St. John’s Collision Report (2012 – 2019)

The St. John’s Collision Report (2012 − 2019) summarizes collision experience across the city from January 1, 2012 to December 31, 2019. By observing trends within the collision data, it is possible to better understand what issues are present on the City transportation system and identify possible mitigating strategies.

Collision Reporting

Motor vehicle collisions are reportable in Newfoundland & Labrador if they result in personal injury, a fatality or aggregate property damage more than $1,000. A motorist must report a collision to Police within 24 hours of occurrence. All collisions are reported an could involve two or mor vehicles, a single vehicle, a vehicle and another road user such as pedestrian or cyclists, or a vehicle and another object such as an animal or pole.

The Motor Vehicle Accident Report form is typically completed by a police officer. When a police officer attends a collision, the report is typically completed at the scene. However, a police officer does not always attend the scene of a collision. In the case of unattended collisions, individuals are required to report the collision to a police station if it meets the injury or aggregate damage criteria.

Data Limitations

- Many collisions are unreported. The data here only includes collisions that were reported to the RNC.
- Data keying errors are sometimes present in individual collision records, these can often be resolved by reviewing the detailed notes or contacting the RNC. However, when reviewing data at the high level these errors may not be identified.
- While collisions on private property are often reported to the RNC they are not included in the analysis presented as they do not occur on within a public right-of-way. For example, collisions on commercial parking lots are excluded from the analysis. Similarly, collisions on Provincial highways are excluded as these areas are outside City jurisdiction.

St. John's Collision Report (2012 – 2019)

Collision History

The City of St John's created and managed a collision database from 2003-2010 with paper forms provided by the province. In 2011, the Province took over data entry and management of the collision reporting database. Data from 2011 is not available. From 2012 onward, the province has provided the City with collision data.

Reported Collisions on City Streets (2004-2019)

Figure 1 shows long term historic data for collisions in St. John's. The number of fatal collisions is shown above each data bar in this figure. Collisions numbers are unusually high in 2012-2013, however, exploratory analysis of the database does not reveal an obvious cause.

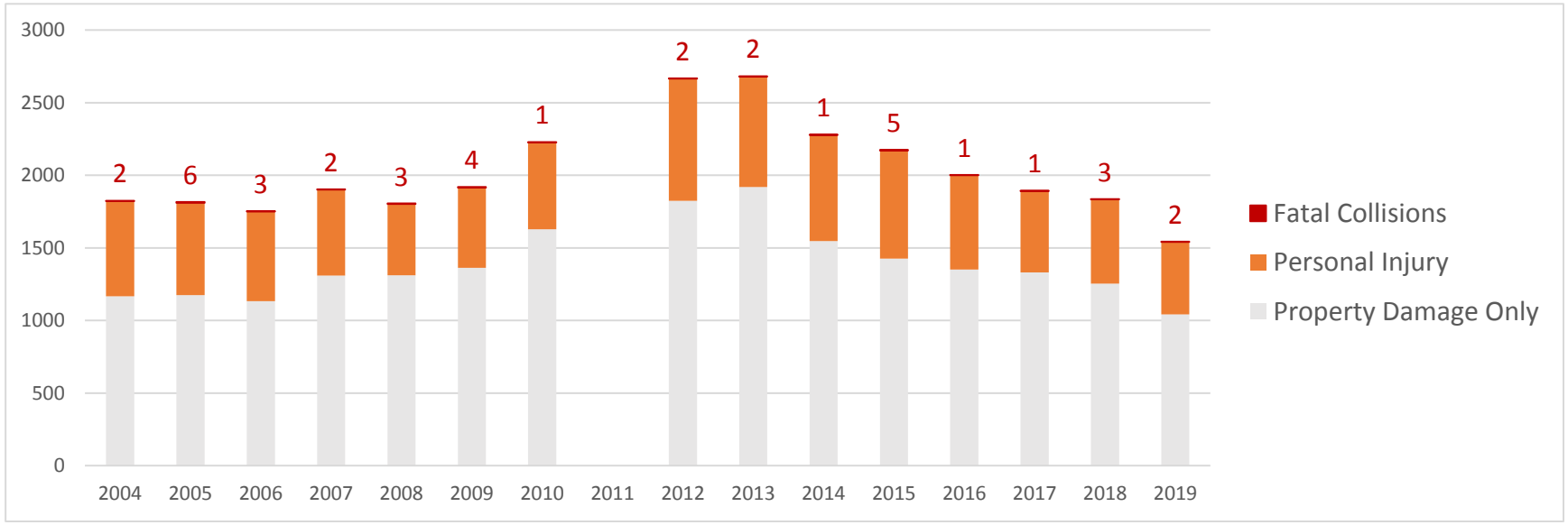

Figure 1: Historic collision numbers on City streets

St. John's Collision Report (2012 – 2019)

Typically, a collision analysis would be based on the most recent 5 years' worth of data. This allows causal factors that are no longer present to age out of the actively assessed database. Given that this is the first collision report produced since the transition to Provincially managed data all data since 2012 is included (for a total of 8 years). For subsequent reports it is recommended that only the most recent 5 years worth of data be included in the analysis.

For the sake of comparison the collisions that have been excluded from analysis because they fall outside City jurisdiction are shown in Figure 2.

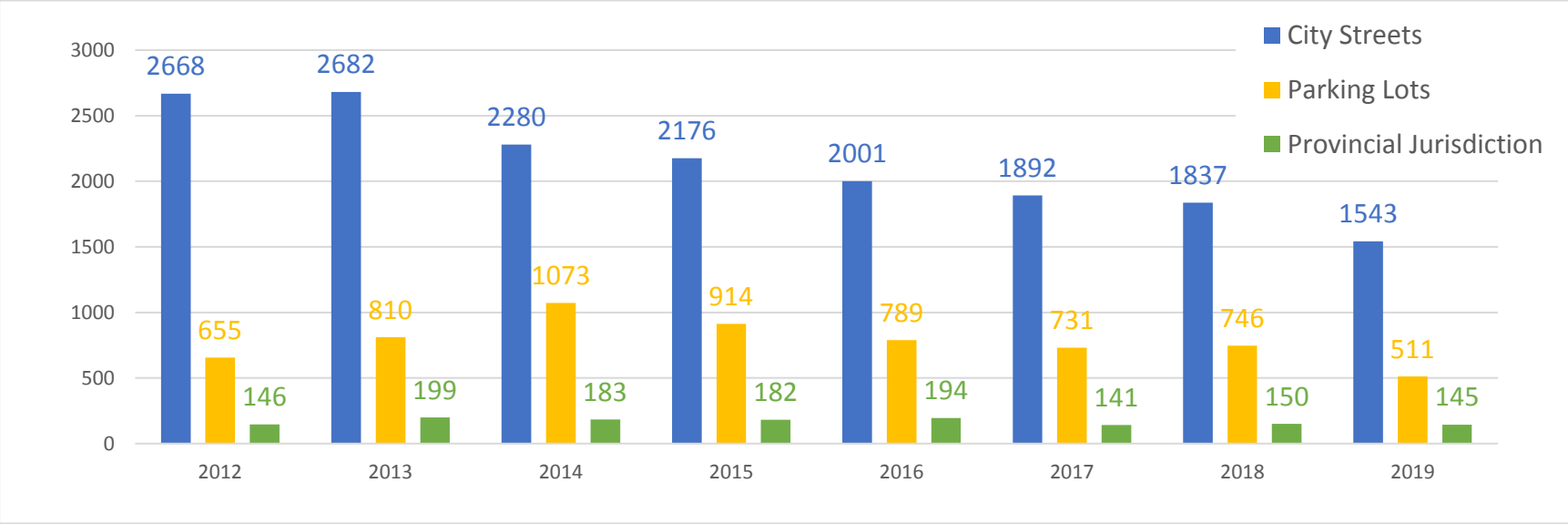

Figure 2: Historic collisions in other locations

St. John's Collision Report (2012 – 2019)

Collision Severity

The severity of a collision is a vital indicator that can be used to target safety interventions. Property damage only (PDO) collisions are unfortunate and demonstrate locations where there may be room for infrastructure improvement. However, fatal (FAT) and injury (INJ) collisions are serious incidents where individuals and families have been directly hurt by the collision. These collisions carry significantly higher direct and societal costs. As such, in collision analysis injury and fatal collisions are given more weight when determining the magnitude of safety concern present. Figure 3 shows the number of each collision type across the 2012 to 2019 analysis period.

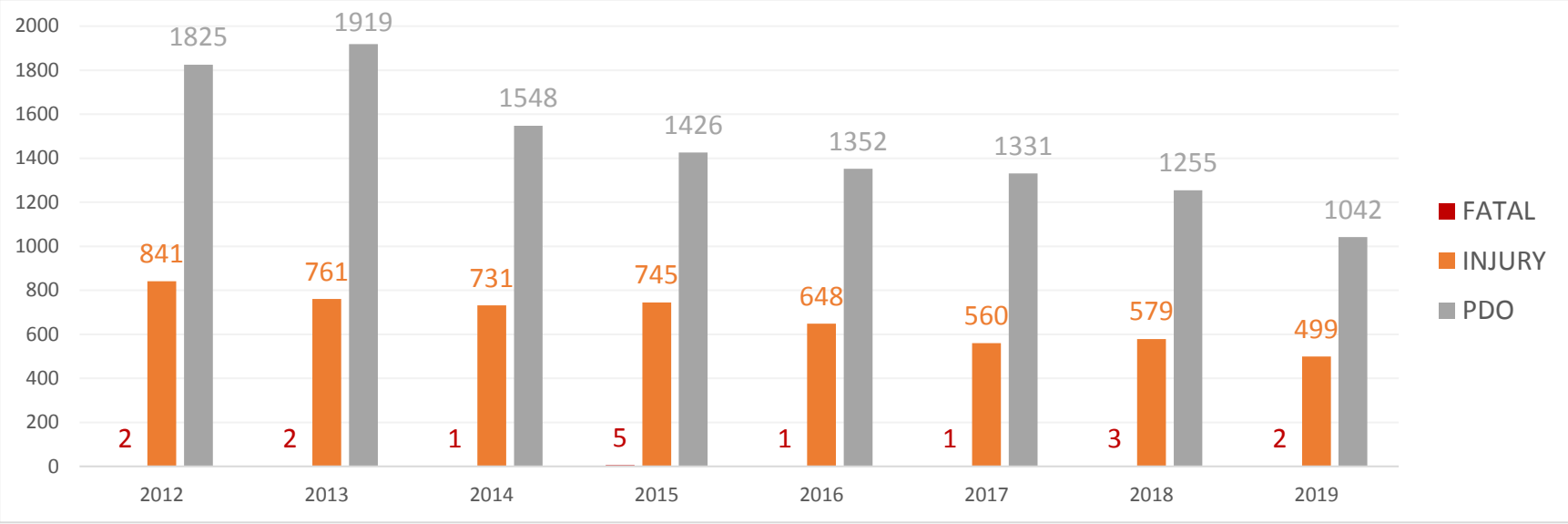

Figure 3: Severity of collisions

As can be seen above, there is an overall decrease in collisions, and more importantly a decrease in collisions resulting in injury over time. The proportion of severe collisions (INJ+FAT) that occurs has remained stable over time at about 32% of all collisions on City streets. There has been no large-scale change in the volume of traffic overt this period that would explain the change in the number of collisions.

St. John's Collision Report (2012 – 2019)

Collision Configuration

Table 1 shows what collision configurations are most frequent and which are most likely to result in injury or death. Collisions where pedestrians and cyclists are hit are the most likely to result in injury or death. 40% of all deadly collisions were the result of a pedestrian being hit by a motor vehicle. With a concerted effort to improve pedestrian priority in the transportation system these deaths are largely avoidable.

In Figure 4 the proportions of collision severity are shown and sorted based on the configuration. The extremely high rate of fatal and injury collisions with vulnerable road users (pedestrians and cyclists) is obvious. The high proportion of injuries among rear end collisions is also evident. Finally, the high safety risk of run off the road, head-on, and angle collisions shows that these configurations are among the most important to mitigate.

Table 1: Configuration of collisions by severity

Collision Configuration	Fatal	Injury	Property Damage Only	Grand Total	% resulting in injury / fatality
Angle (i.e., T-bone)	2	499	941	1442	35%
Head-on	-	58	114	172	34%
Hit Animal	-	11	74	85	13%
Hit Cyclist	-	40	5	44	91%
Hit Object (e.g., pole, tree, wall)	1	62	265	328	19%
Hit Parked Car	1	144	2692	2837	5%
Hit Pedestrian	7	528	49	585	91%
Rear End	-	2289	2829	5118	45%
Run off Road / Rollover	5	230	461	696	34%
Sideswipe	1	232	1155	1388	17%
Turning Movement (e.g., left turn against traffic)	-	899	2024	2923	31%

St. John's Collision Report (2012 – 2019)

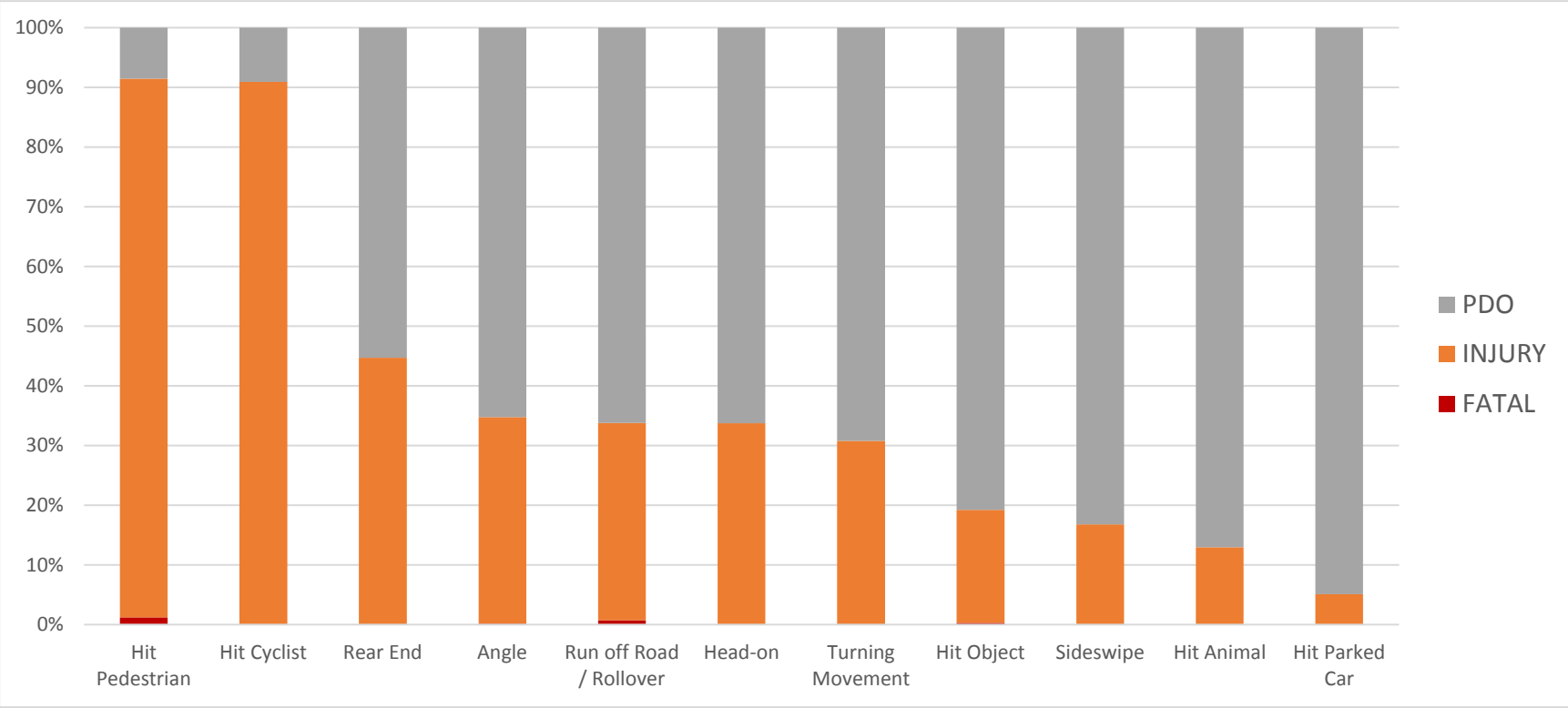

Figure 4: Configuration of collisions

It should be noted that collisions involving pedestrians and cyclists that do not result in injury are known to be typically underreported compared to vehicle-vehicle collisions. This trend may also be true for minor injuries such as scrapes, bruises, etc.

St. John's Collision Report (2012 – 2019)

Intersection & Midblock Collisions

Midblock collisions are classified as collisions on a road segment between two intersections that is not related with the nearby intersections. There is some room for interpretation with how collisions are reported in these cases. One police officer may record a rear-end collision as occurring on a mid-block while another officer may identify a queue of traffic to a nearby intersection as being an underlying factor and therefore classify the collision as occurring at that intersection. This interpretation in reporting means that when detailed collision assessments are completed it is important to look at segments or intersections adjacent to that identified for the detailed analysis.

An intersection is any point where two road segments meet and conflicts between vehicles can occur. An intersection may be a roundabout, signalized, unsignalized (e.g. yield or stop controlled) or uncontrolled (e.g. acceleration/deceleration lanes for on/off ramps at an over/underpass). The collisions at the two broad location types are shown in Figure 5. These collisions are further broken down and assessed in the subsequent sections of this report.

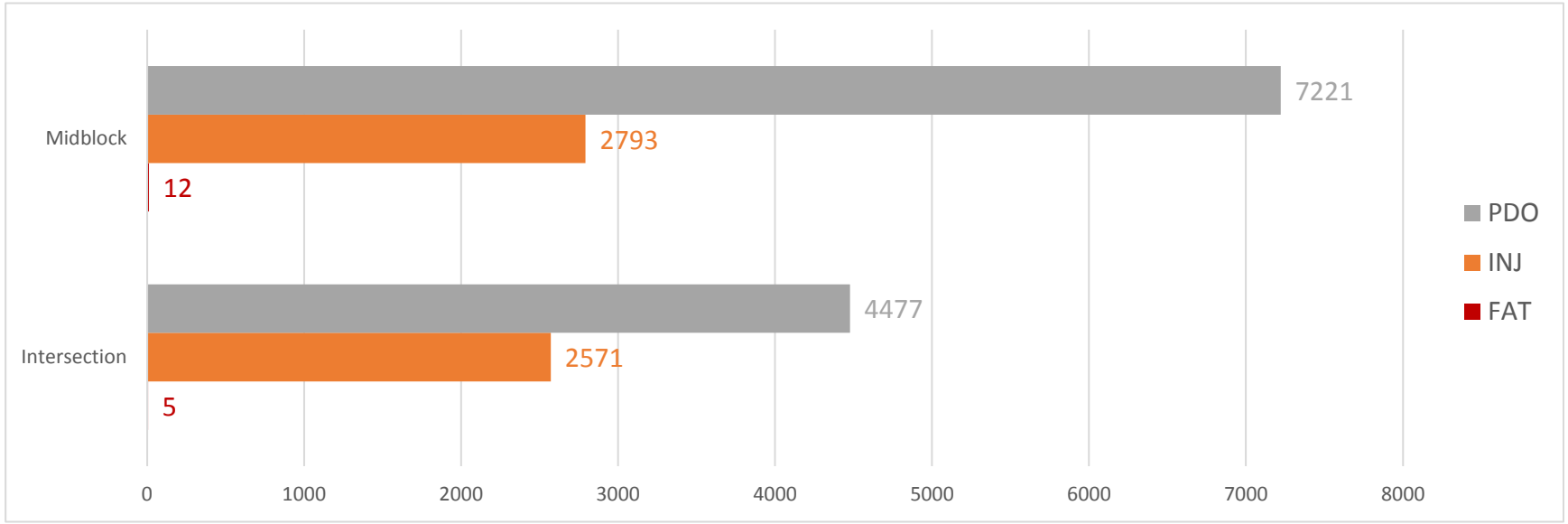

Figure 5: Location of collisions

St. John's Collision Report (2012 – 2019)

Top Intersections

Between 2012 and 2019, 41% of collisions were reported to occur at intersections and 59% were reported to occur at mid-block locations. Although a greater number of collisions are reported to occur at midblock locations, intersections have a higher proportion of collisions resulting in injury.

Table 2 shows the top intersections ranked by collision rate. At the highlighted intersections more than a third of reported collisions resulted in an injury or fatality. Please note that the numerical identifiers included in location descriptions are internal references for the collision database and have no real-world application.

Human error underlies many collisions and can be expected to happen at about the same frequency regardless of location. If human error alone influenced the likelihood of a collision, we would expect to see a consistent correlation between how many vehicles are in a given area and how many collisions there are. However, this is not the case as there are numerous other factors that can contribute to a collision.

In this analysis we consider the total number of collisions alongside the volume of vehicle traffic through an area. This results in a rate represented by the number of collisions expected for every million vehicles that enter an intersection (MEV). The resulting collision rates indicate locations where the ratio of collisions to vehicles is disproportionate. A disproportionate rate indicates that there may be underlying factors such as traffic controls or physical design that could be modified to improve safety. While there are compounding issues at play in the complex environment of driver, vehicle, and infrastructure, in short: the higher the rate, the more significant the issues that may be present.

The following 28 intersections were identified by ranking the intersection where the highest number of collisions occurred in the collision database. These 28 locations were then paired with traffic count data allowing a collision rate to be developed.

St. John's Collision Report (2012 – 2019)

Table 2: Top intersection collision locations

Rank	Location	Fatal	Injury	Property Damage Only	Grand Total	% resulting in injury / fatality	Rate per MEV
1	RAWLINS CROSS		47	115	162	29%	2.39
2	GOLDSTONE STREET @ THORBURN ROAD / SEABORN STREET (11379)		33	54	87	38%	1.50
3	KELSEY DRIVE @ KIWANIS STREET (21648)		21	30	51	41%	1.16
4	HIGGINS LINE / PORTUGAL COVE ROAD @ NEWFOUNDLAND DRIVE		38	78	116	33%	1.12
5	AIRPORT HEIGHTS DRIVE / PORTUGAL COVE ROAD @ MAJORS PATH		41	47	88	47%	0.95
6	COWAN AVENUE @ TOPSAIL ROAD (19883)		26	37	63	41%	0.92
7	BLACKMARSH ROAD @ COLUMBUS DRIVE		51	46	97	53%	0.90
8	ABERDEEN AVENUE @ STAVANGER DRIVE / CLOVELLY GOLF COURSE ROAD (8307)		20	22	42	48%	0.90
9	CAMPBELL AVENUE / CASHIN AVENUE EXTENSION @ CASHIN AVENUE (28540)		21	23	44	48%	0.89
10	HUSSEY DRIVE / STAVANGER DRIVE @ TORBAY ROAD (14861)		24	41	65	37%	0.85
11	ALLANDALE ROAD @ PRINCE PHILIP DRIVE		38	79	117	32%	0.85
12	NEWFOUNDLAND DRIVE @ TORBAY ROAD (11392)		33	47	80	41%	0.80
13	MACDONALD DRIVE @ TORBAY ROAD (16700)		29	43	72	40%	0.78
14	ELIZABETH AVENUE @ TORBAY ROAD (28938)		28	27	55	51%	0.77
15	COLUMBUS DRIVE @ TOPSAIL ROAD		32	45	77	42%	0.77
16	KENMOUNT ROAD @ KELSEY DRIVE (20985)		30	39	69	43%	0.72

St. John's Collision Report (2012 – 2019)

Table 2: Top intersection collision locations

Rank	Location	Fatal	Injury	Property Damage Only	Grand Total	% resulting in injury / fatality	Rate per MEV
17	MACDONALD DRIVE / PRINCE PHILIP DRIVE @ PORTUGAL COVE ROAD		37	46	83	45%	0.71
18	FRESHWATER ROAD / STAMP'S LANE @ OXEN POND ROAD (12705)		12	32	44	27%	0.70
19	MAJOR'S PATH @ TORBAY ROAD (456)		29	36	65	45%	0.66
20	EMPIRE AVENUE @ FRESHWATER ROAD (4770)		16	34	50	32%	0.64
21	PRINCE PHILIP DRIVE @ THORBURN ROAD		34	49	83	41%	0.61
22	KENMOUNT ROAD @ WYATT BOULEVARD (24814)		31	31	62	50%	0.60
23	LARKHALL STREET @ THORBURN ROAD (30834)		14	32	46	30%	0.58
24	TORBAY ROAD @ WHITE ROSE DRIVE (35598)		20	32	52	38%	0.56
25	COLUMBUS DRIVE @ OLD PENNYWELL ROAD		24	37	61	39%	0.51
26	ALLANDALE ROAD / ELIZABETH AVENUE @ BONAVENTURE AVENUE (10981)		21	20	41	51%	0.49
27	COLUMBUS DRIVE @ MUNDY POND ROAD		20	29	49	41%	0.46
28	PRINCE PHILIP DRIVE @ WESTERLAND ROAD / CLINCH ROAD (22781)		9	34	43	21%	0.35

In this analysis we see many familiar and busy intersections. Based on these results a detailed evaluation of the top 10 intersections is recommended. This detailed evaluation would map the specifics of each collision at the intersection to identify common factors that could be addressed. Broad trends identified from the table above, such the few examples shown below, would be investigated in more detail as part of the recommended evaluation:

- At Blackmarsh Road and Columbus Drive - 2019 reported only 7 collisions where the average in 2012 to 2018 was about 13. This could be due to the opening of Team Gushue Highway which had a big impact on traffic patterns in the area.
- At Portugal Cove Road and Airport Heights Drive / Major’s Path – turning movement’s make up 45% of collisions at this intersection compared to the City wide intersection average of 30%.
- At Kelsey Drive and Kiwanis Street - 82% of the collisions reported involve a vehicle that was initially travelling south on Kelsey Drive.

Top Midblock Sections

Similar to the intersection assessment above, the midblock locations with the highest number of collisions are identified in Table 3 below. Unfortunately, vehicle volume data is not sufficient to adjust this ranking to a collision rate at this time.

Note that locations that experienced the same number of collisions are assigned the same rank in the table.

Several locations below include the word “Unknown”. This is an artefact of the way in which the provincial data is reported. The locations of these collisions are not actually unknown. Detailed evaluations would not be affected by this.

As it stands the top 5 locations all share a common context: each is on a higher speed, higher volume, 5 lane cross section with many driveways and busy commercial uses. Access management is a tool commonly applied in these types of areas. It includes limiting the number of driveways, restricting left turns, and sharing access between adjacent properties. These approaches have been proactively incorporated in many projects over the last several years as a way to address the possibility of collision issues developing as the City grows and it is recommended this practice continue.

It is recommended that data be collected to re-rank this table based on collision rates. Once that is complete the top 10 locations should be the subject of detailed evaluations as discussed above for intersections.

St. John's Collision Report (2012 – 2019)

Table 3: Top midblock collision locations

Rank	Location	Fatal	Injury	Property Damage Only	Grand Total	% resulting in injury / fatality
1	KENMOUNT ROAD btwn PEET STREET & AVALON MALL PARKING LOT (53433)		52	98	150	35%
2	KENMOUNT ROAD btwn PIPPY PLACE & PEET STREET (46721)		44	70	114	39%
3	TORBAY ROAD btwn TRANS CANADA HIGHWAY & UNKNOWN (39397) [Major's Path to Stavanger Area]		42	62	104	40%
4	KELSEY DRIVE btwn KIWANIS STREET & MESSANGER DRIVE (1785615)		22	62	84	26%
5	TOPSAIL ROAD btwn BURGEO STREET & DUNN'S ROAD (53409)		28	54	82	34%
6	KENMOUNT ROAD btwn TEAM GUSHUE HIGHWAY NORTHEAST & PIPPY PLACE (33018)		16	43	59	27%
7	FRESHWATER ROAD btwn CROSBIE ROAD & FRESHWATER ROAD / STAMP'S LANE (46460)		16	41	57	28%
8	THORBURN ROAD btwn MOSS HEATHER DRIVE & WIGMORE COURT (41261)	1	20	34	55	38%
9	UNKNOWN btwn KELSEY DRIVE & TEAM GUSHUE HIGHWAY SOUTH (1389942)		13	41	54	24%
9	TOPSAIL ROAD btwn HOLBROOK AVENUE & COWAN AVENUE (34790)		12	42	54	22%
11	ELIZABETH AVENUE btwn NEW COVE ROAD & UNKNOWN (63801)		16	36	52	31%
12	TOPSAIL ROAD btwn HAMLYN ROAD & HOLBROOK AVENUE (40537)		14	35	49	29%

St. John’s Collision Report (2012 – 2019)

13	TORBAY ROAD btwn UNKNOWN & UNKNOWN (2) (50971)		20	28	48	42%
13	KING'S BRIDGE ROAD btwn LAKE AVENUE & WINTER AVENUE (35009)		17	31	48	35%
13	HIGGINS LINE btwn BELL'S TURNABOUT & PORTUGAL COVE ROAD (50783)		8	40	48	17%
13	HAMLYN ROAD btwn TOPSAIL ROAD & BARACHOIS STREET (37105)		19	29	48	40%
17	BLACKMARSH ROAD btwn COLUMBUS DRIVE & MERCER'S LANE (60910)		18	24	42	43%
18	KENMOUNT ROAD btwn WYATT BOULEVARD & GREAT EASTERN AVENUE (1448305)		8	33	41	20%
19	WATER STREET btwn AYRE'S COVE / MCBRIDE'S HILL & BAIRD'S (CLIFT'S) COVE (33579)		13	27	40	33%
20	KENMOUNT ROAD btwn PARRELL'S LANE & TEAM GUSHUE HIGHWAY		16	20	36	44%
21	TOPSAIL ROAD btwn UNKNOWN & HAMLYN ROAD (35924)		8	27	35	23%
22	TORBAY ROAD btwn PENNEY CRESCENT & PENNEY CRESCENT / TORBAY ROAD (40399)		8	26	34	24%
23	KENMOUNT ROAD btwn RYAN'S LANE & KELSEY DRIVE (55165)		14	19	33	42%
24	ELIZABETH AVENUE btwn PORTUGAL COVE ROAD & NEW COVE ROAD (52180)		9	23	32	28%
25	TORBAY ROAD btwn TRANS CANADA HIGHWAY & TRANS CANADA HIGHWAY (1) (35660)		14	17	31	45%
25	ROPEWALK LANE btwn MUNDY POND ROAD & ROPEWALK PLACE (40982)		10	21	31	32%

Pedestrian and Cyclist Collisions

The following table shows the 22 locations with the highest count of collisions involving pedestrians and cyclists. They are ranked according to the number of collisions in which a pedestrian or cyclist was struck.

As with the midblock analysis, data available is not sufficient to adjust these rankings based on volumes. With collisions that involve pedestrians or cyclists it is best to balance for “exposure” rather than simply calculating vehicle-based rates as with intersections. This exposure measure is a combination of both active mode volumes and vehicle volumes. It helps to quantify the risk of a collision between a vehicle and a person using an active mode by highlighting areas where there are a more frequent conflicts or interactions between these modes.

Many of these locations are areas where there is ongoing effort for improvement. At the top 4 locations:

- Water Street between Ayre’s Cove / McBride’s Hill and Clift’s Baird’s Cove is being improved through ongoing Water Street infrastructure work.
- Rawlin’s Cross is scheduled for several minor improvements over the coming years.
- Canada Drive at Hamlyn Road is scheduled for rehab and intersection improvements are being planned as part of the Bike St. John’s Master Plan.
- Hamlyn Road between Topsail Road and Barachois Street is being investigated for improvements in the vicinity of the Village Mall access and the existing crosswalk.

Other areas show a need for additional investigation. For example: Thorburn Road at Mount Scio Road and the neighbouring segment on Thorburn Road between Moss Heather Drive and Wigmore Court both appear in the top 10.

It is recommended that the top 10 locations are the subject of a detailed evaluation to determine if there are mitigating strategies that can be employed at these locations. It is also recommended that ongoing efforts to improve pedestrian and cycling facilities within the City continue.

St. John's Collision Report (2012 – 2019)

Table 4: Top active mode collision locations

Rank	Location	Ped & Bike	Ped & Bike Involved	Motor Vehicle Only	Total Collisions	% involving pedestrians / cyclists
1	WATER STREET btwn AYRE'S COVE / MCBRIDE'S HILL & BAIRD'S (CLIFT'S) COVE (33579)	10	0	30	40	25.0%
2	RAWLINS CROSS	7	1	154	162	4.9%
3	CANADA DRIVE @ HAMLYN ROAD (20230)	6	2	22	30	26.7%
3	HAMLYN ROAD btwn TOPSAIL ROAD & BARACHOIS STREET (37105)	6	5	37	48	22.9%
3	THORBURN ROAD btwn MOSS HEATHER DRIVE & WIGMORE COURT (41261)	6	0	49	55	10.9%
6	BLACKMARSH ROAD btwn COLUMBUS DRIVE & MERCER'S LANE (60910)	5	1	36	42	14.3%
6	CAMPBELL AVENUE / CASHIN AVENUE EXTENSION @ CASHIN AVENUE (28540)	5	1	38	44	13.6%
6	CHURCH HILL @ DUCKWORTH STREET (17584)	5	2	5	12	58.3%
6	KENMOUNT ROAD btwn PEET STREET & AVALON MALL PARKING LOT (53433)	5	1	144	150	4.0%
6	MOUNT SCIO ROAD @ THORBURN ROAD (1690)	5	0	9	14	35.7%
6	ROPEWALK LANE btwn MUNDY POND ROAD & ROPEWALK PLACE (40982)	5	3	23	31	25.8%
12	AIRPORT TERMINAL ACCESS ROAD btwn UNKNOWN & UNKNOWN (2) (55597)	4	1	5	10	50.0%
12	ALLANDALE ROAD / ELIZABETH AVENUE @ BONAVENTURE AVENUE (10981)	4	0	37	41	9.8%
12	AYRE'S COVE / MCBRIDE'S HILL @ WATER STREET (3100)	4	0	2	6	66.7%

St. John's Collision Report (2012 – 2019)

Table 4: Top active mode collision locations

Rank	Location	Ped & Bike	Ped & Bike Involved	Motor Vehicle Only	Total Collisions	% involving pedestrians / cyclists
12	BLACKHEAD ROAD / WATER STREET @ LESLIE STREET (17571)	4	0	31	35	11.4%
12	CAVENDISH SQUARE @ DUCKWORTH STREET (3020)	4	0	3	7	57.1%
12	ELIZABETH AVENUE btwn GAMBIER STREET & PATON STREET (66508)	4	0	10	14	28.6%
12	EMPIRE AVENUE @ FRESHWATER ROAD (4770)	4	1	45	50	10.0%
12	EMPIRE AVENUE @ GRENFELL AVENUE (2) (30471)	4	0	1	5	80.0%
12	EMPIRE AVENUE @ KING'S BRIDGE ROAD (1472)	4	2	20	26	23.1%
12	MACDONALD DRIVE @ TORBAY ROAD (16700)	4	2	66	72	8.3%
12	WATER STREET btwn UNKNOWN & SUDBURY STREET (41228)	4	0	22	26	15.4%

St. John's Collision Report (2012 – 2019)

Environmental Factors

The following chart shows total reported collisions by month according to daylight conditions. There are generally fewer collisions between April and August when there is most daylight. Between November and February, a larger proportion of collisions occur during dusk and dark conditions. This correlates with rush hour traffic occurring in those darker conditions.

Detailed evaluations of collision location must consider the time of day to determine if modifications need to be made to account for low sun angle or dark conditions.

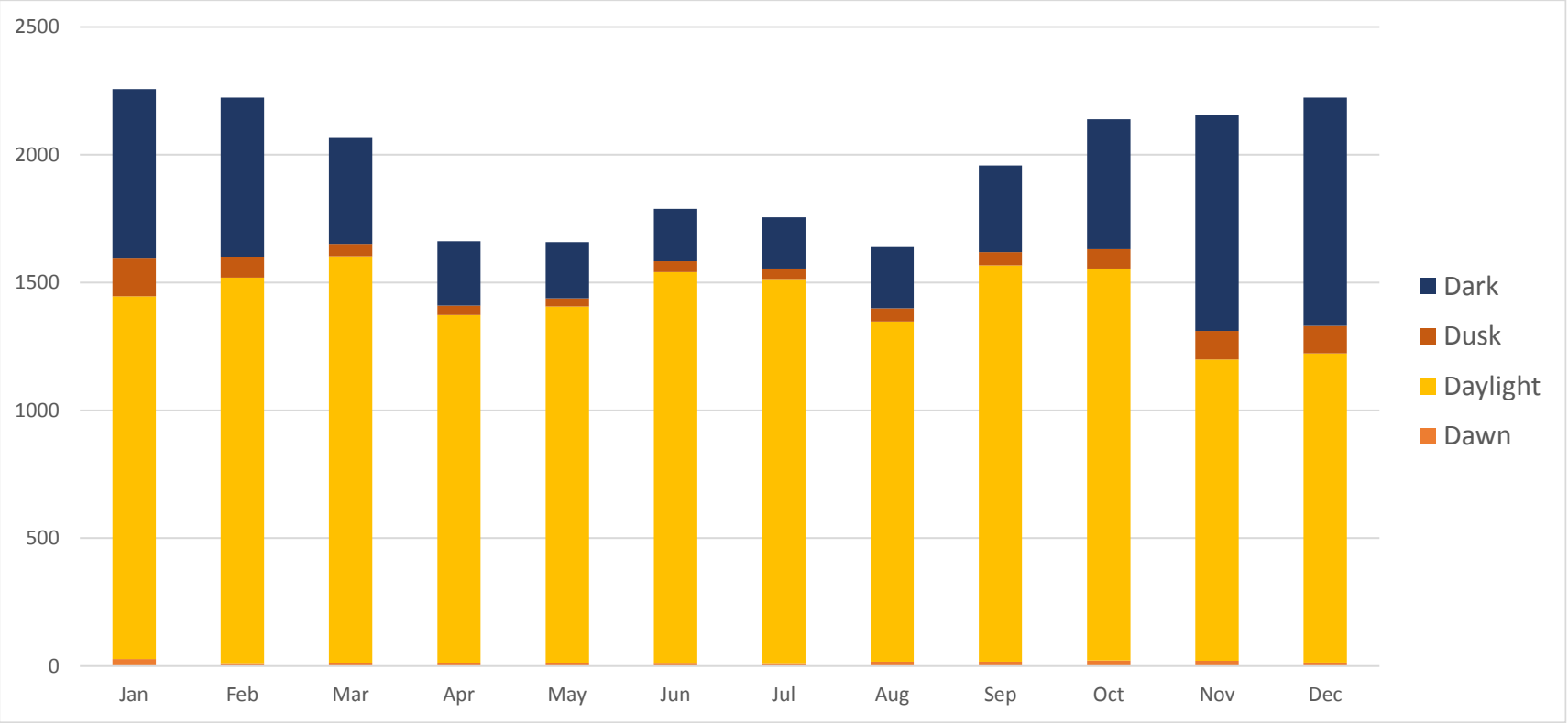

Figure 6: Time of day conditions

St. John's Collision Report (2012 – 2019)

Collision Time & Seasonality

As might be expected, between September and March there are increased collisions. During these times there are fewer daylight hours as seen above and increased precipitation. Also, in summer, there is generally less traffic due to holidays. Seasonal influences such as road condition must be considered in completing detailed evaluation. There are possible infrastructure or maintenance approaches to mitigate collisions where this is a factor. Totals shown in the figure below are for the full eight year analysis period.

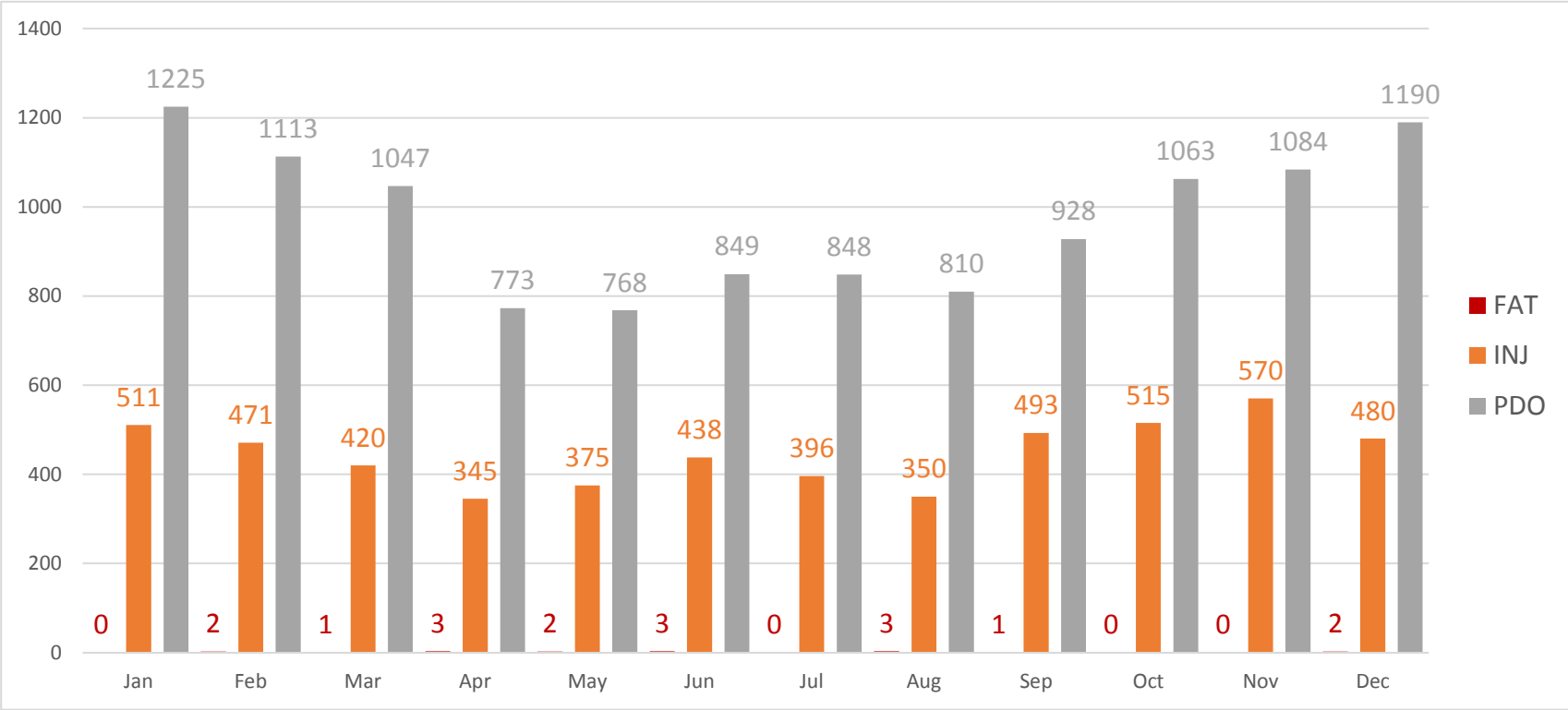

Figure 7: Seasonal influence by severity