

Motorcycle Collisions in New Brunswick

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Abstract

After a period of constant decline, motorcycle collisions have been increasing in recent years. This trend is being seen in many different parts of the world as well as in the province of New Brunswick. Data from around the world show that motorcycles are becoming more popular, particularly with the middle-aged population. Studies on the subject of motorcycle collisions have found that middle-aged motorcyclists are becoming involved in an increasing number of fatal collisions. A parallel trend shows that larger engine motorcycles have become increasingly involved in collisions. Although the findings from these studies are very useful it is not known if the same issues are prevalent in New Brunswick and therefore an in-depth study was completed on motorcyclist characteristics and motorcycle collisions occurring in New Brunswick.

This study used a mail-out survey that was sent to 1,000 motorcycle owners in New Brunswick. A total of 462 completed surveys were returned. The survey gained information on driver education, experience, type and quantity of driving (urban/rural, recreational/commuting), the use of protective clothing and collision involvement. This information, coupled with motor vehicle collision reports, was used to determine what the major collision factors were for New Brunswick motorcycle collisions as well as collision rates among different age groups.

ResumJ

À la suite d'une période de baisse continue, le nombre de collisions mettant en cause des motocyclettes a augmenté au cours des dernières années. Cette tendance semble s'accroître dans plusieurs parties du monde ainsi que dans la province du Nouveau-Brunswick. Les données recueillies à l'échelle internationale indiquent que les motocyclettes deviennent de plus en plus populaires, particulièrement auprès de la population de personnes d'âge moyen. Des études effectuées à ce sujet ont démontré que les motocyclistes d'âge moyen deviennent de plus en plus impliqués dans un nombre croissant de collisions mortelles. Une tendance parallèle indique que les motocyclettes munies d'un moteur plus puissant ont été impliquées davantage dans des collisions. Malgré le fait que les constatations découlant de ces études s'avèrent très utiles, nous ignorons si les mêmes questions s'appliquent plus particulièrement au Nouveau-Brunswick et, par conséquent, une étude approfondie a été effectuée sur les caractéristiques propres aux motocyclistes et aux collisions mettant en cause des motocyclettes qui se produisent au Nouveau-Brunswick.

Cette étude a été menée à l'aide de questionnaires envoyés par la poste à 1 000 propriétaires de motocyclettes au Nouveau-Brunswick. Au total 462 individus ont retourné le questionnaire dûment rempli. Le sondage a permis de recueillir des données sur la scolarité des conducteurs, sur leur expérience, sur le type de conduite et le nombre de fois qu'ils utilisent leur motocyclette (pour se déplacer en milieu urbain ou rural, à des fins récréatives ou pour le transport quotidien), sur le port de vêtements spécialement conçus pour les motocyclistes ainsi que leur implication dans des collisions. Ces données, appuyées de rapports sur les collisions mettant en cause des véhicules motorisés, ont servi à déterminer quels étaient les principaux facteurs de collision en ce qui a trait aux collisions mettant en cause des motocyclettes et aux taux de collision entre les différents groupes d'âge au Nouveau-Brunswick.

1. Introduction

Traffic fatalities as a whole have been steadily declining over the years. This is due, in part, to safer vehicles, increased driver training and improvements in roadway design and construction. Although overall these numbers have been falling there is one group of road users that have experienced an increase in injuries and fatalities over the last few years. This group is motorcyclists. Motorcycles are much smaller and less visible than other vehicles on the roadway making them more vulnerable. Riders are more exposed to the elements and have virtually no protection when involved in any type of collision, be it with another vehicle or with the ground.

The reasons for the increase in motorcyclist fatalities are not fully understood. The causes could be due to increased exposure, a shift in the age of motorcycle drivers, a change in the type of motorcycles being purchased and so on. The problem of motorcycle fatalities cannot be addressed if the reasons for the increase are not known and fully understood. In order to ensure the development of effective policy, this study was undertaken to better understand motorcyclist driving habits and collision factors in New Brunswick.

2. Study Objectives

Studies completed in the U.S. and Europe have dealt with the subject of motorcycle collisions and the increasing fatalities for this group of road users. The findings of these studies have been consistent but it is unclear if the same situation exists for New Brunswick as the use of motorcycles in the U.S. and Europe is much more prevalent. Therefore, this study examined motorcycle collisions among New Brunswick's motorcycling population. The objectives of this study were to examine the use of motorcycles, to determine who is driving them, where they are driving, what are the purposes of the trips, and what types of motorcycles are being used.

The causes of collisions were also examined and collision rates were determined.

3. Background

It seems that more motorcycles are on the roads than in previous years and data proves that this is, in fact, the case. For example, sales of motorcycles have increased significantly over the past 5 years not only here in Canada but in the U.S. as well. Sales in Canada for new motorcycles have increased from 24,322 in 1995 to 79,885 in 2004¹. Similarly in the U.S. sales have surpassed the 1 million mark with 1,001,000 new motorcycles being sold in 2004². Not unexpectedly, the number of motorcycles being registered in Canada is also showing an upward trend for the years 1999 to 2003. Transport Canada reports a low of 274,000 motorcycles being registered in 1999 which had increased to 373,000 in 2003. Although data from the Motorcycle and Moped Industry Council (MMIC) varies slightly from this with a low of 290,568 in 1996 and a high of 404,776 in 2003 the trend with their data is the same. In previous years motorcycle registrations had been steadily declining.

Along with the trend of increasing popularity there have been changes in the demographics of motorcycle drivers as well as with the motorcycles that are being purchased and driven in recent years. Today's motorcycles have larger engine sizes and those driving them are increasing in age. It was found that the mean age for motorcycle riders in the U.S. was 26.9 years in 1980 which increased dramatically to 38.1 years by 1998³. As increases are being seen in motorcycle ownership for the middle-aged population the opposite is happening to those under 30. A significant decrease was seen in ownership for the under 30 age range for the years 1980 to 1998. This age group held the majority of motorcycle ownership in 1980 and in 1998 became a minority, owning approximately 25% of all motorcycles in the U.S.³.

The number of fatalities for motorcycle drivers between 45 and 64 has been increasing along with the increase in ownership. The largest increase in motorcyclist fatalities is for the over 45 age group who are driving motorcycles with an engine size of 1000 cc's or more³. This is not surprising considering that for the years 2000 to 2004, in Canada, the largest increase in motorcycle sales was for those with an engine size of 951 cubic centimetres or larger.

Another interesting trend is that women are buying more and more motorcycles, increasing from 2% of all sales in 1985 to 10% in 2003⁴. Although women are buying more motorcycles there are few designed specifically for women. Many motorcycles are too high for women and must be modified using lowering kits and/or by shaving height off the seat. This modification could have an adverse impact on the handling capabilities of the motorcycles, but more research would need to be done to quantify any effects.

Although an increasing number of women are purchasing motorcycles the number of women being fatally injured in a motorcycle collisions has not seen a significant increase. Women were victims in 8% of collisions in 1990 and 9% of collisions in the U.S. in 1999³. But it is unclear how often they were the passengers of the motorcycle and how often they were the driver. It should be noted that this trend is relatively new and the amount of research on women and motorcycle collisions is very limited.

An extensive literature review was completed in order to gain an understanding of what related studies have been performed as well as what their findings were. This information was gathered as background data as well as to help guide this project.

One report completed by ACEM (Association des Constructeurs Européens de Motocycles) entitled the MAIDS Report⁵ (Motorcycle Accidents In Depth Study) reviews motorcycle accidents, which

occurred during the year 1999 to 2000 in France, Germany, Spain, Italy and the Netherlands. This study was done in order to gain a better understanding of the reasons for motorcycle collisions as it was realized that motorcycles can aid in congestion problems and are more economically and environmentally friendly than typical passenger cars. The MAIDS study examined 921 collisions involving motorcycles and the drivers of those motorcycles. Each collision was subjected to a full accident reconstruction, which included the close examination of the vehicles involved and interviews of any witnesses. When available, the medical records of those injured in the collisions were obtained and studied for more information. This project found that in half of all the collisions that were studied the primary contributing factor was the 'Other Vehicle' driver. This meant the driver of the vehicle other than the motorcycle, most commonly a passenger car, was at fault for the accident. The error on the part of the 'Other Vehicle' driver was most commonly due to inattention, perception error, traffic scan error, inappropriate traffic maneuver or speed. Other less common causes were tire and brake problems of the motorcycle as well as weather and inappropriate traffic maneuvers.

Findings on significant vehicle factors were interesting, as they were different than what has been reported here in North America. There was no overrepresentation found for any one type of motorcycle (cruiser, sport, etc.). Furthermore the engine size of the motorcycles did not prove to have an effect on the probability of a motorcycle being involved in a collision. One other interesting finding was that white motorcycles were found to be overrepresented in collisions; it was assumed that this was due to the low conspicuity of this color in traffic.

Human factors such as the gender and age of motorcycle drivers were also examined. While gender played no significant role, age did appear to be a factor with riders between the ages of 18 and 25 being overrepresented and riders aged 41 to 55 being underrepresented. These data were not

normalized for the number of kilometres driven which was a weakness of this project.

Motorcycle drivers who were unlicensed or improperly licensed showed an increased risk of being involved in a collision compared to those who were properly licensed. Not unexpectedly, motorcyclists with more experience were less likely to be involved in a collision. Other vehicle drivers who held a motorcycle license were found to be less likely to be involved in a collision involving a motorcycle than those who did not. This is interesting as it implies that drivers who have experience on motorcycles are more actively watching for motorcycles on the roadway.

A project entitled 'Motorcycle Accidents and Casualties in Scotland: 1992–2002' was completed in 2004 by Sexton, Fletcher and Hamilton⁶. This study used data from STATS19, a database of collision information on the driver, the vehicle and the person or people involved in the collision. This study focused on motorcycle collisions where a fatality or an injury was sustained which resulted in 11,514 fatalities and injuries being examined. The collisions were examined by what was defined as "built-up roads" and "non built-up roads". Built-up roads were areas where the speed limit was 40 miles per hour or less and the non built-up roads were where the speed limit was greater than 40 miles per hour. This was done as it was assumed that motorcycles are either used for commuting, which would primarily take place on urban built-up roads, or for recreation, which would primarily take place on rural non built-up roads.

The study found that for built-up areas it is more common that the collision is not the motorcyclist's fault and that they are moving straight ahead when they are struck. The most common action was a motorist turning right (what would be equivalent to a left hand turn in Canada) in front of the motorcyclist as well as cars U-Turning in front of a motorcyclist. Another substantial collision cause was the loss of control by the motorcyclist. These collisions were found most frequently to take place

on roads with a speed limit of 30 miles per hour and involve motorcycles with an engine capacity of 500 cubic centimeters or less.

For non built-up areas the most common form of collision is when the motorcyclist is rounding a curve (to the left more commonly than right) when they lose control of the vehicle. More severe or fatal collisions happen on non built-up roads due to the higher speeds compared to built-up areas. These collisions normally occur on single lane roads with speed limit of 60 miles per hour. In two-thirds of these collisions the type of motorcycle being driven is a Sport Motorcycle and mainly those with an engine size of 500 cubic centimeters or more.

Overall, it was found that the age of motorcycle drivers involved in collisions was most likely to be in the 31 to 45 range. Although the number of casualties were found to be increasing, this study did conclude that the casualty rate has been actually decreasing over the past 11 years due to the fact that the number of licensed motorcycles and the distance traveled by motorcycles have been increasing as well.

In 2004 a study was completed by the Department for Transport in London called the In-depth Study of Motorcycle Accidents⁷. This study used data from police reports as well as other information such as photos, maps and witness statements when available. This data was entered into a database, along with a sketch of the collision, which allowed queries to be made and patterns in similar accidents to be identified. There were 1790 files that were examined using the database.

Secondly a survey was developed. The aim of this survey was to gather information on motorcyclists' experience, training, safety habits as well as personal information (which was optional). This survey was sent to a group known as the Motorcycle Action Group, or MAG. This group of 45,000 members promotes motorcyclists' rights and safety throughout the UK. The group posted the

survey on their website as well as in a newsletter to its members in hopes that many of their members would fill it out. A total of 147 surveys were completed and returned. Although there was a low return rate for the survey, the information contained in the 147 completed surveys was still useful. This information was paired with the data in the database and numerous conclusions were reached. First, and not surprisingly, was that a major factor in motorcycle collisions was other road users not seeing motorcyclists. The study went further and analyzed these collisions by the age of the other vehicle driver and found that as the age of the other driver increases so does the proportion of at-fault motorcycle collisions they are involved in.

Bend collisions (collisions occurring on curves or turns in the roadway) are also a concern found in this study. A driver and/or passenger is much more likely to be killed or injured in this type of collision. Overrepresented in these types of collisions are sport-bikes, riders with no or a provisional license, as well as motorcyclists who are returning to motorcycles after some time away.

Overtaking, or passing, maneuvers are also a concern. These types of collisions usually involve motorcycle drivers less than 25 years of age on sport-bikes with larger engines. On the other hand younger, less experienced riders on small engine motorcycles or scooter are often the ones who are involved in rear end collisions. These collisions primarily occur when the motorcyclist fails to stop in time and runs into stationary traffic.

The survey found that most of the motorcyclists were aware of the safety issues presented when driving their motorcycle and therefore take actions to protect themselves by wearing protective clothing. The majority of the motorcyclists surveyed stated that they believed one of the most important safety measures was not driving under the influence of alcohol. This is supported by the data, which indicates that the number of motorcyclists involved in a collision while intoxicated is minimal with it only being a factor in 3.4% of collisions in

the database. Although the motorcyclists seemed concerned about many safety issues, speeding was not a large concern for many of them and some admit to passing more than one vehicle at a time. The data does not show that this is a serious concern for motorcyclists as it was found that where an overtaking collision occurred the fault (when it was known) was only found to be the motorcyclist's 25% of the time.

4. Research Methodology

This project used data obtained from a mail-out survey sent to 1,000 registered motorcycle owners in New Brunswick. A copy of the survey can be viewed in Figure 1. The surveys were sent to all different areas of the province with 462 being returned by the cut-off date. The data from this survey were entered into a spreadsheet and analyzed to determine differences between collision and non-collision involvement groups and to gain an understanding of the general demographics of motorcyclists in New Brunswick. Variables such as the distribution of drivers by age groups, gender, and motorcycle type were compared between the collision and non-collision groups.

Motor vehicle collision reports for the years 1993 to 2003 were obtained from the New Brunswick Department of Transportation. These reports were sorted to obtain only collisions involving motorcycles. These collisions were divided into property damage only (PDO), injury and fatal collisions. The collisions were examined by severity, number of vehicles involved, motorcycle types, and whether the driver was properly licensed.

Data from the survey was compared to data obtained from the collision reports to determine police reported collisions differences and similarities. These data were also combined to determine collision rates.

UNB Transportation Group 2005 Motorcycle Survey

How long have you been driving a motorcycle? _____ years

What is the size and model of your motorcycle?

Size: _____ cc's

Model:

Cruiser (e.g. Yamaha Virago, Harley Davidson, Kawasaki Vulcan, Honda Shadow etc)

Sport (e.g. Suzuki GSX-R, Yamaha R6, Kawasaki Ninja, Honda CBR etc)

Street and Trail

Touring (e.g. Honda Goldwing etc)

Scooter

Other

Have you attended a formal motorcycle safety training course? Yes No
(e.g. the New Brunswick Safety Council Motorcycle Course)

If you answered 'Yes', was the course taken.....

Prior to obtaining your license

Shortly after obtaining your license

Approximately _____ years after you obtained your license (please estimate)

Estimate as closely as you can each the following:

The amount of kilometers you drive a motorcycle per year: _____ km.

The percentage of time you:

- use your motorcycle for commuting: _____ %
- use your motorcycle for recreation: _____ %
- drive your motorcycle on urban roads: _____ %
- drive your motorcycle on rural roads: _____ %
- drive after dark: _____ %
- drive with a passenger: _____ %
- drive with other motorcyclists: _____ %
- wear a protective motorcycle jacket: _____ %
- wear boots or shoes that cover your ankles: _____ %
- wear gloves: _____ %
- wear long pants: _____ %

OVER ↘

Figure 1: Survey

form of training while 78% of the females surveyed did so. Females were also slightly more likely to wear any and all types of protective clothing (long pants, jackets, boots and gloves). Females were also involved in proportionately fewer collisions than males, only 6% of the females surveyed were involved in a collision of any severity while 27% of the males surveyed were involved in a collision of

Optional question:
your age: _____ years gender: male female

Have you ever been in an accident while driving your motorcycle?
 Yes No

If you answered 'No' you are finished. Thank you for your time. **STOP**

If you answered 'Yes' please continue the survey ↓

How long had you been driving motorcycles when you were involved in the accident?
_____ years

How serious was the accident?
 Minor, did not need to report the accident to the police
 Reported to the police but there were no injuries
 Reported to the police and there were injuries

Did you have a passenger on the motorcycle when the collision occurred?
 Yes No

What was the major contributing factor in the accident?
(you may select more than one response)

Road conditions (loose gravel, potholes etc)

Weather (rain)

Failure of another driver to see you or yield the right of way

Speed

Fatigue

Inappropriate action by passenger

Equipment failure (tires, brakes, other, _____)

Other (please explain): _____

If you wore protective clothing (jacket, pants, gloves, or boots), do you believe your injuries were reduced:
 definitely
 possibly
 no
 not applicable, was not wearing protective clothing

Thank you for your participation. Please return the completed survey in the postage paid envelope.

5. Data Analysis

Differences in survey responses between age groups and genders were analyzed. The data show that females generally drive smaller engine motorcycles when compared to males. The most popular engine size for the females was between 551 and 1,000 cubic centimetres (cc's) (48.5%) while most of the males surveyed drove motorcycles with an engine size of over 1000 cc's (53%). These data show that only 31% of the males surveyed took part in any

any severity. Among all respondents 15% were found to be women while 85% were men.

The differences between the age groups were examined and it was found that the type and size of motorcycle preferred by age varied. The data show that those aged 65 and over preferred either scooters or cruisers. These data coincide with the findings on the engine size of the motorcycles that found that this age group drove primarily either the largest or

the smallest motorcycles. These data also show that the majority of large motorcycles (over 1,000 cc's) were driven by people over the age of 25. The middle-aged group (45 to 64) drove the most cruisers and the greatest proportion of large motorcycles. Figures 2 and 3 display these detailed data.

The number of kilometres driven on average by each age group varied with the youngest cohort driving the most kilometres each year. Drivers between 16 and 24 averaged 7,000 kilometers per year. Those aged 26 to 44 drove just over an average of 5,000 kilometres per year while those aged 45 to 64 drove on average 6,600 kilometres per year. The confidence in the data on those over 65 is lower due to a small number of responses, however they were found to average 5,000 kilometres per year.

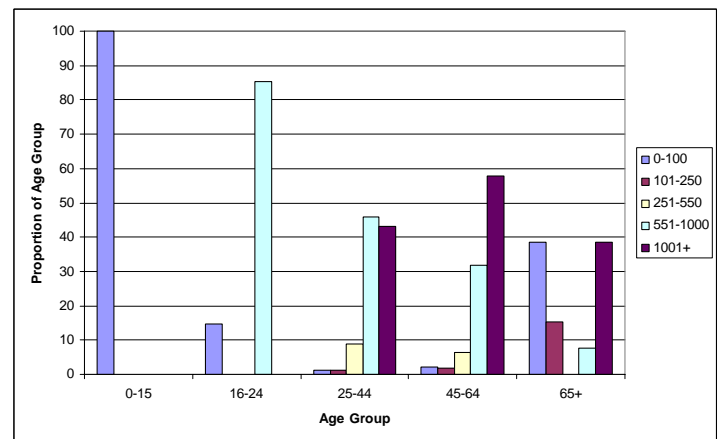


Figure 3 – Size of Motorcycle (engine, cc's) Preferred by Age Group

There were also differences in trip purpose, time of day, and safety training between the age groups. The majority of commuting was done by those in the 16 to 24 age group and the proportion of time spent driving after dark was found to decrease with age. Those aged 16 to 24 were most likely to have taken a safety training course, with 44% of this age group taking part in some form of training. Drivers between the ages of 16 and 28 had the highest number of collisions followed by drivers between the ages of 40 and 52. Spikes in collision involvement for these two age groups are evident in Figure 4, which shows the frequency of collisions by driver age. These data were not normalized for age group population or exposure.

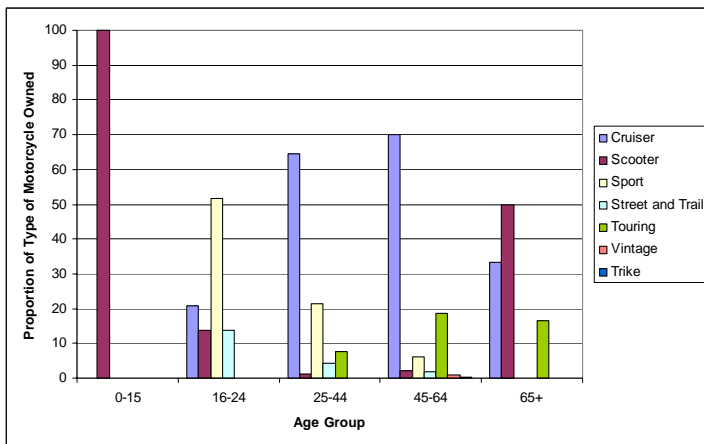


Figure 2 – Types of Motorcycles Preferred by Age Group

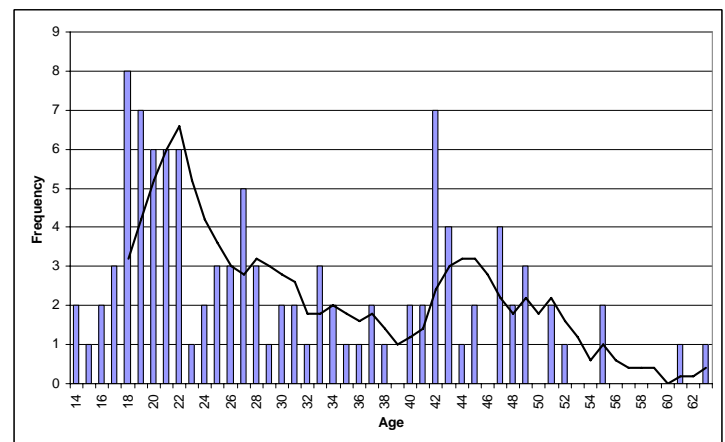


Figure 4 – Age When Collision Occurred

From the survey, it was found that the majority of reportable collisions was due to the failure of another driver to see or yield the right-of-way to the motorcyclist. It would be expected that more serious collisions would involve another vehicle. Road conditions were the primary cause of the minor collisions, primarily debris left from road construction and sand left from the winter months. These two factors were the cause of the majority of all collisions. The survey left a blank space for the respondent to fill in the cause of the collision they had been involved in if the correct response was not provided. It was found that there were numerous motorcyclists involved in collisions due to unsecured loads in vehicles ahead, a mistake by a secondary motorcyclist and even one citing a reckless attempt to perform a trick.

Survey respondents were divided into two groups - those involved in a collision and those not involved in a collision. Variables describing each group were reduced to a proportion to help identify which seemed to cause an increased risk of collision involvement. The primary findings are summarized below.

A disproportionately higher proportion of males were involved in collisions compared to females. Males made up 96% of the collision involvement group while they accounted for only 82% of the non-collision group.

Those aged 16 to 24 accounted for a disproportionately larger cohort among the collision involvement group (39%) compared to the non-collision involvement group (6%). Adversely, those aged 45 to 64 consisted of 49% of the non-collision group and only 14% of the collision group.

Sport type motorcycles made up a larger proportion (23%) of the collision group than the non-collision group (12%). Larger engine sizes (over 1,000 cc's) were found to be a disproportionately larger portion of the collision group when compared to the non-collision group.

Those who had over 5 years of experience were found to be involved in proportionately fewer collisions than those who had under 5 years of experience. Motorcyclists aged 45 to 64 with less than one years experience were found to be involved in proportionately more collisions, which is consistent with the findings from other similar studies from around the world. It is unknown if those who are returning to motorcycling are involved in more collisions as this was not specifically identified on the survey.

People who had taken a training/safety course were involved in fewer collisions than those who had not taken a training/safety course. The time when the course was taken in relation to obtaining a motorcycle drivers license did not seem to affect collision involvement.

A suspected result was that the more kilometres driven would result in more collisions and the data showed that this was the case for New Brunswick motorcyclists. Once a motorcyclist drove over 5,000 kilometres per year they were found to be at a higher risk for a collision.

Perhaps an unexpected finding of the survey was that the majority (54%) of all motorcycle collisions are not reported and those that are reported tend to be multiple vehicle collisions resulting in an injury. This would imply that the official provincial statistics under-represent motorcycle collisions by about one-half.

Collision reports for the Province of New Brunswick were examined next. These data showed that the average age of motorcyclists involved in reported collisions has been increasing over recent years. These data are plotted in Figure 5 with a trend line showing the mean increasing from 27 years of age in 1993 to 34 years of age in 2003. This is consistent with the data from the survey which found the average age of those involved in a collision was 31 years.

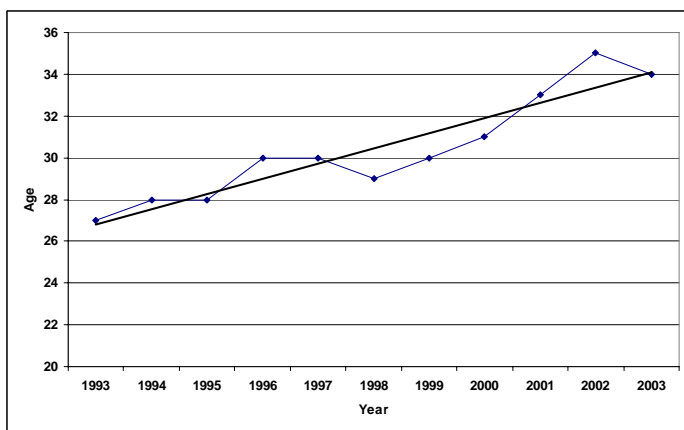


Figure 5 – Average Age of Those Involved in Reported Collisions (1993 to 2003)

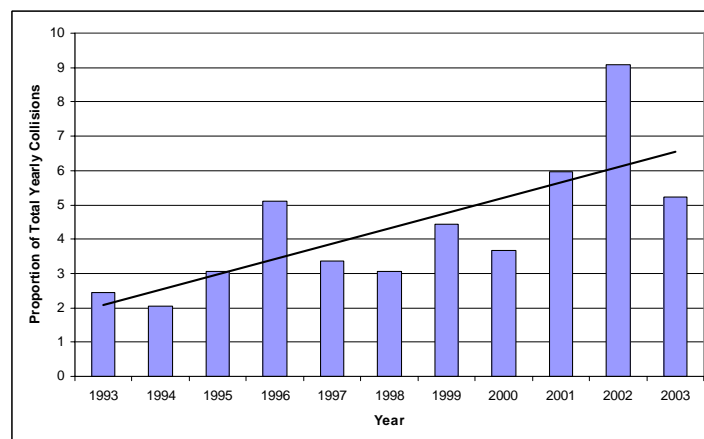


Figure 6 - Proportion of Female Motorcycle Drivers Involved in Reported Collisions

This trend was examined further and it was found that reported collision involvement decreased for drivers aged 16-24 and increased for drivers aged 45 to 64. Even further examination showed that the only apparent change in fatal collision involvement proportions was for drivers between 16 and 24 who showed a slight decrease over this time period.

The collisions described in the reports were examined by separating the multiple vehicle collisions from the single vehicle collisions and, as expected, the major causes were found to differ somewhat. These causation factors are outlined below.

The proportion of females driving motorcycles involved in reported collisions has also been increasing. These proportions were plotted and are shown in Figure 6 below. Although the number of females involved in reported collisions has been increasing the number of female motorcyclists involved in fatal motorcycle collisions has not. These values have stayed relatively low. The survey found that females were involved in very few motorcycle collisions; while 15% of the respondents were female only 6% of the total collisions were attributed to female motorcyclists. The collisions that they were involved in were primarily minor while the males who responded to the survey were involved in a larger proportion of serious collisions.

Table 1: Major Contributing Factors – All Motorcycle Collisions

Single Vehicle	Multiple Vehicle
Inattention/Distraction	Inattention/Distraction – Other Vehicle Driver
Inexperience	Inattention/Distraction – Motorcyclist
Speed	Failure to Yield the ROW Other Vehicle Driver
Animal	Speed – Motorcyclist
Surface Defect	Passing or Lane Usage Improper – Motorcyclist
Uninvolved Vehicle	Inexperience/Confusion – Motorcyclist
Alcohol	Failure to Yield the Right-of-way – Motorcyclist
Equipment Failure	Following too Closely – Motorcyclist

The primary causes of the collisions that were reported on the survey were found to be road conditions such as loose gravel and sand that is represented as surface defect in the reported collisions, and the failure of another driver to see or yield the right of way. Both of these are major factors in the reported collisions.

These collisions were then examined by severity and the causes of the fatal collisions are detailed in the following list, separated by multiple and single vehicle collisions. A comparison could not be made against the survey data for fatal collisions as these collisions were not represented in the survey.

Table 2: Major Contributing Factors –Fatal Motorcycle Collisions

Single Vehicle	Multiple Vehicle
Speed	Inattention/Distracted – Motorcyclist
Alcohol	Inattention/Distracted – Other Vehicle Driver
Inattention/Distracted	Failure to Yield the Right-of-way – Other Vehicle Driver
Moose	Passing or Lane Usage Improper – Motorcyclist
Driver Inexperience	Speed – Motorcyclist
Uninvolved Vehicle	Passing or Lane Usage Improper – Motorcyclist
Crosswind	Inexperience – Motorcyclist
Illegal Drugs	Equipment Failure – Motorcyclist

Interestingly, it was found that 24% of all motorcyclists involved in fatal collisions were not properly licensed to drive a motorcycle

The majority of motorcycles involved in collisions were cruiser type motorcycles. Sport-bikes made up the second largest proportion of motorcycles involved in fatal collisions. It was found from the survey that these two types of motorcycles also represented the highest proportions of motorcycle types driven by the respondents. However, sport bikes were overrepresented in fatal collisions. They accounted for 12 percent of the motorcycles driven in the survey and 30 percent of the fatal collisions in the provincial records.

The sizes of the engines of motorcycles involved in fatal collisions were primarily between 551 and 1,000 cc's (56%). When these data were compared to the proportion of motorcycles with that engine size from the survey, it was found that these

motorcycles were driven by only 40% of the motorcyclists. Engine sizes of under 550 cc's were also overrepresented in the fatal collision data. Surprisingly motorcycles with an engine size of larger than 1,000 cc's were found to be substantially underrepresented in the collision records.

The collision rates for New Brunswick motorcyclists were determined for each age group and are displayed in Figure 6. These data show that the motorcyclists most at risk of a collision were between the ages of 16 and 24. This cohort has the highest collision rate not only by licensed motorcyclists but shows an even more troublesome picture when normalized for exposure (using billion vehicle-kilometres traveled as a proxy).

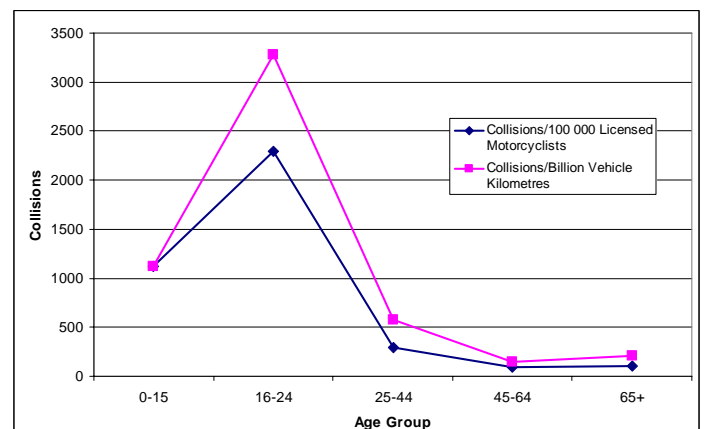


Figure 6 – Collision Rates

6. Discussion

This study found that while some of the trends that were found for other areas of the world were true for New Brunswick motorcyclists, others were not. One of these trends was that the middle-aged population was becoming involved in an increasing number of fatal motorcycle collisions in Canada and around the world. Although, in New Brunswick, this age group showed an increase in the number of reported collisions the number of fatal collisions, for this age group remained relatively the same. The only visible change regarding the age of motorcyclists involved in fatal collisions was that those aged 16 to 24 have been showing a decline,

although this group showed the highest collision rate of all the age groups.

Although the data is limited there does appear to be a trend of increasing engine size in the motorcycles involved in fatal collisions. An average of 550 cc's was found for motorcycles involved in fatal collisions in 1995 (the earliest data available for engine size) which had increased to 1,050 cc's in 2002 and then down to 707 cc's in 2003.

Conclusions from the study have led to the following recommendations on how to increase motorcyclist safety :

1. The data showed support for the effectiveness of motorcycle training with the under representation in the collisions of those who had participated. Through the survey responses it was evident that motorcyclists in New Brunswick would like more experience in real world situations when they took part in the training. They indicated that this would be beneficial to their safety as it would prepare them for live traffic situations. It is recommended that this be considered by the New Brunswick Safety Council as an addition to their motorcycle safety course. Making motorcycle training mandatory for those obtaining a license may have benefits to motorcyclists.
2. The licensing procedure in New Brunswick may not adequately test a motorcyclist's true ability to handle their motorcycle and react to situations in live traffic. Possibly a graduated program requiring an experienced driver or doing on-road testing would be beneficial. More research would be needed in order to determine the appropriateness of this.
3. The fatal collision data indicated that 24% of all motorcyclists involved in fatal collisions were not properly licensed. Currently a valid motorcycle license is not needed to

register a motorcycle in New Brunswick. Requiring that a license is valid and held by the person registering the motorcycle, or that a grace period of, for example, one month to obtain a license is given, would help in mitigating this problem. Of course enforcement of this law would be required.

4. Sport type motorcycles were found to be overrepresented in fatal collisions in New Brunswick. Possibly requiring a special license or a minimal amount of experience to operate these types of motorcycles may be beneficial.
5. Drivers of other vehicles were found to be at fault for many collisions. These drivers may benefit from awareness campaigns and more emphasis on motorcycles in their driver education programs taught at the beginners stage of licensing.
6. The survey indicated that a serious safety concern for motorcyclists was loose loads in other vehicles. Stressing the importance of ensuring that the load in pick-up trucks and so forth is secure and informing the public on the dangers of loose loads would be useful.
7. Data from the survey indicated that a large amount of minor collisions occur due to loose construction debris (gravel etc.) and sand from the winter. Ensuring that maintenance and construction crews keep the driving lanes, especially curves and intersections, clear of all gravel and sand would be beneficial to motorcyclists' safety.
8. Equipment failure was a factor in many reported and non-reported collisions. Motorcycles in New Brunswick are currently exempt from yearly safety inspections but these data show that there is no justification for this. Subjecting motorcycles to inspections similar to other motor vehicles could help decrease motorcycle collisions.

7. References

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