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2007

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A NATIONAL REVIEW OF RCMP MOTOR VEHICLE CRASHES: 2004 – 2005



**School of Criminology and Criminal Justice – University College
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A Review of RCMP Motor Vehicle Crashes:

2004 - 2005

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This report was prepared for RCMP National Traffic Services

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Introduction

In order to reduce and prevent the number of RCMP members involved in motor vehicle crashes, it is necessary to understand the conditions that most commonly contribute to this type of event. While the police routinely investigate all instances of a police motor vehicle crash, there has been no systematic analysis of these events. The purpose of this study was to analyse the data from the RCMP's Police Motor Vehicle Crash Report to provide a better understanding of the quantity and characteristics of police motor vehicle crashes. Through an analysis of this data, the RCMP will not only have a clearer comprehension of the crash event, but will be better informed about the financial and personal injuries associated with crashes and the level of responsibility RCMP members have for police motor vehicle crashes. In effect, an analysis of police motor vehicle crashes will produce necessary evidence-based information with which to base policy recommendations.

Methodology

In all cases in which an RCMP officer is involved in a crash while operating a police motor vehicle, a Police Motor Vehicle Crash Report is completed following an investigation. All of the relevant crash information is coded onto these forms. The RCMP provided access to all forms completed between 2003 and 2005 in all RCMP jurisdictions in Canada to the principal investigators of this project. Research assistants coded these forms into an SPSS (Statistical Package for the Social Sciences) database and the authors of this report analysed the data.

Results

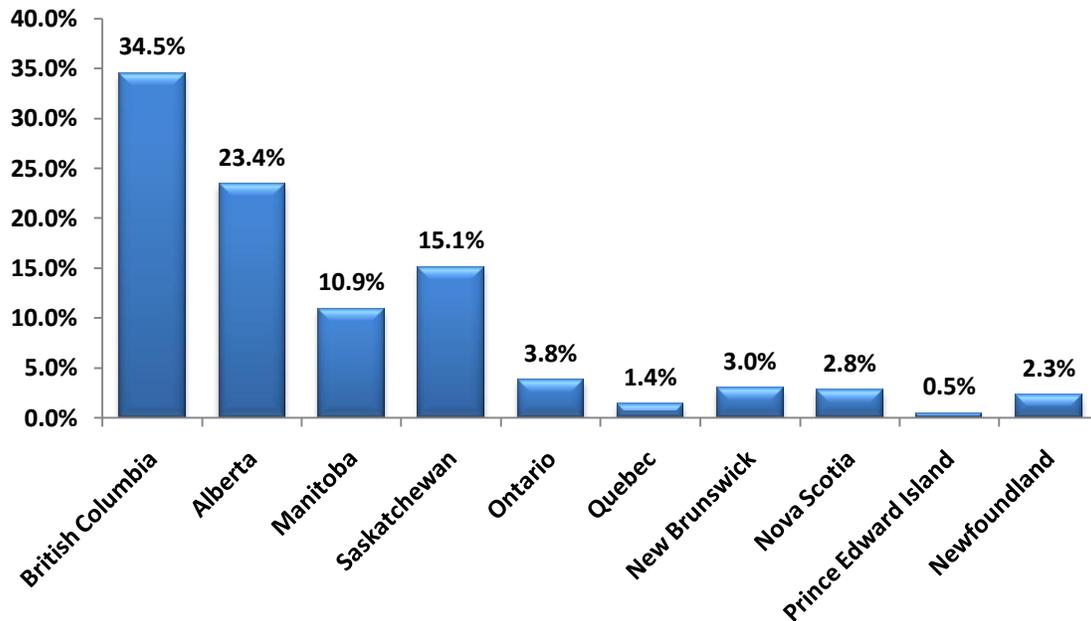
In total, data was collected on 2,314 crashes involving police motor vehicles between 2004 and 2005. There was a slight increase in the number of crashes in 2005 ($n = 1,181$) over 2004 ($n = 1,133$), however both years contributed nearly equally to the sample of crashes (51 per cent for 2005 and 49 per cent for 2004).

General Information

Slightly more than one-third of the sample was from British Columbia (34.5 per cent) followed by Alberta (23.4 per cent) and Saskatchewan (15.1 per cent) (see Figure 1). When including Manitoba (10.9 per cent), the Western Provinces accounted for the large majority of police-involved crashes (83.9 per cent), while the Atlantic Provinces accounted for less than one-tenth (8.8 per cent). The Northwest Territories (1.3 per cent), the Yukon Territory (0.3 per cent), and Nunavut (0.8 per cent) accounted for a very small proportion of the sample (2.4 per cent). This overall distribution was expected, as British Columbia has the highest proportion of RCMP

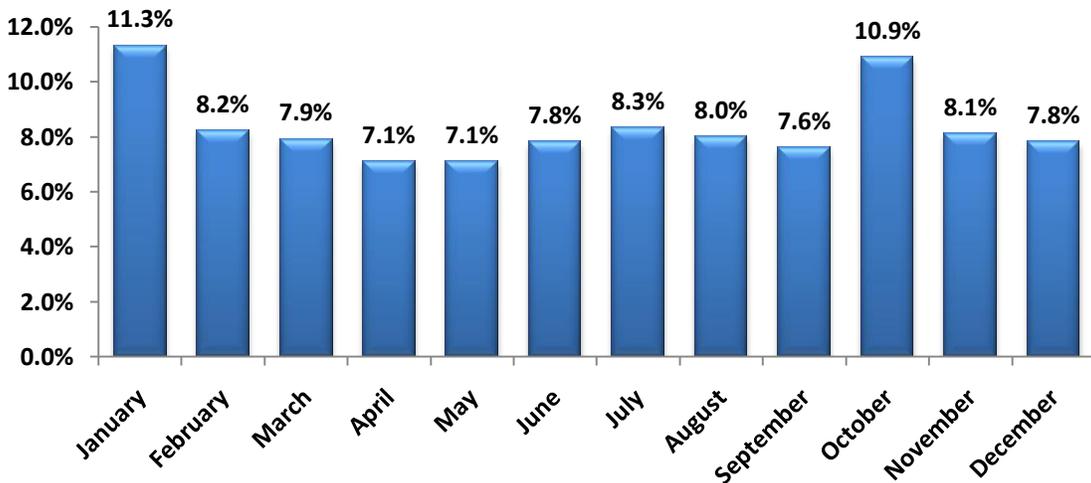
officers. In contrast, Quebec and Ontario do not have any RCMP officers in rural areas as the RCMP does not serve as the provincial police force in those jurisdictions.

Figure 1: Distribution of Police Crashes by Province



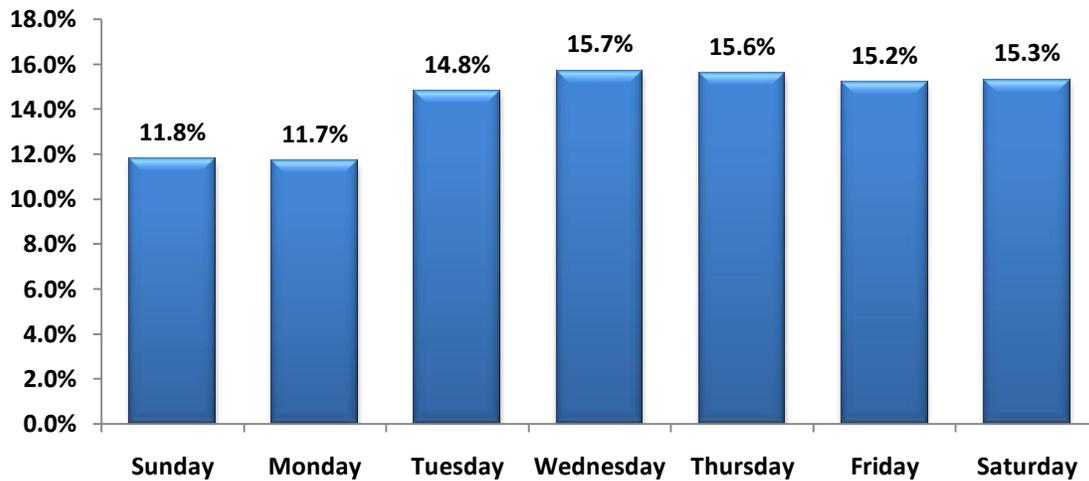
For the most part, there was little variation by the month of the year that the crashes occurred (see Figure 2). The two peak months were January (11.3 per cent) and October (10.9 per cent). In fact, nearly half of all crashes (49.3 per cent) occurred in the first six months of the calendar year. If one just considers the winter months (October to March), these five months also accounted for nearly half (46.4 per cent) of all police motor vehicle crashes.

Figure 2: Distribution of Police Crashes by Month



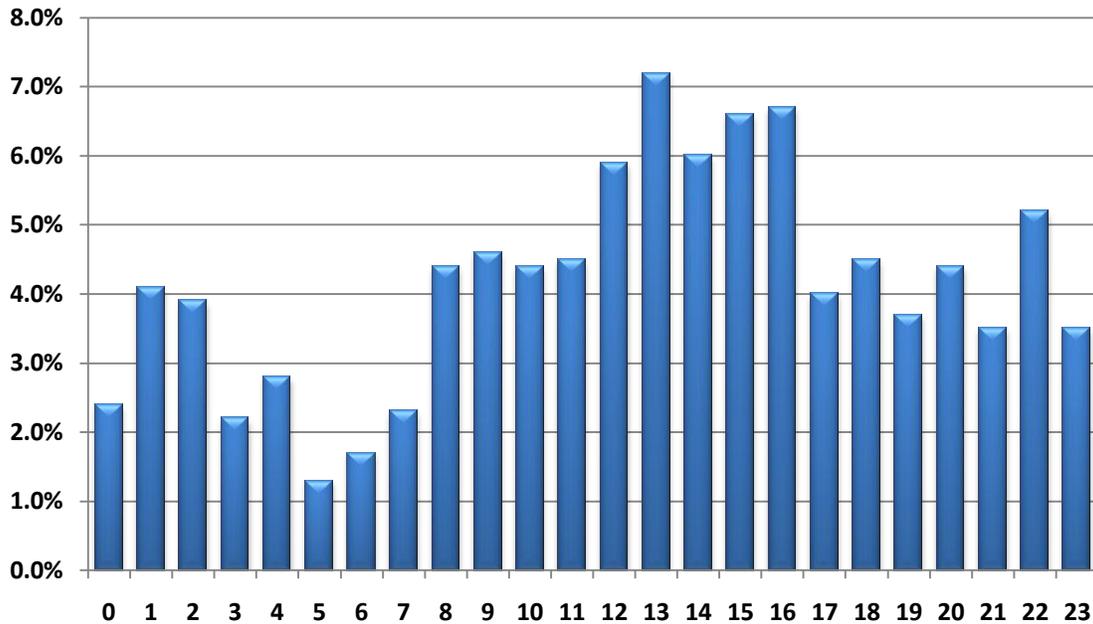
There were also no substantial variations by day of the week. While Sunday and Monday each contributed about one-tenth to the sample (11.8 per cent and 11.7 per cent respectively), all other days contributed approximately 15% (see Figure 3). In effect, no one day was more likely to have a crash involving a police motor vehicle than any other.

Figure 3: Distribution of Police Crashes by Day of the Week



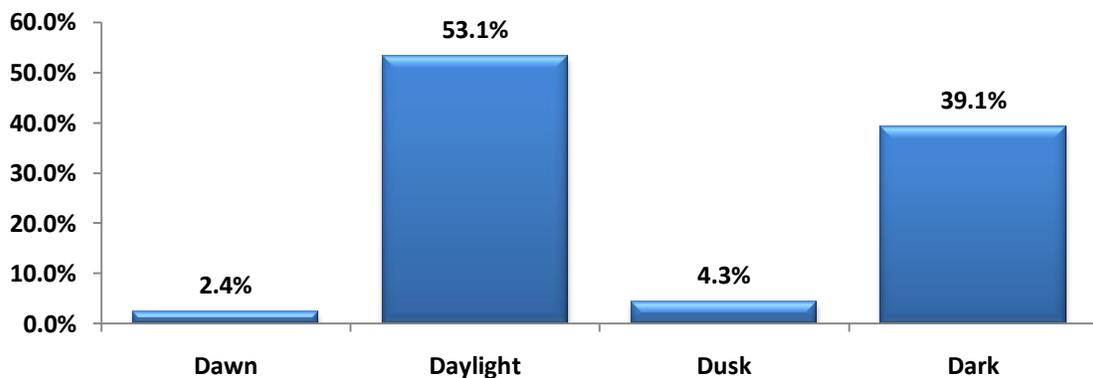
Similarly, there was only slight variation in the time of day that police-involved crashes occurred. The most common times were 1pm (7.2 per cent), 4pm (6.7 per cent), and 3pm (6.6 per cent). However, like month of year and day of the week, for the most part, time of day was evenly distributed (see Figure 4). It is interesting to note that even based on the greater number of police vehicles and the volume of civilian vehicles on the road during the day, only slightly more than half of all police motor vehicle crashes occurred between 8am and 5pm (54.3 per cent). One might expect that with more RCMP members on the road and more civilian commuters, the proportion of police motor vehicle crashes would be substantially higher during higher traffic volume times. This conclusion is generally supported by the peak times of police motor vehicle crashes, by, as previously mentioned, approximately half of all crashes occurred between 6pm and 8am.

Figure 4: Distribution of Police Crashes by Time of Day



Given the time of day distribution, it was not surprising that, in the majority of cases (53.1 per cent), the light condition at the time of the crash was recorded as daylight. Given this distribution presented in Figure 4, however, it was not surprising that slightly more than one-third (39.1 per cent) of the police motor vehicle crashes occurred under dark conditions (see Figure 5).

Figure 5: Light Conditions at Time of Crash



Police Motor Vehicle Operator Data

In concordance with general RCMP member gender distributions, the overwhelming majority of police officers involved in crashes (82.9 per cent) were male. However, less than half (45.9 per cent) of the Police Motor Vehicle Crash Reports recorded the RCMP member's age. The mean age of the operator of the police motor vehicle at the

time of the crash was 36 years old.³ A slightly lower proportion of Police Motor Vehicle Crash Reports (45.4 per cent) recorded information on how long the officer had been a member of the RCMP. The range was one month to 36½ years, with a mean of 9¾ years of service. Similarly, less than half of the Police Motor Vehicle Crash Reports (44.7 per cent) recorded information on how many years of driving experience the RCMP member had. The range of driving experience was from one year to 48 years, with an average of 19.7 years of driving experience.

The large majority of Police Motor Vehicle Crash Reports (86.5 per cent) recorded how many Kilometres the officer had driven in the last 12 months prior to the crash. The data was coded as a closed scale on the Police Motor Vehicle Crash Reports with the options of (1) 5,000 km or less; (2) 5,001 km to 15,000 km; or (3) more than 15,000 km. The majority of officers (56.7 per cent) had driven over 15,000 km in the last 12 months, while nearly one-third (29.1 per cent) had driven between 5,000 and 15,000 km. Only a small proportion (14.2 per cent) had driven 5,000 km or less. In other words, for the most part, the operator of the police motor vehicle at the time of the crash had many years driving experience and had been driving many kilometres in the last year preceding the crash on file.

In the overwhelming majority of Police Motor Vehicle Crash Reports (98.9 per cent), the RCMP member was found to be in a normal, healthy physical and mental state at the time of the crash. Other possible conditions that were rarely present were: being ill at the time of the crash (0.2 per cent), having drunk alcohol prior to the crash (n = 1), or being on medication (0.8 per cent). Moreover, only a very small proportion of RCMP members (3.7 per cent) were categorised as being tired at the time of the crash. This conclusion was supported by two other pieces of data. First, the mean number of hours that the officer worked in the 24 hours prior to the crash was 8.9 hours with a range of 0 to 24 hours, and the mean number of time that the officer slept in the 24 hours prior to the crash was 7.8 hours. Given this, it appears that fatigue was not a significant contributor to officer-involved crashes.

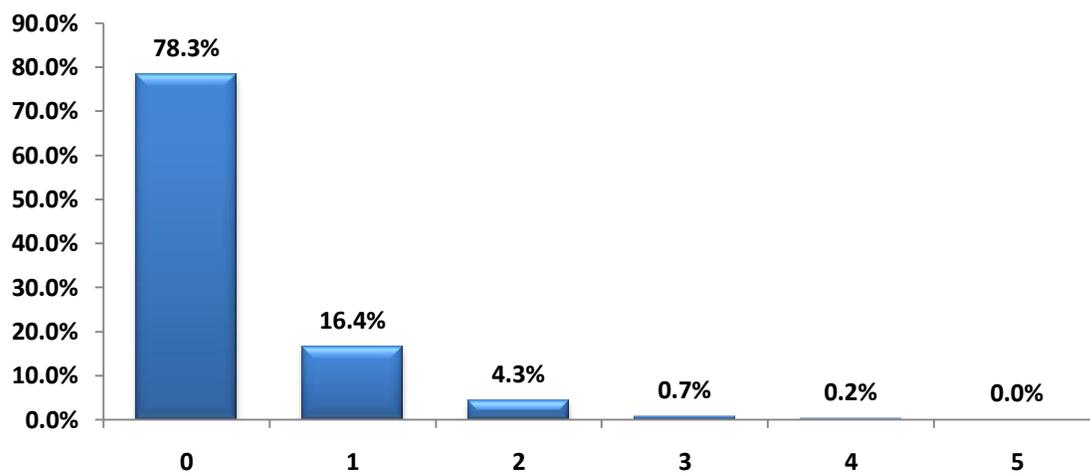
In more than one-third of Police Motor Vehicle Crash Reports (38.5 per cent) information was recorded on both the time the RCMP member's shift began and the time they began to patrol. On average, members began their patrols 1 hour and 55 minutes after their shift began.

³ It should be noted that one file indicated that the operator of the police motor vehicle was 77 years old and another file recorded the operator's age as 67 years old. These two ages were not included in the calculation of mean age.

Information was also available in the large majority of Police Motor Vehicle Crash Reports (93 per cent) regarding whether the RCMP member was in uniform or plain clothed at the time of the incident. The available information indicated that more than three-quarters (78.1 per cent) of the time, RCMP members were in uniform at the time of the crash. Further, the same proportion of reports contained information regarding whether an officer was wearing a seatbelt at the time of the crash. The majority (88.5 per cent) of RCMP members were wearing their seatbelts at the time of the crash.

The large majority of Police Motor Vehicle Crash Reports (86.6 per cent) also provided data on whether the RCMP member had been involved in another crash, as well as how many additional crashes, over the last 12 months prior to their current crash. Over three-quarters (78.3 per cent) of RCMP members had not been involved in another crash in the last 12 months. In total, slightly more than one-fifth (21.7 per cent) of members had been involved in at least one other crash in the past 12 months (see Figure 6). Considering only those RCMP members who had been involved in at least one other police motor vehicle crash (n = 2003), one was involved in five other crashes in the past twelve months, while three-quarters were involved in one additional crash. Nearly one-fifth (19.8 per cent) of members had been involved in two additional crashes.

Figure 6: Number of Additional Crashes in Past Twelve Months



There was a statistically significant negative, albeit somewhat weak, correlation (-.152**) ⁴ between the number of years of driving experience and the number of crashes in the twelve months preceding the current crash. In other words, the

⁴ This finding was significant at the 0.01 level

greater the driving experience of the member, the fewer number of crashes that the officer was involved with in the past 12 months.

Of all these prior crashes, only 33 Police Motor Vehicle Crash Reports (1.4 per cent) included data on the final determination or category of the crash. Because the number was so low, these findings must be considered carefully. Again, this analysis does not consider the current crash, but additional crashes in the past 12 months.⁵ Of these 33 crashes, five (15.2 per cent) were classified as 'no fault' or caused by an avoidable natural hazard, such as a landslide.⁶ Nearly one-third of the cases (30.3 per cent; n = 10) were categorised as being caused by someone else, and two crashes were determined to be caused by a deliberate and justifiable action during a pursuit or by any other acceptable hazard of police work. However, nearly half of the crashes (48.5 per cent; n = 16) were determined to be caused through carelessness or negligence on the part of the RCMP member. In effect, the operator of the police motor vehicle was found to be partially or wholly at fault for the crash. None of the crashes occurred in situations where the officer was either off duty or on duty, but not acting within the scope of their duties or employment.

Police Motor Vehicle Data

More than two-thirds (69.8 per cent) of all police vehicles involved in a crash were marked cars. Nearly all of the vehicles (89.8 per cent) were emergency equipped, meaning that they had sirens and lights. Of those vehicles that were emergency equipped (n = 1,997), only slightly more than one-quarter (27.7 per cent) had their sirens and lights on at the time of the crash. In other words, in the large majority of crashes (71.8 per cent), the police motor vehicles were not in emergency mode. Also, in the great majority of cases (92.7 per cent), another police vehicle was not involved in the crash.

As expected, the nature of the RCMP members' duties at the time of the motor vehicle crash was most commonly general duty (69.3 per cent). This was expected as most members on the road are assigned to general duty and these members are most likely to respond to calls for service or be on patrol. Surveillance officers (3.7 per cent) and traffic services (3.6 per cent) were the next most common type of

⁵ Information on the current crash is presented below.

⁶ After an investigation of a crash involving a RCMP officer, the event is categorised by one of six classifications. Categories A, B, C, and D are for instances where the officer was on duty and acting within the scope of their duties or employment. Categories A to D range from natural hazard, to no fault of the RCMP member, to partial or complete fault of the member. Category E is assigned when the officer was on duty, but not acting within the scope of their duties or employment, and Category F when the operator of the vehicle was off duty.

RCMP member involved in a vehicle crash, but these rates were not at all close to the proportion of general duty-related vehicle crashes.

In very few cases (1.5 per cent; n = 384), the Police Motor Vehicle Crash Reports indicated the most recent driving course that an officer took since training and prior to the crash. Of those indicated, the most common course (66.9 per cent) was advanced driving. In just considering those officers where advanced driving was the last driving course they completed, the mean number of months between when they completed this course and had their crash was 95.3 months or 7.9 years. In effect, for the most part, there had been a substantial amount of time between their current crash and their most recent driving course.

Crash Site Data

A majority of police motor vehicle crashes occurred in urban jurisdictions (59.4 per cent). Nearly half of all crashes (47.8 per cent) occurred on straight roads, while nearly one-fifth (19.1 per cent) occurred in parking lots. Given the differences between urban and rural communities, it should not be surprising that there were some statistically significant differences in the location of police-involved crashes. When comparing urban and rural jurisdictions, there was a substantial difference in the proportion of crashes that occurred in parking lots (see Table 1). In urban jurisdictions, slightly more than one-quarter of all crashes (25.8 per cent) occurred in parking lots compared to less than one-tenth (7.8 per cent) in rural jurisdictions. This difference was statistically significant ($p < .001$). It is unknown what proportion of these crashes occurred in police parking lots compared to public lots. In addition, a majority of rural crashes (52 per cent) occurred on straight roads compared to less than half (44.3 per cent) of all urban-based crashes ($p < .001$).

Table 1: Crash Scene – Urban and Rural

Location of Crash	All Crashes (n = 2248)	Urban (n = 1332)	Rural (n = 877)
Hill	5.3%	4.5%	6.5%
Straight	47.8%	44.3% ***	52.0%
Private Driveway/Road	5.2%	4.3% *	6.5%
Curve	7.7%	5.2% ***	11.4%
Parking Lot	19.1%	25.8% ***	7.8%
Parking Garage	3.2%	5.1% ***	0.3%
Field	1.7%	0.4% ***	3.6%
Car Wash	0.1%	0.2%	0
Bridge	0.8%	0.6%	1.1%
Ramp	0.8%	0.9%	0.8%
Other	8.3%	7.7%	8.7%

* p > .05

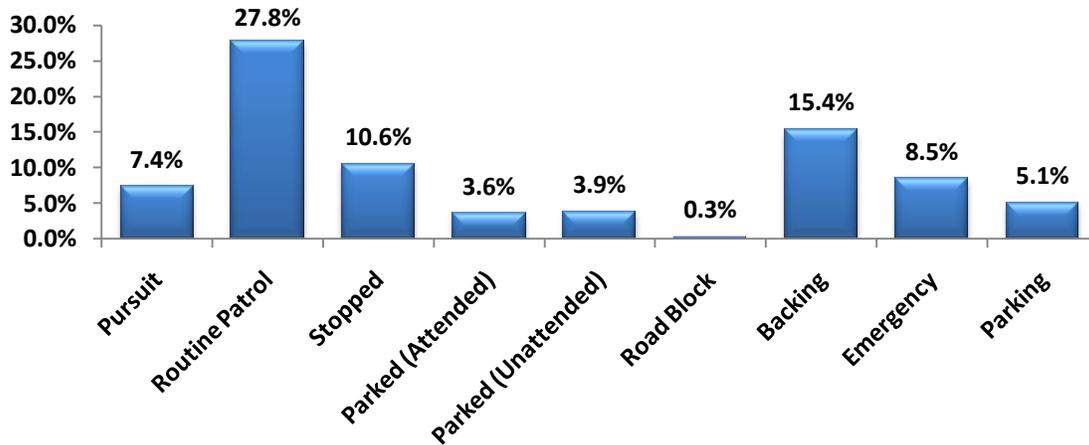
*** p < .001

There were a number of other statistically significant differences between urban and rural crashes. There were nearly no crashes in parking garages in rural jurisdictions (0.3 per cent), however, slightly more than one-twentieth (5.1 per cent) of all urban crashes occurred in parking garages. Conversely, nearly none of the urban crashes occurred in a field (0.4 per cent) compared to 3.6% of rural crashes.

A total of 365 crashes (15.8 per cent) occurred at an intersection. Of these crashes, nearly half (42.7 per cent) occurred at an uncontrolled intersection; while slightly more than one-third (37.8 per cent) occurred at a traffic light controlled intersection. A smaller proportion (19.2 per cent) occurred at a controlled intersection, but one that was controlled by some sign other than a traffic light. As expected, crashes at traffic light controlled intersections were much more common in urban (42.7 per cent) than rural (15 per cent) jurisdictions, while an uncontrolled intersection crash was much more likely to have occurred in rural (70 per cent) compared to urban (37 per cent) jurisdictions.

Less than half of the Police Motor Vehicle Crash Reports (46.8 per cent) provided information on the type of driving that the operator was doing at the time of the crash. In slightly more than one-quarter of the crashes for which there was data (27.8 per cent), the RCMP member was conducting a routine patrol at the time of the crash (see Figure 7). It is interesting to note that in only 7.4% of cases, the RCMP member was engaged in a pursuit when they crashed. Moreover, in 10.6% of cases, the member's vehicle was stopped, and, in some cases, the police motor vehicle was either parked and attended (3.6 per cent) or parked and unattended (3.9 per cent).

Figure 7: Type of Driving at Time of Crash



In considering the type of driving that occurred at the time of the crash, and removing from the analysis all instances when the police vehicle was not moving or in operation, such as when the vehicle was parked and unattended, the operating speed of the police vehicle at the time of the crash was calculated. The range of speed was from 0 km to 165 km per hour with an average speed of 32 km per hour.⁷ It is interesting to note that the average speed of a pursuit was 33 km per hour; however, one police vehicle crashed at 160 km per hour, while another crashed at 130 km per hour. By comparison, the average speed that a police vehicle was moving at the time of a crash that occurred during routine patrol was 36 km per hour, with three vehicles crashing at 110 km per hour. In effect, the average speed of a routine patrol crash was slightly faster than the average speed of a pursuit crash.

Weather and Road Conditions at Time of Crash

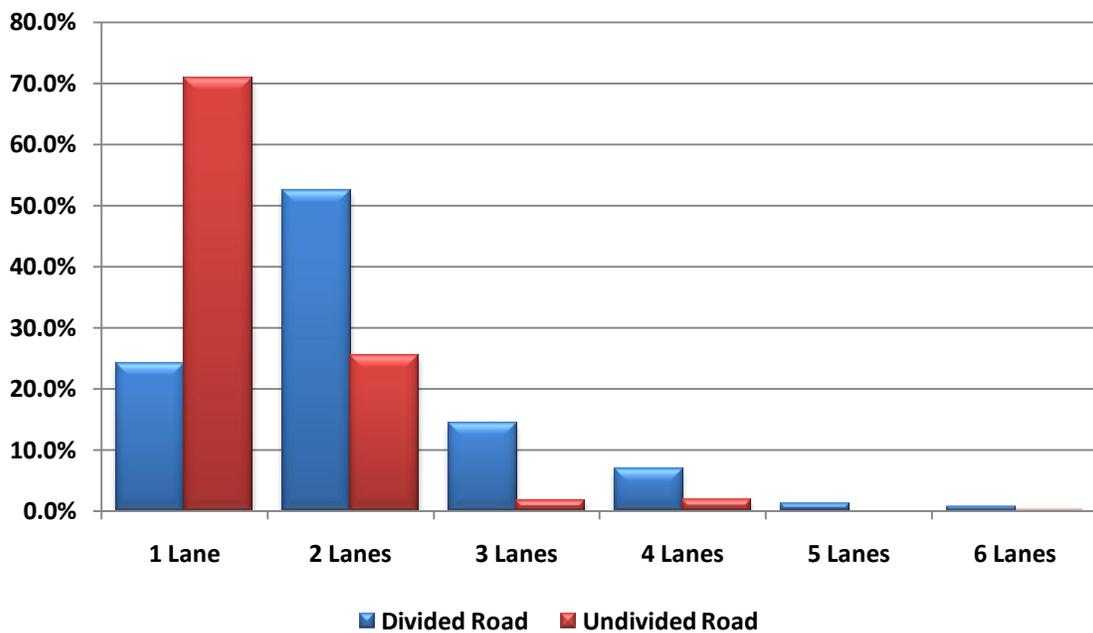
In nearly two-thirds of crashes (65.2 per cent), the weather conditions were recorded as clear. In fact, few crashes occurred when conditions were cloudy (15.6 per cent), when it was raining (8 per cent), snowing (4.4 per cent), blowing/drifting snow (1.9 per cent), in fog (1.7 per cent), or freezing rain (0.9 per cent). Furthermore, the visibility was recorded as “good” in the large majority of cases (87.6 per cent).

As an aside, slightly more than two-thirds (69.9 per cent) of all pursuit-related crashes occurred in clear weather conditions and a further one-fifth (20.3 per cent) occurred in cloudy conditions. Regardless of the conditions, nearly all of the pursuits (97.5 per cent) occurred when the visibility was good.

⁷ Some vehicles had a recorded speed of 0 km per hour as they were backing up or parking or were hit while stopped at an intersection during routine patrol.

In terms of the roads, approximately three-quarters (74.9 per cent) of the crashes occurred on divided roadways. As indicated by Figure 8, a slight majority (52.5 per cent) of crashes that occurred on divided roads happened on two lane roads, while nearly one-quarter (24.1 per cent) occurred on one lane roads. By comparison, for crashes that occurred on undivided roads, nearly three-quarters (70.8 per cent) happened on one lane roads, while one-quarter (25.4 per cent) occurred on two lane roads. Still, nearly one-quarter (23.3 per cent) of all crashes on divided roads occurred on roads with more than two lanes compared to undivided roads (3.8 per cent).

Figure 8: Number of Lanes One Way on Road



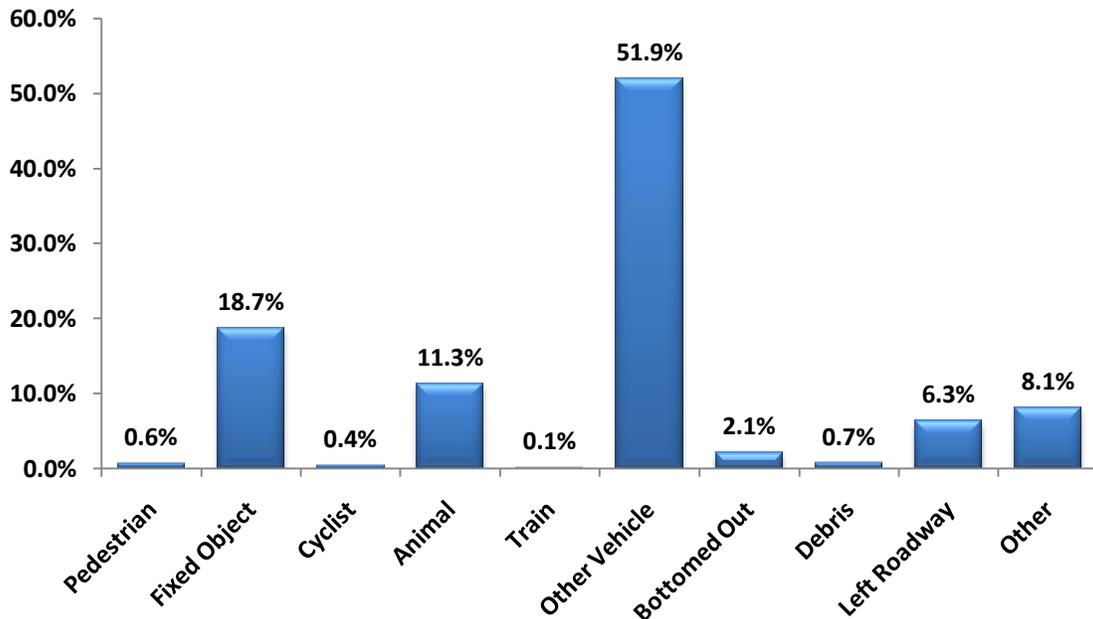
For the most part, crashes occurred on paved roads (76.2 per cent). In few cases, crashes occurred on gravel roads (13.8 per cent) or earth roads (3.7 per cent). Moreover, the conditions of the roads that these crashes occurred on were assessed as “good” in more than three-quarters (79.9 per cent) of cases. However, in considering just those instances where the road conditions were assessed as poor, two-thirds (67.9 per cent) were on paved roads. Still, it is important to keep in mind that when considering each road type individually, paved roads were assessed as good in 83.9% of cases, but earth roads were classified as being in a good condition only 39% of the time, and gravel roads only 58.1% of the time. Given this, it is possible that road surface and condition played a role in some of these crashes. This conclusion is supported by the fact that more than one-third of the crashes (38.1 per

cent) occurred on driving surfaces that were wet (15.4 per cent), icy (12.4 per cent), or had snow on them (10.3 per cent).

Type of Crash and Outcome of Crash

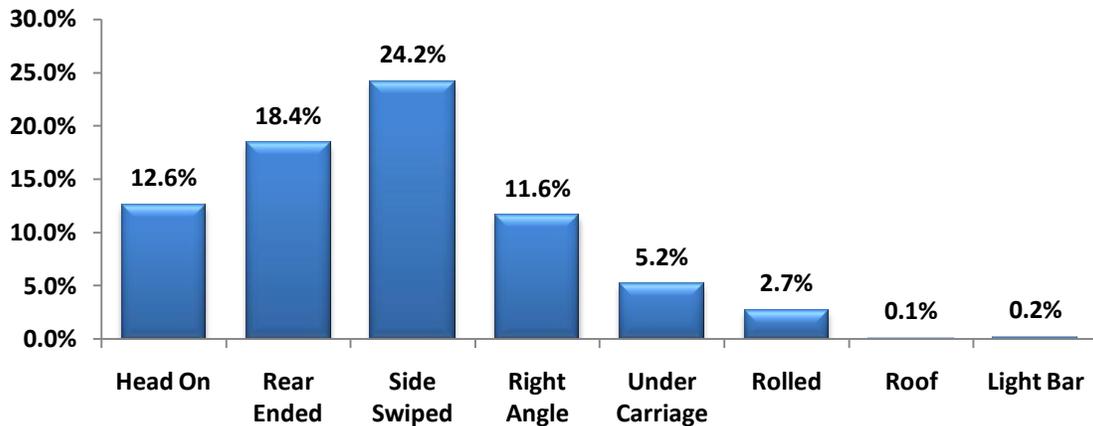
At the time of the crash, virtually all officers were on duty (98.5 per cent). The most common type of crash was a police motor vehicle striking or being struck by another vehicle (51.9 per cent). The next two most common categories were hitting a fixed object (18.7 per cent) or hitting or being hit by an animal (11.3 per cent). Of note, in only 13 cases (0.6 per cent) was a pedestrian struck by a police vehicle (see Figure 9).

Figure 9: Type of Crash



In considering all of the crashes in which there was information regarding the nature of the crash available in the Police Motor Vehicle Crash Reports, most commonly, the police motor vehicle was side swiped (24.2 per cent) or rear ended (18.4 per cent) (see Figure 10). It is important to note that based on how the information is recorded in the Police Motor Vehicle Crash Reports it is possible to determine fault, but it is not possible to determine whether the police motor vehicle struck the other vehicle or was hit by the other vehicle. The Police Motor Vehicle Crash Reports also do not indicate how many vehicles were involved in the crash.

Figure 10: Description of Crash



In less than half the Police Motor Vehicle Crash Reports (47.7 per cent), data was available about the nature of injuries suffered as a result of a police-involved crash. There was only one fatality recorded⁸, while the large proportion of Police Motor Vehicle Crash Reports (84.1 per cent) recorded that there was some property damage. However, 15.9% of Police Motor Vehicle Crash Reports for which there was data indicated that physical injuries resulted from the crash.

In 12.2% of cases, one RCMP member was injured and in 11 cases, two officers were injured as a result of the crash. In terms of civilian injuries, very few injuries were recorded. For example, in only 53 cases (4.8 per cent), one civilian was injured; in ten instances, two civilians were injured; in five cases, three civilians were hurt; and in three cases, four civilians were hurt. In sum, for those Police Motor Vehicle Crash Reports with data, a total of 156 RCMP officers and 100 civilians were injured.

The estimated damage in dollars to the police motor vehicle as a result of an crash was available in slightly more than one-third (35 per cent) of the files. The average cost of the damage was estimated at \$2,644.48. Property damage was estimated, on average, to be \$2,007.38 and other Crown damage was estimated at \$2,183.05. In total, only 22.2% of all the files provided a rough estimate of the total costs associated with a crash. On average, the total costs were \$3,147.23.

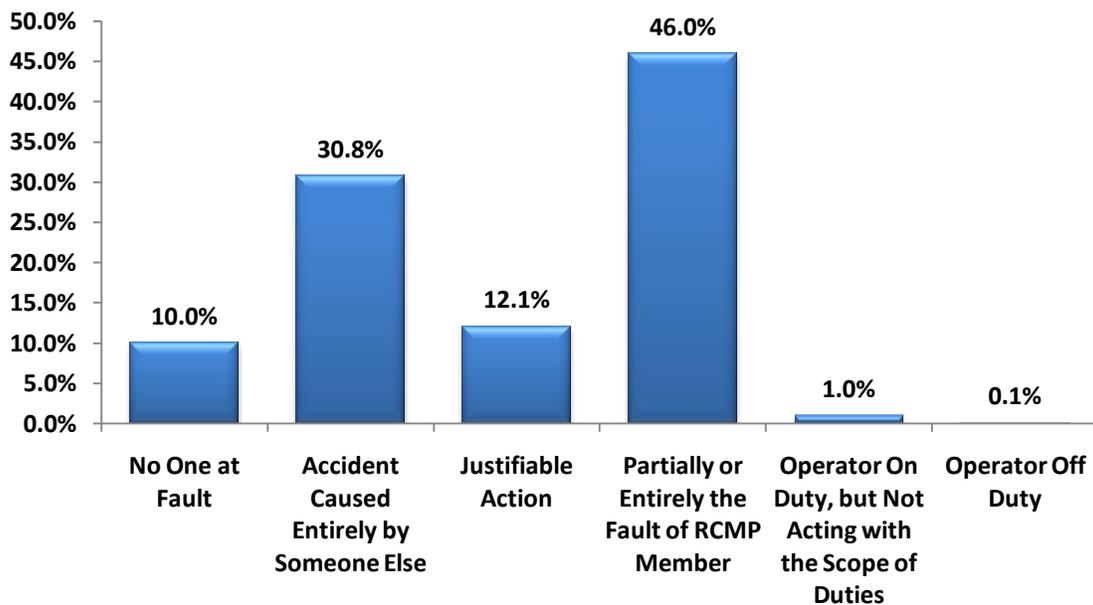
Surprisingly, only approximately one-third of files (34.7 per cent) provided data on the circumstances and categorization of the crash. Of those files with data, nearly half (46 per cent) concluded that the operator of the police motor vehicle was either partially or wholly responsible for the crash due to carelessness or negligence.

⁸ This fatality was the result of a pedestrian being hit when the police were attending a crash. This fatality occurred in “E” Division.

Interestingly, there were 14 reports which indicated that the current crash was partially or entirely the fault of the RCMP member and provided information on a previous crash. Of these 14 reports, ten (71.4 per cent) indicated that the RCMP member was also partially or entirely responsible for the previous crash. Although this was a very small sample size, it does suggest that some officers have been found to be repeatedly responsible for police motor vehicle crashes.

Roughly one-third (30.8 per cent) of crashes were assessed as being entirely caused by someone other than the police operator. One in ten crashes were deemed to be caused by an unavoidable natural hazard, while a slightly higher proportion (12.1 per cent) were determined to be caused by the deliberate and justifiable action of the operator during the course of their responsibilities (see Figure 11).

Figure 11: Circumstance of Crash



It is interesting to note that in only one case was the operator of the police motor vehicle found to be using the vehicle for an unauthorized purpose at the time of the crash, and in only eight cases the operator was on duty, but not acting within the scope of their duties. Given the determination of the investigators, as presented in Figure 11, it was surprising that very few cases (7.9 per cent) resulted in a recommendation for remedial action against the operator of the police motor vehicle.

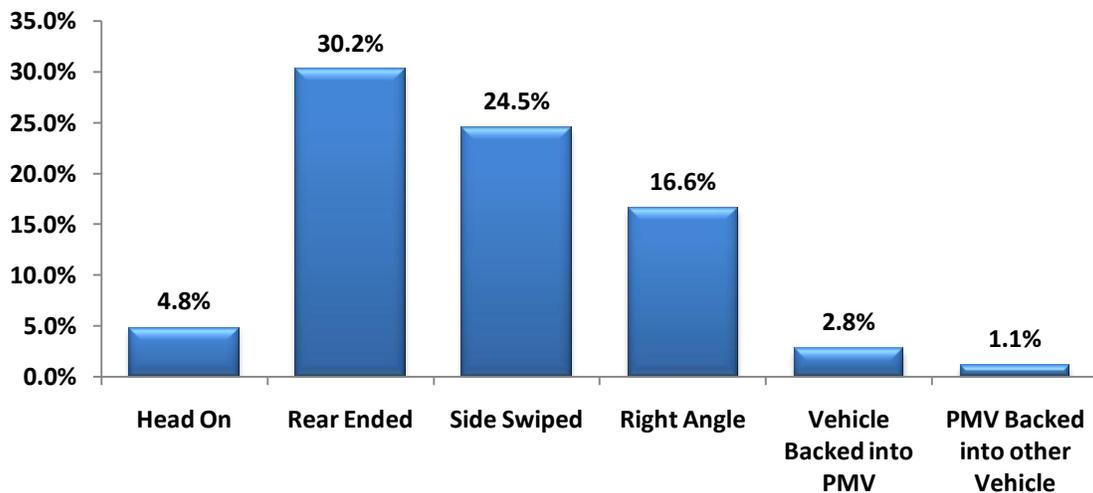
In order to provide a much more detailed analysis of the nature and outcome of crashes involving police vehicles, crashes involving another vehicle, those involving

fixed objects, and those involving pedestrians will be examined in greater detail below.

Crashes Involving another Vehicle

In virtually all of the cases of a crash with another vehicle (98.1 per cent), the operator of the police vehicle was on duty. In nearly one-third (30.2 per cent) of cases, the police vehicle either rear ended another vehicle or was rear ended, and in one-quarter of cases (24.5 per cent), the police vehicle side swiped another vehicle or was side swiped (see Figure 12). A somewhat smaller proportion involved the police vehicle hitting another vehicle or being hit at a right angle.

Figure 12: Description of Crash with another Vehicle



At the time of the crash involving another vehicle, in one-quarter (25.5 per cent) of the cases, police were engaged in routine patrol. Moreover, for a similar proportion (27.5 per cent) of the time, the police vehicle was either stopped (16.6 per cent) or parked (10.9 per cent). The average speed that the police motor vehicle was travelling at the time of the crash was 18 km per hour with a range of 0 to 160 km per hour.

None of these crashes resulted in a fatality and the large majority (82.5 per cent) resulted in property damage. However, there were some instances of personal injury (17.5 per cent). In 13.2% of cases (n = 85), one member of the RCMP was injured and in five cases, two RCMP members were injured. In terms of civilian injuries, as noted, in the vast majority of instances (90.7 per cent), no civilians were injured in the crash. However, in 6.5% of crashes involving another vehicle (n = 42), one civilian was injured, in ten instances, two civilians were injured, in five cases, three civilians were injured, and in three cases, four civilians were injured.

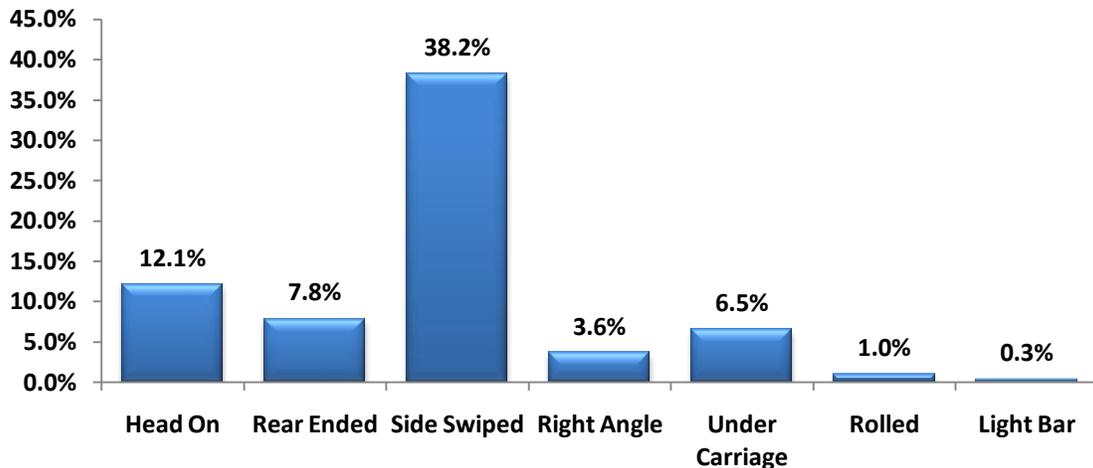
In terms of financial damages, only slightly more than one-third (37.7 per cent) of crashes involving another vehicle had information on the cost of the damage to the police vehicle. On average, the estimated damage to the police motor vehicle was \$2,711.10 with a range of \$20.00 to \$45,000.00. In addition, other Crown damage was assessed, on average, at \$2,123.58 (n = 33). Property damage was assessed, on average, at \$2,202.78 (n = 92). One-third of Police Motor Vehicle Crash Reports had a rough estimate of the total value of the damage incurred as a result of the crash. On average, the value was estimated at \$3,451.50 with a range of \$40.00 to \$100,000.00.

Surprisingly, in less than half (40.3 per cent) of the Police Motor Vehicle Crash Reports when the crash was with another vehicle, data was available on the circumstances and recommended category of the crash. A large majority of crashes (83.7 per cent) were classified as either entirely the fault of someone else other than the RCMP member (44.5 per cent) or partially or wholly the fault of the police motor vehicle operator due to carelessness or negligence (39.2 per cent). In much fewer instances (11.8 per cent), the crash was determined to be the result of a deliberate and justifiable action on the part of police motor vehicle operator. Only 3.2% of cases were determined to be no specific person's fault. Given these recommendations, it was somewhat unexpected that in virtually all cases (93.6 per cent), no remedial action was recommended against the operator of the police motor vehicle.

Crashes Involving a Fixed Object

As mentioned above, nearly one-fifth of all police involved crashes were with a fixed object, such as a tree or a traffic post (18.7 per cent). In virtually all of these cases (98.8 per cent), the operator of the police motor vehicle was on duty. In slightly more than one-third (38.2 per cent) of cases, the police motor vehicle side swiped the fixed object. There were few instances of other types of crashes (see Figure 13).

Figure 13: Description of Crash with a Fixed Object



Slightly more than one-third of the crashes with a fixed object (36.6 per cent) occurred while the police motor vehicle operator was backing up the police vehicle. Moreover, one-fifth (20.6 per cent) of the crashes occurred while the RCMP member was engaged in routine patrol; a somewhat lower proportion (13.9 per cent) occurred while the operator of the police motor vehicle was parking. Of the 194 cases where a RCMP member crashed into a fixed object and there was information recorded about the type of driving at the time of the crash in the Police Motor Vehicle Crash Reports, only six reports (3.1 per cent) indicated that the crash occurred during or as a result of a pursuit. The average speed that the police motor vehicle was travelling at the time of the crash was 18 km per hour with a range of 0 to 120 km per hour.

None of the crashes with a fixed object resulted in a fatality; the large majority (92.4 per cent) resulted in property damage. However, there were some instances of personal injury (17.5 per cent). In 7.6% of cases (n = 15), the crash resulted in an injury to an RCMP member. In these crashes, a total of 20 RCMP members were reported injured. There were no reported civilians injured as a result of a crash with a fixed object.

In terms of financial damages, slightly more than one-third (36.9 per cent) of crashes with a fixed object had information on the cost of the damage to the police motor vehicle. On average, the estimated damage to the police motor vehicle was \$1,499.21 with a range of \$50.00 to \$25,000.00. In addition, the one Police Motor Vehicle Crash Report that provided information on other Crown damage assessed the damage at \$840.00. Property damage was assessed, on average, at \$1,412.31 (n = 16). A very small proportion of Police Motor Vehicle Crash Reports (11.6 per cent) had a rough estimate of the total value of the damage incurred as a result of the

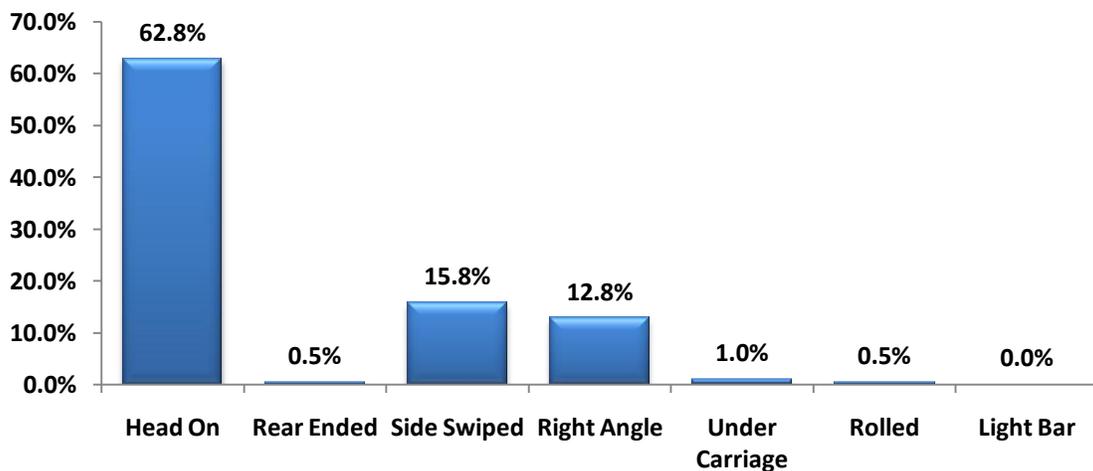
crash. On average, the value was estimated at \$1,075.69 with a range of \$50.00 to \$6,000.00.

Surprisingly, in slightly less than one-third (35 per cent) of the Police Motor Vehicle Crash Reports involving a fixed object, data was available on the circumstances and the recommended category of the crash. Not unexpected, given the context of these crashes, a large majority (79.1 per cent) were classified as either partially or entirely the fault of police motor vehicle operator as a result of carelessness or negligence. In much fewer instances (11.5 per cent), the crash was determined to be the result of a deliberate and justifiable action on the part of the operator of the police motor vehicle. Only 7.4% of cases were determined to be no specific individual's fault and only 1.4% was classified as caused entirely by someone else. Given these classifications, it was unexpected that in virtually all cases (90.2 per cent) no remedial action was recommended against the operator of the police motor vehicle.

Crashes Involving Animals

As mentioned above, slightly more than one-tenth of all RCMP police motor vehicle crashes involved an animal (11.3 per cent). In all of these cases, the operator of the police motor vehicle was on duty. In nearly two-thirds (62.8 per cent) of these cases, the police motor vehicle was hit head on. There were few instances of other types of crashes (see Figure 14).

Figure 14: Description of Crash with an Animal



Slightly more than two-thirds of the crashes with an animal (38.6 per cent) occurred during routine patrol. A substantially lower proportion (13.7 per cent) occurred while the operator of the police motor vehicle was on route to an emergency. Of the 51 cases where a police motor vehicle crashed into an animal and there was

information recorded in the Police Motor Vehicle Crash Reports about the type of driving at the time of the crash, none of the crashes were as a result of a pursuit. The average speed that the police motor vehicle was travelling at the time of the crash was 88 km per hour with a range of 0 to 165 km per hour.

None of the crashes with an animal resulted in a human fatality. The large majority (86.3 per cent), however, resulted in property damage. There were also some instances of personal injury (13.7 per cent). In total, seven RCMP members and no civilians were injured as a result of a collision with an animal.

In terms of financial damages, only very few Police Motor Vehicle Crash Reports (16.8 per cent) of collisions with an animal had information on the cost of the damage to the police motor vehicle. On average, the estimated damage to the police motor vehicle was \$2,233.60 with a range of \$100.00 to \$14,366.00. No other Crown damage was assessed and property damage was assessed in only one Police Motor Vehicle Crash Reports. The value assessed was \$211.00. Only nine Police Motor Vehicle Crash Reports (3.5 per cent) had a rough estimate of the total value of the damage incurred as a result of the crash. On average, the value was estimated at \$713.44 with a range of \$161.00 to \$2,180.00.

Surprisingly, very few Police Motor Vehicle Crash Reports (11.3 per cent) provided information on the circumstances and the recommended category of the crash. As expected, nearly all crashes (94.4 per cent) were classified as being caused by an unavoidable natural hazard. In one case, the crash was determined to be the fault of someone other than the operator of the police motor vehicle, and in one other case, the crash was determined to be caused by the deliberate and justifiable action of the RCMP member. Given these determinations, it was not unexpected that in virtually all cases (96.6 per cent), no remedial action was recommended against the operator of the police motor vehicle.

Crashes Involving Pedestrians

As mentioned above, there were only 13 instances of a police motor vehicle hitting a pedestrian. Although this type of event was very rare (0.6 per cent of all crashes), its seriousness required additional analysis. In less than one-third of these crashes (30.8 per cent), the operator of the police vehicle was on duty. The data from the other nine Police Motor Vehicle Crash Reports was missing, making it impossible to determine whether the members in these cases were on or off duty. In one case, the collision was head on, while in two cases each, the crash involved the pedestrian being hit by the back of the police motor vehicle or being side swiped.

Data was only available in four cases as to what the operator of the police motor vehicle was doing at the time of the crash. The four actions were: (1) arresting a purse snatcher; (2) attending the scene of a crash; (3) pacing a fleeing suspect; and (4) returning from PRTC. None of the crashes were reported as occurring during or as a result of a pursuit. The average speed that the police motor vehicle was travelling at the time of the crash was 11 km per hour with a range of 0 to 40 km per hour.

Of the 13 crashes involving a pedestrian, one resulted in a civilian fatality and five additional instances resulted in a civilian being injured. There were no reported injuries or fatalities among RCMP members as a result of a collision with a pedestrian.

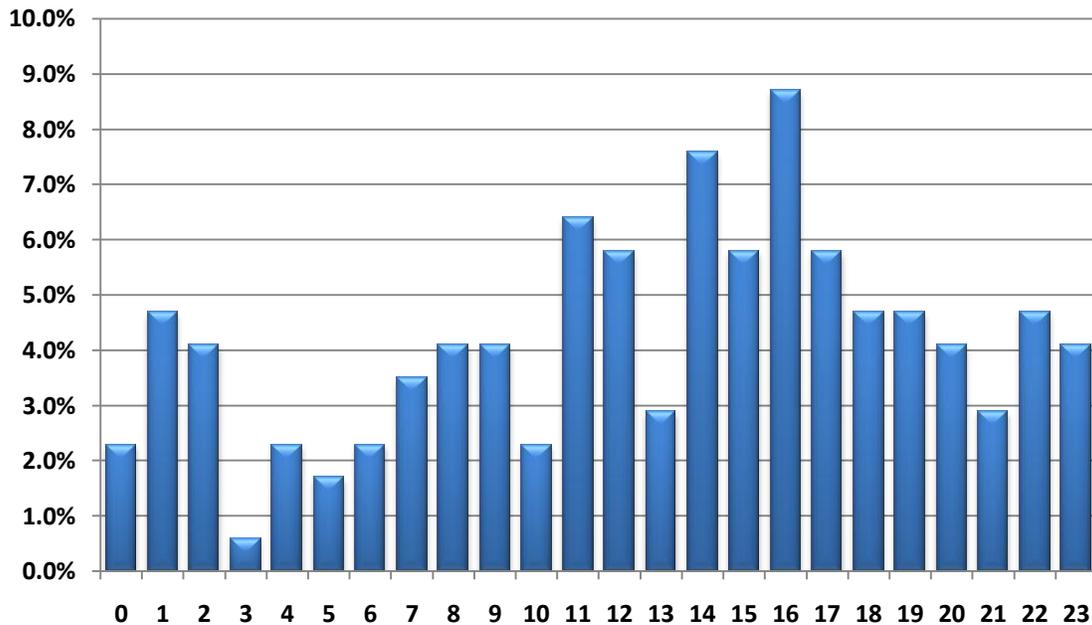
In terms of financial damages, only two cases had information on the cost of the damage to the police motor vehicle. On average, the estimated damage to the police motor vehicle was \$4,050.00 with one case having an estimate of \$100.00 and the other being \$8,000.00. In addition, no other Crown damage or property damage was provided in the Police Motor Vehicle Crash Reports. Only one Police Motor Vehicle Crash Report provided a rough estimate of the total value of the damage incurred as a result of the crash; this was assessed at \$2,500.00.

Surprisingly, given the seriousness of this type of crash, only four files had information on the classification of the crash. In one case, it was determined that the crash was entirely caused by someone other than the operator of the police motor vehicle. In two cases, the determination was that the crash was caused by a deliberate and justifiable action on the part of the RCMP member. And, in one case, the determination was that the crash was partially or wholly the fault of the operator of the police motor vehicle through carelessness or negligence. Of note, the crash which resulted in the civilian fatality was determined to be partially or wholly the fault of the RCMP member. Given these determinations, it was not unexpected that the case with the civilian fatality was the only one that resulted in remedial action being recommended against the operator of the police motor vehicle.

Injuries as a Result of a Police Motor Vehicle Crash

Of the 2,314 police motor vehicle crashes, only 175 (7.6 per cent) recorded that either a RCMP member or a civilian was injured. As demonstrated in Figure 15, the distribution associated with the time of these crashes was somewhat even with peak times of 4pm (8.7 per cent) and 2pm (7.6 per cent). It would appear that crashes resulting in injury were more likely to occur, as anticipated, during higher traffic volume times.

Figure 15: Distribution of Crashes with an Injury by Time of Day



Given this time of day distribution, it was not surprising that a majority of police motor vehicle crashes (57 per cent) occurred under daylight conditions. In addition, slightly more than one-third (37.2 per cent) of crashes in which someone sustained an injury the light conditions were classified as dark.

In terms of the operator of the police motor vehicle, the mean age of the RCMP member was 36.9 years old and had been in service, on average, slightly more than eleven years (11.3 years). Moreover, on average, the operator had 21 years of driving experience. Given this, it would appear that those RCMP members involved in crashes where an injury occurred were both experienced officers and experienced drivers. Not only were the RCMP operators experienced, in terms of the number of years they had been driving vehicles, but just slightly less than half of these operators (48.8 per cent) had driven 15,000 km or more in the 12 months prior to their crash. In other words, these RCMP members had substantial recent driving experience.

In only 56 reports, information was available on the nature of the most recent driving course since training that the operator of the police motor vehicle completed. Of those, more than half (58.9 per cent) had most recently completed an advanced driving course, however, the mean length of time since they took the course prior to their current crash was eight years.

In addition, nearly all of the RCMP members (95.8 per cent) were considered to be in a normal and healthy physical and mental state at the time of the crash. Virtually none of the officers (6.7 per cent) were deemed to have been tired at the time of the crash. This finding was supported by data indicating that the RCMP member had, on average, 7.6 hours of sleep in the 24 hours prior to the crash and had worked, on average, 8.7 hours in the 24 hours prior to the crash. Again, it would appear that fatigue, on the part of the RCMP member, did not play a substantial role in crashes causing injury.

In a majority of the cases in which someone was injured (60.9 per cent), the police motor vehicle was marked and in the large majority of cases (85.4 per cent), the police motor vehicle was emergency equipped. In one-third of those cases, the emergency equipment was on at the time of the crash; however, this result should not be considered evidence of RCMP negligence or responsibility for the crash when one considers the nature of the crash and what the RCMP member was doing at the time of the crash (see Figure 16).

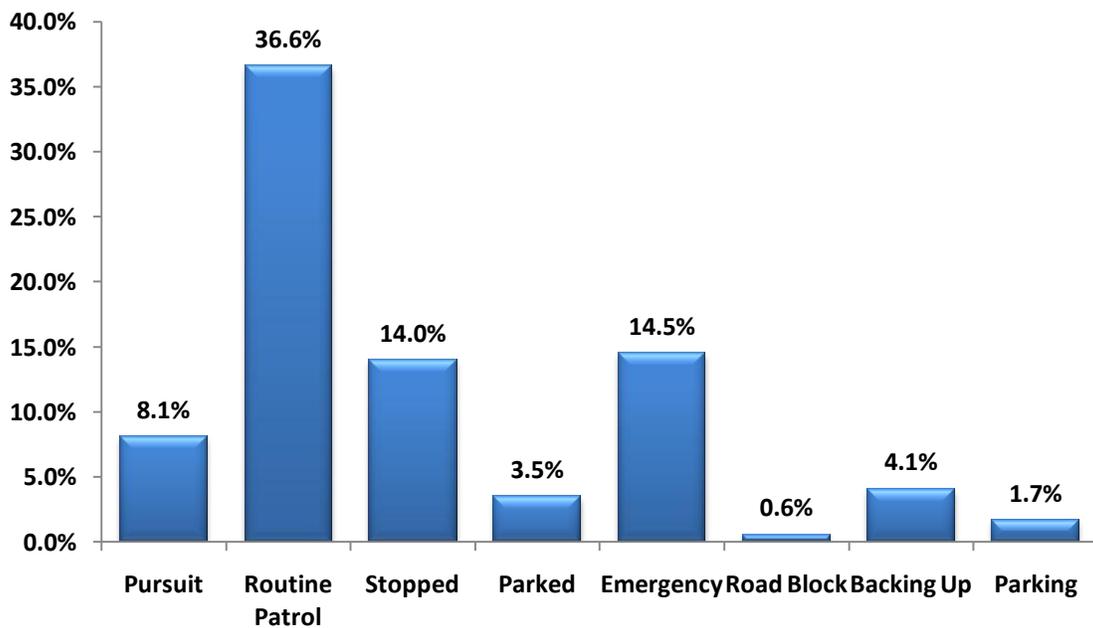
While it is generally accepted that seatbelts reduce both the risk for and the severity of injuries in the event of a motor vehicle crash, this did not seem to play a large role for this sample as nearly all RCMP members involved in an crash where an injury occurred (86.9 per cent) were wearing their seatbelts at the time of the crash. Again, this conclusion was supported by data suggesting that in slightly more than four-fifths of cases in which a police officer was injured during a motor vehicle crash, the RCMP member was wearing a seatbelt (81.4 per cent).

Given that more than half (59.4 per cent) of all crashes occurred in urban areas, it was not surprising that nearly two-thirds (63.8 per cent) of crashes that resulted in injury also occurred in urban settings. In considering the type and condition of the road, a majority of crashes that resulted in injury (55.7 per cent) occurred on a straight road and nearly half (43.4 per cent) occurred at an intersection. However, a more detailed analysis revealed that most commonly crashes that resulted in injury occurred at a controlled intersection on straight roads. For example, nearly three-quarters (71.9 per cent) of all crashes that occurred at a light controlled intersection occurred on a straight road and 80% of all crashes that occurred at an intersection that was controlled in some other way, such as with a stop sign, happened on a straight road. In effect, of the 76 Police Motor Vehicle Crash Reports that contained data on both the type of road and whether the crash happened at an intersection, half occurred at a controlled intersection on a straight road.

In addition, in only one-third of crashes in which someone was injured, the event occurred on a divided road. Commonly, the road was paved (90.9 per cent), the road was deemed to be in good condition (77.2 per cent), the road was dry (60.7 per cent), the weather conditions were clear (59 per cent), and the visibility was good (90.1 per cent). Given all this information, it would appear that road and weather conditions did not play a substantial role in many of the police motor vehicle crashes that resulted in injury.

As indicated by Figure 16, it would also appear that, for the most part, what the RCMP member was doing at the time of the crash did not necessary contribute to the crash. While slightly more than one-third of crashes (36.6 per cent) occurred while the RCMP member was engaged in routine patrol, nearly one-fourth of the crashes resulting in injury (22.6 per cent) happened while the RCMP member was either engaged in a pursuit (8.1 per cent) or responding to an emergency (14.5 per cent).

Figure 16: Type of Driving at Time of Crash



Given the type of driving that the RCMP member was doing at the time of the crash, it was not unexpected that only slightly more than one-third of the crashes where someone was injured (36.1 per cent) were deemed to be the fault of the operator of the police motor vehicle.⁹ However, a more detailed analysis revealed some

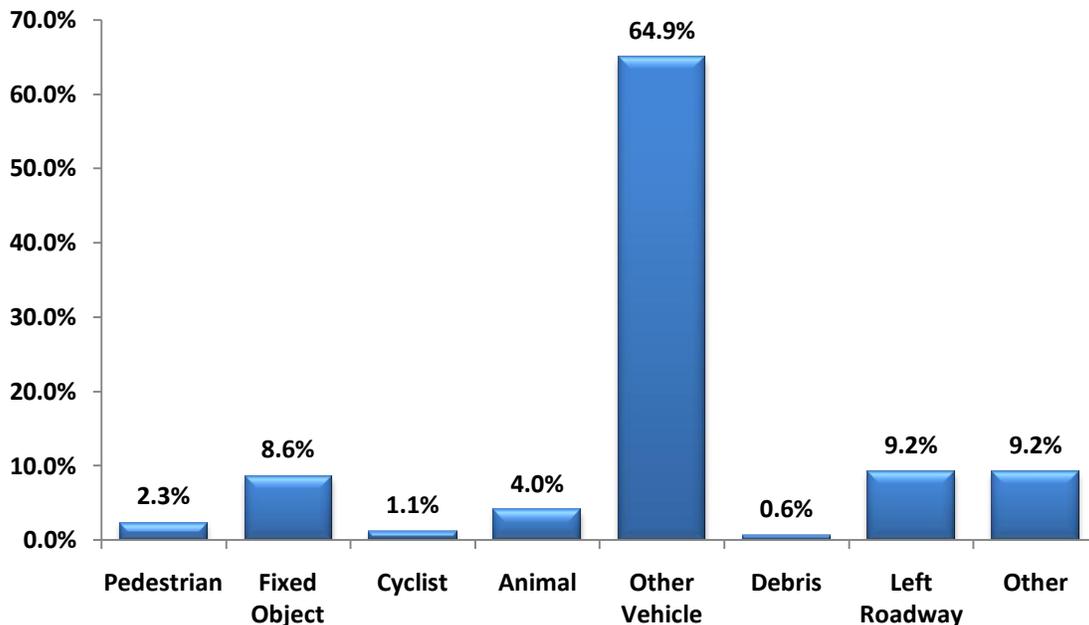
⁹ It should be noted that, in total, there were only 122 Police Motor Vehicle Crash Reports that had data indicating that someone had been injured and provided a recommended classification of responsibility (5.3 per cent of the sample).

interesting findings. When considering pursuits (n = 44), only 18.2% of cases concluded with the operator of the police motor vehicle being deemed partially or entirely at fault for the crash. However, of the 18 Police Motor Vehicle Crash Reports which indicated that the RCMP member was responding to an emergency, 11 (61 per cent) indicated that the operator of the police motor vehicle was partially or entirely responsible for the crash. It is interesting to note that in nine of these cases, the emergency equipment on the police vehicle was in use at the time of the crash and, therefore, not the reason for concluding that the RCMP member was responsible.

As expected, of those crashes that resulted in injury and concluded to be partially or entirely the fault of the operator of the police motor vehicle, nearly half (40.9 per cent) occurred when the RCMP member was on routine patrol.

What was clear about police motor vehicle crashes that result in injury is that personal harm was most likely to occur when another vehicle was involved (64.9 per cent). As indicated in Figure 17, no other type of crash that caused injury was near the rate for a collision with another vehicle.

Figure 17: Type of Crash Causing Injury



In considering a collision with another vehicle, the two types of collisions which most commonly resulted in injury were being rear-ended or rear-ending another vehicle (43.4 per cent) or being hit or hitting another vehicle on a right angle (33.6 per cent). Given the type of roads that these crashes occurred on, it was not

surprising that very few crashes with another vehicle causing injury (2.7 per cent) were the result of a head-on collision.

In sum, considering the sparse data available in the Police Motor Vehicle Crash Reports, it would appear that for crashes resulting in injury, the crashes most commonly involved another vehicle in a rear-end or right angle collision at a controlled intersection on a straight, paved road in good condition, during good weather with clear visibility, with a well-rested, experienced RCMP member doing routine patrol. Moreover, the specifics of the crash were such that, for the most part, crashes were deemed to not be the fault of the RCMP member.

Discussion and Conclusion

The analysis conducted for this report suggested that RCMP members who were involved in a police motor vehicle crash in 2004 or 2005 were typically experienced members with a considerable amount of driving experience. Moreover, it appeared that, at the time of the crash, the operator of the police motor vehicle was not suffering from any health problems and was not fatigued. In addition, most of those RCMP members involved in a crash had not been involved in any additional police motor vehicle crashes in the 12 months preceding the current crash.

The fact that more RCMP involved crashes occurred in urban jurisdictions was not surprising, given the number of members and the number of people and vehicles in urban versus rural areas. Similarly, the specific locations of crashes were not surprising either. However, given that many crashes occurred in parking lots, it would be interesting to know how many of these crashes happened in RCMP parking lots compared to other private or public lots. While it was not possible to determine what proportion of crashes occurred in RCMP parking lots, if this was found to be a substantial proportion, there are measures that could be taken to reduce this number.

Most commonly, the police motor vehicle crash occurred during a routine patrol. And, while there were some crashes that occurred while the police motor vehicle was in excess of 100 km per hour, the average speed at the time of the crash was not very fast. Moreover, very few crashes occurred as a result of or during a police pursuit. It would seem, therefore, that RCMP members are not engaged in any particular activity which puts them at a higher risk of being involved in a crash, nor does it appear that excessive speed on the part of the members is a root cause of police motor vehicle crashes.

It would also appear that, for the most part, road conditions and weather conditions did not play a role in a police motor vehicle crash as most crashes occurred in clear, dry conditions with good visibility on roads that were assessed as being in good condition. Regardless of road and weather conditions, most commonly, RCMP members were involved in crashes with other vehicles.

While there was incomplete data, the Police Motor Vehicle Crash Reports indicated that over 150 RCMP members and 100 civilians were injured in police-related motor vehicle crashes. As this data was derived from less than half of all the Police Motor Vehicle Crash Reports, it would be reasonable to double the number of RCMP and civilians injured. Moreover, there was one fatality recorded. It is likely that the missing data would not include additional fatalities as this type of data would certainly be recorded in the Police Motor Vehicle Crash Reports.

The number of people injured as a result of the police motor vehicle crash is important, not just because it is always serious when someone is injured, but because a high proportion of these crashes were determined to be partially or entirely the responsibility of the operator of the police motor vehicle. Although many of the operators had completed an advanced driving course, it may be worthwhile ensuring that all RCMP members recertify or qualify in this course every several years. While there were many instances where the crash was determined to be either the fault of someone other than the operator of the police motor vehicle, due to some natural hazard, or justifiable under the circumstances, the fact that so many crashes were concluded to be the fault of the police motor vehicle operator suggests that more must be done to ensure that all members are professionally trained in how to operate the vehicle in a variety of road and weather conditions and under a range of circumstances, such as attending an emergency or pursuing another vehicle.

In addition to the financial costs associated with the medical treatment and rehabilitation of RCMP members and civilians injured in crashes, court costs, and compensation for property damage, which could not be determined from this dataset, there was also the costs directly related to just repairing police motor vehicles. While there was only data available on approximately one-third of the Police Motor Vehicle Crash Reports, the average repair costs to the police motor vehicle was \$2,644.48. Extrapolating this estimated cost to all police motor vehicle crashes in 2004 and 2005 places the cost of repair at over six million dollars (\$6,119,326.72) or three million dollars per year.

While crashes are extremely costly to the RCMP, as discussed above, not all crashes were the fault of the operator of the police motor vehicle. Just considering those instances where the crash was partially or wholly the fault of the operator of the police motor vehicle as a result of negligence or carelessness and therefore avoidable, the estimated cost of repairing the police vehicles was nearly two million dollars (\$1,836,375.59) or \$918,187.79 per year.¹⁰ It is possible that this cost could be reduced or eliminated by additional driving courses or other actions that would reduce RCMP member carelessness or negligence while operating a police motor vehicle.

It was surprising that, given how many crashes were determined to be either partially or wholly the fault of the operator of the police motor vehicle, and the seriousness of any police motor vehicle crash, that more RCMP members were not disciplined or had any remedial action taken against them. While it is possible that actions were taken against those RCMP members found responsible for police motor vehicle crashes occurred and were simply not recorded in the Police Motor Vehicle Crash Reports, as these reports are part of the official crash file, greater attention should be taken to ensure that these reports are complete and accurate. If this is not the case, and remedial action is commonly not taken against those members who are responsible for police motor vehicle crashes, steps must be put in place to hold not only the member, but their superiors, accountable for negligence or carelessness which results in crashes.

In addition to the important information provided in this report, there were two striking observations made by the principle investigators. First, the Police Motor Vehicle Crash Reports could be modified in very minor ways to collect data that might be more useful to the RCMP. For example, more specific information on the location of the crash could be helpful in developing policies to reduce the number of police motor vehicle crashes if it was found that a substantial proportion occurred in or around police stations. Similarly, it would be useful to record whether the police motor vehicle was the recipient or the instigator of the collision.

The second observation was that the Police Motor Vehicle Crash Reports appeared to be very easy to fill out and would not require a lot of time to complete. Still, there

¹⁰ This estimate was based on the fact that there was data available for approximately one-third of the entire sample about crash responsibility (n = 809). Of these, one-third (n = 261) concluded that the operator of the police motor vehicle was responsible for the crash. Extrapolating the proportion of all crashes that would, therefore, be the responsibility of the RCMP member and multiplying this number by the estimate average cost of repairing a police motor vehicle when the RCMP member was found to be responsible for the crash was how the total cost for this part of the sample was calculated.

was a substantial amount of missing data in the Police Motor Vehicle Crash Reports which made establishing firm conclusions and recommendations difficult. Most surprising, there was a lot of missing data in key fields, such as whether there were any injuries as a result of the crash, the type of crash, or the final determination of responsibility. While there was sufficient data to provide a general overview of the quality and quantity of police motor vehicle crashes, given the amount of missing data for important variables, the information presented in this report must be considered carefully. While it appears this report is based on all police motor vehicle crashes in RCMP jurisdictions between 2004 and 2005, the amount of missing data reduces the reliability of the findings.