MOTOR VEHICLE COLLISIONS 2013

OFFICE of TRAFFIC SAFETY
EDMONTON, CANADA

THE CITY OF Edmonton
TRANSPORTATION SERVICES

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2013 QUICK FACTS

STATISTICS	2012	2013	% CHANGE
Total Collisions	23,243	24,803	6.7
Fatal Collisions	26	23	-11.5
Injury Collisions	3,363	3,223	-4.2
Fatal and Injury Collisions	3,389	3,246	-4.2
Property Damage Only (PDO) Collisions	19,854	21,557	8.6
Intersection Collisions	12,674	13,672	7.9
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Number of Fatalities	27	23	-14.8
Number of Major Injuries	517	437	-15.5
Number of Minor Injuries	3,821	3,686	-3.5
Number of Major and Minor Injuries	4,338	4,123	-5.0
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Pedestrian Collisions	296	298	0.7
Number of Pedestrian Injuries	302	311	3.0
Number of Pedestrian Fatalities	8	6	-25.0
Number of Pedestrian Fatalities and Injuries	310	317	2.3
Bicycle Collisions	177	177	0.0
Number of Cyclist Injuries	176	176	0.0
Number of Cyclist Fatalities	1	1	0.0
Number of Cyclist Fatalities and Injuries	177	177	0.0
Motorcycle Collisions	157	160	1.9
Number of Motorcyclist Injuries	126	119	-5.6
Number of Motorcyclist Fatalities	4	2	-50.0
Number of Motorcyclist Fatalities and Injuries	130	121	-6.9
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Population	817,498	835,000	2.1
Private Passenger Vehicles	509,655	536,737	5.3
Private Motorcycles	14,945	14,311	-4.2
Collisions per 1,000 Population	28.42	29.70	4.5
Intersection Collisions per 1,000 Population	15.50	16.37	5.6
Number of Fatalities and Injuries per 1,000 Population	5.34	4.97	-7.0
Collisions per 1,000 Vehicles	45.61	46.21	1.3
Intersection Collisions per 1,000 Vehicles	24.87	25.47	2.4
Number of Fatalities and Injuries per 1,000 Vehicles	8.56	7.72	-9.8

Cover Photograph: Collision on Yellowhead Trail. Photo Credit: CBC.ca (http://www.cbc.ca/news/canada/edmonton/road-rage-may-be-behind-crash-on-yellowhead-trail-1.1414336)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF MAPS

2013 Summary

- There were 24,803 collisions in the City of Edmonton in 2013. This figure represents an increase of 6.7% from 2012.
- The number of collisions per capita in Edmonton increased by 4.5% from 2012 levels (28.4), to 29.7 collisions per 1,000 population.
- In 2013 there were 3,246 collisions that resulted in injury or fatality, a reduction of 4.2% from 2012 and the lowest overall total in 20 years. These injury and fatal collisions resulted in 3,686 minor injuries, 437 major injuries, and 23 fatalities.[1]
- The 23 fatalities in 2013 included 14 vehicle occupants (11 vehicle drivers and 3 vehicle passengers) and 9 vulnerable road users (6 pedestrians, 2 motorcyclists, and 1 cyclist).
- Collisions at intersections made up 55.1% (13,672) of the collision total and resulted in 68.5% (2,824) of total injuries and 47.8% (11) of the fatalities sustained in 2013. Compared to 2012, the number of intersection collisions per 1,000 population increased by 5.6%.
- The most common collision causes in Edmonton were followed too closely (36.5%, 9,051 collisions); struck parked vehicle (12.9%, 3,191); changing lanes improperly (10.7%, 2,646), and ran off road (8.0%, 1,993).
- The collision causes most likely to result in injury or fatality were followed too closely (39.4%, 1,280 collisions); left turn across path (11.7%, 381); failed to observe traffic signal (8.5%, 275); and ran off road (7.9%, 257).
- There were 298 pedestrian-involved collisions in 2013, resulting in 311 pedestrian injuries (a 3% increase over 2012) and only 6 fatalities as compared to 2012 (8 fatalities). Of these, 74 injuries and 2 fatalities occurred when a pedestrian was crossing at a midblock without the right of way (jaywalking).
- The number of cyclists injured or killed in 2013 remained the same as in 2012, with 177 cyclist collisions resulting in 176 injuries and 1 fatality. Among them 25.4% (45 of 177) collisions involving cyclists were deemed to be caused by cyclist error or violation.
- The number of collisions involving motorcyclists increased 1.9%, from 157 in 2012 to 160 in 2013; however, the number of motorcyclists injured decreased by 5.6% to 119. There were 2 motorcyclist fatalities in 2013, a decrease of 50% from 2012 (4 fatalities).
- Ranked by the total number of collisions, the top three high-collision *intersections* in the City of Edmonton in 2013 were: Yellowhead Trail NW and 149 Street NW (83 collisions, 16 injuries), 107 Avenue NW and 142 Street NW (81 collisions, 14 injuries), and 23 Avenue NW & 91 Street NW (64 collisions, 14 injuries). The top three high-collision *midblock* segments were: the High Level Bridge (57 collisions, 1 injury); Whitemud Drive from 122 Street NW to the Terwillegar Drive interchange (52 collisions, 8 injuries); and Calgary Trail from 34 Avenue to G.A. MacDonald Avenue (36 collisions, 4 injuries).

[1] For classifications of fatality, major and minor injury, please refer to Appendix 1 at the end of this document.

Section 1: Introduction

The City of Edmonton Office of Traffic Safety maintains the Motor Vehicle Collision Information System (MVCIS), a database of motor vehicle collisions that occur on public roads in the City of Edmonton. The information in the database is collected from the provincial Collision Report Form, which is completed by members of the Edmonton Police Service 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 result in property damage of $2,000 or greater, as well as any collision that results in a minor or major injury or fatality.

On January 1, 2011, Alberta Transportation implemented a change in its regulations that affected the requirement to report collisions; specifically, the estimated damage amount beyond which a collision is required to be reported to police increased from $1,000 to $2,000.

This report presents an overview of collisions that occurred in Edmonton from January 1 to December 31, 2013, based on causes, temporal information, high collision locations and injury severity. The report also provides information on collisions involving pedestrians, cyclists, and motorcyclists.

Intersection- and midblock-level collision detail is available in spreadsheet form to facilitate end-user analysis, and can be accessed from the Office of Traffic Safety's website at http://www.edmonton.ca/transportation/traffic_reports/collision-speed-reports.aspx. This data is also available through the City of Edmonton's Open Data portal at http://data.edmonton.ca.

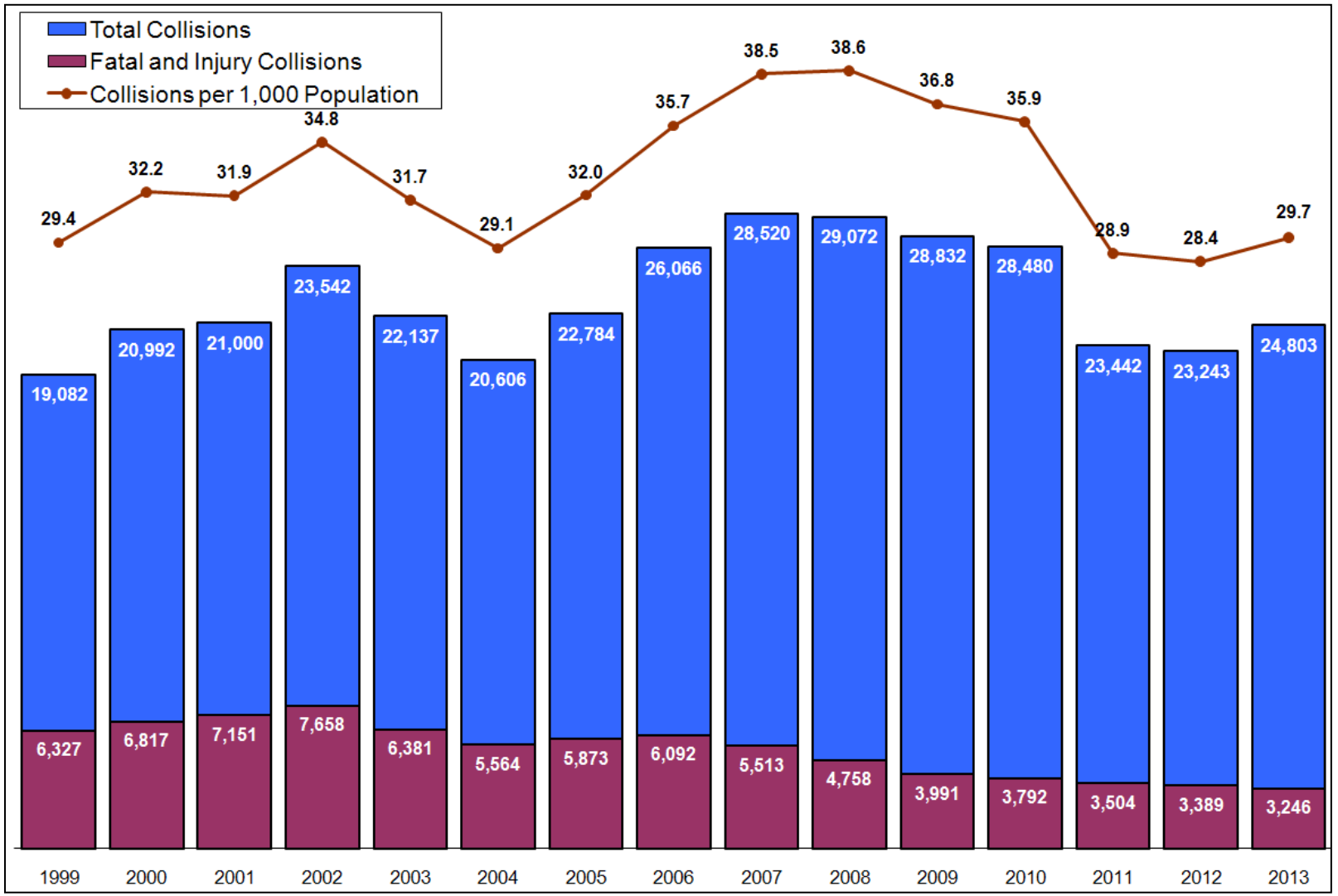


Figure 1: Historical Collision Statistics from 1999 to 2013

Table 1: Summary of Selected Collision Statistics from 1999 to 2013

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total Collisions	19,082	20,992	21,000	23,542	22,137	20,606	22,784	26,066	28,520	29,072	28,832	28,480	23,442	23,243	**24,803**
Injury Collisions	6,316	6,798	7,127	7,638	6,352	5,530	5,847	6,067	5,482	4,730	3,962	3,768	3,482	3,363	**3,223**
Injuries	9,173	9,805	10,284	11,013	9,083	7,686	8,006	8,221	7,445	6,270	5,203	4,910	4,446	4,338	**4,123**
Fatal Collisions	11	19	24	20	29	34	26	25	31	28	29	24	22	26	**23**
Fatalities	17	19	24	20	32	37	27	25	32	29	32	27	22	27	**23**
Pedestrian Collisions	310	302	372	348	308	296	333	347	366	395	347	306	316	296	**298**
Pedestrians Injured	330	310	380	365	314	308	346	364	372	395	357	326	302	302	**311**
Pedestrians Killed	3	9	11	9	6	10	4	0	13	9	9	4	8	8	**6**
Bicycle Collisions	249	214	227	201	181	196	221	199	184	235	220	182	190	177	**177**
Cyclists Injured	247	215	230	200	181	195	221	198	181	234	218	182	188	176	**176**
Cyclists Killed	1	1	0	0	0	2	1	0	4	2	2	2	1	1	**1**
Motorcycle Collisions	119	105	148	157	110	161	177	177	213	255	201	211	199	157	**160**
Motorcyclists Injured	106	98	137	144	111	137	162	144	160	184	150	135	139	126	**119**
Motorcyclists Killed	0	1	2	3	1	9	2	1	4	7	2	4	4	4	**2**
Population	648,284	657,500	666,104	676,300	697,657	707,271	712,391	741,028	741,392	752,412	782,439	793,000	812,201	817,498	**835,000**
Private Pass. Vehicles	349,575	356,679	365,232	376,157	380,475	381,456	389,471	407,732	431,425	452,101	470,602	479,194	491,789	509,655	**536,737**
Private Motorcycles	5,188	5,574	6,112	6,346	7,070	8,278	8,586	9,236	10,152	12,686	14,378	15,605	14,087	14,945	**14,311**
Collisions/1000 Pop.	29.4	31.9	31.5	34.8	31.7	29.1	32.0	35.2	38.5	38.6	36.8	35.9	28.86	28.42	**29.70**
Intersection Collisions/1000 Pop.	17.3	18.2	17.5	17.9	16.0	15.0	15.4	17.9	19.2	18.2	16.8	17.0	15.28	15.50	**16.37**
Fatalities & Injuries/1000 Pop.	14.2	14.9	15.5	16.3	13.1	10.9	11.3	11.1	10.1	8.4	6.7	6.2	5.50	5.34	**4.97**
Collisions/1000 Veh.	54.6	58.9	57.5	62.6	58.2	54.0	58.5	63.9	66.1	64.3	61.3	59.4	47.67	45.61	**46.21**

The population figure for 2013 is based on an estimate provided by the Chief Economist for the City of Edmonton. The population figure for 2012 is based on Edmonton's official population on April 1, 2012 from 2012 Edmonton Municipal Census (http://www.edmonton.ca/city_government/municipal-census.aspx); Population figures for previous years were primarily obtained from either Census of Canada or City of Edmonton Municipal Census, (see "Population History" of 2012 Edmonton Municipal Census (http://www.edmonton.ca/city_government/facts_figures/population-history.aspx).

Data on passenger vehicle and motorcycle registrations are based on the Alberta Vehicle Registration Statistics by Vehicle Registration Classes, and reflect the number of registrations as of March 31 of each year.

Section 2: Overview

The overall number of collisions in Edmonton, as shown in Figure 1 and Table 1, had been decreasing year over year since 2008, despite significant population growth in the region at the time. Although the total number of reported collisions increased (6.7%) between 2012 and 2013, collisions resulting in injury and the number of people injured decreased 4.2% and 5.0% respectively, the lowest annual figures reported in Edmonton in two decades. Collisions resulting in fatality decreased from 26 in 2012 to 23 in 2013. Major injuries also decreased in 2013 from 2012 by 15.5%.

Collisions and injuries involving vulnerable road users (pedestrian and motorcyclists) showed an increase in 2013 compared to 2012 and collisions involving cyclists remained the same in 2013 as 2012. Collisions involving pedestrians and pedestrian injuries increased 0.7% and 3.0% respectively; however, pedestrian fatalities decreased 25.0% from 2012 to 2013. Although motorcycle collisions in 2013 increased 1.9% from 2012, motorcyclist fatalities and injuries in 2013 decreased 6.9% from 2012.

While the total collisions per 1,000 population increased by 4.5% from 2012 to 2013, fatalities and injuries per 1,000 population decreased 9.8%.

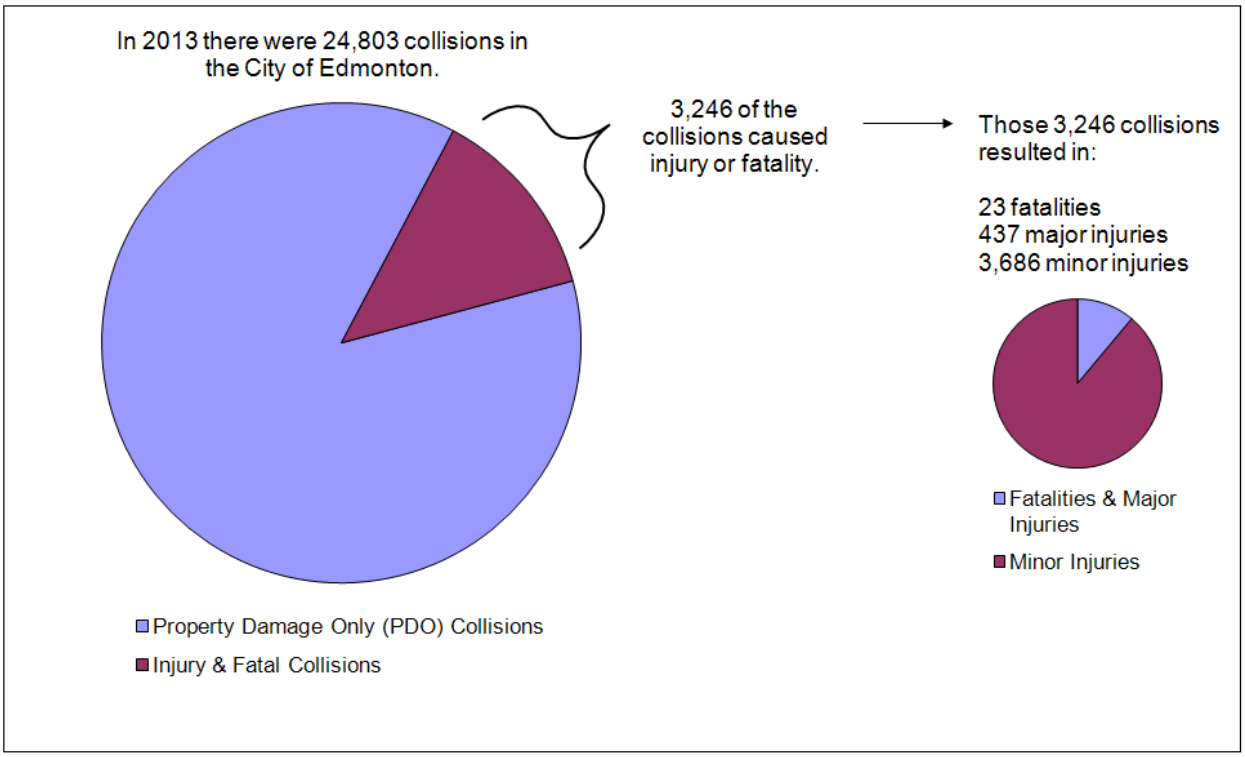


Figure 2: Collision Severity Distributions

As shown in Figure 2, included in the 24,803 reported motor vehicle collisions in 2013 on Edmonton streets are 3,246 (13.1%) collisions that resulted in minor or major injury or death. The 3,246 collisions resulting in fatality or injury caused a total of 4,123 injuries to drivers, passengers, pedestrians, cyclists, and motorcyclists. Among them were 23 traffic fatalities, 437 major injuries and 3,686 minor injuries. The fatality figure includes 14 vehicle occupants (11 drivers and 3 passengers), 6 pedestrians, 2 motorcyclists, and 1 cyclist.

Section 3: Collision Causes

The most common collision cause reported was followed too closely, which was indicated in (36.5%, 9,051) of all collisions. Other common collision causes included: struck parked vehicle (12.9%, 3,191); changing lanes improperly (10.7%, 2,646); ran off road (8.0%, 1,993); and left turn across path (7.7%, 1,914).[2]

The collision causes most likely to result in injury or fatality were followed too closely (39.4%, 1,280 collisions resulted in injury or fatality); left turn across path (11.7%, 381); and failed to observe traffic signal (8.5%, 275). Others were: ran off road (7.9%, 257); and stop sign violation (5.5%, 178).

[2] For a glossary of collision causes, please refer to Appendix 2 at the end of this document.

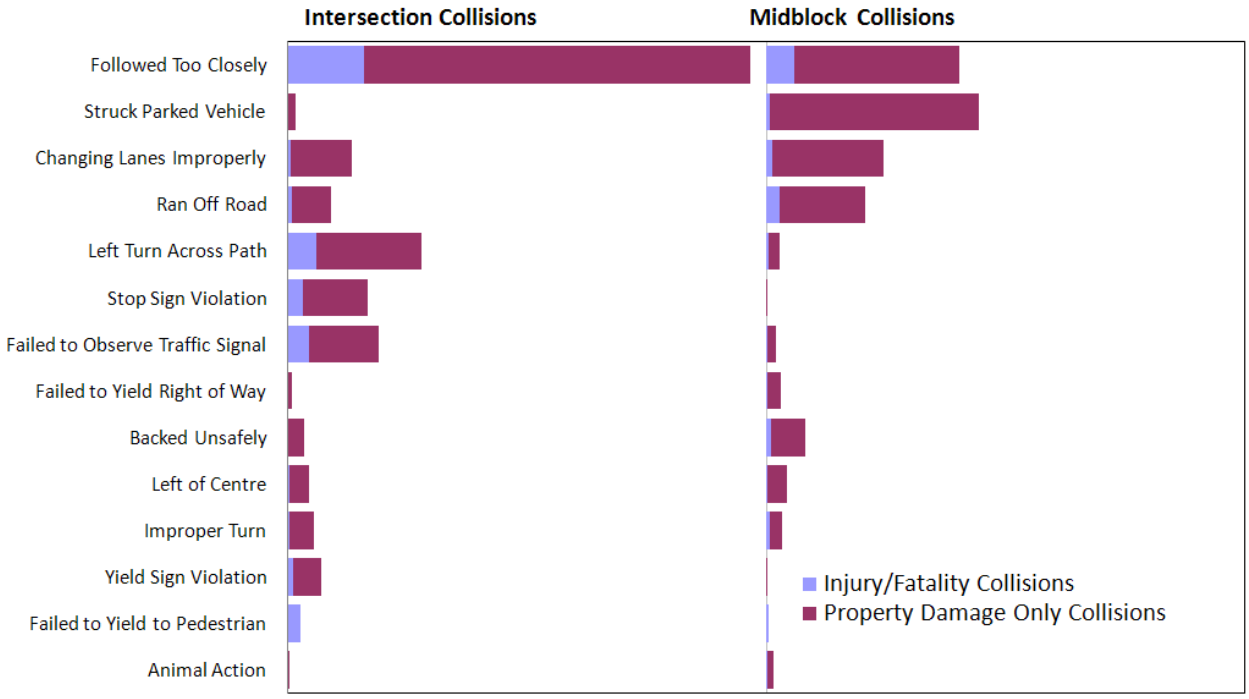


Figure 3: Collision Causes at Intersections and Midblock Segments

Figure 3 shows the considerable differences in the profile of collision causes at intersections versus midblock segments. At intersections, followed too closely was the reported cause in 46.0% (6,291) of all 13,672 intersection collisions; by comparison, followed too closely was the reported cause in only 25.3% (2,422) of all 9,590 collisions along mid-blocks. Of the 1,993 ran off road collisions in 2013, only 25.4% (507) occurred at intersections, versus 65.6% (1,308) along mid-blocks.[3] On the other hand, of the 1,914 left turn across path collisions, 90.5% (1,733) occurred at intersections, versus 9.1% (174) along midblock segments with vehicles turning onto private property.

Ranked by the severity of outcome, there were five causes where 100% of collisions resulted in fatality or injury (i.e., no PDO collisions for these five causes). They were failed to yield to pedestrian (212), pedestrian error/violation (75), failed to yield to cyclist (47), cyclist error / violation (45), and inanimate object action (1).

[3] The remaining 1,541 collisions occurred either on service roads, in alleys, or did not specifically report a location.

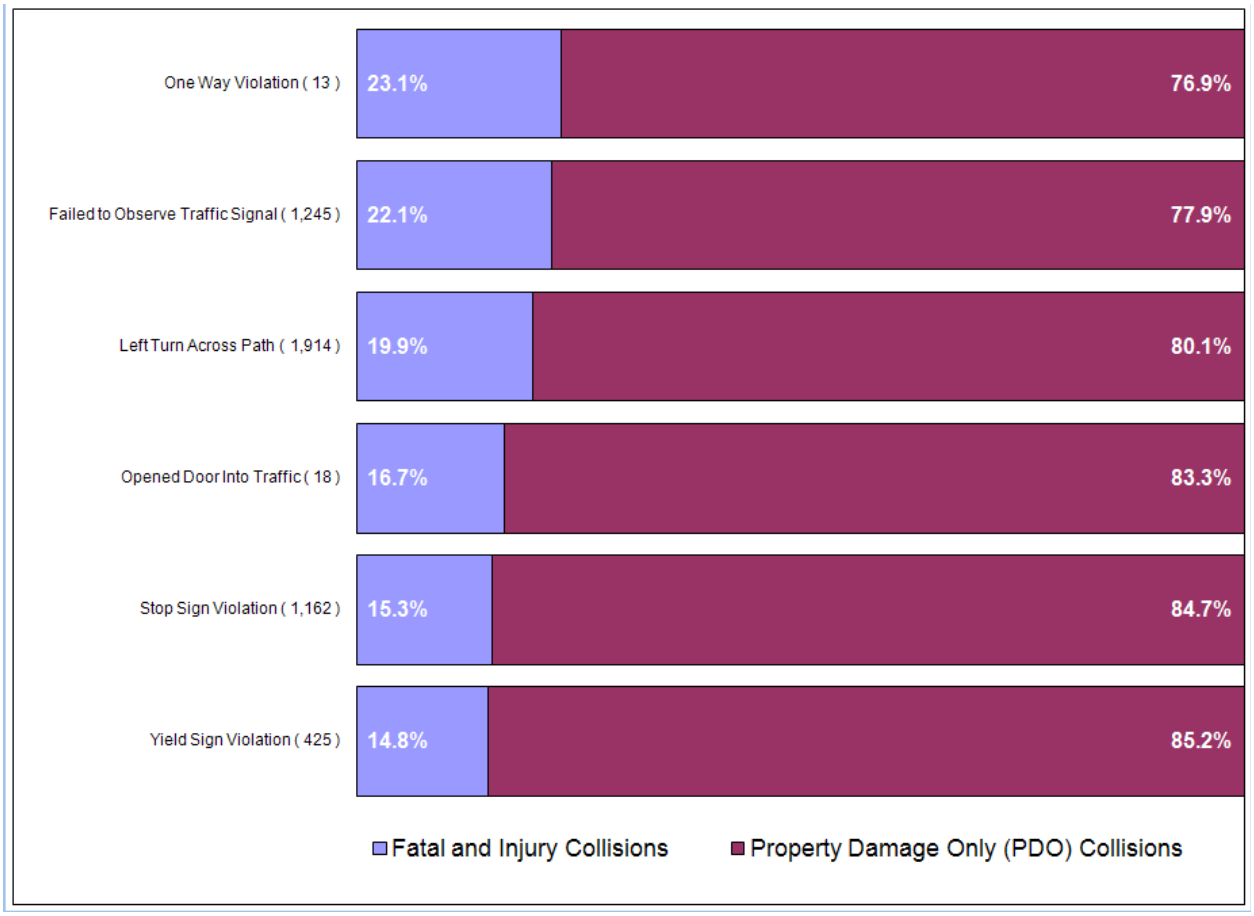


Figure 4: Collision Severity by Selected Causes

Figure 4 shows other causes (above mentioned severity causes with 100% injury/fatality were not included into this Figure), ranked by the severity of outcome. Proportionally, one way violations resulted in the most fatal and injury collisions but the frequency was low (3 of 13). More significant are the causes with a high frequency and a high proportion of fatal and injury collisions. Arguably the most significant cause was failing to observe traffic signal which had 22.1% of collisions result in a fatality or injury (275 of 1,245).

Section 4: Temporal Analysis

The profile of collisions in Edmonton by month of year, day of week, and hour of day are consistent from year to year. Fluctuations in the number of collisions can be the result of changing traffic volumes, weather and road conditions, number of daylight hours, and roadway congestion, as well as many other factors. The following charts exhibit the overall patterns of collisions during the hours, days, and months of 2013.

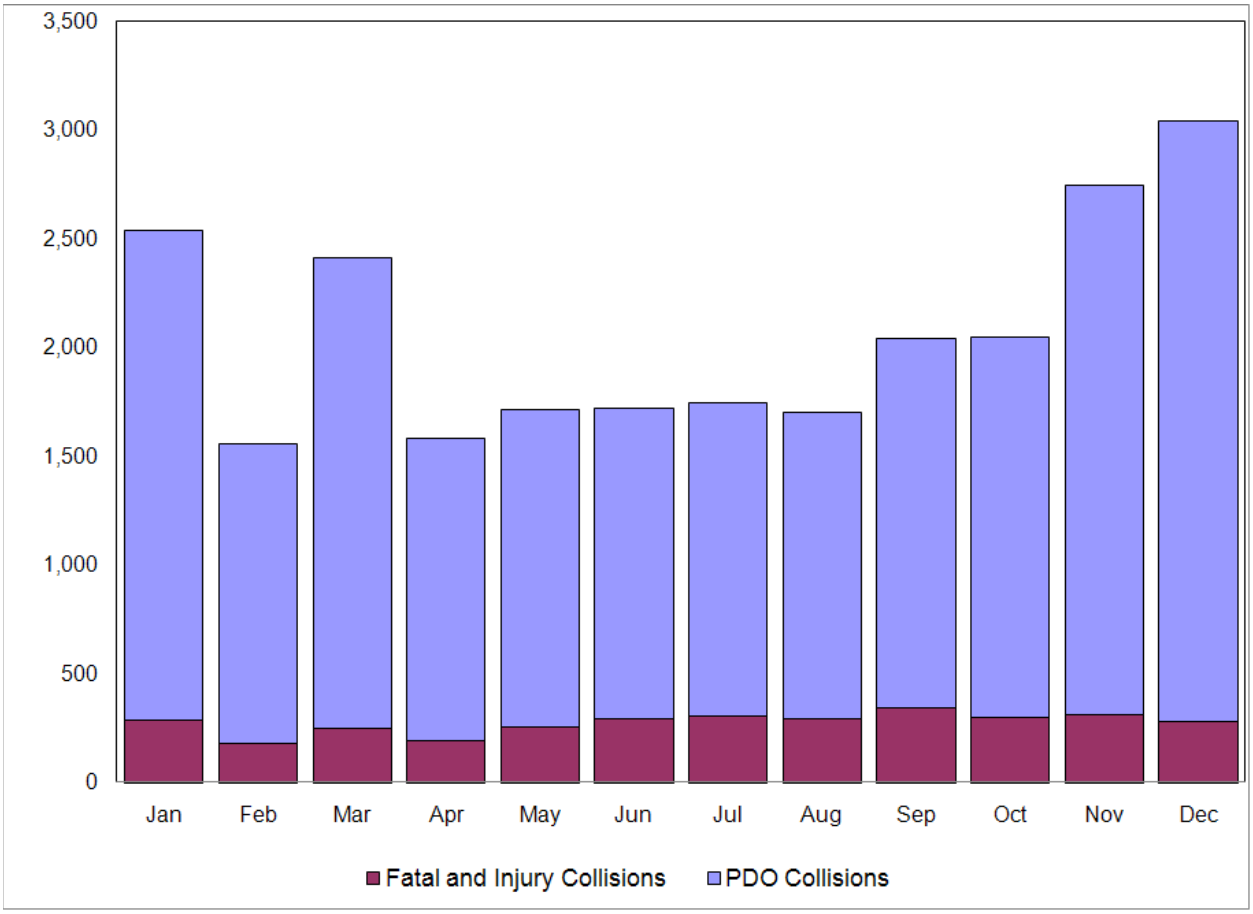


Figure 5: Collisions by Month

Figure 5 shows the breakdown of collisions by month, which in 2013 varied from a low of 1,554 collisions in February to 3,039 collisions in December. Overall, 57.7% (14,323) of collisions occurred in the fall and winter months (January - March and October - December). The percentage of collisions in fall and winter is consistent with prior years, and the top three collision months in 2013 remained the same as 2012 - November, December, and January.

Fatal and injury collisions ranged from 175 in February to 341 in September. The proportion of collisions that result in fatality or injury is higher in the spring and summer (April-September); while fatal and injury collisions made up 11.1% of all fall and winter collisions, they constituted 15.9% of all spring and summer collisions.

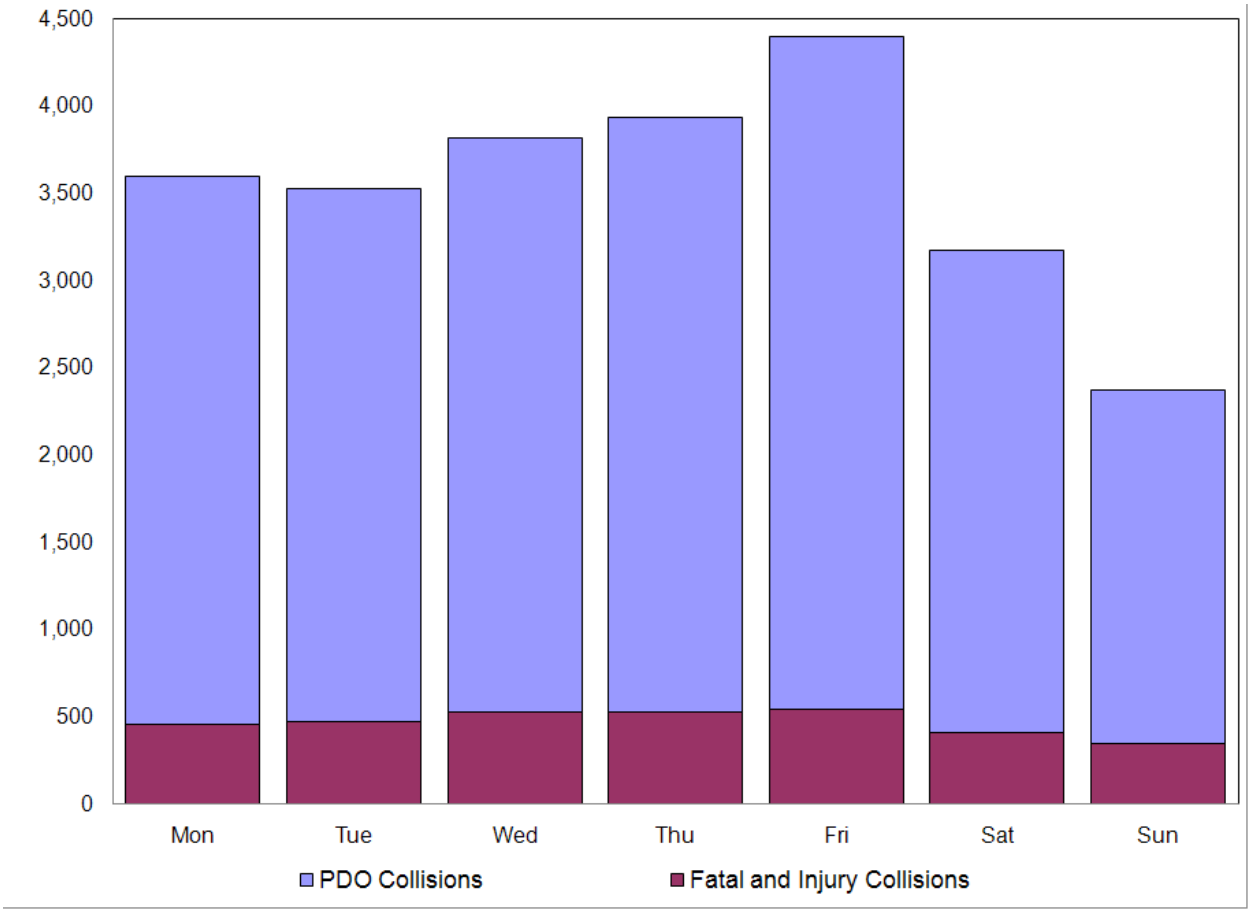


Figure 6: Collisions by Day of Week

As shown as Figure 6, Friday was the most common day of the week for collisions in 2013, accounting for 17.7% (4,394) of collisions. Least common was Sunday, with 9.6% (2,371) of all collisions. As in previous years, there were fewer collisions on weekends than on weekdays.

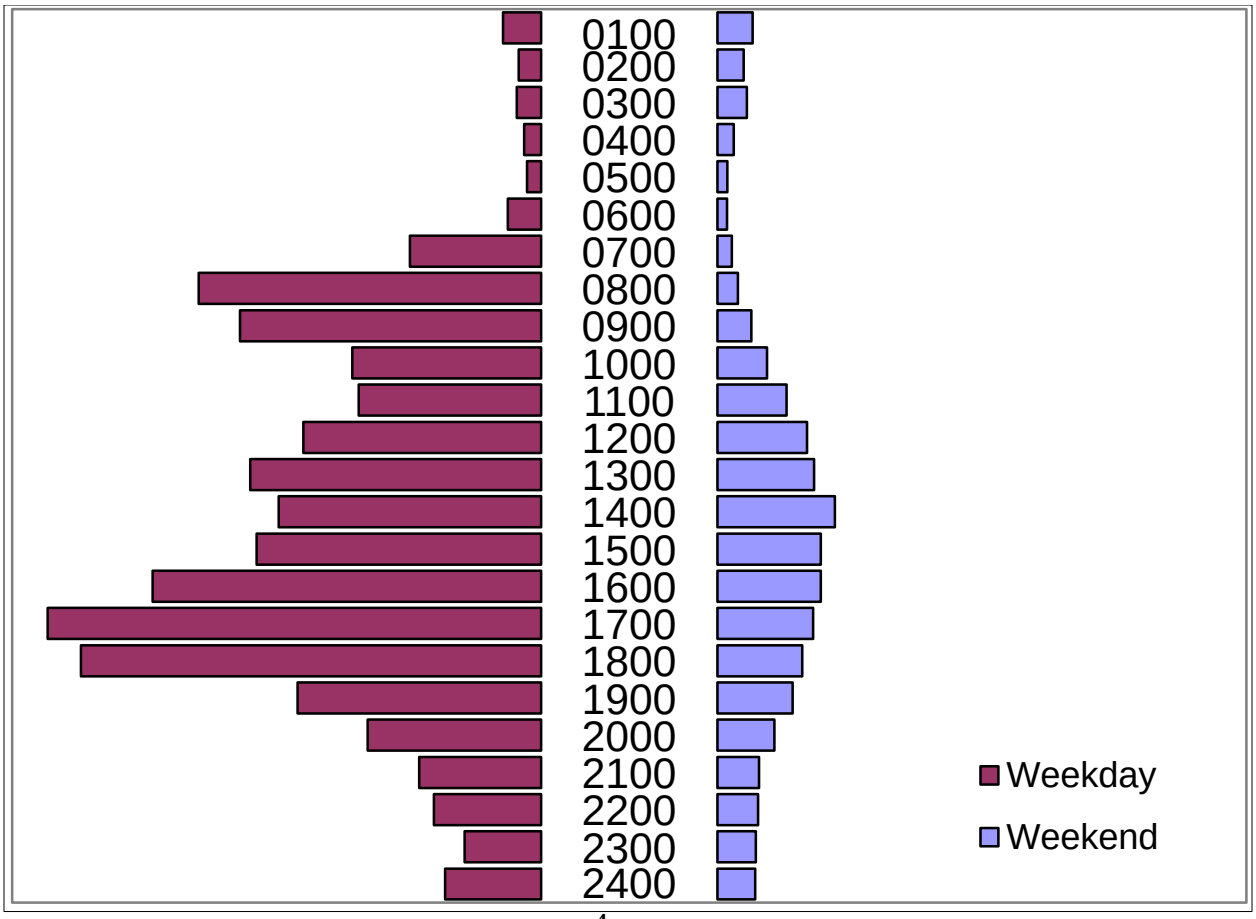


Figure 7: Collisions by Hour[4] of Day (Weekday vs. Weekend)

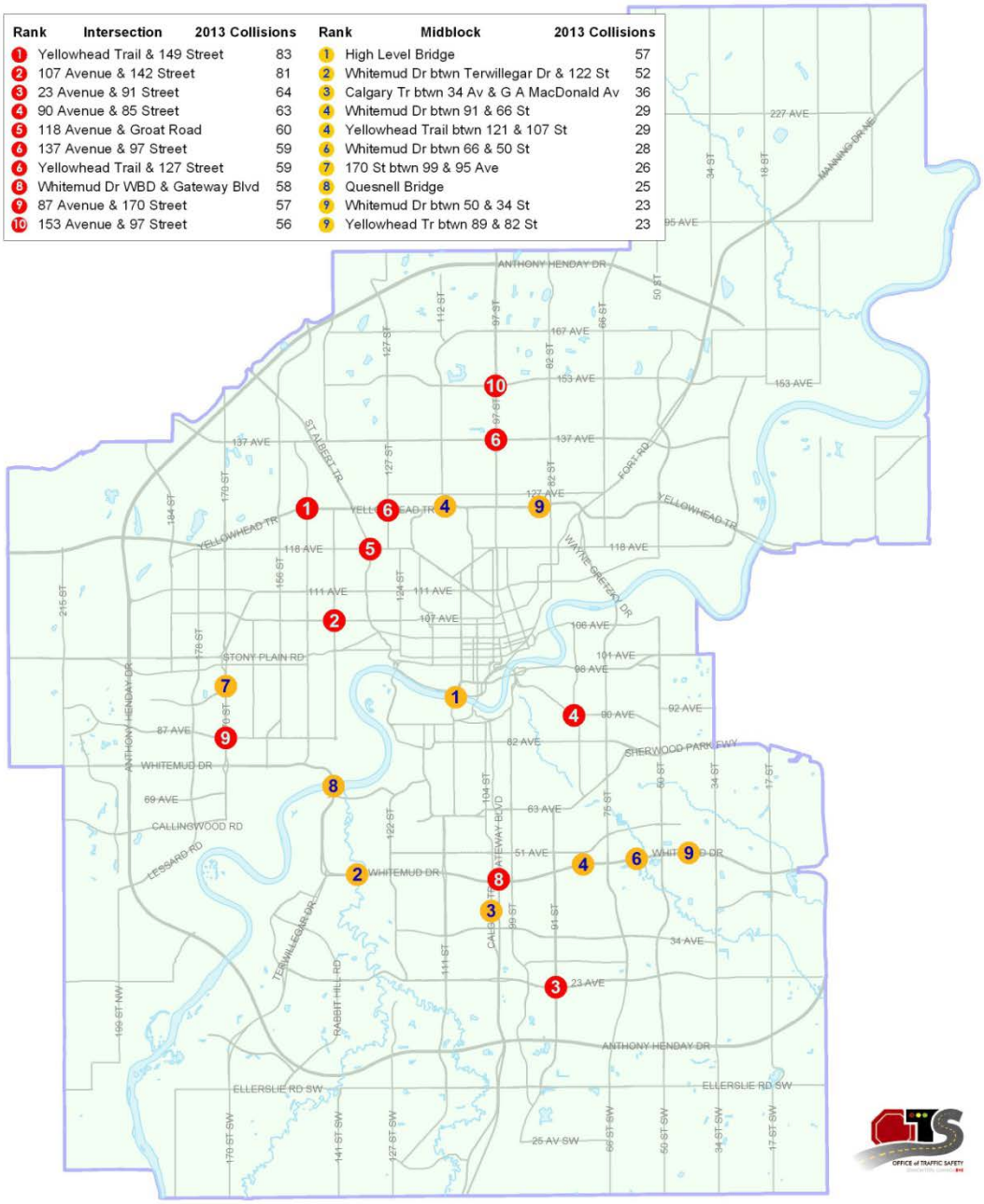
Figure 7 breaks down collisions by hour of day, for both weekdays (Monday through Friday) and weekends (Saturday and Sunday). During the weekdays, peak collision times match peak travel times; the morning peak period of 6:00 - 9:00 AM accounted for 17.0% (3,269) of all weekday collisions, while collisions during the PM peak of 3:00 - 6:00 PM made up 29.4% (5,663) of all weekday collisions.

On weekends, collision patterns shifted in line with traffic patterns, with the number of collisions peaking between 2:00 - 3:00 PM. Collisions from 12:00 Noon to 6:00 PM made up 45.8% (2,538) of weekend collisions. Collisions during the overnight hours were also more prevalent during the weekend; there were 496 collisions from 12:00 Midnight to 5:00 AM on weekends, representing 9.0% of all weekend collisions. By comparison, in the same time period there were 487 collisions over the five weekdays, representing only 2.5% of all weekday collisions.

[4] Hour name corresponds to "hour ending" in MVCIS, e.g., 1400 means 13:01-14:00 inclusive.

Section 5: Intersection and Midblock Collision Hot Spots

Map 1 illustrates the top intersections and midblock segments with the highest numbers of collisions in the city for 2013. A high collision location is also called a "hot spot".



Map 1: Top Intersections and Midblock Segments by Number of Collisions

Map 1 also highlights two areas with very dense hot spots: the areas north and northwest of the downtown core that included six intersections and two midblock hot spots. Included is 170 Street which had one intersection hotspot at 87 Avenue and one midblock hotspot between 95 and 99 Avenues.

In addition, Whitemud Drive between 34 and 91 Street contained three midblock hot spots. Other high-collision midblock segments included sections of the Quesnell Bridge and Calgary Trail between 34 Ave and G.A. MacDonald Avenue.

Table 2 shows some intersections and midblock segments were also 2012 hot spots while others were new hot spots for 2013.

Table 2: Summary of 2013 Hot Spots

Type	Location Name	2013 Rank	2013 Collisions	2012 Rank	2012 Collisions
Intersection	Yellowhead Trail & 149 Street	1	83	2	74
	107 Avenue & 142 Street	2	81	6	52
	23 Avenue & 91 Street	3	64	1	76
	90 Avenue & 85 Street	4	63	N/A[5]	36
	118 Avenue & Groat Road	5	60	8	49
	Yellowhead Trail & 127 Street	6	59	5	55
	137 Avenue & 97 Street	6	59	10	48
	Whitemud Drive WB & Gateway Boulevard	8	58	3	59
	87 Avenue & 170 Street	9	57	N/A	27
	153 Avenue & 97 Street	10	56	N/A	39
Midblock	High Level Bridge	1	57	2	50
	Whitemud Drive - 122 Street to Terwillegar Drive	2	52	1	54
	Calgary Trail - 34 Avenue to G.A. MacDonald Avenue	3	36	4	26
	Whitemud Drive - 66 to 91 Street	4	29	3	39
	Yellowhead Trail - 107 to 121 Street	4	29	5	24
	Whitemud Drive - 50 to 66 Street	6	28	6	21
	170 Street - 95 to 99 Avenue	7	26	5	24
	Quesnell Bridge	8	25	N/A	17
	Whitemud Drive - 34 to 50 Street	9	23	7	20
	Yellowhead Trail - 82 to 89 Street	9	23	9	18

[5] These collision locations were not in the top 10 in 2012.

Section 6: Objects Involved in Collisions

All collisions in the MVCIS database include at least one motor vehicle; collisions between two cyclists, for example, would not be entered in the database. Most collisions in 2013 involved two motor vehicles, or a single vehicle and a fixed object.

Table 3: Objects Involved in Collisions

Object Type	Number of Objects	Number of Collisions
Automobile	46,777	24,609
Fixed Object	2,343	2,326
Truck	1,328	1,265
Pedestrian	317	298
ETS Bus	273	273
Bicycle	177	177
Motorcycle	161	160
Animal	113	113
School Bus	148	147
Rollover	85	85
Other Vehicle	75	74
Other Bus	20	20
Emergency Vehicle	21	20
Train	6	6
Unknown	7	7

Table 3 summarizes the types of objects involved in collisions in 2013. Automobiles – a category that includes passenger vehicles, pickup trucks, and SUVs, but excludes large trucks over 4,500 kg and buses – were involved in over 99.2% (24,609) of all 24,803 collisions in 2013.

Fixed objects were involved in 9.4% (2,326) of all collisions. Other object types included trucks greater than 4,500 kg (5.1%, 1,265 collisions), pedestrians (1.2%, 298 collisions), ETS buses (1.1%, 273 collisions), and bicycles (0.7%, 177 collisions). Six collisions in 2013 involved a train.

Fixed objects are routinely involved in collisions, and Table 4 summarizes the type and number of these objects for 2013. The most common fixed object involved in collisions was “pole”. In 2013, 416 poles – more than one a day on average – were struck.

Some other fixed objects more frequently involved in collisions included 346 other fixed objects; 336 posts, signs, or parking meters; 297 restraining barriers; 226 curbs; 184 snow banks/drifts; 179 trees, brush or hedges; and 107 fences. Except for the above mentioned, other objects listed in Table 4 were less frequently involved.

Table 4: Fixed Objects Involved in Collisions

Fixed Object Type	# Objects	Percent
Pole	416	26.3%
Other Fixed Object	346	21.9%
Post, Sign, Parking Meter	336	21.3%
Restraining Barrier	297	18.8%
Curb	226	14.3%
Snowbank/Drift	184	11.6%
Tree, Brush, Hedge	179	11.3%
Fence	107	6.8%
Ditch	92	5.8%
Fire Hydrant	48	3.0%
Utility Box	47	3.0%
Building	35	2.2%
Bridge Support	21	1.3%
Bus Shelter	9	0.6%
Total	1,581	

Section 7: Demographic Analysis

The demographic makeup of licensed drivers (as of March 31, 2013) in Edmonton is shown in Figure 8. The graph exhibits there are slightly more licensed male drivers than female drivers across all age groups, and the age breakdown mirrors the population as a whole, with a general decrease in the number of drivers after the 25-29 age group.

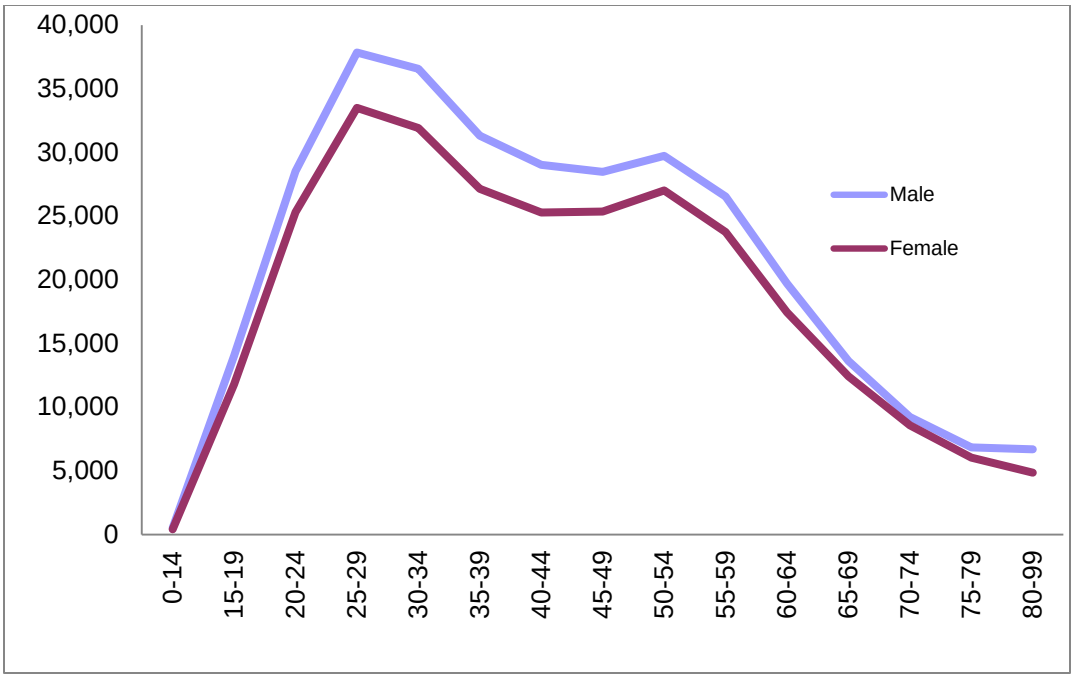


Figure 8: Age and Gender Breakdowns of Licensed Drivers

The demographic profile of drivers deemed at fault in a collision, as shown in Figure 9, is not consistent with the demographic profile. Young drivers were more likely to be deemed at fault for collisions in Edmonton. Drivers aged 15-24 made up 13.3% of Edmonton's licensed drivers in 2012, but were responsible for 24.1% of collisions. By comparison, drivers aged 30-49 constituted 39.2% of all licensed drivers, but were deemed at fault in 36.1% of collisions.

Gender was also a factor in the likelihood of collision involvement. While males made up 53.2% of licensed drivers in Edmonton in 2012, they were deemed at fault in 63.6% of collisions.

Comparing different age/gender groups showed much greater differences between the driving population and the population of at-fault drivers. Males aged 15-19 made up 2.3% of licensed drivers in Edmonton, but accounted for 5.1% of all at-fault drivers in 2012. Expanding the size of the group, males aged 15-24 make up 7.1% of the licensed driving population but 15.0% of at-fault drivers.

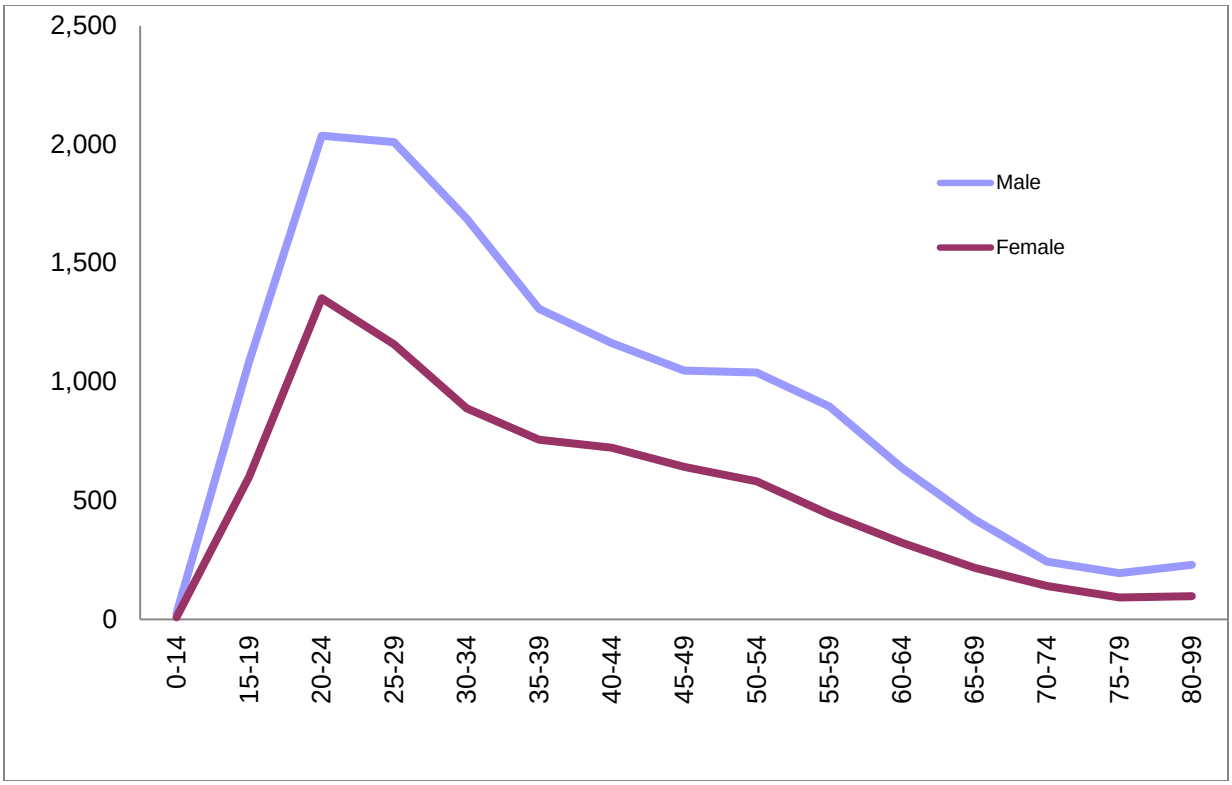


Figure 9: Age and Gender Breakdowns of At-Fault Drivers

The demographic breakdown of collision figures and at-fault drivers reveals that approximately 1 in 13 licensed males aged 15-19 were involved in a collision for which they were deemed at fault in 2013. By comparison, 1 in 20 female drivers aged 15-19 were at-fault in a collision, while the ratio for all licensed drivers at-fault was approximately 1 in 27.

Section 8: Fatal and Injury collisions

In 2013 a total of 4,123 injuries and 23 fatalities resulted from 3,246 collisions. The following section presents detailed information about fatal and injury collisions in 2013.

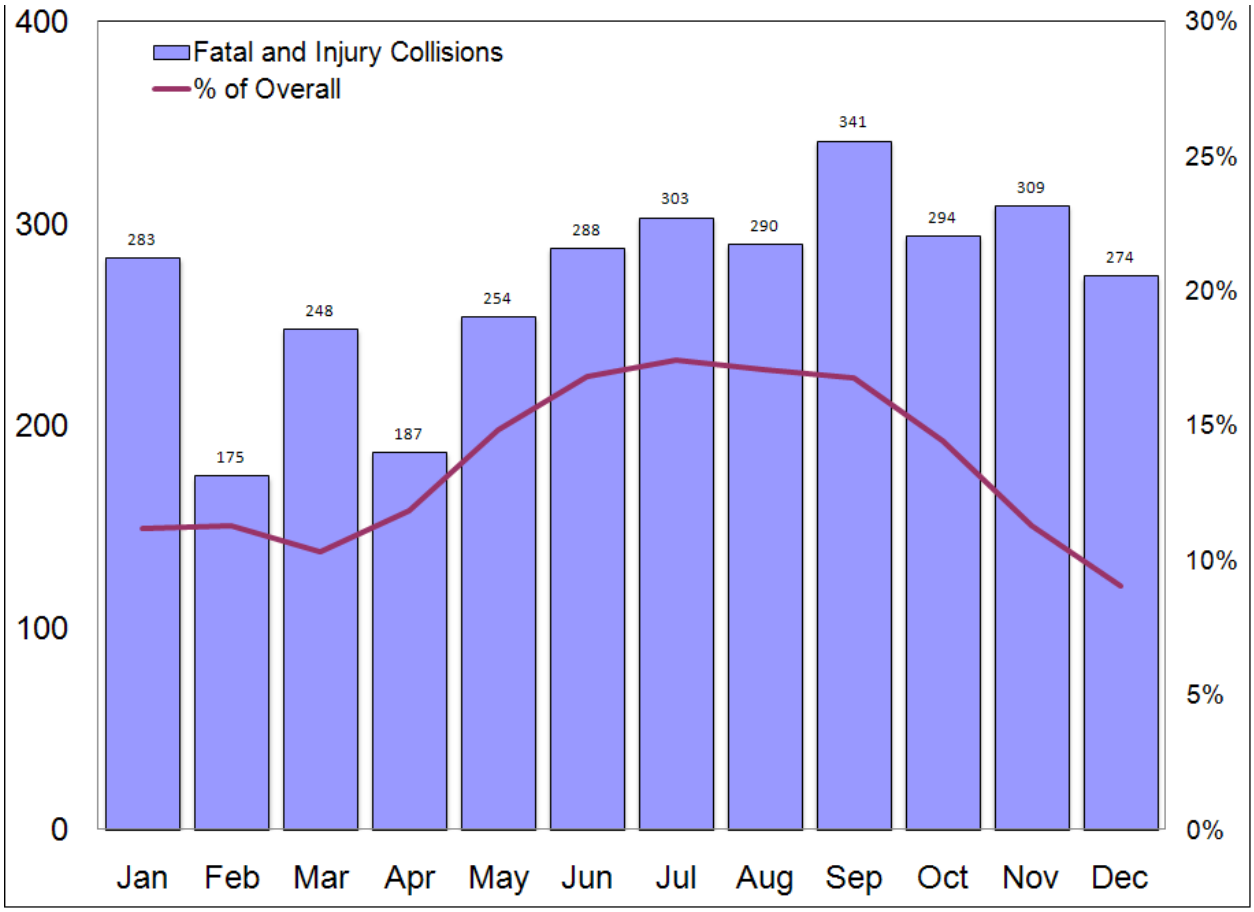


Figure 10: Fatal and Injury Collisions by Month

The number of fatal and injury collisions by month varied from a low of 175 collisions in February to a high of 341 collisions in September. The pattern of fatal and injury collisions did not follow that of collisions overall; Figure 10 indicates that while the total collisions remain steady through the winter months, the number of fatal and injury collisions are reduced. The average percent of fatal and injury collisions through the spring and summer months (April to September) is 15.9% compared to only 11.1% during the winter months (January to March and October to December).

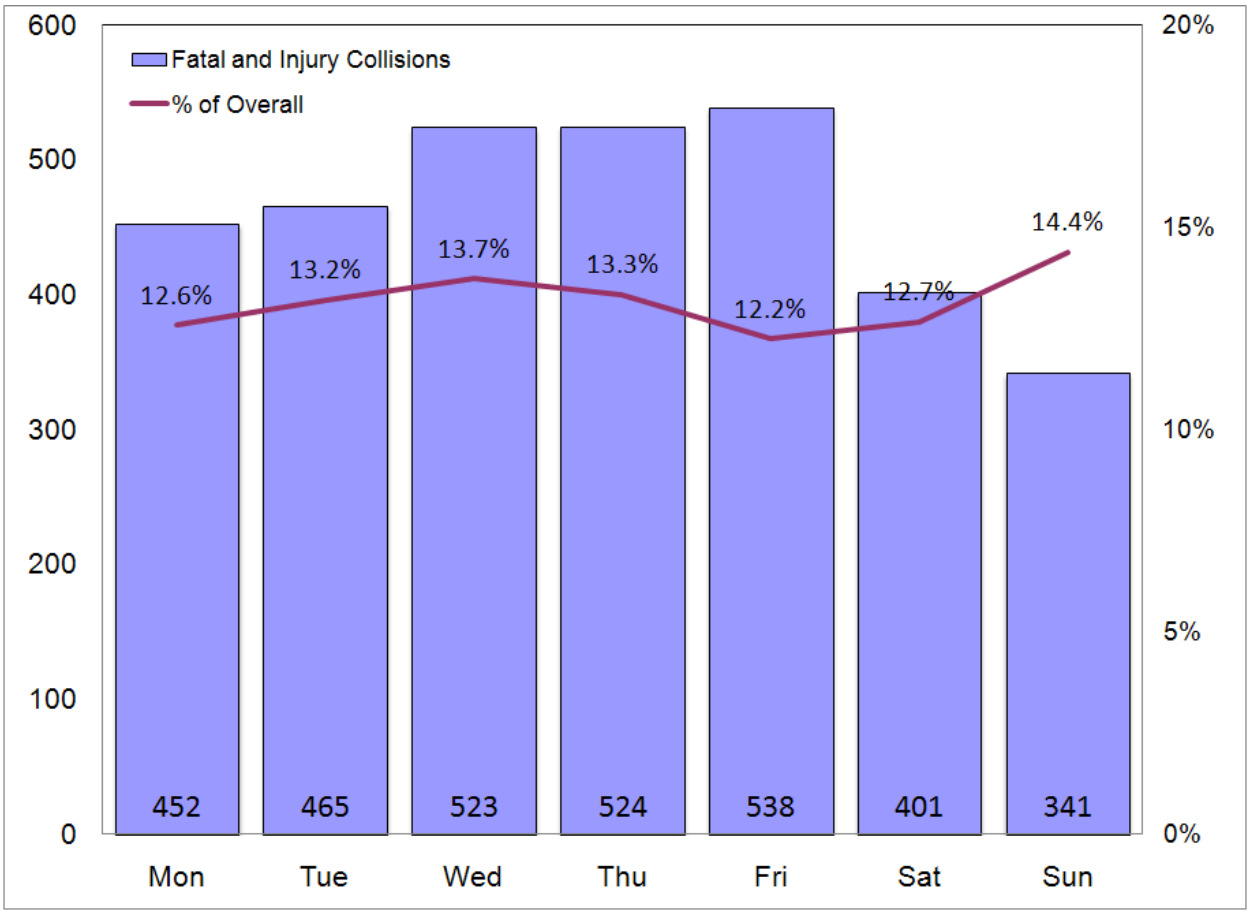


Figure 11: Fatal and Injury Collisions by Day of Week

Figure 11 indicates that Friday had the highest number of fatal and injury collisions, with 538 of all fatal or injury collisions, closely followed by Thursday and Wednesday (524 collisions and 523 collisions, respectively). By contrast, only 341 fatal or injury collisions occurred on Sunday. The pattern in terms of raw numbers of fatal and injury collisions by day of week generally followed that of overall collisions, with an increase in collisions from Monday to Friday and a decrease on the weekends. However, the pattern in terms of percentages of fatal and injury collisions of the overall collisions for each particular weekday told a different story; there was a proportionately lower percentage of fatal and injury collisions out of overall collisions on Fridays compared to other days of the week, with 14.4% of the collisions occurring on Sunday involving an injury or fatality.

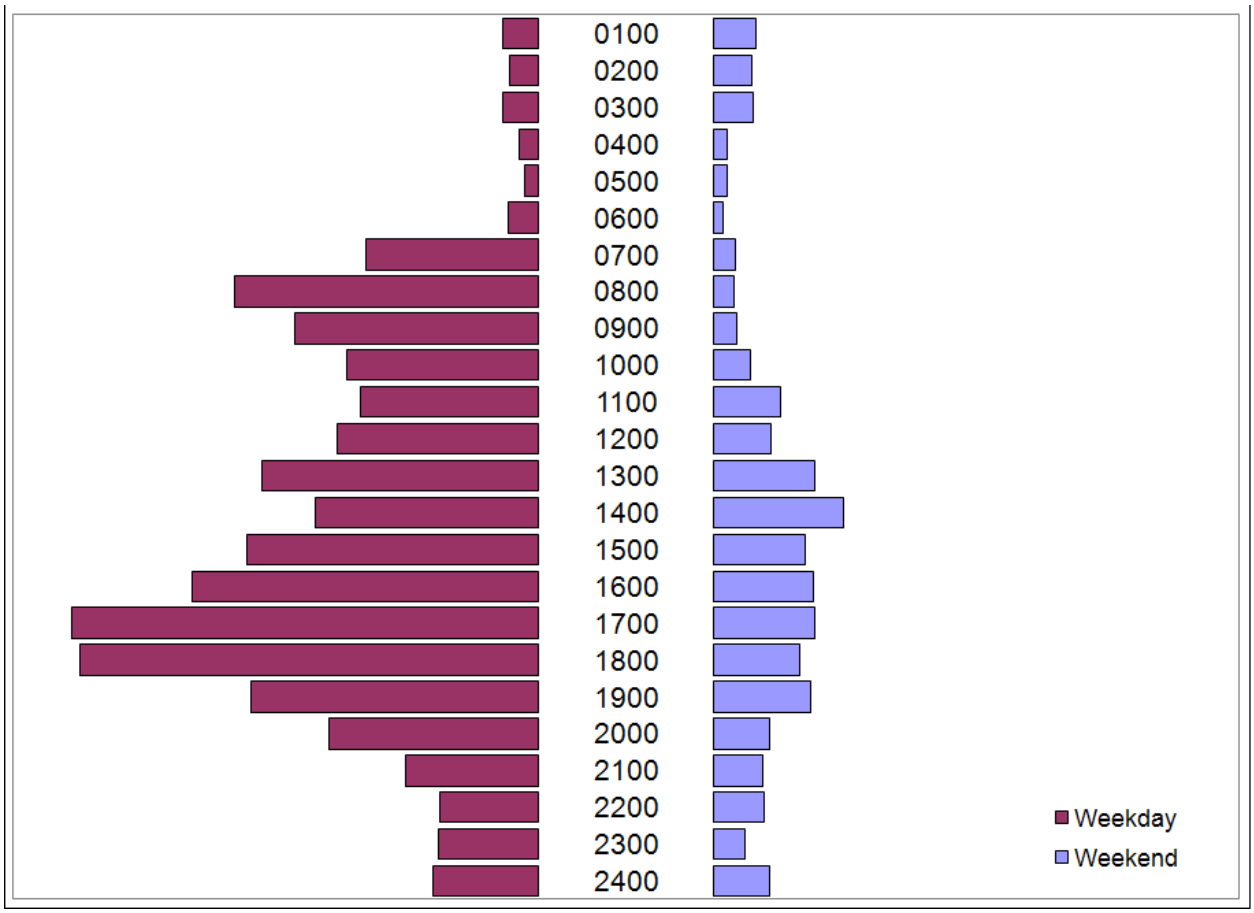


Figure 12: Fatal and Injury Collisions by Hour of Day

Figure 12 shows the profile of fatal and injury collisions by hour of day and is similar to the profile of overall collisions. On weekdays, the same morning and evening spikes occurred with fatal and injury collisions; collisions during the morning peak (6:00 - 9:00 AM) accounted for 16.0% (401) of all fatal and injury collisions on weekdays, while the evening peak (3:00 - 6:00 PM) accounted for 28.3% (708) of all fatal and injury collisions.

The profile of fatal and injury collisions on weekends was generally the same as the profile of overall collisions, with a gradual increase during the daytime and a peak between 5:00 - 6:00 PM. Fatal and injury collisions from Noon to 6:00 PM made up 45.6% (338) of all weekend fatal and injury collisions.

The most fatal and injury collisions occurred in the late evening and overnight hours. Collisions between Midnight and 5:00 AM accounted for 4.0% of all collisions in 2013, but accounted for 4.8% of all injury and fatal collisions. Of the 155 fatal or injury collisions that occurred between Midnight and 5:00 AM, 80 (10.8%) occurred on Saturday or Sunday.

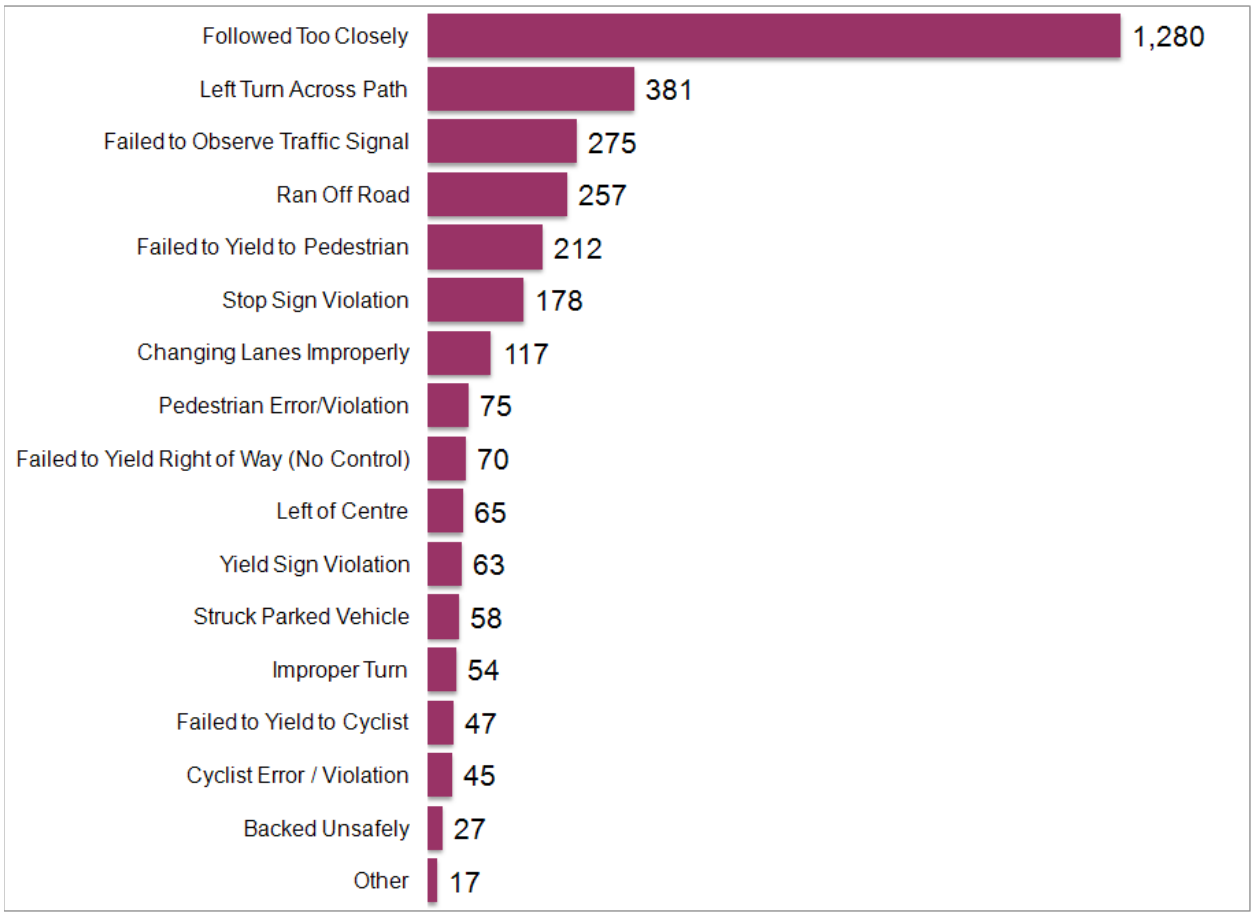


Figure 13: Fatal and Injury Collisions by Cause

As shown in Figure 13, collisions with the reported cause of followed too closely made up 39.4% (1,280) of all injury and fatal collisions. Other collision causes with significant injury / fatality counts included left turn across path (11.7%, 381), failed to observe traffic signal (8.5%, 275), and ran off road (7.9%, 257).

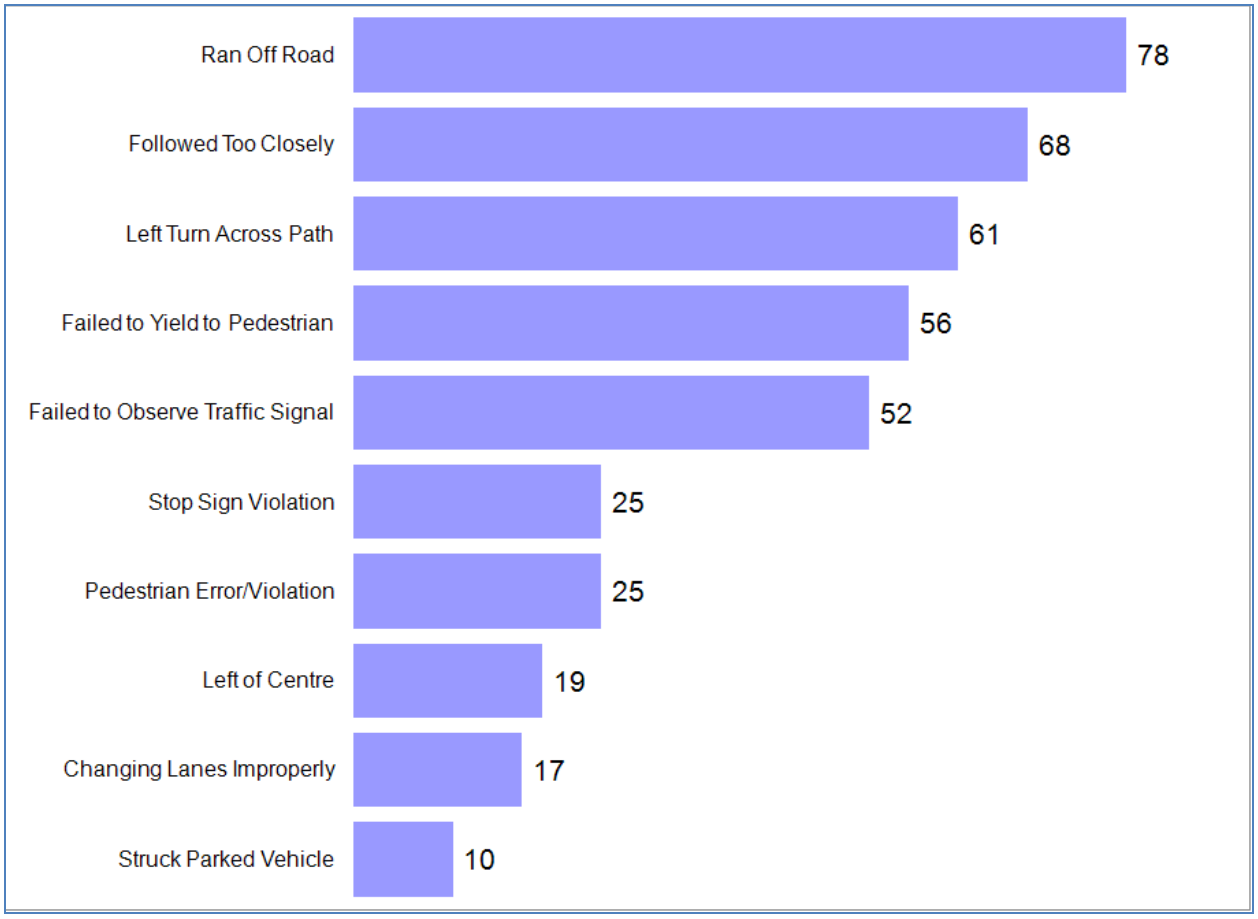


Figure 14: Fatalities and Major Injuries by Cause

A single collision can result in multiple injuries and/or fatalities. Injuries are classified as minor or major depending on the level of treatment required.[6] Figure 14 displays the number of fatalities and major injuries for a number of collision causes.

Ran off road collisions contributed 17.0% (78) of all fatalities and major injuries. Other common causes of fatalities and major injuries included followed too closely (14.8%, 68), left turn across path (13.3%, 61), and failed to yield to pedestrian (12.2%, 56).

Certain collision causes result in proportionately more fatalities or major injuries when compared to minor injuries. Of the 56 fatalities or injuries resulting from pedestrian error or violation, 32.5% (25) were a fatality or major injury, while 27.2% (92) of the total number of ran off road fatalities and injuries were considered as major injury or fatality. By comparison, there were 68 fatalities or major injuries resulting from followed too closely collisions, representing just 4.2% of all followed too closely injuries.

[6] For a definition of minor and major injuries, please refer to Appendix 1.

Table 5: Fatalities and Injuries by Mode, Severity, and Age Group

Injury Mode	Class	< 14	14 – 15	16 – 18	19 – 24	25 – 34	35 – 44	45 – 54	55 – 64	65 – 74	75+	N/A	Total
Vehicle Driver	Minor	0	2	97	438	573	387	346	220	92	68	81	2,304
	Major	0	0	7	40	46	33	30	28	10	10	4	208
	Fatal	0	0	0	4	5	0	0	1	1	0	0	11
Vehicle Passenger	Minor	0		39	160	214	168	142	68	31	22	28	872
	Major	0	0	5	31	27	9	8	11	3	2	2	98
	Fatal	0	0	0	1	0	0	0	1	0	1	0	3
Pedestrian	Minor	11	1	17	26	31	31	36	28	9	9	35	234
	Major	4	1	2	8	18	11	7	9	5	3	9	77
	Fatal	0	0	2	0	1	0	1	1	0	0	1	6
Cyclist	Minor	7	3	7	23	16	21	21	17	6	5	26	152
	Major	0	0	1	4	4	3	5	5	0	2	0	24
	Fatal	0	0	0	0	0	1	0	0	0	0	0	1
Motorcyclist	Minor	0	0	5	13	23	20	11	7	5	3	4	91
	Major	0	0	2	2	4	8	5	2	1	0	4	28
	Fatal	0	0	0	0	1	0	1	0	0	0	0	2
Unknown	Minor	0	0	4	0	2	0	5	21	0	0	1	33
	Major	0	0	0	0	0	0	1	0	0	0	1	2
All Modes	Minor	18	6	169	660	859	627	561	361	143	107	175	3,686
	Major	4	1	17	85	99	64	56	55	19	17	20	437
	Fatal	0	0	2	5	7	1	2	3	1	1	1	23

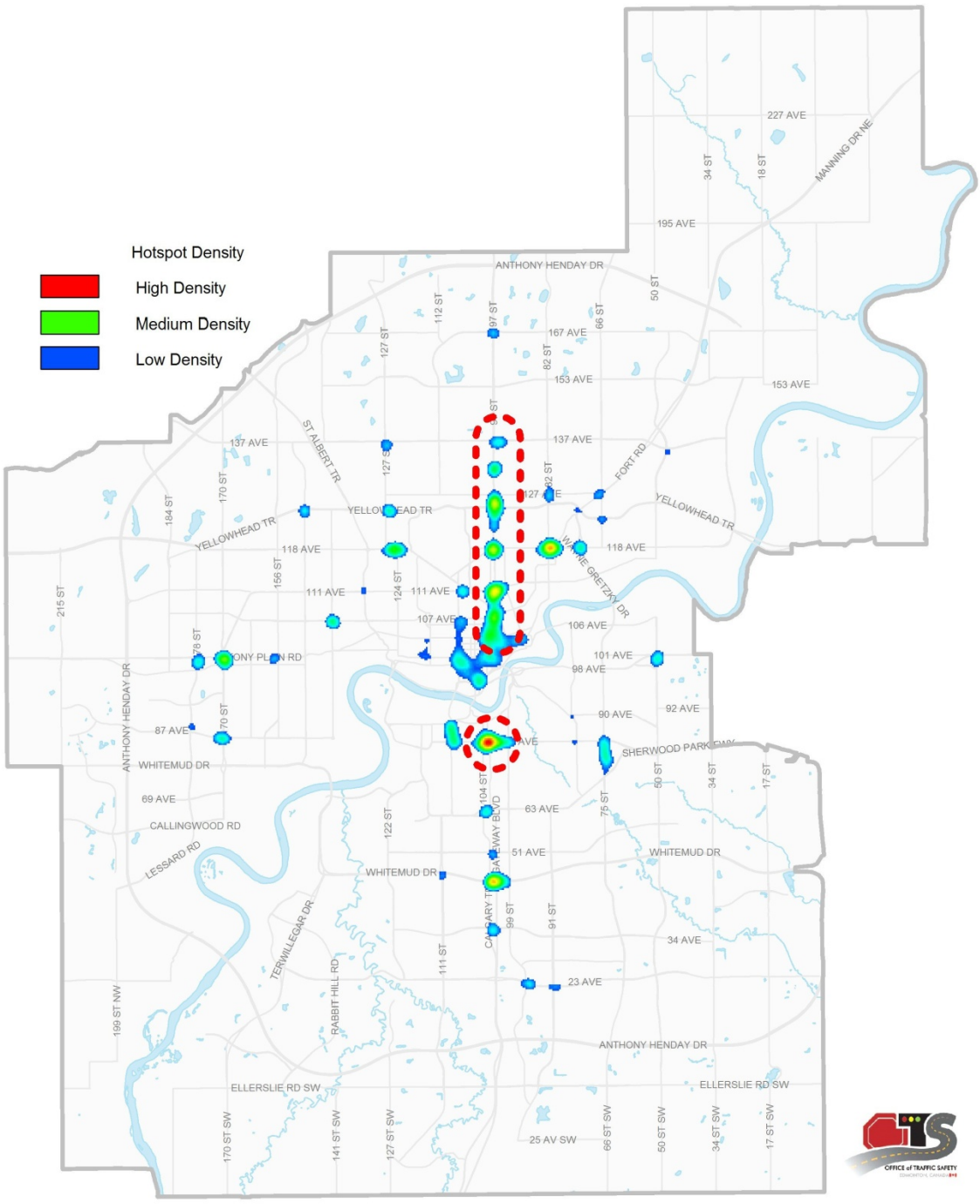
A summary of all fatalities and injuries is presented in Table 5, broken out by age group and injury class. The largest number of fatalities and injuries were sustained by vehicle drivers, followed by vehicle passengers. Most fatalities and injuries to children 14 and under were sustained while they were pedestrians. Most fatalities and injuries to adolescents 16-18 were caused while they were driving or as passengers in a vehicle.

Among vehicle drivers, there were 2,523 fatalities or injuries in 2013, a rate of 4.2 per 1,000 licensed drivers in Edmonton and 0.4 fatalities or major injuries per 1,000 licensed drivers. However, these figures increase to 7.8 fatalities or injuries per 1,000 licensed drivers and 0.7 fatalities or major injuries per 1,000 licensed drivers aged 19-24. Among those drivers aged 75 and over, the 3.2 fatalities or injuries per 1,000 licensed drivers, 0.4 fatalities or major injuries per 1,000 licensed drivers are lower than the overall rates respectively.

Table 6: Fatalities and Injuries by Mode and Traffic Control

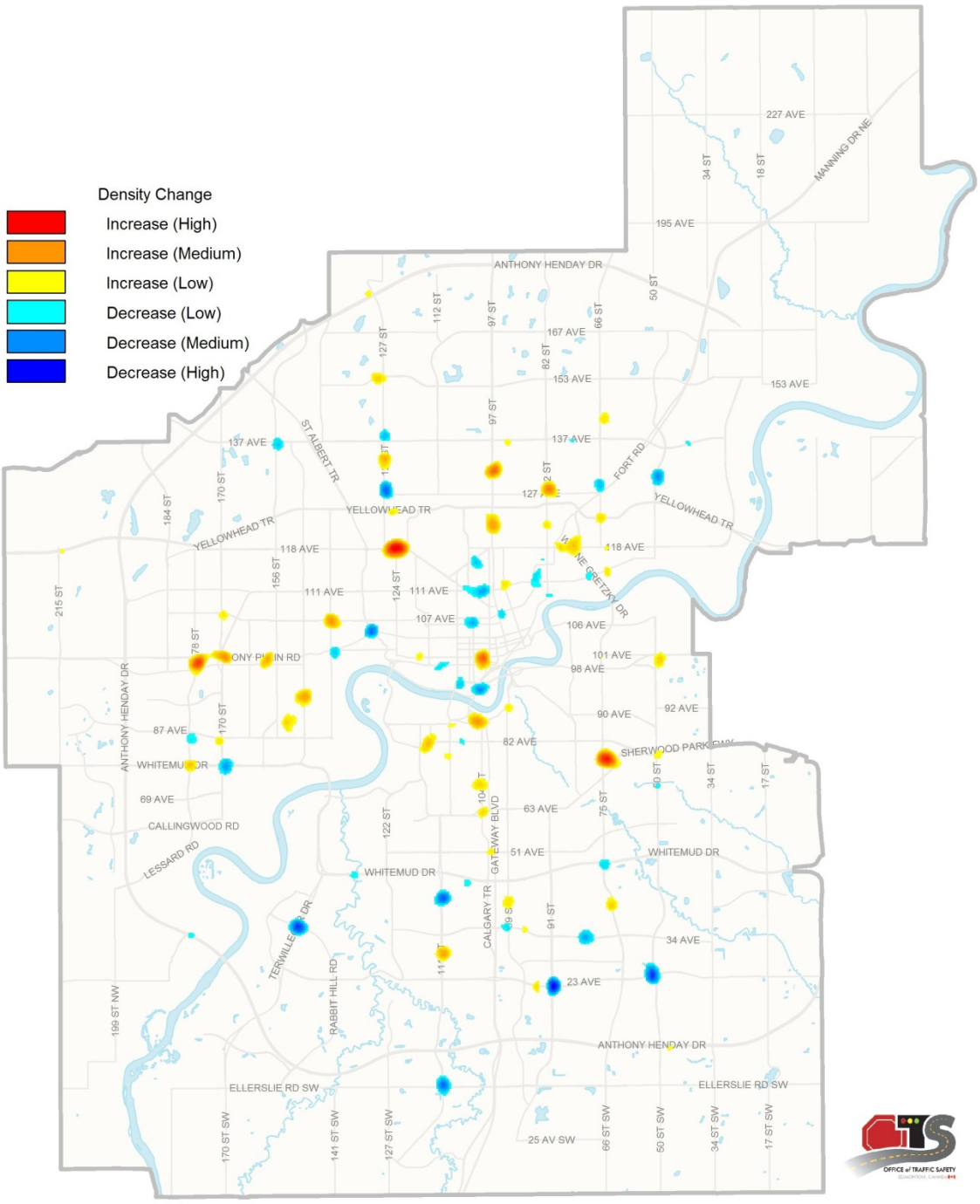
	Vehicle Driver	Vehicle Passenger	Pedestrian	Cyclist	Motor cyclist	Unknown	Total
Construction	6	3	2	0	0	0	11
Marked Pedestrian Crosswalk	47	15	43	15	3	1	124
Merge Sign	2	0	0	0	0	0	2
No Control	961	329	120	67	67	28	1,572
One Way Sign	5	1	0	1	1	0	8
Pedestrian-Actuated Signal	33	13	11	0	5	0	62
Pedestrian Amber Flasher	6	3	5	1	0	0	15
Police Control	3	3	3	0	0	0	9
Rail Crossing	8	3	1	0	0	0	12
Signal Light	1037	450	104	54	28	5	1,678
Stop Sign	181	73	20	26	11	1	312
Warning/ Advisory Light	1	0	0	0	0	0	1
Yield Sign	233	80	8	13	6	0	340
Total	2,523	973	317	177	121	35	4,146

Table 6 breaks down fatalities and injuries by the type of traffic control present. Collisions where the traffic control was a signal light made up 40.5% (1,678) of all fatalities and injuries, followed by no control, which includes both intersections that have no traffic control and midblock segments (37.9%, 1,572) and yield signs (8.2%, 340). Among the three standalone pedestrian crosswalk controls (as opposed to crosswalks that are part of intersection traffic signals), the fewest fatalities and injuries occurred at crosswalks with amber crossing lights (0.4%, 15), followed by standalone pedestrian crossings with full actuated signals (1.5%, 62), and finally marked crosswalks with no signals (3.0%, 124). Twelve injuries occurred at rail crossings.



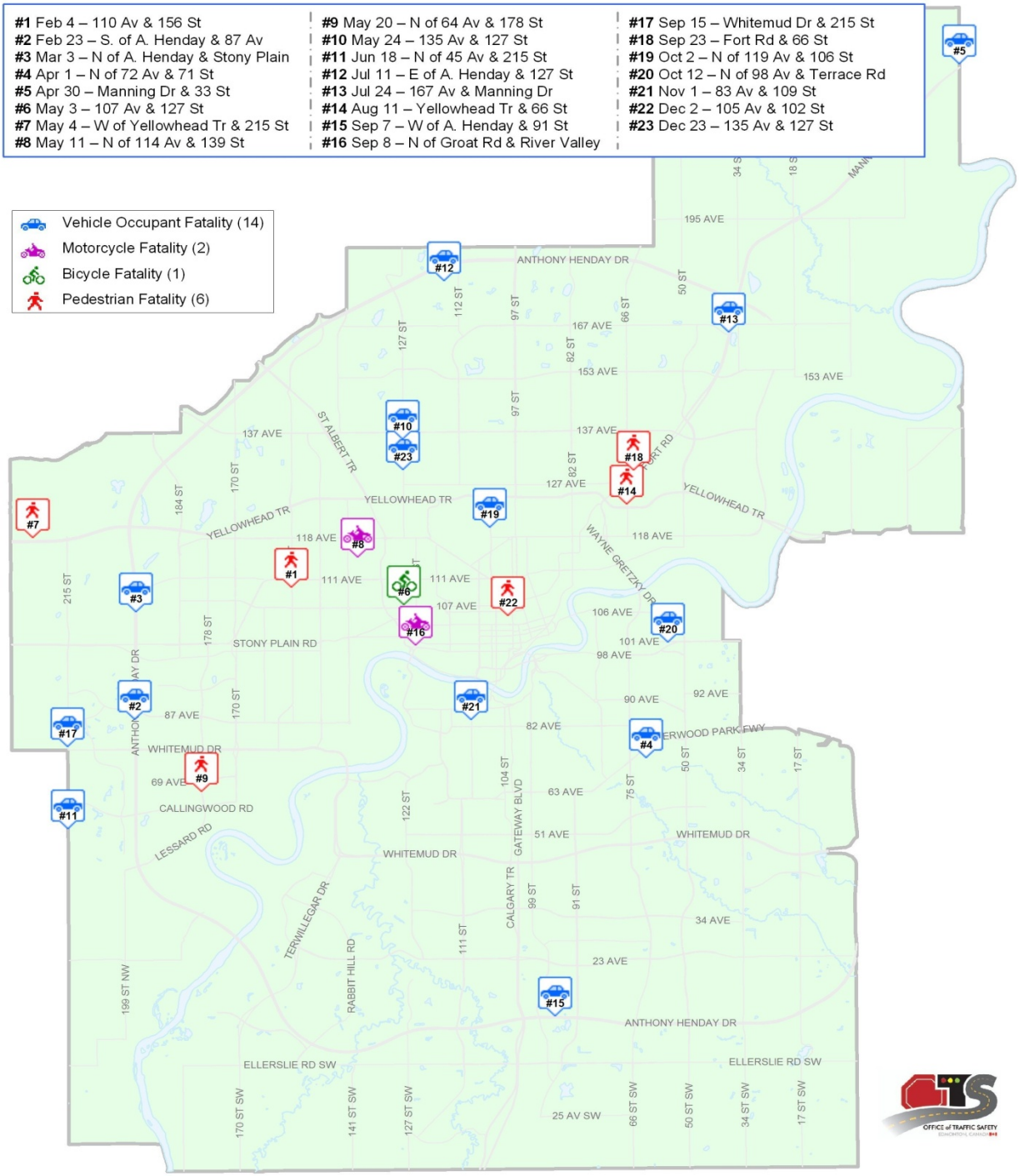
Map 2: Density Map of Fatal and Injury Collisions

Map 2 highlights locations with higher concentrations of fatal and injury collisions in 2013. Fatal and injury collisions were most prevalent in the downtown core, the Whyte Avenue entertainment area, and at the intersection of Whitemud Drive and Calgary Trail / Gateway Boulevard. Some fatal and injury hot spots in 2013 included: Whyte Avenue (82 Avenue) & 104 Street/Gateway Boulevard and 97 Street from Jasper Avenue to 137 Ave.



Map 3: Density Changes in Fatal and Injury Collisions from 2012 to 2013

Map 3 illustrates where the largest increases or decreases in fatal and injury collisions occurred between 2012 and 2013. The areas of 118 Avenue & 124 Street, 76 Avenue & 75 Street, and Stony Plain Road & 178 Street saw the largest increases, while the largest decreases happened in the areas around 23 Avenue & 50 Street, 23 Avenue & 91 Street, and Terwillegar Drive & Rabbit Hill Road.



Map 4: Fatality Locations

Map 4 indicates locations with fatal collisions in 2013. These 23 fatal collisions caused a total of 23 fatalities and 18 additional injuries. Among the 14 vehicle occupant fatalities, there were 11 drivers and 3 passengers killed. Many of the fatal collision locations are located on roads with higher speed limits such as Anthony Henday Drive (#2, #3, #12, #15), Yellowhead Trail (#7, #14), and Manning Freeway (#5, #13).

Section 9: Vulnerable Road User Collisions

Section 9.1: Pedestrian Collisions

In 2013 there were 298 collisions involving pedestrians, resulting in 6 pedestrian fatalities and 311 injuries.

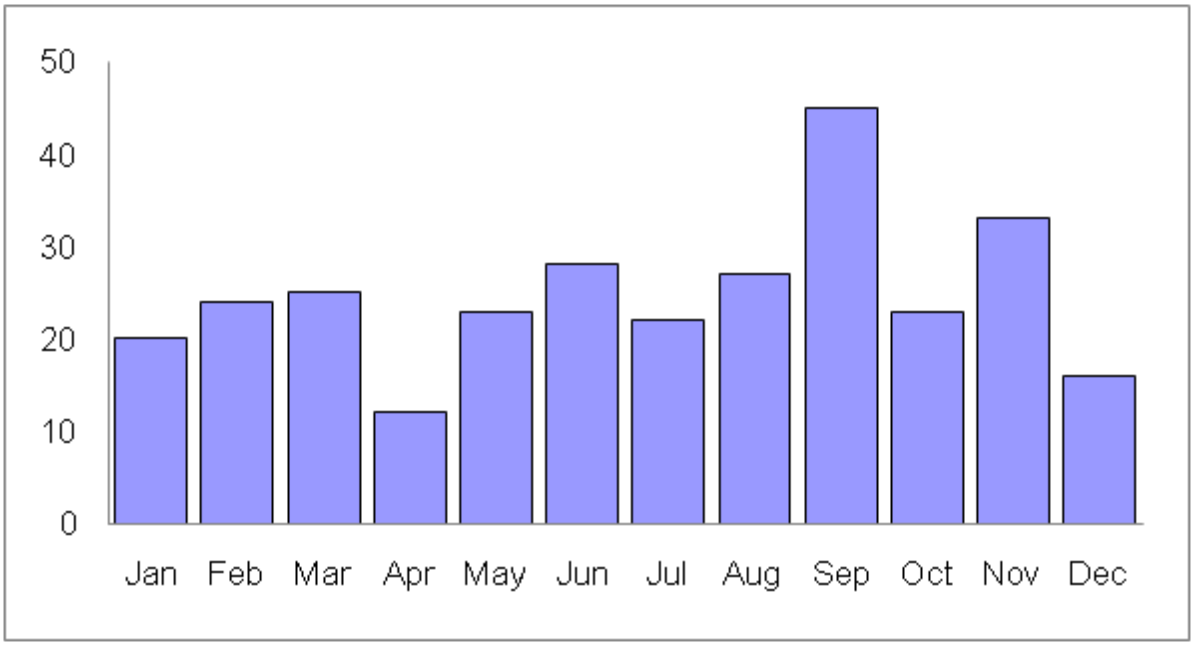


Figure 15: Pedestrian Collisions by Month

Pedestrian collisions occurred throughout the year, the highest number of collisions occurred in September (45) and the lowest in April (12).

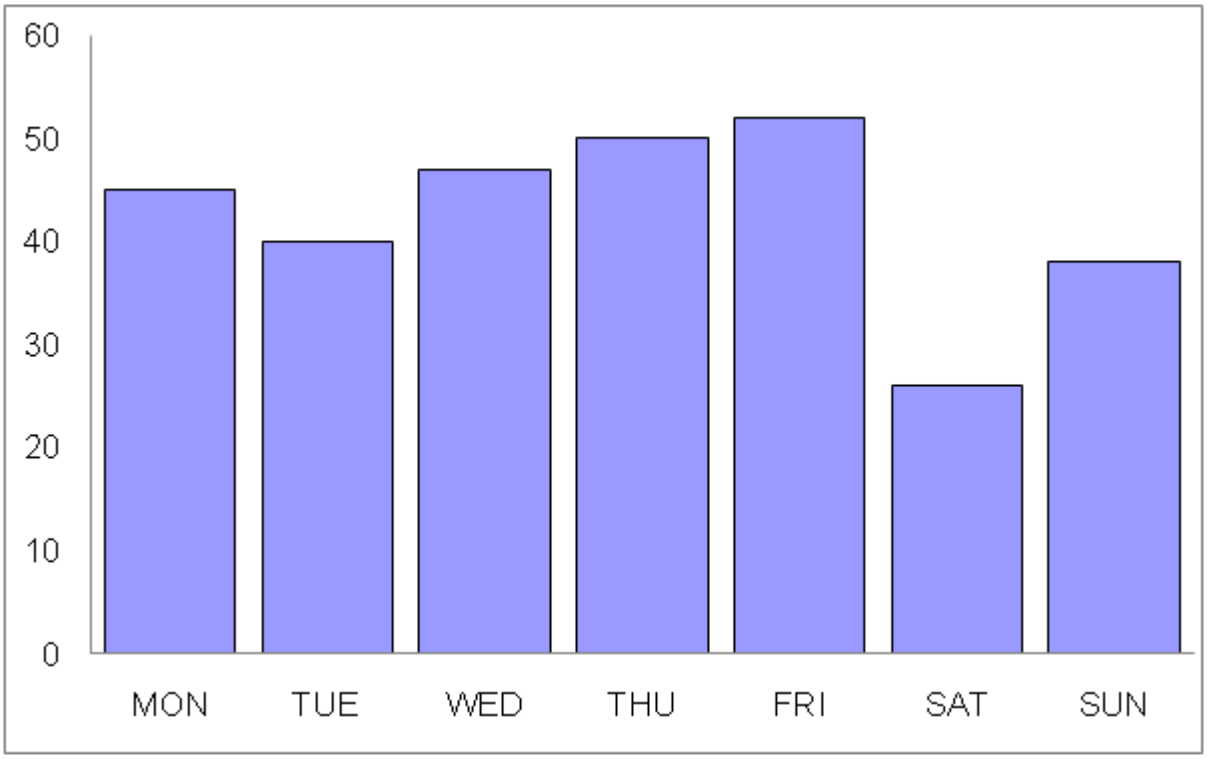


Figure 16: Pedestrian Collisions by Day of Week

Pedestrian collisions were slightly more likely to occur on Fridays, as shown in Figure 16 (17.4%, 52 collisions).

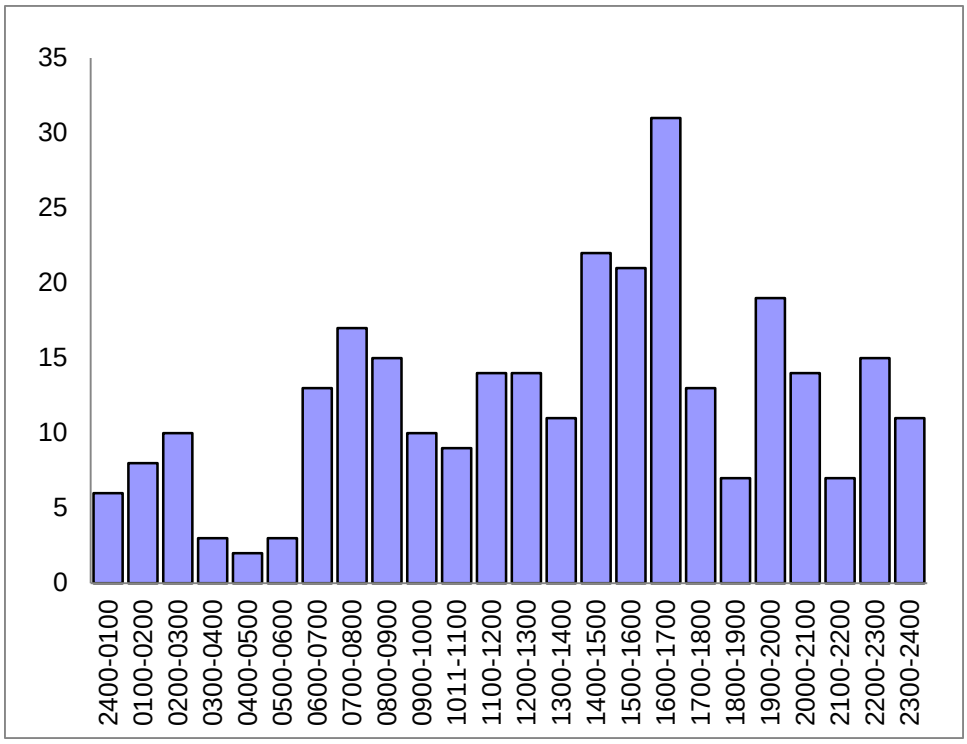


Figure 17: Pedestrian Collisions by Hour of Day

Figure 17 reveals more pedestrian collisions occurred between 4:00 – 5:00 PM (10.5%, 31) and 2:00 – 3:00 PM (7.5%, 22).

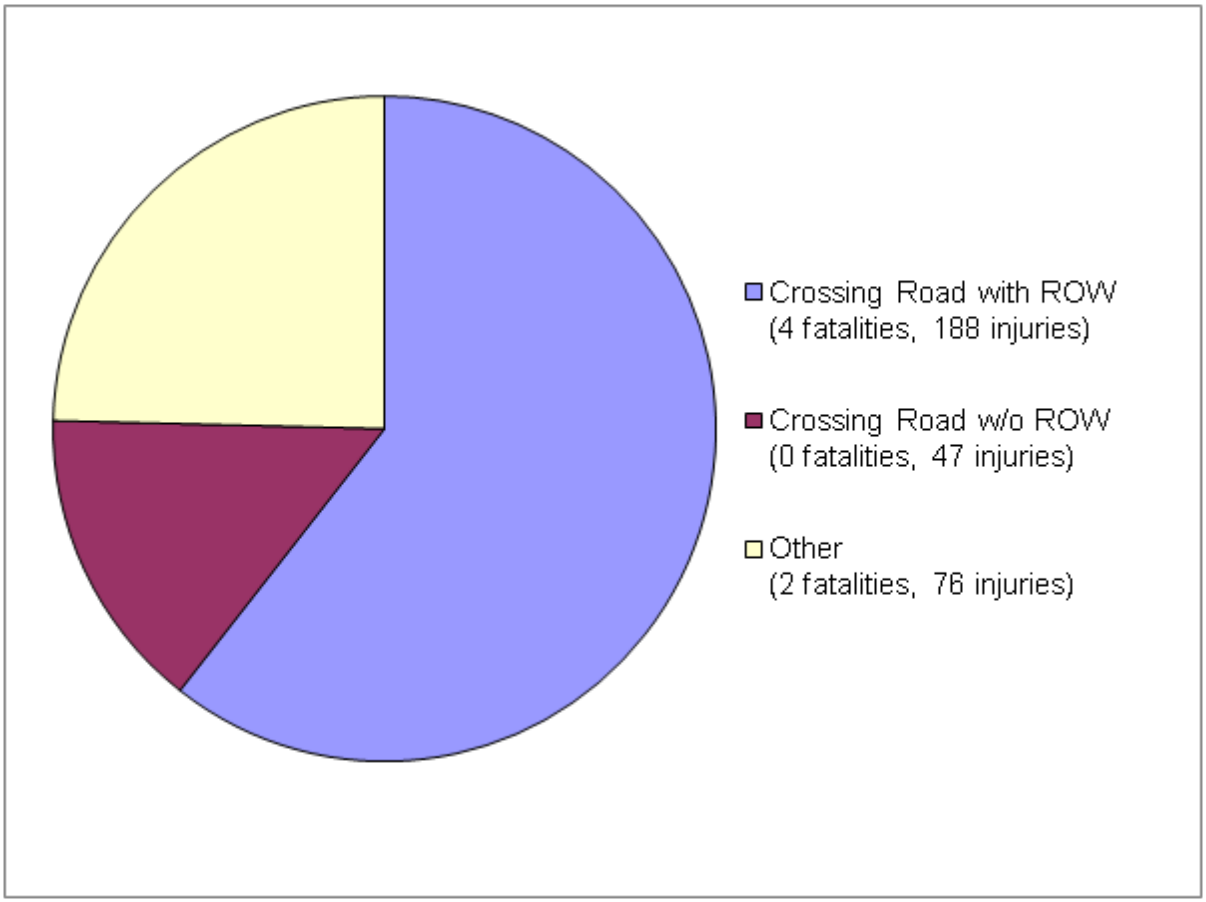


Figure 18: Action of Pedestrians Involved in Collisions

As shown in Figure 18, pedestrians crossing the road with the right of way - either at a marked crosswalk, an unmarked crossing at an intersection, or at a signalized intersection with a walk sign - made up 60.6% (192) of all pedestrian fatalities and injuries. Pedestrians crossing without the right of way, either crossing at a midblock without a marked crosswalk or crossing against the flow of traffic at a signalized intersection, accounted for 14.8% (47) fatalities and injuries. Other actions – including running onto roadway, working on the roadway, and entering or exiting vehicles – made up 24.6% (78) of pedestrian fatalities and injuries.

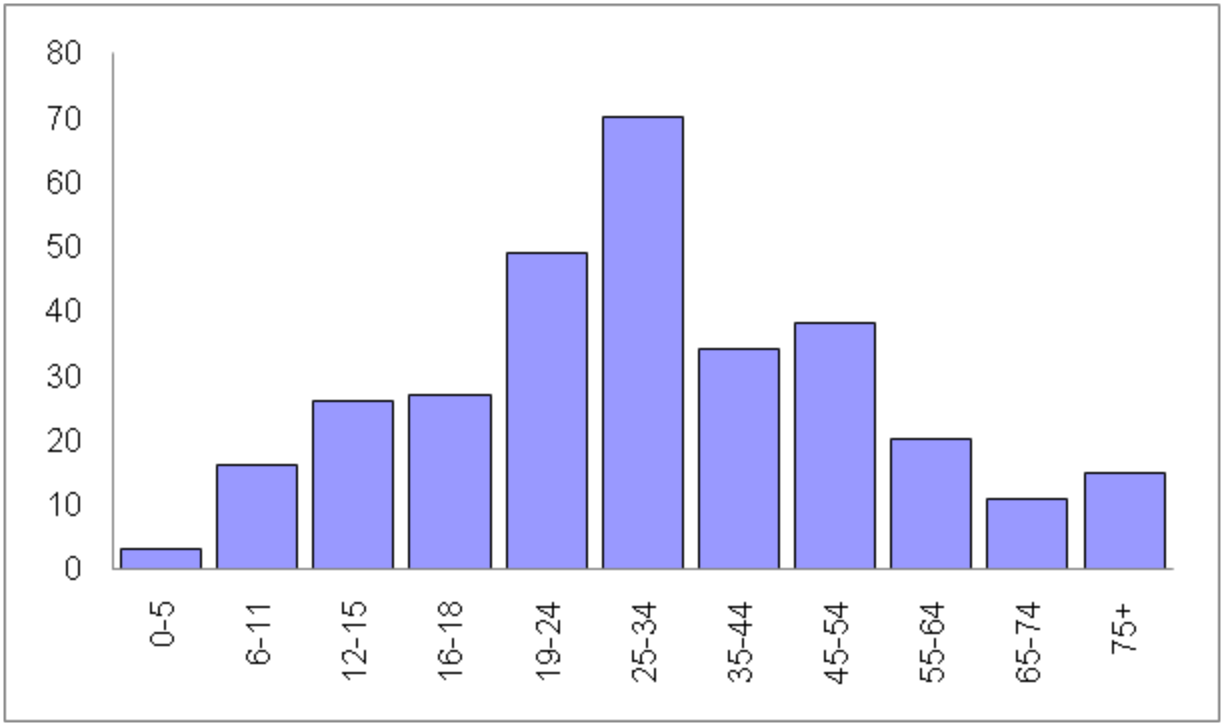


Figure 19: Age of Pedestrian Fatalities and Injuries

Figure 19 shows a total of 37.5% (119) of pedestrians involved in collisions were between the ages of 19 and 34. Children 18 and younger made up 22.7% (72) of pedestrians involved in collisions while those aged 65 and older constituted 8.2% (26) of overall pedestrian fatalities and injuries.

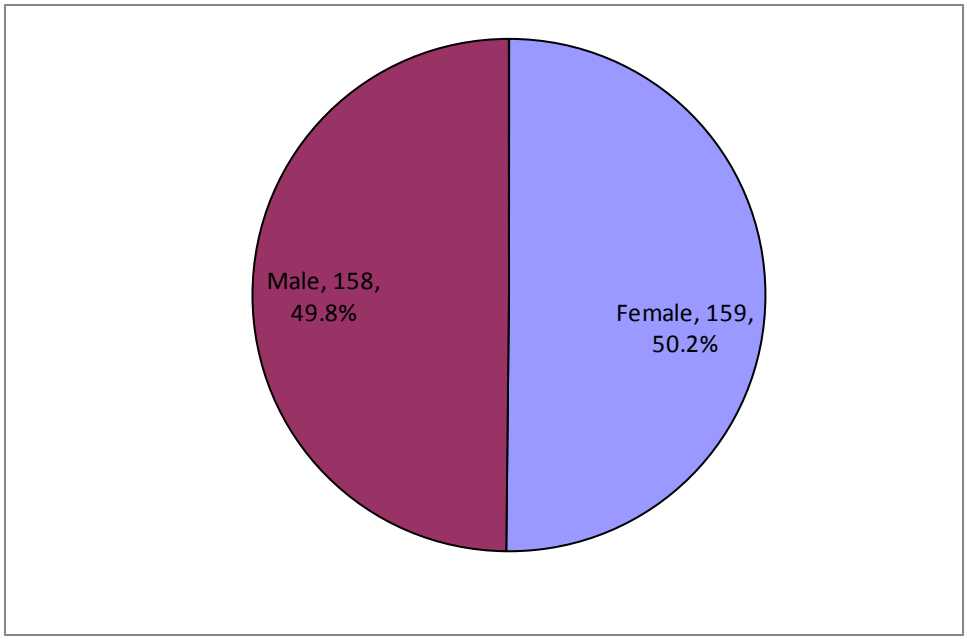


Figure 20: Gender of Pedestrian Fatalities and Injuries

Male pedestrians have a similar likelihood of being injured or killed compared with females, shown as Figure 20 (49.8% vs. 50.2%). Of the pedestrian fatalities, 4 were males and 2 were females.

Section 9.2: Cyclist Collisions

In 2013 there were 177 collisions involving cyclists, which resulted in 1 fatality and 176 injuries.

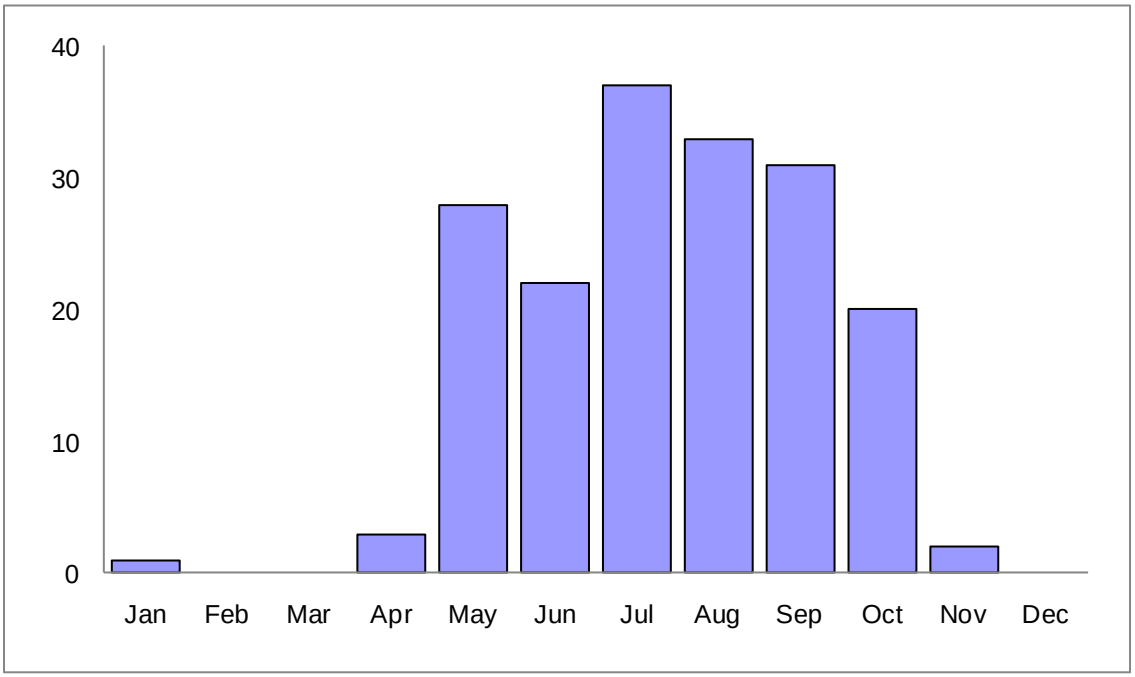


Figure 21: Cyclist Collisions by Month

As illustrated in Figure 21, most cyclist collisions in 2013 occurred in the spring, summer, and fall months when more cyclists are on the road. The number of collisions peaked at 37 in July, compared to zero collisions in February, March and December.

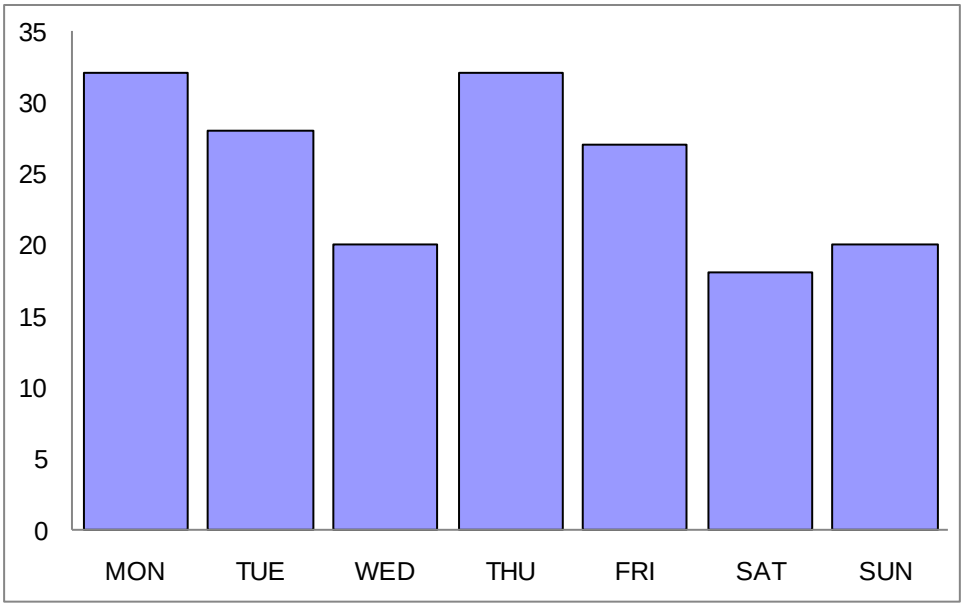


Figure 22: Cyclist Collisions by Day of Week

Figure 22 indicates cyclist collisions were more likely to occur on Mondays (18.1%, 32 collisions) and Thursdays (18.1%, 32).

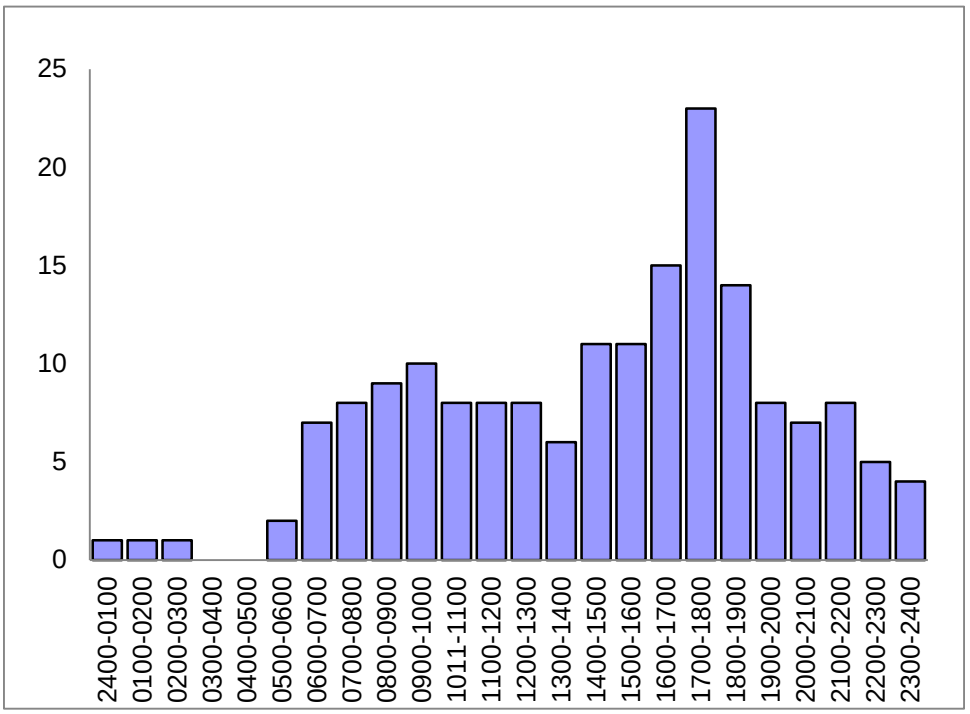


Figure 23: Cyclist Collisions by Hour of Day

Figure 23 shows more cyclist collisions occurred between 5:00 – 6:00 PM (13.0%, 23) and 4:00 – 5:00 PM (8.5%, 15 collisions), reflecting afternoon peak traffic hours.

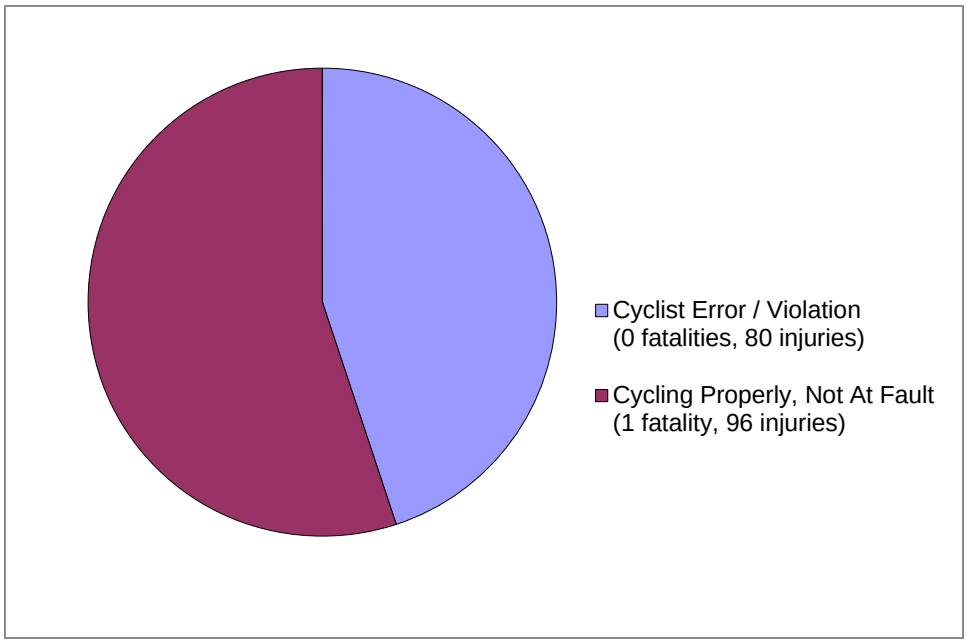


Figure 24: Action of Cyclists Involved in Collisions

Of the 177 cyclists involved in collisions, as shown in Figure 24, 55.1% (97) were deemed to be not at fault in the collision. Cyclists who were deemed to have committed errors or violations made up 44.9% (79) of collisions. In the one fatal collision, which occurred at an intersection, the cyclist was deemed not at fault.

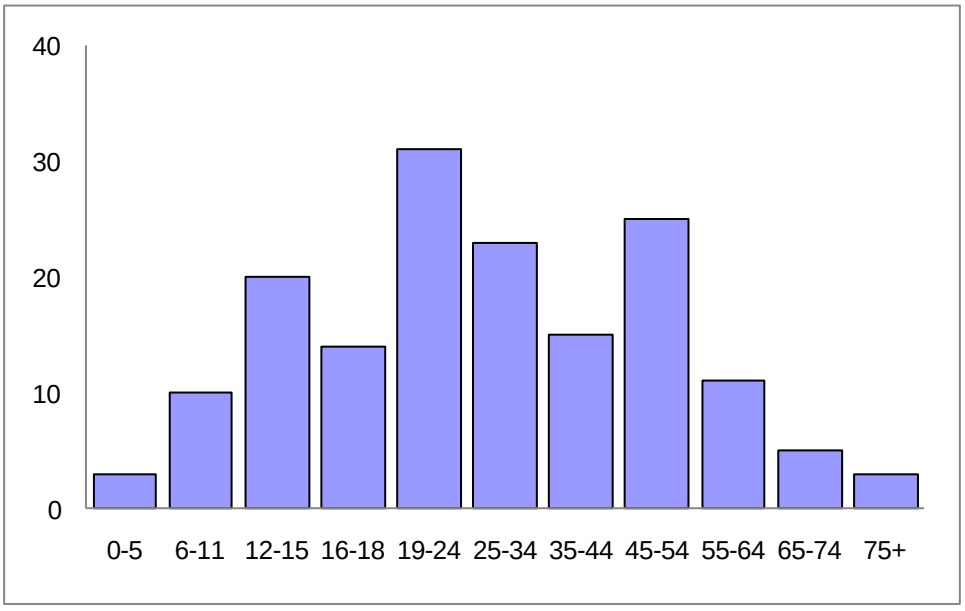


Figure 25: Age of Cyclist Fatalities and Injuries

A total of 26.6% (47) of cyclists involved in collisions were 18 or younger, while the 19-24 year old age group was involved in 17.5% (31) of collisions. The one fatal collision involved a cyclist in the 55-64 age group.

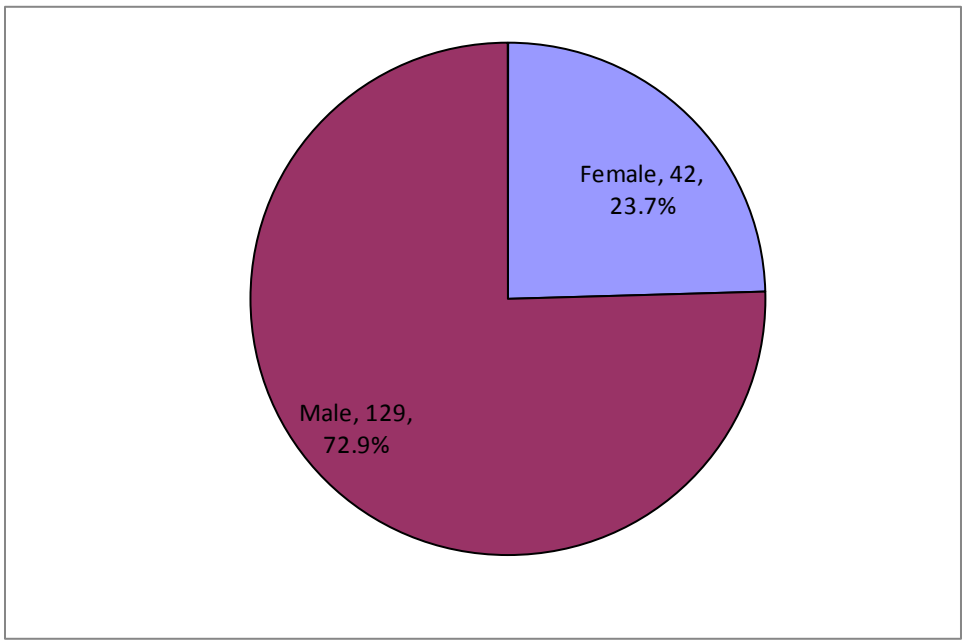


Figure 26: Gender of Cyclist Fatalities and Injuries

Figure 26 shows that males are over-represented in cyclist collisions where the cyclist is injured or killed (male: 129 (72.9%) vs. female: 42 (23.7%)).

Section 9.3: Motorcyclist Collisions

In 2013 there were 160 collisions involving motorcycles[7], resulting in 2 fatalities and 119 injuries. The following information relates to the 118 collisions in which motorcyclists were injured or killed.

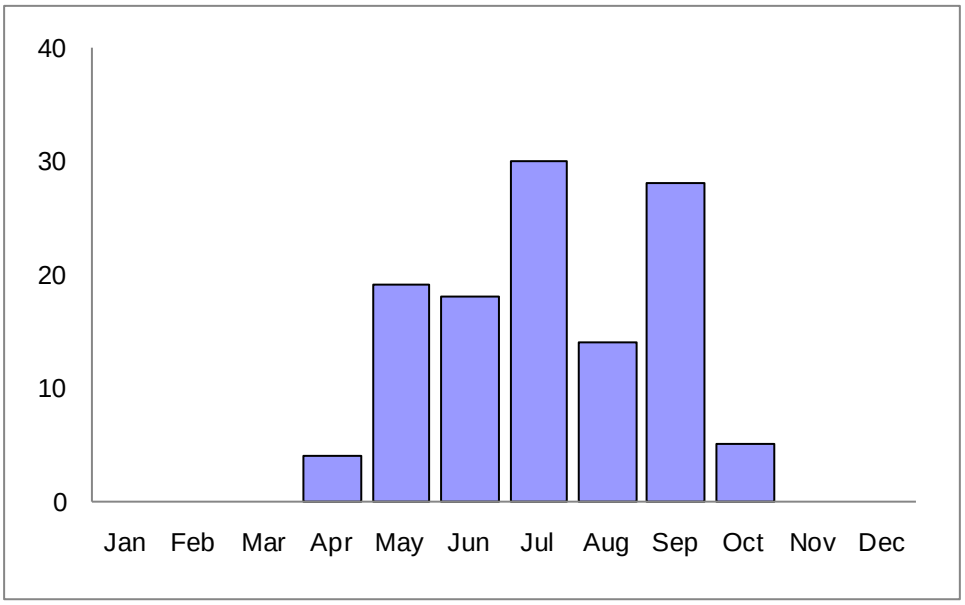


Figure 27: Motorcyclist Fatal and Injury Collisions by Month

Figure 27 reveals that there were no motorcyclist collisions resulting in a fatality or injury from January to March or from November to December. The most common month for fatal or injury collisions was July (25%, 30 collisions).

[7] The figure of 160 collisions includes 9 collisions where the motorcycle was struck while legally parked and unattended.

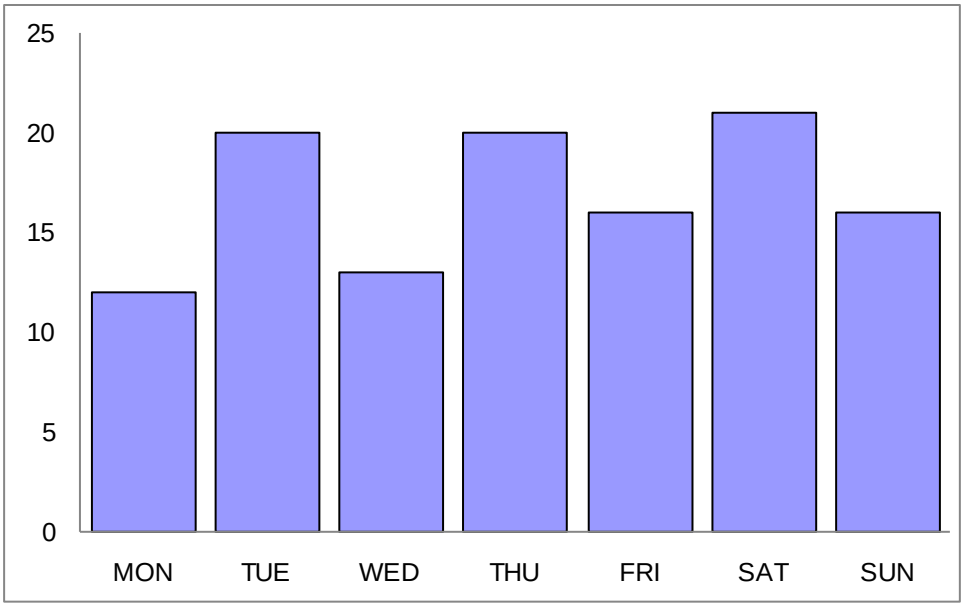


Figure 28: Motorcyclist Fatal and Injury Collisions by Day of Week

Figure 28 shows that a higher number of motorcyclist fatal & injury collisions occurred on Saturdays (17.8%, 21), followed by Tuesdays (16.9%, 20) and Thursdays (16.9%, 20).

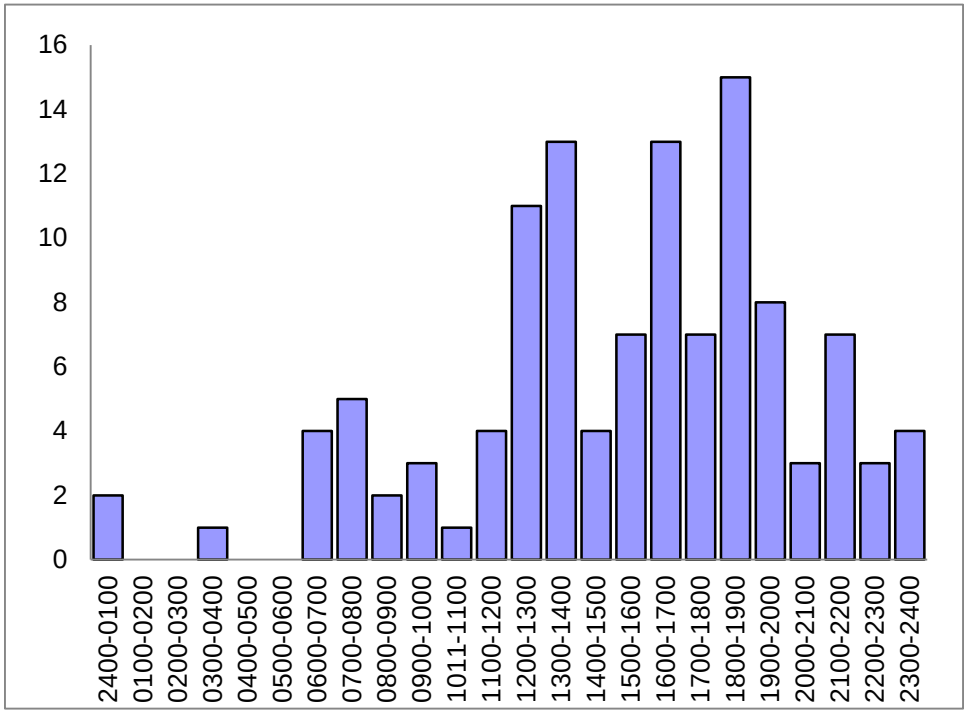


Figure 29: Motorcyclist Fatal and Injury Collisions by Hour of Day

Figure 29 further shows that more motorcyclist fatal and injury collisions occurred between 6:00 – 7:00 PM (12.8%, 15).

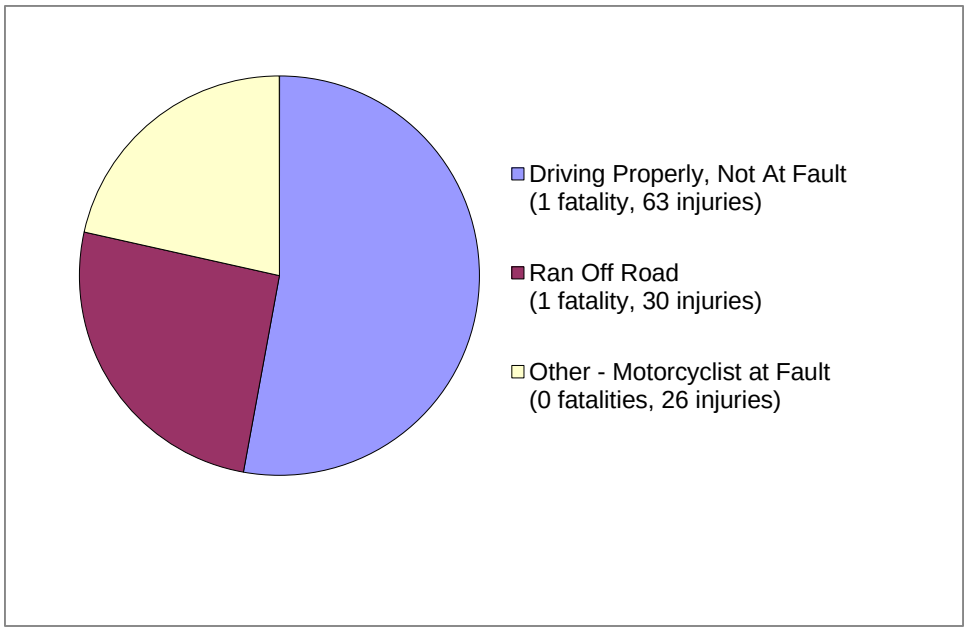


Figure 30: Action of Motorcyclist Fatalities and Injuries in Collisions

Figure 30 reveals motorcyclists who were driving properly and deemed not at fault made up 52.9% (64) of motorcyclist fatalities and injuries. The remaining 47.1% (57) of fatalities and injuries occurred in collisions where the motorcyclist was deemed to be at fault. Among these at-fault collisions, the most common collision cause was ran off road, which was the reported cause for 25.6% (31) of all motorcyclist fatalities and injuries.

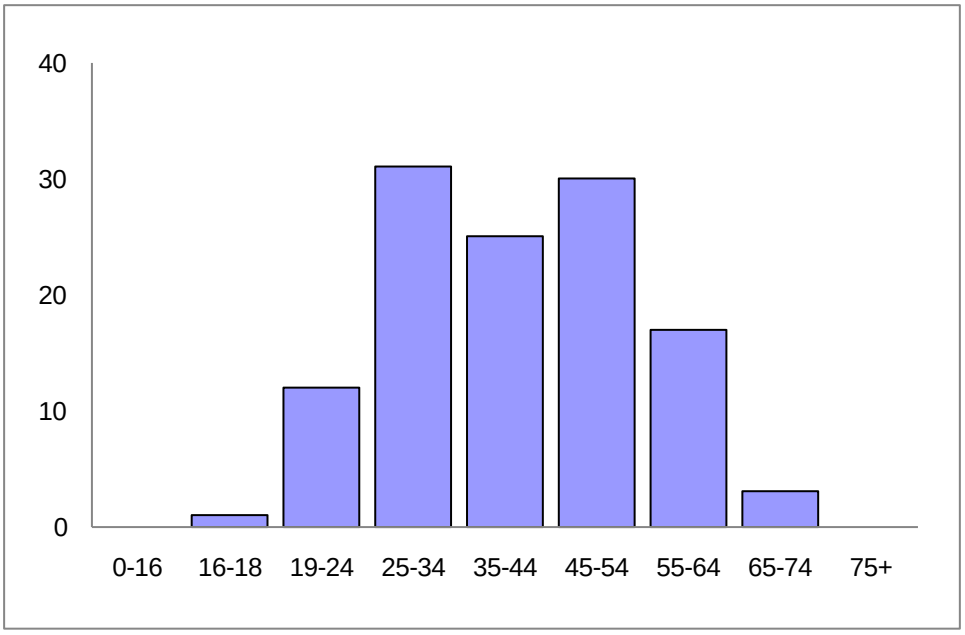


Figure 31: Age of Motorcyclist Fatalities and Injuries

Figure 31 reveals that riders aged 25-34 made up 25.6% (31) of all motorcyclist fatalities and injuries in 2013, followed by riders in the 45-54 age group (24.8%, 30). The two motorcyclist fatalities in 2013 were between the ages of 19 and 34.

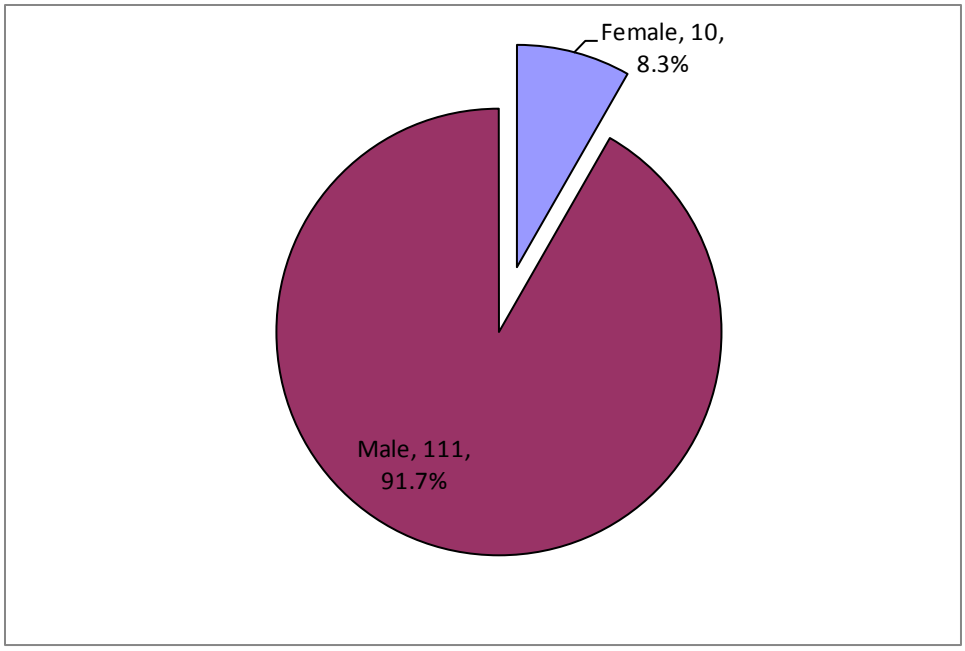
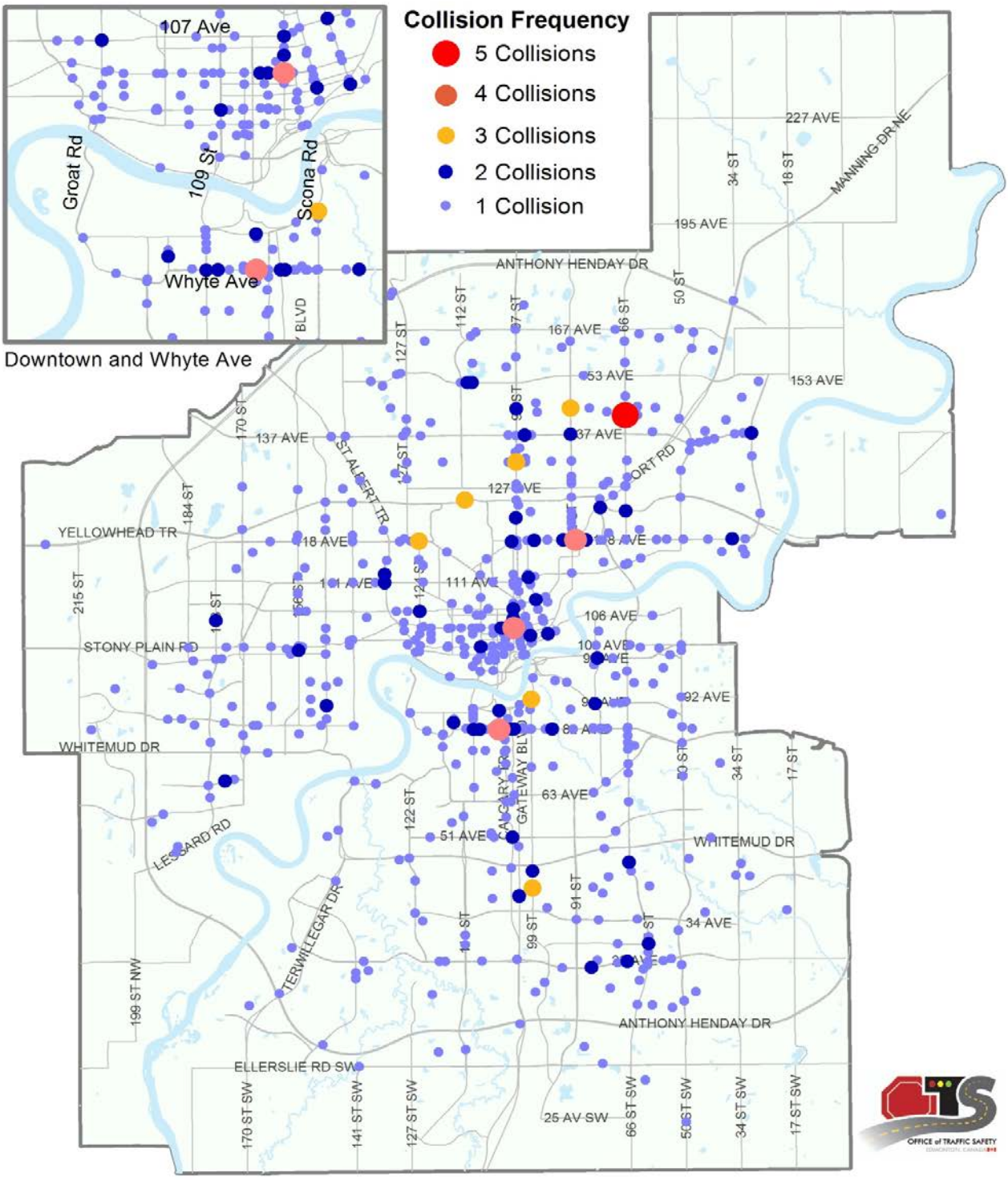


Figure 32: Gender of Motorcyclist Fatalities and Injuries

As is clearly indicated by Figure 32, similar to cyclists, males are over-represented in motorcyclist fatalities and injuries (male: 111 (91.7%) vs. female: 10 (8.3%)).



Map 5: Vulnerable Road User (Pedestrian, Cyclist, Motorcyclist) Collision Locations

The highest collision location involving vulnerable road users was 144 Avenue and 66 Street; 5 collisions resulting in 1 major and 4 minor pedestrian injuries. In two of the minor injury collisions the cause was pedestrian error/violation.

Appendix 1: Glossary of Terms

The following terms are used throughout this report.

Collision	Police-reported collisions occurring on public roadways in the City of Edmonton which result in a minimum of $2,000 property damage or which result in fatality or injury. The collision must include at least one (1) motor vehicle. This report includes all collisions where data was received by the Office of Traffic Safety from the Edmonton Police Service as of February 26, 2014. Non-vehicular collisions and collisions on private roadways are not included in this report.
Injury	Injuries noted by police on the collision report form. Injuries are classified as minor (treated but not admitted to hospital – may include treatment at an emergency department) or major (result in admission to hospital).
Fatality	On-scene fatalities, as well as any fatalities occurring within 30 days of and which are related to the collision.
Automobile	Cars, pickup trucks, SUVs, and vans under 4,500 kg.
Truck	Tractor-trailers, trucks, and vans 4,500 kg and over.
Intersection	Defined as extending 10 m past the legally defined limits of the outer crosswalk lines of an intersecting roadway.
Midblock	A section of roadway between two intersections. Bridges are also included as midblock segments.
Bridge	One of the 10 vehicle bridges over the North Saskatchewan River: Beverly, Capilano, Dawson, Low Level, James MacDonald, Walterdale, High Level, Groat, Quesnell, and Anthony Henday.

Appendix 2: Glossary of Collision Causes

The collision causes used throughout this report are derived from the provincial Collision Report Form. The following table provides an explanation of each of these causes.

Collision Cause	Description
Followed Too Closely	A vehicle rear-ends another vehicle due to a number of possible reasons, such as driver inattention, failure to maintain a safe distance between the vehicle and the one ahead, or failing to account for road conditions.
Struck Parked Vehicle	A moving vehicle collides with a legally parked or unattended vehicle.
Ran Off Road	The vehicle leaves the roadway.
Changing Lanes Improperly	A vehicle is involved in a collision while changing lanes.
Left Turn Across Path	A driver makes a left turn and is struck by an oncoming vehicle with the right of way.
Failed to Observe Traffic Signal	At a signalized intersection, the driver fails to obey a signal and collides with another vehicle with the right of way.
Stop Sign Violation	A driver fails to stop at a stop sign, or fails to proceed safely after stopping, and collides with a vehicle with the right of way.
Backed Unsafely	A driver strikes another vehicle while backing.
Failed to Yield ROW[8] (No Control)	A driver fails to yield the right of way at an uncontrolled intersection, striking or being struck by another vehicle.
Improper Turn	A vehicle either turns from or to an incorrect lane (for example, turning from the inside lane to an outside lane) and causes a collision.
Left of Centre	A vehicle driving left of the centre line on a roadway collides with another vehicle.
Yield Sign Violation	A driver fails to stop at a yield sign and strikes a vehicle with the right of way.
Failed to Yield to Pedestrian	A vehicle fails to yield to a pedestrian who has the right of way.

[8] ROW – Right of Way

Collision Cause	Description
Animal Action	An animal on the roadway causes a collision with a vehicle.
Pedestrian Error / Violation	A pedestrian is involved in a collision after failing to cross at an intersection or marked crosswalk, or after crossing against a “don’t walk” sign.
Improper Passing	A driver causes a collision while attempting to pass another vehicle.
Failed to Yield to Cyclist	A vehicle fails to yield to a cyclist.
Cyclist Error / Violation	A cyclist commits an error or violation and is struck. (This code is typically used for cyclist actions such as entering the road improperly; collisions involving cyclists which can be classified as a vehicle-related cause are also used.)
Driverless Vehicle	A vehicle not being controlled by a driver causes a collision.
Signed Forced Turn Violation	A vehicle in a lane signed for specific turns disobeys the sign and causes a collision.
Improper Loading	An improperly-secured or unstable load causes a collision.
One Way Violation	A vehicle causes a collision by driving the wrong way down a one-way street.
Oversize Vehicle	A vehicle causes a collision after entering a roadway and exceeding posted height restriction.

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