INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	December 2, 2019
SUBJECT/REPORT NO:	City of Hamilton Annual Collision Report - 2018 (PW19104) (City Wide)
WARD(S) AFFECTED:	City Wide
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COUNCIL DIRECTION

The Public Works Committee approved the Hamilton Strategic Road Safety Program and Vision Zero Action Plan for 2019-2025 on February 4, 2019. A key component of the program is the development of an Annual Collision Report.

INFORMATION

The 2018 Annual Collision Report, attached to Report PW19104 as Appendix "A", is the second annual edition of a high-level review of motor vehicle collisions occurring on City of Hamilton roadways. The report is a collaborative effort between the Public Works Department, Hamilton Police Services, Hamilton Fire Department and the Healthy & Safe Communities Department (Public Health Services).

The statistics and analysis will provide the Hamilton Strategic Road Safety Committee with the information to identify priority roadway safety issues, develop technical initiatives to improve roadway safety and undertake public education campaigns, all of which will contribute to improving roadway safety and align with the principles of Vision Zero.

The report provides an analysis of collisions trends over a five-year span (2014-2018) and collision statistics for 2018.

The report is broken down into 13 sections as follows:

Section 1 – Roadway Safety Initiatives and Education Campaigns
Section 2 – Five Year Collision Trends – 2014 to 2018
Section 3 – Collision Statistics - 2018
Section 4 – Fatal Collisions - 2018
Section 5 – Pedestrian and Cyclist Collisions - 2018
Section 6 – Lincoln M. Alexander Parkway and Red Hill Valley Parkway Five Year Collision Trends – 2014 to 2018
Section 7 – Lincoln M. Alexander Parkway and Red Hill Valley Parkway Collision Statistics - 2018
Section 8 – Network Screening
Section 9 – Red Light Camera Program Statistics
Section 10 – Hamilton Fire Collision Statistics
Section 11 – Hamilton Police Services Collision Statistics
Section 12 – Appendix

The following provides a summary of key statistics in the Annual Collision Report:

Five Year Collision Trends – 2014 to 2018

Year	Total Collisions	Self-Reported Collisions	Police Reported Collisions	Injury Collisions	Property Damage Collisions	Fatal Collisions
2014	8,101	4,266	3,835	1,831	1,988	16
2015	8,399	4,535	3,864	1,931	1,919	14
2016	8,265	4,653	3,612	1,938	1,663	11
2017	8,806	5,226	3,580	1,682	1,882	16
2018	9,281	5,891	3,390	1,551	1,827	11

An evaluation of the five-year collision data shows that injury collisions were trending upwards until they stabilized in 2016. In 2017, injury collisions dropped by 13% (256 collisions) compared to 2016, then a further 8% decline in 2018 (131 collisions) compared to 2017. Overall, injury collisions have declined 20% since peaking in 2016.

The decreasing trend in injury collision corresponds with the initiation of the Hamilton Strategic Road Safety Program, the implementation of various collision reduction safety measures and roadway safety education campaigns.

The trend also aligns with the primary aim of Vision Zero, to achieve a transportation system where no loss of life is acceptable and where traffic fatalities and injuries are preventable.

Collisions Statistics - 2018

A summary of the 2018 general collision statistics are as follows:

- 9,281 total collisions (5,891 self-reported and 3,390 Police reported);
- 1,551 collisions resulted in injuries and 11 collisions resulted in fatalities;
- Collisions occurred most frequently on a Friday;
- The hour with the highest number of total collisions was 5-6 p.m.;
- Months with the highest number of total collisions were January and November;
- The most common collision type was a rear-end motor collision and most frequent driver action was lost control;
- There were 1,159 motorists between the ages of 21 and 30 that were involved in collisions, followed by 1,059 (31-40), 957 (51-60) and 883 (41-50); and
- 17% of all collisions resulted in injuries and 0.12% resulted in a fatality.

Fatal Collisions – 2018

A review of motor vehicle collisions involving fatalities was undertaken to identify root causes and to identify potential mitigation strategies.

Fatal collisions have remained relatively constant over a five-year time period. The following provides an overview of fatal collision statistics in 2018:

- 18% (2) of fatal collisions occurred on rural roadways and 82% (9) occurred on urban roadways;
- 18% (2) of fatal collisions were cyclist collisions; one involved an impaired cyclist and the other involved a cyclist colliding with a turning truck;
- 27% (3) of fatal collisions involved pedestrians;
- 45% (5) occurred within an intersection and 55% (6) occurred at midblock locations;
- 9% (1) of fatal collisions occurred when it was raining and 91% (10) during clear weather;
- 27% (3) occurred during wet road conditions and 73% (8) on dry roadways;

- 9% (1) of fatal collisions involved a single motor vehicle, 9% (1) occurred during a head-on collision, 27% (3) were pedestrian/vehicle collisions, 45% (5) involved turning vehicles (two of the five were cyclist fatalities) and 9% (1) was the result of a rear-end collision; and
- 9% (1) occurred when the driver lost control of the vehicle, 9% (1) when the driver disobeyed traffic control, 18% (2) when the drivers failed to yield the right-of-way, and 27% (3) when drivers were exceeding the speed limit or driving too quickly for the conditions.

Based on the data, the majority of fatal collisions occurred during clear, dry conditions. A review of the collisions involving turning vehicles identified that four of the five collisions occurred under daylight conditions and two of the collisions identified driver impairment as a contributing factor. A review of the pedestrian fatalities identified that all three (3) occurred at intersections or were related to intersections. Two of the three pedestrians were crossing at controlled locations.

Pedestrian and Cyclist Collisions – 2018

There was a total of 245 collisions involving pedestrians in 2018. 219 (89%) caused non-fatal injuries while three (1.2%) resulted in fatalities. An analysis of the data identified that the majority of pedestrian collisions, 124 (50%), occurred at signalized intersections.

There was a total of 166 collisions involving cyclists in 2018. 135 (81%) caused non-fatal injuries while 2 (1.5%) resulted in fatalities. An analysis of the data involving cyclists identified that the majority of cyclist collisions, 74 (45%) occurred at locations with no traffic control.

Lincoln M. Alexander Parkway (LINC) and the Red Hill Valley Parkway (RHVP) Five Year Collision Trends

An analysis of collisions between 2014 and 2018 identified that following too close and losing control of the vehicle were the predominant causes of collisions on the LINC and RHVP, respectively.

Most of the collisions on the LINC occurred under dry roadway conditions (80%) while the majority of collisions on the RHVP occurred under wet roadway conditions (64%). The most common collision type was rear end collisions on the LINC and single motor vehicle collisions on the RHVP.

There has been an upward trend in the total number of collisions on the LINC (32%) and RHVP (100%) over the past five years. However, this can be attributed to the

increase in the number of self-reported collisions on the LINC (86%) and RHVP (208%) which are of low severity and do not involve personal injuries.

Recent measures to address safety on the RHVP include a speed limit change, additional enforcement, pavement resurfacing, roadway high-visibility delineation and a queue warning system.

LINC Collisions – 2014 to 2018

	2014	2015	2016	2017	2018	Total
Total Collisions	138	135	144	159	182	758
Self-Reported	73	64	86	98	136	457
Police Reported	65	71	58	61	46	301
Crossovers	2	1	0	1	1	5
Property Damage	27	22	21	31	19	120
Injury	37	50	38	30	27	182
Fatal	1	0	0	1	0	2

RHVP Collisions – 2014 to 2018

	2014	2015	2016	2017	2018	TOTAL
Total Collisions	117	238	186	193	235	969
Self - Reported	46	101	84	91	142	464
Police Reported	71	137	102	102	93	505
Crossovers	1	6	0	3	3	13
Property Damage	45	79	58	59	54	295
Injury	26	56	44	41	39	206
Fatal	0	2	0	2	0	4

Lincoln M. Alexander Parkway and Red Hill Valley Parkway Collision Statistics – 2018

The number of self-reported collisions continued to rise in 2018 with a 39% increase on the LINC and 56% increase on the RHVP. Police reported collisions decreased on both.

As well, there was a continuation in the trends for the majority of collisions on the LINC to occur under dry conditions (76%) and the majority of collisions on the RHVP to occur under wet roadway conditions (61%).

	LINC	RVHP
Day with highest number of total collisions	Friday	Monday/Tuesday
Month with highest number of total collisions	November	October
Hour with highest number of total collisions	5-6 p.m.	8-9 a.m.
Most common collision type	Rear End	Single Motor Vehicle
Most frequent driver action resulting in collision	Following Too Close	Lost Control

Network Screening

Network screening is the comprehensive process of evaluating safety conditions on the entire road network in the City of Hamilton. By comparing locations to other similar types within the group, a risk indicator is calculated. All locations are then grouped and sorted by the indicator. Where collision groups were found to be overrepresented, greater potential exists for the application of programs or techniques to reduce the number of collisions.

A Collision Countermeasure Program has been implemented to undertake safety audits of over-represented collision locations identified through the network screening process.

Network Screening Over-Representation Ranking: 2014-2018 (Top 15 Locations)

Rank	Group	Description	Network Risk Indicator	Total Collisions	Collisions per km	Fatal/Injury Collisions for 5 Years
1	Off-ramp	Stone Church Ramp EB - SB ramp: Mud NB - EB off ramp – Stone Church ramp	52.3	19	43.6	9
2	Two-way	Highland Road South and Third Road	50.6	7	N/A	4
3	On-ramp	Mud: Mud SB - EB off ramp - RHVP	35.7	31	72.4	7
4	Rural Road	Weirs Lane: Hwy 8 - Governors	35.1	13	5.9	3
5	Urban Road	Upper James: Rymal - Stone Church	34.5	70	69.5	45
6	Two-way	Eleventh Road and Mud	34.0	16	N/A	10
7	Rural Road	Rymal: Upper Sherman - Upper Gage	33.5	42	49.8	34
8	Two-way	Beechwood and Lottridge	32.8	7	N/A	7
9	Urban Road	Queenston: Nash - Centennial Parkway	32.5	59	72.3	31
10	Signal	North Service & QEW Off-Ramp	32.0	25	N/A	20
11	Urban Road	James: St Josephs - King	30.3	49	50.6	13
12	Rural Road	Rymal: Swayze - Upper Centennial	30.0	19	46.8	10
13	On-ramp	Queenston to RHVP SB loop on ramp	29.7	7	21.2	3
14	Urban Road	King: Paradise - Newton	28.7	22	28.8	12
15	Urban Road	King: James - Catharine	28.2	18	53.4	9

Red Light Camera Program Statistics

In 2008, the City of Hamilton began installing Red Light Cameras (RLC) at intersections as a measure to reduce the number of right-angle collisions which result in serious injury or fatalities. There are currently 29 RLC's installed across the City.

There has been a 53% reduction in right-angle collisions and 69% reduction in injury/fatal collisions at RLC locations in the past three years compared to the three years prior to initiation of the program.

Vision Zero

The 2018 Annual Collision Report provides a comprehensive statistical review of collisions on City of Hamilton roadways. This information will be utilized to identify roadway safety priorities, inform and focus technical and educational initiatives as identified in the Vision Zero Action Plan.

The Hamilton Strategic Road Safety Committee and its partners are committed to reducing the number of serious injury and fatal collisions on City of Hamilton roadways by integrating the goals and principles of Vision Zero. Vision Zero is a proactive approach to road safety, with the goal of zero fatalities or serious injuries on roadways.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW19104 – City of Hamilton Annual Collision Report - 2018

City of Hamilton

2018 Annual Collision Report

Hamilton

TABLE OF CONTENTS

The Annual Collision Report is a summary of statistics and trends associated with traffic collisions that have occurred in the City of Hamilton. It is comprised of the following sections:

EXECUTIVE SUMMARY

The City of Hamilton road network consists of approximately 6,490 lane-kilometres of urban and rural roads. As part of the road network, there are a total of 8,489 intersections, of which 608 are controlled by traffic signals and 1,169 are controlled by all-way stops. In addition, the City of Hamilton has 72 pedestrian crossovers.

An analysis of collisions in 2018 identified that the majority of collisions occurred on a Friday, the month with the highest number of total collisions was November, and the hour with the highest number of collisions was between 4-5 p.m.

In 2018, 245 pedestrian collisions occurred, which resulted in 219 injuries and three fatalities. There were 166 cyclist collisions, which resulted in 135 injuries and two fatalities.

The most common collision type was a single motor vehicle collision, and the most frequent driver actions resulting in the collision were loss of control and failing to yield the right-of-way.

DISCLAIMER AND EXPLANATION

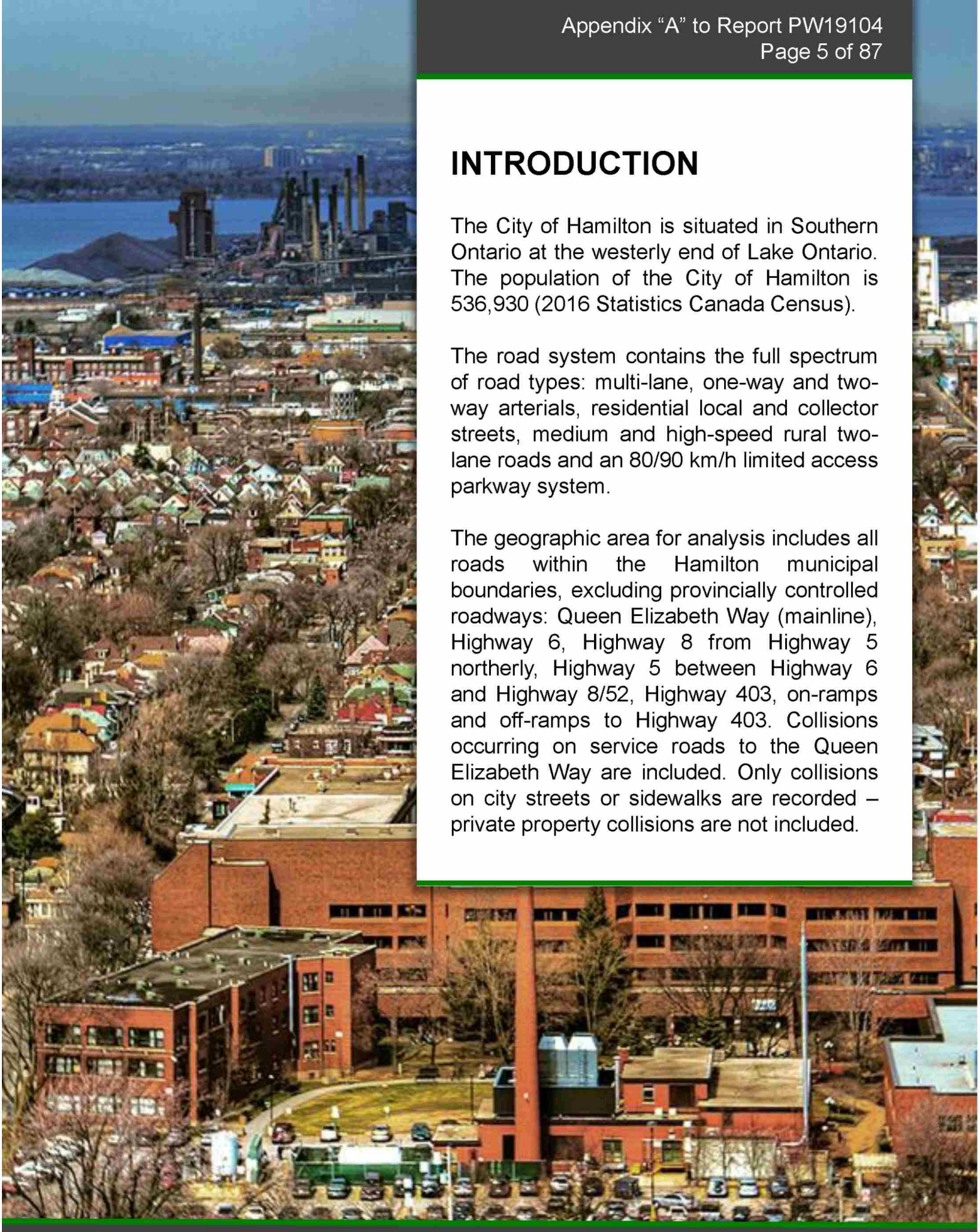
Self-Reporting of Collisions

The use of the term “reported” or “police reported” collision refers to a collision attended by a member of the Hamilton Police Service who filled out the standard Provincial reporting form.

In June 2003, Hamilton Police Services adopted a system of Collision Reporting Centres (CRC) for the City of Hamilton. These “one stop reporting centres” allow citizens who are involved in minor or property damage collisions, to file a report based on their own information only, at the nearest CRC office. These collisions are referred to as “self-reported” collisions.

As a result of the introduction of self-reporting, there has been a significant decrease in the total number of collisions reported by police officers, and the statistics in this report reflect this. This is to be expected as the onus for reporting minor collisions was shifted from the police officers to the general public.

Where ‘”Total Collisions” are reported in this document, they are the sum of Police Reported Collisions and Self-Reported Collisions; otherwise the statistics are for Police Reported Collisions.



INTRODUCTION

The City of Hamilton is situated in Southern Ontario at the westerly end of Lake Ontario. The population of the City of Hamilton is 536,930 (2016 Statistics Canada Census).

The road system contains the full spectrum of road types: multi-lane, one-way and two-way arterials, residential local and collector streets, medium and high-speed rural two-lane roads and an 80/90 km/h limited access parkway system.

The geographic area for analysis includes all roads within the Hamilton municipal boundaries, excluding provincially controlled roadways: Queen Elizabeth Way (mainline), Highway 6, Highway 8 from Highway 5 northerly, Highway 5 between Highway 6 and Highway 8/52, Highway 403, on-ramps and off-ramps to Highway 403. Collisions occurring on service roads to the Queen Elizabeth Way are included. Only collisions on city streets or sidewalks are recorded – private property collisions are not included.

INTRODUCTION

Traffic collisions are a primary cause of death, injury and associated property loss.

The average annual cost of collisions in Hamilton, between 2013-2017, amounted to an estimated $388 million*.

Direct costs include property damage, health care, police services, courts, fire and ambulance services, tow trucks, out of pocket costs, and traffic delays. Indirect costs of collisions (associated with productivity losses due to disability and premature mortality) are more than twice the direct costs.

The intent of this report is to provide factual information to those agencies and persons concerned with the safety of the roadway transportation system within the City of Hamilton.

Between 2014 and 2018, there were an average of 8,570 total collisions and an average of 1,787 collisions resulting in injuries on Hamilton roadways each year, including an average of 13 fatal collisions per year. This information correlates to the following average collision rates per 100,000 population for the City of Hamilton.

	Collision Rate/100,000 Pop.			Injury Collision Rate/100,000 Pop.			Fatality Collision Rate/100,000 Pop.		
	All	Ped.	Cyclist	All	Ped.	Cyclist	All	Ped.	Cyclist
2014	1,558.0	48.9	30.4	352.1	43.3	24.8	3.1	1.0	0.0
2015	1,615.3	50.6	31.7	371.4	44.4	25.2	2.7	1.3	0.2
2016 **	1,539.3	55.5	33.3	360.9	50.5	27.2	2.0	0.7	0.0
2017 **	1,640.1	46.0	32.4	311.5	41.5	25.1	3.0	0.7	0.0
2018 **	1,728.6	45.6	30.9	289.2	41.0	25.1	2.0	0.6	0.4

* 2018 Hamilton Transportation Master Plan
** Collision rates based on 2016 Statistics Canada Census.

Section 1

Roadway Safety Initiatives and Education Campaigns

ROADWAY SAFETY INITIATIVES

The Hamilton Strategic Road Safety Program and the Hamilton Strategic Road Safety Committee were re-established in 2014 by City Council and are committed to reducing the number of collisions, particularly injury and fatal collisions citywide. Since 2014, numerous roadway safety initiatives have been implemented to encourage motorists to slow down and improve safety for all road users.

EDUCATION CAMPAIGNS

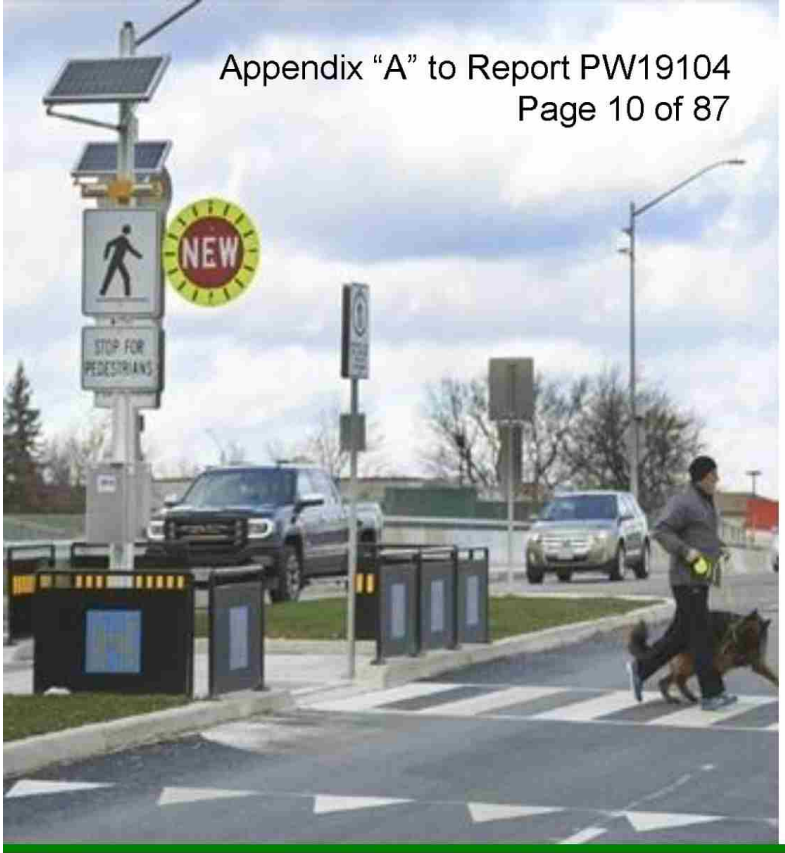
Since 2015, the City of Hamilton has launched a number of road safety education campaigns to raise awareness about issues identified by the Hamilton Strategic Road Safety Committee. These campaigns are targeted to encourage motorists to change their behavior. These various campaigns includes robust communications plans that target motorists, cyclists and pedestrians with a variety of tactics such as media outreach, videos, social media, print and radio advertisements, and more.

Dynamic Speed Signs

Dynamic speed signs have been introduced in the City of Hamilton as part of a safety initiative to reduce vehicle speed. The operating speed electronically displayed is a strong visual reminder to the motorist to comply with the posted speed limit. Residents can also access the City website to see the placement of devices and obtain summary data from each unit.

Safety Zone Lawn Signs and Neighbourhood Entry Signs

Lawn signs and neighbourhood entry signs advising drivers to slow down are now available to residents of Hamilton. These signs promote safer streets and remind drivers to reduce their speed in residential areas. The safety of all road users is a priority for the City of Hamilton.

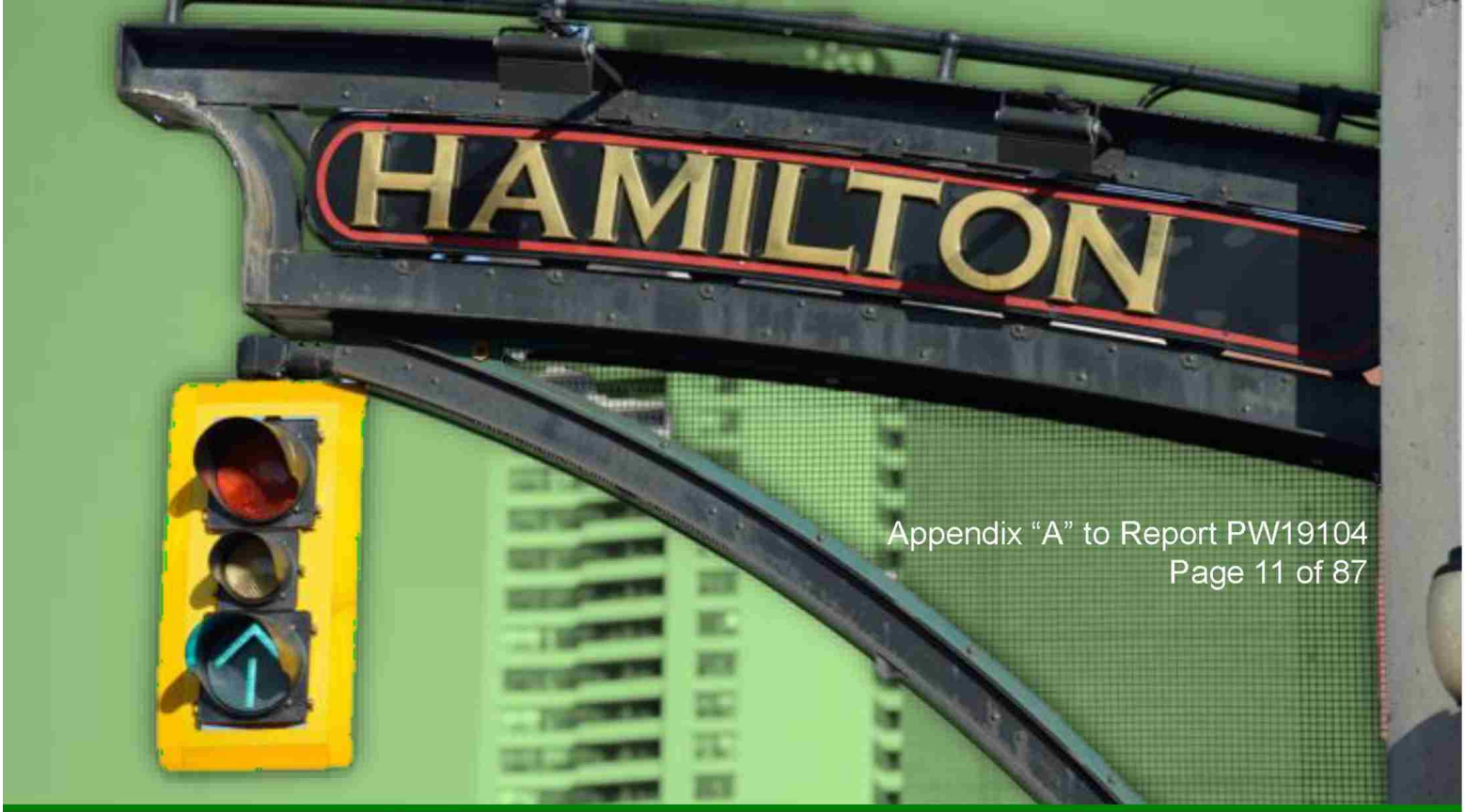


Pedestrian Crossovers

The City of Hamilton approved the use and installation of pedestrian crossovers in 2016. These crossovers allow pedestrians to easily and safely cross the road. The Highway Traffic Act requires motorists and cyclists to stop and yield to pedestrians intending to cross the road, and wait for them to completely reach the other side before driving. The City installed 19 pedestrian crossovers in 2018. Approximately $400,000 is dedicated each year for the installation of pedestrian crossovers from a priority ranking list.

Traffic Calming Measures

Speed cushions, bump-outs, median islands and knockdown sticks are additional tools used across the City to reduce vehicle speeds and increase safety for all road users. Approximately $350,000 is dedicated each year for implementing traffic calming measures on Hamilton roadways.



Traffic Signals

The City of Hamilton's Public Works Department has been using various approaches to create safer signalized intersections for all road users:

- Introduction of fully protected left-turn phasing to reduce conflicts between pedestrians and vehicles
- All new and reconstructed signals feature pedestrian countdown signals and accessible pedestrian push-buttons
- Ladder crosswalk markings are installed to highlight the presence of pedestrian crossing facilities
- Increases in the allocated crossing time for pedestrians
- Right-turn-on-red movements are restricted where vehicle sightlines are insufficient
- Expansion of the Red Light Camera Program through the installation of five new red light cameras per year at locations that experience higher than expected right-angle collisions.

School Zone Safety Reviews

The Hamilton Strategic Road Safety Committee recognizes that school zones often see a high number of vulnerable road users.

City staff from multiple departments, have been proactively conducting and implementing various initiatives throughout the City to ensure that children can travel to and from school safely. Some of these initiatives include increased enforcement by Hamilton Police Services and Hamilton Parking Enforcement, reduced speed limits, expansion of ladder crosswalk locations, radar message board installations, school zone and additional warning signs, speed cushions, bump-outs, and the development of Safe Routes to School through the Transportation Planning division and Hamilton Public Health.

Section 2

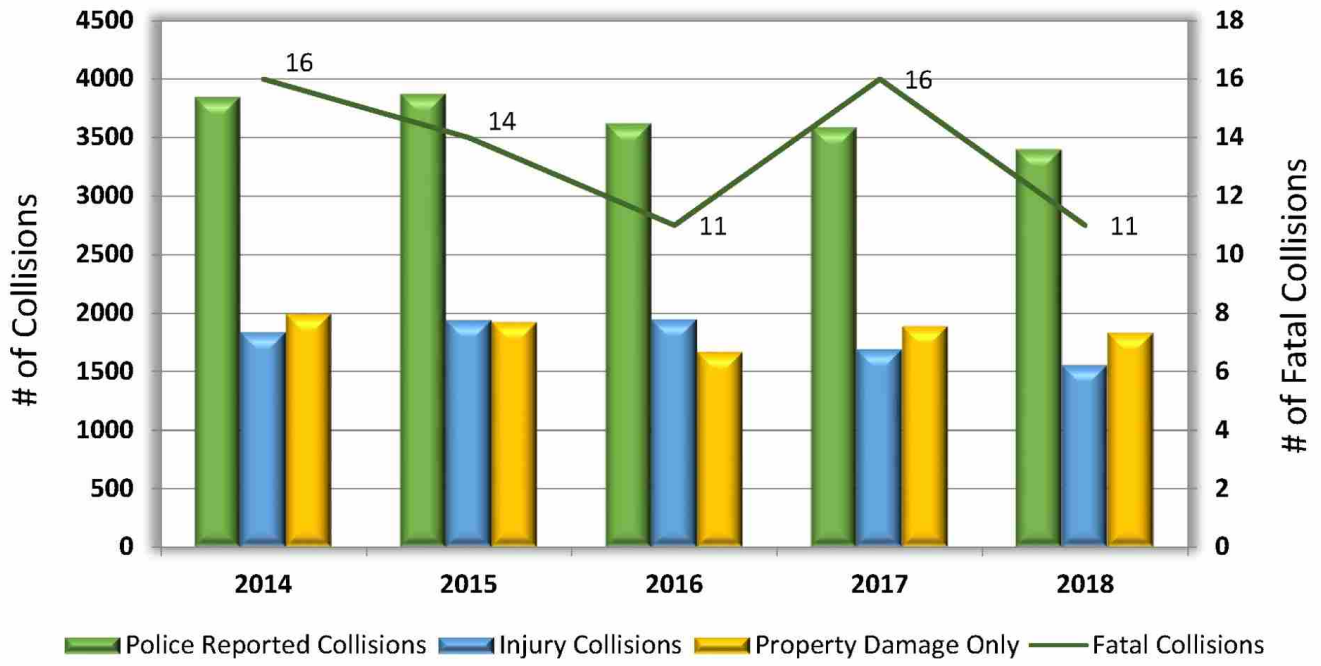
Five Year Collision Trends – 2014 to 2018

The total number of collisions have been generally increasing each year since 2014. However, the number of collisions with Hamilton Police Services involvement has declined since 2015 while the number of self-reported collisions has increased. There was a reduction of 129 injury collisions from 2017 to 2018.

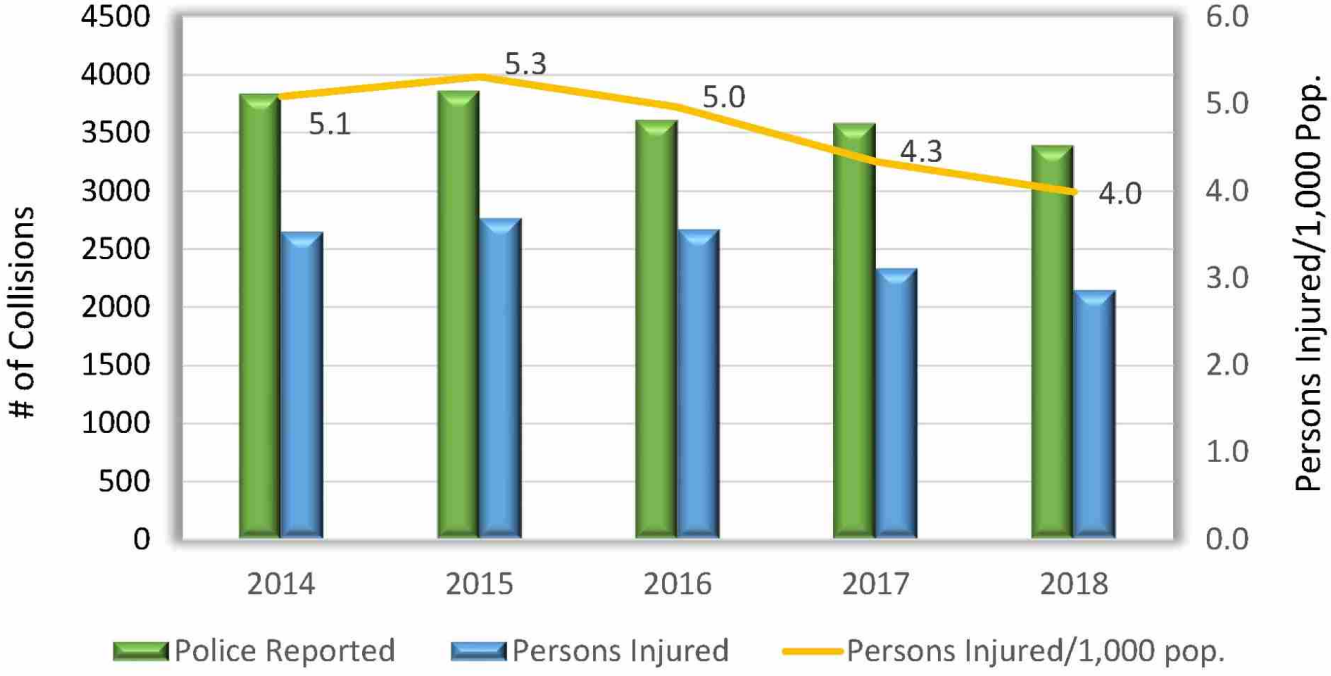
A summary of 2014 - 2018 collisions statistics is shown below.

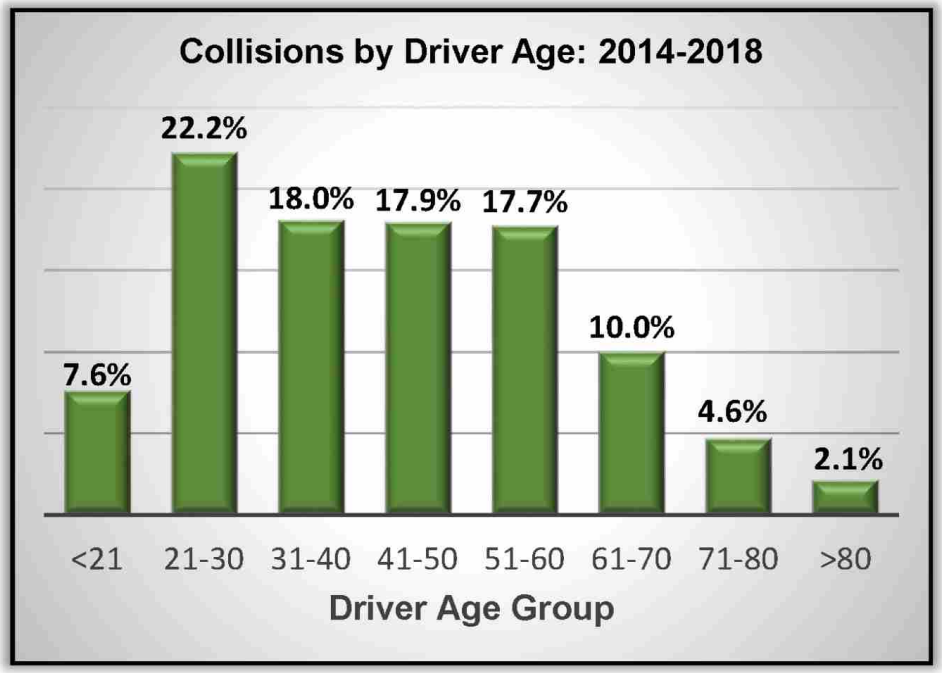
Year	Total Collisions	Self Reported Collisions	Police Reported Collisions	Injury Collisions	Property Damage Collisions	Fatal Collisions
2014	8,101	4,266	3,835	1,831	1,988	16
2015	8,399	4,535	3,864	1,931	1,919	14
2016	8,265	4,653	3,612	1,938	1,663	11
2017	8,806	5,226	3,580	1,682	1,882	16
2018	9,281	5,891	3,390	1,551	1,827	11

Collision Severity by Year: Trends



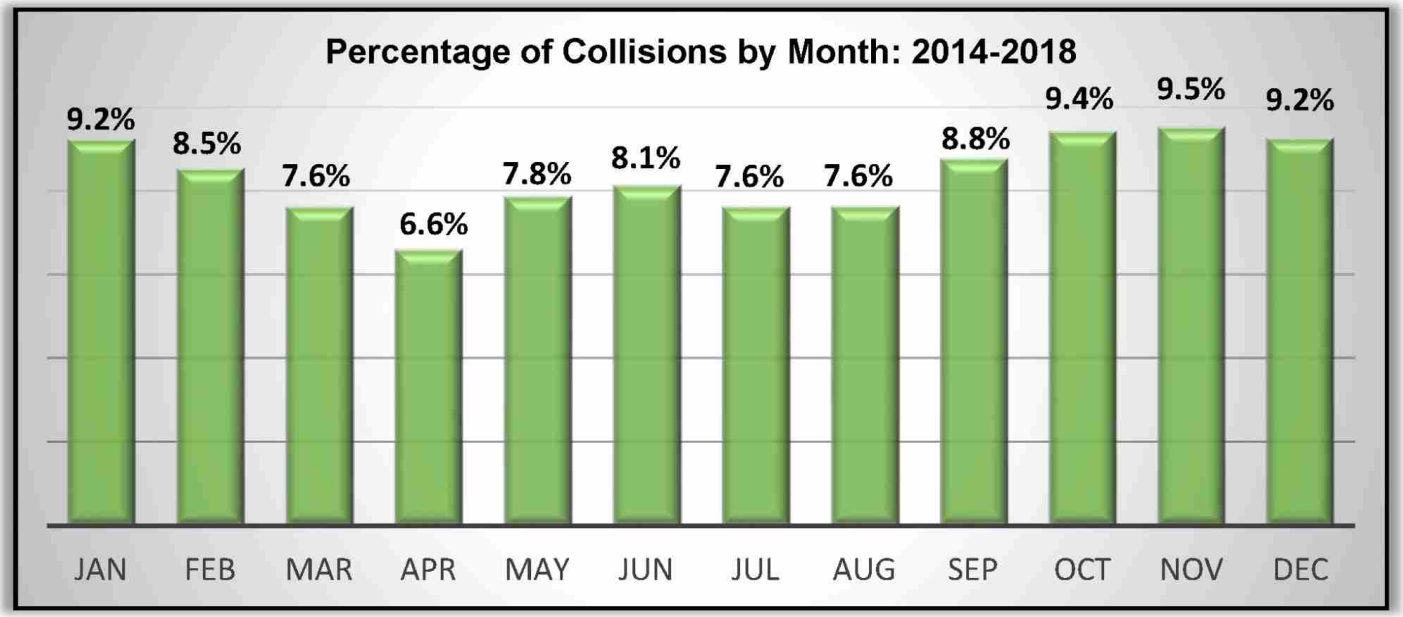
Injury Collisions by Year: Trends



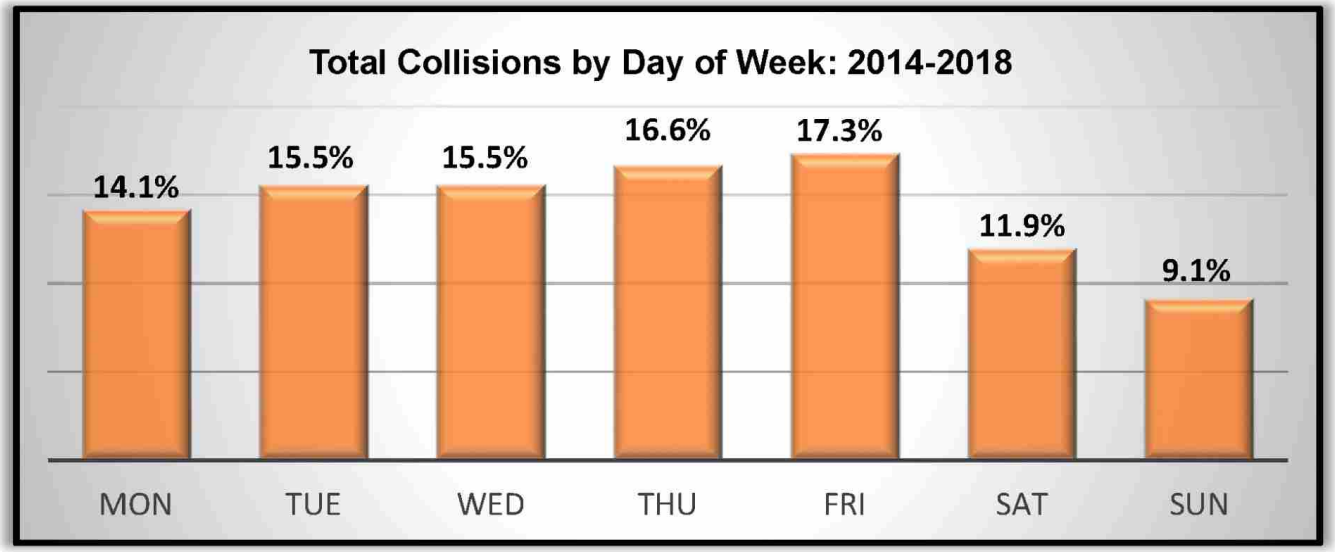


Over 20% of drivers involved in collisions from 2014-2018 in the City of Hamilton were between the ages of 21-30 years old. The most common age for a driver involved in a collision during this time period was 23 years old. It should be noted that these were drivers involved in collisions, not necessarily the person at fault.

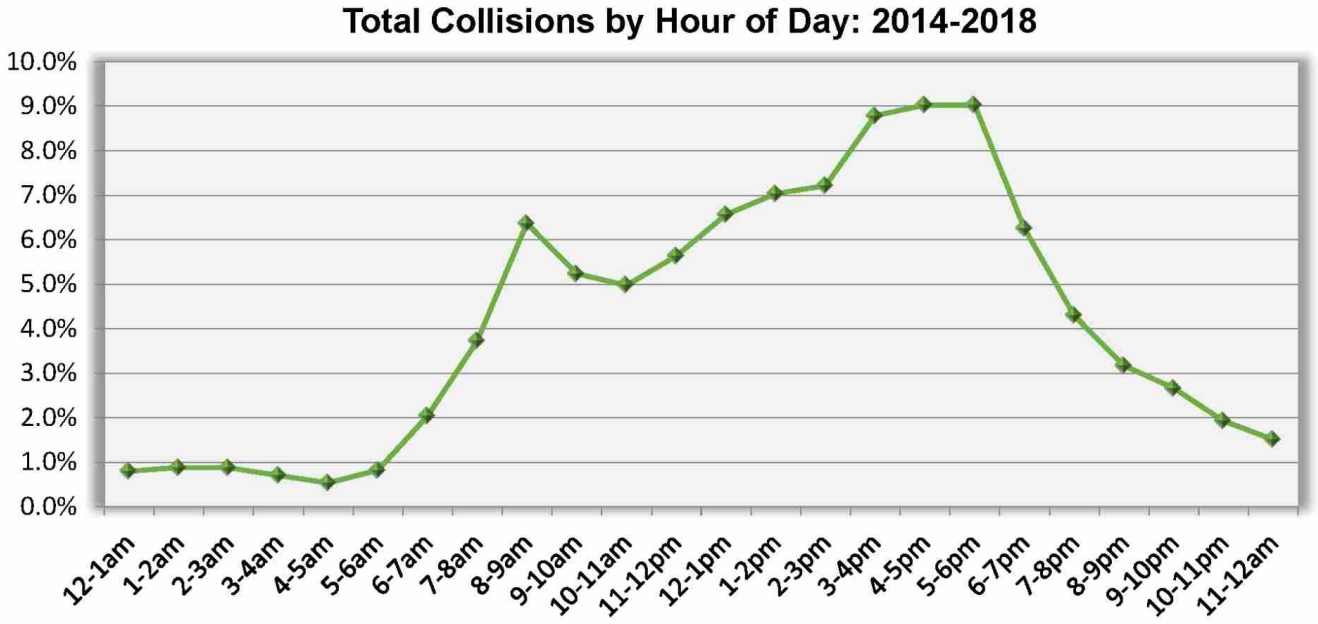
In the last five years, April has been the month that has seen the lowest average number of collisions. The highest average number of collisions occurred in November. The spring months of March, April and May showed the lowest seasonal trend in collisions while the autumn season of October, November and December had the highest percentage of collisions.



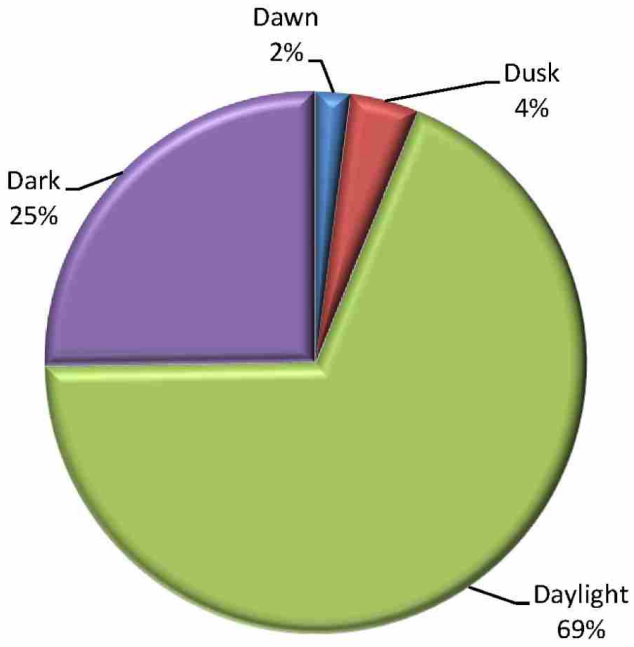
Approximately 17% of all collisions occurred on a Friday making it the most common day to experience a collision. Sundays had the lowest percentage with approximately 9% of collisions.



The hours of 4 to 6 p.m. have had the highest number of collisions.

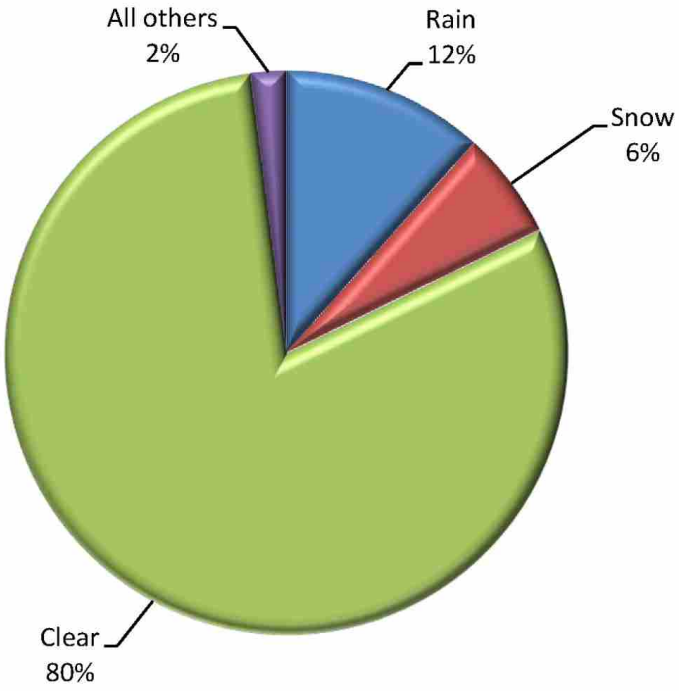


Collisions by Lighting Condition: 5 Year Average



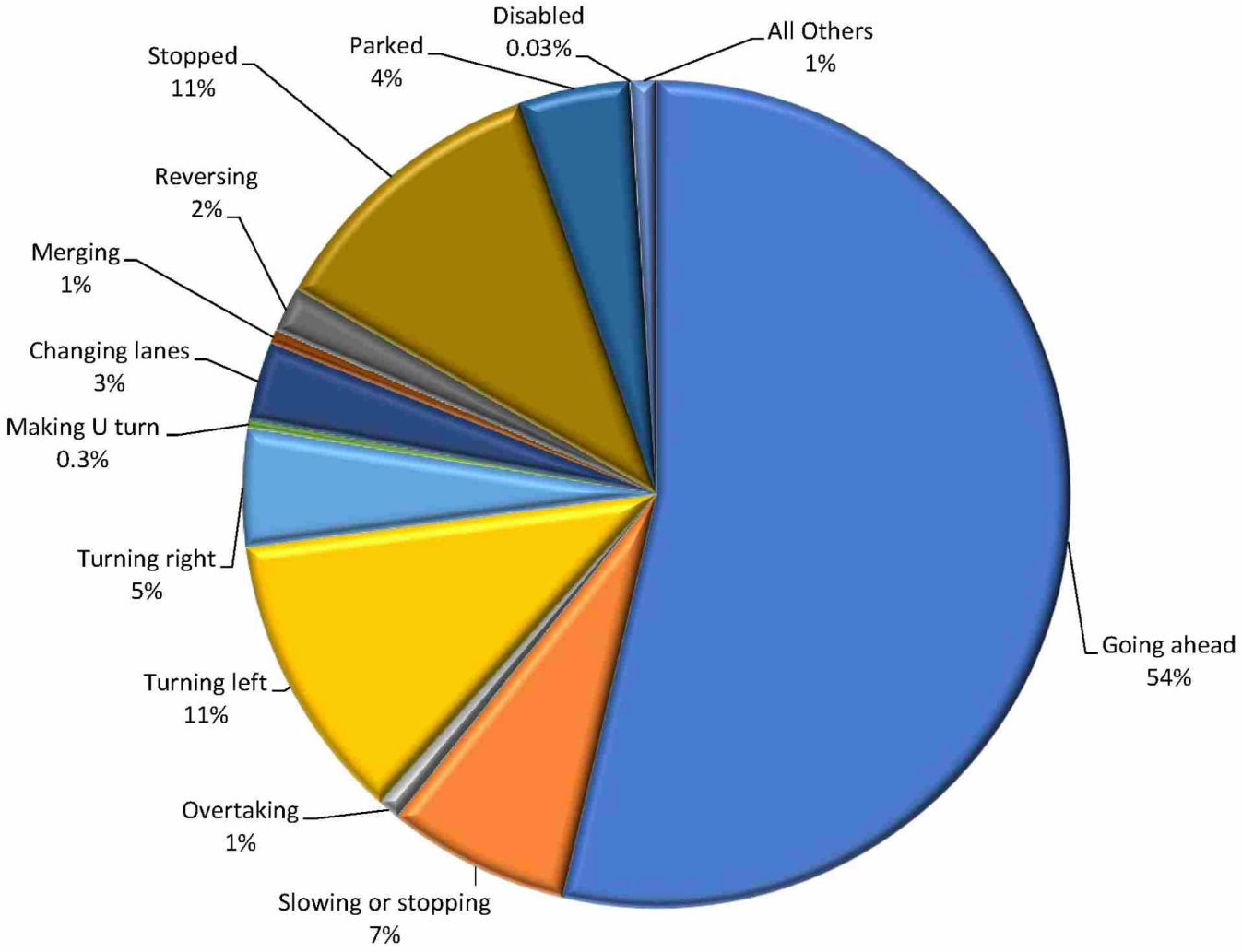
69% of all collisions have occurred during daylight conditions, while 25% have occurred during dark conditions.

Collisions by Weather Condition: 5 Year Average



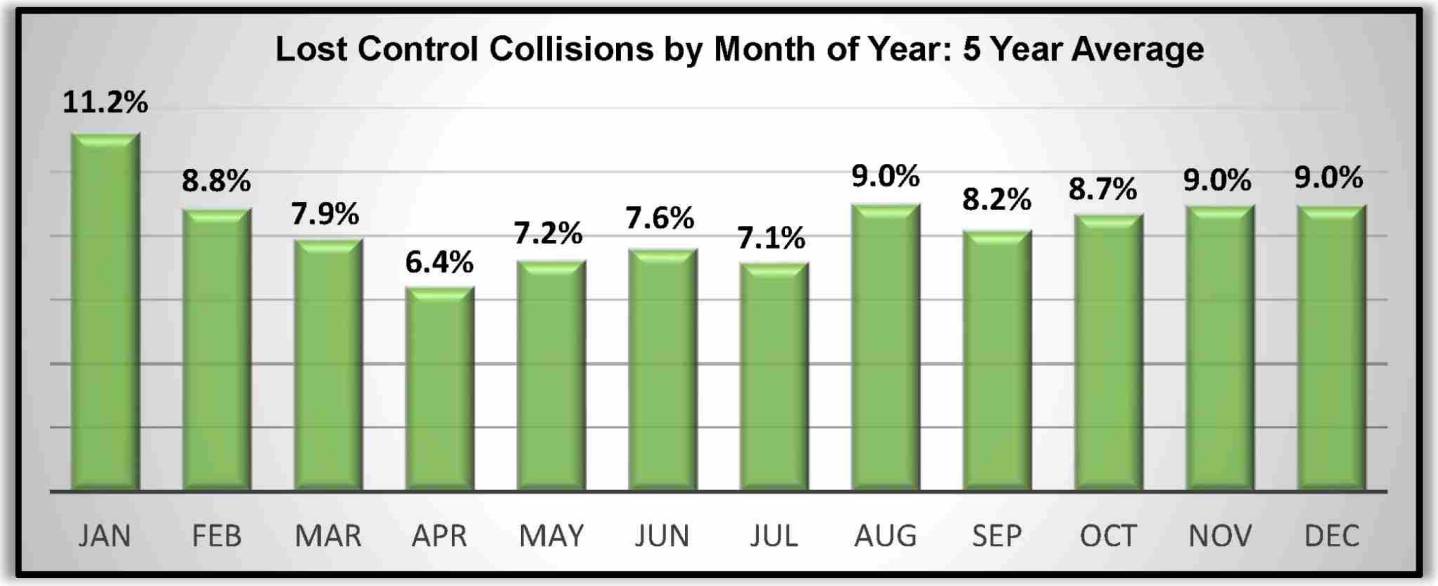
80% of all collisions occurred during clear weather conditions, 12% during rain and 6% during snow conditions. Other weather conditions include freezing rain, drifting snow and fog.

Collisions by Vehicle Maneuver: 5 Year Average

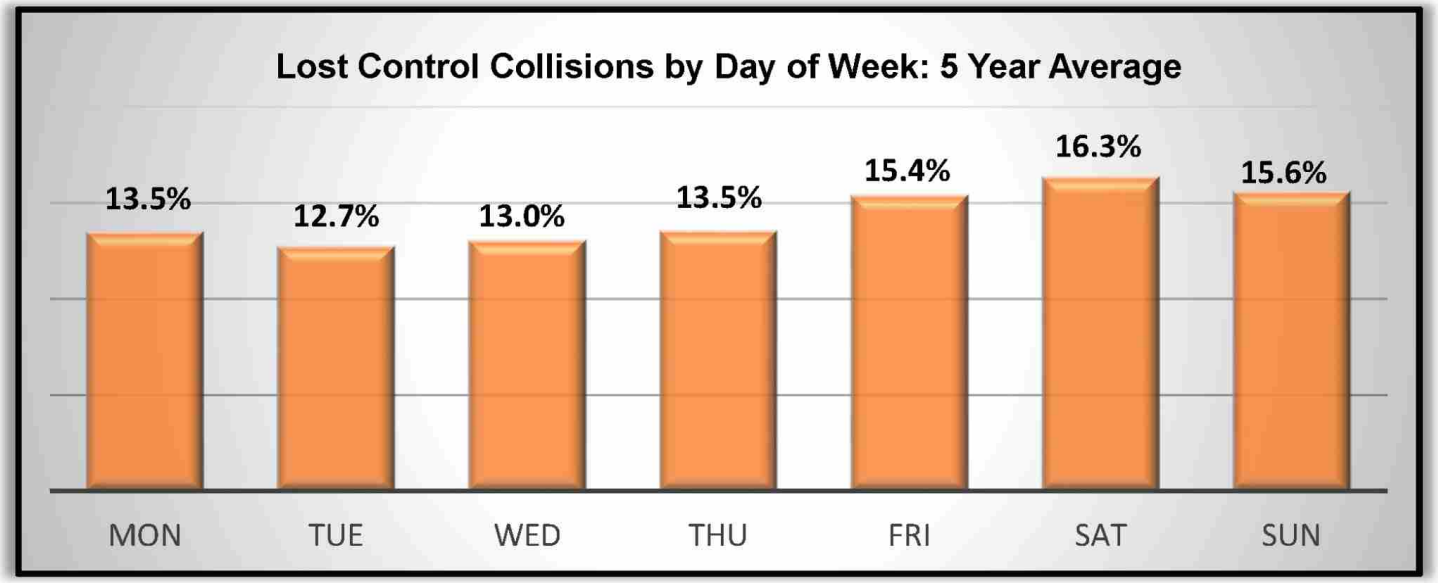


The most common vehicle maneuver (including bicycles) involved in a collision was "Going Ahead" which accounted for 54% of collisions. "Turning Left" and "Stopped" were the second leading maneuvers at 11% each.

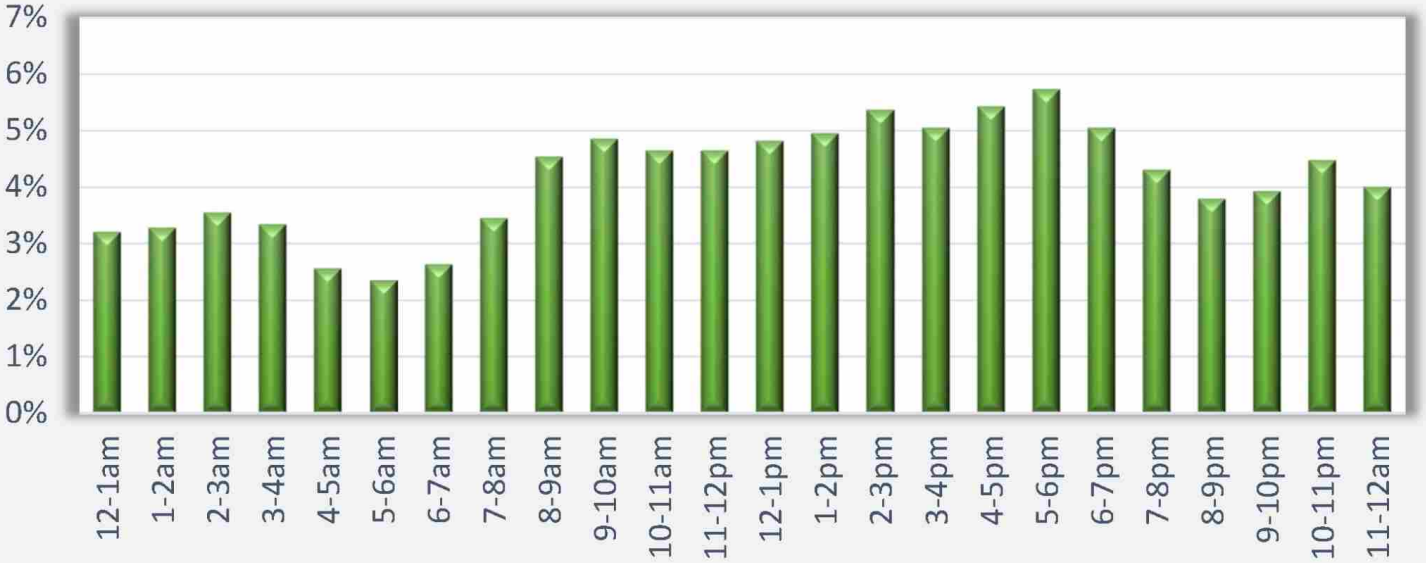
January was the month where the most collisions occurred where at least one involved driver lost control.



Saturday was the day of the week where the most collisions occurred where at least one involved driver lost control.

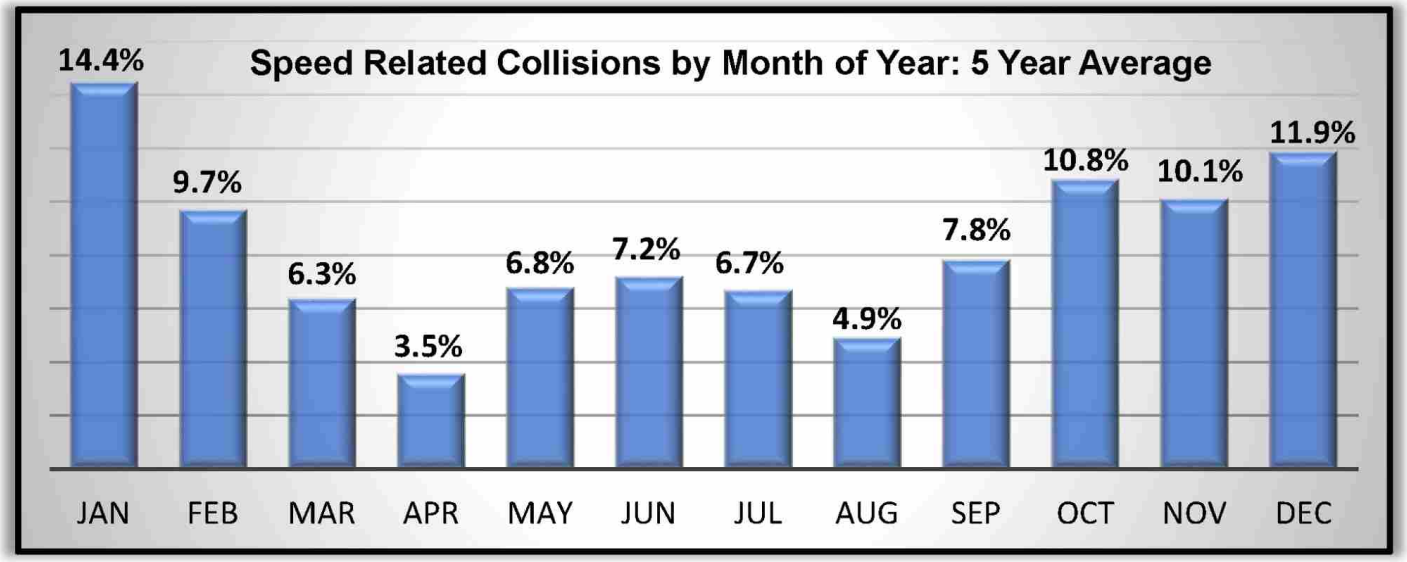


Lost Control Collisions by Hour of Day: 5 Year Average

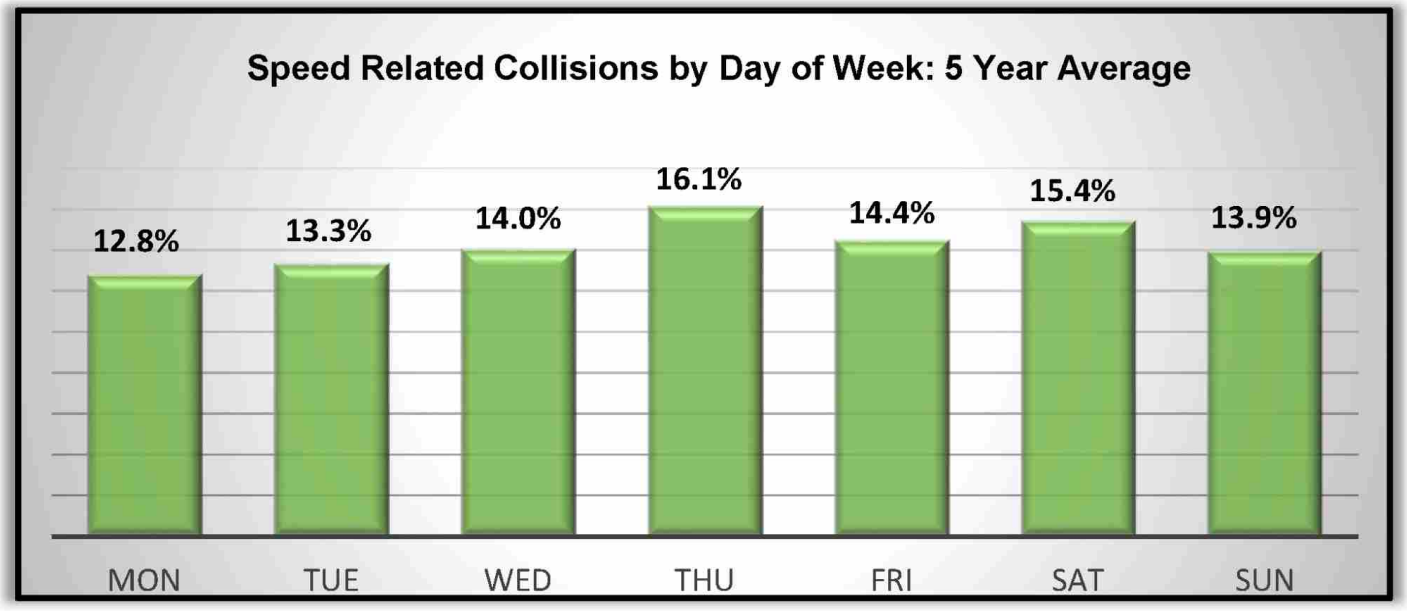


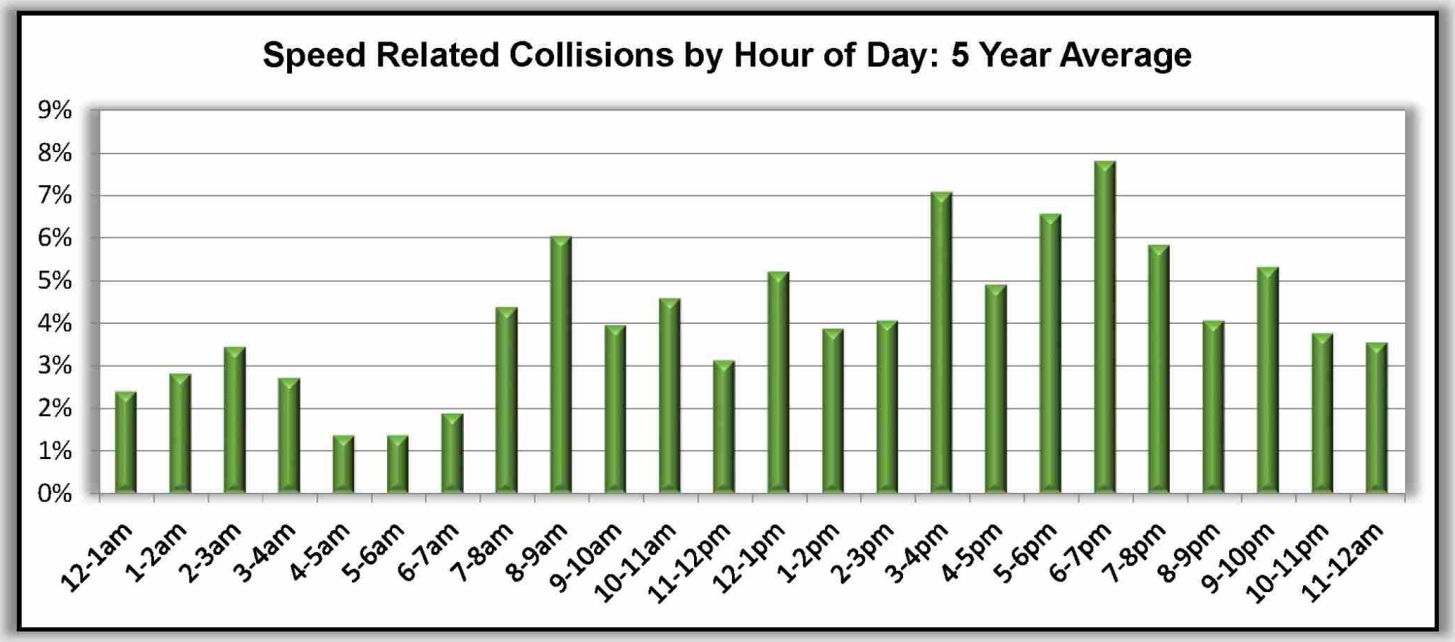
The hour of 5-6 p.m. was the time of the day where the most collisions occurred where at least one involved driver lost control.

January was the month where the most collisions occurred where at least one involved driver was either exceeding the speed limit or driving too quickly for the conditions.

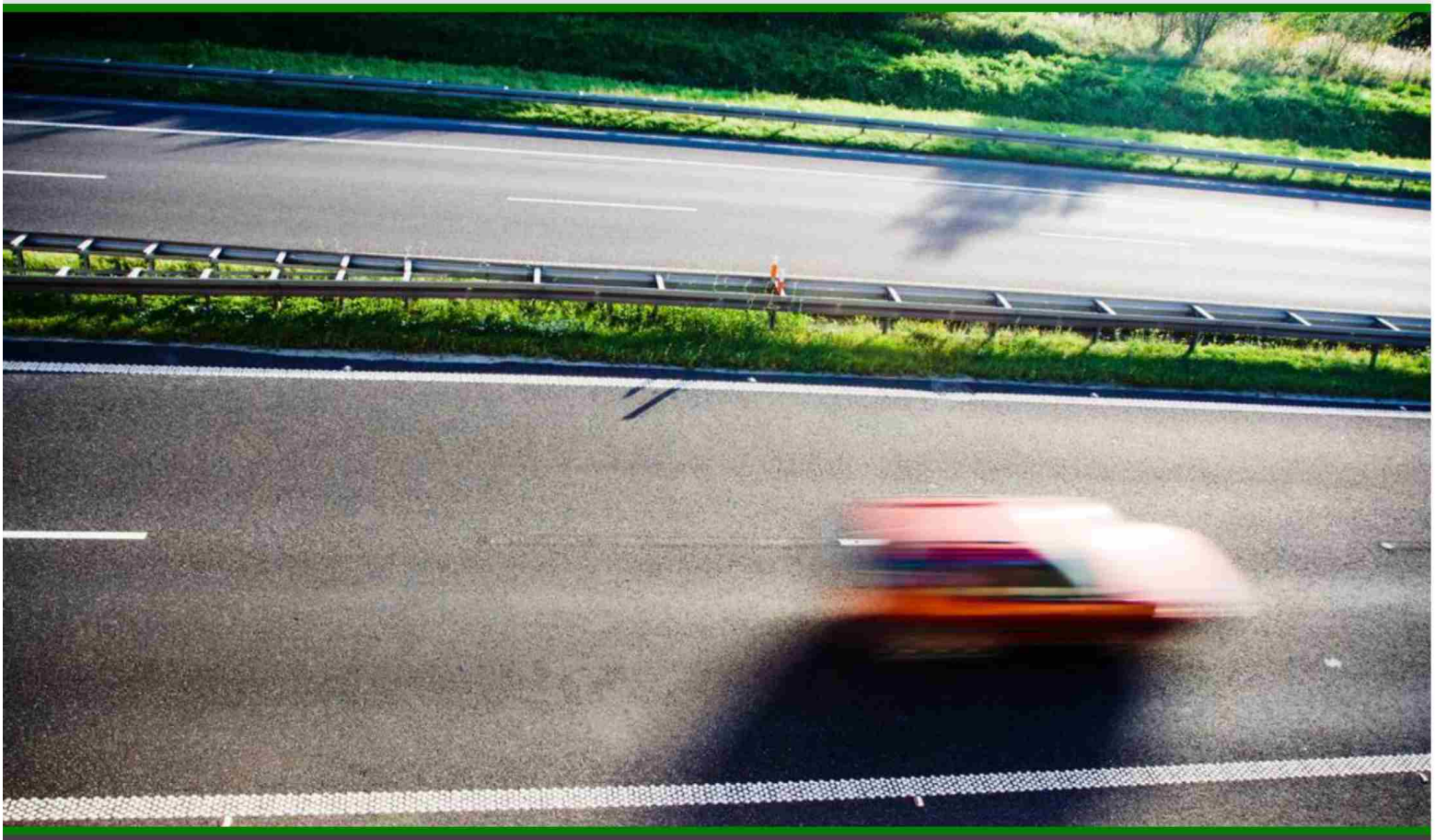


Thursday was the day of the week where the most collisions occurred where at least one involved driver was either exceeding the speed limit or driving too quickly for the conditions.

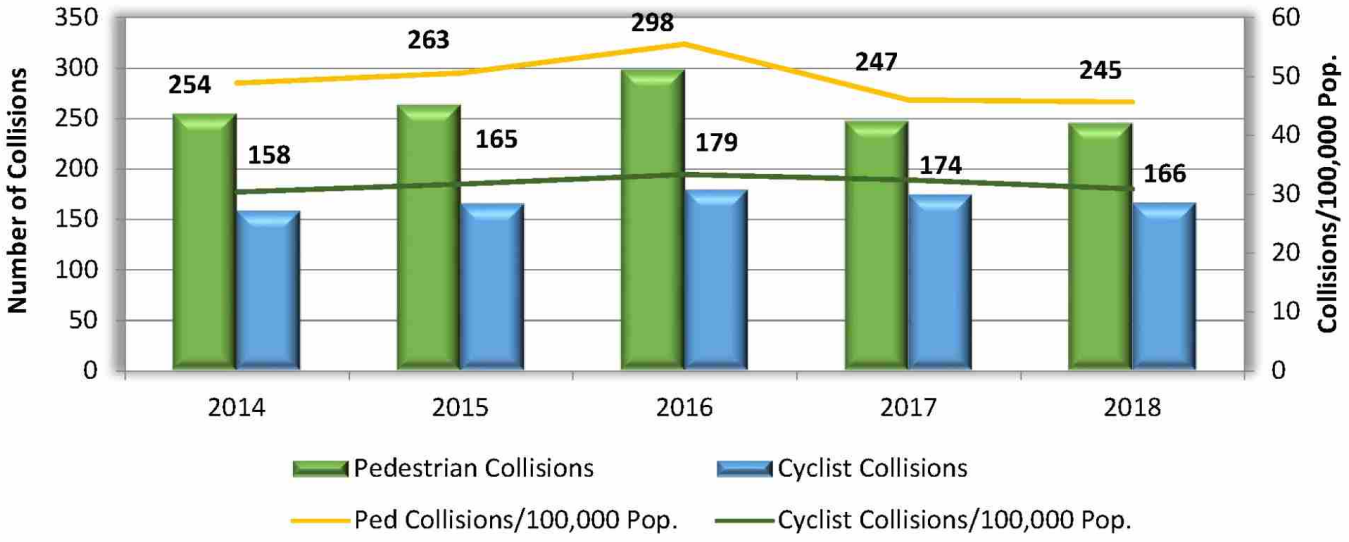




The hour of 6-7 p.m. was the time of day where the most collisions occurred where at least one involved driver was either exceeding the speed limit or driving too fast for the conditions.



Pedestrian and Cyclist Collisions per Year: 5 Year Trends



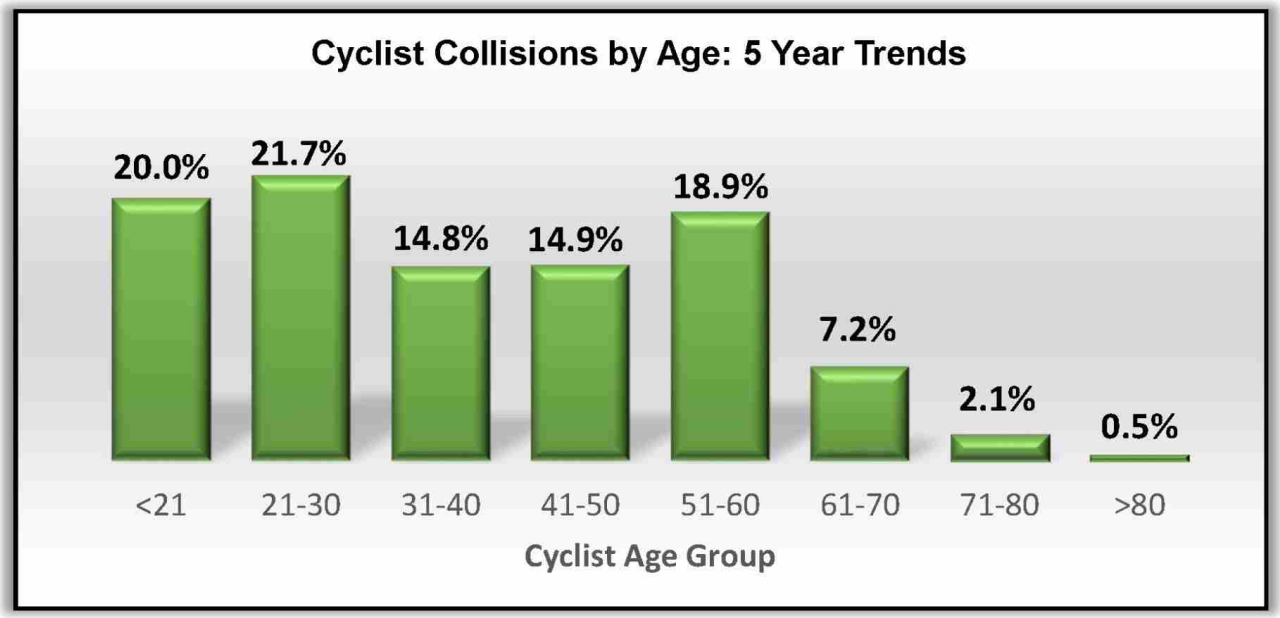
Collisions involving pedestrians and cyclists reached a peak in 2016 with 298 and 179 respectively and have declined in the past two years.

Pedestrian and Cyclist Average Collisions per Month: 5 Year Trends

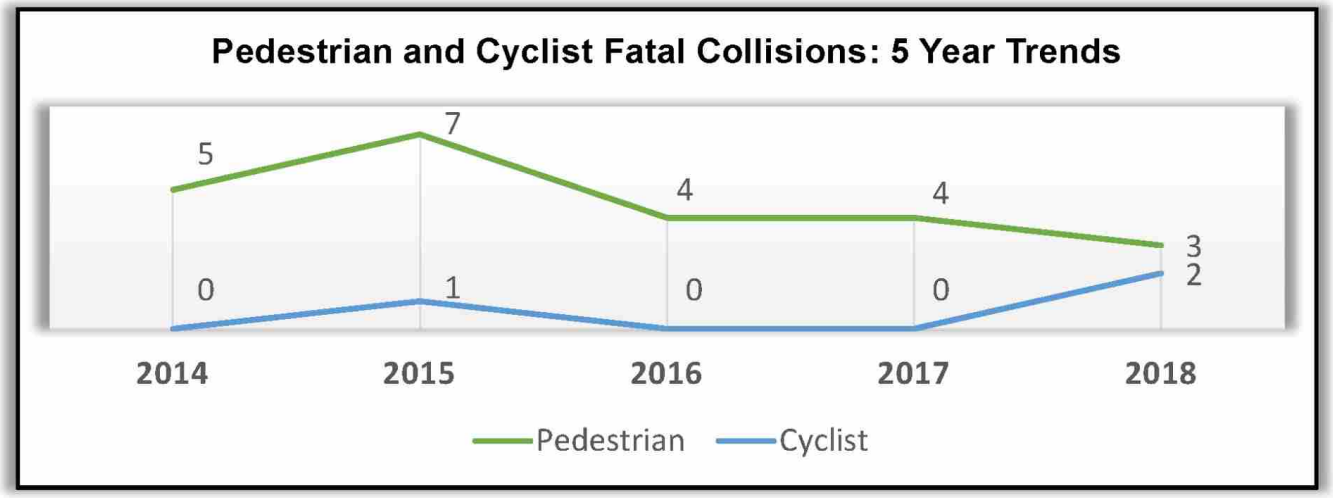
Between 2014-2018, the month of January had the most pedestrian collisions and July had the least. January 2016 had the highest number of pedestrian collisions with 46.

For cyclists, July had the highest average number of collisions and the winter months of January, February and March had the fewest collisions, most likely due to a reduced volume of cyclists at those times. September 2014 had the highest number of cyclist collisions with 31.

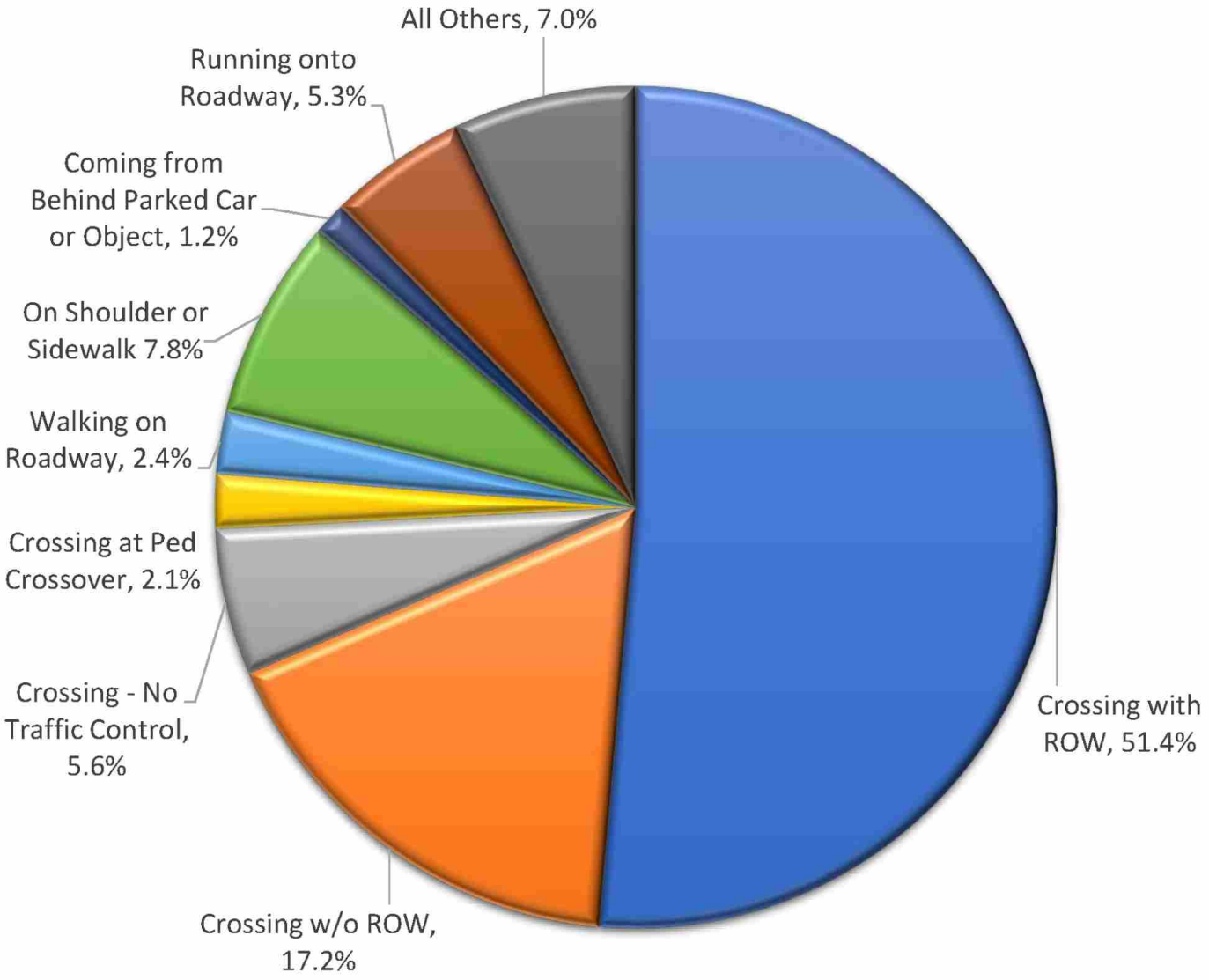
Cyclists of 21-30 years old were involved in the highest number of collisions. The most common age for a cyclist involved in a collision was 21.



2015 saw the highest number of pedestrian fatalities with seven, while 2018 saw the lowest number of pedestrian fatal collisions. There have been three fatal cyclist collisions since 2014, with two occurring in 2018.

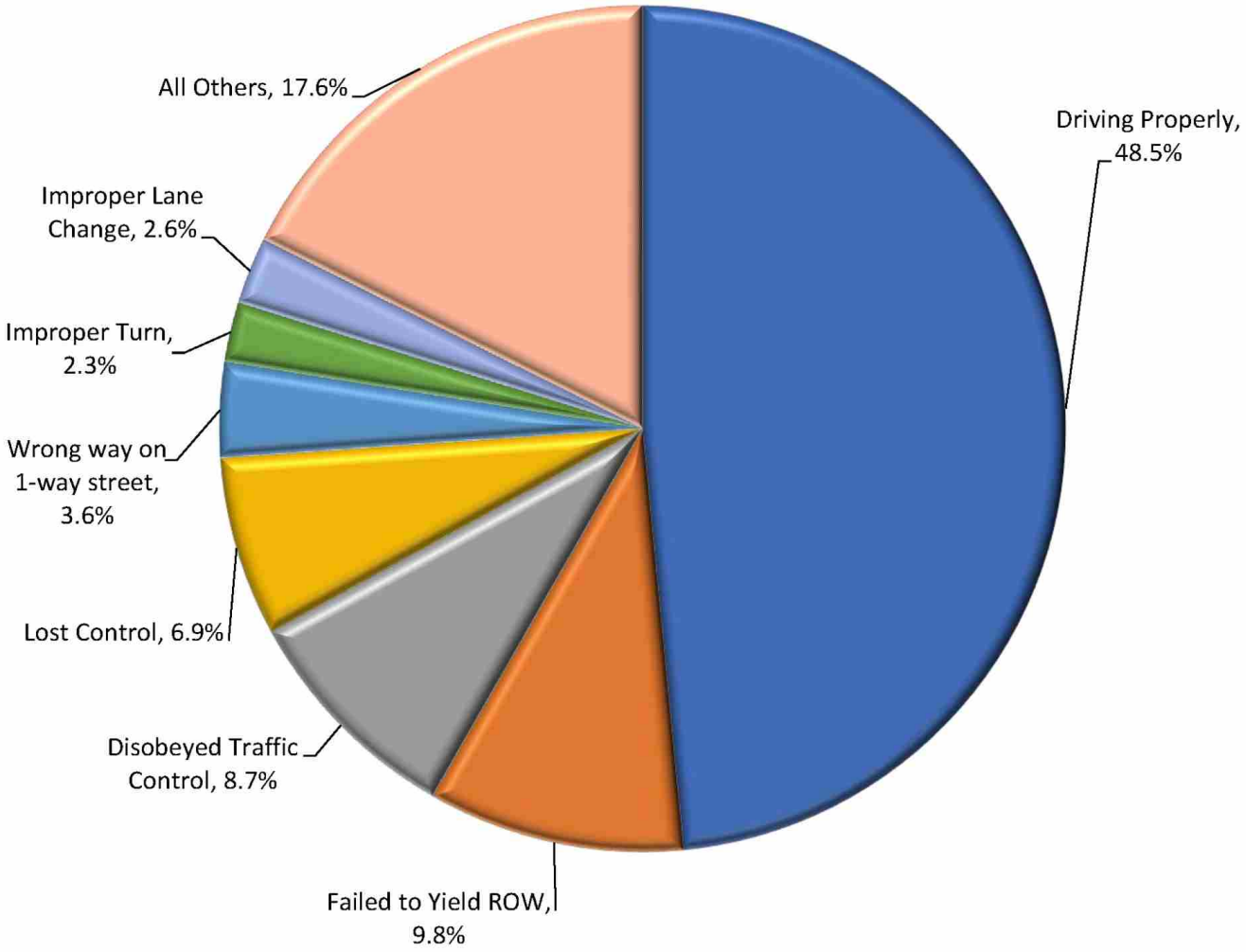


Pedestrian Collisions by Pedestrian Action: 5 Year Average



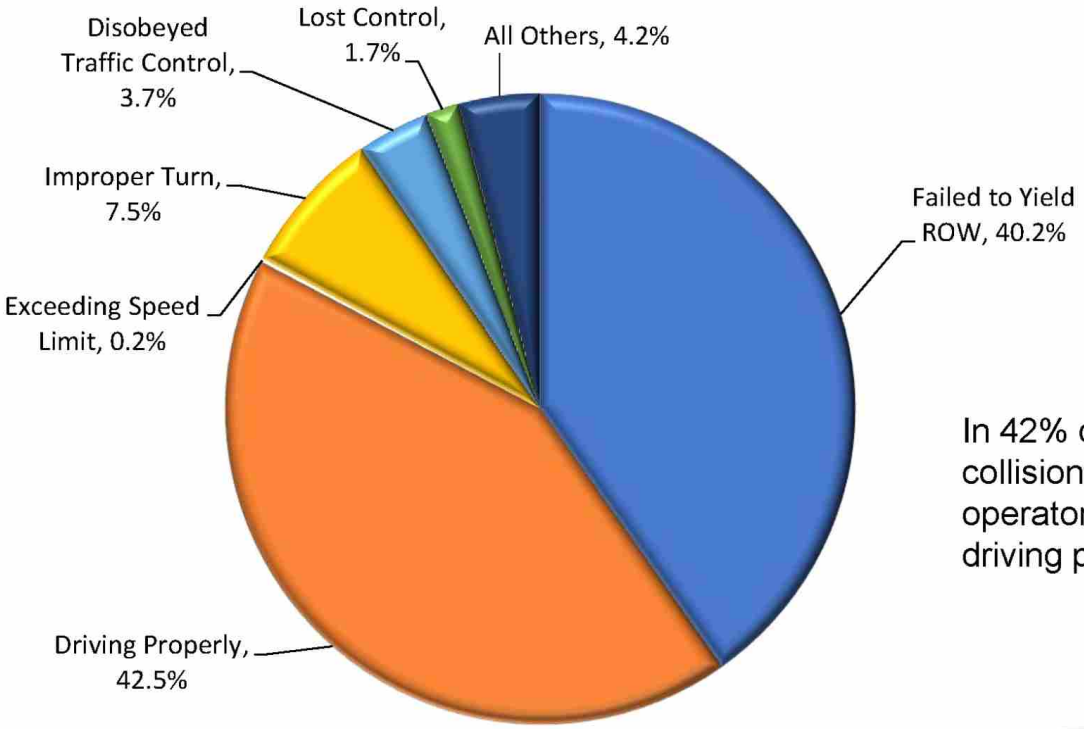
More than half of all pedestrian collisions occurred when pedestrians had the right-of-way (ROW), followed by a pedestrian crossing without the ROW, which occurred 17% of the time.

Cyclist Collisions by Cyclist Action: 5 Year Average



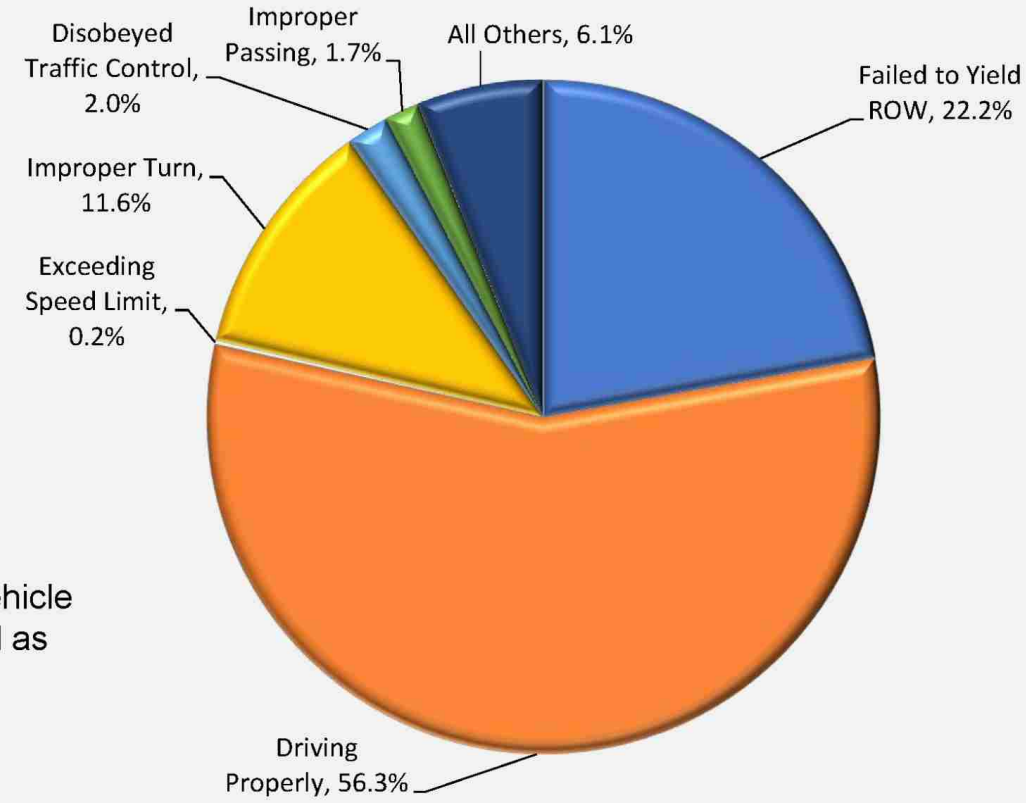
Nearly half of all cyclist collisions occurred when the cyclist was identified as driving properly.

Pedestrian Collisions by Driver Action: 5 Year Average



In 42% of pedestrian collisions the motor vehicle operator was classified as driving properly.

Cyclist Collisions by Driver Action: 5 Year Average



In 56% of all cyclist collisions, the motor vehicle operator was classified as driving properly.

The tables below lists the intersections that had the highest number of collisions between 2014 and 2018.

5 Year Trends: Intersections with Highest # of Collisions							
Rank	Intersection	2014	2015	2016	2017	2018	5 Year
1	James and Main	18	16	7	11	17	69
2	Dundurn and King	18	7	14	14	9	62
3	Dundurn and Main	5	12	15	11	11	54
4	Main and Wellington	10	11	11	9	12	53
5	John and King	20	8	5	10	8	51
6	John and Main	8	15	7	6	8	44
7	Main and Victoria	8	9	7	7	11	42
8	Kenilworth and Main	9	12	10	6	5	42
9	RHVP and RHVP to NB King	7	12	5	8	9	41
10	Fennell and Upper James	10	6	8	8	6	38
11	King and Victoria	5	4	13	9	6	37
12	Rymal and Upper James	6	7	13	7	4	37
13	Barton and Ottawa	10	7	4	7	8	36
14	Mohawk and Upper James	12	8	5	3	7	35
15	Centennial Parkway and Queenston	5	4	6	10	9	34
16	Mohawk and Upper Gage	8	9	4	6	6	33
17	James and King	5	9	7	6	5	32
18	Hunter and John	8	6	9	6	3	32
19	Cannon and Wellington	12	10	0	8	1	31
	Six intersections each had 30 collisions from 2014-2018						

5 Year Trends: Intersections with Highest # of Pedestrian Collisions							
Rank	Intersection	2014	2015	2016	2017	2018	5 Year
1	Dundurn and King	4	0	3	3	2	12
2	Barton and Wellington	2	1	3	1	2	9
3	Barton and Ottawa	2	4	1	1	1	9
4	King and Wellington	2	2	3	0	1	8
5	Main and Queen	1	3	1	1	2	8
6	Kenilworth and Main	0	3	4	1	0	8
7	Main and Wellington	0	2	1	1	3	7
8	John and King	2	2	1	0	2	7
9	Barton and Lottridge	1	0	2	0	4	7
10	Dundurn and Main	1	1	1	2	2	7

The intersection of Dundurn Street and King Street has recorded the most pedestrian collisions in the past five years with 12 collisions.

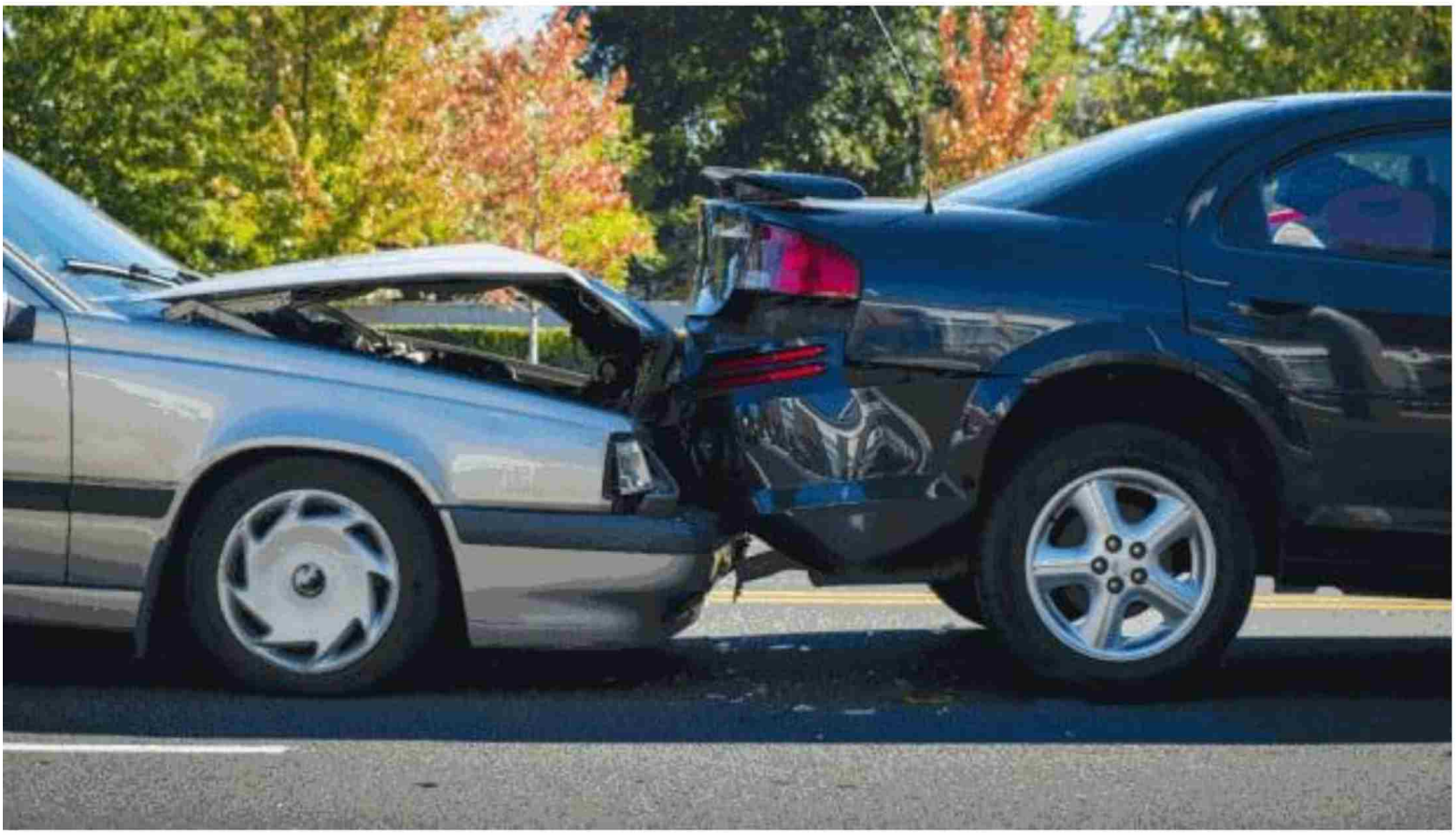
This table below lists the intersections that had the highest number of cyclist collisions between 2014 and 2018.

5 Year Trends: Intersections with Highest # of Cyclist Collisions							
Rank	**Intersection**	**2014**	**2015**	**2016**	**2017**	**2018**	**5 Year**
1	Cannon and Wellington	4	3	0	3	0	10
2	Cannon and Mary	1	1	3	4	0	9
3	Queenston and RHVP NB to Queenston	2	1	2	0	1	6
4	Ashley and Cannon	0	1	2	2	1	6
5	Stinson and Victoria	1	1	2	0	1	5
6 intersections each had 4 cyclist collisions							

Two intersections along the Cannon Street cycle track (at Wellington Street and Mary Street) have recorded the most cyclist collisions in the past five years with 10 and 9 collisions respectively.

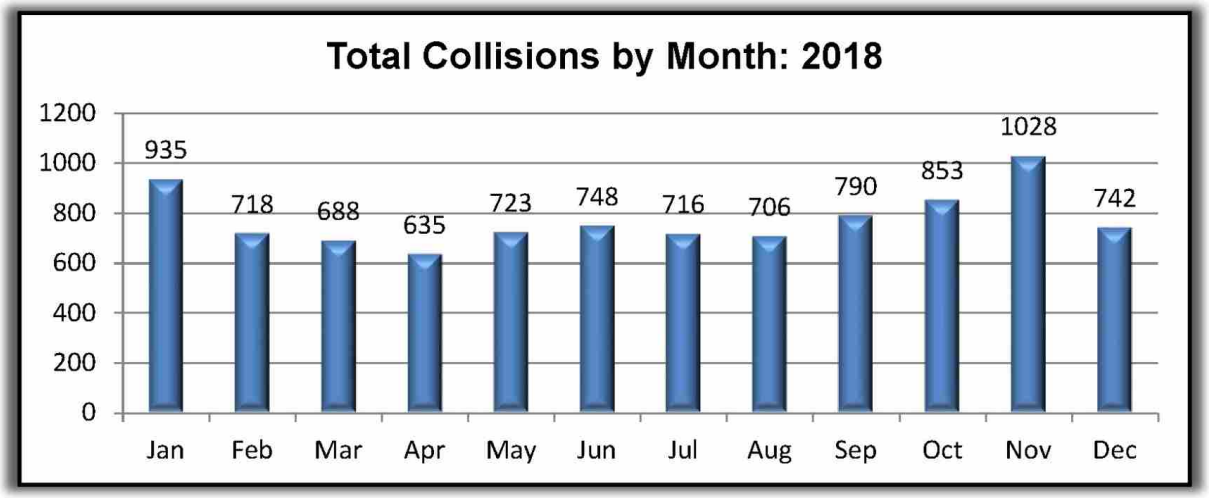
Section 3

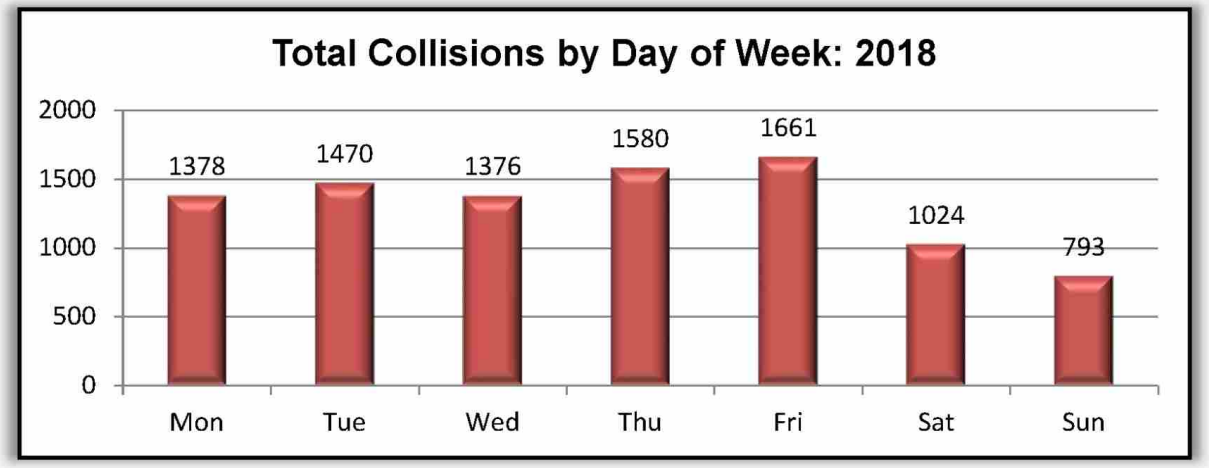
Collision Statistics – 2018

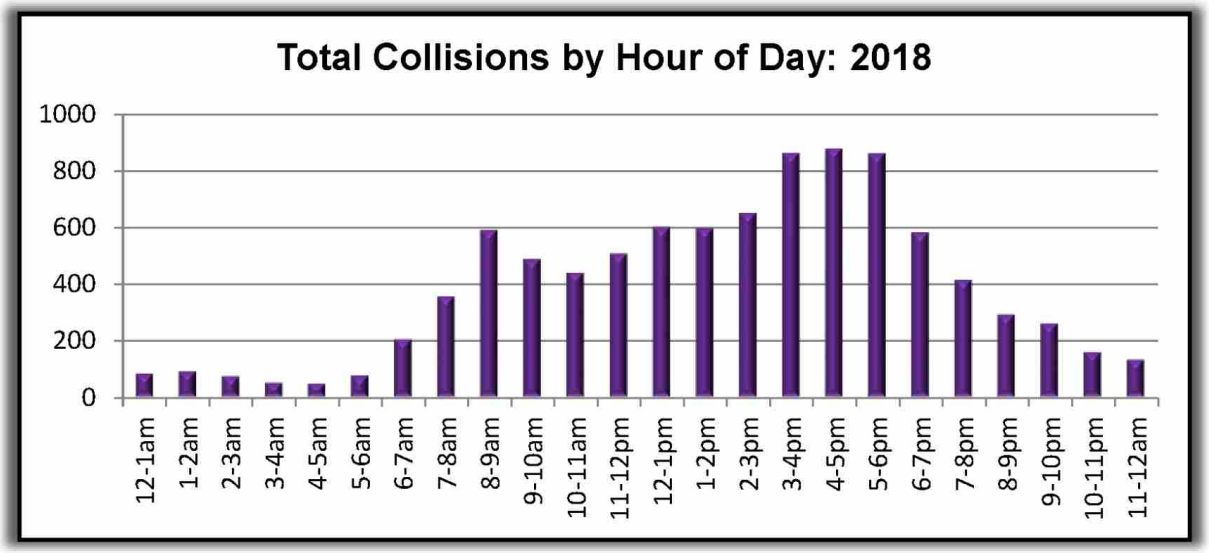


The table below provides a summary of collision statistics for 2018.

Statistics	2018
Number of total collisions	9,281
Number of police reported collisions	3,390
Number of Injury/Fatal collisions	Injury: 1,551 Fatal: 11
Number of collisions involving pedestrians	245
Number of Injury/Fatal collisions involving pedestrians	Injury: 219 Fatal: 3
Day with highest number of pedestrian collisions	Tuesday
Hour with highest number of pedestrian collisions	5-6 p.m.
Number of collisions involving cyclists	166
Number of Injury/Fatal collisions involving cyclists	Injury: 135 Fatal: 2
Day with highest number of cyclist collisions	Thursday and Friday
Hours with highest number of cyclist collisions	5-6 p.m.
Day with highest number of total collisions	Friday
Month with highest number of total collisions	January and November
Hour with highest number of total collisions	4-5 p.m.
Most common collision type	Rear End
Most frequent driver action resulting in collision	Lost Control

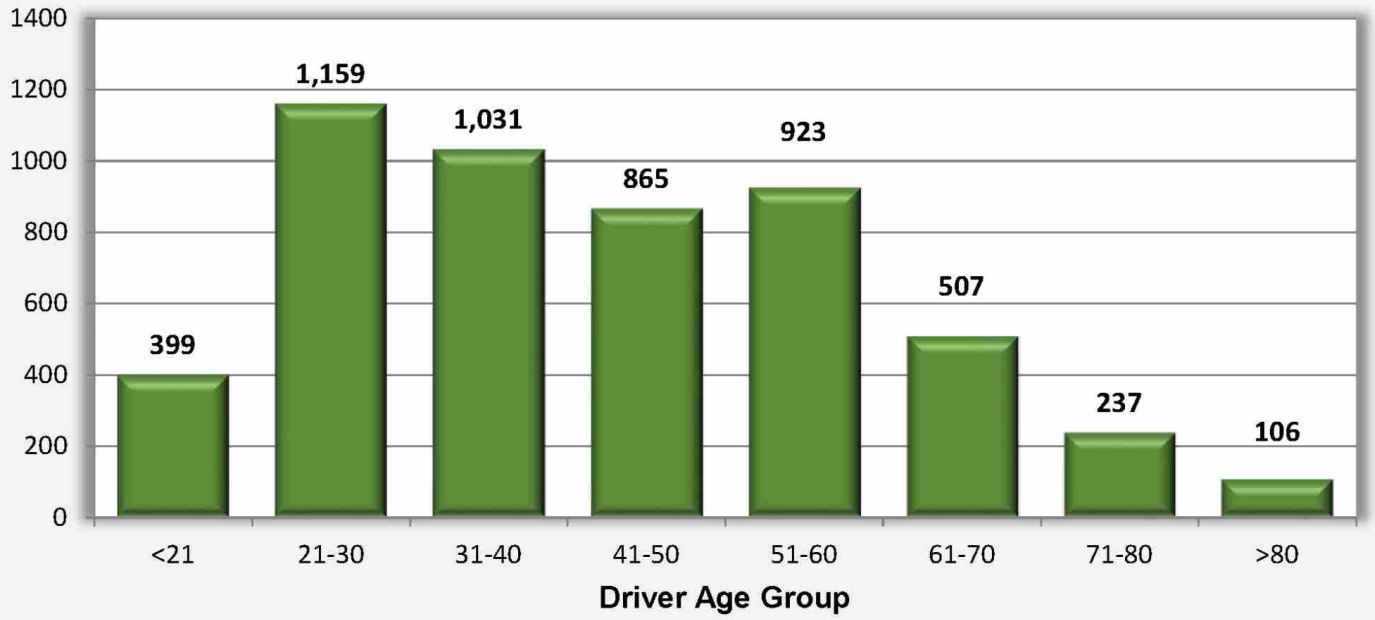

Total Collisions by Month: 2018
1200
1000
800
600
400
200
0
935
718
688
635
723
748
716
706
790
853
1028
742
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Total Collisions by Day of Week: 2018
2000
1500
1000
500
0
1378
1470
1376
1580
1661
1024
793
Mon
Tue
Wed
Thu
Fri
Sat
Sun

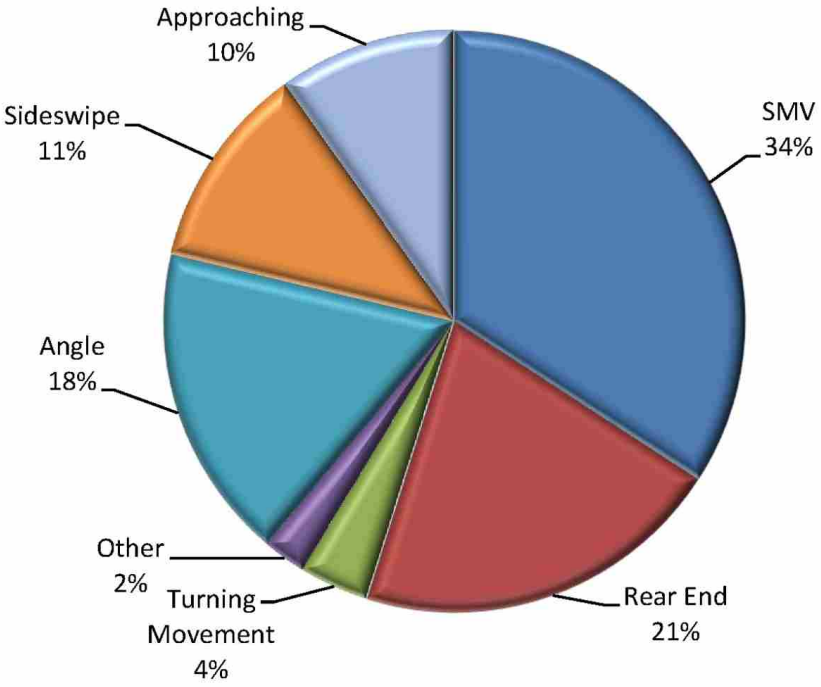

Total Collisions by Hour of Day: 2018
1000
800
600
400
200
0
12-1am
1-2am
2-3am
3-4am
4-5am
5-6am
6-7am
7-8am
8-9am
9-10am
10-11am
11-12pm
12-1pm
1-2pm
2-3pm
3-4pm
4-5pm
5-6pm
6-7pm
7-8pm
8-9pm
9-10pm
10-11pm
11-12am

In 2018, there were 1,159 drivers between the ages of 21 and 30 that were involved in collisions on City of Hamilton streets. The most common age for a driver involved in a collision was 23 years old. It should be noted that these were drivers involved in collisions, not necessarily the person at fault.

Collisions by Driver Age: 2018



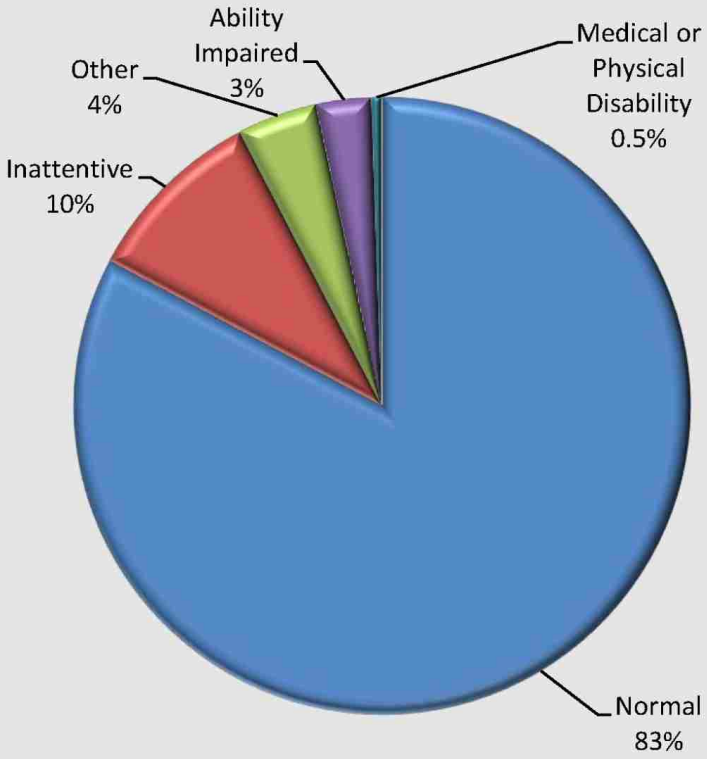
Collisions by Initial Impact: 2018



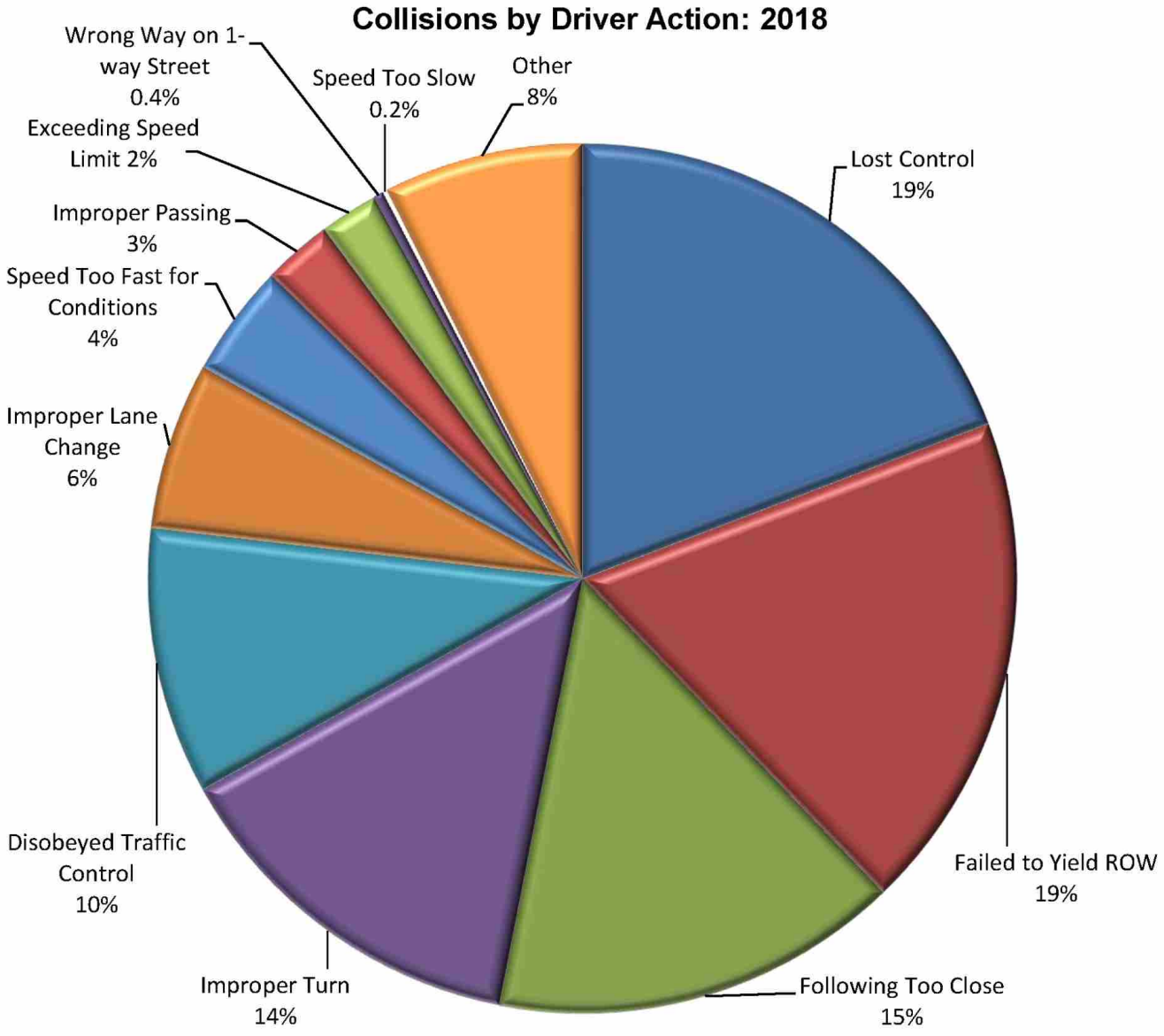
Impact Type	#
Single motor vehicle	1,157
Rear end	704
Turning movement	130
Other	81
Angle	596
Sideswipe	388
Approaching	334

34% of collisions in 2018 involved a single motor vehicle. Rear end collisions were the second most frequent at 21%.

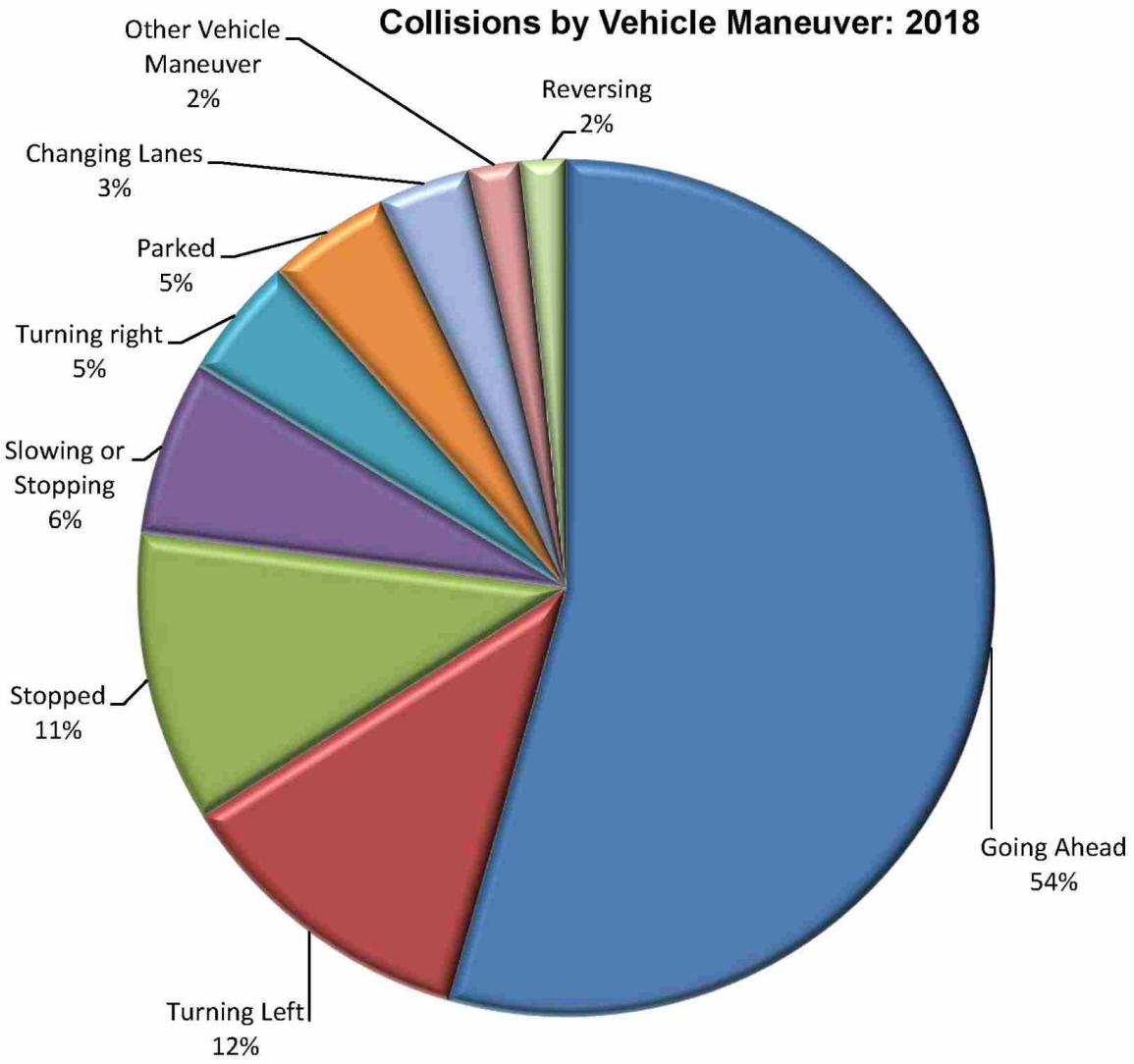
Driver Condition: 2018



83% of 2018 drivers involved in a collision were noted as operating their vehicle under "normal" condition, meaning they were not distracted, impaired by alcohol or drugs or any other condition.



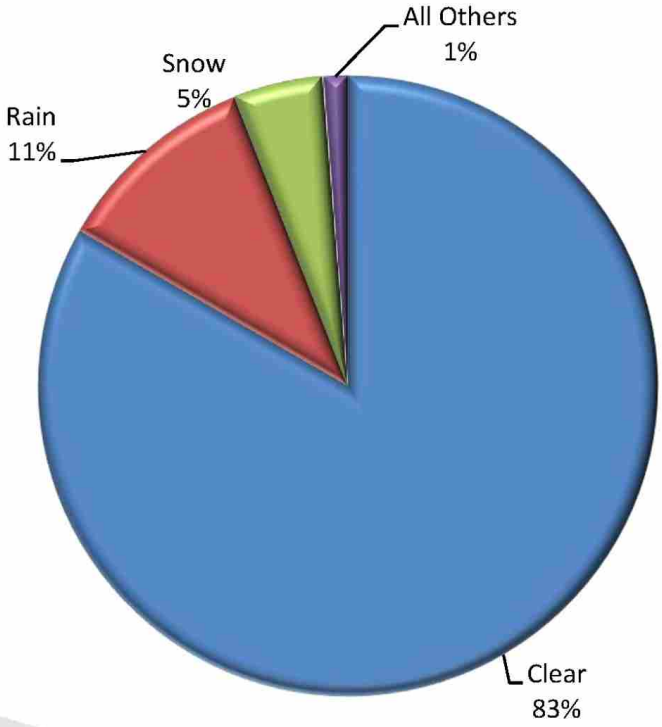
The leading cause of collisions were drivers losing control of their vehicles or failing to yield the right-of-way; each at 19%. Speed related collisions resulted in 6% of collisions citywide in 2018.



Statistics show that the most common vehicle maneuver (including bicycles) during a collision was "Going Ahead", which occurred 54% of the time. "Turning Left" was the second leading maneuver at 12%.

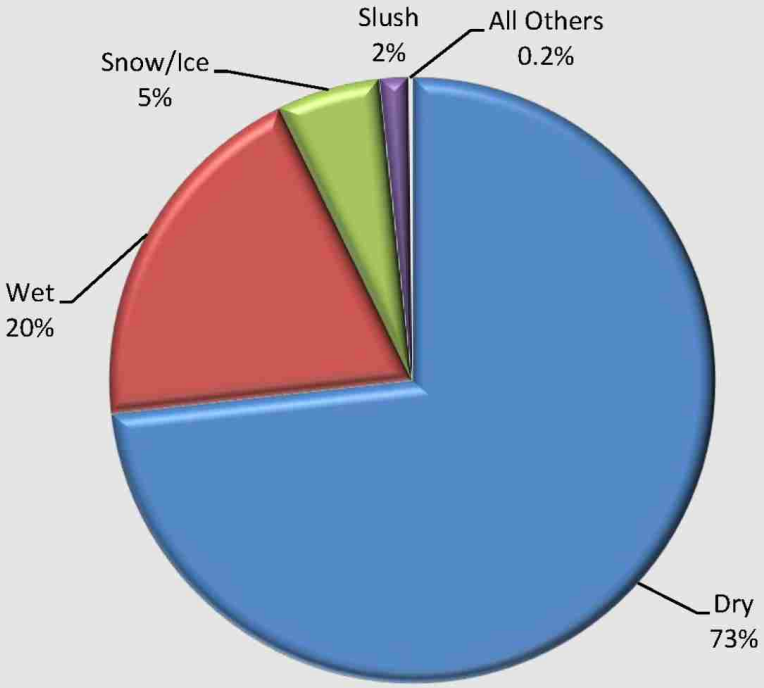
Vehicles that were stopped accounted for 11% and parked vehicles were involved in 5%. These values are similar to those from the 2014-2018 data. Other vehicle maneuvers include merging, pulling onto or away from the shoulder or U-turns.

Collisions by Weather Condition: 2018



83% of all collisions occurred during clear weather conditions. 11% occurred during rain and 5% during snow. The other weather conditions include fog, strong winds, freezing rain, drifting snow, etc.

Collisions by Road Condition: 2018



73% of all collisions occurred during dry road surface conditions. 20% occurred when the road surface was wet, 5% during snow/ice and 2% in slushy conditions. The other road surface conditions include mud, loose gravel, etc.

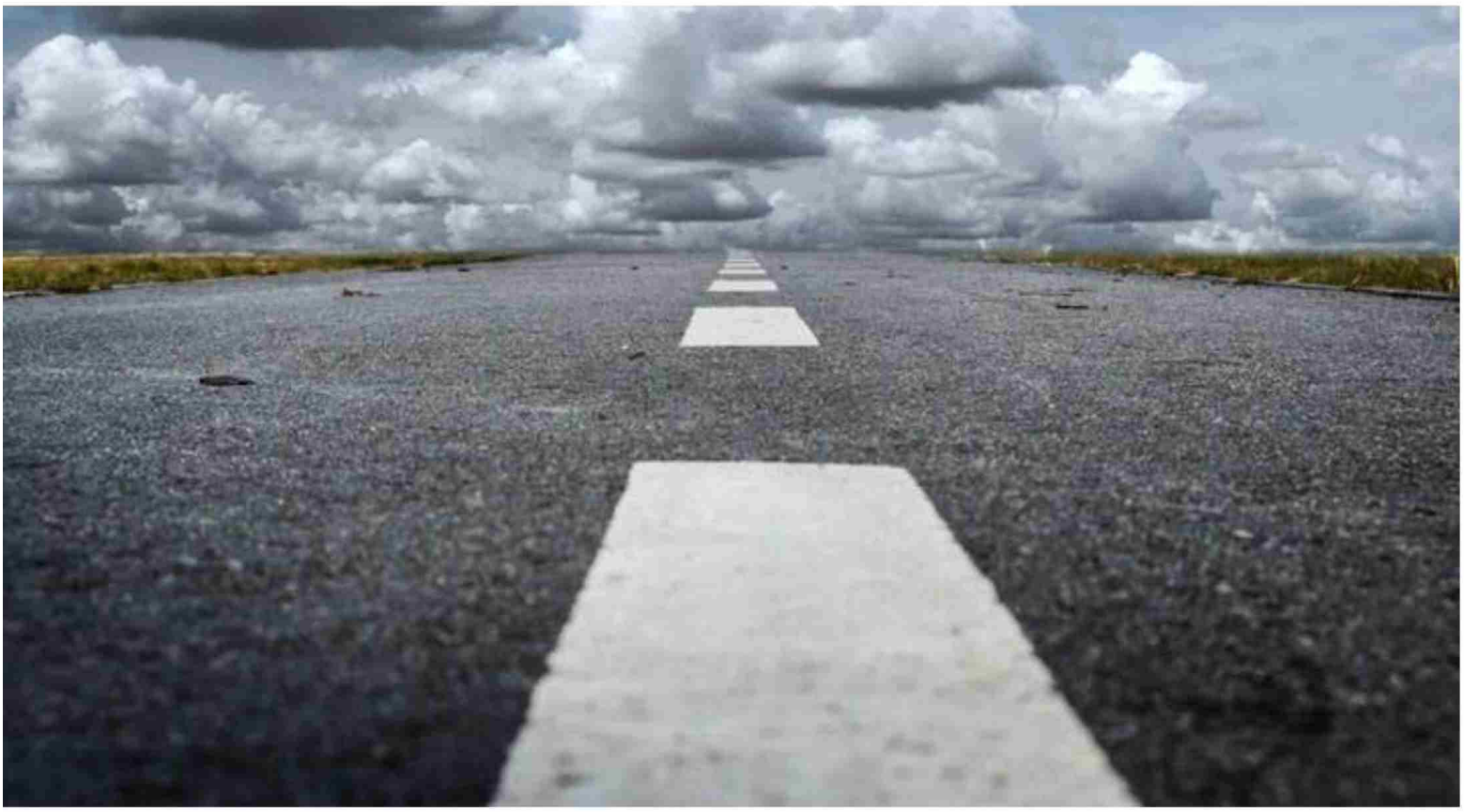
2018: Intersections with Highest # of Collisions

Rank	Intersection	# of Collisions	Ward
1	James Street and Main Street *	17	2
2	Main Street and Wellington Street *	12	2,3
3	Dundurn Street and Main Street *	11	1
4	Main Street and Victoria Avenue *	11	3
5	Red Hill Valley Parkway and North Bound Red Hill Valley Parkway to King Ramp *	9	5
6	Centennial Parkway and Queenston Road *	9	5
7	Dundurn Street and King Street *	9	1
8	John Street and King Street *	8	2
9	Charlton Avenue and James Street	8	2
10	John Street and Main Street *	8	2
11	Barton Street and Gage Avenue *	8	3
12	Barton Street and Ottawa Street *	8	3,4
13	Barton Street and Centennial Parkway	8	5
14	Mohawk Road and Upper Wentworth Street *	8	7

* Represents locations that were also identified in 2014-2018 trends review

Section 4

Fatal Collisions – 2018



Fatal Collisions

An evaluation was undertaken of fatal collisions in order to analyze the collision circumstances and to identify any potential patterns.

- 18% (2) of fatal collisions occurred on rural roadways and 82% (9) occurred on urban roadways
- 45% (5) occurred within an intersection and 55% (6) occurred at midblock locations
- 9% (1) of collisions occurred when it was raining and 91% (10) during clear weather
- 27% (3) occurred during wet road conditions and 73% (8) on dry roadways
- 9% (1) fatal collision was the result of a single motor vehicle, 9% (1) was caused by a head-on collision, 27% (3) were pedestrian/vehicle collisions, 45% (5) involved turning vehicles and 9% (1) was the result of a rear end collision
- 9% (1) occurred when a driver lost control of the vehicle, 9% (1) because a driver disobeyed the traffic control, 18% (2) when a driver failed to yield the right-of-way and 27% (3) from a driver exceeding the speed limit or driving too fast for the conditions

Based on the analysis, the majority of fatal collisions occurred during clear, dry conditions.

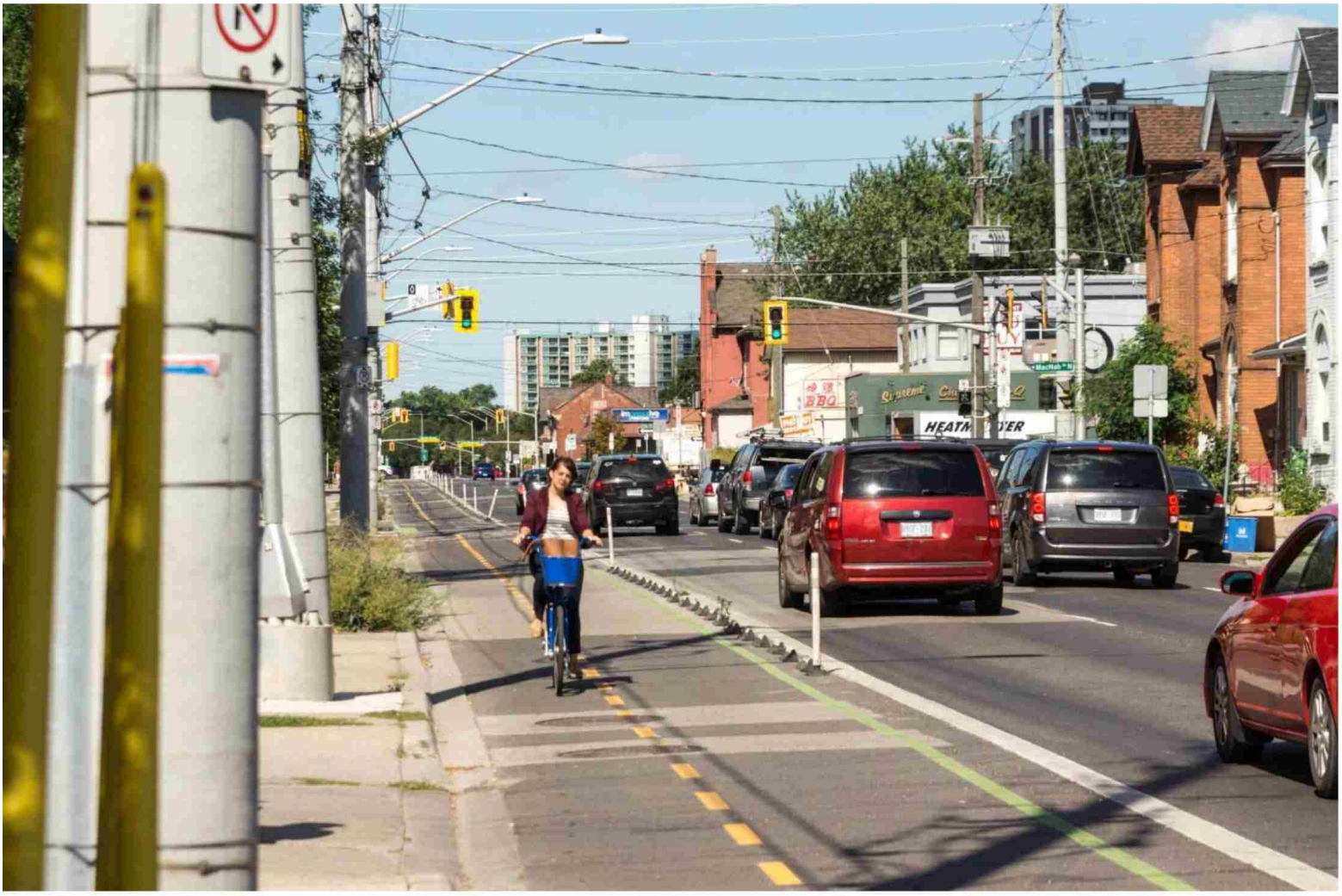
The chart on the following page provides a brief summary of the details taken from the motor vehicle accident report from the police officer that created the report for each fatal collision that occurred in Hamilton in 2018.

Fatal Collisions – 2018

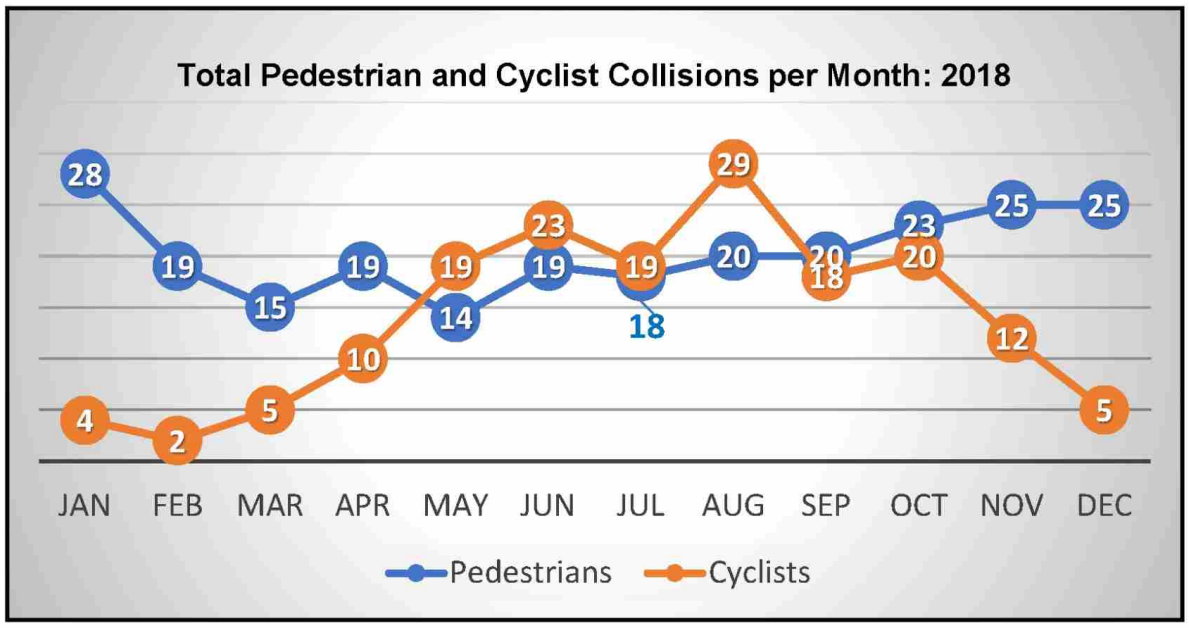
DATE	STREET 1	STREET 2	LOCATION	WEATHER	LIGHTING	ROAD 1 SURF COND	INITIAL IMPACT	DRV 1 ACT	DETAILS
02/06/2018	King	Sydenham	At intersection	Clear	Daylight	Wet	Ped/Vehicle	Failed to yield right of way	Pedestrian struck by truck turning left
02/27/2018	York	Valley	Non intersection	Clear	Daylight	Dry	SMV other	Lost control	Impaired driver
03/31/2018	Gage	Lawrence	Non intersection	Rain	Dark artificial	Wet	Head on	Speed too fast	Car driving at excessive speed hits car on curve
05/28/2018	Highway 5	Spring Creek	Non intersection	Clear	Dark	Dry	Rear end	Exceeding speed limit	Motorcycle rear-ends car
06/02/2018	Highway 403 EB Off Ramp	Wilson	Intersection related	Clear	Daylight	Dry	Left turn (oncoming)	Disobeyed traffic control	Driver fails to stop at stop sign
06/13/2018	Queenston	Beland	Near private drive	Clear	Daylight	Dry	Left turn (oncoming)	Other driver action	Impaired driver struck vehicle exiting from driveway
06/14/2018	Garth	Madonna	At intersection	Clear	Daylight	Dry	Left turn (opposite thru)	Exceeding speed limit	Truck turned in front of motorcycle
08/17/2018	King	Queen	At intersection	Clear	Daylight	Dry	Right turn (thru-right)	Driving Properly	Cyclist collided with right turning truck
10/09/2018	Trinity Church	Golf Club	At intersection	Clear	Dark	Wet	Left turn (thru-right)	Improper turn	Impaired cyclist crosses road in front of car
11/20/2018	Barton	Lottridge	Intersection related	Clear	Daylight	Dry	Ped/Vehicle	Failed to yield right of way	Driver turning left at traffic signal struck pedestrian crossing with right of way
11/29/2018	Upper Wentworth	East 24th	At intersection	Clear	Dark artificial	Dry	Ped/Vehicle	Driving Properly	Inattentive driver struck pedestrian crossing at uncontrolled intersection

Section 5

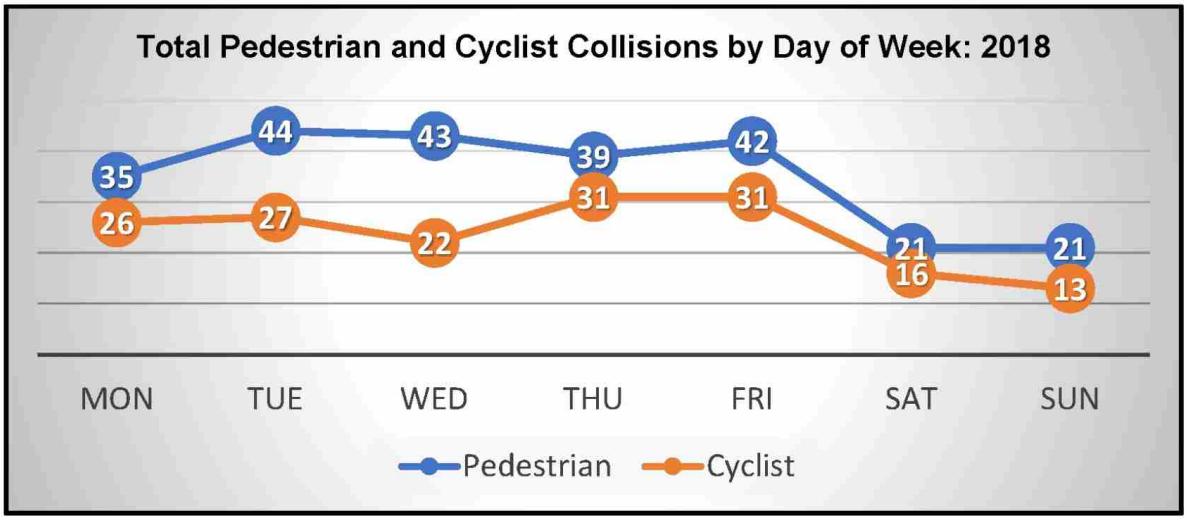
Pedestrian and Cyclist Collisions – 2018



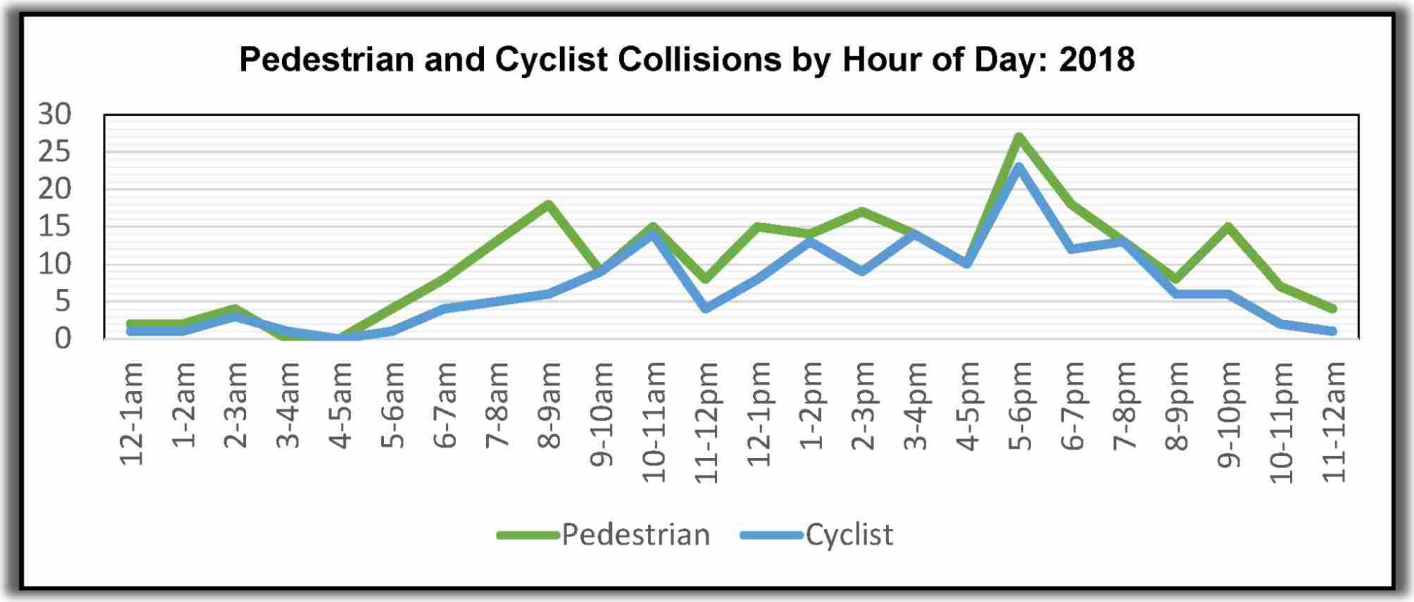
There were 245 collisions involving pedestrians and 166 cyclist collisions. May had the lowest number of pedestrian collisions. August had the highest number of cyclist collisions.



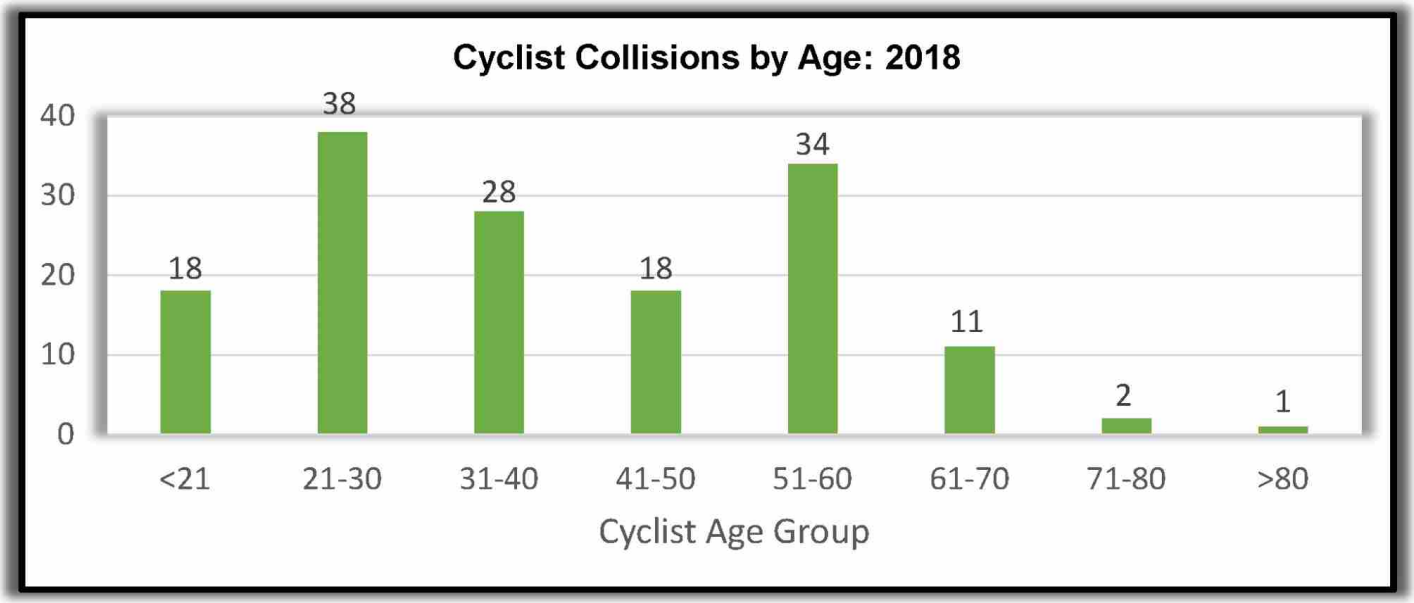
Tuesday had the highest number of pedestrian collisions and Thursday and Friday had the most cyclist collisions.



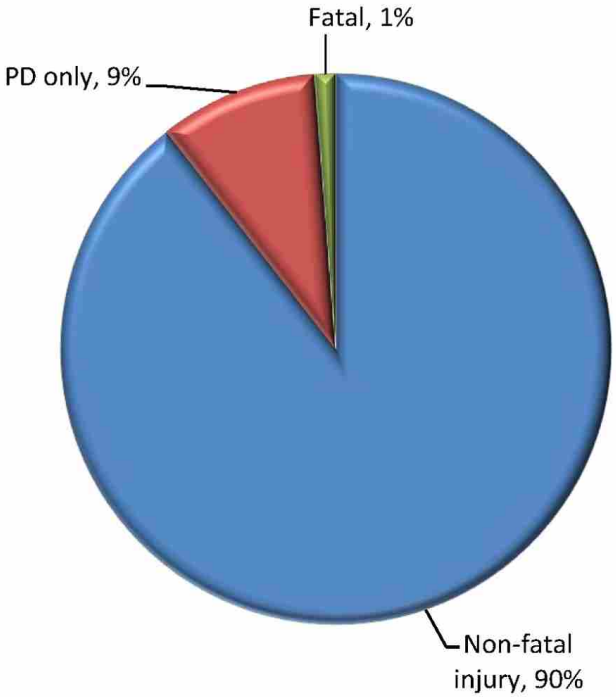
The time period of 5-6 p.m. had the highest number of pedestrian collisions with 27. The same hour had the highest number of cyclist collisions with 23.



The most common ages for cyclists involved in collisions were 30 and 54 years old.



Pedestrian Injury: 2018

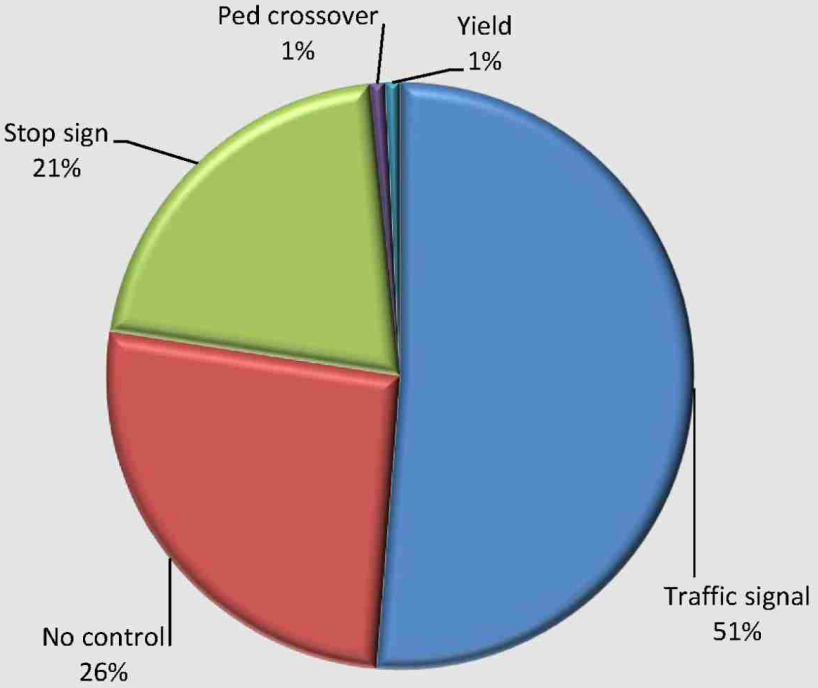


Injury Classification	#
Non-fatal injury	219
Property damage (PD) only	23
Fatal	3

90% of all pedestrian related collisions resulted in a non-fatal injury. There were 3 fatal pedestrian collisions.

Pedestrian Collisions by Traffic Control: 2018

Traffic Control Type	#
Traffic signal	124
No control	66
Stop sign	51
Pedestrian crossover	2
Yield	2

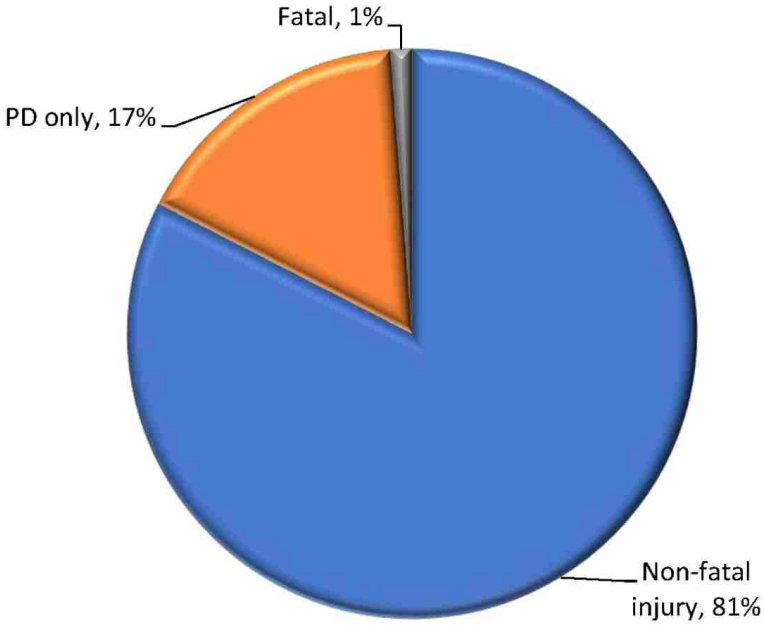


Nearly half of all pedestrian related collisions happened at locations controlled by traffic signals. 26% occurred where there was no form of traffic control.

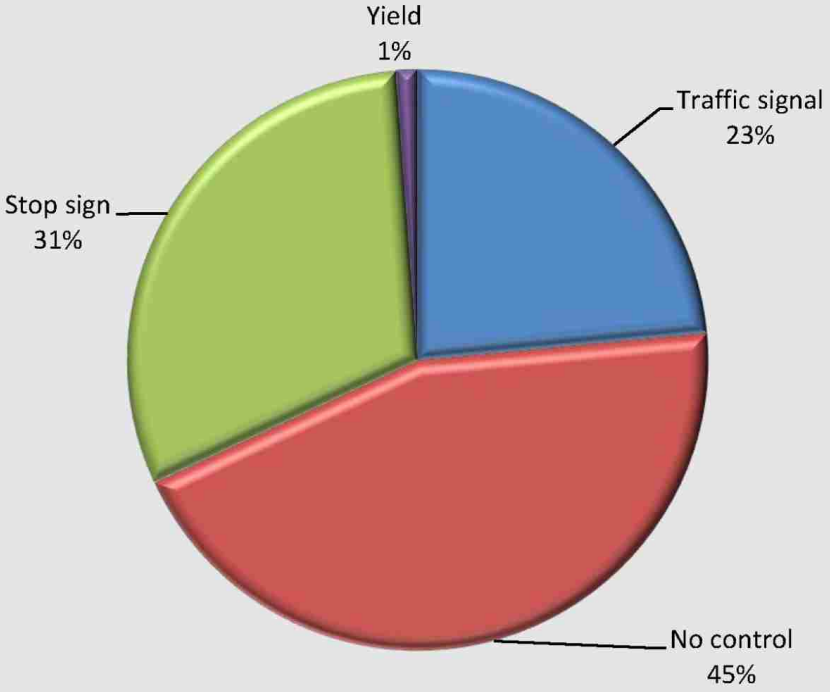
Collision Classification	#
Non-fatal injury	135
Property damage (PD) only	29
Fatal	2

81% of collisions involving cyclists resulted in non-fatal injuries. There were two fatal cyclist collisions.

Cyclist Injury: 2018



Cyclist Collisions by Traffic Control: 2018



Traffic Control Type	#
No control	74
Traffic signal	39
Stop sign	51
Yield	2

55% of cyclist collisions occurred at locations that were either controlled by a traffic signal or a Stop/Yield sign.

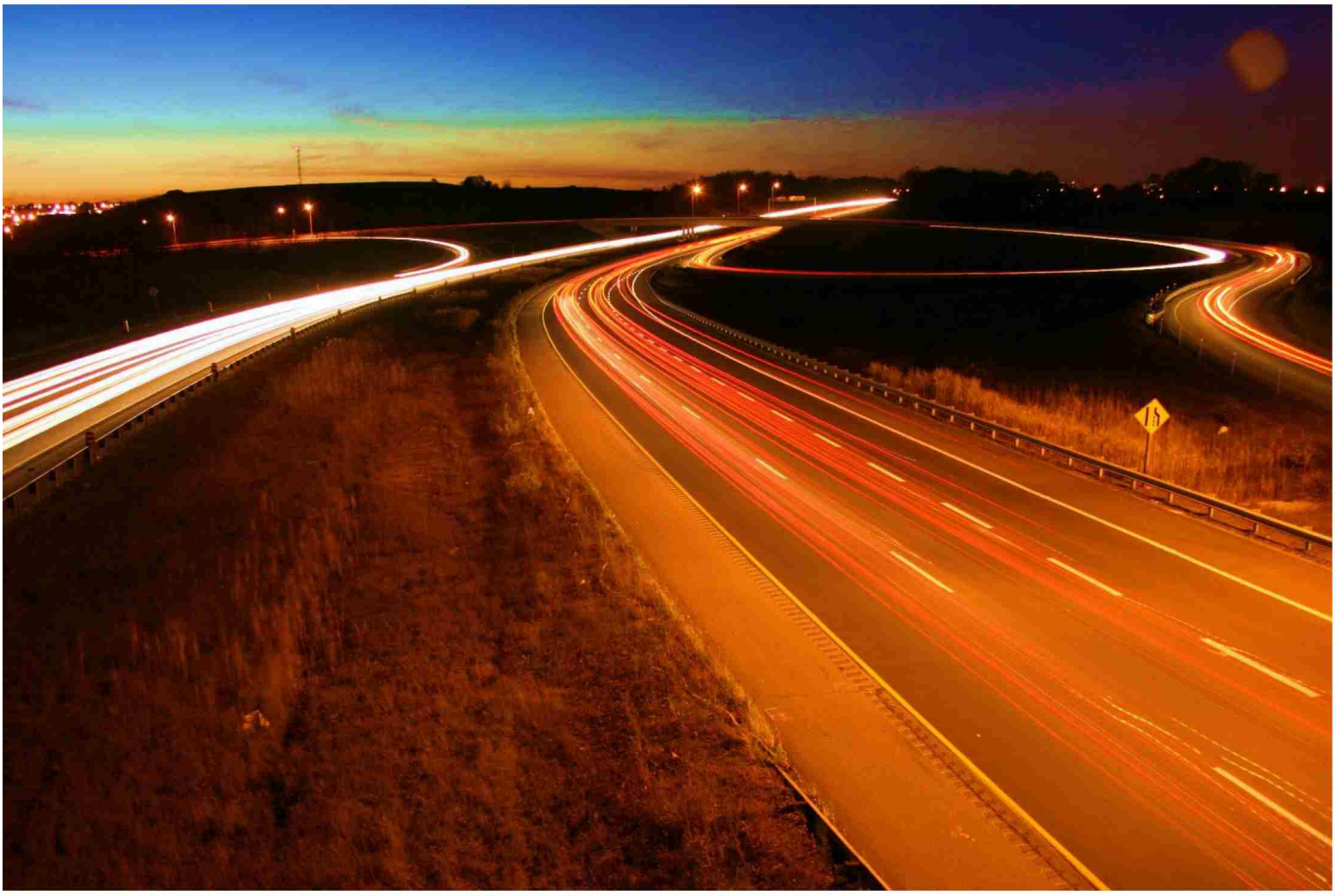
Intersections with the Highest # of Pedestrian Collisions: 2018			
Rank	Intersection	# of Collisions	Ward
1	Barton Street and Lottridge Street *	4	3
2	Main Street and Wellington Street *	3	2/3
3	Mohawk Road and Upper James Street	3	8
4	Mohawk Road and Rice Avenue	2	14
5	Golf Links Road and Legend Court	2	12
6	Stone Church Road and Upper Paradise Road	2	14
7	Barton Street and Wellington Street *	2	2/3
8	Millbank and Mohawk Road	2	8
9	Dundurn Street and King Street *	2	13
10	Dundurn Street and Main Street *	2	1
11	Barton Street and Centennial Parkway	2	5
12	Main Street and Queen Street *	2	1/2
13	John Street and King Street *	2	2
14	Kendale Court and Limeridge Road	2	8
15	Rymal Road and Upper Wentworth Street	2	7
16	Charlton Avenue and James Street	2	2
17	Barton Road and Grays Road	2	5/10
18	Mud Street and Winterberry Drive	2	9
19	Charlton Street and John Street	2	2
20	Hess Street and King Street	2	2
21	Nash Road and Queenston Road	2	5

Intersections with the Highest # of Cyclist Collisions: 2018			
Rank	Intersection	# of Collisions	Ward
1	John Street and King William Street	2	2
2	Cannon Street and Steven Street	2	3
3	Garfield Avenue and King Street	2	3
4	John Street and St. Josephs Drive	2	2
5	Cannon Street and East Avenue	2	3
6	Central Avenue and Rosewood Road	2	4
7	Bay Street and Duke Street	2	2
8	80 intersections had 1 collision	1	

* Locations that were also identified in 2014-2018 review

Section 6

Lincoln M. Alexander Parkway and Red Hill Valley Parkway Five Year Collision Trends – 2014 to 2018

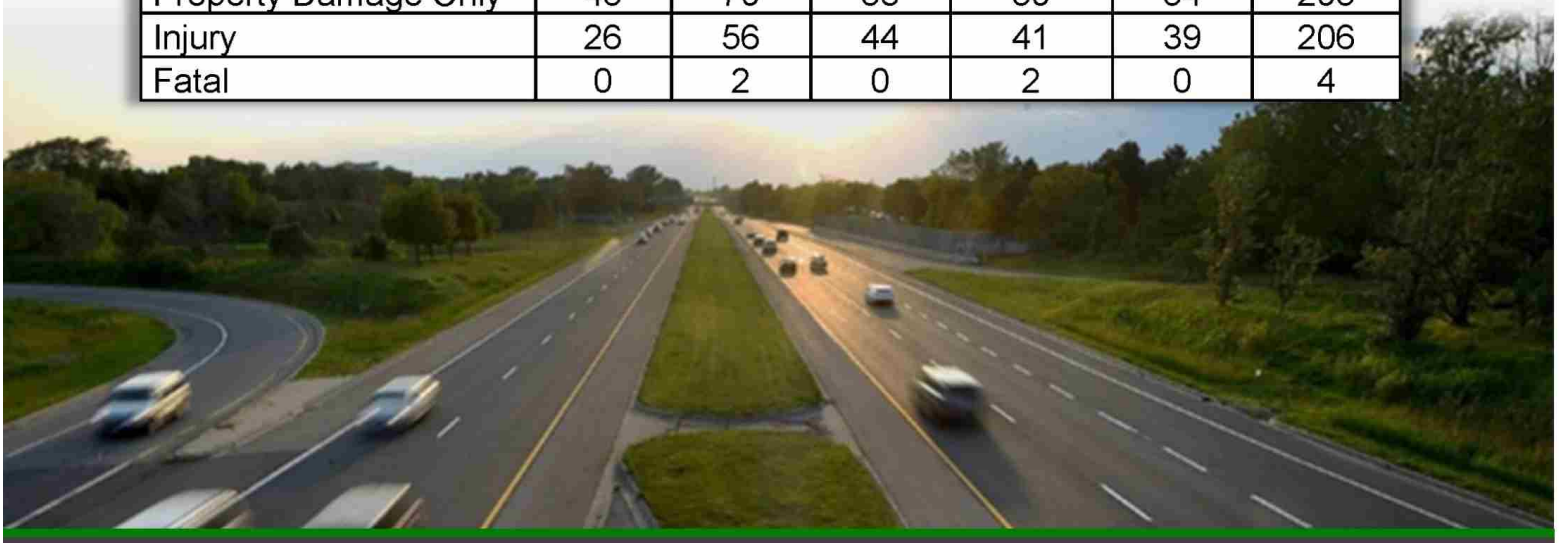


While the chart below shows an increase in collisions on the LINC since 2014, this is largely due to an 86% increase in the number of self-reported collisions. Self-reported collisions are of low severity and do not involve person injuries. Police reported collisions have decreased 29% and collisions resulting in injuries have decreased 27%.

Lincoln M. Alexander Parkway Collisions						
Collision Type	**2014**	**2015**	**2016**	**2017**	**2018**	**TOTAL**
Total Collisions	138	135	144	159	182	758
Self-Reported	73	64	86	98	136	457
Police Reported	65	71	58	61	46	301
Crossover	2	1	0	1	1	5
Property Damage Only	27	22	21	31	19	120
Injury	37	50	38	30	27	182
Fatal	1	0	0	1	0	2

Similarly, while the chart below shows an increase in collisions on the RHVP since 2014, largely due to an increase in self-reported collisions. Police reported collisions have increased 31% and injury collisions have increased 50% but both decreased from 2017 to 2018.

Red Hill Valley Parkway Collisions						
Collision Type	**2014**	**2015**	**2016**	**2017**	**2018**	**TOTAL**
Total Collisions	117	238	186	193	235	969
Self-Reported	46	101	84	91	142	464
Police Reported	71	137	102	102	93	505
Crossover	1	6	0	3	3	13
Property Damage Only	45	79	58	59	54	295
Injury	26	56	44	41	39	206
Fatal	0	2	0	2	0	4



2015 saw the highest number of collisions on the LINC with 71. November 2018 was the month with the most collisions with 11.

Lincoln M. Alexander Parkway Police Reported Collisions						
Month	**2014**	**2015**	**2016**	**2017**	**2018**	**TOTAL**
January	9	6*	9	2	4	30
February	9	10	5	5	3	32
March	1	4	4	4	4	17
April	3	6	2	3	1	15
May	4*	4	9	6	3	26
June	4	4	4	8	4	24
July	4	5	2	4	2	17
August	4	10	8	5*	2	29
September	10	5	6	2	1	24
October	8*	4	4	9	4	29
November	4	5	0	7	11	27
December	5	8	5	6	7	31
TOTAL	65	71	58	61	46	**301**

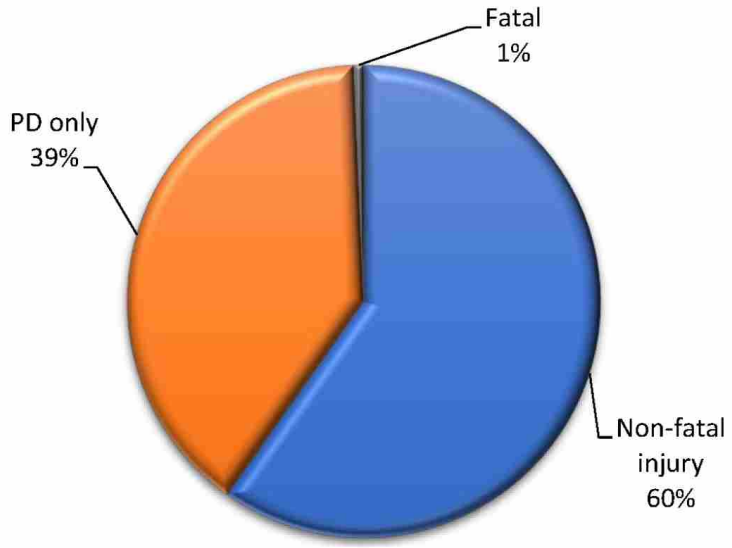
*Denotes when a full crossover occurred resulting in a head-on collision.

2015 had the highest number of collisions on the RHVP with 137. December 2015 was the month with the most collisions with 24 collisions.

Red Hill Valley Parkway Police Reported Collisions						
Month	**2014**	**2015**	**2016**	**2017**	**2018**	**TOTAL**
January	9	7*	14	9*	6	45
February	5	5	5	6	6	27
March	3	7*	5	5	4	24
April	1	7	7	6	8	29
May	5	12*	3	11	6	37
June	2	14	7	9	5	37
July	4	11	8	8*	7	38
August	1	7*	9	10	9	36
September	11	13	12	7	11	54
October	11*	19*	16	9	17	72
November	6	11	8	15*	12	52
December	13	24*	8	7	2	54
TOTAL	71	137	102	102	93	505

*Denotes when a full crossover occurred resulting in a head-on collision.

LINC Collision Severity: 2014-2018

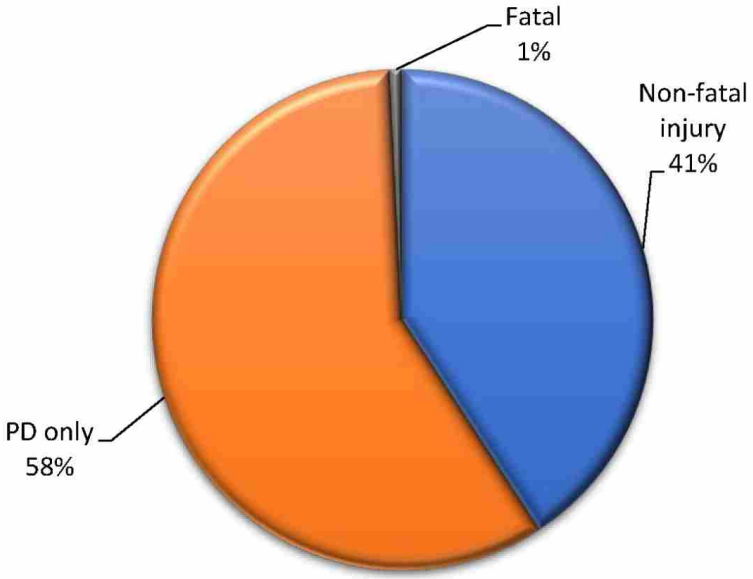


Collision Classification	#
Non-fatal injury	180
Property damage (PD) only	119
Fatal	2

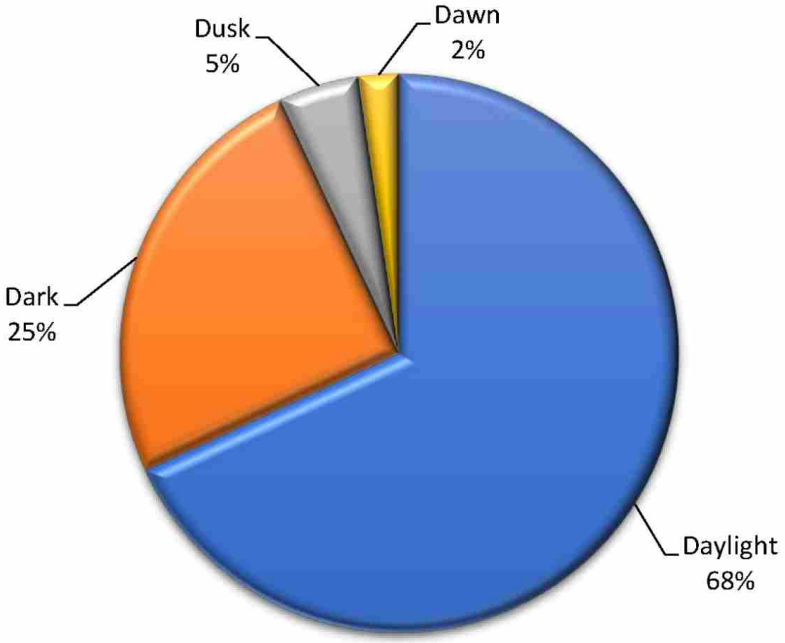
60% of all collisions on the Lincoln M. Alexander Parkway resulted in non-fatal injuries compared to 41% on the Red Hill Valley Parkway. There have been a total of six fatal collisions on the two roadways combined since 2013.

RHVP Collision Severity: 2014-2018

Collision Classification	#
Non-fatal injury	206
Property damage (PD) only	295
Fatal	4

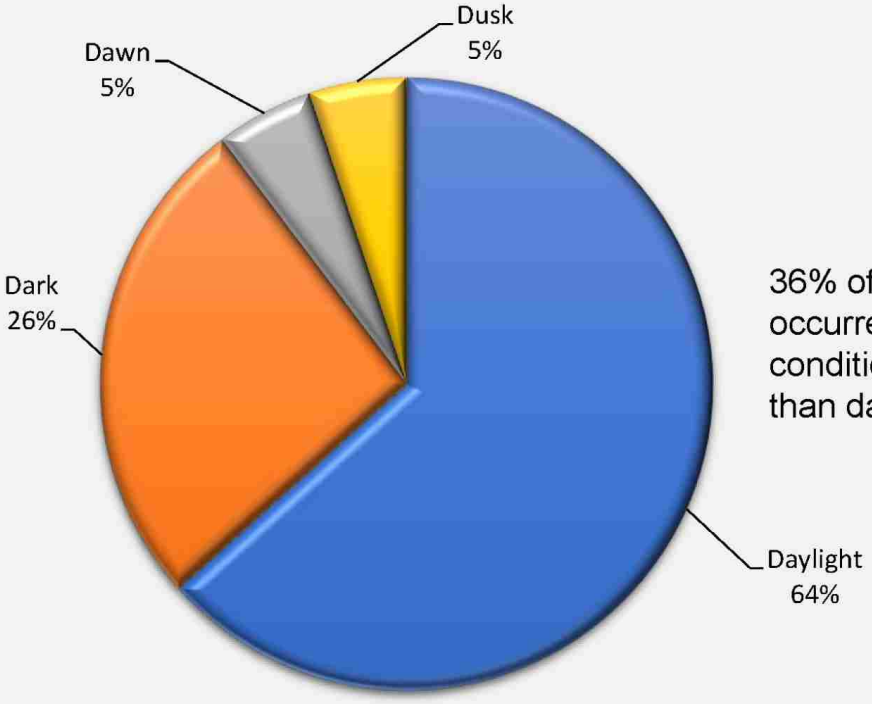


LINC Collisions by Lighting Condition: 2014-2018



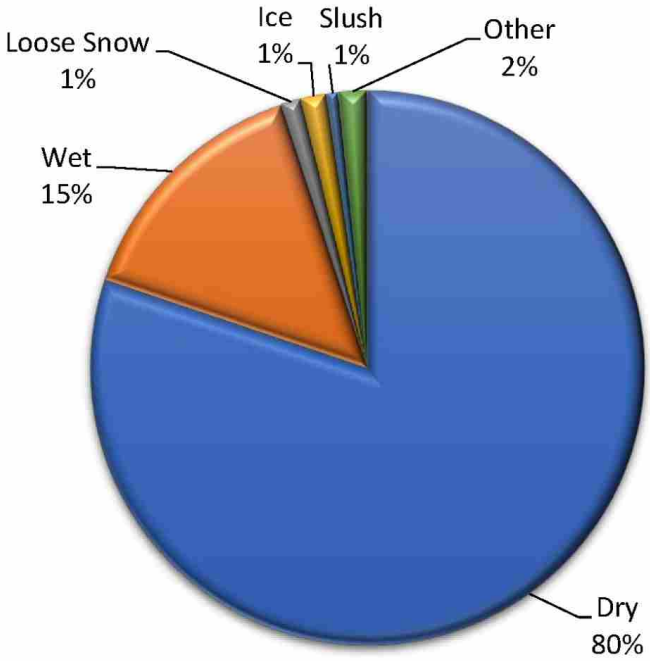
32% of collisions on the LINC occurred during times when lighting conditions were classified as other than daylight.

RHVP Collision by Lighting Condition: 2014-2018



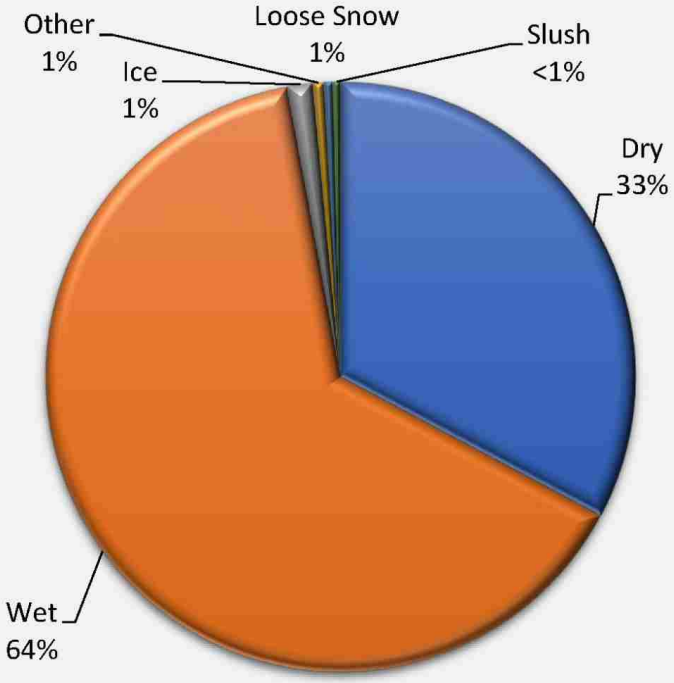
36% of collisions on the RHVP occurred during times when lighting conditions were classified as other than daylight.

LINC Collisions by Road Surface Condition: 2014-2018



80% of collisions on the LINC occurred when the road surface was dry. 15% occurred when the road surface was wet, 1% during loose snow, ice or slushy conditions.

RHVP Collisions by Road Surface: 2014-2018

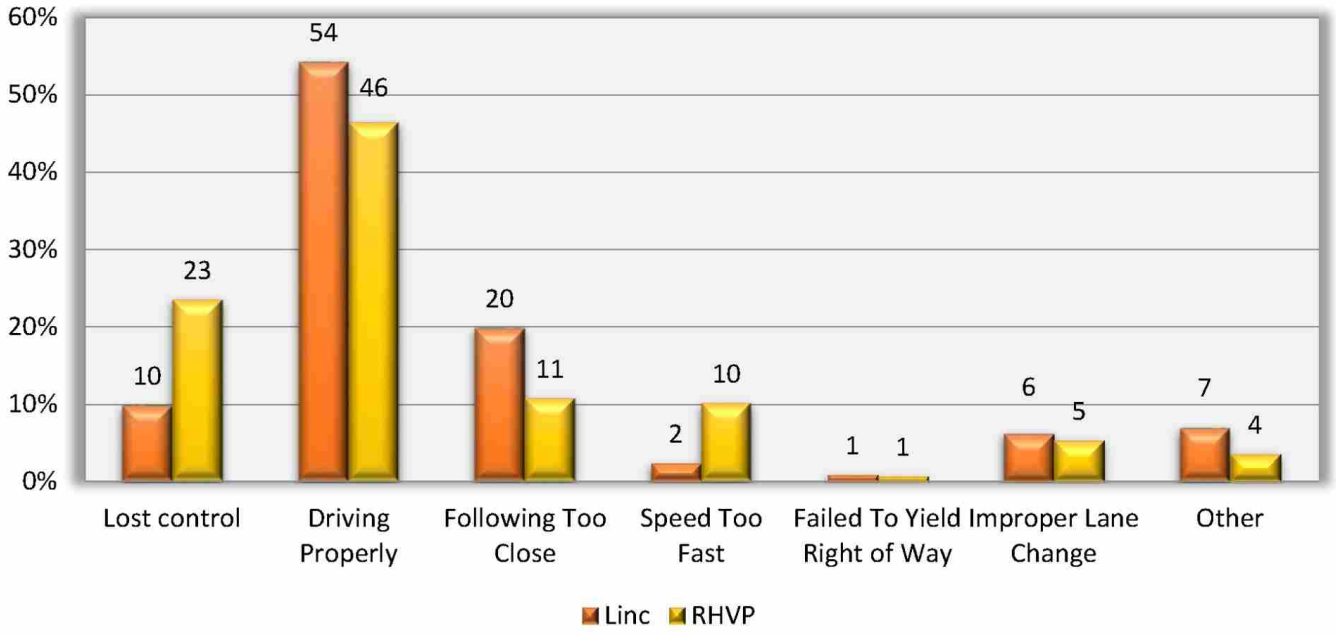


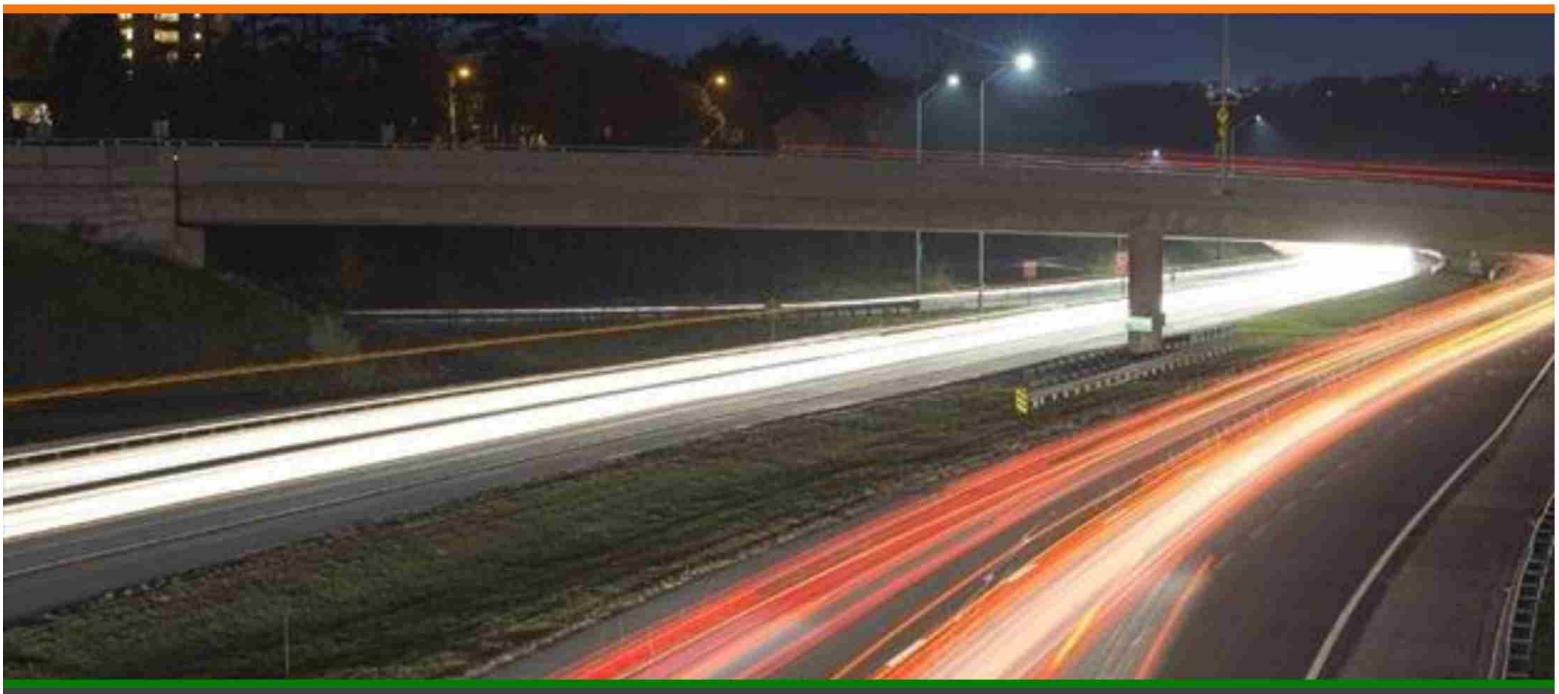
64% of collisions on the RHVP occurred when the road surface was wet. 33% of collisions occurred during dry road conditions and ice, loose snow, slush and others each accounted for 1% or less.

The most common driver action resulting in collisions on the LINC were drivers "Following Too Close." The RHVP driver action resulting in the most collisions was "Lost Control."

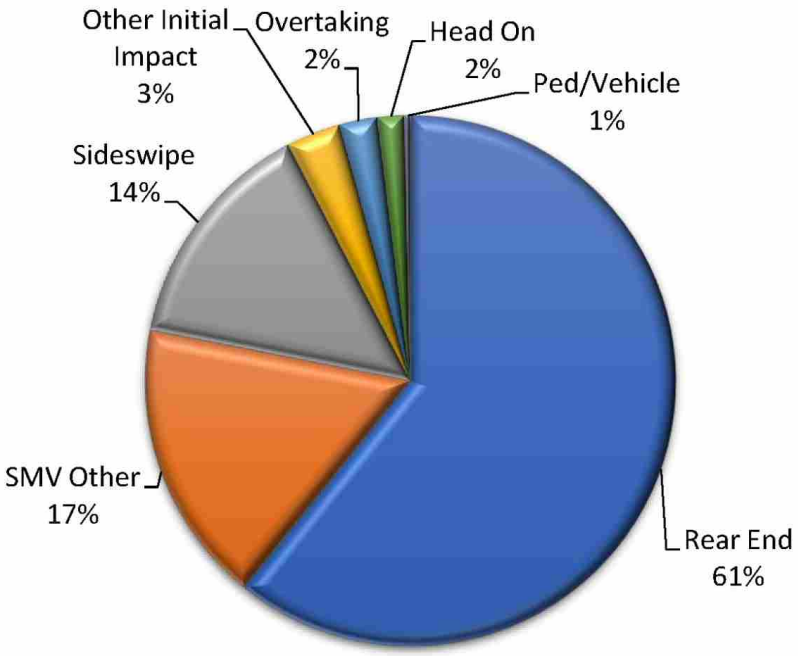
The values in "Driving Properly" typically represent the action of the driver that was not at fault in a collision.

LINC and RHVP Collisions by Driver Action: 2014-2018



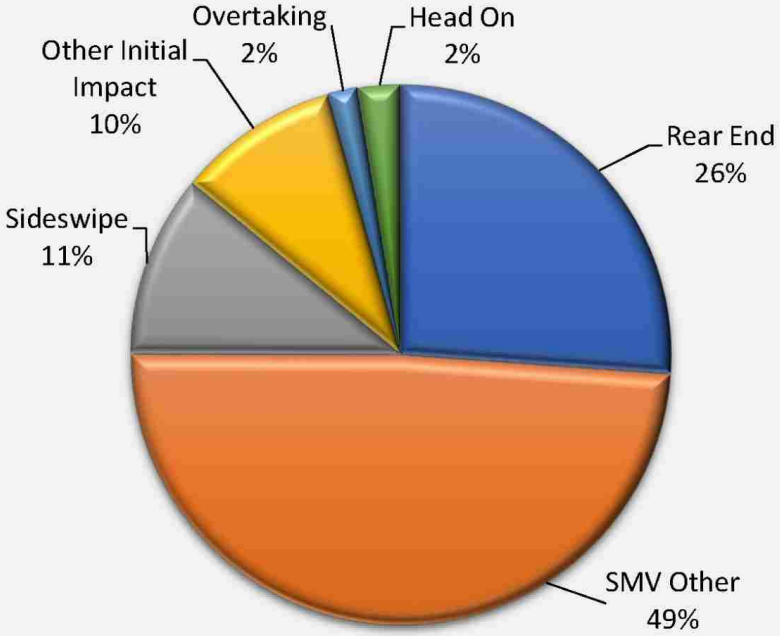


LINC Collisions by Impact Type: 2014-2018



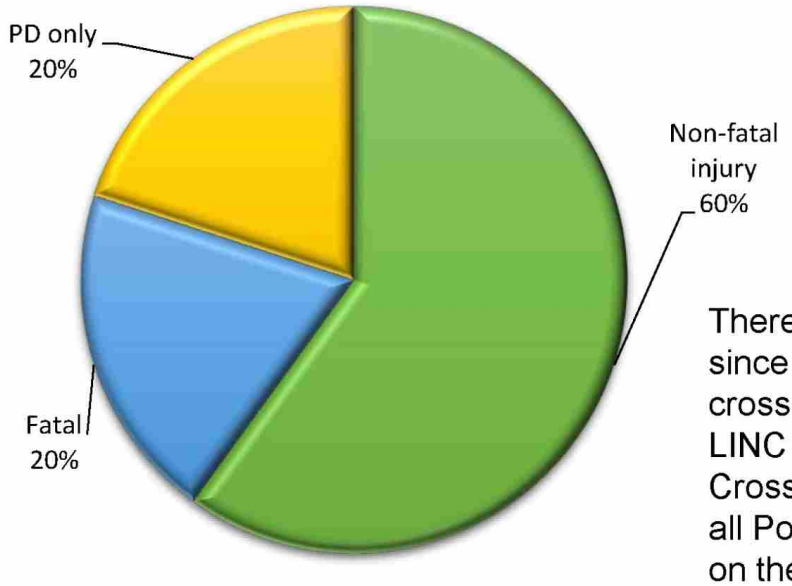
Rear end collisions were the most common occurrence on the LINC.

RHVP Collisions by Impact Type: 2014-2018



Single motor vehicle collisions accounted for 49% of all collisions on the RHVP.

LINC Injury Severity for Crossover Collisions: 2014-2018



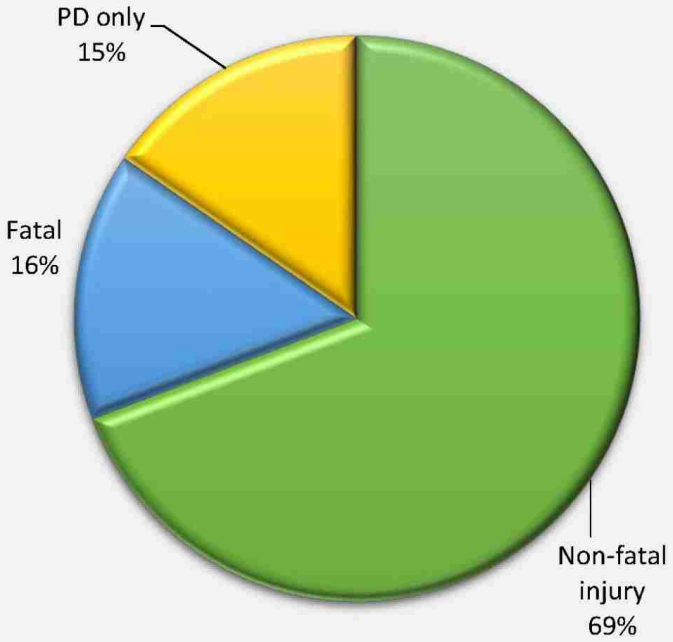
Classification	#
Property damage only	1
Non-fatal injury	3
Fatal	1

There have been a total of five collisions since 2014 where a vehicle has fully crossed over the centre median of the LINC and collided with another vehicle. Crossover collisions account for 1.6% of all Police Reported collisions that occur on the LINC.

RHVP Injury Severity for Crossover Collisions: 2014-2018

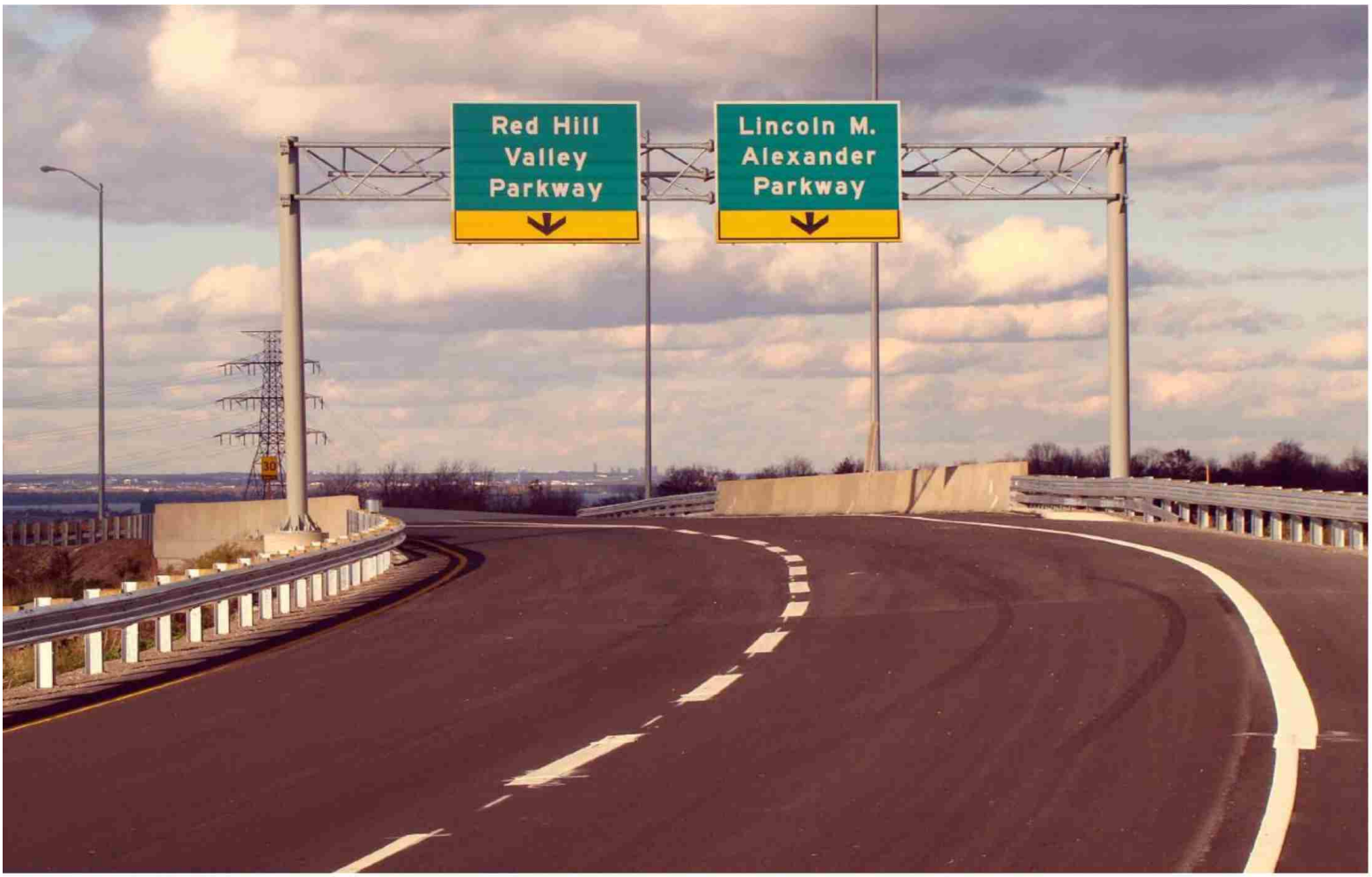
Classification	#
Property damage (PD) only	2
Non-fatal injury	9
Fatal	2

There have been a total of 13 collisions since 2014 where a vehicle has fully crossed over the centre median of the RHVP and collided with another vehicle. Crossover collisions account for 2.6% of all Police Reported collisions that occur on the RHVP.



Section 7

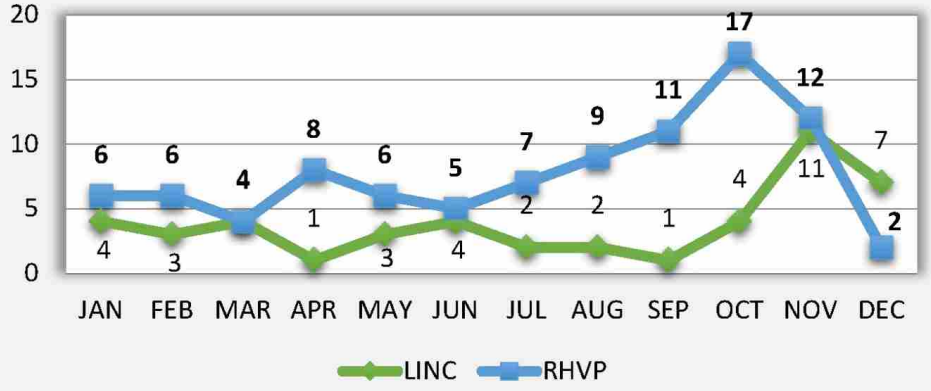
Lincoln M. Alexander Parkway and Red Hill Valley Parkway Collision Statistics – 2018



A summary of 2018 collisions statistics on the LINC and RHVP is shown below.

2018 STATISTICS	LINC	RHVP
Number of total collisions	182	235
Number of police reported collisions	46	93
Number of fatal collisions	0	0
Number of collisions involving pedestrians	0	0
Number of crossover collisions	1	3
Day with highest number of total collisions	Friday	Monday/Tuesday
Month with highest number of total collisions	November	October
Hour with highest number of total collisions	5-6 p.m.	8-9 a.m.
Most common collision type	Rear End	Single Motor Vehicle
Most frequent driver action resulting in collision	Following Too Close	Lost Control

LINC and RHVP Collisions by Month: 2018



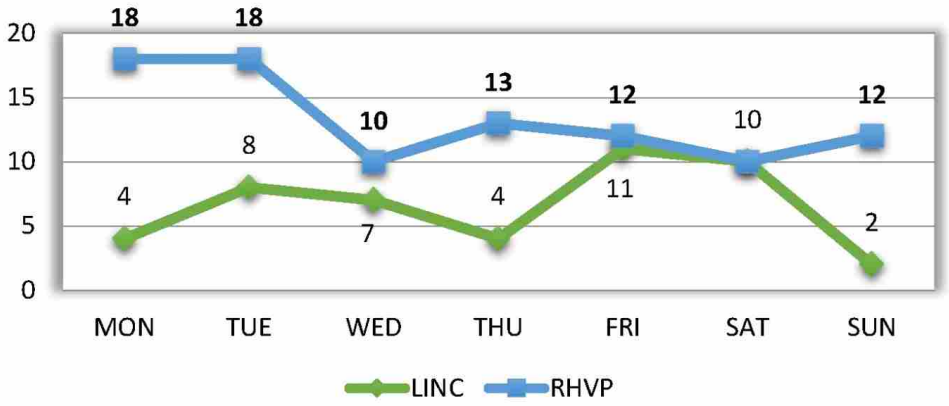
November had the highest number of collisions on the LINC.

October was the month that had the highest number of collisions on the RHVP.

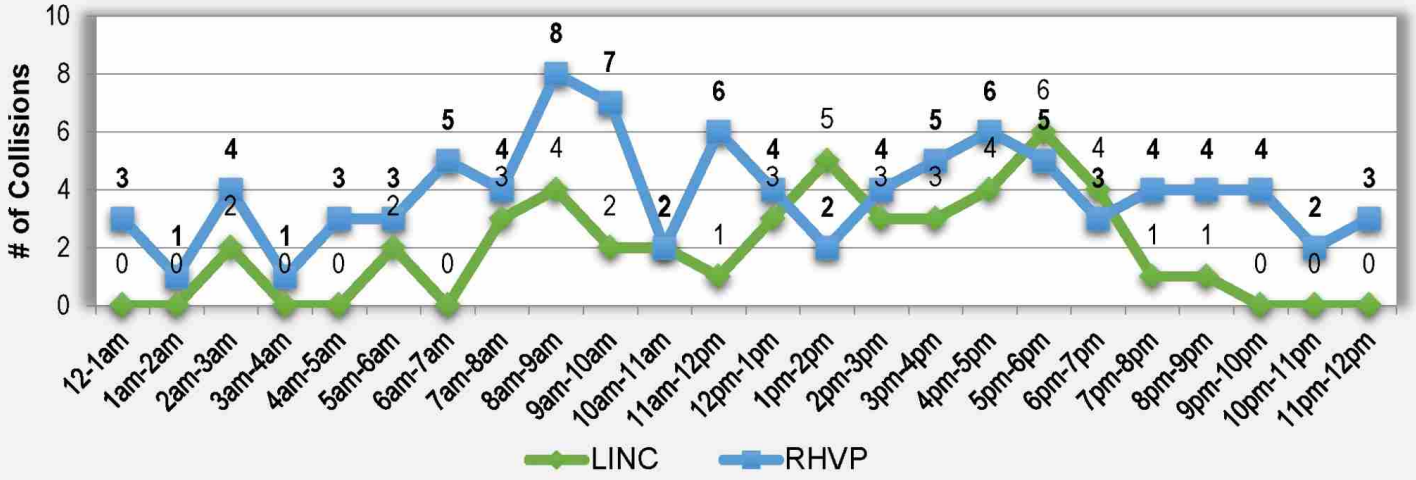
LINC and RHVP Collisions by Week Day: 2018

Tuesday had the highest combined collisions for both Parkways during the week.

Friday had the most collisions for the LINC and Monday and Tuesday were highest for the RHVP.

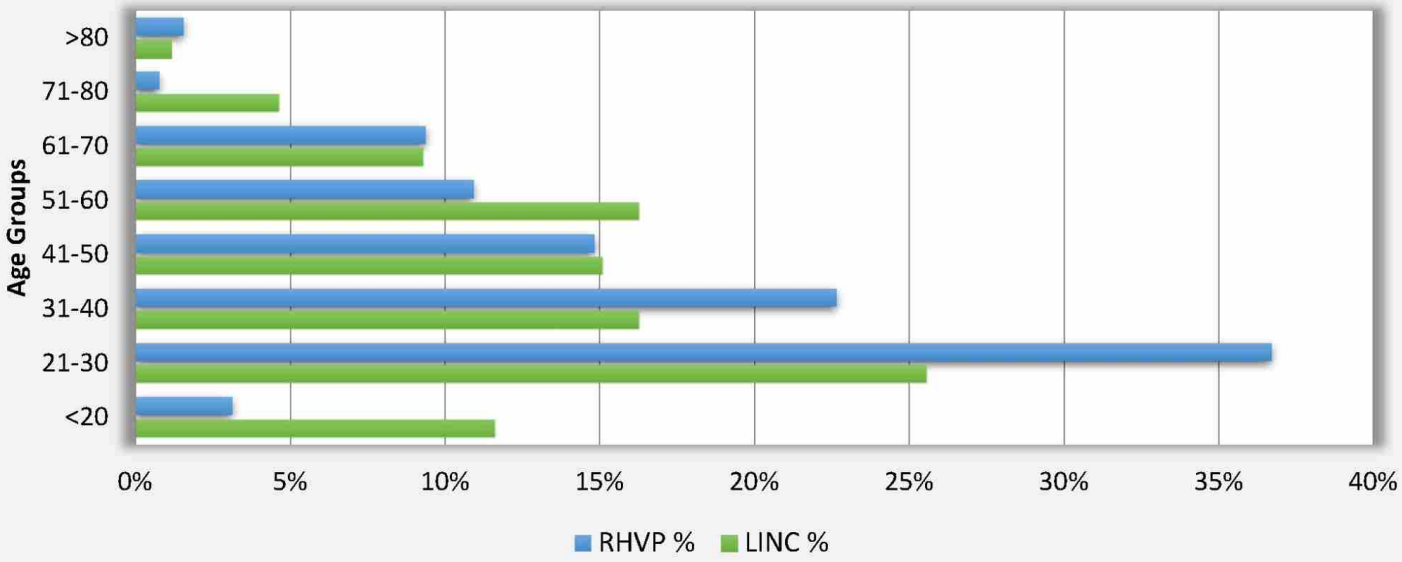


LINC and RHVP Collisions by Hour of Day: 2018



The 5-6 p.m. afternoon commute resulted in the highest number of collisions during that hour on the LINC in 2018. The 8-9 a.m. morning commute resulted in the highest number of collisions during that hour on the RHVP.

LINC and RHVP Collisions by Driver Age: 2018

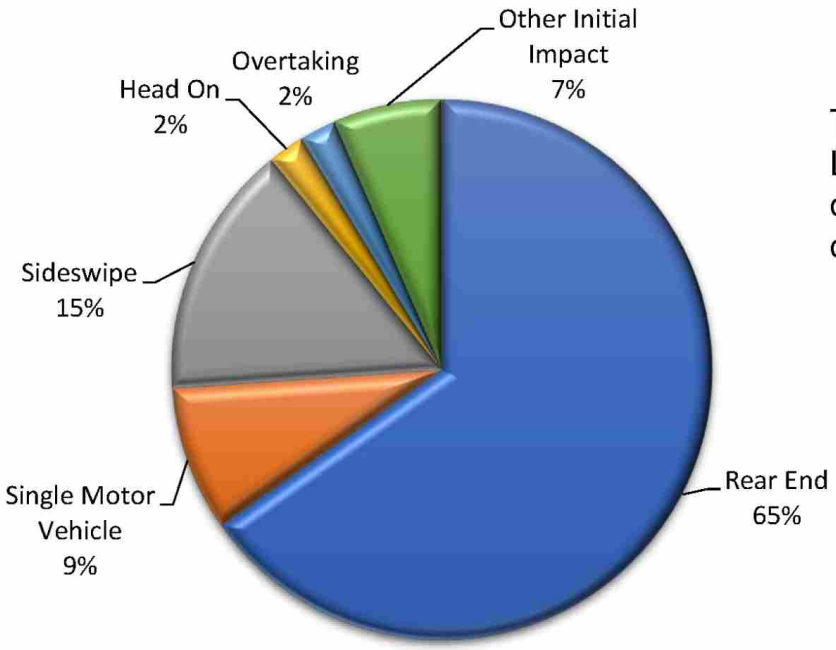


The most common ages for drivers involved in a collision on the LINC in 2018 were 20 and 24. The most common ages for drivers involved in a collision on the RHVP were 23 and 24. It should be noted that these were drivers involved in collisions, not necessarily the person at fault.

58% of collisions on the RHVP resulted in property damage and 42% resulted in non-fatal injuries.
There were no fatal collisions in 2018.

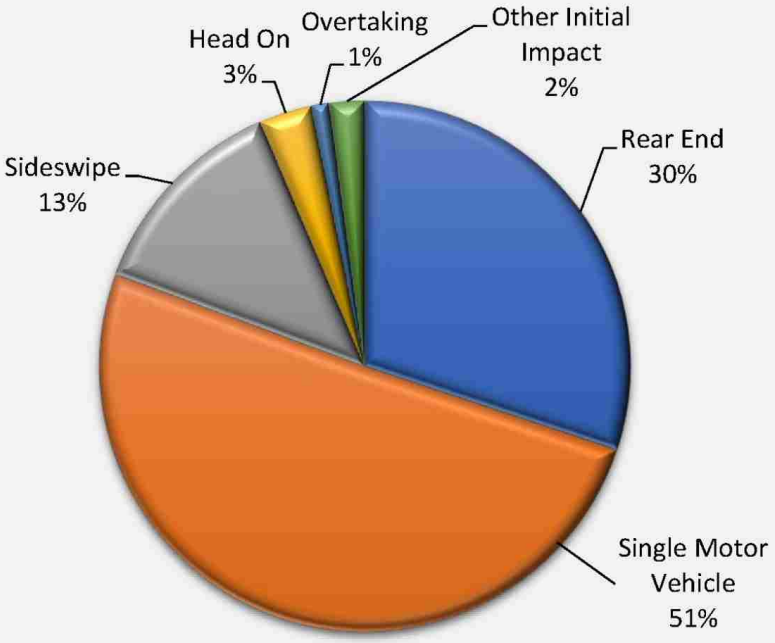
41% of collisions on the LINC resulted in property damage and 59% resulted in non-fatal injuries. There were no fatal collisions in 2018.

LINC Collisions by Initial Impact Type: 2018



The most common impact type on the LINC was a rear end collision which occurred 65% of the time. There was one crossover collision in 2018.

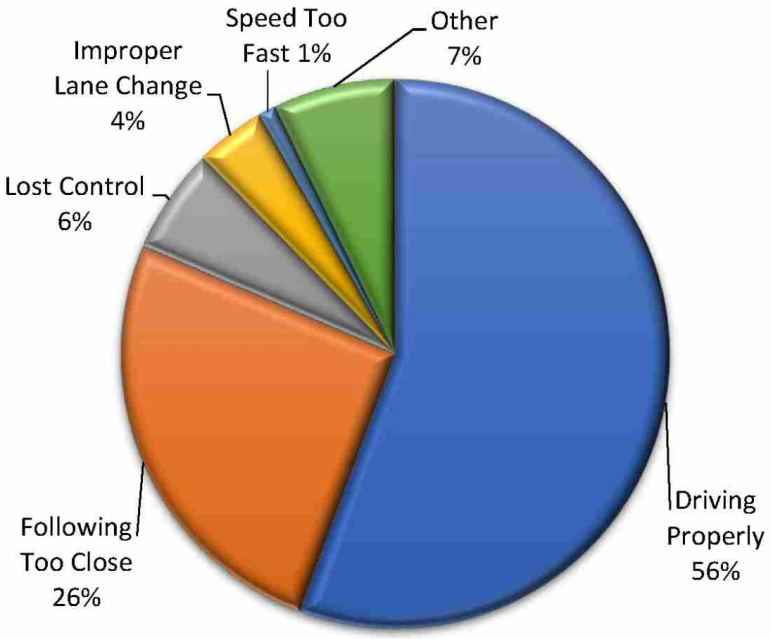
RHVP Collisions by Initial Impact Type: 2018



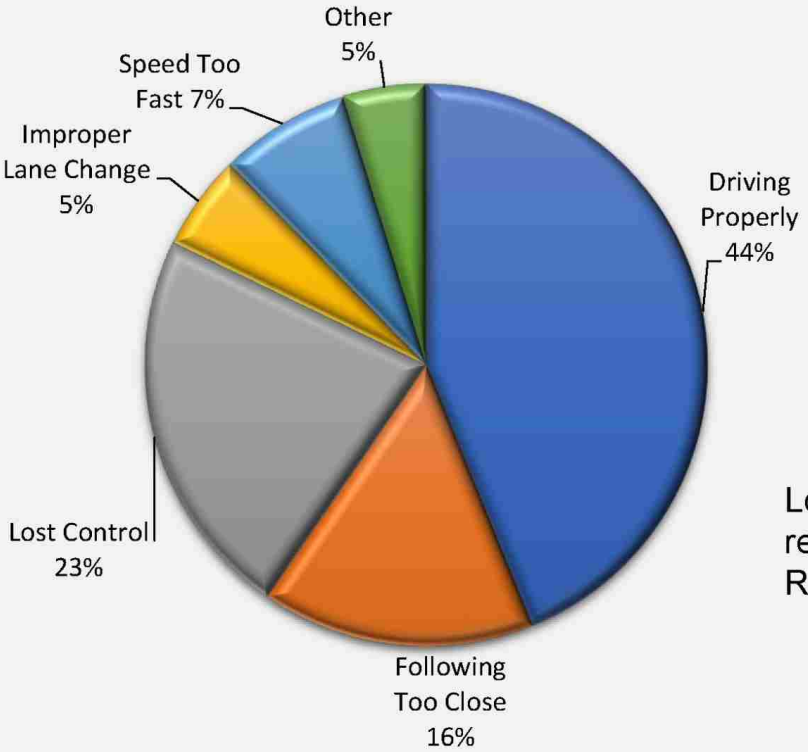
The most common impact type on the RHVP was single motor vehicle collisions which occurred 51% of the time. There were three crossover collisions in 2018.

LINC Collisions by Driver Action: 2018

Following too close was the driver action that resulted in the most collisions on the LINC.

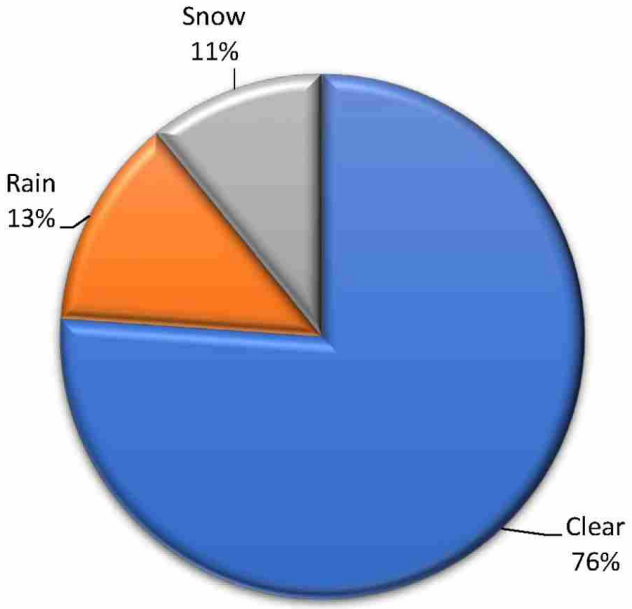


RHVP Collisions by Driver Action: 2018



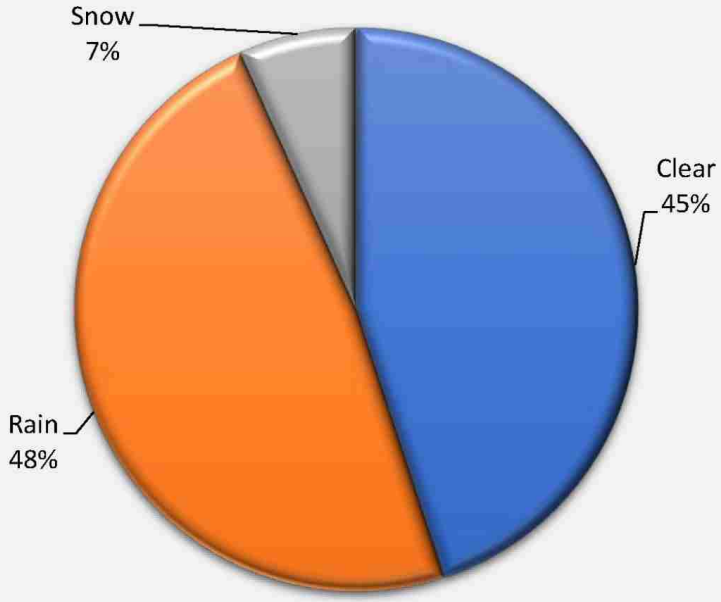
Lost control was the driver action that resulted in the most collisions on the RHVP.

LINC Collisions by Weather Condition: 2018



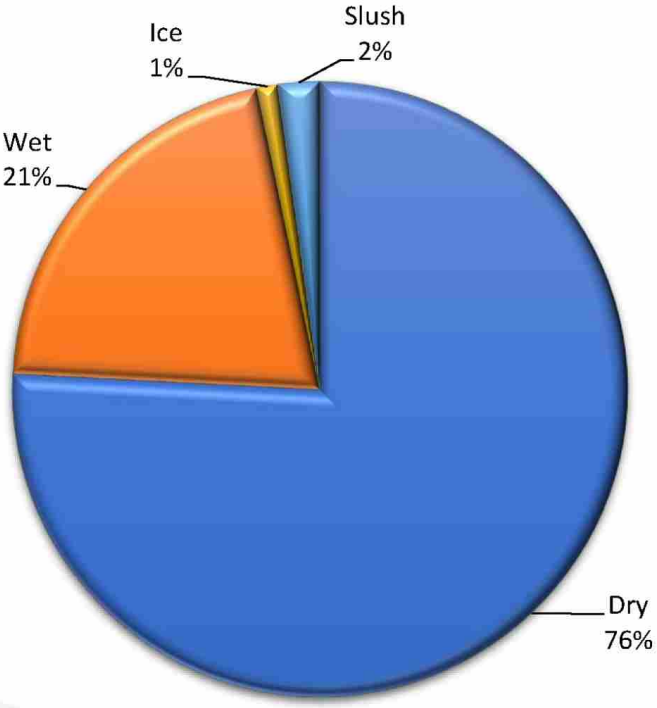
76% of all collisions on the LINC occurred when the weather was clear.

RHVP Collisions by Weather Condition: 2018



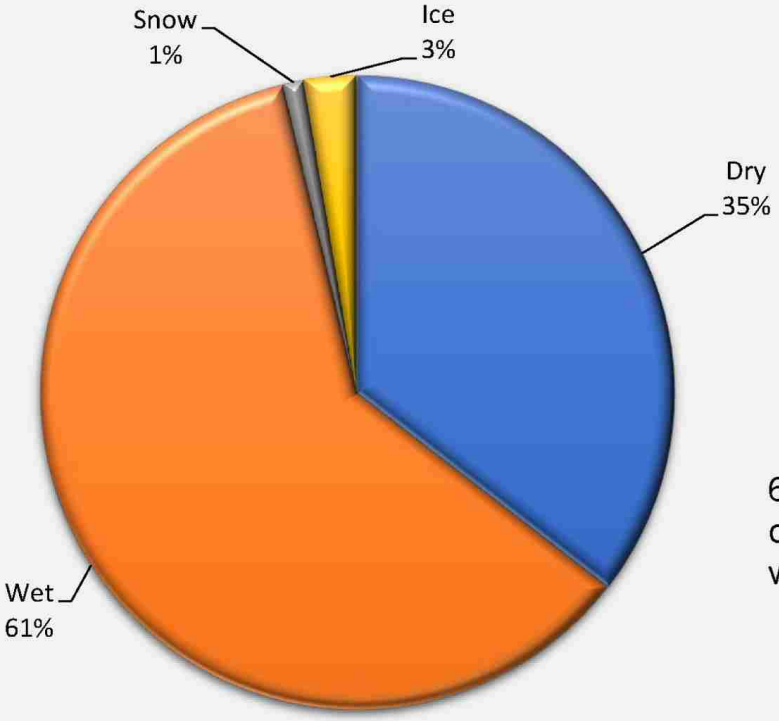
48% of the collisions on the RHVP occurred when it was raining.

LINC Collisions by Road Surface Condition: 2018



76% of all collisions on the LINC occurred when the road surface was dry.

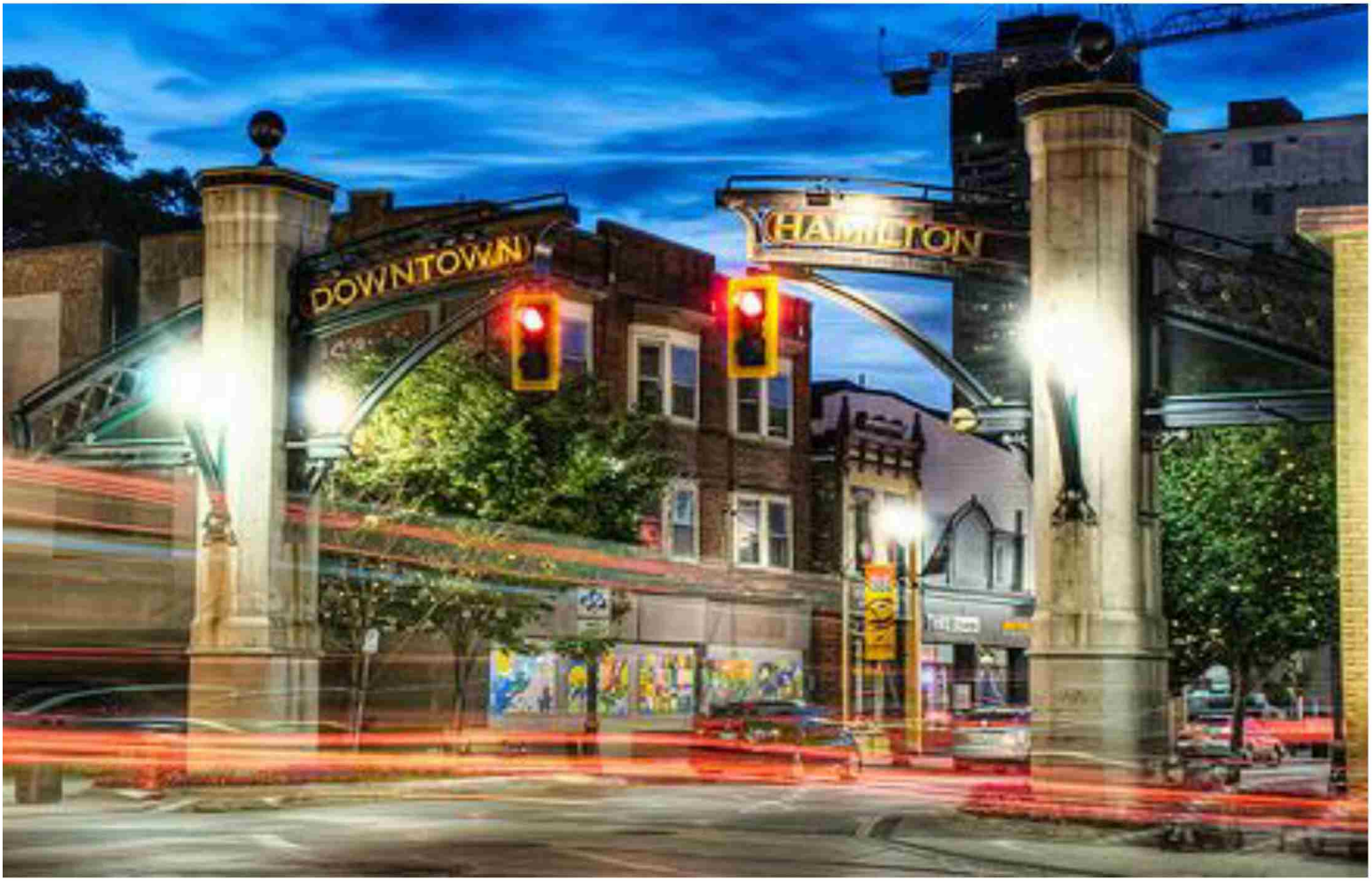
RHVP Collisions by Road Surface Condition: 2018

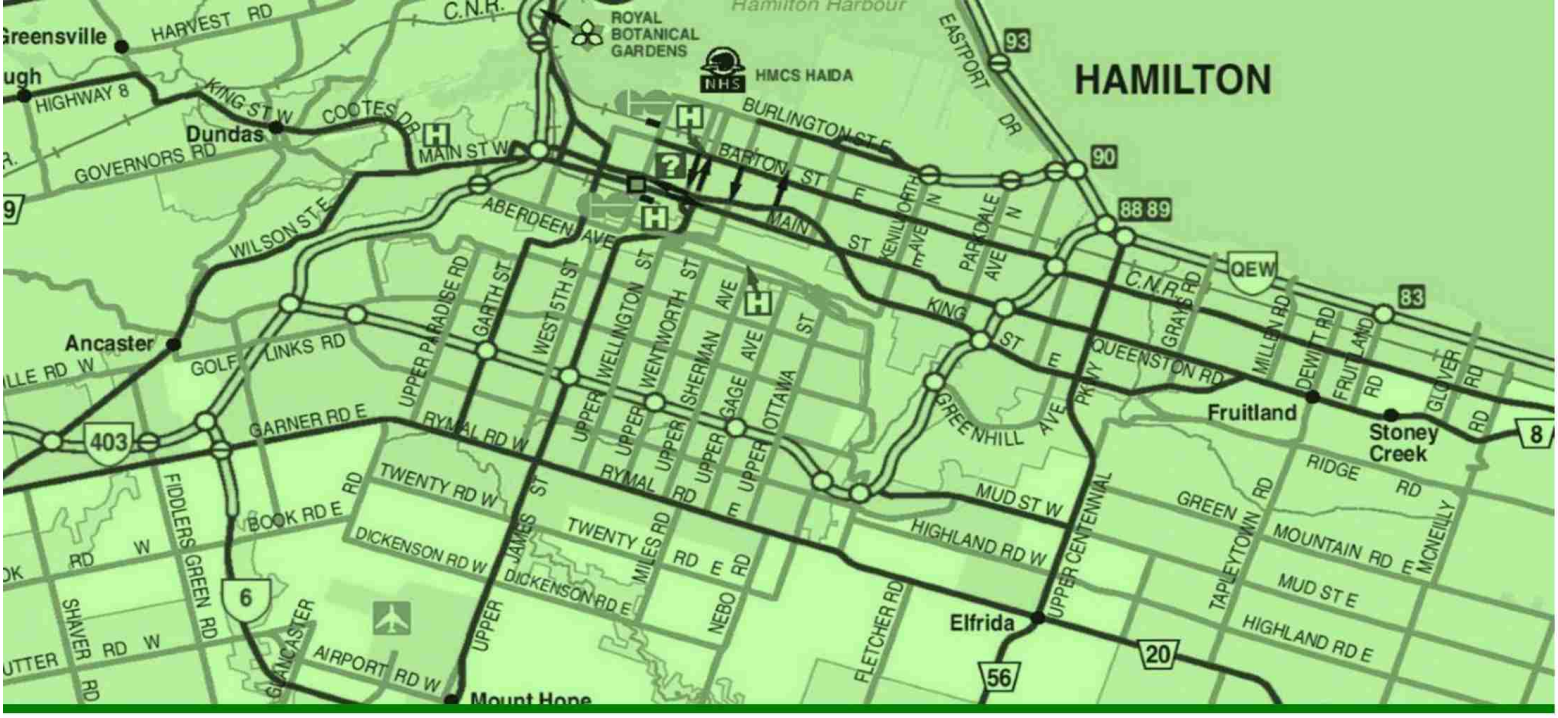


61% of collisions on the RHVP occurred when the road surface was wet.

Section 8

Network Screening





Network Screening

Network screening is the comprehensive process of evaluating safety conditions on the entire road network in the City of Hamilton. By using the same method at each location, the results can be compared and prioritized.

Twelve types of road groups are analyzed:

- Traffic signals (at intersections)
- Intersection pedestrian signals (IPS)
- Mid-block traffic signals
- All-way stop controlled intersections
- Two-way stop controlled intersections
- Yield controlled intersections
- Intersections with no control
- Urban roadway sections, between intersections (curbed cross-sections)
- Rural roadway sections, between intersections (uncurbed cross-sections)
- LINC and RHVP sections
- LINC and RHVP on-ramps
- LINC and RHVP off-ramps

Calculation of Risk and Over-representation

Traditionally, collision screening processes determined candidate locations by calculating collision rates considering collision frequency and traffic volume.

A major change that has been implemented in the network screening process for the City of Hamilton is the automated calculation of over-representation trends in the collision that occurred at each location when compared to its peer group. By comparing locations to other similar types within the group, a risk indicator can be calculated. All locations are then grouped and sorted by the indicator. In particular, where collision types were found to be over-represented, greater potential exists for the application of programs or techniques to reduce the number of collisions. This element forms one component of a test for candidate locations for the application of road safety audits.

To further enhance the likelihood of success in achieving collision reduction, the network risk indicator and collision type over-representation were supplemented with an evaluation of the frequency of collisions at each location. Each site was checked to determine if the number of collisions at the locations exceeded the upper 95% confidence limits for the expected number of collisions for sites in that group of locations. This additional test ensured that there was good "potential" at each site selected to implement successful countermeasures.

Network Screening Overrepresentation Ranking – 2014-2018 (TOP 15 LOCATIONS)

Rank	Group	Description	Network Risk Indicator	Total Collisions	Collisions per km	Overall average # of collisions for 5 years for Group	Fatal or Injury Collisions for 5 Years
1	Off-ramp	SCRP* EB - SB ramp: Mud NB - EB off ramp – SCRP	52.317	19	43.6	6.4	9
2	Two-way	Highland Road S and Third Rd	50.637	7	N/A	1.0	4
3	On-ramp	Mud: Mud SB - EB off ramp - RHVP	35.743	31	72.4	4.2	7
4	Rural Road	Weirs Ln: Hwy 8 - Governors	35.199	13	5.9	2.4	3
5	Urban Road	Upper James: Rymal - Stone Church	34.510	70	69.5	13.5	45
6	Two-way	Eleventh Road and Mud	34.016	16	N/A	1.0	10
7	Rural Road	Rymal: Upper Sherman - Upper Gage	33.567	42	49.8	2.4	34
8	Two-way	Beechwood and Lottridge	32.806	7	N/A	1.0	7
9	Urban Road	Queenston: Nash - Centennial Pkwy	32.500	59	72.3	13.5	31
10	Signal	North Service and QEW	32.023	25	N/A	10.2	20
11	Urban Road	James: St Josephs - King	30.380	49	50.6	13.5	13
12	Rural Road	Rymal: Swayze - Upper Centennial	30.001	19	46.8	2.4	10
13	On-ramp	Queenston to RHVP SB loop on ramp	29.779	7	21.2	4.2	3
14	Urban Road	King: Paradise - Newton	28.770	22	28.8	13.5	12
15	Urban Road	King: James - Catharine	28.298	18	53.4	13.5	9

* SCRP - Stone Church Road Ramp

Network Screening Overrepresentation Ranking – 2014-2018 (LOCATIONS 16-30)

Rank	Group	Description	Network Risk Indicator	Total Collisions	Collisions per km	Overall average # of collisions for 5 years for Group	Fatal or Injury Collisions for 5 Years
16	Urban Road	Upper James: Rymal – Alderlea	27.822	35	64.2	13.5	26
17	Urban Road	King: Queen - James	25.969	62	73.8	13.5	23
18	Urban Road	John: King - Barton	25.817	20	22.6	13.5	9
19	Urban Road	Barton: Wentworth - Sherman	25.710	31	36.7	13.5	18
20	Urban Road	Queenston: Parkdale - Nash	25.692	86	53.1	13.5	52
21	Urban Road	Bay: King - Cannon	25.135	12	26.8	13.5	4
22	Urban Road	Rymal: West 5th - Upper James	24.741	15	42.4	13.5	10
23	Two-way	Cooper and HWY 97	24.442	11	N/A	1.0	3
24	Rural Road	Pritchard: Stone Church - Rymal	22.979	11	10.7	2.4	8
25	Urban Road	Barton: Wellington - Wentworth	22.927	46	53.6	13.5	17
26	Rural Road	Jerseyville: Martin - Wilson A	22.252	15	7.1	2.4	11
27	Urban Road	Barton: Nash - Centennial Pkwy	21.275	37	44.4	13.5	27
28	Urban Road	Upper Wentworth: Stone Church - LINC WB off ramp	21.252	21	27.3	13.5	16
29	Urban Road	John: St Josephs - King	21.215	43	45.9	13.5	9
30	Rural Road	Sulphur Springs: Mineral Springs - Lovers Lane	20.894	14	9.5	2.4	5

Section 9

Red Light Camera Program Statistics

Red Light Camera Program Statistics

The City of Hamilton has installed Red Light Cameras (RLCs) at 29 locations. The chart on the following page shows the location of the 24 RLCs installed before 2018. The City installed RLC at five locations in 2018:

- Twenty Road and Upper James Street
- Cannon Street and James Street
- Fennell Avenue and Upper James Street
- Wentworth Street and Wilson Street
- Stone Church Road and Upper Gage Avenue

RLC are generally installed at locations that have a history of right-angle collisions which typically result in more severe injury and fatal collisions. There has been a 53% reduction in right-angle collisions and 69% reduction in injury/fatal collisions at all RLC locations combined in the past three years.

Location	Date Installed	Right Angle Collisions			Injury/Fatal Collisions			Average Annual Violations
		3 Year Before	2016-2018	% Change	3 Year Before	2016-2018	% Change	2016-2018
Stone Church and Upper Wentworth	21-Jul-08	1	3	200%	0	1	100%	207
Mud and Paramount	21-Jul-08	3	2	-33%	2	1	-50%	141
Cannon and Hess	19-Aug-08	9	1	-89%	5	1	-80%	2,150
Burlington and Gage	19-Aug-08	8	2	-75%	7	2	-71%	231
Dundurn and King	17-Aug-09	13	3	-77%	7	1	-86%	2,211
Dundurn and Main	17-Aug-09	5	2	-60%	5	1	-80%	1,961
Bay and Main (EB)	12-Oct-10	4	6	50%	2	4	100%	731
Cannon and Kenilworth	12-Oct-10	8	10	25%	6	6	0%	522
Bay and Main (NB)	16-Oct-12	7	6	-14%	5	4	-20%	294
Main and Sanford	16-Oct-12	3	1	-67%	1	0	-100%	944
Brantdale and Upper James	16-Oct-12	1	0	-100%	1	0	-100%	892
Longwood and Main	12-Nov-13	4	1	-75%	1	1	0%	153
Mohawk and Upper Gage	12-Nov-13	3	0	-100%	2	0	-100%	203
Fennell and Upper Gage	28-Nov-14	7	1	-86%	5	1	-80%	154
Mohawk and Upper Wellington	05-Dec-14	6	3	-50%	5	1	-80%	593
King and Lawrence/RHVP	05-Dec-14	3	1	-67%	3	1	-67%	330
King and Macklin	07-Jan-15	6	1	-83%	5	0	-100%	1,983
Mohawk and Upper Wentworth	13-Feb-15	3	1	-67%	3	1	-67%	418
Main and Wellington	13-Feb-15	10	14	40%	5	7	40%	794
Dundas and Mill *	14-Jul-17	2	0	-100%	6	0	-100%	1,294
Charlton and John *	03-Aug-17	2	0	-100%	12	0	-100%	333
Mohawk and Upper Paradise *	03-Aug-17	3	0	-100%	6	0	-100%	326
Highway 8 and Green*	14-Aug-17	5	1	-80%	6	1	-83%	696
Hess and York *	30-Aug-17	10	0	-100%	10	0	-100%	644
ALL RLC LOCATIONS COMBINED		**126**	**59**	**-53%**	**110**	**34**	**-69%**	**18,205**

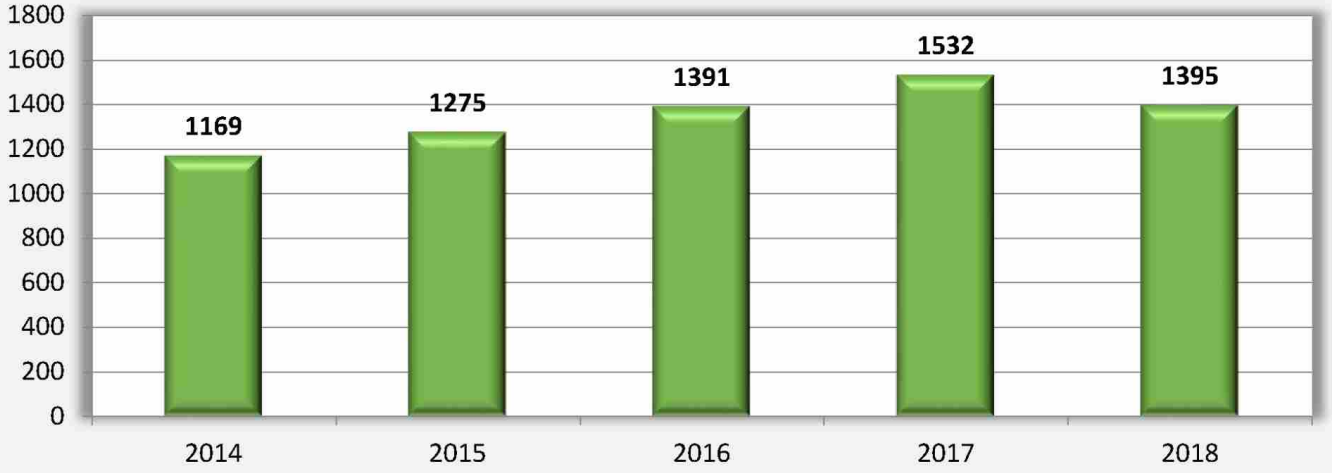
* collision statistics for 2018 only

Section 10

Hamilton Fire Department Collision Statistics

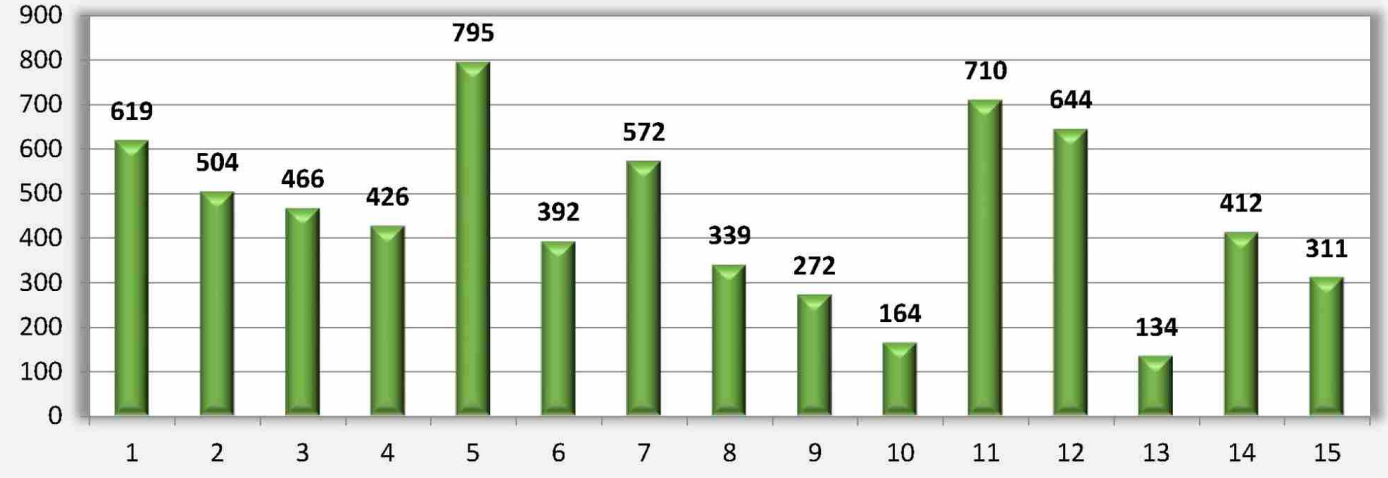
The Hamilton Fire Department (HFD) responded to increasingly more collisions each year between 2014 to 2017. This trend was broken in 2018 with a decrease of 137 collision dispatches over 2017, a decrease of approximately 9%.

HFD Collision Dispatches per Year



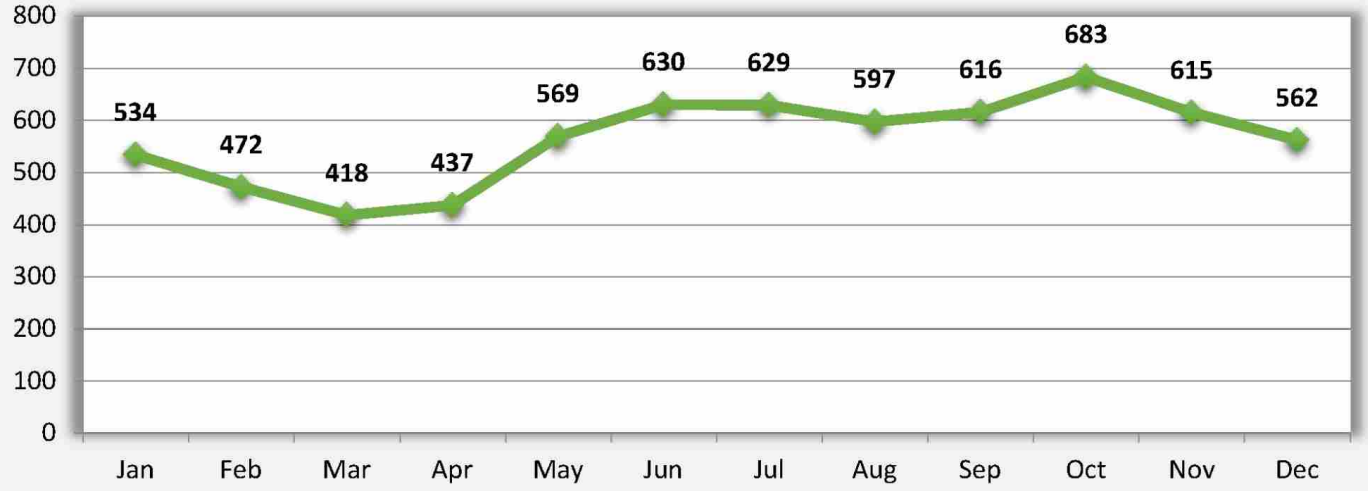
Ward 5 had the highest number of collision dispatches for the HFD with an average of 160 per year. Ward 13 has the fewest collision dispatches with an average of 27 per year.

HFD Collision Dispatches by Ward: Last Five Years



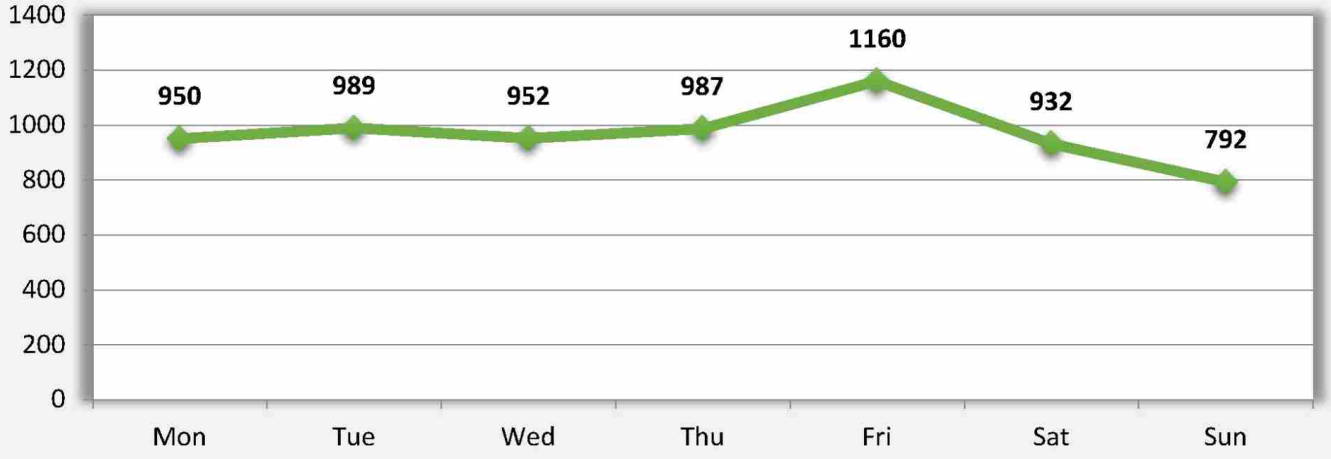
Over the last 5 years, October was the month with the highest number of HFD dispatches totaling 683.

HFD Collision Dispatches by Month: Last 5 Years

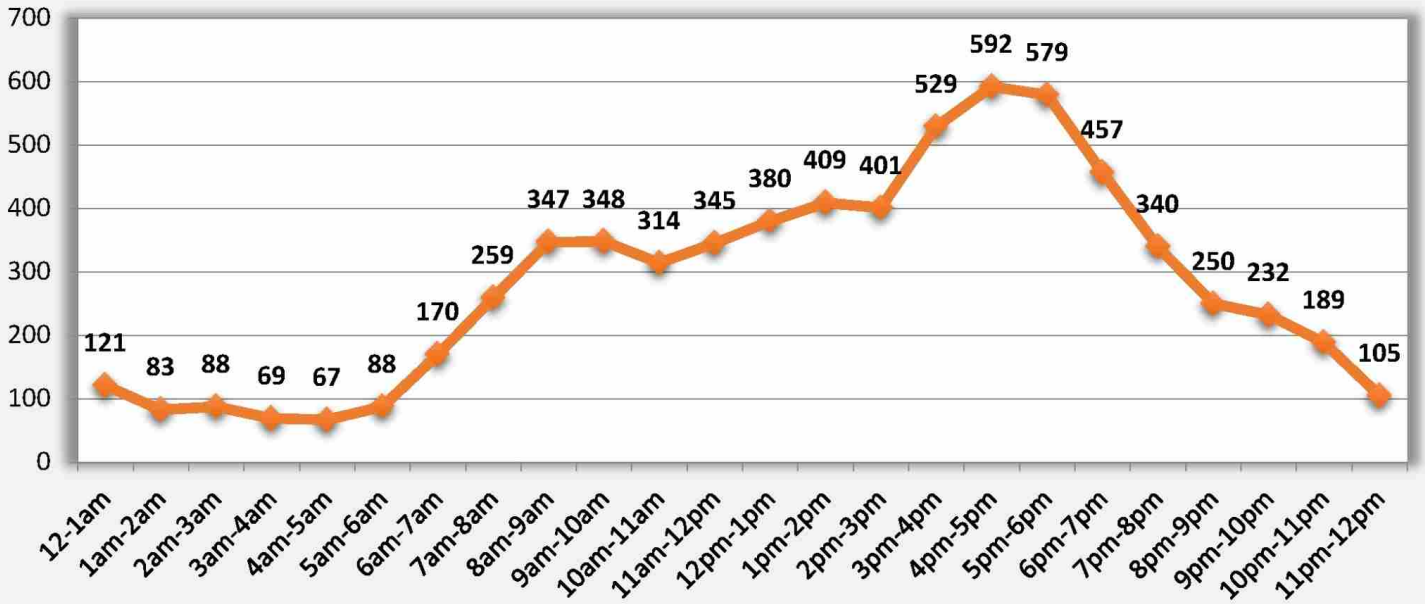


HFD was dispatched to collisions most frequently on Fridays. This coincides with Friday also being the day with the highest number of collisions.

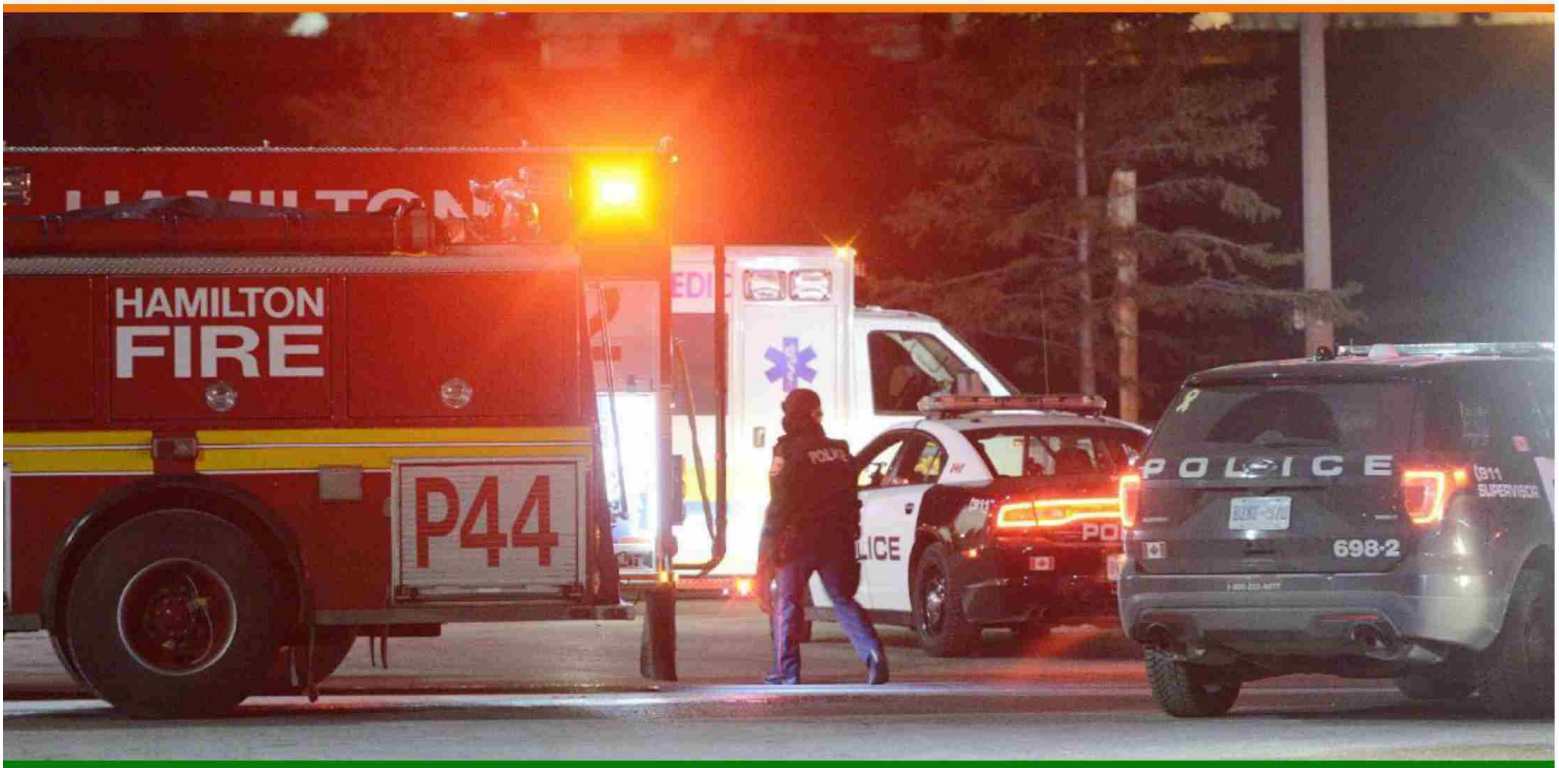
HFD Collision Dispatches by Day of Week: Last 5 Years



HFD Collision Dispatches by Hour of Day: Last Five Years



The time period of 4-5 p.m. was the hour in which the HFD were dispatched to collisions most often in the past five years.



Section 11

Hamilton Police Service Collision Statistics

The Hamilton Police Service has developed a year-long Road Safety Education and Awareness Campaign. The goal is to raise understanding of driver and pedestrian safety rules and gain compliance on the use of safety equipment. The goal of these programs was to reduce motor vehicle collisions in Hamilton.

The 2018 Traffic Safety Program targeted seasonal issues. In the spring/summer months, the focus was on distracted driving, seat belts, aggressive driving and speeding. In the fall, emphasis was directed again at distracted driving and speeding. In addition, the Hamilton Police Service joined the provincial Seat Belt Campaign. During the holiday season, R.I.D.E. lanes were emphasized.

Hazardous Moving Violations:

Hazardous Moving Violations (red light infractions, stop sign infractions, speeding, careless driving offences, distracted driving, etc.), decreased 10.30% over 2017. In 2018, 31,358 were issued in comparison to 34,977 in 2017.

Non-Hazardous Violations:

Non-Hazardous Violations (seat belt violations, fail to surrender permits, validation tag offences, etc.), increased 4.90% over 2017. In 2018, 15,130 violations were issued, in comparison to 14,422 in 2017.

2018 Alcohol-Related Charges

In 2018, there were 706 alcohol and drug-related driving offences, which represent an increase of 4.90% over 2017. In 2017, there were 673 alcohol and drug-related driving offences.

There were 148 motor vehicle collisions that involved alcohol and or drug in 2018 as compared to 160 in 2017, a decrease of 7.50%.

Type of Charges	2017	2018	% Change
Impaired	279	282	+1.08%
Over 80 mg	322	314	-2.48%
Impaired C.B.H.	2	2	0.00%
Impaired by Drugs	16	52	+225%
Impaired Cause Death	0	1	+100%
Refuse Breath	43	37	-13.97%
Over 80 Cause Death	0	1	+100%
Over 80 Cause B.H.	3	2	-33.33%
Refuse Blood	1	9	+800%
Refuse A.S.D.	7	6	-14.29%
Blood Samples Taken	1	3	+200%
Alcohol-Related Driving Offences	673	706	+4.90%

Five-Year Trend: Alcohol Related Charges

Type of Charges	2014	2015	2016	2017	2018
Impaired	350	300	273	279	282
Over 80 mg	447	377	338	322	314
Impaired C.B.H.	2	5	2	2	2
Impaired by Drugs	18	24	22	16	52
Impaired Cause Death	1	1	1	0	1
Refuse Breath	60	50	36	43	37
Over 80 Cause Death	0	1	1	0	1
Over 80 Cause B.H.	0	3	0	3	2
Refuse Blood	0	1	0	0	9
Refuse A.S.D.	18	16	11	7	6
Blood Samples Taken	3	4	0	1	3
Alcohol-Related Driving Offences	896	778	684	673	706

2014-2018 R.I.D.E. Stats

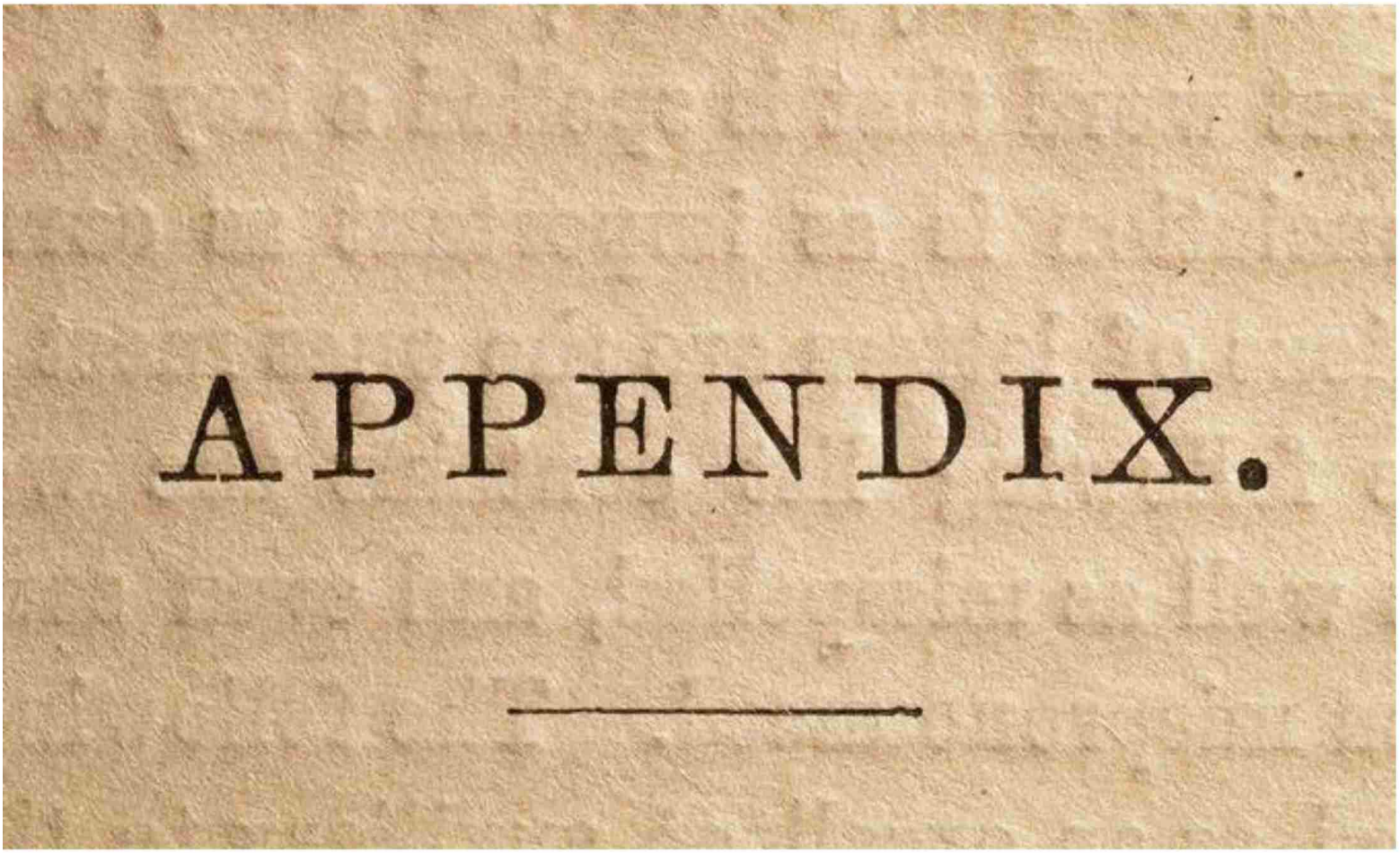
R.I.D.E. is a year-long educational and enforcement program for the Hamilton Police Service. The Service also participates in the Provincial Policing Community's annual R.I.D.E. focus that starts in December.

R.I.D.E Program	2014	2015	2016	2017	2018
Stopped	240,344	245,760	224,503	182,228	136,896
Tested	391	337	219	156	138
Tested/Stopped	0.16%	0.14%	0.10%	0.09%	0.10%

R.I.D.E. Stats	2017 Yearly Total	2018 Yearly Total	Difference
Stopped	182,228	136,896	-45,332
Pass	107	116	9
Warn	29	14	-15
Fail	20	8	-12
Impaired	8	5	-3
Tested/Stopped	0.09%	0.10%	0.01%
Passed/Tested	69%	84%	15%
Warned/Tested	19%	10%	-9%
Failed/Tested	13%	6%	-7%
Impaired/Tested	5%	4%	-1%

In 2018, there was a 15% increase in the number of motorists who were tested and passed the R.I.D.E test resulting in less warnings, failures and impairments compared to 2017. R.I.D.E will again be a focus of the *2019 Traffic Management Plan*.

Section 13
Appendix


APPENDIX.

Motor Vehicle Collision History

Year	Police Reported Collisions	Fatal Collisions	Injury Collisions	Property Damage Collisions
2000	5,217	20	2,023	3,151
2001	5,171	20	2,031	3,107
2002	5,270	19	2,229	3,020
2003 (a)	4,041	21	1,784	2,238
2004	3,161	16	1,697	1,448
2005	3,149	19	1,690	1,440
2006	3,174	22	1,638	1,514
2007	3,356	21	1,743	1,592
2008	3,314	14	1,675	1,625
2009	3,335	14	1,666	1,655
2010	3,673	20	1,809	1,844
2011	3,755	17	1,835	1,903
2012	3,650	20	1,795	1,835
2013	3,521	14	1,742	1,765
2014	3,835	16	1,831	1,988
2015	3,864	14	1,931	1,919
2016	3,612	11	1,938	1,663
2017	3,580	16	1,682	1,882
2018	3,390	11	1,551	1,827

(a) Introduction of Collision Reporting Centres – *refer to disclaimer on Page 2.*

Personal Injuries and Fatalities

Year	Police Reported Collisions	Persons Injured	Personal Injuries/1,000 Population	# of Fatalities	Fatalities/ 100,000 Population	Fatalities/10,000 Registered Vehicle
2000	5,217	3,013	6.4	22	4.7	0.6
2001	5,171	3,107	5.2	21	4.4	0.6
2002	5,270	3,209	6.4	19	3.8	0.5
2003(a)	4,041	2,680	5.3	21	4.1	0.5
2004	3,161	2,507	5.0	16	3.2	0.4
2005	3,149	2,422	4.8	19	3.8	0.5
2006	3,174	2,427	4.8	25	4.9	0.7
2007	3,356	2,457	4.9	27	5.3	0.7
2008	3,314	2,347	4.6	14	2.8	0.4
2009	3,335	2,345	4.6	16	3.1	0.4
2010	3,673	2,533	5.0	21	4.1	0.5
2011	3,755	2,509	4.8	18	3.5	0.5
2012	3,650	2,462	4.7	22	4.2	0.5
2013	3,521	2,452	4.7	15	2.9	0.4
2014	3,835	2,644	5.1	18	3.5	0.4
2015	3,864	2,762	5.2	15	2.9	n/a
2016 (b)	3,612	2,664	4.9	14	2.6	0.3
2017 (b)	3,580	2,330	4.3	16	3.0	0.4
2018 (b)	3,391	2,141	4.0	11	2.0	0.2

(a) Introduction of Collision Reporting centres – *refer to disclaimer on Page 2.*
(b) Collision rates based on 2016 Statistics Canada Census.

Pedestrian and Cyclist Injuries and Fatalities

Year	Collisions Involving Pedestrians	Pedestrian Injuries/ Fatalities	Pedestrian Fatalities Only	Collisions Involving Cyclists	Cyclist Injuries/ Fatalities	Cyclist Fatalities Only
2000	282	271	8	159	145	1
2001	270	262	2	157	131	4
2002	262	253	2	170	146	2
2003(a)	264	237	6	142	120	0
2004	241	222	4	169	143	1
2005	268	245	5	151	131	0
2006	243	227	6	146	132	2
2007	293	288	8	156	137	0
2008	250	246	3	162	140	1
2009	221	209	2	139	121	2
2010	272	257	7	162	143	2
2011	267	274	8	149	127	0
2012	264	247	6	161	138	1
2013	234	220	5	168	131	1
2014	254	230	5	158	129	0
2015	263	238	7	165	132	1
2016	298	275	4	179	146	0
2017	247	227	4	174	135	0
2018	245	222	3	166	137	2

Alcohol Related Motor Vehicle Collisions

Year	Police Reported Collisions	Total Alcohol-Related Collisions	% of Total Collisions Involving Alcohol	% Impaired or Had Been Drinking (Drivers Under the Age of 21)	Total Fatal Collisions	Alcohol-Related Fatal Collisions (a)	% Fatal Collisions Involving Alcohol
2000	5,217	252	5.0	5.8	20	1	5.0
2001	5,171	266	5.1	7.8	20	1	5.0
2002	5,270	281	5.3	4.6	19	0	0.0
2003(b)	4,041	242	5.9	3.4	19	1	5.2
2004	3,161	208	6.6	1.5	16	2	12.5
2005	3,149	234	7.4	7.9	19	2	10.5
2006	3,174	231	7.3	4.8	22	2	9.0
2007	3,356	223	6.6	8.5	21	2	9.5
2008	3,314	235	7.0	9.4	14	2	14.2
2009	3,335	195	5.8	6.1	14	2	14.2
2010	3,673	181	4.9	7.7	20	2	10.0
2011	3,755	190	5.0	3.3	17	4	23.5
2012	3,650	155	4.2	2.0	20	0	0
2013	3,521	168	4.8	4.0	14	3	21.4
2014	3,835	169	4.4	1.2	16	2	12.5
2015	3,864	151	3.9	2.4	14	3	21.4
2016	3,612	152	4.2	1.6	11	2	18.2
2017	3,580	173	4.8	2.6	16	2	12.5
2018	3,390	140	4.1	1.8	11	2	18.2

(a) Includes drivers classified as impaired due to alcohol or classified as had been drinking
(b) Introduction of Collision Reporting Centres – *refer to disclaimer on Page 2.*

Hamilton

2018 Annual Collision Report

Transportation Operations & Maintenance Division
Public Works Department
City of Hamilton