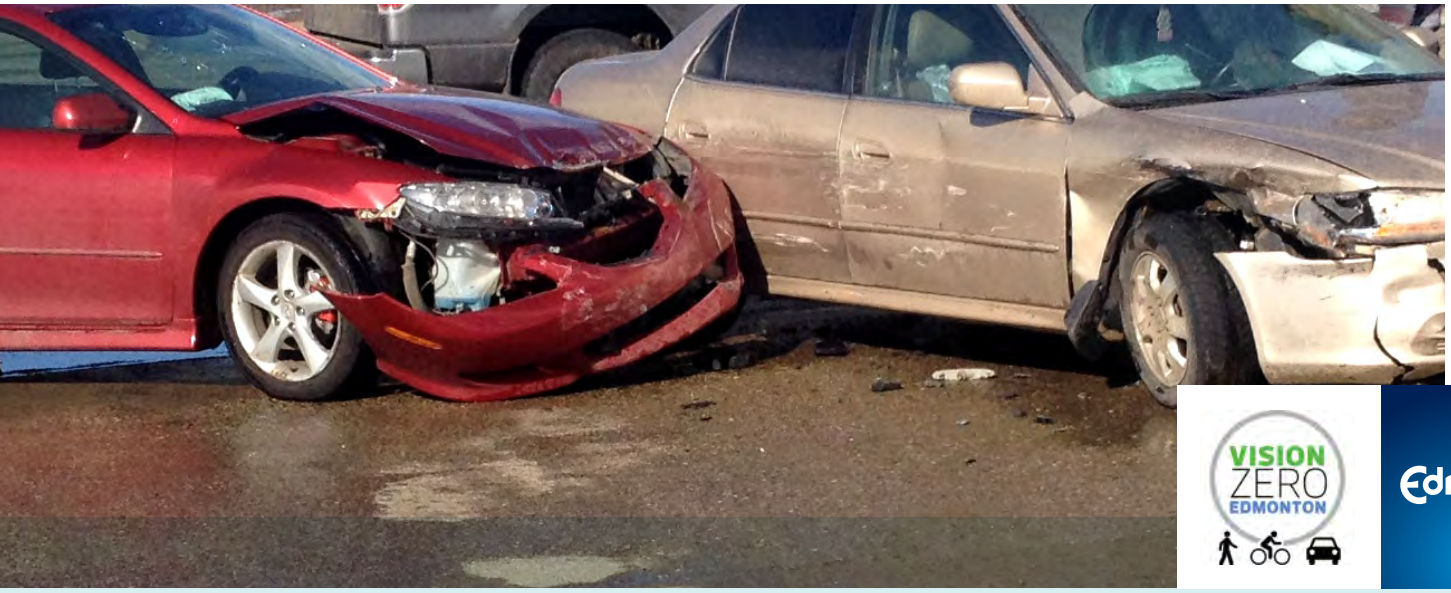
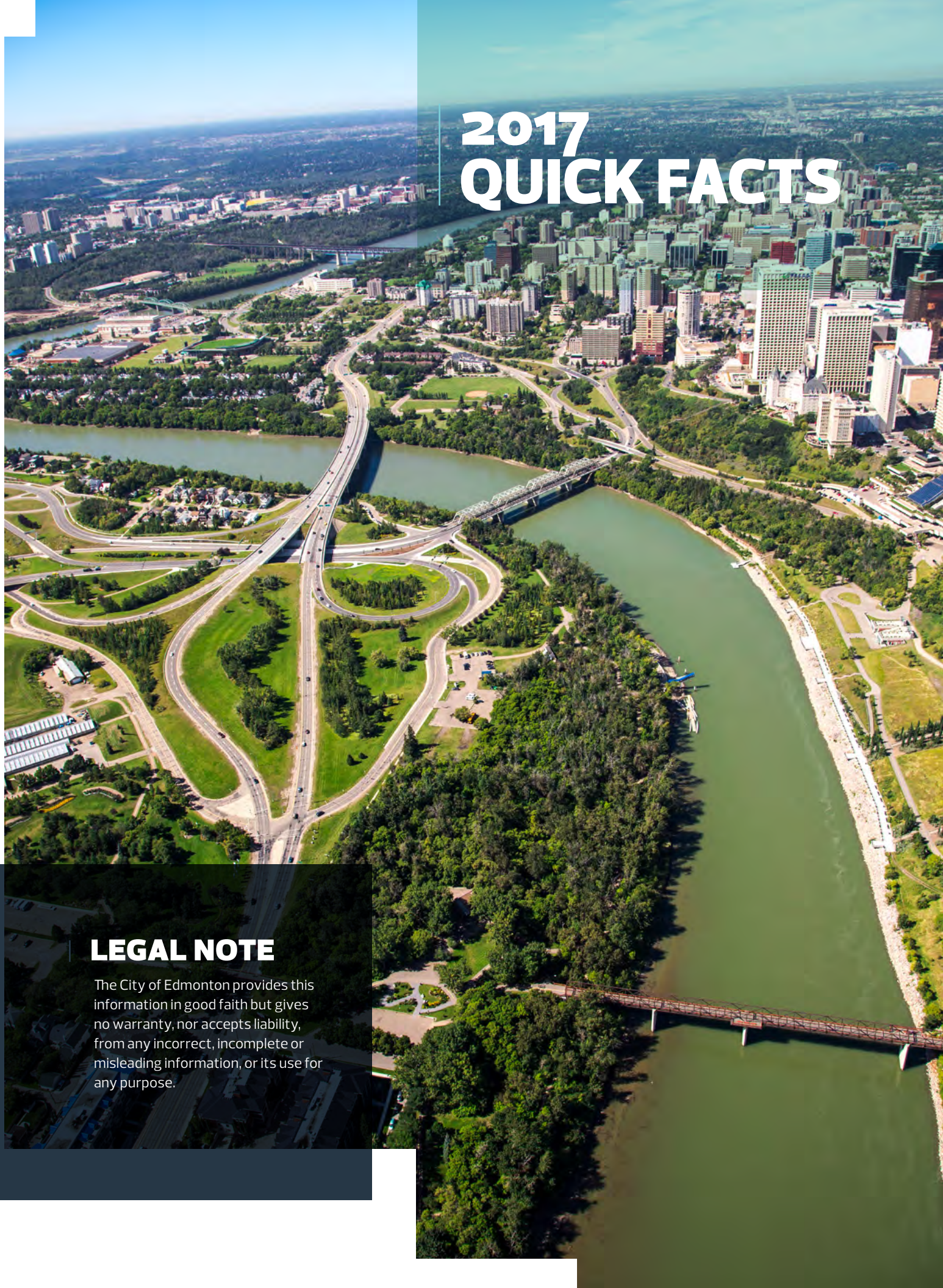


MOTOR VEHICLE COLLISIONS

2017



2017 QUICK FACTS

LEGAL NOTE

The City of Edmonton provides this information in good faith but gives no warranty, nor accepts liability, from any incorrect, incomplete or misleading information, or its use for any purpose.

STATISTICS	2016	2017	% CHANGE
Total Collisions	23,139	23,906	3.3
Fatal Collisions	21	26	23.8
Injury Collisions	2,656	2,710	2.0
Fatal and Injury Collisions	2,677	2,736	2.2
Property Damage Only (PDO) Collisions	20,462	21,170	3.5
Intersection Collisions	13,384	13,924	4.0
Number of Fatalities	22	27	22.7
Number of Major Injuries	325	341	4.9
Number of Minor Injuries	2,980	3,048	2.3
Number of Major and Minor Injuries	3,305	3,389	2.5
Number of Fatalities and Major Injuries	347	368	6.1
Pedestrian Collisions	292	270	-7.5
Number of Pedestrian Injuries	297	275	-7.4
Number of Pedestrian Fatalities	10	9	-10.0
Number of Pedestrian Fatalities and Injuries	307	284	-7.5
Bicycle Collisions	171	143	-16.4
Number of Cyclist Injuries	145	120	-17.2
Number of Cyclist Fatalities	0	1	N/A
Number of Cyclist Fatalities and Injuries	145	121	-16.6
Motorcycle Collisions	191	154	-19.4
Number of Motorcyclist Injuries	124	91	-26.6
Number of Motorcyclist Fatalities	3	4	33.3
Number of Motorcyclist Fatalities and Injuries	127	95	-25.2
Population	932,546	934,000	0.2
Private Passenger Vehicles	602,330	593,430	-1.5
Private Motorcycles	18,424	16,093	-12.7
Collisions per 1,000 Population	24.8	25.6	3.2
Intersection Collisions per 1,000 Population	14.4	14.9	3.9
Number of Injuries per 1,000 Population	3.5	3.6	2.4
Number of Fatalities and Injuries per 1,000 Population	3.6	3.7	2.5
Collisions per 1,000 Vehicles[1]	37.3	39.2	5.2
Intersection Collisions per 1,000 Vehicles[1]	21.6	22.8	6.0
Number of Fatalities and Injuries per 1,000 Vehicles[1]	5.4	5.6	4.6

1 Per 1,000 vehicles refers to private passenger vehicles and private motorcycles.

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2017 EDMONTON SUMMARY

- There were 23,906 collisions in Edmonton, an increase of 3.3% from 2016.
- Collisions per capita increased 3.2% from 2016 levels (24.8), to 25.6 collisions per 1,000 population.
- In 2017, there were 2,736 collisions that resulted in injuries or fatalities, an increase of 2.2% from 2016. These injury and fatal collisions resulted in 3,048 minor injuries, 341 major injuries, and 27 fatalities.[2]
- The 27 fatalities in 2017 included 13 vehicle occupants (9 drivers and 4 passengers) and 14 vulnerable road users (9 pedestrians, 4 motorcyclists, and 1 cyclist).
- Collisions at intersections made up 58.2% (13,924) of the collision total and resulted in 70.6% (2,393) of total injuries and 48.1% (13) of the fatalities.
- Compared to 2016, the number of intersection collisions per 1,000 population increased by 3.9%.
- The most common collision causes in Edmonton were following too closely (37.3%, 8,914 collisions); struck parked vehicle (14.6%, 3,491); changing lanes improperly (10.2%, 2,447); ran off road (7.0%, 1,685); and left turn across path (6.8%, 1,637).
- The collision causes most likely to result in injury or fatality were following too closely (42.4%, 1,159 collisions); left turn across path (12.1%, 331); failed to observe traffic signal (7.3%, 201); and failed to yield to pedestrian (6.8%, 185).
- There were 270 pedestrian-involved collisions in 2017 resulting in 275 pedestrian injuries (a decrease of 7.4% over 2016), and there were 9 fatalities in 2017 compared to 10 fatalities in 2016. Of the pedestrian collisions, 177 injuries and 5 fatalities occurred when pedestrians were crossing with

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

the right of way, and 56 injuries and 4 fatalities occurred when pedestrians were crossing without the right of way (jaywalking).

- The number of cyclists injured or killed decreased 16.6% from 2016, with 143 cyclist collisions resulting in 120 injuries and 1 fatality. The cyclist was deemed not at fault in 54.5% (66) of these injury and fatal collisions.
- The number of collisions involving motorcyclists in 2017 decreased 19.4% to 154 collisions compared to 191 collisions in 2016. The number of motorcyclists injured decreased by 26.6% to 91. There were 4 motorcyclist fatalities in 2017, an increase from 3 in 2016.
- Ranked by the total number of collisions, the top 3 high-collision intersections in 2017 were: 107 Avenue NW and 142 Street NW (89 collisions, 3 injuries); Yellowhead Trail NW and 149 Street NW (81 collisions, 9 injuries); and 23 Avenue NW and 91 Street NW (68 collisions, 10 injuries).
- The top 3 high-collision midblock segments were: High Level Bridge (30 collisions, 2 injuries); Calgary Trail from 39A Avenue to 34 Avenue (24 collisions, 1 injury); and Whitemud Drive from north of Quesnell Bridge to 149 Street NW (20 collisions, 3 injuries).

23,906
COLLISIONS

+3.3%

8,914
MOST COMMON CAUSE OF COLLISION: FOLLOWING TOO CLOSELY (37.3%)

SECTION 1:
INTRODUCTION

The City of Edmonton's Traffic Safety Section maintains the Motor Vehicle Collision Information System (MVCIS), a database of motor vehicle collisions that occur on public roads in 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 at the scene of the collision or 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 (serious) injury or fatality.

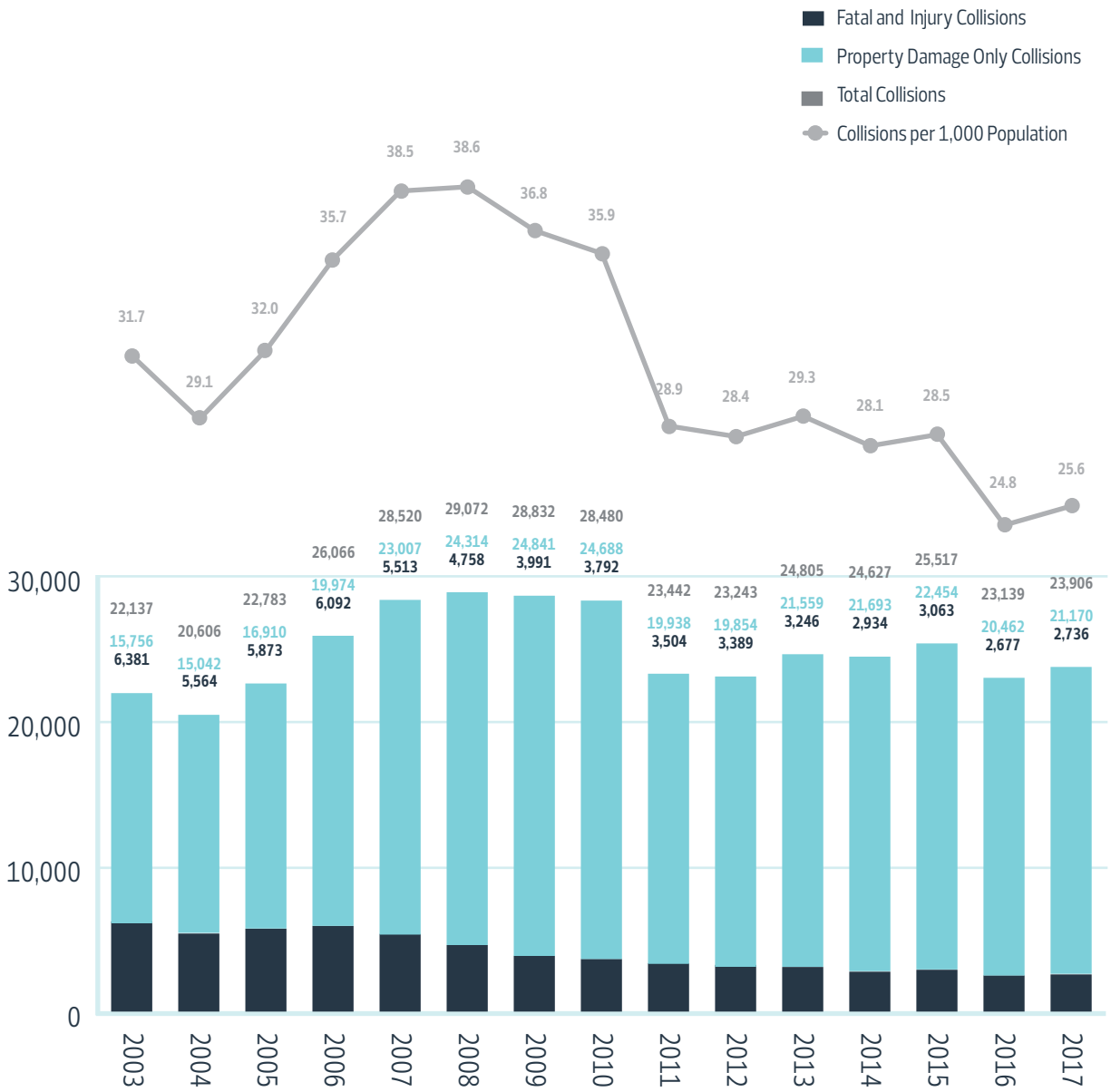
On January 1, 2011, Alberta Transportation implemented a change in its regulations that affected the requirement to report collisions; specifically, the estimated damage amount beyond which a collision is required to be reported to police increased from $1,000 to $2,000.

This report presents an overview of collisions that occurred in Edmonton from January 1 to December 31, 2017, based on causes, temporal information, high collision locations, and injury severity. The report also provides information on collisions involving pedestrians, cyclists, and motorcyclists.

“APPROXIMATELY 1.25 MILLION PEOPLE ARE KILLED ON THE WORLD’S ROADS EVERY YEAR, WITH BETWEEN 20 AND 50 MILLION PEOPLE SERIOUSLY INJURED.”

—World Health Organization

FIGURE 1:
Historical Collision Statistics from 2003 to 2017



2017 POPULATION

934,000

+0.2%

2017 PRIVATE PASSENGER VEHICLES

593,430

-1.5%

2017 PRIVATE MOTORCYCLES

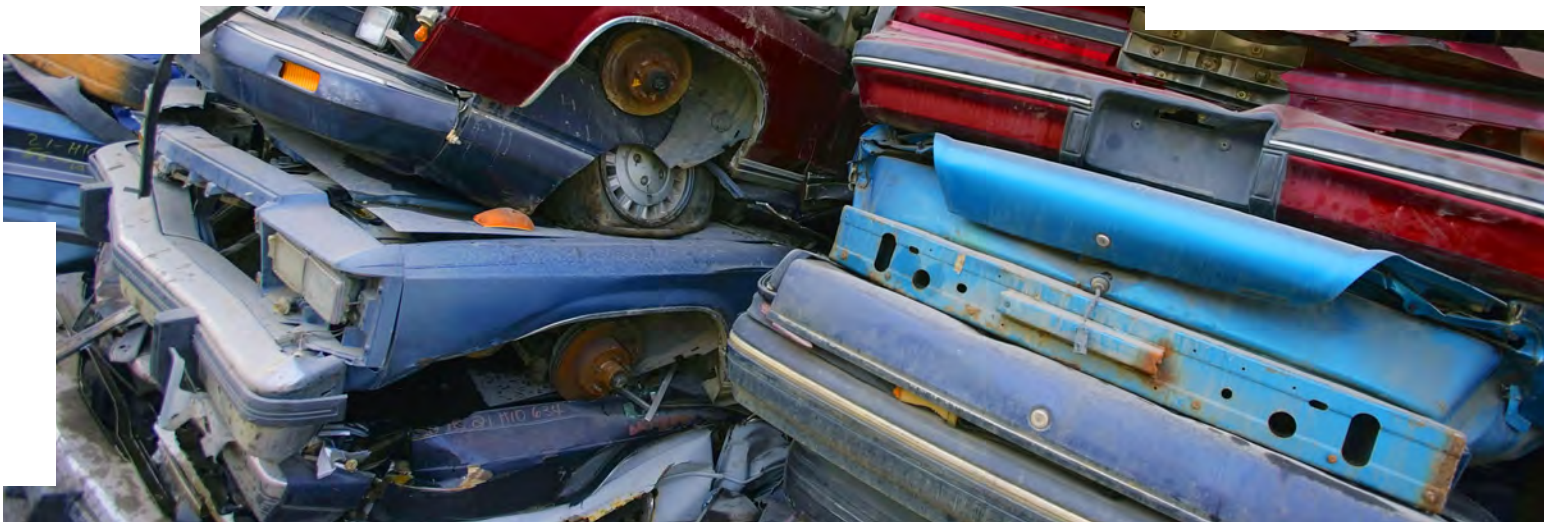
16,093

-12.7%

= 10,000

TABLE 1:
Summary of Selected Collision Statistics from 2003 to 2017

	2003	2004	2005	2006	2007	2008	2009	2010
Total Collisions	22,137	20,606	22,783	26,066	28,520	29,072	28,832	28,480
Injury Collisions	6,352	5,530	5,847	6,067	5,482	4,730	3,962	3,768
Injuries	9,083	7,686	8,006	8,221	7,445	6,270	5,203	4,910
Fatal Collisions	29	34	26	25	31	28	29	24
Fatalities	32	37	27	25	32	29	32	27
Pedestrian Collisions	296	296	333	347	366	395	347	306
Pedestrians Injured	308	308	346	364	372	395	357	326
Pedestrians Killed	6	10	4	0	13	9	9	4
Bicycle Collisions	180	196	221	199	184	235	220	182
Cyclists Injured	181	195	221	198	181	234	218	182
Cyclists Killed	0	2	1	0	4	2	2	2
Motorcycle Collisions	125	161	177	177	213	255	201	211
Motorcyclists Injured	110	137	162	144	160	186	152	135
Motorcyclists Killed	1	9	2	1	4	7	2	4
Population	697,657	707,271	712,391	730,372	741,392	752,412	782,439	793,000
Private Passenger Vehicles	380,475	381,456	389,471	407,732	431,425	452,101	470,602	479,194
Private Motorcycles	7,070	8,278	8,586	9,236	10,152	12,686	14,378	15,605
Collisions/1000 Population	31.7	29.1	32.0	35.7	38.5	38.6	36.8	35.9
Intersection Collisions/1000 Population	16.0	15.0	15.4	18.2	19.2	18.2	16.8	17.0
Injuries/1000 Population	13.0	10.9	11.2	11.3	10.0	8.3	6.6	6.2
Collisions/1000 Vehicles	57.1	52.9	57.2	62.5	64.6	62.5	59.4	57.6



2011	2012	2013	2014	2015	2016	2017	% CHANGE
23,442	23,243	24,805	24,627	25,517	23,139	23,906	3.3%
3,482	3,363	3,223	2,912	3,033	2,656	2,710	2.0%
4,446	4,338	4,123	3,660	3,805	3,305	3,389	2.5%
22	26	23	22	30	21	26	23.8%
22	27	23	23	32	22	27	22.7%
316	296	298	319	316	292	270	-7.5%
324	302	311	336	317	297	275	-7.4%
8	8	6	9	12	10	9	-10.0%
190	177	177	177	178	171	143	-16.4%
188	176	176	177	158	145	120	-17.2%
1	1	1	1	0	0	1	N/A
199	157	172	163	208	191	154	-19.4%
139	126	131	114	121	124	91	-26.6%
4	4	2	0	6	3	4	33.3%
812,201	817,498	847,712	877,926	895,000	932,546	934,000	0.2%
491,789	509,655	536,737	563,829	591,595	602,330	593,430	-1.5%
14,087	14,945	14,311	16,003	17,415	18,424	16,093	-12.7%
28.9	28.4	29.3	28.1	28.5	24.8	25.6	3.2%
15.28	15.5	16.1	15.4	16.2	14.4	14.9	3.8%
5.5	5.3	4.9	4.2	4.3	3.5	3.6	1.6%
46.3	44.3	45.0	42.5	41.9	37.3	39.2	5.2%

% change 2016 – 2017

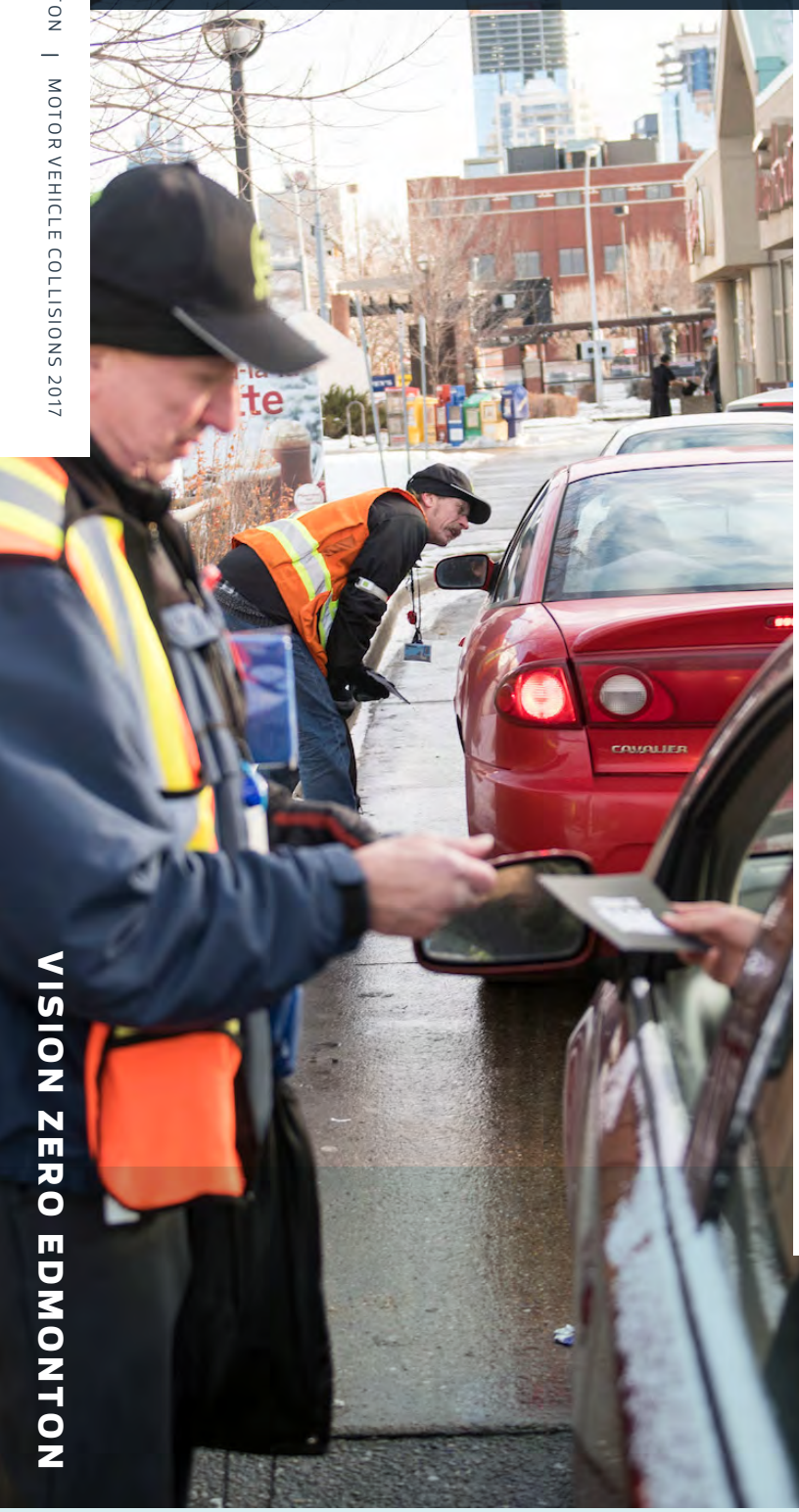
The population figure for 2017 is based on an estimate provided by the Chief Economist for the City of Edmonton. Population figures for previous years were primarily obtained from either Census of Canada or City of Edmonton Municipal Census. [See "Population History" of Edmonton Municipal Census (http://www.edmonton.ca/city_government/facts_figures/population-history.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.

23,906
COLLISIONS

Gathered together, the drivers involved in collisions in 2017 would exceed the maximum seating capacity of Rogers Place by more than 3,000.

SECTION 2:

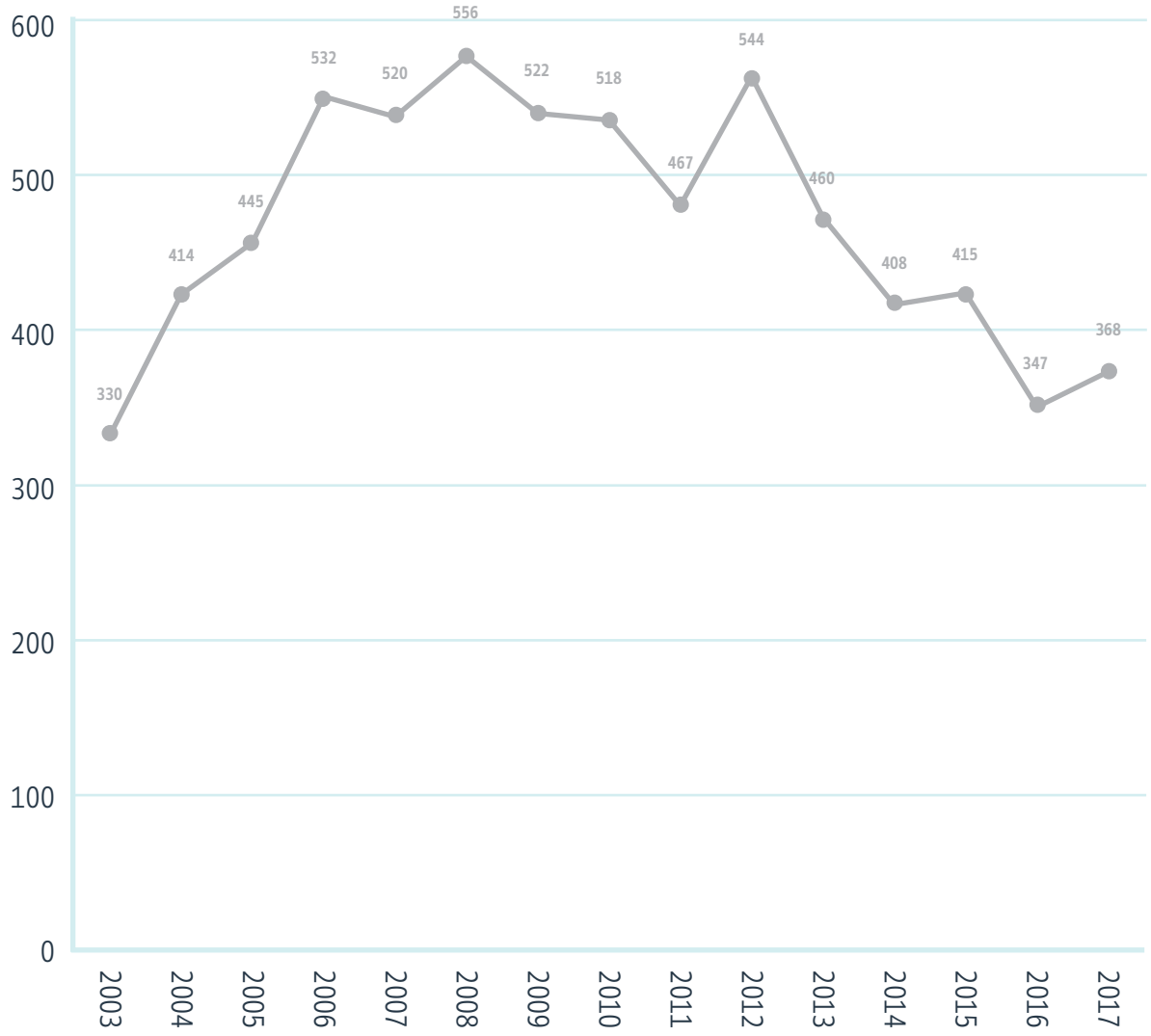
VISION ZERO EDMONTON



Vision Zero is the long-term goal to reach zero traffic-related serious (major) injuries and fatalities. The Vision Zero approach to road safety can be summarized in one sentence: no loss of life is acceptable. The City of Edmonton moves towards this goal by using a Safe Systems approach that includes engineering, education, enforcement, evaluation, and engagement.

Humans have limited tolerance to violent forces so we are physically vulnerable when involved in motor vehicle collisions. That's why everyone who uses our roadways has a shared responsibility for road safety. This accountability is also shared by those who design, maintain and operate the road system. Everyone has a part in reaching our goal. By obeying the traffic rules and thinking about the safety of others, you prevent tragic deaths and serious injuries. Figure 2 shows the number of fatalities and major (serious) injuries from 2003-2017.

FIGURE 2:
Historical Collision Fatalities and Major Injuries from 2003 to 2017



"ROAD SAFETY WORK CANNOT BE DONE IN ISOLATION. COMMUNITIES ARE INCREASINGLY SEEKING IMPROVEMENTS IN LIFESTYLE, SUSTAINABILITY, ENVIRONMENT AND CONNECTIVITY."

—Zero Road Deaths and Serious Injuries, OECD

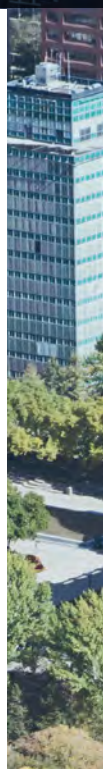
SECTION 3: OVERVIEW

The total number of reported collisions increased 3.3% between 2016 and 2017, and collisions resulting in injury and the number of people injured increased 2.0% and 2.5% respectively. Since the establishment of the City of Edmonton's Traffic Safety Section in late October 2006, overall there has been a 55.3% decrease in injury collisions from 2006 (6,067) to 2017 (2,710) and a 58.8% decrease in the number of people injured from 2006 (8,221) to 2017 (3,389).

Collisions resulting in fatalities increased from 21 in 2016 to 26 in 2017, with the number of fatalities increasing from 22 to 27. Major (serious) injuries increased by 4.9% in 2017 (341) from 2016 (325).

Injuries involving vulnerable road users – pedestrians, cyclists, and motorcyclists – all decreased in 2017 compared to 2016 (pedestrians 7.4%, 275 injuries; cyclists 17.2%, 120 injuries; and motorcyclists 26.6%, 91 injuries). Overall, collisions involving motorcyclists decreased 19.4% (154). There were 4 motorcycle fatalities in 2017 compared to 3 in 2016. Pedestrian fatalities decreased 10.0% from 2016 (10) to 2017 (9). Cyclist collisions decreased from 171 in 2016 to 143 in 2017 (16.4%) with 1 cyclist fatality compared to no fatalities in 2016.

Total collisions per 1,000 population increased by 3.2% from 2016 to 2017, and fatalities and injuries per 1,000 population increased 2.5%.

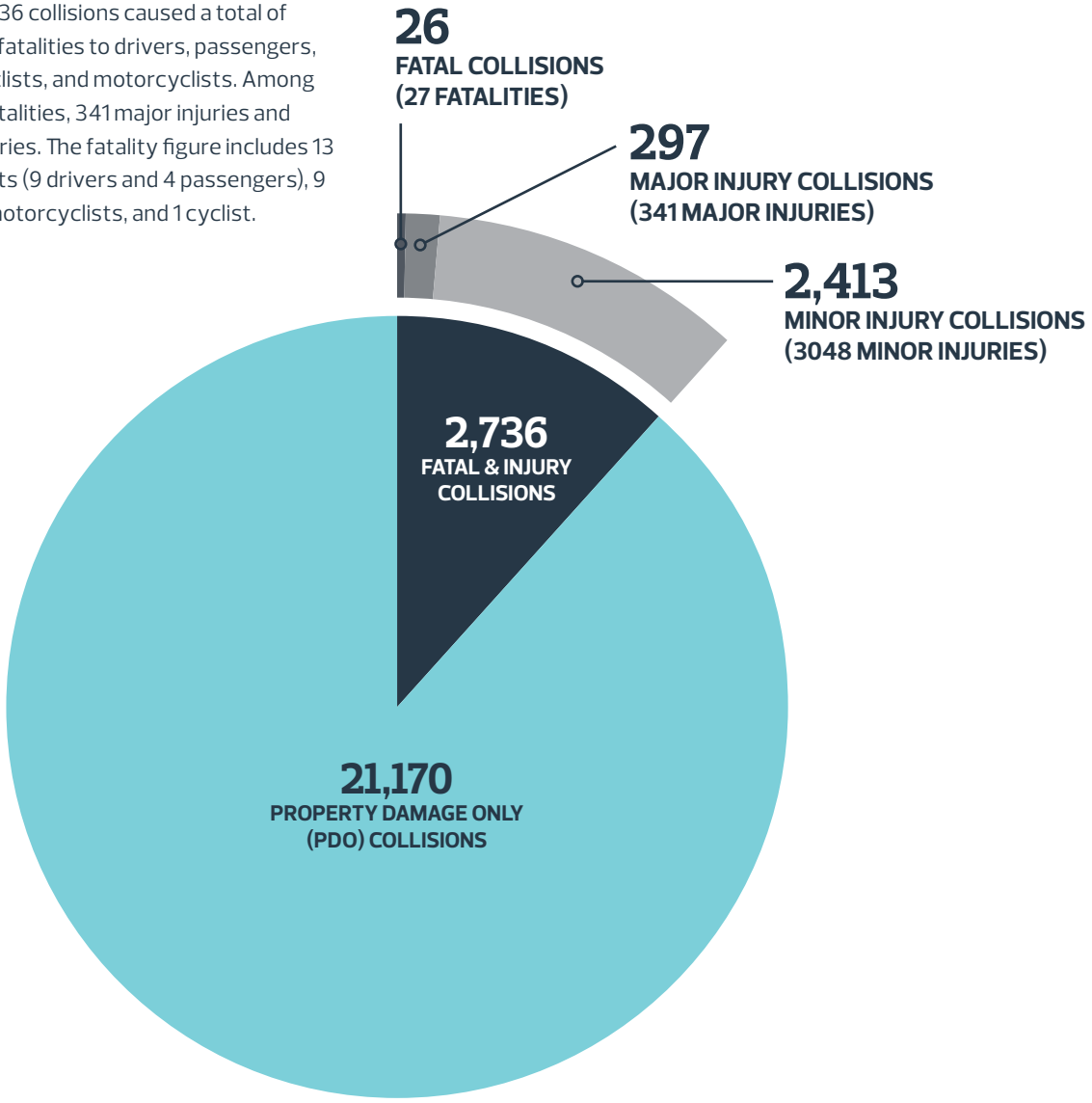


“A SAFE SYSTEM IS BASED ON A MULTIDIMENSIONAL APPROACH THAT INVESTIGATES AND IMPROVES THE ROAD TRAFFIC SYSTEM AS A WHOLE.”

—Zero Road Deaths and Serious Injuries, OECD

FIGURE 3:
Collision Severity Distribution

As shown in Figure 3, included in the 23,906 reported motor vehicle collisions on Edmonton streets in 2017 are 2,736 (11.4%) collisions that resulted in minor or major (serious) injury or death. These 2,736 collisions caused a total of 3,416 injuries or fatalities to drivers, passengers, pedestrians, cyclists, and motorcyclists. Among them were 27 fatalities, 341 major injuries and 3,048 minor injuries. The fatality figure includes 13 vehicle occupants (9 drivers and 4 passengers), 9 pedestrians, 4 motorcyclists, and 1 cyclist.



23,906 COLLISIONS

+3.3%

21,170
PROPERTY DAMAGE ONLY

+3.5%

3,048
MINOR INJURIES

+2.3%

341
MAJOR INJURIES

+4.9%

27
FATALITIES

+22.7%

FATALITIES

9 DRIVERS

4 PASSENGERS

9 PEDESTRIANS

4 MOTORCYCLISTS

1 CYCLIST

SECTION 4:
COLLISION CAUSES

The most common collision cause reported was following too closely, which was indicated in 37.3% (8,914) of all collisions. Other common collision causes included: struck parked vehicle (14.6%, 3,491); changing lanes improperly (10.2%, 2,447); ran off road (7.0%, 1,685); and left turn across path (6.8%, 1,637).[3]

The collision causes that accounted for the highest number of injuries or fatalities were following too closely (42.4%, 1,159); left turn across path (12.1%, 331); and failed to observe traffic signal (7.3%, 201). Others were: failed to yield to pedestrian (6.8%, 185); ran off road (6.2%, 170); and stop sign violation (5.6%, 152).

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

“THE TWO MAIN QUESTIONS CRASH STUDIES SHOULD ANSWER ARE (A) WHY A CRASH OCCURRED, AND (B) IF THERE WAS A SERIOUS INJURY, WHY THE CONSEQUENCES OF THE CRASH WERE SO SEVERE.”

—Zero Road Deaths and Serious Injuries, OECD

FIGURE 4:
Collision Causes at Intersections and Midblock Segments

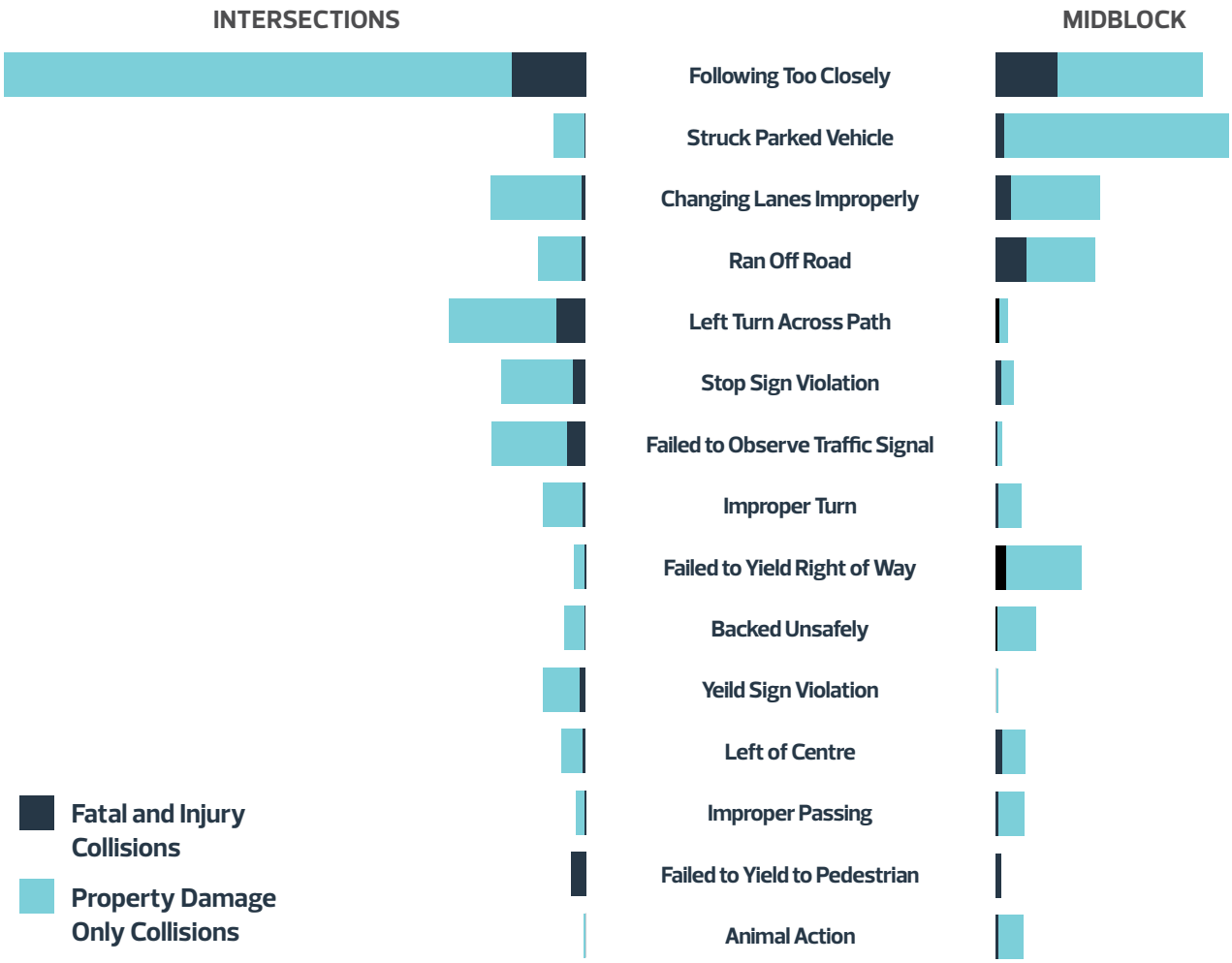


Figure 4 shows the considerable differences in the profile of collision causes at intersections versus midblock segments.[4] At intersections, following too closely was the reported cause in 46.6% (6,487) of all 13,924 intersection collisions; by comparison, following too closely was the reported cause in only 23.9% (1,884) of all 7,884 collisions along midblocks. Of the 1,685 ran off road collisions in 2017, only 31.2% (526) occurred at intersections, versus 53.2% (896) along midblocks. On the other hand, of the 1,637 left turn across path collisions, 92.6% (1,516) occurred at intersections, versus 6.8% (111) along midblock segments with vehicles turning onto private property or into alleys.

Ranked by the severity of outcome, there were three causes where 100% of collisions resulted in fatality or injury (i.e., no PDO collisions for these three causes). They were failed to yield to pedestrian (185), pedestrian error / violation (73), and failed to yield to cyclist (31).

4 The remaining 2,098 collisions occurred either on service roads, in alleys, or did not specifically report a location.

FIGURE 5:
Collision Severity by Selected Causes

Figure 5 shows other causes ranked by the severity of outcome (severity causes with 100% injury/fatality were not included in this Figure). Proportionally, cyclist error/ violation resulted in the most fatal and injury collisions but the frequency was low (28 of 34). More significant are the causes with a high frequency and a high proportion of fatal and injury collisions. Arguably the most significant cause was left turn across path which had 20.2% of collisions result in a fatality or injury (331 of 1,637).

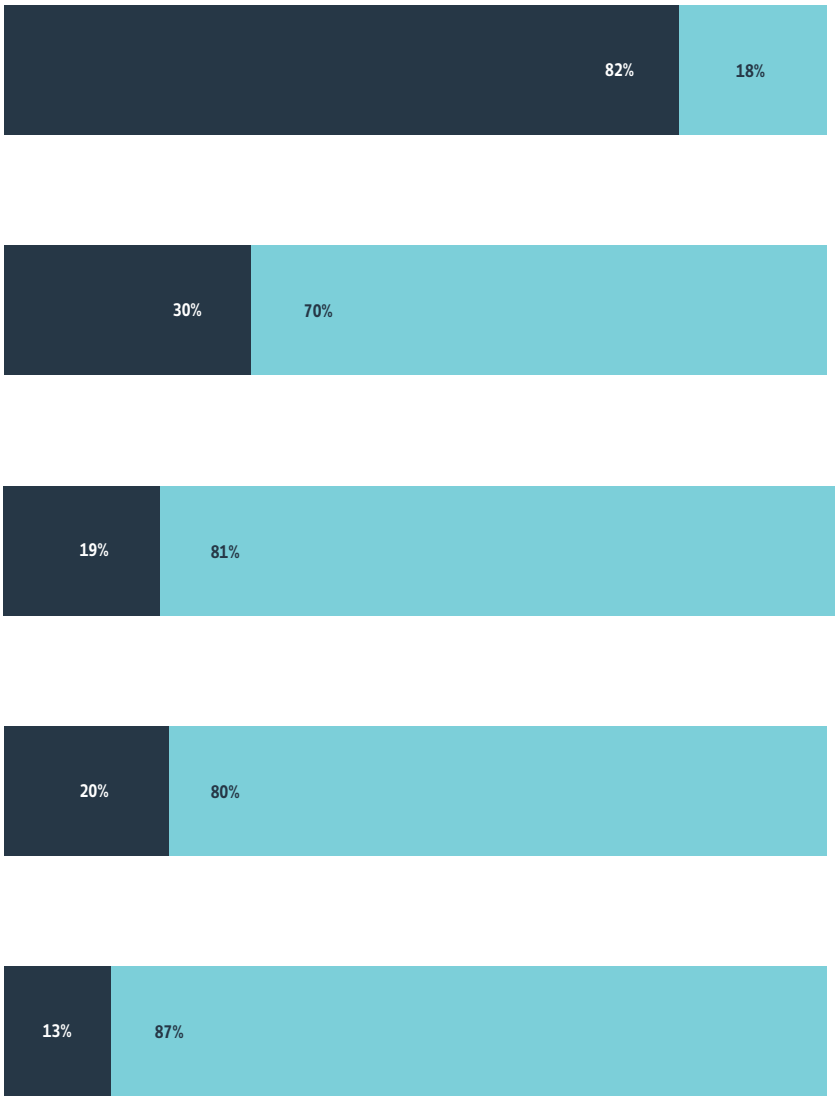
34
Cyclist Error/ Violation

20
One Way Violation

1,071
Failed to Observe Traffic Signal

1,637
Left Turn Across Traffic

1,128
Stop Sign Violation



SECTION 5:

TEMPORAL ANALYSIS

The profile of collisions in Edmonton by month of year, day of week, and hour of day are fairly 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 figures exhibit the overall patterns of collisions during the hours, days, and months of 2017.

"IN FALL AND SPRING, THE BLINDING SKIES OF SUNRISE AND SUNSET CREEP INTO RUSH HOUR. VISIBILITY IS LOW. PEDESTRIAN COLLISION RISK IS HIGH."

—Beware the Glare,
Vision Zero Street Team
Messaging 2017

FIGURE 6:
Collisions by Month

Figure 6 shows the breakdown of collisions by month, which in 2017 varied from a low of 1,525 total collisions in April to 2,781 total collisions in December. Overall, 57.5% (13,755) of the total collisions occurred in the fall and winter months (October–December and January–March). The percentage of total collisions in fall and winter is consistent with prior years, and the top three collision months in 2017 were January, November, and December.

Fatal and injury collisions ranged from 159 in February to 311 in December. The proportion of collisions that result in fatality or injury is slightly higher in the spring and summer (April–September); while fatal and injury collisions made up 10.5% of all fall and winter collisions, they constituted 12.8% of all spring and summer collisions.

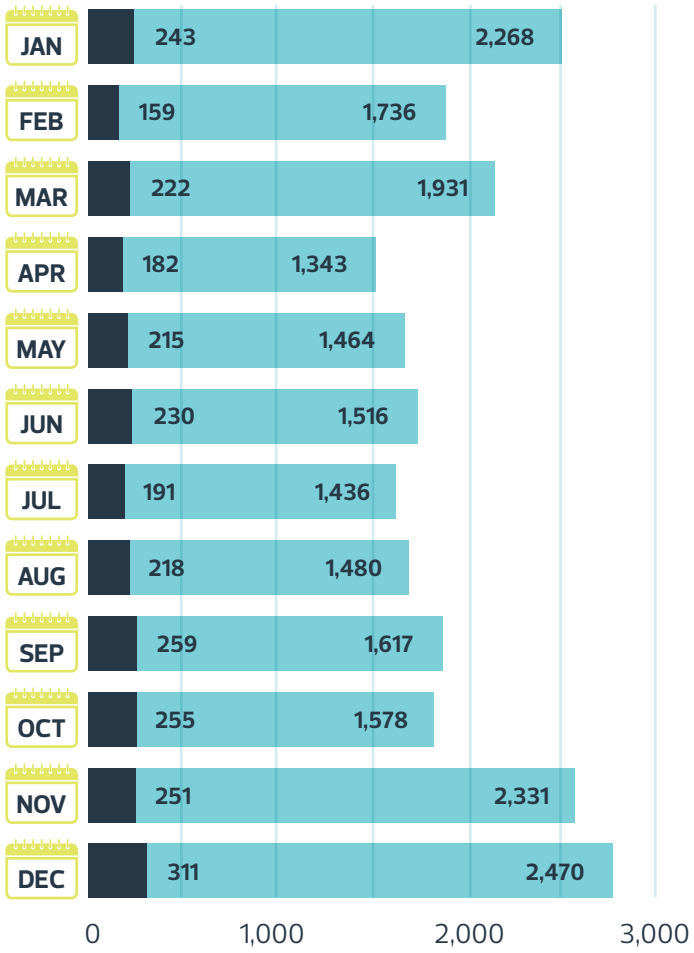
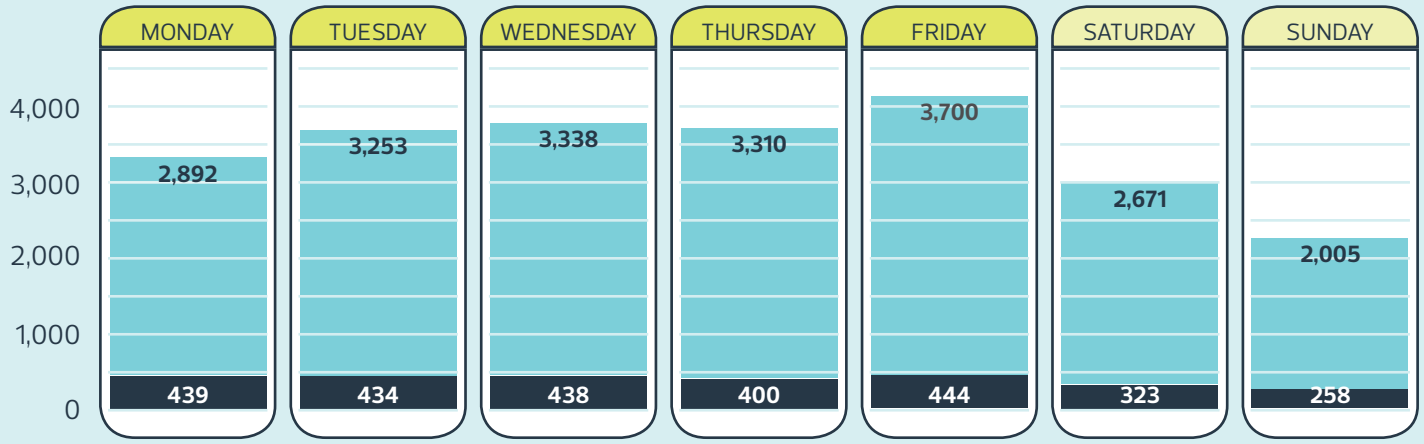


FIGURE 7:
Collisions by Day of Week

As shown in Figure 7 and similar to previous years, Friday was the most common day of the week for collisions in 2017, accounting for 17.3% (4,144) of collisions. Least common was Sunday, with 9.5% (2,263) of all collisions. Again, as in previous years, there were fewer collisions on weekends than on weekdays.

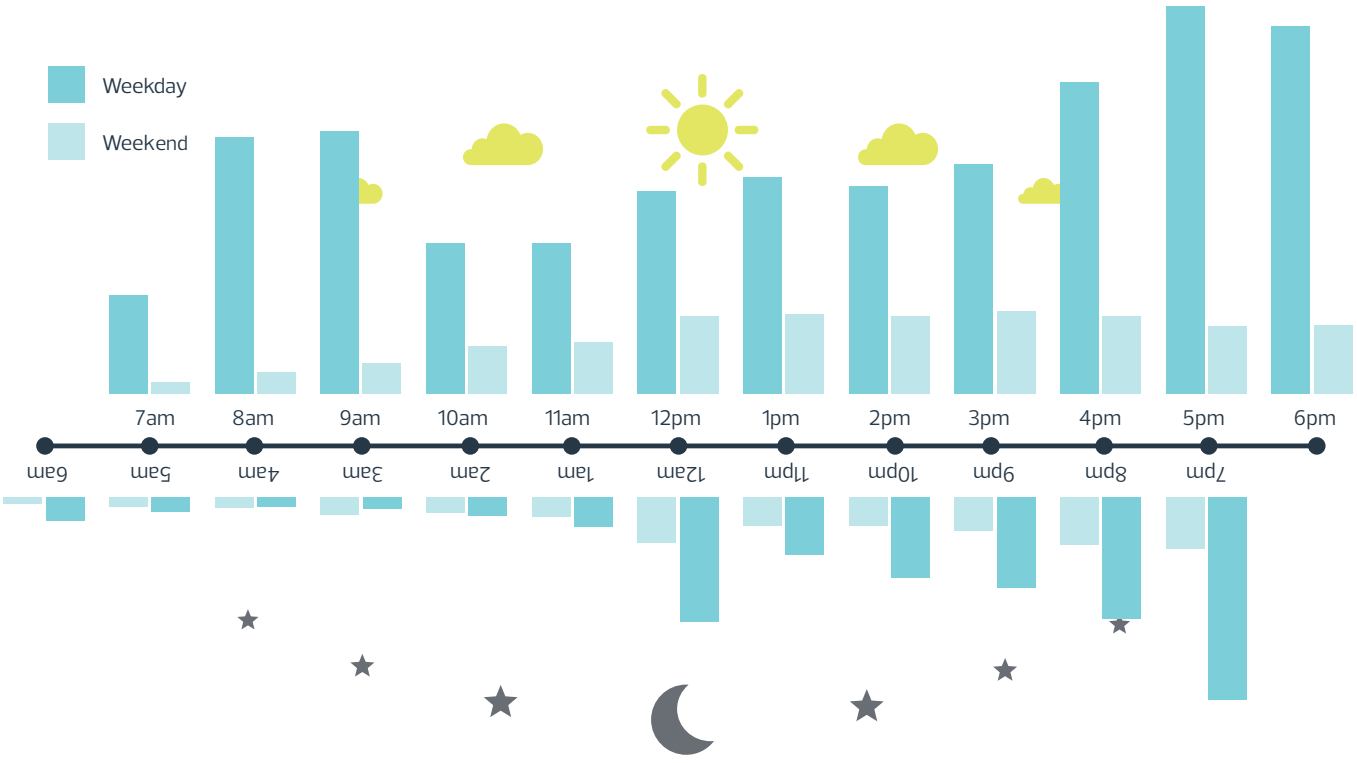


The most collisions occured on FRIDAYS, but the most fatal and injury collisions occured on MONDAYS

FIGURE 8:
Collisions by Hour[5] of Day (Weekday vs. Weekend)

Figure 8 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 to 9:00 AM accounted for 17.0% (3,176) of all weekday collisions, while collisions during the PM peak of 3:00 to 6:00 PM made up 29.3% (5,470) of all weekday collisions.

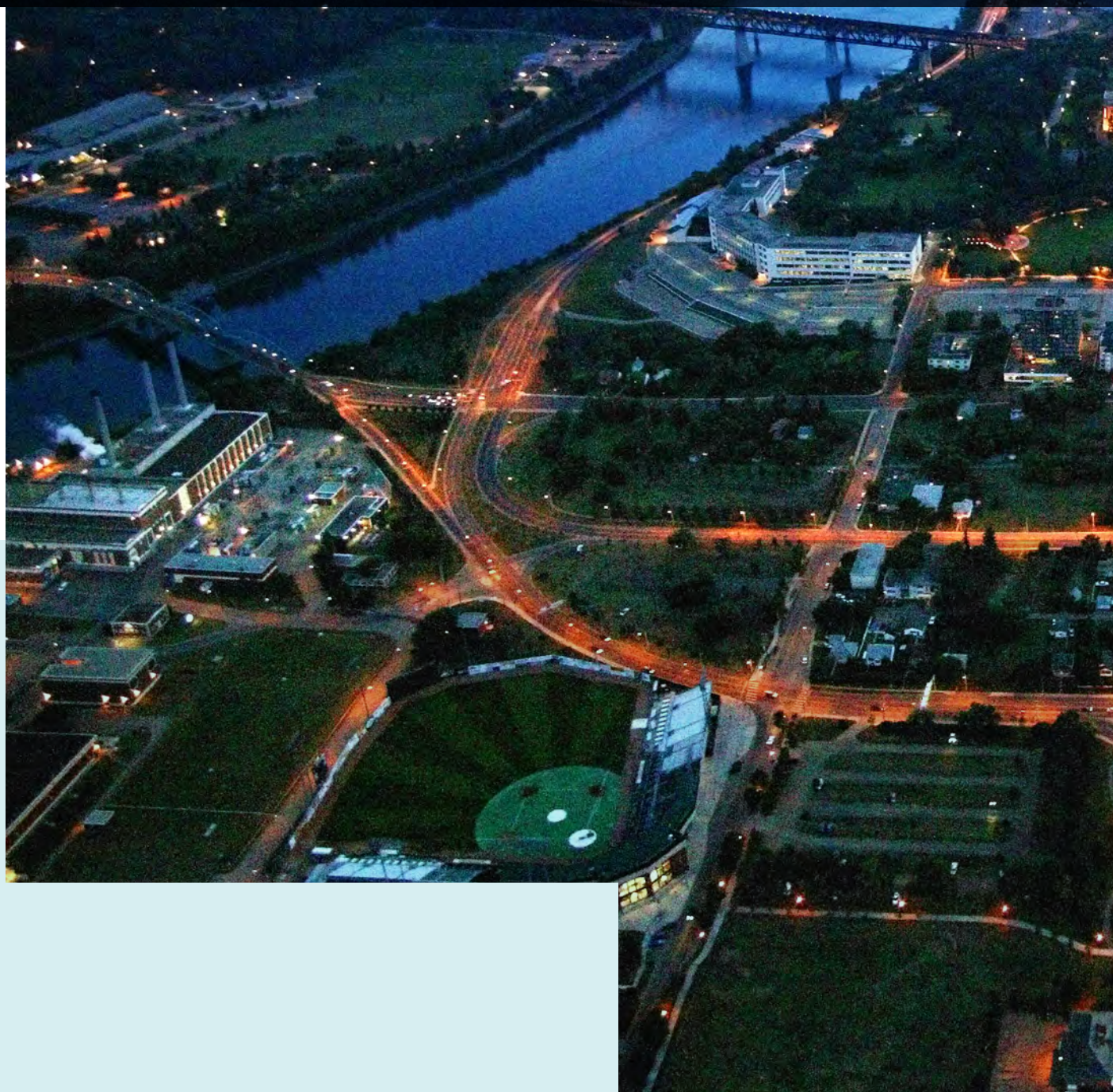
On weekends, collision patterns shifted in line with traffic patterns, with the number of collisions peaking between 2:00 and 3:00 PM. Collisions from Noon to 6:00 PM made up 44.7% (2,348) of weekend collisions. Collisions during the overnight hours were also more prevalent during the weekends; there were 390 collisions from Midnight to 5:00 AM on weekends, representing 7.4% of all weekend collisions. By comparison, in the same time period there were 446 collisions over the five weekdays, representing only 2.4% of all weekday collisions.

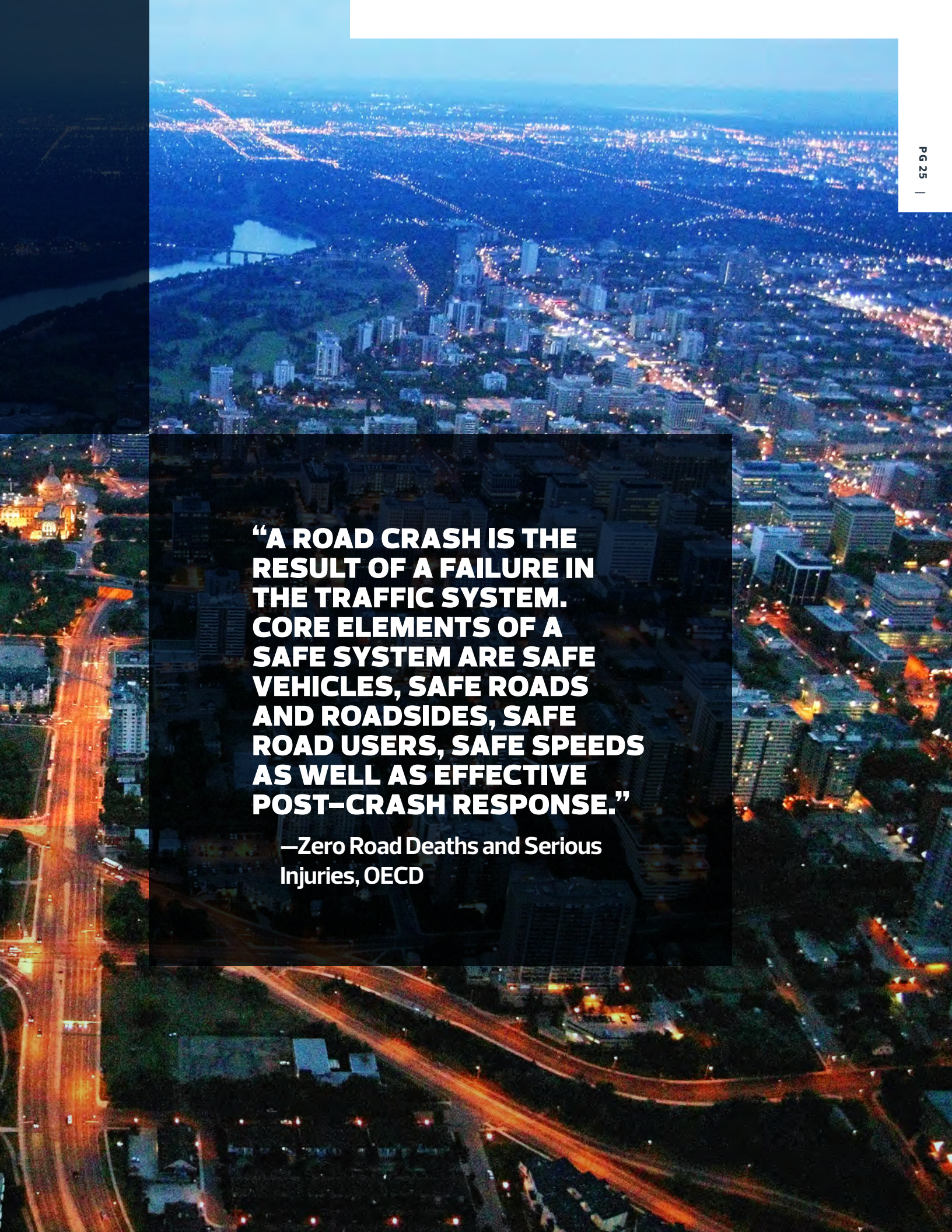


5 Hour name corresponds to "hour ending" in MVCIS, e.g., 6:00 AM refers to 5:01 AM – 6:00 AM inclusive.

SECTION 6:

INTERSECTION AND MIDBLOCK COLLISION HOT SPOTS





"A ROAD CRASH IS THE RESULT OF A FAILURE IN THE TRAFFIC SYSTEM. CORE ELEMENTS OF A SAFE SYSTEM ARE SAFE VEHICLES, SAFE ROADS AND ROADSIDES, SAFE ROAD USERS, SAFE SPEEDS AS WELL AS EFFECTIVE POST-CRASH RESPONSE."

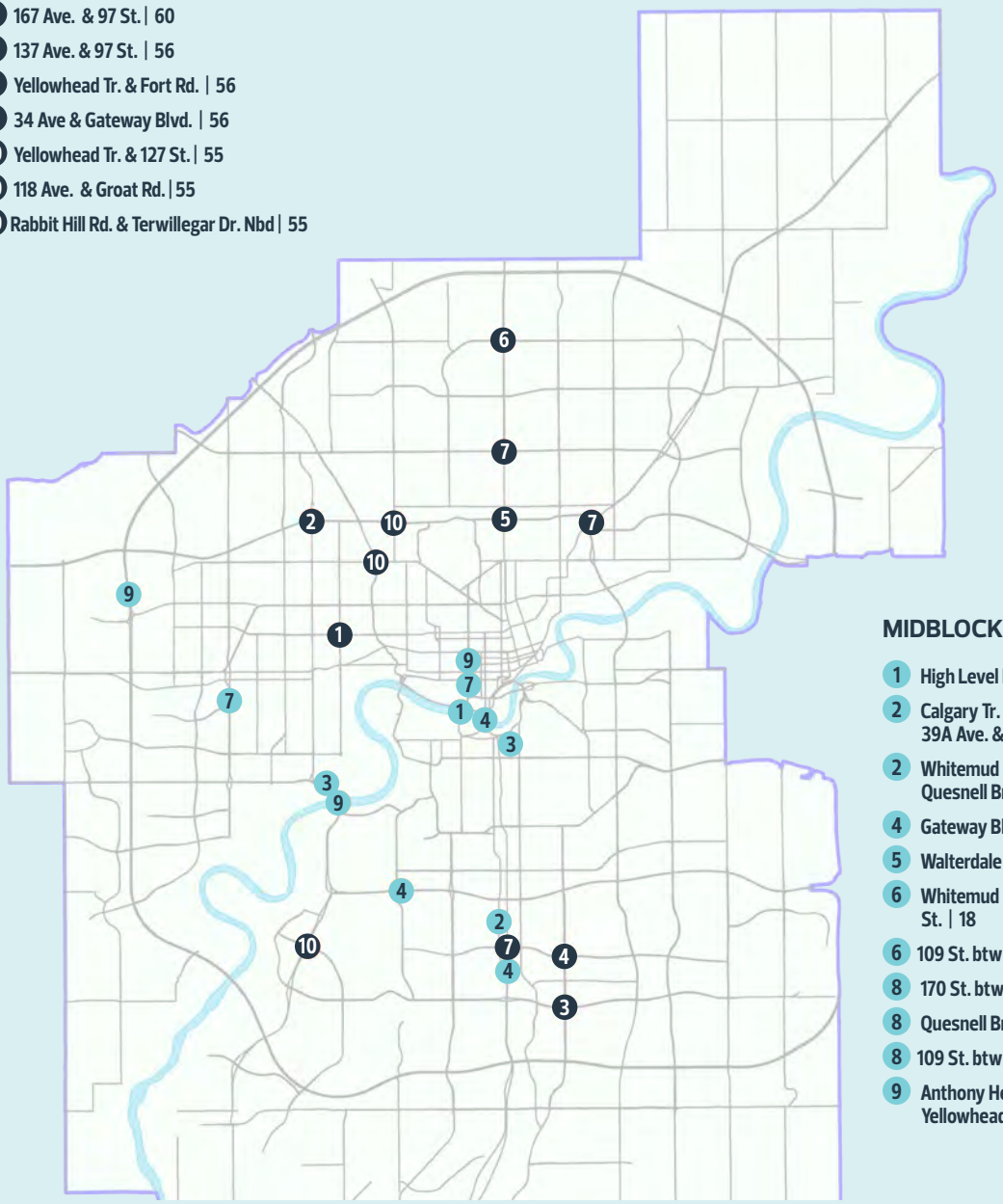
—Zero Road Deaths and Serious Injuries, OECD

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

Map 1 illustrates the top intersections and midblock segments with the highest numbers of collisions in the city for 2017. A high collision location is also called a "hot spot."

INTERSECTIONS | Collisions

1. 107 Ave. & 142 St. NW (Traffic Circle) | 89
2. Yellowhead Tr. & 149 St. NW | 81
3. 23 Ave. & 91 St. | 68
4. 34 Ave. & 91 St. | 65
5. Yellowhead Tr. & 97 St. | 61
6. 167 Ave. & 97 St. | 60
7. 137 Ave. & 97 St. | 56
7. Yellowhead Tr. & Fort Rd. | 56
7. 34 Ave & Gateway Blvd. | 56
10. Yellowhead Tr. & 127 St. | 55
10. 118 Ave. & Groat Rd. | 55
10. Rabbit Hill Rd. & Terwillegar Dr. Nbd | 55



MIDBLOCK | Collisions

1. High Level Bridge | 33
2. Calgary Tr. between 39A Ave. & 34 Ave. | 22
2. Whitemud Dr. btwn North of Quesnell Bridge & 149 St. | 22
4. Gateway Blvd btw 31 Ave. & 34 Ave. | 21
5. Walterdale Bridge | 19
6. Whitemud Drive Wbd btw 111 St & 122 St. | 18
6. 109 St. btw 100 Ave & Jasper Ave. | 18
8. 170 St. btw 95 Ave. & 99 Ave. | 17
8. Quesnell Bridge. | 17
8. 109 St. btw Jasper Ave. & 102 Ave. | 17
9. Anthony Henday Dr. Nbd btw 111 Ave. & Yellowhead Trail | 15

TABLE 2:

Top Intersections and Midblock Segments by Number of Collisions

Some intersections and midblock segments were also hot spots in 2016 while others were new hot spots for 2017. Collision locations ranked as "N/A" were not in the top 10 in 2016.

TYPE	LOCATION NAME	2017 RANK	2017 COLLISIONS	2016 RANK	2016 COLLISIONS
INTERSECTION	107 Avenue & 142 Street	1	89	1	134
	Yellowhead Trail & 149 Street	2	81	3	76
	23 Avenue & 91 Street	3	68	N/A	54
	34 Avenue & 91 Street	4	65	8	58
	Yellowhead Trail & 97 Street	5	61	N/A	49
	167 Avenue & 97 Street	6	60	7	59
	137 Avenue & 97 Street	7	56	9	57
	34 Avenue & Gateway Blvd	7	56	6	60
	Yellowhead Trail & Fort Road	7	56	N/A	49
	Yellowhead Trail & 127 Street	10	55	2	83
	118 Avenue & Groat Road	10	55	5	62
	Rabbit Hill Road & Terwillegar Drive Nbd	10	55	N/A	46
MIDBLOCK	High Level Bridge	1	33	7	24
	Calgary Trail btw 39A Avenue & 34 Avenue	2	22	N/A	19
	Whitemud Drive btw N of Quesnell Bridge & 149 Street	2	22	3	27
	Gateway Boulevard btw 31 Avenue & 34 Avenue	4	21	N/A	9
	Walterdale Bridge	5	19	N/A	6
	Whitemud Drive Wbd btw 111 St & 122 Street	6	18	3	27
	109 Street btw 100 Ave & Jasper Avenue	6	18	N/A	20
	170 Street btw 95 Avenue & 99 Avenue	8	17	N/A	14
	Quesnell Bridge	8	17	N/A	17
	109 Street btw Jasper Avenue & 102 Avenue	8	17	N/A	17
	Anthony Henday Drive Nbd btw 111 Avenue & Yellowhead Trail	9	15	N/A	2

SECTION 7:

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 2017 involved two motor vehicles, or a single vehicle and a fixed object.

"THE DAY BEFORE DISTRACTED DRIVING LAWS CAME INTO EFFECT I CHECKED A TEXT ON MY PHONE AND DROVE INTO A DITCH. ALL I COULD THINK WAS, 'WOW, NO WONDER THIS IS BECOMING ILLEGAL.' "

—Traffic Safety Culture Survey Comment

FIGURE 9:
Objects Involved in Collisions

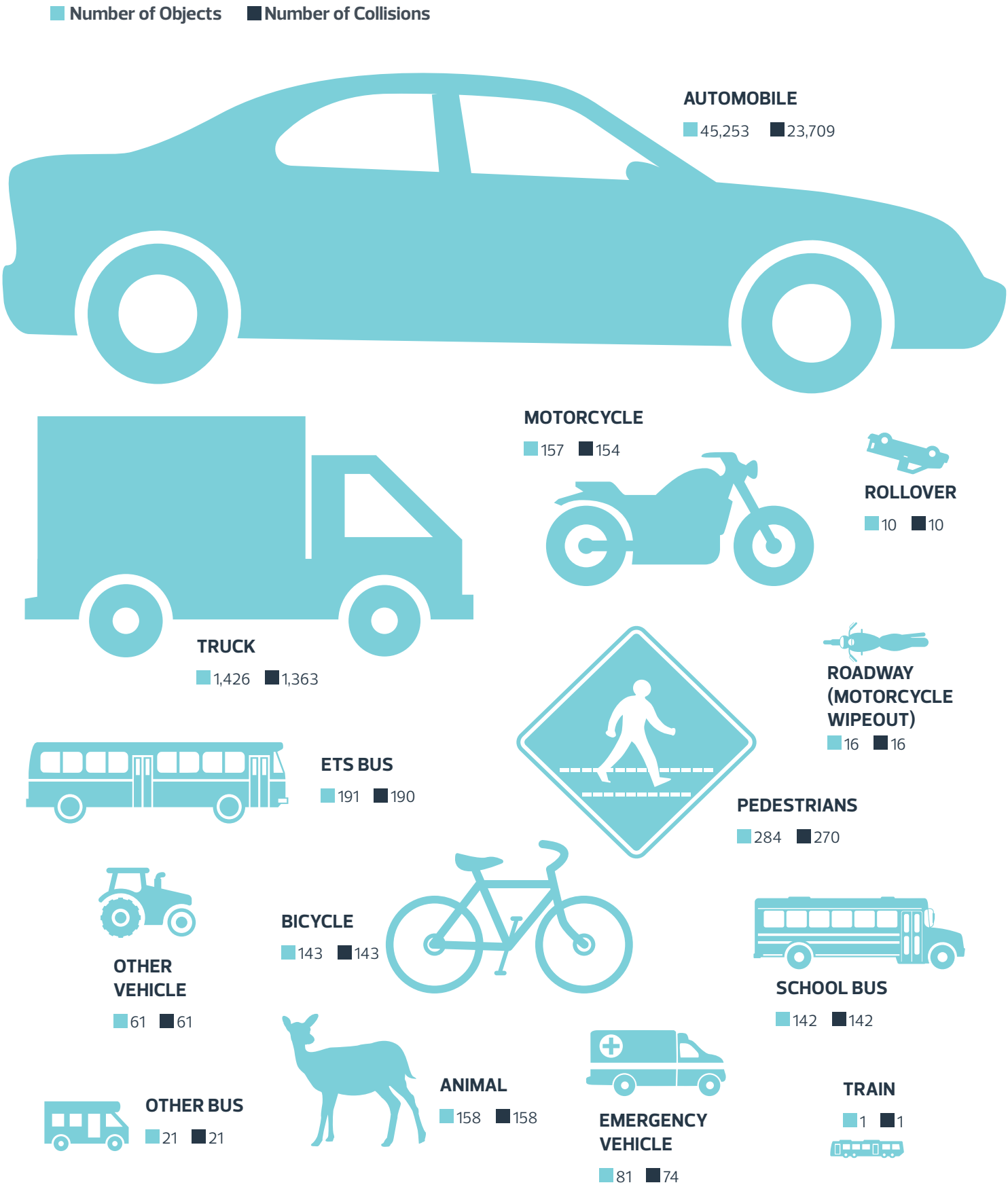


Figure 9 summarizes the types of objects involved in collisions in 2017. Automobiles – a category that includes passenger vehicles, pickup trucks, and SUVs, but excludes large trucks over 4,500 kg and buses – were involved in over 99.2% (23,709) of all 23,906 collisions in 2017.

Fixed objects were involved in 8.6% (2,058) of all collisions. Other object types included trucks greater than 4,500 kg (5.7%, 1,363 collisions), pedestrians (1.1%, 270 collisions), ETS buses (0.8%, 190 collisions), and animals (0.7%, 158 collisions). One collision in 2017 involved a train.

Fixed objects are routinely involved in collisions, and Figure 10 summarizes the type and number of these objects for 2017. The most common fixed objects involved in collisions were posts, signs, or parking meters. In 2017, 328 other fixed objects – close to one a day on average – were struck. The second most common fixed object involved in collisions was pole (296) followed by restraining barrier (274).

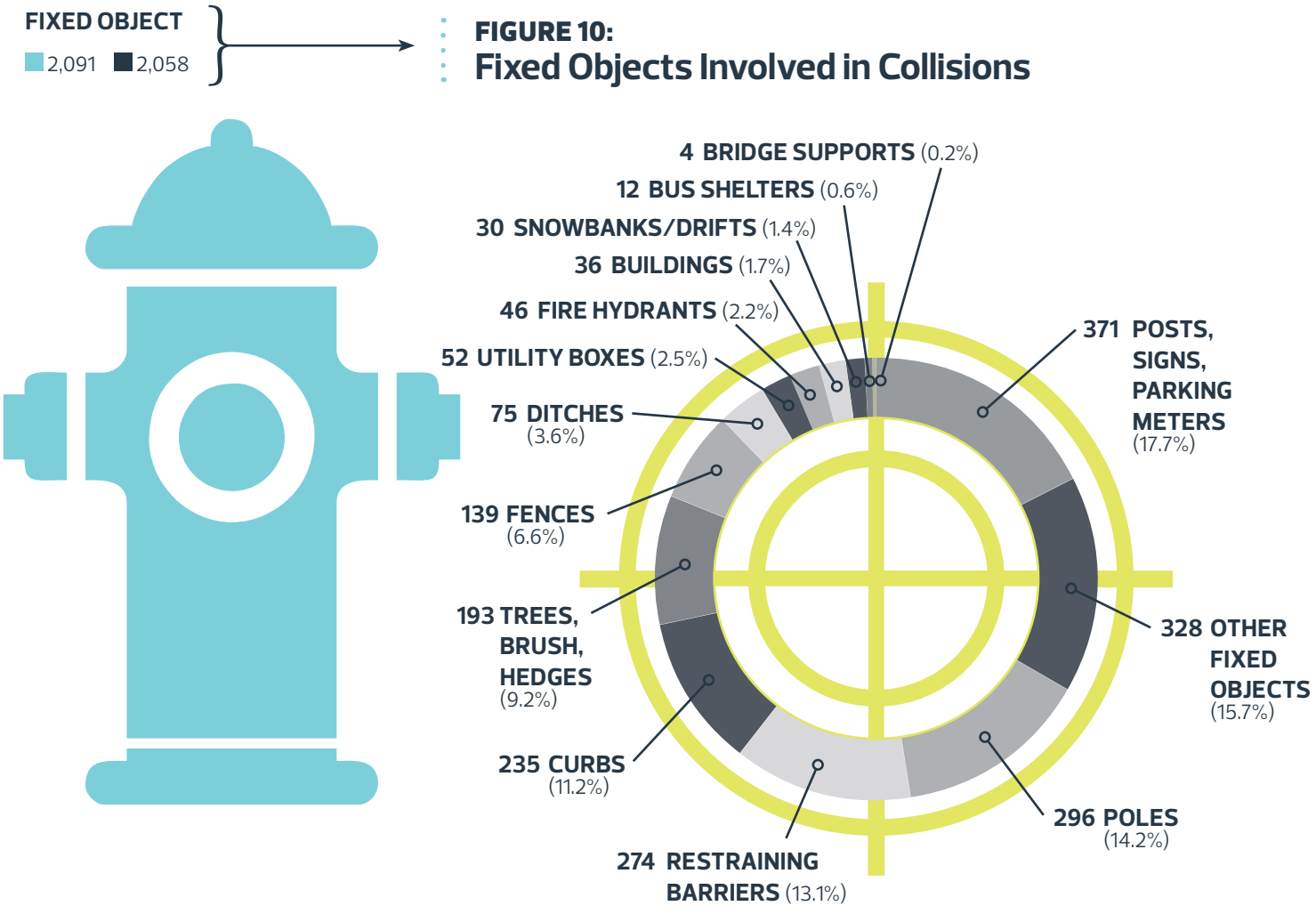


FIGURE 10:
Fixed Objects Involved in Collisions

SECTION 8:

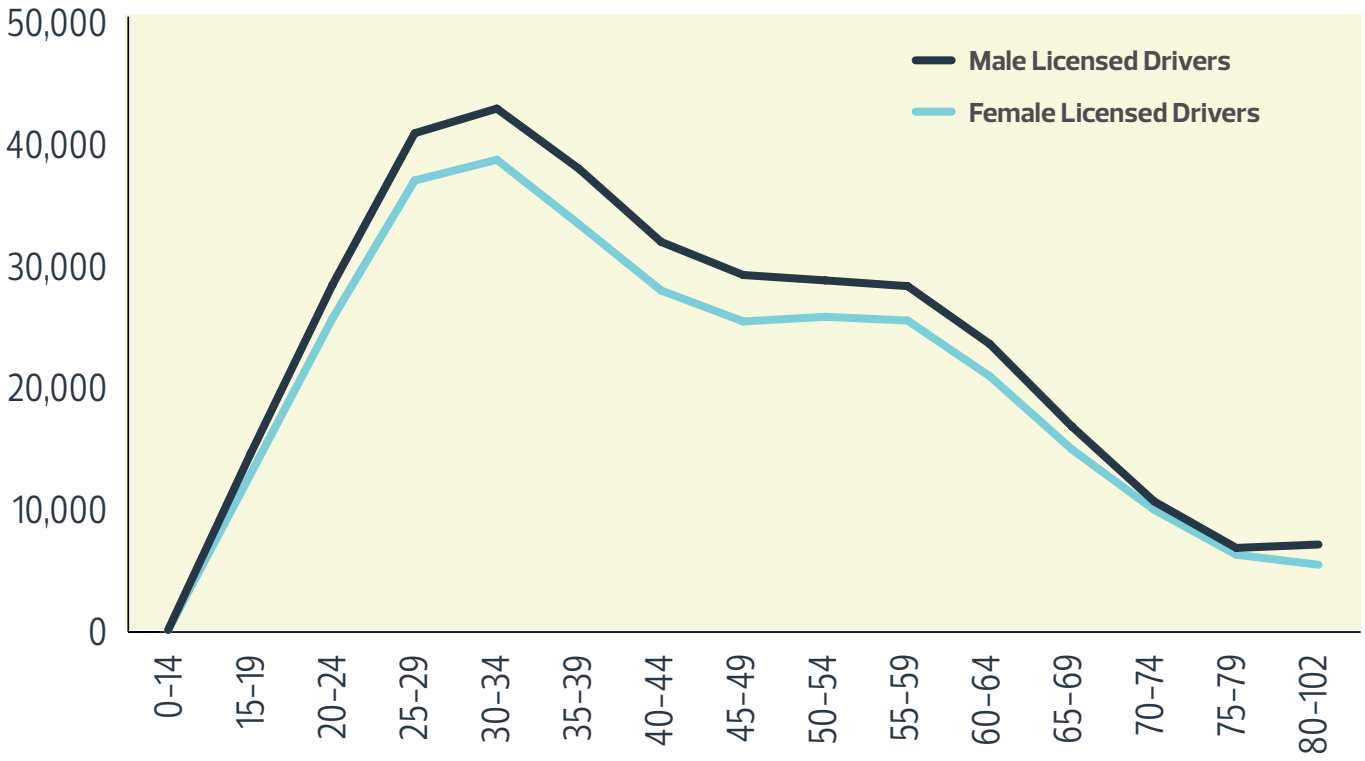
DEMOGRAPHIC ANALYSIS

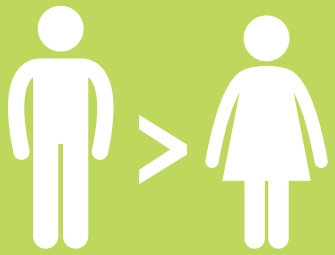
“WHETHER WE ARE DESIGNING ROADS OR USING THEM, WE NEED TO MAKE SAFETY OUR PRIORITY.”

– Gord Cebryk,
Acting Deputy City Manager

FIGURE 11:
Age and Gender Breakdown of Licensed Drivers

The demographic makeup of licensed drivers (as of March 31, 2017) in Edmonton is shown in Figure 11. The graph shows that 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 30 to 34 age group.





There are more male than female licensed drivers in all age groups

25- to 29-year-old drivers have the most at-fault collisions

FIGURE 12:

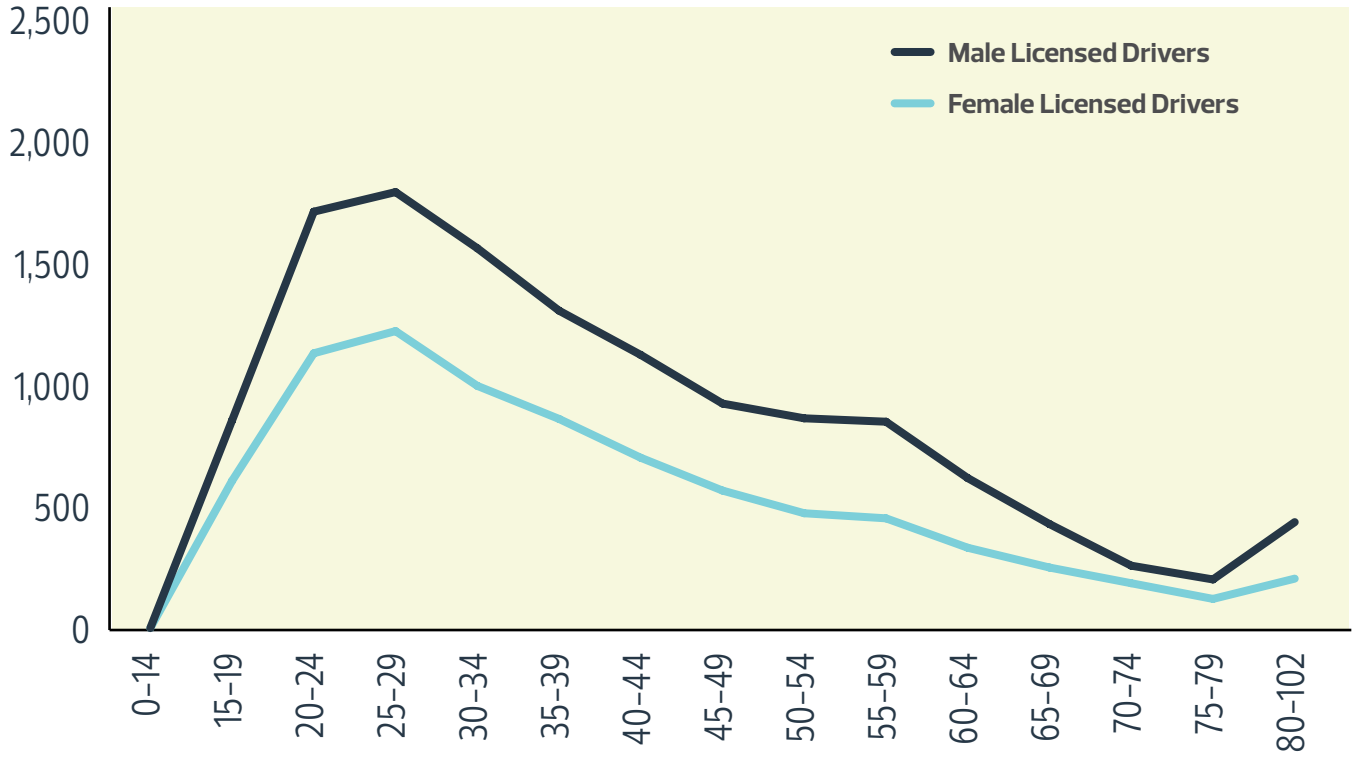
Age and Gender Breakdown of At-Fault Drivers

The demographic profile of drivers deemed at fault in a collision, as shown in Figure 12, is fairly consistent with the demographic profile in Edmonton. Young drivers were more likely to be deemed at fault for collisions in Edmonton. Drivers aged 15 to 24 made up 12.4% of Edmonton's licensed drivers in 2017, but were responsible for 20.5% of collisions. By comparison, drivers aged 25 to 34 constituted 24.0% of all licensed drivers and were deemed at fault in 26.5% of collisions.

Gender was also a factor in the likelihood of collision involvement. While males made up 52.8% of licensed drivers in Edmonton in 2017, they were deemed at fault in 61.4% of collisions.

Comparing different age/gender groups revealed differences between the driving population and the population of at-fault drivers. Males aged 15 to 19 made up 2.2% of licensed drivers in Edmonton, but accounted for 4.1% of all at-fault drivers in 2017. Expanding the size of the group, males aged 15 to 24 make up 6.5% of the licensed driving population but 12.2% of at-fault drivers. In comparison, females aged 15 to 24 make up 5.9% of the licensed driving population and 8.3% of at-fault drivers.

The demographic breakdown of collision figures and at-fault drivers reveals that approximately 1 in 16.7 licensed males aged 20 to 24 were involved in a collision for which they were deemed at fault in 2017. By comparison, 1 in 22.9 female drivers aged 20 to 24 were at fault in a collision, while the ratio for all licensed drivers at fault was approximately 1 in 31.7.



SECTION 9:

FATAL AND INJURY COLLISIONS

In 2017 a total of 3,389 injuries and 27 fatalities resulted from 2,736 collisions. The following section presents detailed information about fatal and injury collisions in 2017.

“THESE ARE OUR MOTHERS, FATHERS, WIVES, HUSBANDS, CHILDREN, FRIENDS... ANY LOSS OF LIFE ON OUR ROADS IS UNACCEPTABLE.”

— Mayor Don Iveson

FIGURE 13:
Fatal and Injury Collisions by Month

The number of fatal and injury collisions by month varied from a low of 159 collisions in February to a high of 311 collisions in December. The pattern of fatal and injury collisions did not follow that of collisions overall. Figure 13 indicates that through the fall and winter months (January–March and October–December), the number of fatal and injury collisions is lower than the rest of the year. The average percentage of fatal and injury collisions through the spring and summer months (April–September) is 12.8% compared to 10.5% during the fall and winter months.

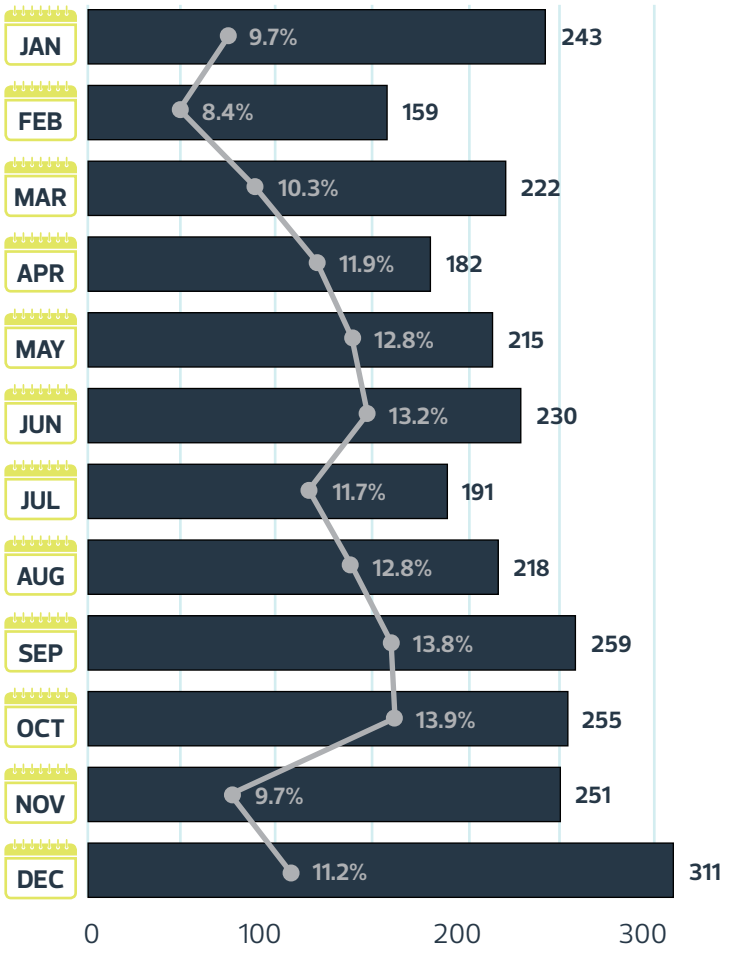
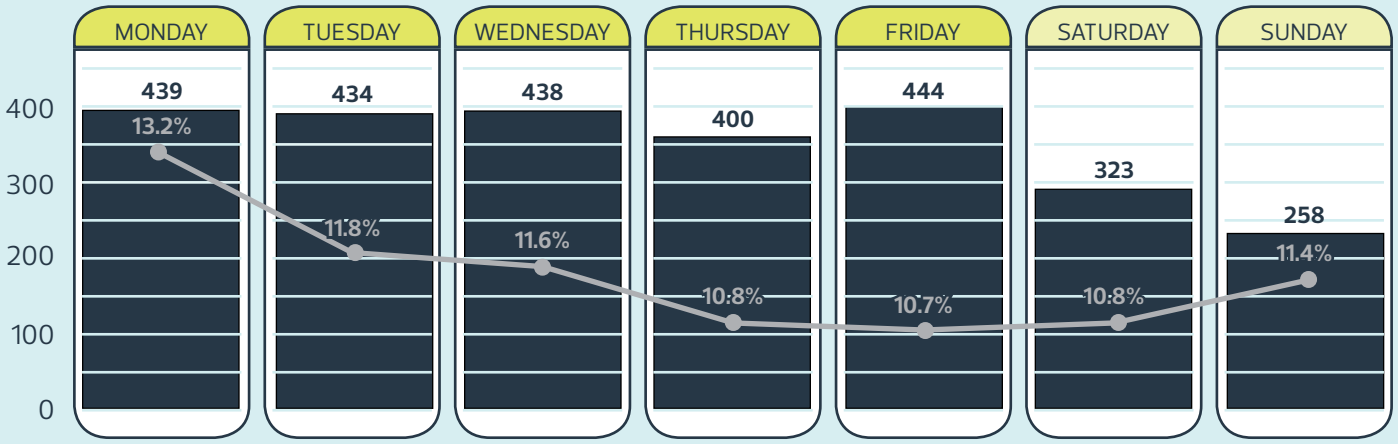


FIGURE 14:
Fatal and Injury Collisions by Day of Week

Friday had the highest number of fatal and injury collisions with 444, followed by Monday and Wednesday (439 collisions and 438 collisions, respectively). The pattern in terms of raw numbers of fatal and injury collisions by day of week generally follows that of overall collisions, with a higher number of collisions occurring on weekdays and a decrease on the weekends. Though Friday had



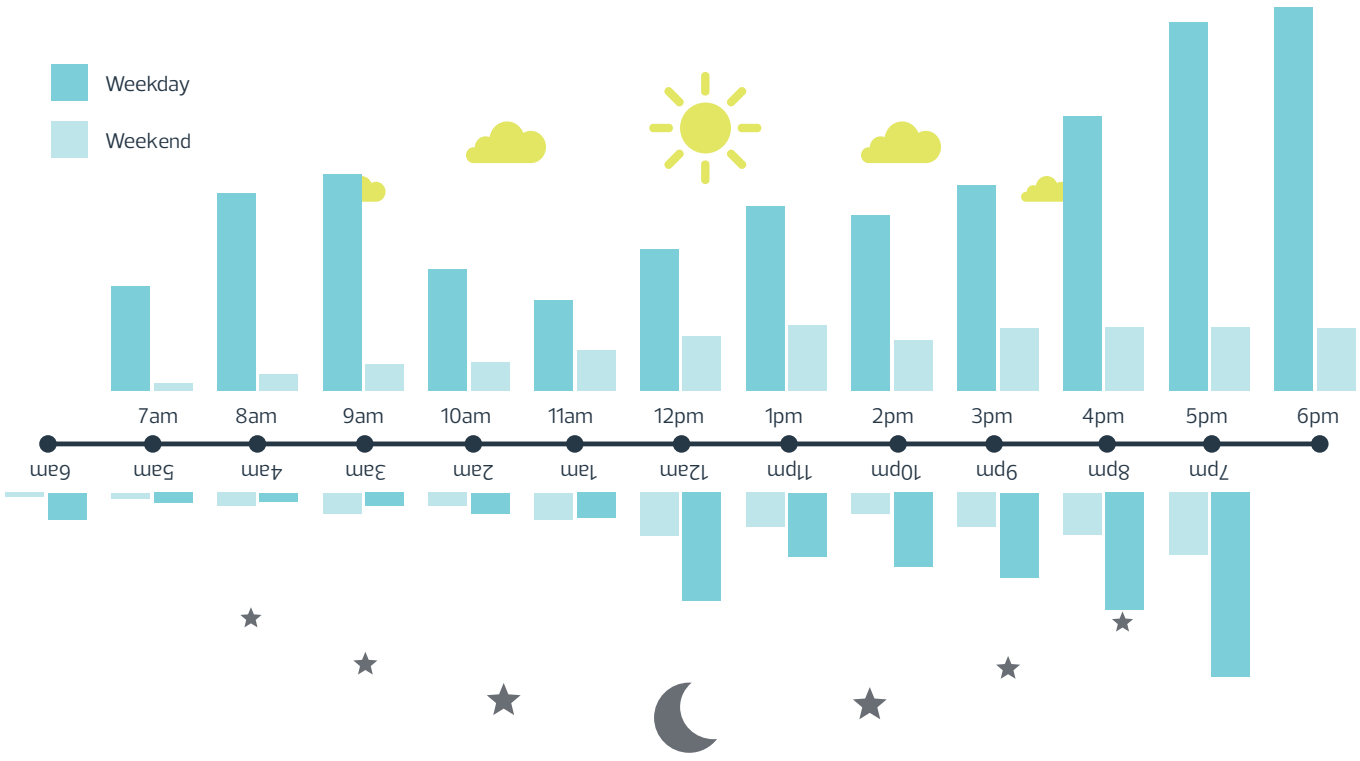
the highest number of fatal and injury collisions, the total percentage of those collisions that involved a fatality or injury was slightly lower on Friday (10.7%) compared to other days of the week. In contrast, though Sunday saw the lowest number of fatal or injury collisions (258), a higher percentage (11.4%) of those collisions resulted in a fatality or injury compared to other days of the week.

FIGURE 15:
Fatal and Injury Collisions by Hour[6] of Day (Weekday vs. Weekend)

Figure 15 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 to 9:00 AM) accounted for 16.2% (349) of all fatal and injury collisions on weekdays, while the evening peak (3:00 to 6:00 PM) accounted for 32.1% (691) 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 slight peak between 12:00 and 1:00 PM. Fatal and injury collisions from Noon to 6:00 PM made up 42.7% (248) of all weekend fatal and injury collisions.

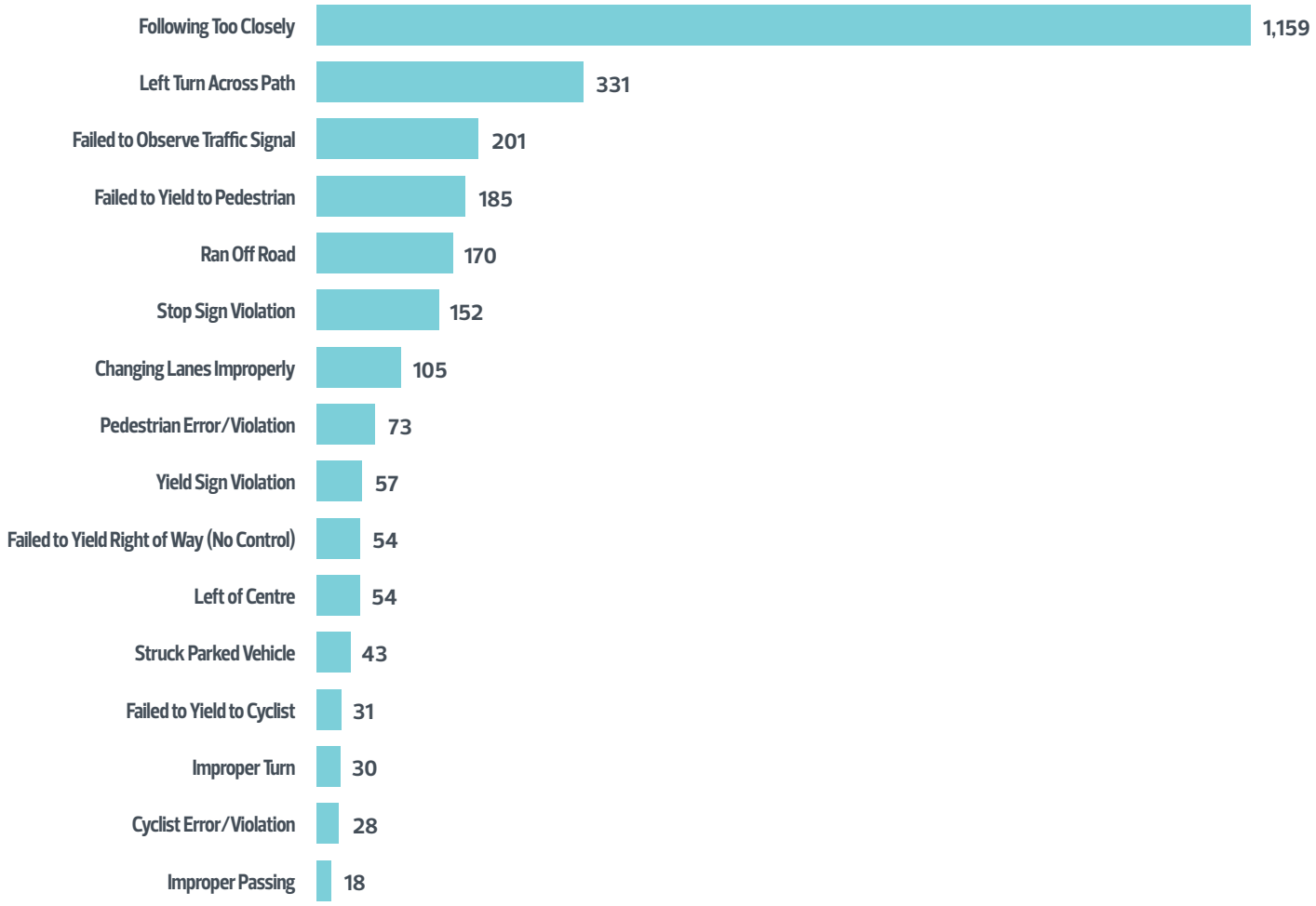
The most fatal and injury collisions occurred in the early evening hours (4:00 PM–6:00 PM). Collisions between Midnight and 5:00 AM accounted for 7.4% of all collisions in 2017, and fatal and injury collisions during the same time period accounted for 9.3% of all injury and fatal collisions. Of the 107 fatal or injury collisions that occurred between Midnight and 5:00 AM, 54 (50.5%) occurred on Saturday or Sunday. Those 54 collisions represent 9.3% of all fatal and injury collisions that occurred on weekends.



6 Hour name corresponds to "hour ending" in MVCIS, e.g., 6:00 AM refers to 5:01 AM – 6:00 AM inclusive.

FIGURE 16:
Fatal and Injury Collisions by Cause

As shown in Figure 16, collisions with the reported cause of following too closely made up 42.4% (1,159) of all injury and fatal collisions. Other collision causes with significant injury/fatality counts included left turn across path (12.1%, 331); failed to observe traffic signal (7.3%, 201); and failed to yield to pedestrian (6.8%, 185).[7]



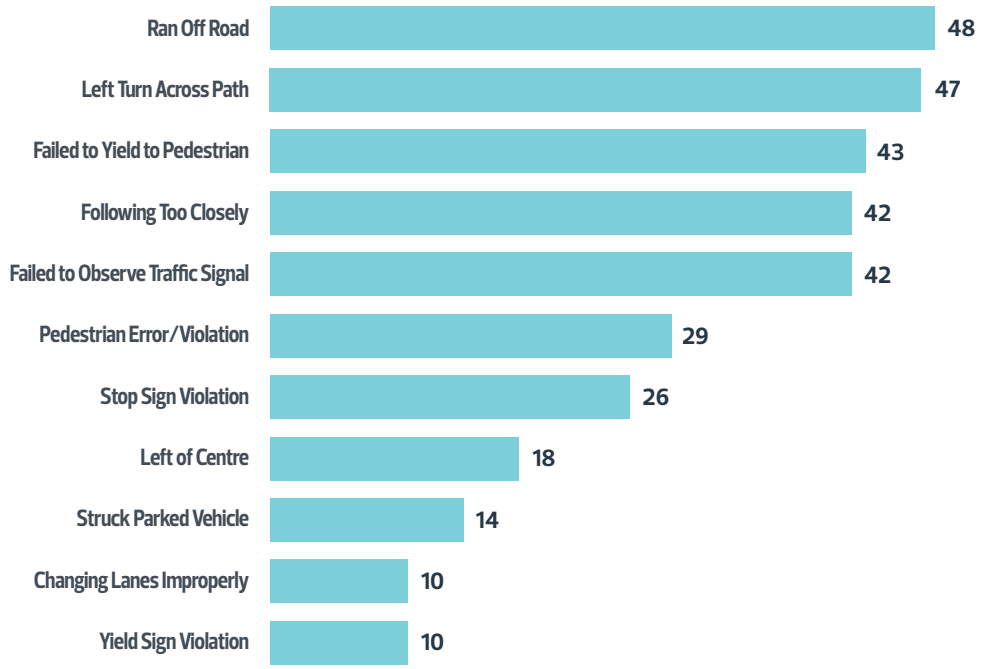
7 Causes not listed on this chart are: other (cause that does not fall within other collision cause categories; 14), backed unsafely (11), animal action (6), one-way violation (6), opened door into traffic (3), signed forced turn violation (3), improper loading (1), and unknown (1).

Following too closely caused as many collisions as the NEXT 6 TOP CAUSES COMBINED

FIGURE 17:
Fatalities and Major Injuries[8] 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. Figure 17 displays the number of fatalities and major injuries for a number of collision causes.

Ran off road collisions made up 13.0% (48) of all fatalities and major injuries. Other common collision causes of fatalities and major injuries included left turn across path (12.8%, 47); failed to yield to pedestrian (11.7%, 43); and following too closely and failed to observe traffic signal (each 11.4%, 42).[9]



8 For a definition of minor and major injuries, please refer to Appendix 1.

9 Causes not listed on this chart are: failed to yield right of way – no control (9), failed to yield to cyclist (9), other (7), one-way violation (5), improper turn (4), cyclist error/violation (3), animal action (1), and opened door into traffic (1).

TABLE 3:
Fatalities and Injuries by Mode, Severity, and Age Group

A summary of all fatalities and injuries is presented in Table 3, broken down by age group and injury severity. The largest number of fatalities and injuries were sustained by vehicle drivers, followed by vehicle passengers.

Among vehicle drivers, there were 2,211 fatalities or injuries in 2017, a rate of 3.3 per 1,000 licensed drivers in Edmonton and 0.3 fatalities or major injuries per 1,000 licensed drivers. However, these figures increase to 4.7 fatalities or injuries per 1,000 licensed drivers and 0.4 fatalities or major injuries per 1,000 licensed drivers for those aged 19 to 24. Among those drivers aged 75 and over, the 2.1 fatalities or injuries per 1,000 licensed drivers and 0.5 fatalities or major injuries per 1,000 licensed drivers are lower than the overall rates respectively.

	< 14	14 – 15	16 – 18	19 – 24	25 – 34	35 – 44	45 – 54	55 – 64	65 – 74	75+	N/A	TOTAL
Vehicle Driver	0	1	57	269	512	420	336	262	112	45	2	**2,016**
	0	0	4	23	49	40	26	22	9	12	1	**186**
	0	0	0	0	2	2	0	3	1	1	0	**9**
Vehicle Passenger	127	29	41	86	116	74	55	49	18	12	24	**631**
	9	0	1	6	7	3	5	5	1	1	0	**38**
	0	0	0	1	0	0	0	1	1	1	0	**4**
Pedestrian	24	7	15	37	35	26	22	20	10	9	10	**215**
	5	1	0	7	10	5	13	12	5	2	0	**60**
	1	0	0	0	1	0	1	2	2	2	0	**9**
Cyclist	7	4	3	13	21	19	10	10	5	2	4	**98**
	5	0	1	1	5	3	3	2	2	0	0	**22**
	0	0	0	0	0	1	0	0	0	0	0	**1**
Motor-cyclist	0	0	1	10	20	13	5	9	1	0	1	**60**
	0	0	0	3	11	4	8	4	0	1	0	**31**
	0	0	0	1	2	0	1	0	0	0	0	**4**
Unknown	7	3	0	2	5	4	3	1	0	0	2	**27**
	0	0	0	0	1	2	0	0	0	1	0	**4**
	0	0	0	0	0	0	0	0	0	0	0	**0**
Other[10]	0	0	0	0	0	0	0	0	1	0	0	**1**
All Modes	165	44	117	417	709	556	431	351	147	68	43	**3048**
	19	1	6	40	83	57	55	45	17	17	1	**341**
	1	0	0	2	5	3	2	6	4	4	0	**27**

Minor
Major
Fatal

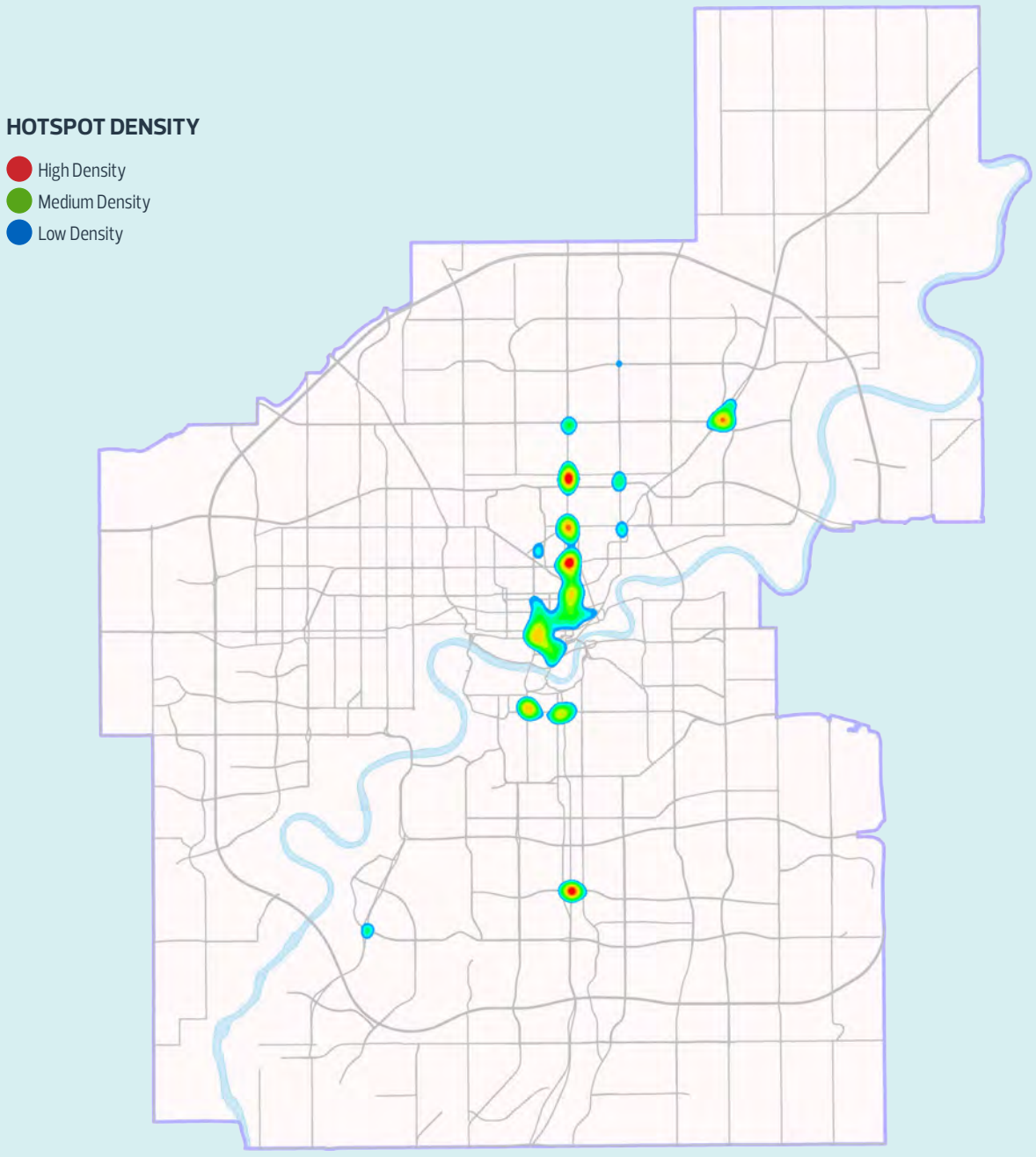
10 Other refers to one scooter operator who sustained a minor injury in 2017.

TABLE 4:
Fatalities and Injuries by Mode and Traffic Control

Table 4 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% (1,383) of all fatalities and injuries, followed by no control (33.8%, 1,153), which includes both intersections that have no traffic control and midblock segments, and yield signs (10.1%, 346). Ten injuries and one fatality occurred at rail crossings.

	Vehicle Driver	Vehicle Passenger	Pedestrian	Cyclist	Motor-cyclist	Unknown	Other	**Total**
Signal Light	913	286	102	49	22	11		**1,383**
No Control	746	204	99	41	54	8	1	**1,153**
Yield Sign	239	85	10	4	4	4		**346**
Stop Sign	166	53	18	16	9	4		**266**
Pedestrian-Actuated Signal	50	13	10	1	2			**76**
Marked Pedestrian Crosswalk	35	12	34	6	1			**88**
Construction	14	2	3					**19**
Pedestrian Amber Flasher	12	2	5	1		1		**21**
One Way Sign	10	2		2				**14**
Police Control	7	6						**13**
Rail Crossing	6	1		1		3		**11**
Warning/Advisory Light	5	6			2			**13**
Merge Sign	4	1			1			**6**
Rectangular Rapid Flashing Beacon	4		2					**6**
Flagman			1					**1**
Total	**2,211**	**673**	**284**	**121**	**95**	**31**	**1**	**3,416**

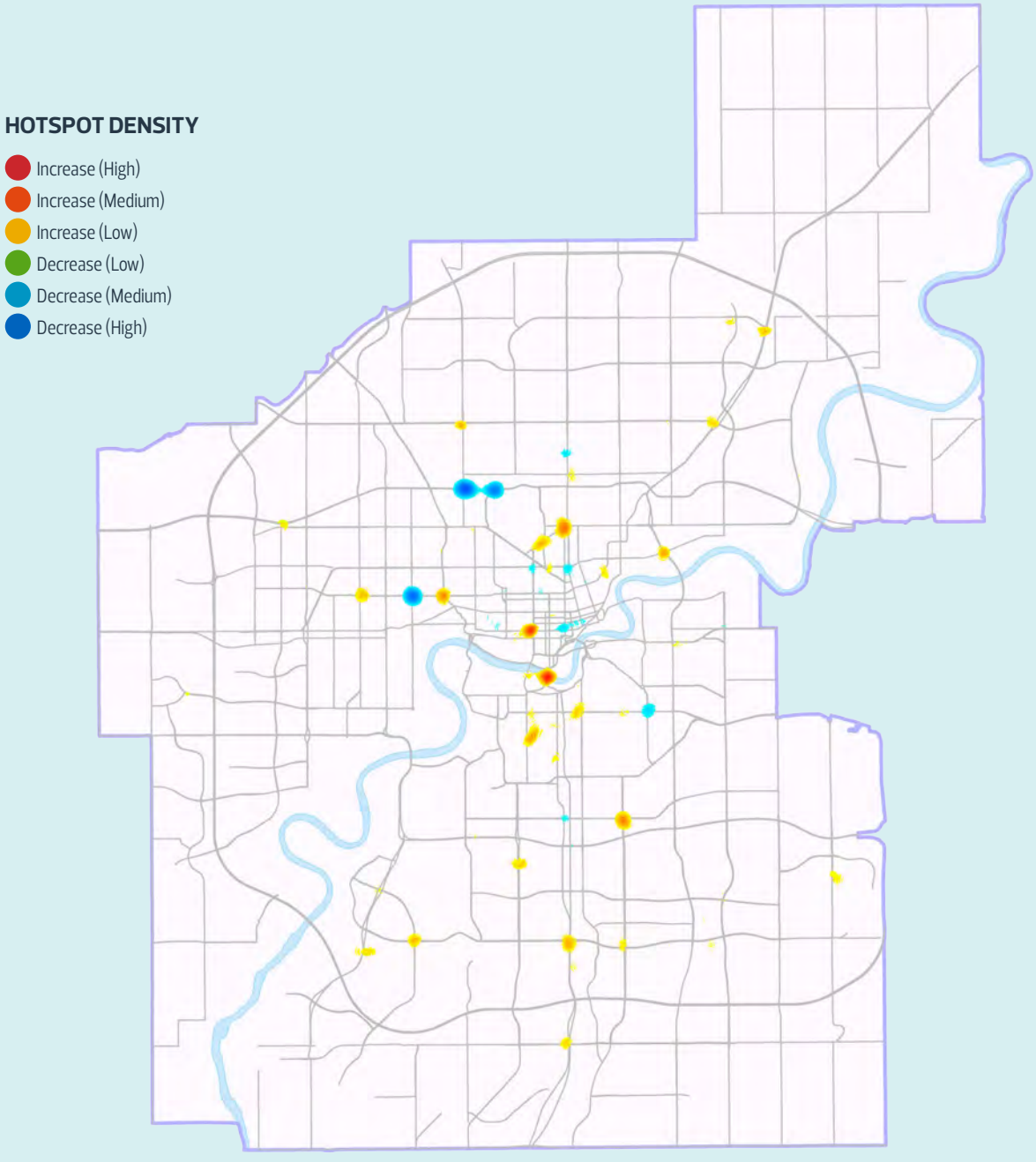
MAP 2:
Density Map of Fatal and Injury Collisions[11]



11 Density maps represent areas identified as having higher concentrations of injury and fatal collisions in 2017.

MAP 3:
Density Changes in Fatal and Injury Collisions from 2016 to 2017

The change map shows collision density difference from 2016 to 2017. Red through yellow indicate collision density increased in 2017; green through dark blue indicate collision density decreased in 2017 compared to 2016.



SECTION 10:

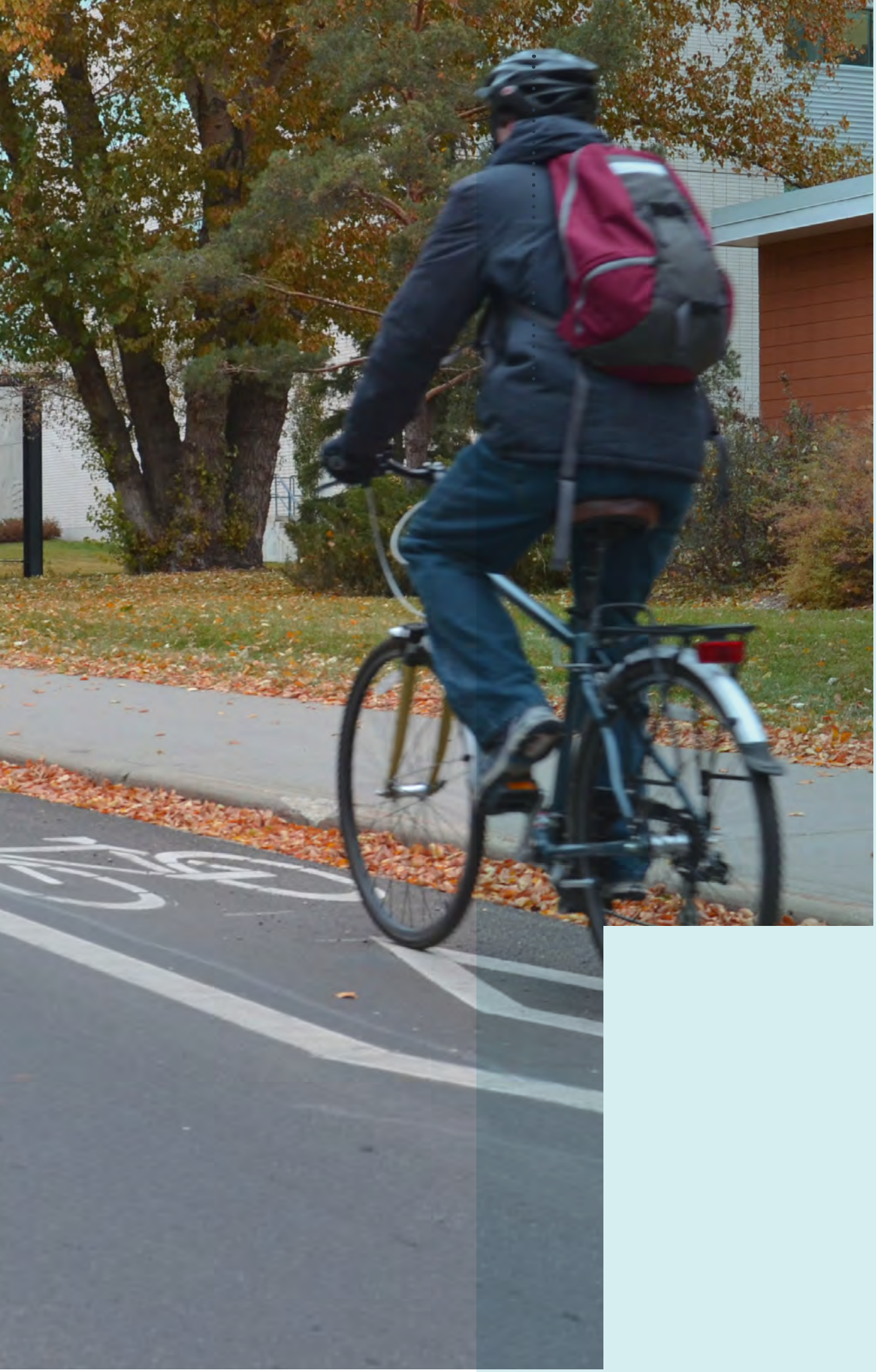
VULNERABLE ROAD USER COLLISIONS

The term "vulnerable road users" refers to those most at risk in traffic. Pedestrians, cyclists, and motorcycle riders are vulnerable because they are unprotected by seatbelts, airbags, and the shell and metal frame of four-wheeled vehicles.

Children may put themselves at risk because of inexperience. The elderly and those with mobility issues are especially vulnerable due to decreased ability to take evasive actions.

"WE ARE COMMITTED TO PROTECTING OUR MOST VULNERABLE CITIZENS BY USING THE BEST TECHNOLOGY AVAILABLE TO MAKE OUR STREETS AND ROADWAYS SAFE FOR EVERYONE."

—Councillor Bev Esslinger



SECTION 10.1:
PEDESTRIAN COLLISIONS

In 2017 there were 270 collisions involving pedestrians, resulting in 9 pedestrian fatalities and 275 injuries.

FIGURE 18:
Pedestrian Fatal and Injury Collisions by Month

Pedestrian fatal and injury collisions occurred throughout the year, with the highest number of fatal and injury collisions occurring in December (39) and the lowest in February (14).

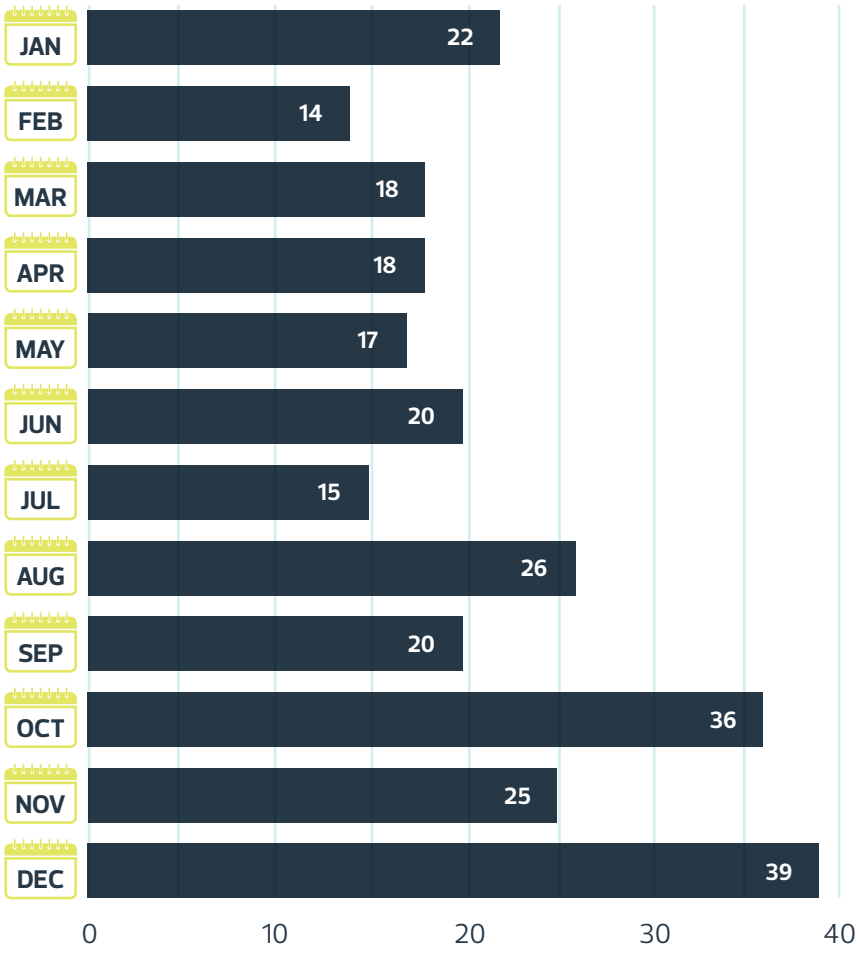


FIGURE 19:
Pedestrian Fatal and Injury Collisions by Day of Week

Pedestrian fatal and injury collisions were slightly more likely to occur on Wednesday, as shown in Figure 19 (20.0%, 54).

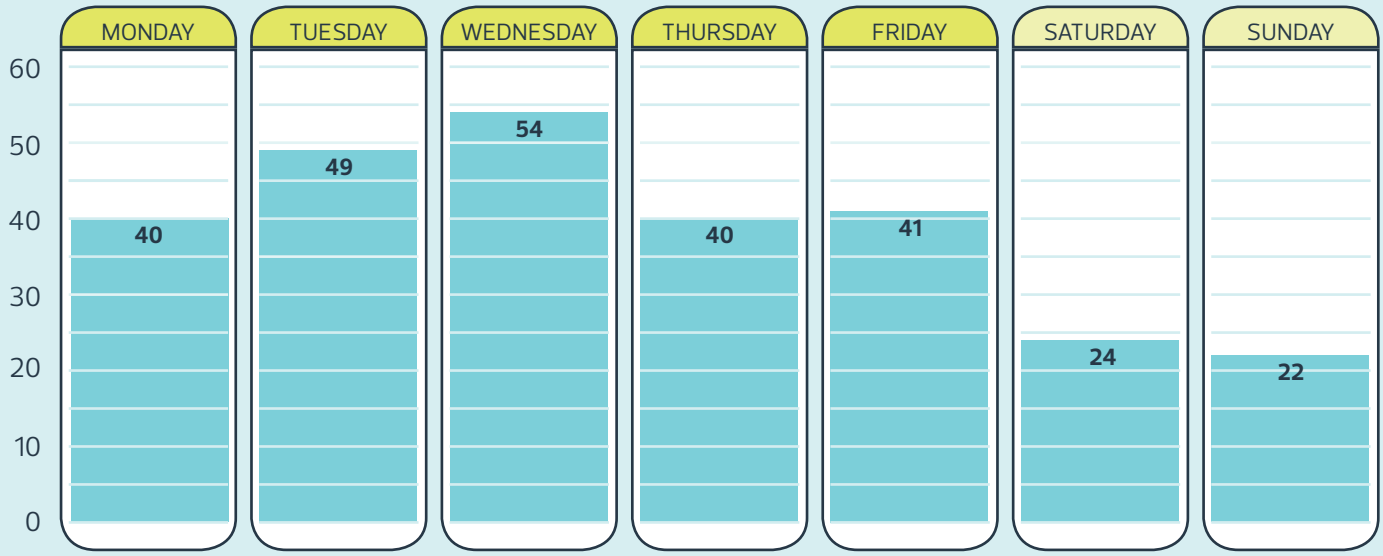
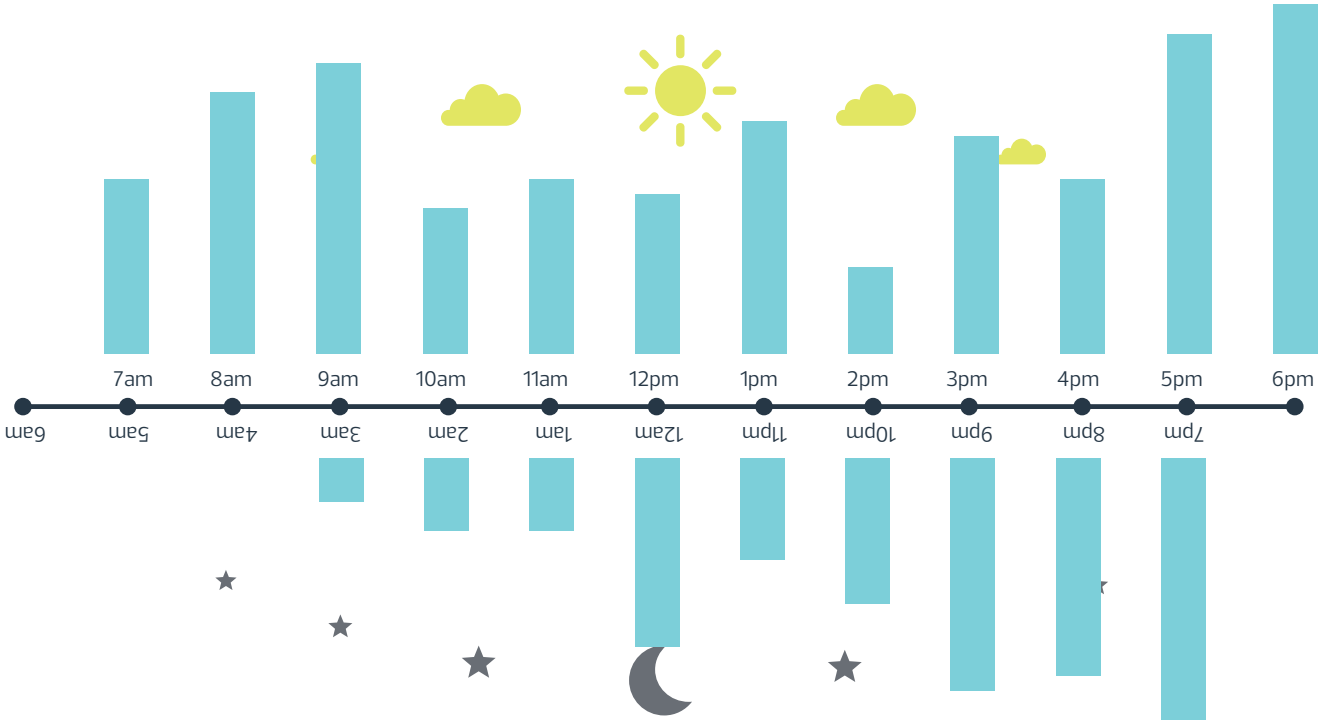


FIGURE 20:
Pedestrian Fatal and Injury Collisions by Hour[12] of Day

The highest number of fatal and injury pedestrian collisions occurred between 5:00 and 6:00 PM (8.9%, 24).



12 Hour name corresponds to "hour ending" in MVCIS, e.g., 6:00 AM refers to 5:01 AM – 6:00 AM inclusive.

FIGURE 21:
Actions of Pedestrians Killed or Injured in Collisions

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 64.1% (182) 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 21.1% (60) of fatalities and injuries. Other actions – including entering or exiting vehicles, walking on the roadway, and running onto the roadway – made up 14.8% (42) of pedestrian fatalities and injuries.

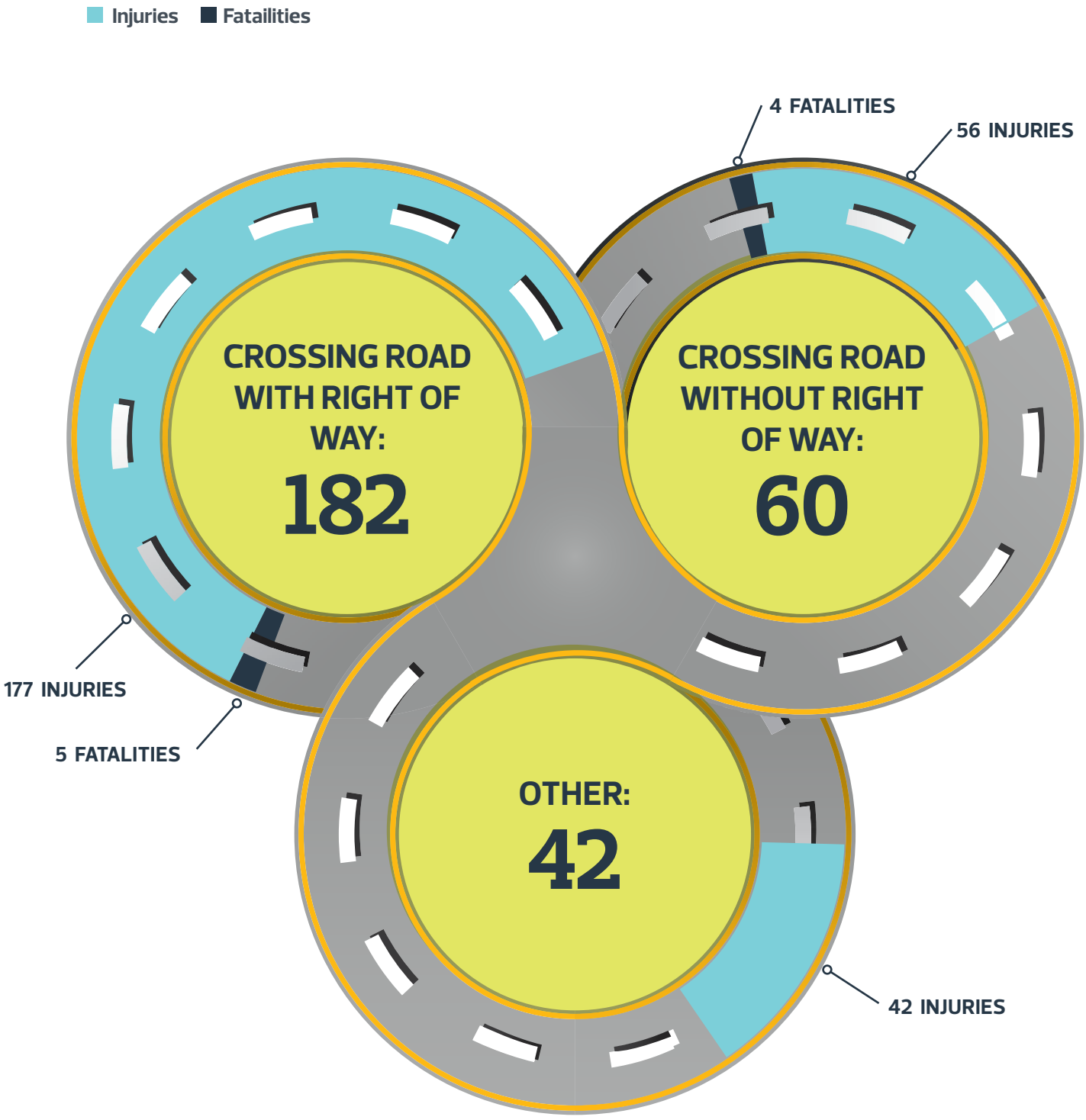


FIGURE 22:
Pedestrian Fatalities and Injuries by Age

Figure 22 shows 16.2% (46) of pedestrians involved in injury and fatality collisions were between the ages of 25 and 34, with 15.5% (44) between 19 and 24. Children 18 and younger made up 18.7% (53) of pedestrians involved in injury and fatality collisions while those aged 65 and older constituted 10.6% (30) of overall pedestrian fatalities and injuries.

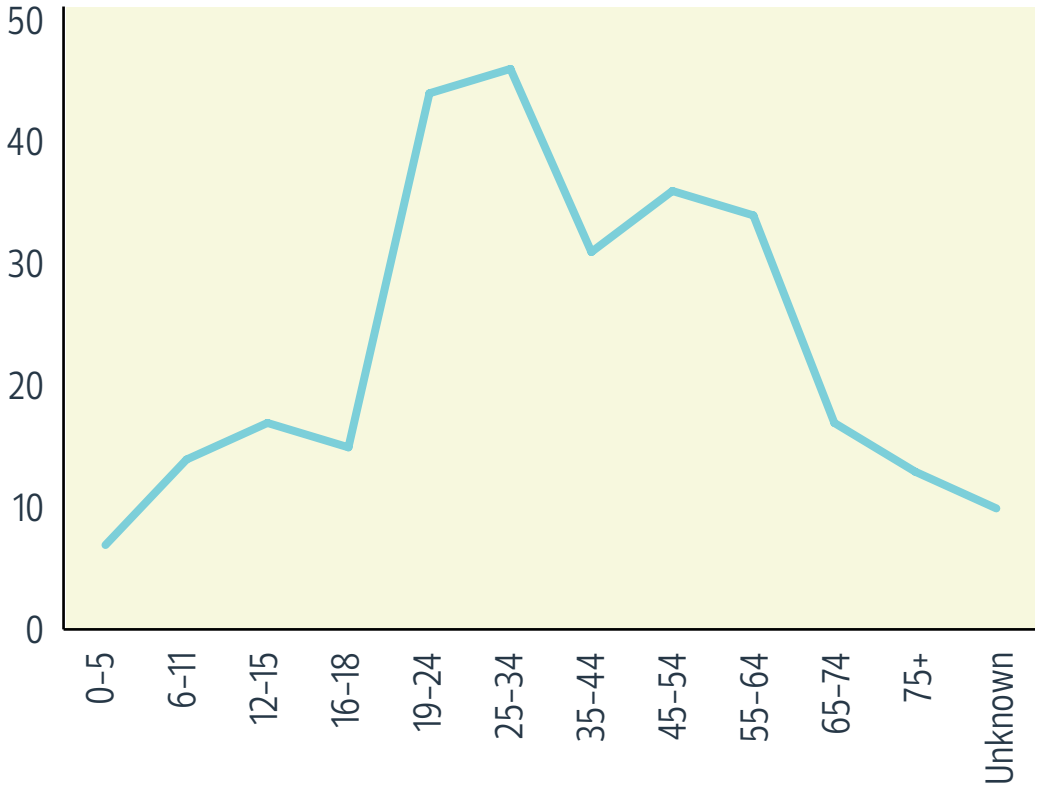
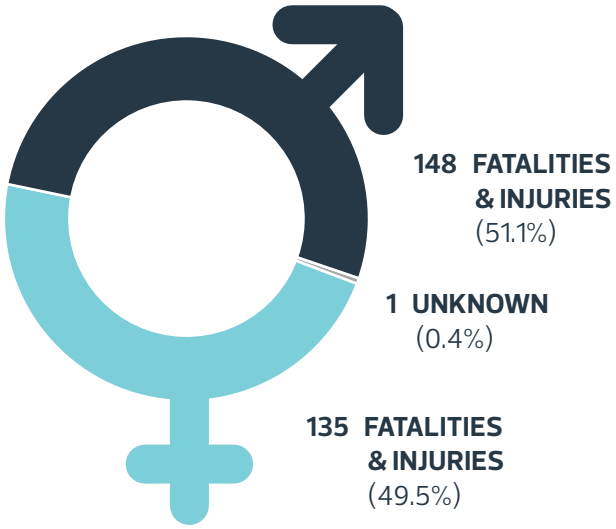


FIGURE 23:
Pedestrian Fatalities and Injuries by Gender

Overall, male pedestrians have a slightly higher likelihood of being injured or killed compared with female pedestrians (52.1% vs. 47.5%) as shown in Figure 23. However, in 2017 of the pedestrian fatalities, six were females and three were males.



SECTION 10.2:
CYCLIST COLLISIONS

In 2017 there were 143 collisions involving cyclists, which resulted in 120 injuries and 1 fatality.

FIGURE 24:
Cyclist Fatal and Injury Collisions by Month

In 2017 cyclist fatal and injury collisions occurred in nearly every month of the year, with the most occurring in the summer months (June to August) when more cyclists tend to be on the roads. The number of fatal and injury collisions peaked at 24 in June, compared to no fatal or injury collisions in February or March.

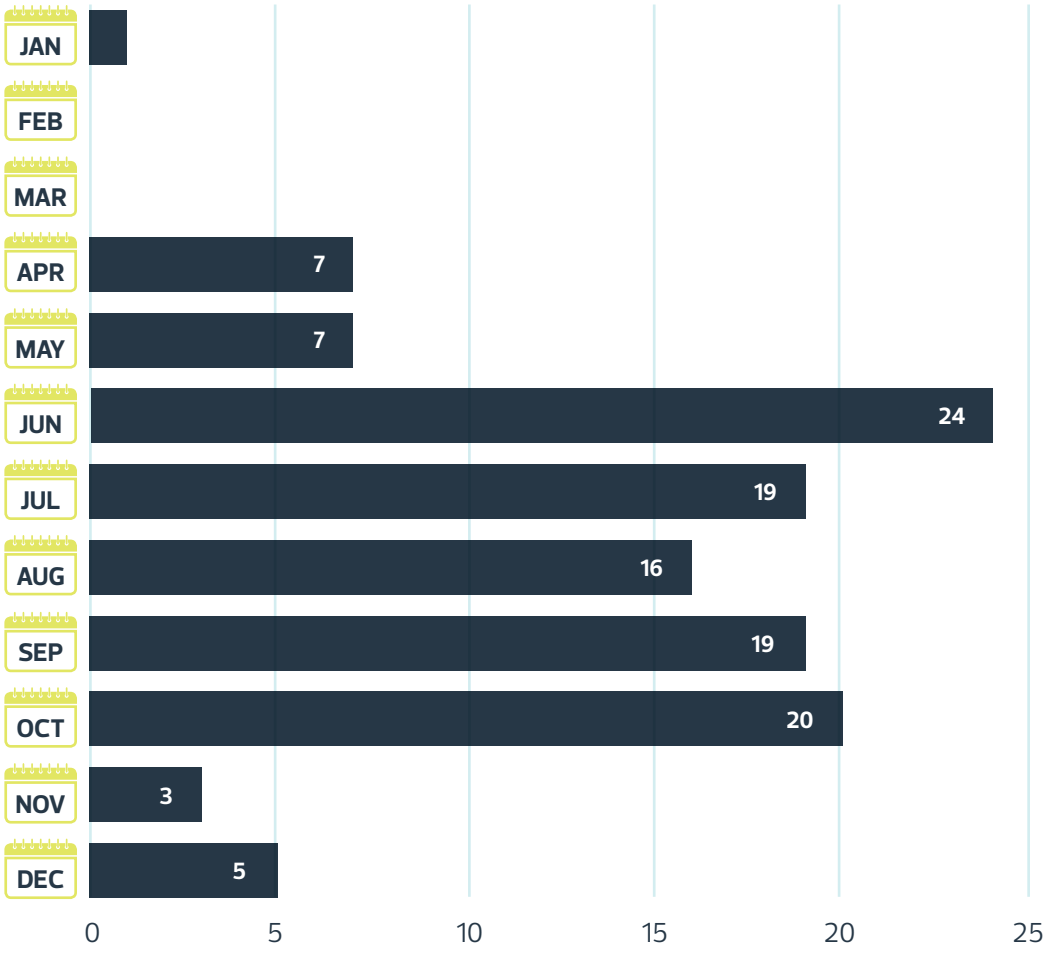


FIGURE 25:
Cyclist Fatal and Injury Collisions by Day of Week

Cyclist fatal and injury collisions were more likely to occur on Thursday (21.5%, 26 collisions) and Wednesday (17.4%, 21). The fewest cyclist fatal and injury collisions occurred on Sunday (9.9%, 12).

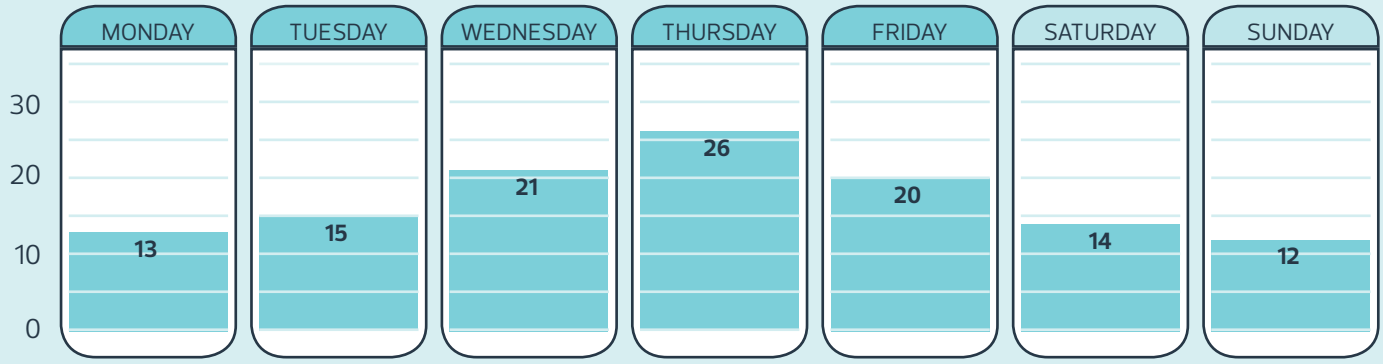
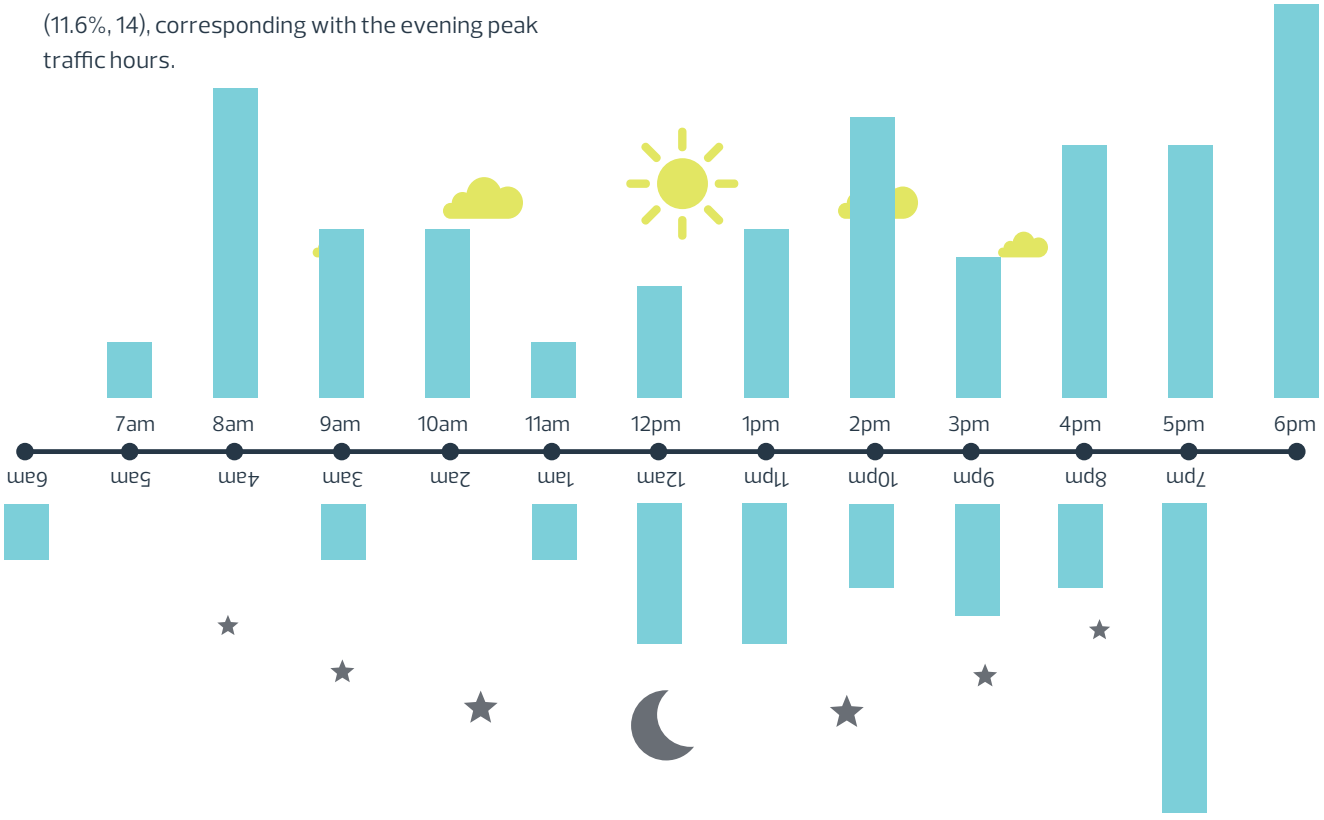


FIGURE 26:
Cyclist Fatal and Injury Collisions by Hour[13] of Day

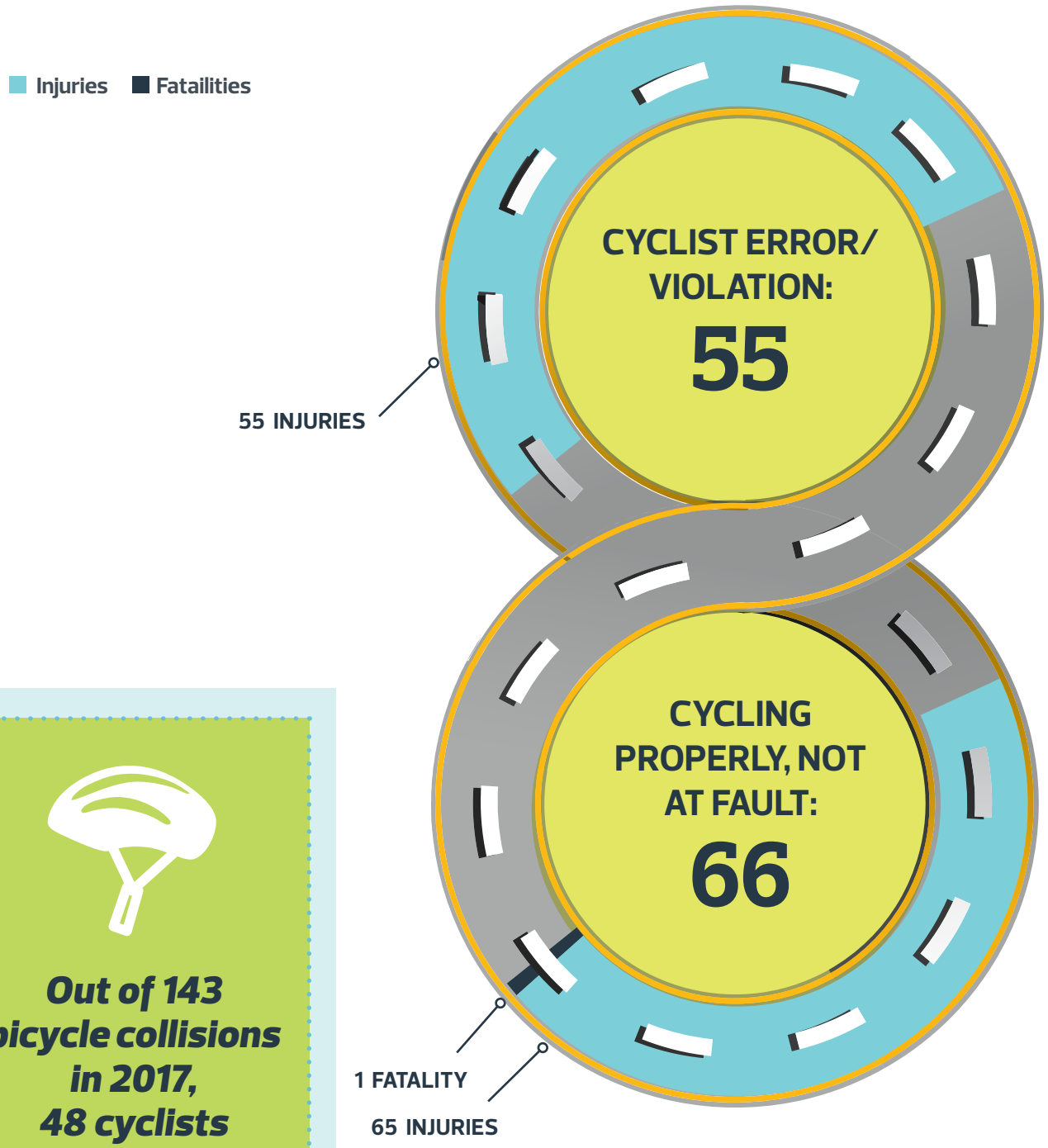
The highest number of cyclist fatal and injury collisions occurred between 5:00 and 6:00 PM (11.6%, 14), corresponding with the evening peak traffic hours.



13 Hour name corresponds to "hour ending" in MVCIS, e.g., 6:00 AM refers to 5:01 AM – 6:00 AM inclusive.

FIGURE 27:
Actions of Cyclists Killed or Injured in Collisions

Of the 121 cyclists involved in an injury or fatality collision, as shown in Figure 27, 54.5% (66) were deemed to be not at fault. Cyclists who were deemed to have committed errors or violations made up the other 45.5% (55).



Out of 143 bicycle collisions in 2017, 48 cyclists wore helmets and 59 did not.[14]

14 In 36 cases, this information is unknown (was not part of the police report).

FIGURE 28:
Cyclist Fatalities and Injuries by Age

The age group with the highest number of cyclists involved in an injury or fatality collision was 25 to 34 (21.5%, 26). A total of 19.0% (23) of cyclists involved in injury and fatality collisions were 35 to 44 years of age.

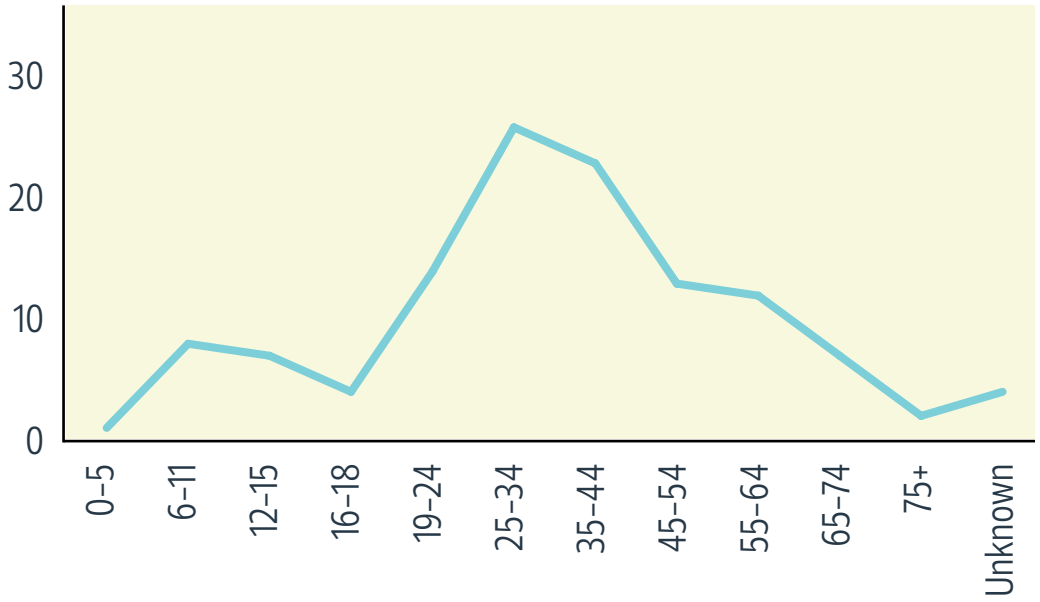
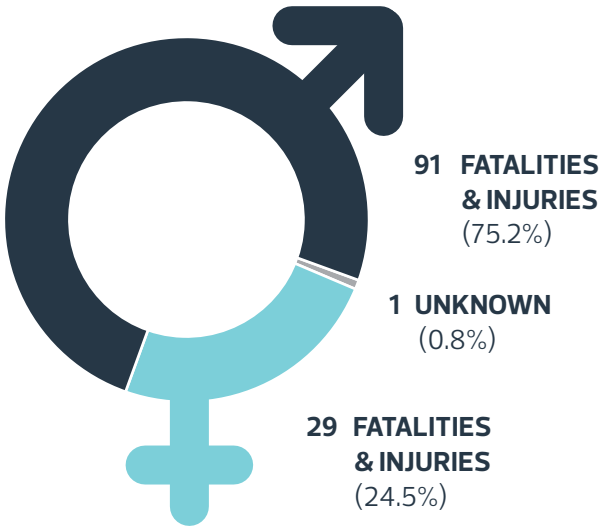


FIGURE 29:
Cyclist Fatalities and Injuries by Gender

Males are over-represented in cyclist collisions where the cyclist is injured or killed; male: 91 (75.2%) vs. female: 29 (24.0%).



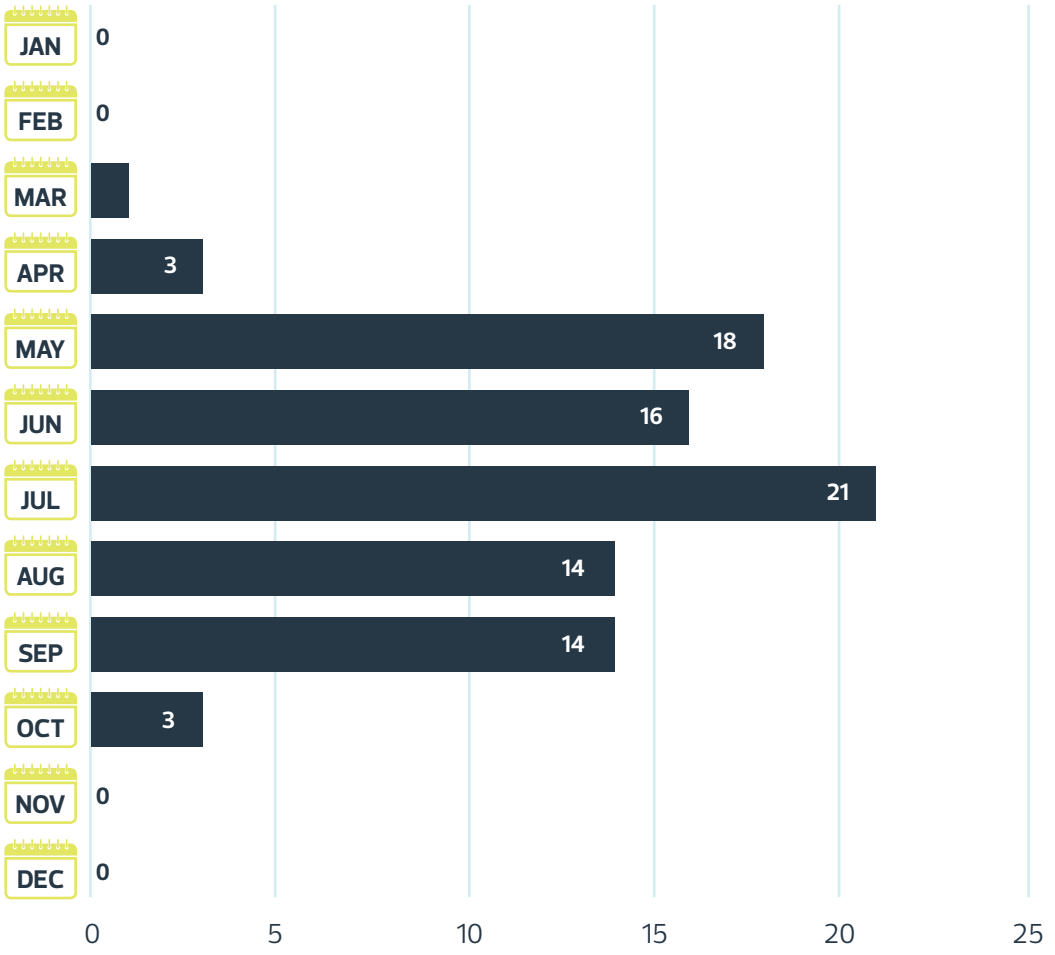
SECTION 10.3: MOTORCYCLIST COLLISIONS

In 2017 there were 154 collisions involving motorcycles[15], resulting in 4 fatalities and 91 injuries.

The following information relates to the 90 collisions in which motorcyclists were injured or killed.

FIGURE 30: Motorcyclist Fatal and Injury Collisions by Month

There were no motorcyclist collisions resulting in a fatality or injury in January, February, November, or December when motorcycles are less likely to be on the road. The highest month for fatal or injury collisions is July (23.3%, 21 collisions).



15 The figure of 154 collisions includes 9 collisions where the motorcycle was struck while legally parked and unattended.

FIGURE 31:
Motorcyclist Fatal and Injury Collisions by Day of Week

A higher number of motorcyclist fatal and injury collisions occurred on Sunday (23.3%, 21), followed by Tuesday (16.7%, 15).

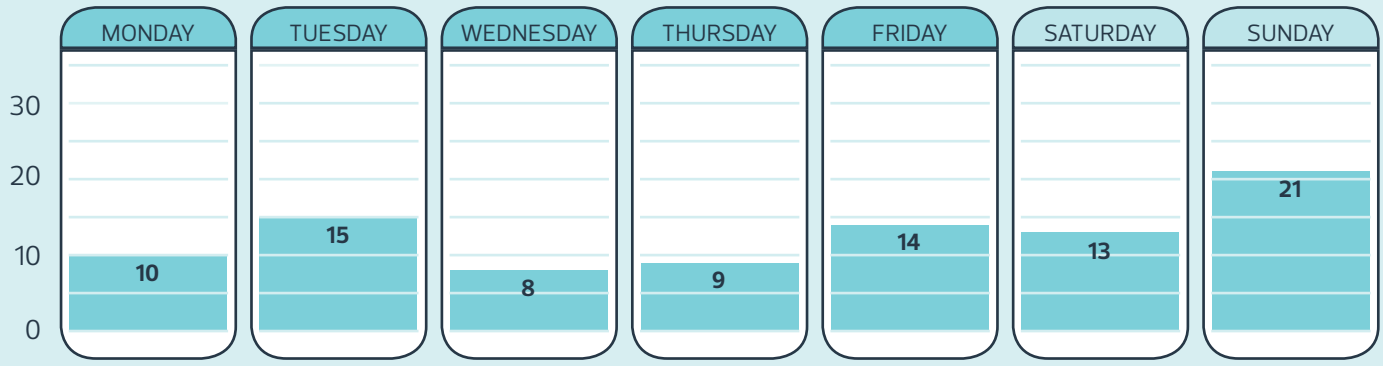
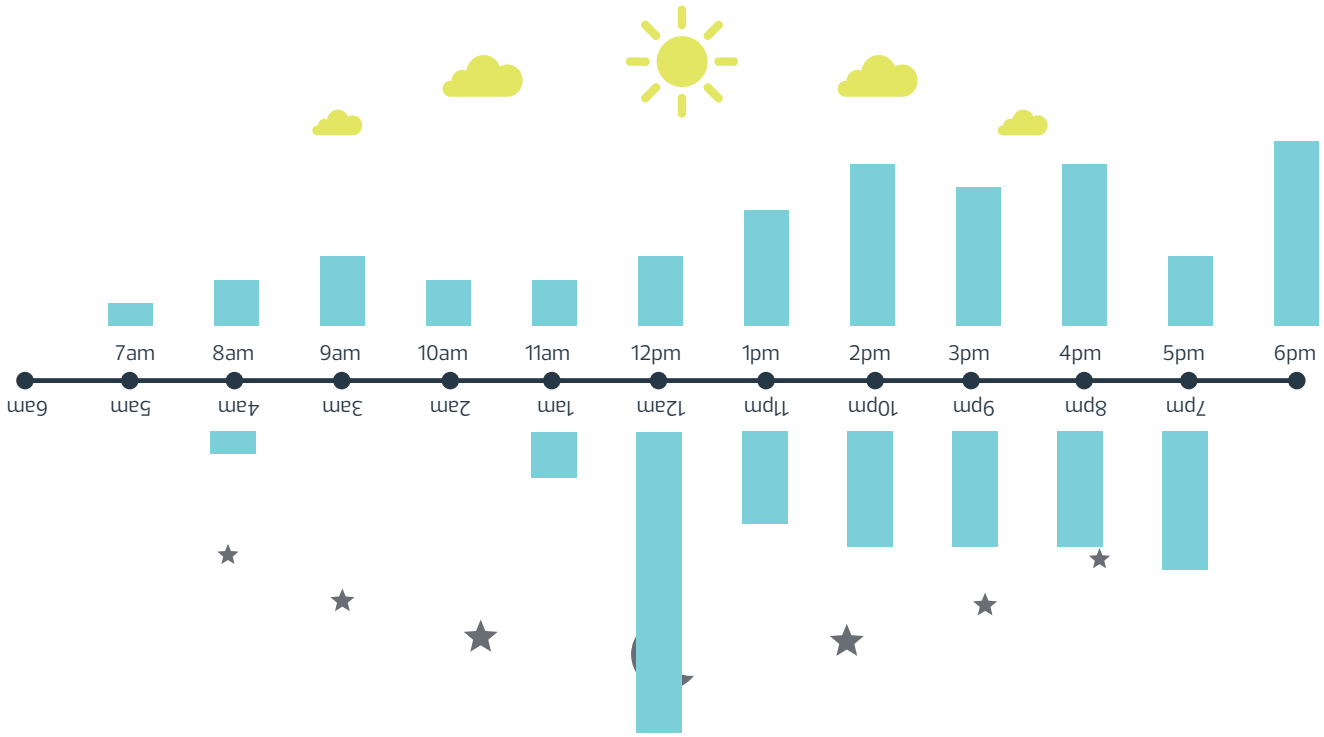


FIGURE 32:
Motorcyclist Fatal and Injury Collisions by Hour[16] of Day

More motorcyclist fatal and injury collisions occurred between 11:00 PM and midnight (14.4%, 13).



16 Hour name corresponds to "hour ending" in MVCIS, e.g., 6:00 AM refers to 5:01 AM – 6:00 AM inclusive.

FIGURE 33:
Action of Motorcyclists Killed or Injured in Collisions

Motorcyclists who were driving properly and deemed not at fault made up 47.4% (45) of motorcyclist fatalities or injuries. The remaining 52.6% (50) 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 resulted in 31.6% (30) of all motorcyclist fatalities and injuries.

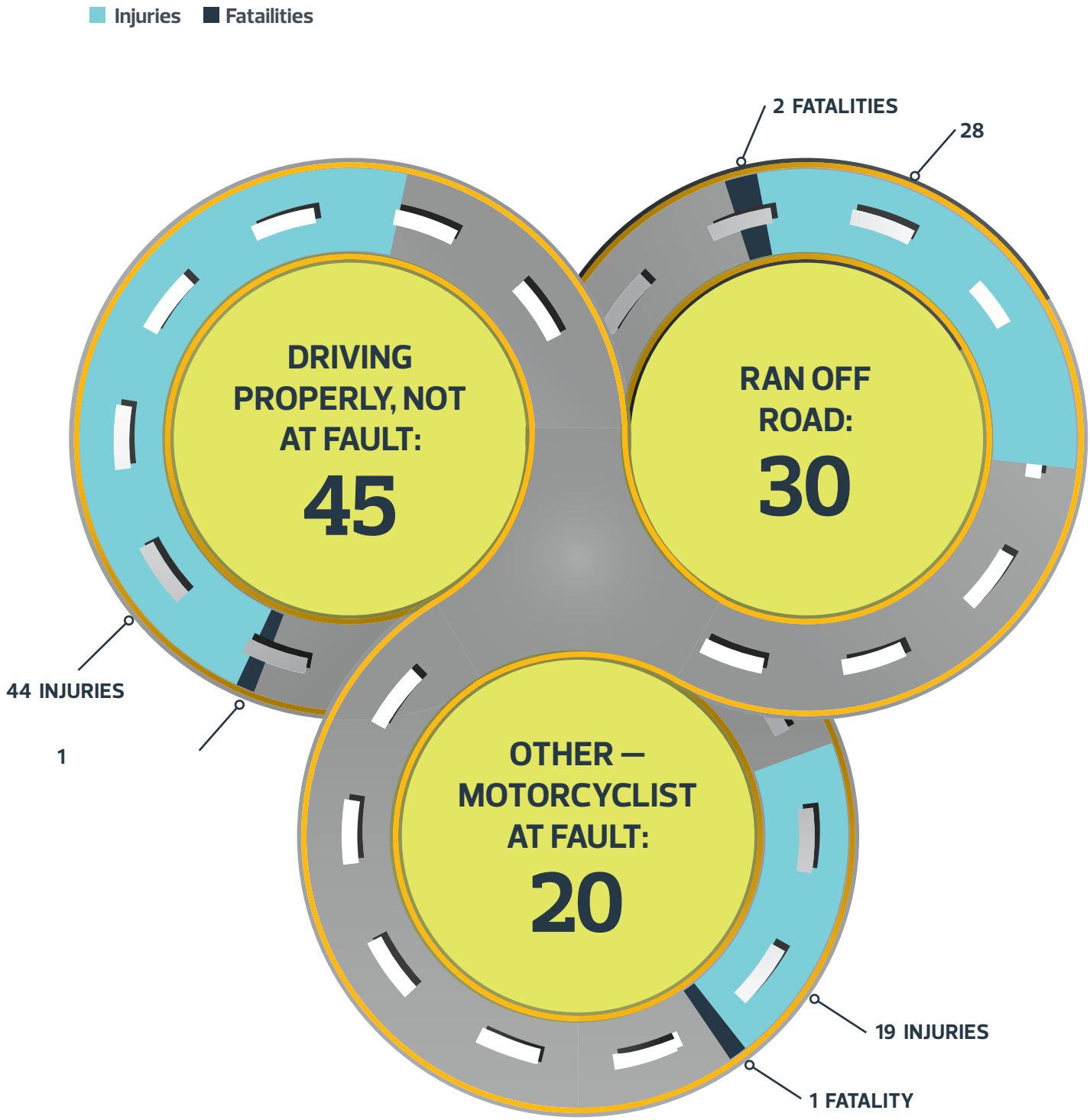


FIGURE 34:

Motorcyclist Fatalities and Injuries by Age

Motorcyclists aged 25 to 34 made up 34.7% (33) of all motorcyclist injuries and fatalities in 2017, followed by riders in the 35 to 44 age group (17.9%, 17). There were 4 motorcyclist fatalities in 2017.

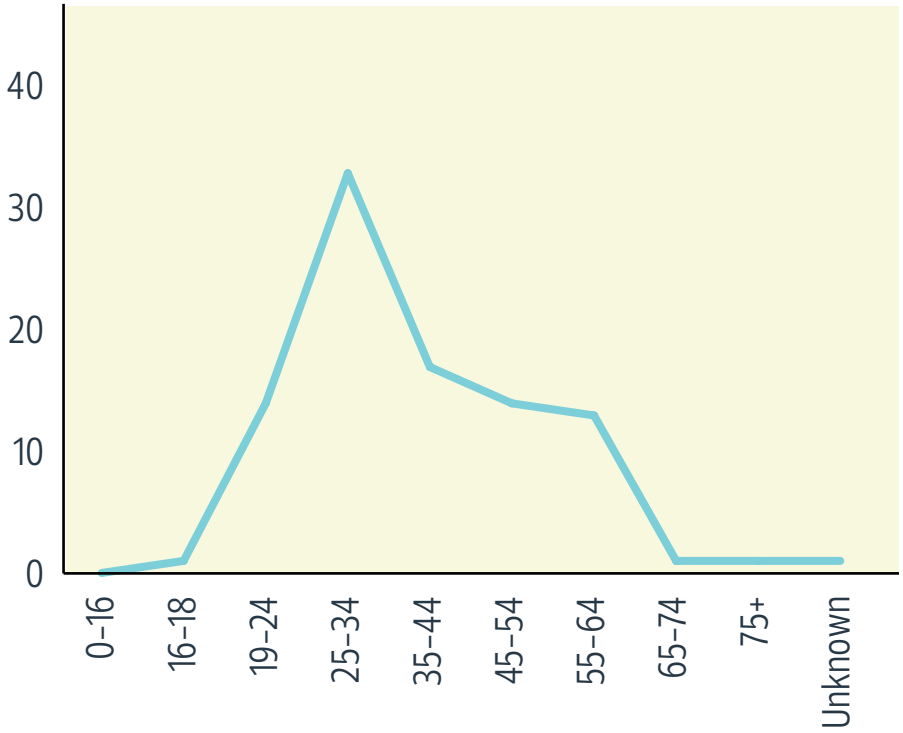
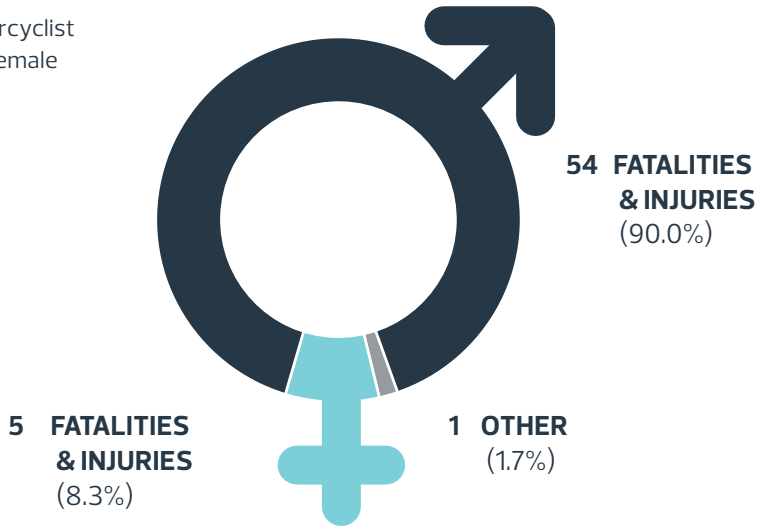


FIGURE 35:

Motorcyclist Fatalities and Injuries by Gender

Males are highly over-represented in motorcyclist fatalities and injuries; male 90.0% (54) vs. female 8.3% (5).



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 Traffic Safety from the Edmonton Police Service as of February 28, 2017. 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 (serious, resulting 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.
PEDESTRIAN	A person on foot or a person in or on a mobility aid.[17]
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 11 vehicle bridges over the North Saskatchewan River: Beverly, Capilano, Dawson, Low Level, James MacDonald, Walterdale, High Level, Groat, Quesnell, Anthony Henday South, and Anthony Henday North.

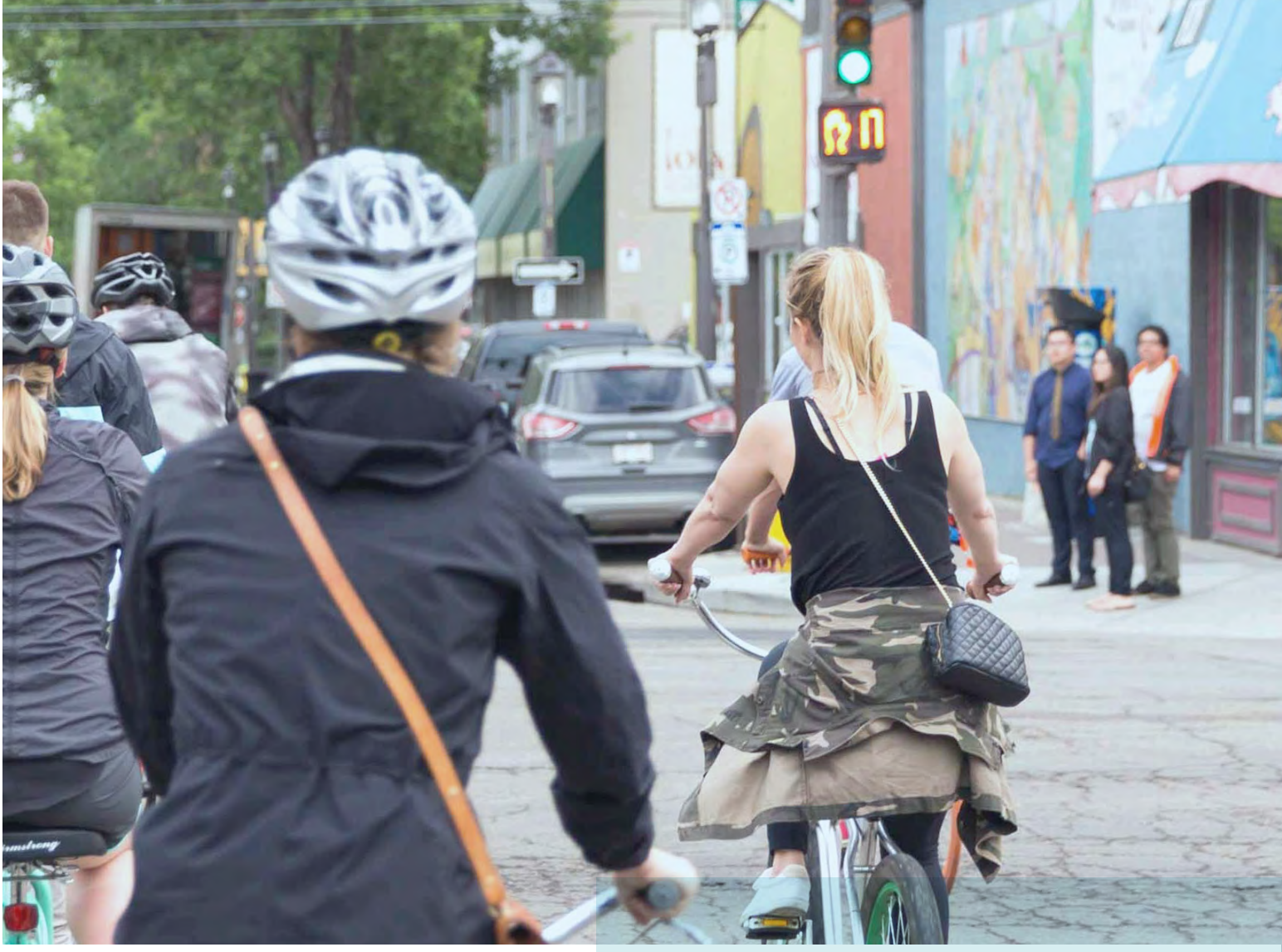
17 Definition of "pedestrian" from the Province of Alberta Traffic Safety Act, 1 Interpretation (1)(gg).

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.

FOLLOWING 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 RIGHT OF WAY (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.
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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