rear end collisions occurred during fall. Approximately 43% of these rear end collisions in fall took place in November when snow fell and stayed.

43%

Rear End Collisions that Occurred during Fall Occurred in

November

when the snowfall starts

[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.

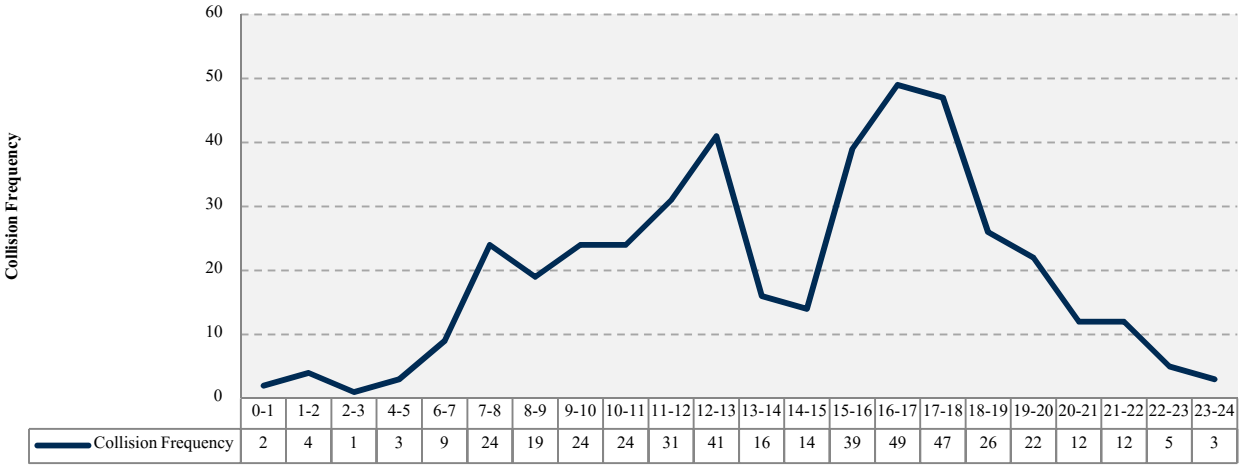


Figure 24: Intersection Collision Occurrences by Time of the Day

Figure 24 illustrates intersection collision occurrences by time of the day. Similar to 2013, the afternoon rush hour period from 3:00 to 6:00 p.m. (reaching a peak collision period around 4:00 to 5:00 p.m.) accounted for the highest proportion (31%) of intersection collisions in 2014. The least collision occurrences occurred in the early morning (2:00 to 6:00 a.m.).

31%

Intersection Collisions Occurred from

3:00 PM- 6:00PM

Mid-block Collisions

In 2014, 44% of the total collisions occurred at mid-block locations. Figure 25 illustrates the density of mid-block collision occurrences which indicates the majority occurred along the St. Albert Trail corridor. Due to high traffic volumes and commercial access point density (high number of access and exit points on to the roadway), collision densities along St. Albert Trail are substantially high.

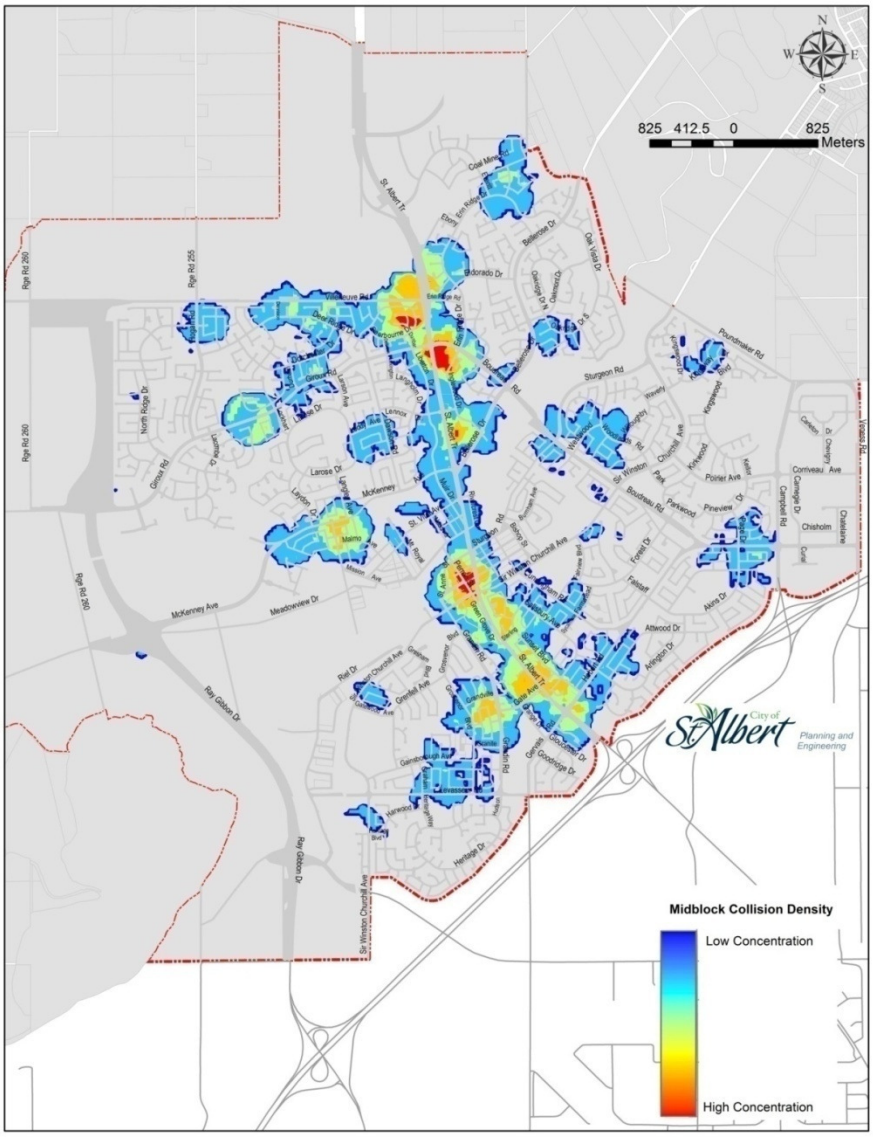
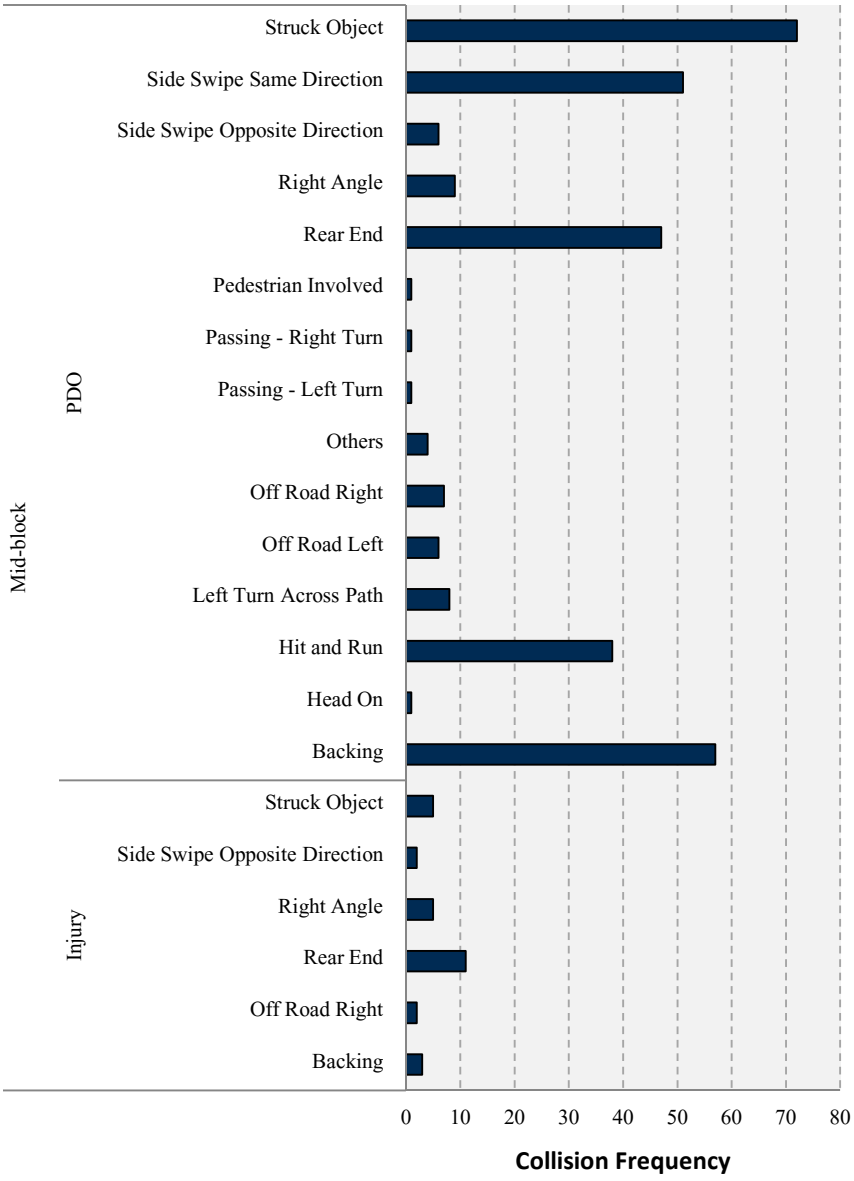


Figure 25 : Mid-block Collision Density (2014) of St. Albert

Figure 25 also shows a high concentration of mid-block 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. 2014 Collision statistics identified three mid-block collision occurrences on Perron Street; however, as those three 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. Two of the three mid-block collisions on Perron Street occurred due to unsafe backing and the remaining one was a hit and run of a parked car.



23%

Mid-block Collisions caused by

Struck a Object

15%

Mid-block Collisions occurred because of

Sideswipe in Same Direction

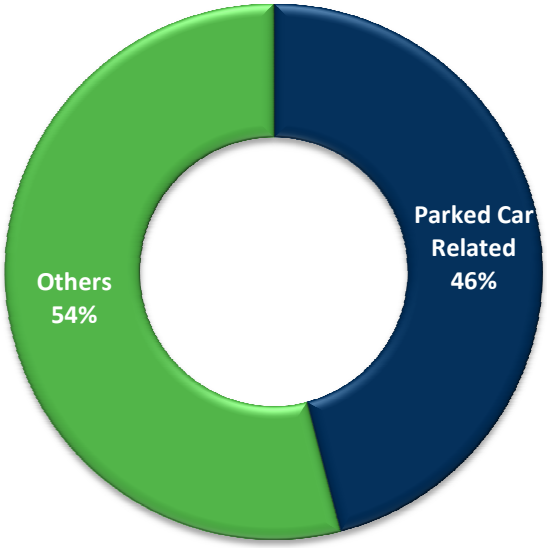
8%

Mid-block Collisions resulted in

Injuries

Figure 26: Mid-block Collisions by Severities and Types

In 2014, 18% of mid-block collisions occurred due to backing from a residential driveway. Approximately 46% of the mid-block collisions occurred due to a vehicle striking a parked vehicle (Figure 27). Most incidents involving parked vehicles occurred in Grandin, where the population density is high (Figure 28).



46%

Mid-block Collisions involved a parked car being hit

19%

of Mid-block Parked Car related Collisions occurred in

Grandin

Figure 27: Mid-block Collision Distribution Related to Parked Cars

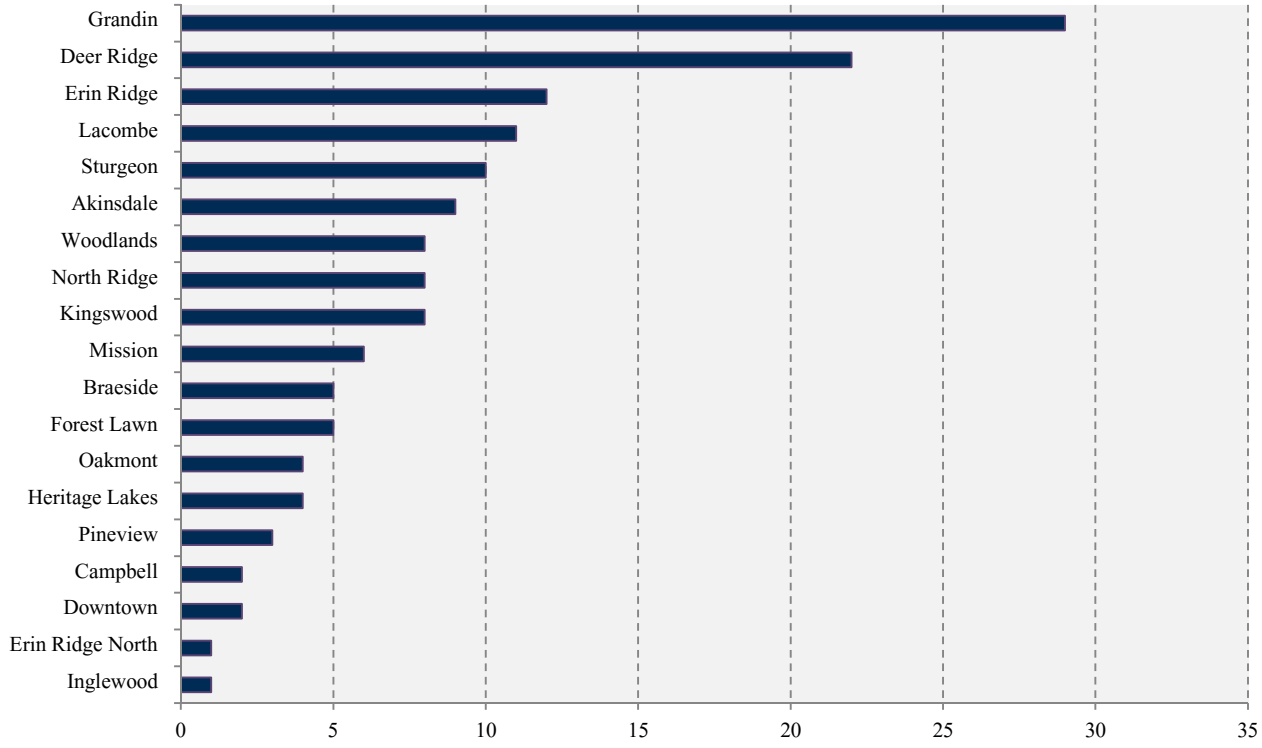
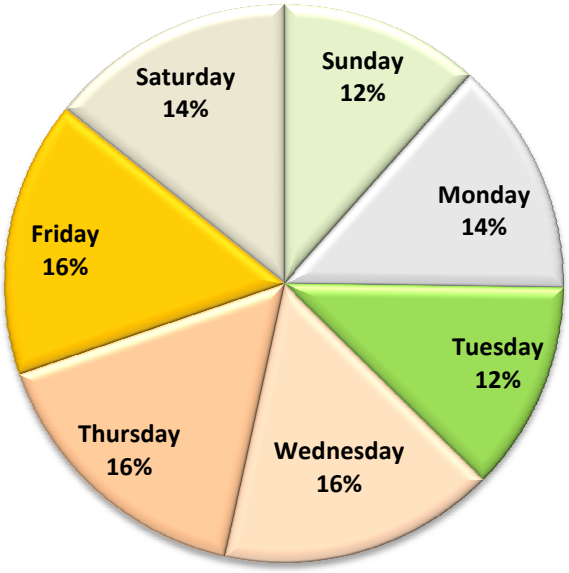


Figure 28: Neighbourhood with Frequency of Occurrence of Parked Car Related Collisions

Temporal Distribution of Mid-block Collision Occurrences



74%

Of Mid-block Collisions Occurred on

Weekdays

83%

Rear End

Collisions Occurred on

Weekdays

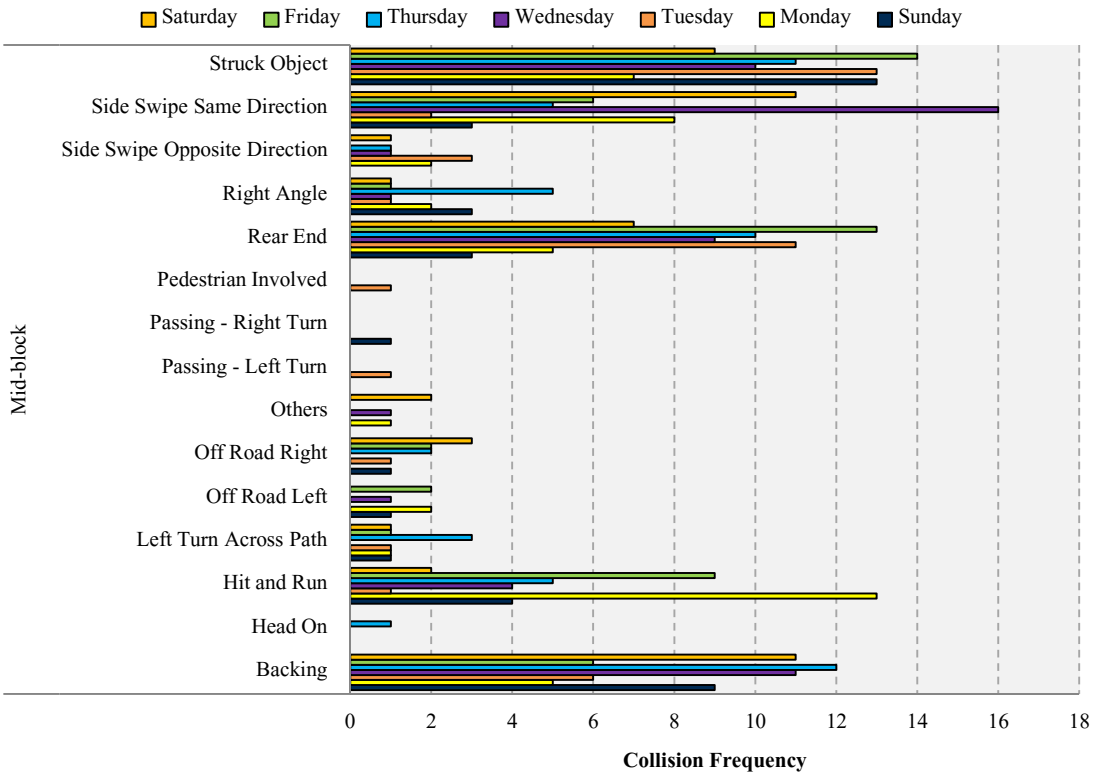
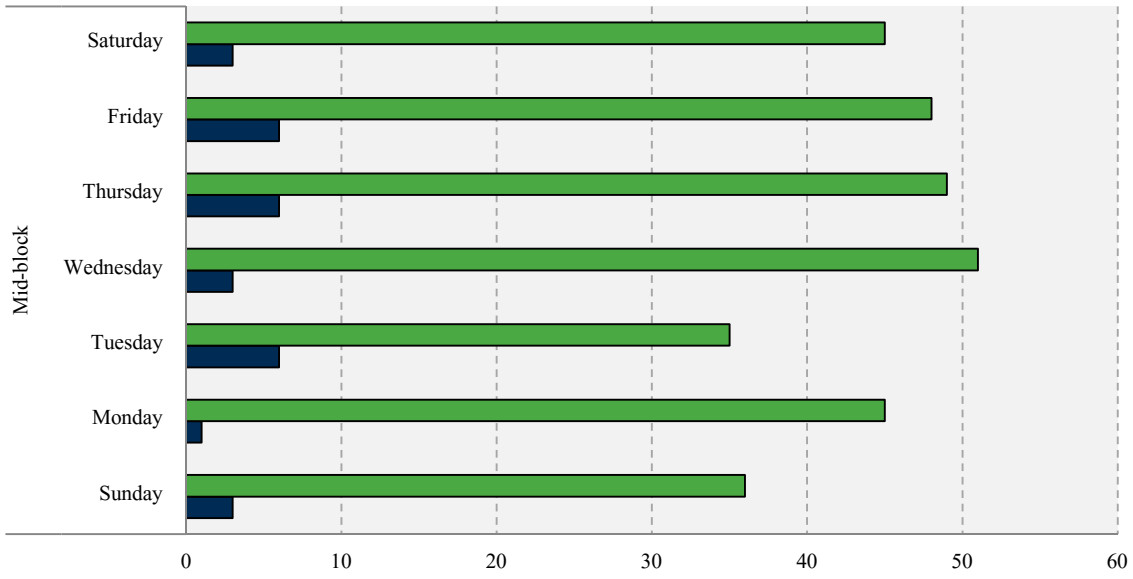


Figure 29: Mid-block Collision Occurrences by Day of the Week and Types



	Mid-block						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
PDO	36	45	35	51	49	48	45
Injury	3	1	6	3	6	6	3

Figure 30: Mid-block Collision Occurrences by Day of the Week and Severity

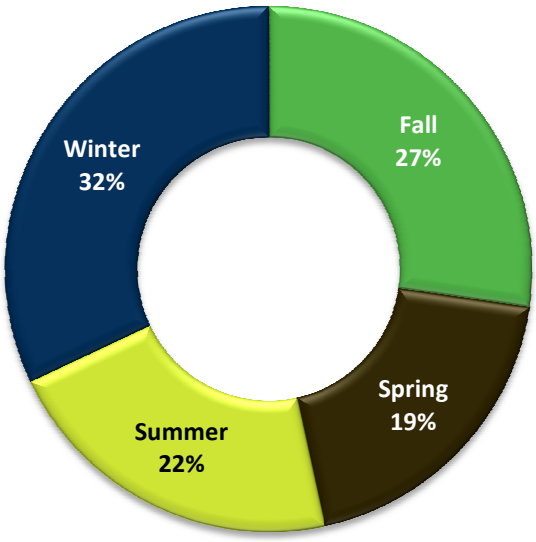
In 2014, 79% of mid-block injury collisions occurred during weekdays. Figure 30 exhibits mid-block collision occurrences by day of the week and severity. It shows that approximately 64% of collisions that resulted in major or minor injuries occurred on a Tuesday, Thursday or Friday. In terms of PDO collisions, 74% of mid-block PDO collisions occurred during weekdays.

79%

Mid-block Injury Resulting Collisions Occurred on Weekdays

24%

Mid-block Injury Resulting Collisions Occurred on a Saturday



32%

Mid-block Collisions Occurred during Winter months (December/ January / February)

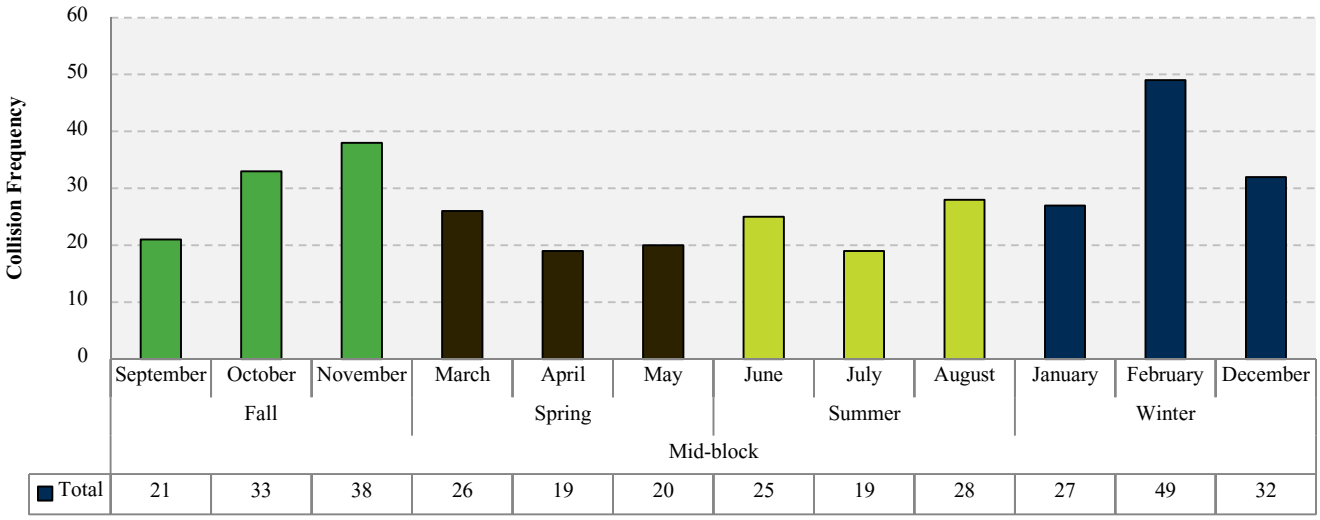


Figure 31: Mid-block Collision Occurrences by Month of the Year and Seasons

Figure 31 represents mid-block collision occurrences by month of the year and season. It shows approximately 32% of collisions occurred during winter months. From the monthly collision distribution it shows that about 15% of total mid-block collisions occurred in February. Further, about 45% of all collisions that occurred during winter, took place in February. Heavy snowfall, extreme weather conditions, and slippery road surface conditions may be some of the contributing factors of these collisions.

45%

Mid-block Collisions that Occurred during Winter, Occurred in February

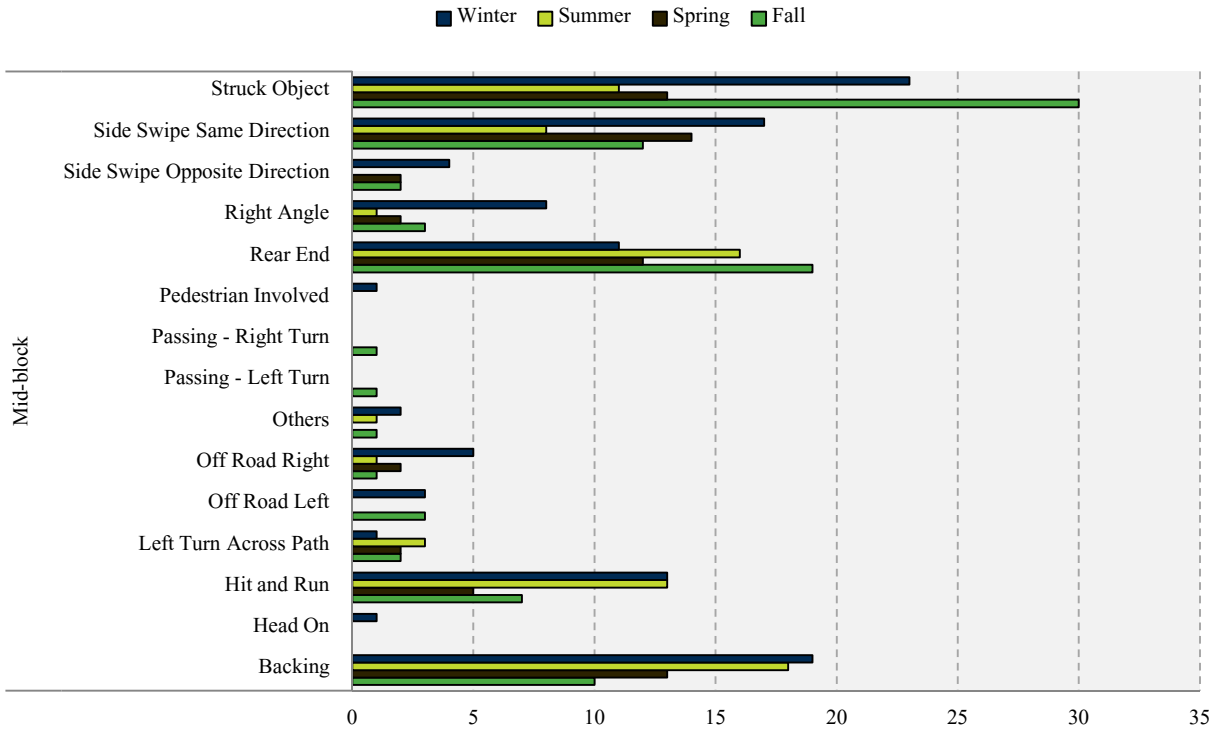


Figure 32: Mid-block Collision Occurrences by Collision Types and Seasons

Figure 32 illustrates mid-block collision occurrences by collision types and seasons. Previous research has shown that major snow events, following dry weather, increases the number of struck parked vehicle collisions[7], which can also be seen in Figure 32. It shows that a high proportion of struck object collisions occurred during winter and fall and 57% of those collisions that occurred during fall, happened in November when typically heavier snowfalls occur and these type of road conditions become more permanent for the season creating icy and slippery conditions. Further, approximately 32% of collisions due to backing took place during the winter, and 90% of those collisions occurred due to a vehicle striking a parked car while backing.

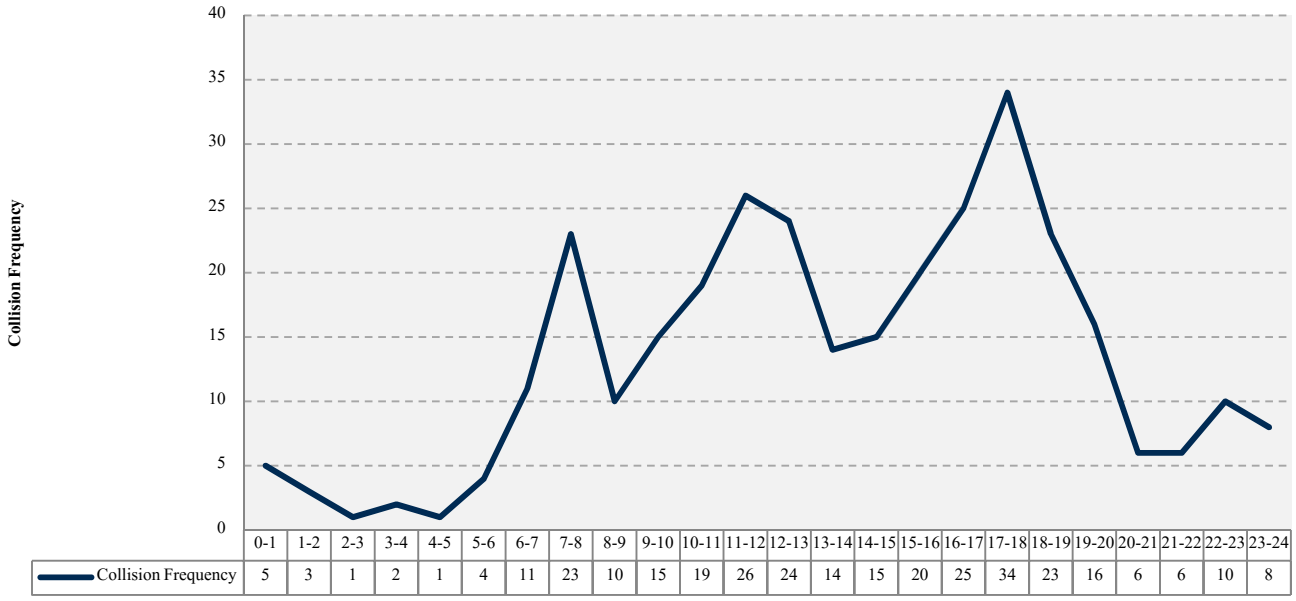
57%

Struck Object Collisions that Occurred during fall Occurred in the month of

November,

when road conditions typically change for the season

[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.



	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Collision Frequency	5	3	1	2	1	4	11	23	10	15	19	26	24	14	15	20	25	34	23	16	6	6	10	8

Figure 33: Mid-block Collision Occurrences by Time of the Day

Figure 33 illustrates mid-block collision occurrences by time of the day. Similar to intersection collisions, the afternoon rush hour period from 4 to 6 p.m. (reaching a peak collision period around 5 - 6 p.m.) accounted for the highest proportion (18%) of mid-block collisions. The least collisions occurred in the early morning (2 - 5 a.m.).

18%

Mid-block Collisions Occurred from

4:00 PM- 6:00PM

Collision by Neighbourhoods

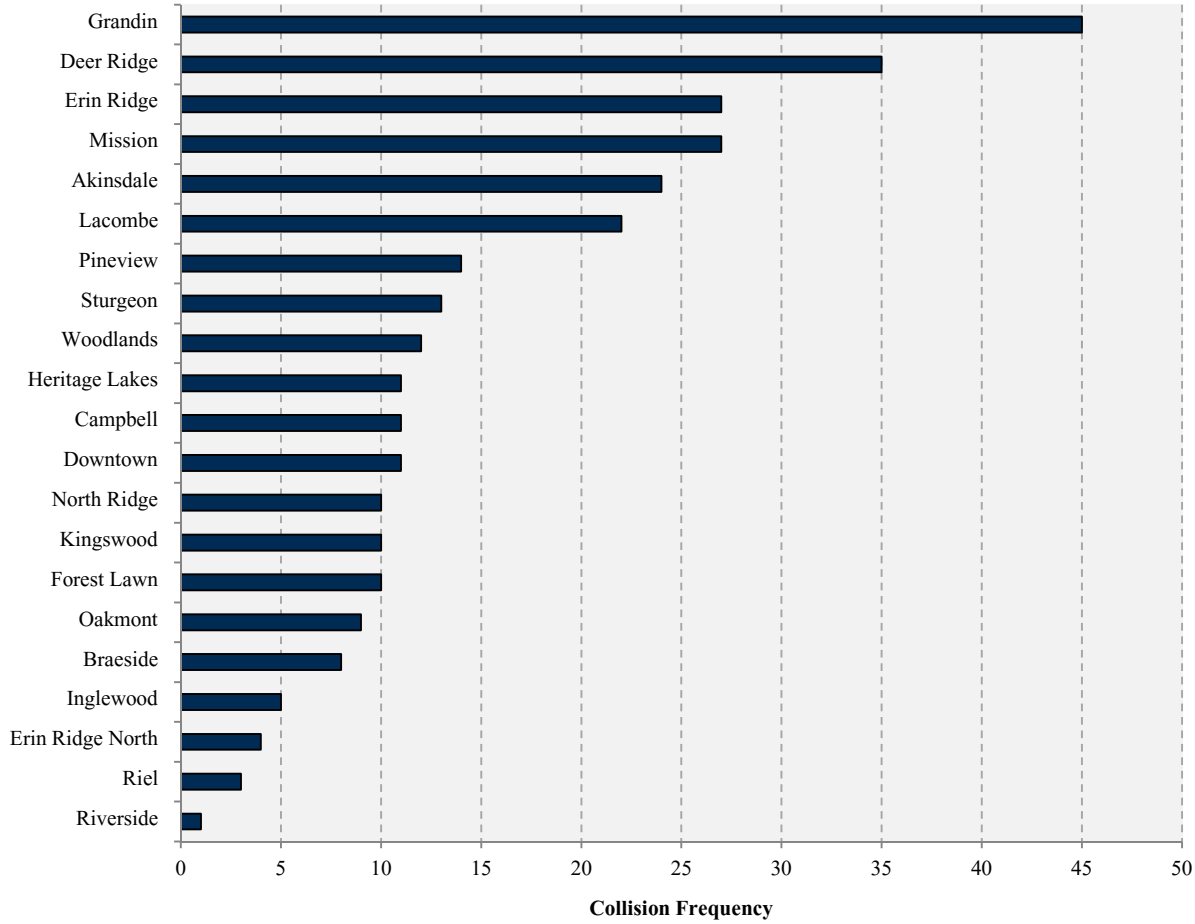


Figure 34: Collision Frequency of Occurrences by Neighbourhoods

Figure 34 illustrates collision occurrences by neighbourhoods. In 2014, the highest volume of collisions occurred in Grandin (14%) followed by Deer Ridge and Erin Ridge.

These results are intuitive as Grandin is one of the most populated neighbourhoods and the increase of exposure (population) increases potential risk of collisions. To account for the population densities, collision per 1,000 population has also been determined (Figure 35) for the neighbourhoods. It shows that Downtown has the highest collision rate followed by Mission. The

14%

of Total Collisions Occurred in

Grandin

population density of the downtown area is quite low; however, it's high traffic volume (destination from commercial and event locations and occurrences) results in a high collision rate for St. Albert's Downtown.

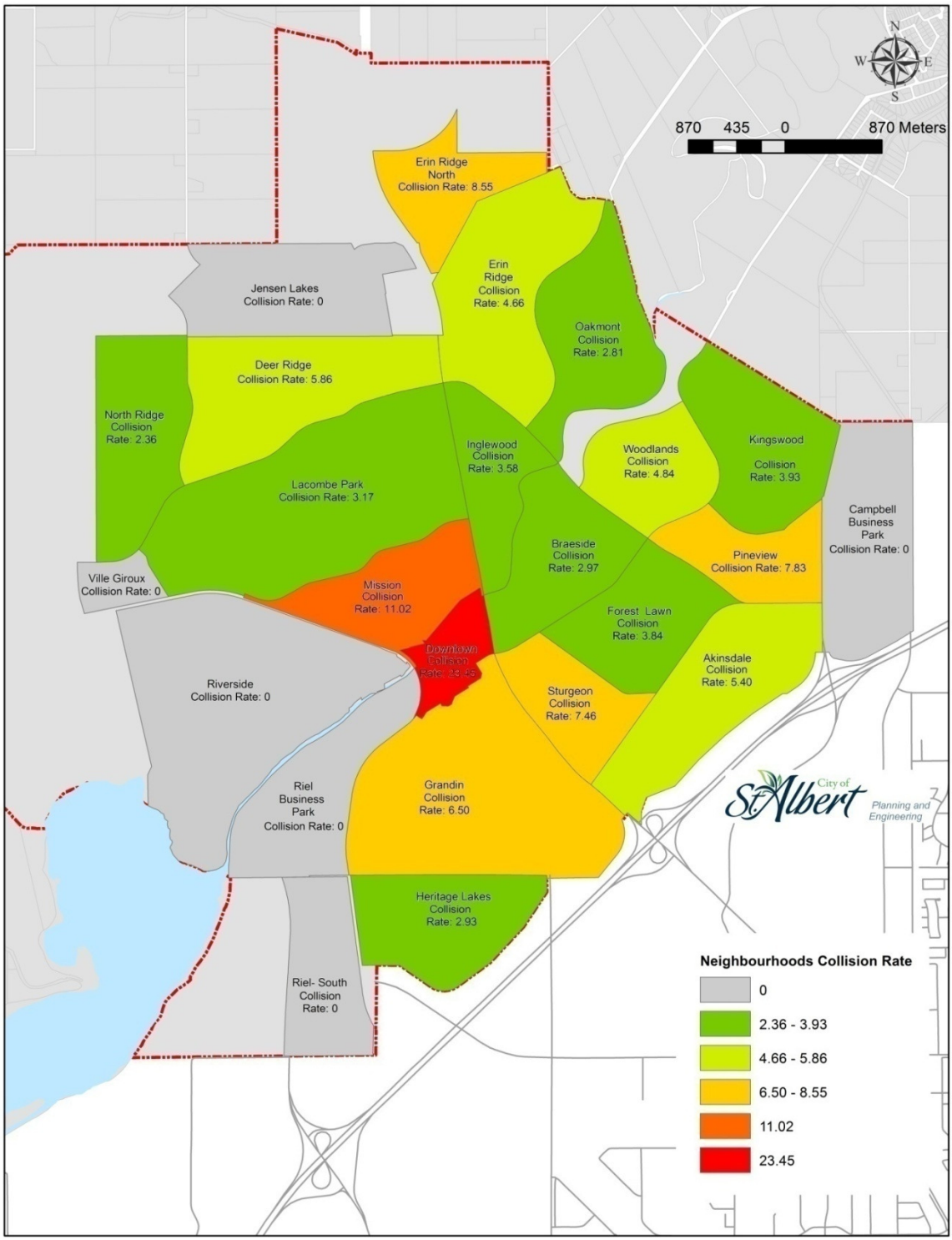
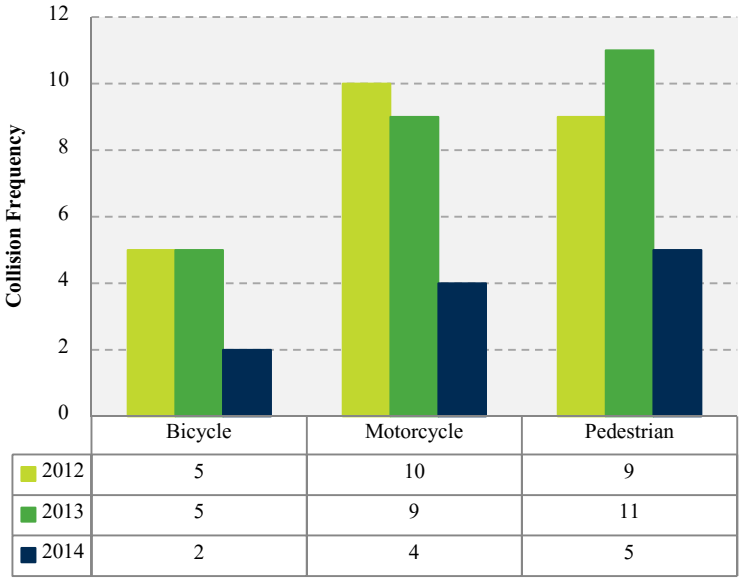


Figure 35: Collision per 1,000 Populations of Neighbourhoods in St. Albert

Vulnerable Road User Collisions

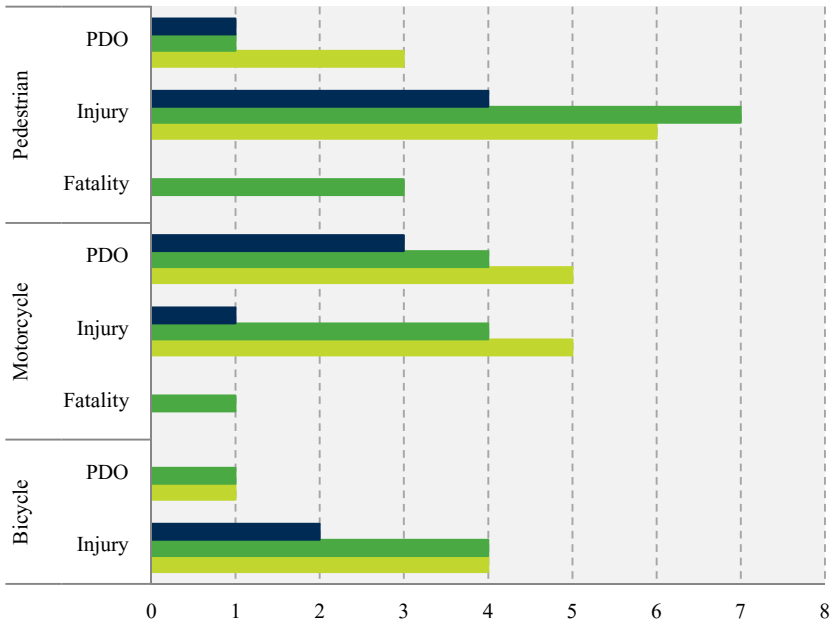


	Bicycle	Motorcycle	Pedestrian
2012	5	10	9
2013	5	9	11
2014	2	4	5

Figure 36 exhibits the 2012 to 2014 vulnerable road user collision occurrences and severity on public roadways.

In 2014, there was a 56%, 60% and 55% reduction of motorcycle, bicycle and pedestrian collisions respectively, compared to 2013.

Figure 37 shows the location of vulnerable road user collision occurrences in 2014.



	Bicycle		Motorcycle			Pedestrian		
	Injury	PDO	Fatality	Injury	PDO	Fatality	Injury	PDO
2014	2			1	3		4	1
2013	4	1	1	4	4	3	7	1
2012	4	1		5	5		6	3

56%
Reduction of
Motorcycle
Collision incidents

60%
Reduction of
Bicycle Collision incidents

55%
Reduction of
Pedestrian
Collision incidents

Figure 36: 2012 - 2014 Vulnerable Road User Collisions with Severity

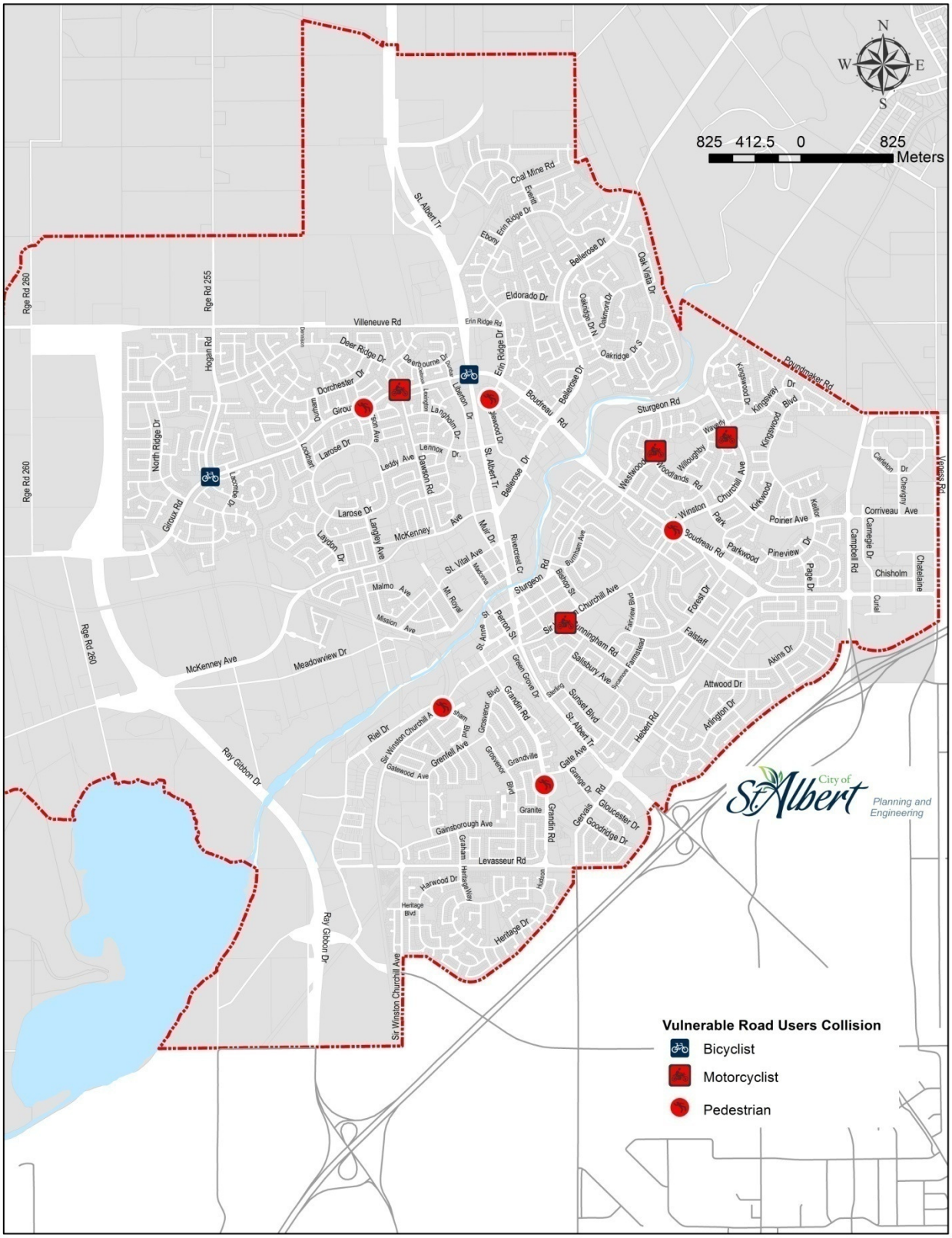


Figure 37: Vulnerable Road User Collision Occurrence Locations

Vehicle Wildlife Collisions

In 2014, 7 motor vehicle collisions occurred that involved wildlife (Figure 38). In 2013, 5 incidents occurred and in 2012, 6 incidents took place between vehicles and wildlife. Of these 7 occurrences, one incident involved a vehicle striking a moose, while the rest involved motor vehicles striking deer. Severity of these incidents: two collisions resulted in minor injuries; five incidents resulted in property damage only.

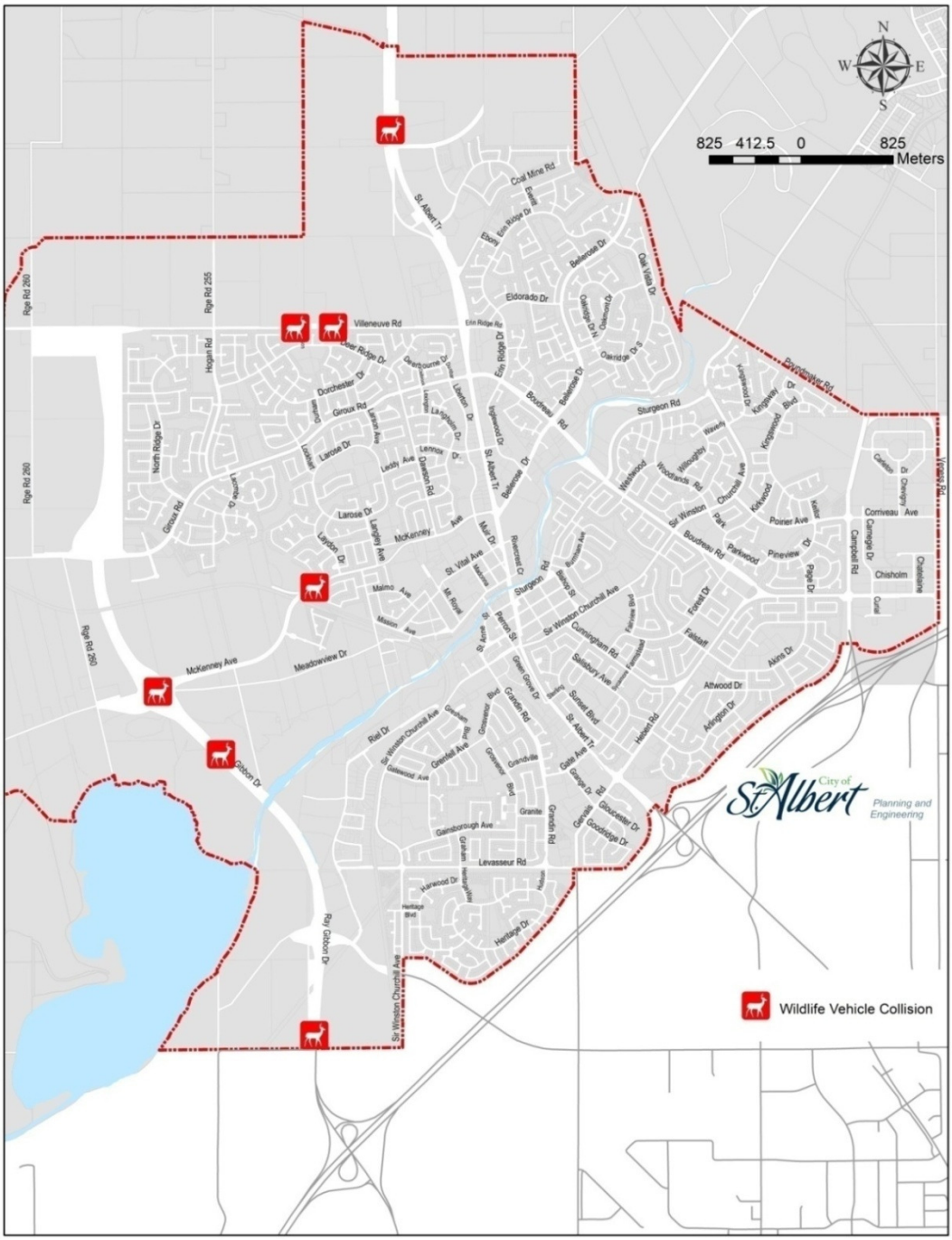
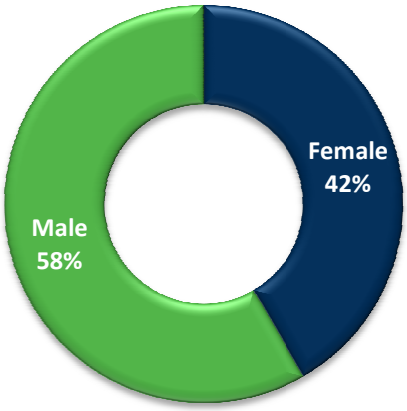
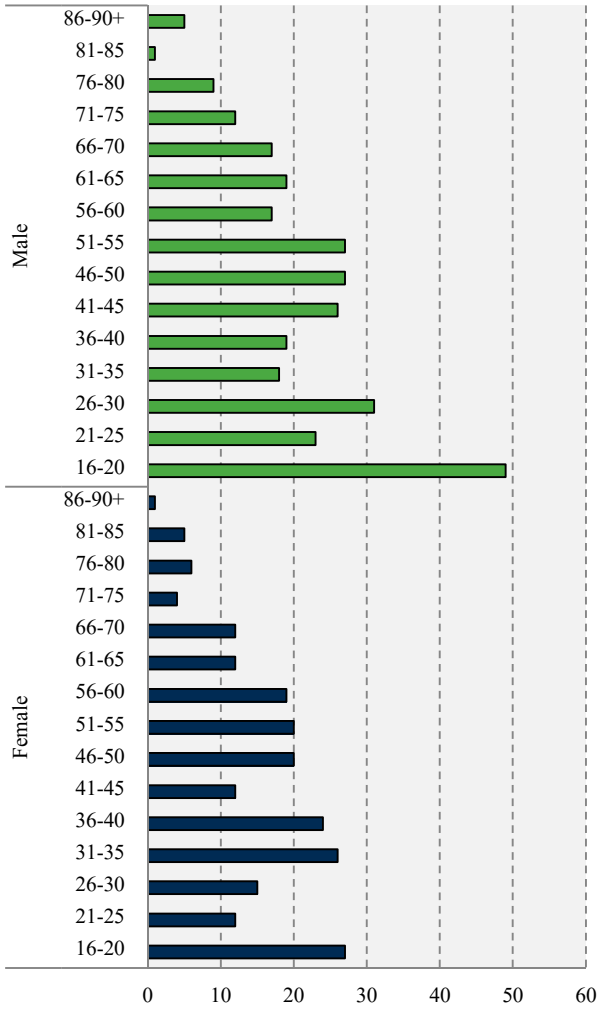


Figure 38: Vehicle Wildlife Collision Occurrence Locations





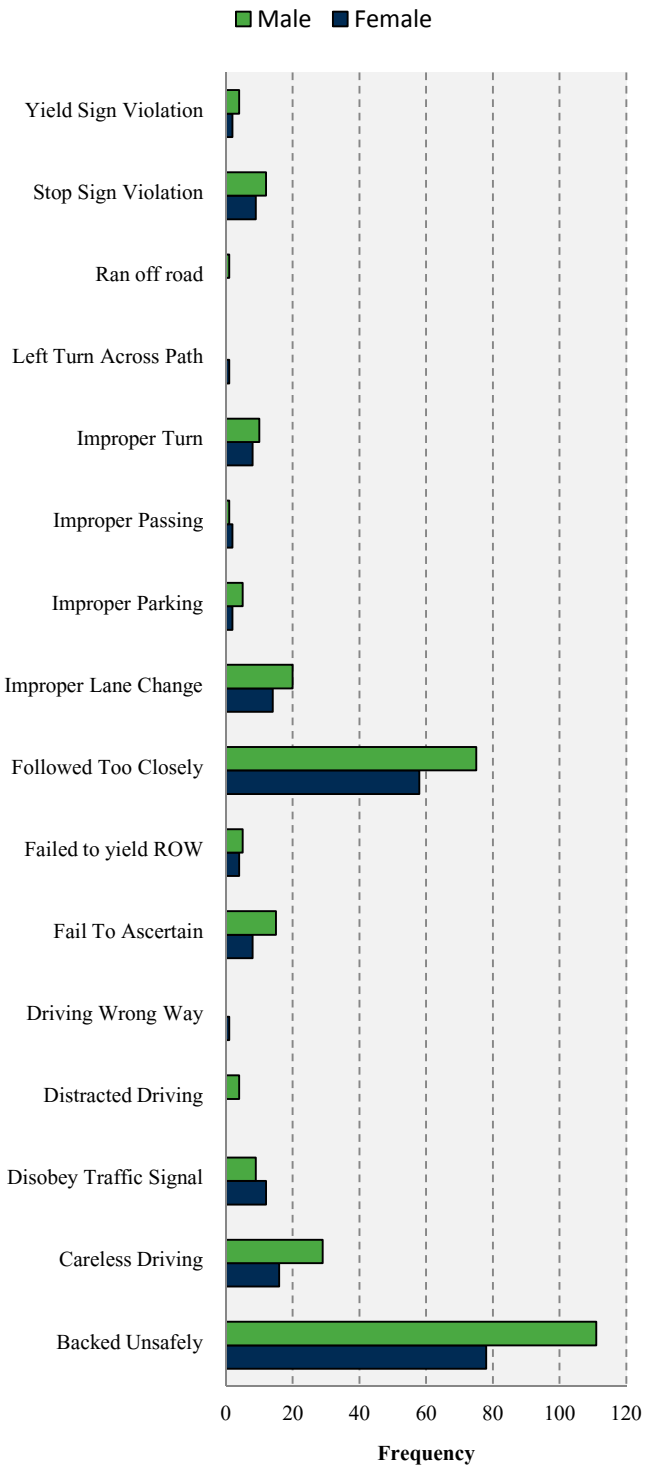
58%
At-Fault Drivers are
Male

Aged 16-20 years
of Male Drivers are the
Most
At-Fault Drivers

Aged 16-20 & 31-40 years
of Female Drivers are the
Most
At-Fault Drivers

The age group
16 – 20
Represents only
7%
of the population

Figure 39: Age and Gender Distribution of At-Fault Drivers in St. Albert



Driver Actions of

At-Fault

Drivers are similar for

Male & Female Drivers

Most of the Collisions occurred due to

Following Too Closely

&

Backing Unsafely

Figure 40: Driver Action of At-Fault Drivers by Gender in St. Albert

Figure 41 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. Further, Figure 39 indicates 16-20 year old male and female drivers are the most at-fault drivers which is only 7% of the total population.From these information, the city authority can target these neighbourhoods for young driver education and design a driver education program to correct poor driving habits.

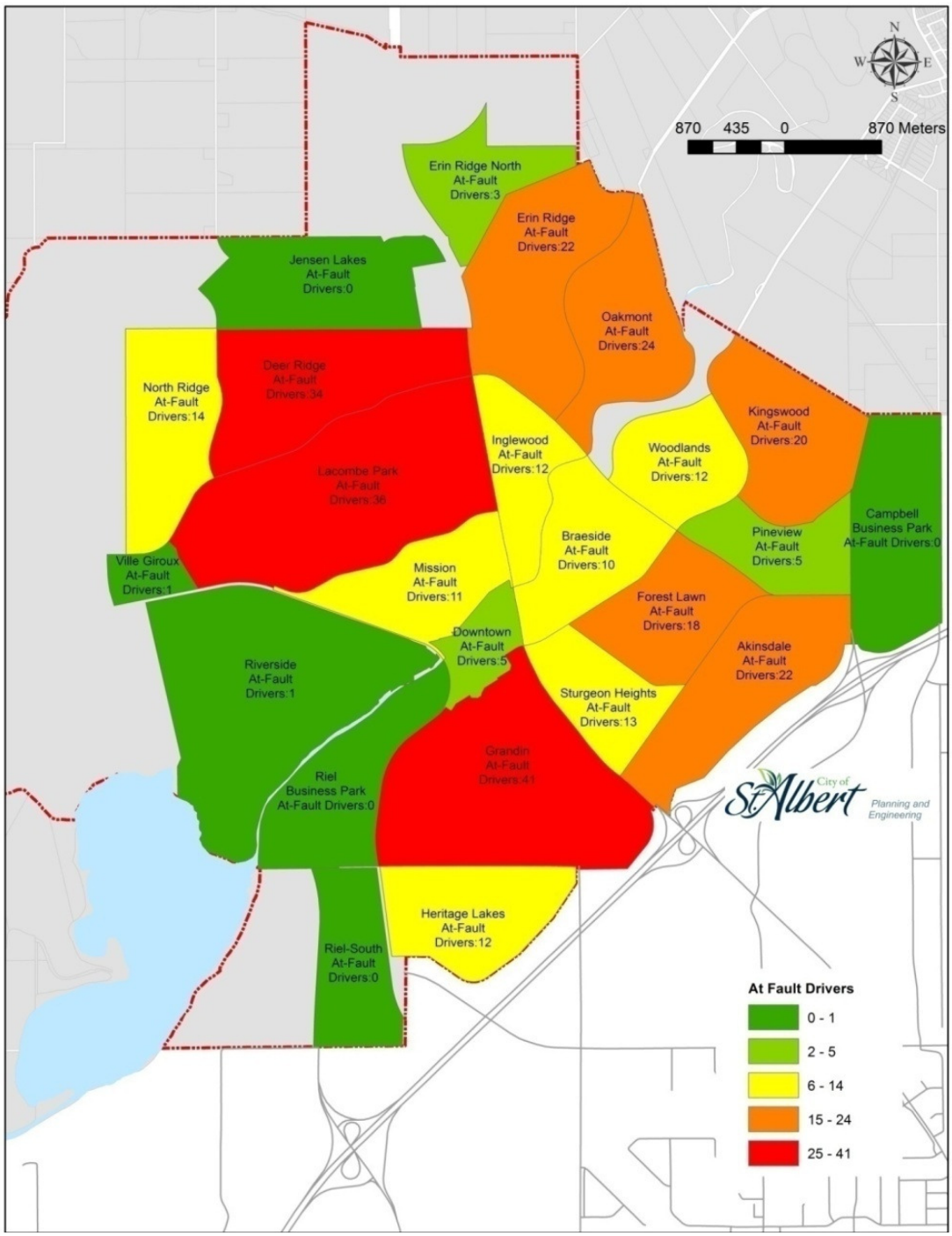


Figure 41: At-Fault Drivers' Residence by Neighbourhoods of St. Albert

Contacting the City

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

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Manager of Transportation
Engineering Services | City of St. Albert
5 St. Anne Street | St. Albert, AB | T8N 3Z9
P: 780-459-1649 | **F:** 780-458-1974
dschick@stalbert.ca | www.stalbert.ca