

March 12, 2004

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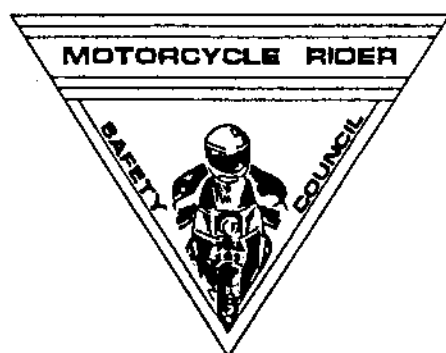
The following document, "Contributing Factors to the Causes of Fatal Motorcycle Accidents in Ontario 1990 - 1991." was first published in 1994 by the now-defunct voluntary body called the Motorcycle Rider Safety Council.

The report was printed in a limited 500 copy edition, and as a result, copies are hard to find 10 years after it was first issued.

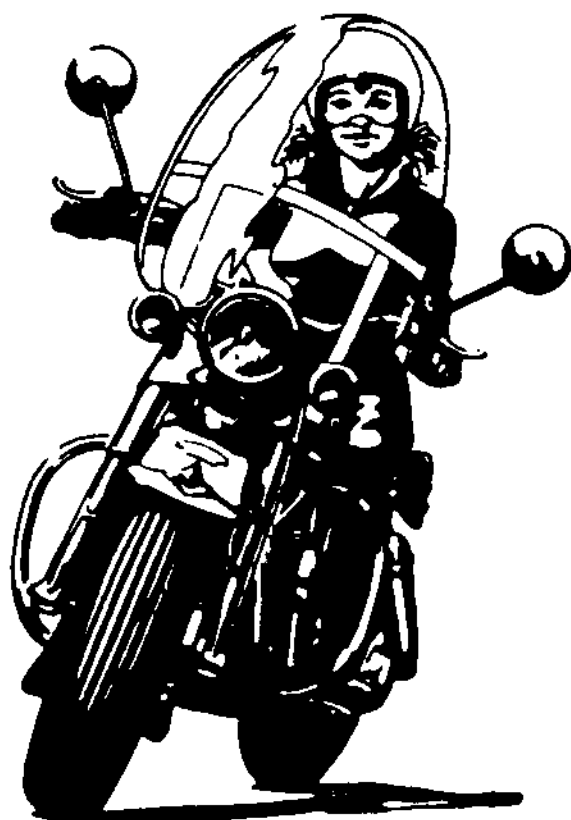
As Chairman of the committee which prepared the report I have taken it on myself to prepare this electronic version in a format suitable for Web-site and Internet distribution. This is in the hope that the current generation of motorcyclists who may read it will learn some things which will help them to enjoy safe and happy motorcycling.

If you have any questions, observations or comments on this report feel free to contact me.

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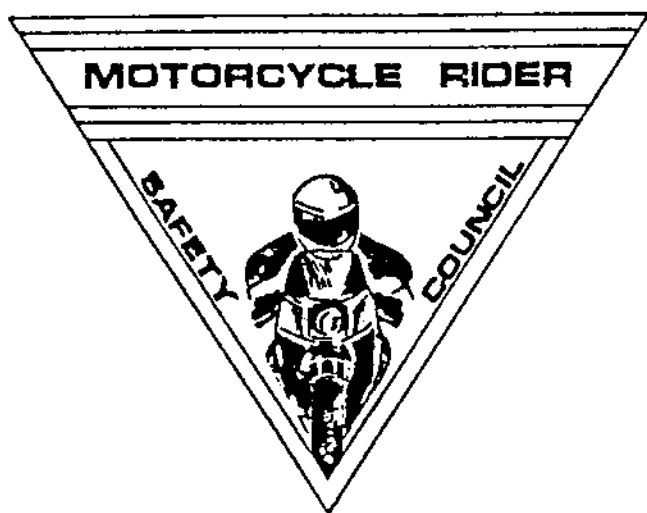
CONTRIBUTING FACTORS TO THE CAUSES OF FATAL MOTORCYCLE ACCIDENTS IN ONTARIO, 1990 - 1991.



**A Report prepared by the
Motorcycle Rider Safety Council
January, 1994**

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The **Motorcycle Rider Safety Council** is a federally registered charity established by volunteer motorcyclists in 1988 with the aim of promoting safer motorcycling.

Any comments or questions about this report, requests for further copies or other publications of the MRSC should be directed to: Motorcycle Rider Safety Council, 150 Queens Ave., Toronto, Ontario, M8V 2N6. Telephone 1(416)255-9984 or Fax 1(416)251-8346.

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1. Introduction

The reporting of statistics regarding motorcycle accidents in Ontario has generally been through the Ontario Road Safety Annual Report (ORSAR) published each year by the Ontario Ministry of Transportation. (MTO, 1992; MTO, 1993) As this report deals with all road accidents in the province each year, it is, of necessity, a much condensed treatment of the whole accident problem. It therefore routinely devotes only a single page of the 58 page report to a summary of motorcycle accident statistics.

This one-page summary consists of a table of fatality and accident numbers for the preceding five years, a graph of motorcycle and motorcyclist numbers in the past ten years, and a table dealing with the "Selected factors relevant to Fatal Motorcycle Accidents", which considers the percentage of fatal accidents where eight individual factors were involved. These factors are licence status, age, alcohol involvement, use of a motorcycle helmet, motorcyclist error, single or multiple vehicle accident, time of day and weekday or weekend. Each of these factors are considered as separate and independent from one another.

Various reports (MTO, 1991; MTO, 1992; Johnson, 1976; Johnson, 1980; Stewart, 1993) have shown that there has been a substantial reduction in the rate of motorcycle fatalities in Ontario in the past. These declines are shown in the long term, Figure 1 (1957-1991) and the recent (1979-1991) in Figure 2. These are real improvements in safety since they are expressed as rate per 100,000 (or rate per 1000) motorcycle registrations and therefore corrected for the variations in the numbers of motorcycles licensed for the provincial highways in any year.

While there have been improvements in motorcycling safety in Ontario in recent years, many riders, concerned with the safety issue, formed the Motorcycle Rider Safety Council in 1988 to conduct programs and campaigns of safety awareness such as the "Don't Drink and Ride", the springtime "M.A.Y. - Motorcycle Awareness and You" and the "Look Twice, Save a Life - Motorcycles are Everywhere" campaigns.

Discussion by the Executive of the Motorcycle Rider Safety Council (MRSC) in 1991 had suggested that perhaps there was potentially more to be learned from a detailed examination of the data used to generate the summary statistics. As experienced riders of motorcycles in Ontario, the Executive thought that a review of the data on fatal accident cases for a several year period might generate insights which would be useful in improving safety programs sponsored by the MRSC. While such a review of a small data base would preclude the use of advanced statistical testing methods, it could also serve as a pilot project for a larger study of the much more numerous non-fatal motorcycle accidents. If a review of the past could help even one Ontario motorcyclist to avoid a fatal accident it was felt that it would be a worthwhile effort. Volunteers from the MRSC membership

were then sought to undertake this review. A brief profile of the motorcycling experience of each of the MRSC volunteers is included in Appendix I.

2. Study Procedure

a) Record Verification

Official application was made in December, 1992 to the Ministry of Transport for copies of all 1990 and 1991 fatal motorcycle accident report forms. These forms are those filled out by the police officer investigating the accident, and subsequently filed with the Ministry of Transportation. Photocopies of the forms were obtained from the Ministry on Feb. 11, 1993. Cost of provision of the records was funded by the MRSC through a grant from the Ontario Ministry of the Attorney General, Drinking/Driving Countermeasures.

Each of these individual reports was reviewed for completeness and quality of the data. In some cases, the data given was insufficiently complete to allow the reviewer to gain any significant detail about the accident. Such reports were deleted from further consideration for the data base. Of the 137 forms provided, 14 had so little data provided as to be considered unusable. The remaining 123 reports were ones which were found to be substantially filled out; all further work was done on this verified data base.

This work required considerable effort on a relatively small data base. If evaluating a large number of years of fatal accident data, or even one year of non-fatal data, it would be preferable to obtain the data from the Ministry of Transport in electronic form.

In deleting the incomplete records, it should be remembered that the data on an accident report form is completed by an investigating police officer and is based on his or her notes, measurements and witness statements taken at the time of the investigation. No matter how sincere and dutiful an officer may be, the data recorded may be incomplete for a number of reasons. Given a busy highway, darkness, the possible unfamiliarity of an officer with motorcycles and their behavior, and the fact that in nearly all cases considered in this study the motorcyclist was deceased and not able to testify as to the causes or situation of the accident, it is no wonder that some data may not have been recorded.

b) Data Base Development

The usable records constituted 65 reports from 1990 and 58 from 1991. Data from these 123 reports was entered in an electronic data base on a personal computer. Entry of individual data points was, in some cases, in various forms which would allow single or multiple factors to be screened.

c) Data Evaluation Methodology

The most prominent report on the causes of motorcycle accidents has been the Hurt study, done in Los Angeles in the 1970's (Hurt, 1979; Hurt, 1980). This study was based on

Fig.1 Motorcycle Registration & Fatality Rates, Per 100,000 Motorcycles Registrations in Thousands. 1957 -1991.

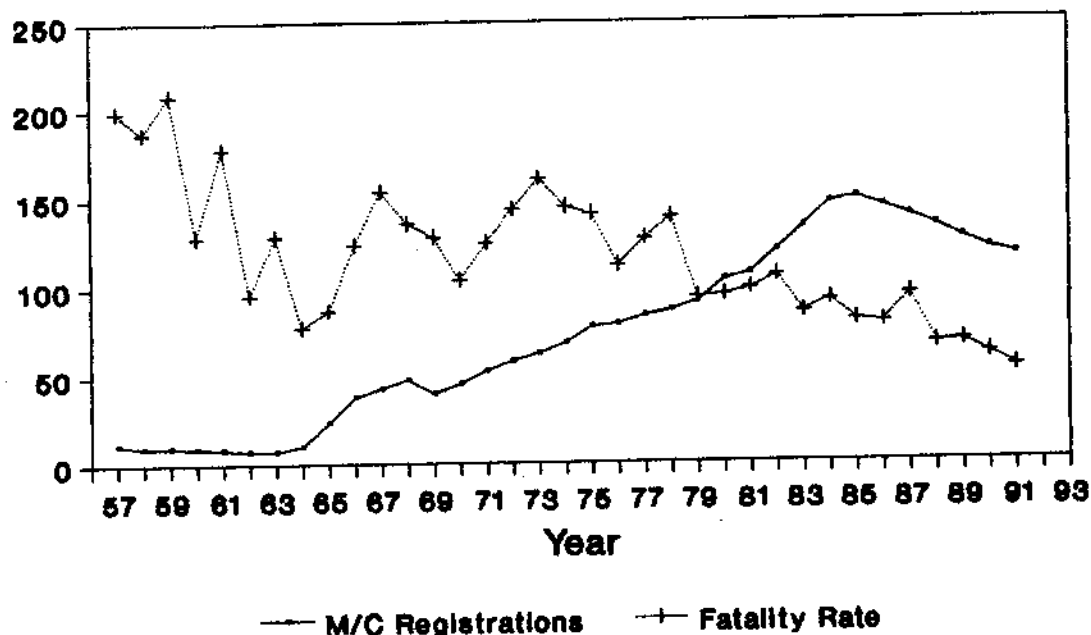
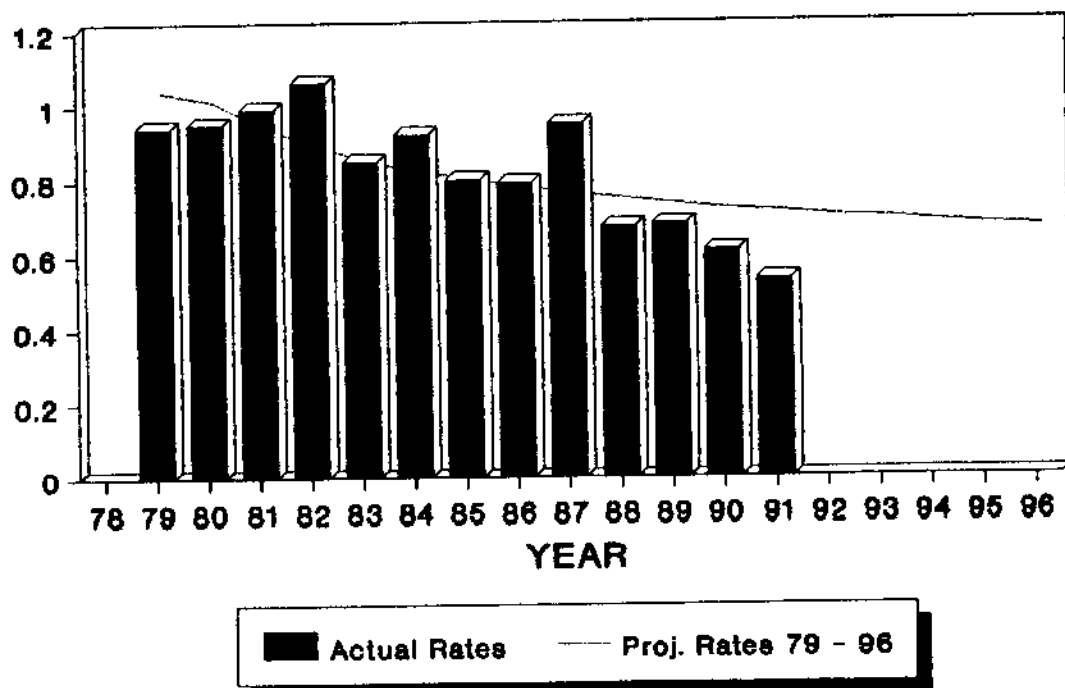


Fig.2 Ontario Motorcyclist Fatality Rates per 1000 Motorcycles 1979-1991



detailed recording of all factors which might have had a bearing on 899 motorcycle accidents in urban Los Angeles. These were mostly non-fatal accidents and each was investigated by a trained team of University of Southern California researchers. The Hurt report has subsequently been very widely used and quoted as an authority in the field, even though the data collected is now 15 years old.

It was decided initially to evaluate the 1990-91 Ontario fatal data in a similar manner to the data obtained in the Hurt study, where extensive single factor analysis was done. Different results were considered likely, since the Ontario data considered fatal cases only, was collected from both rural and urban roads, was from Ontario instead of Southern California and dealt with motorcycles (and motorcyclists) that were likely to be quite different.

After evaluation of single factors in accidents, an effort was made to develop comparisons based on a combination of factors.

While an accident may be caused by a single factor, say an error by a rider, it is more probable that a combination of factors taken together will increase the likelihood of an accident. This approach of assessing combinations of factors was intended to develop a profile of the kind of motorcycle rider who was becoming a fatal statistic.

An effort was made to identify patterns of rider behavior and include a discussion of countermeasures which might be useful in reducing the number of fatal motorcycle accidents.

3. Study Results

In discussing the results of compiling, sorting and evaluating all the information which is contained in each record, it became obvious that a presentation of the many points of information required a framework upon which to place the results in some logical form. It was decided to use the old journalist's and editor's questions which those professions use to determine if they have a complete story. These questions are - Who?, What? Where? When? and Why? A story which does not answer all these is not complete. In this analysis the data will be summarized in When? (Time and place), Where? (location, road type), Who? (Rider and motorcycle data, other vehicle data), What? (What happened, the accident situation). The Why? section will attempt to summarize the extracted information.

a) When?

i) Day of the Week

Table 1. Percentage of Accidents on each day of the week, Ontario 1990-1991 Fatal Accidents and Hurt Study.

Day	Ontario '90-'91 % (Fataals)	Hurt Study % (all accidents)
Monday	7.4	15.1
Tuesday	9.8	14.8
Wednesday	13.9	16.1
Thursday	13.9	14.2
Friday	18.9	17.0
Saturday	21.3	12.1
Sunday	14.8	10.6

It would appear that fatal motorcycle accidents were significantly less likely on Monday and more likely on Saturday in Ontario. In the Hurt study, accidents were less frequent on Sunday. It should be noted, however, that the Hurt study considered only urban Los Angeles. It is possible that on Sunday more motorcycling was done outside Los Angeles than within the city.

ii) Time of Day

Table 2. Time of day of motorcycle accidents, Ontario 1990- 1991 Fataals and Hurt Study.

Time	Ontario 90-91 %	Hurt Study %
0000-0259	22.8	3.2
0300-0559	6.5	1.2
0600-0859	7.3	6.6
0900-1159	4.1	14.7
1200-1459	8.1	26.3
1500-1759	20.3	29.1
1800-2059	16.3	13.9
2100-2359	14.6	5.0

In Ontario, fatal motorcycle accidents were statistically more likely between midnight and 2:59 am and between 3:00 pm and 5:59 pm. They were less likely between 9:00 am and 11:59 am. In the Hurt study, the noon to 2:59 pm and 3:00 pm to 6:00 pm periods were over-represented, with accidents in the 3:00 am to 5:59 am period under-represented.

In the 27 cases where it was indicated that the motorcycle rider "had been drinking" it was found that 23 of those were night-time ones. 12 were between 00:00 and 02:59, 6 were in the 21:00 to 23:59 period, 2 in the 18:00 to 20:59 period and 3 in the period between 03:00 and 03:20. The 4 daytime "had been drinking" cases occurred between 14:40 and 18:00. All seven of the impaired motorcycle driver fatality cases occurred at night; one was at 20:25, 3 were in the 21:00 to 23:59 period and 3 were in the 00:00 to 02:59 period.

Of the 12 alcohol-involved drivers of the other vehicle in multiple vehicle accidents, 7 of these cases occurred in the 00:00 to 02:59 period, 2 in the 21:00 to 23:59 period and the other three between 16:30 and 17:35 in the after noon.

In the Hurt study (Hurt, 1979) only 18.3% of the accidents were at night. This Ontario data indicates that 49.6% of the accidents were at night.

iii) Weekday or Weekend

If the weekend is considered to run from 6:00 pm Friday evening until 5:59 am Monday morning (60 hours or 36% of the total week), it was found that 43% of Ontario motorcycle fatalities occurred on weekends. As might be surmised from this data as well as the day of the week table above, there is a 36% over-representation of fatalities on weekends.

iv) Month

While motorcycling in Ontario is generally considered a six or seven month a year pastime, say from April to October, the data studied included fatalities in all twelve months. 107 of the 123 cases occurred in the April to October period.

Table 3. Distribution of 1990-1991 Ontario fatal Motorcycle Accidents by Month.

Month	# of Cases	Month	# of Cases
January	1	July	20
February	1	August	16
March	5	September	20
April	5	October	13
May	15	November	5
June	18	December	3

v) Response Time of Police

The accident report form includes the time of the accident and the time the investigating officer arrived or the accident was reported. The assumption made here is that the arrival time noted is, in fact, that of the investigating officer. Obviously, absolute response time is not an index of police efficiency, since many factors affect individual times. A rural accident could obviously require a longer travel time if the investigating officer was at some distance from the scene. Time would also increase at night because the numbers of on-duty officers are fewer.

Table 4. Response time of Police, 1990-1991 Ontario fatal motorcycle accidents.

Response Time (minutes)	Number of cases
0 - 5	49
6 - 10	23
11 - 15	17
16 - 20	11
21 - 25	9
26 - 30	5
over 30	9

Two cases were reported with zero time difference between accident time and police arrival, six cases indicated that police arrival was within one minute and 6 with arrival time at 2 minutes.

Of the nine responses which took over 30 minutes, six of those took less than one hour. The longest, 10 hours and 10 minutes, occurred in a night-time single vehicle accident which was not discovered until the next day because the motorcycle had traveled well off a road into dense bush.

b) Where?

i) Investigating Police Force

The jurisdiction of the largest number of fatal motorcycle accidents was the Ontario Provincial Police with 58 cases, followed by the Metropolitan Toronto Police with 13 cases. Niagara Regional had 7 cases, Peel Regional and Hamilton/Wentworth Regional 5 each, Durham Regional 4, and Ottawa City, RCMP (Ottawa) and York Regional had 3 each. Two cases each were reported by Halton Regional, Waterloo Regional, Guelph, London, Sarnia/Clearwater, Owen Sound and Brantford. One case was reported from each of Haldimand/Norfolk Regional, Paris, St. Thomas, Gloucester, Peterborough, Brockville and Sudbury.

The Hurt study (Hurt, 1979) was conducted not by the police but by special university investigators. As a consequence, they were able to assess many other factors, such as motorcycle helmet type, not required by the Ontario reporting system.

ii) Accident Location

Evaluation of the accident locations as reported showed that while the location of a fatal motorcycle accident was most likely to be in a rural area or provincial highway (51%) only 23% of the motorcyclists involved had a rural address. While 31% of the accidents took place in large towns and cities (other than Metropolitan Toronto) approximately 44% of the involved motorcyclists lived in such towns. 10.6% of the accidents were in Metropolitan Toronto; 8.1% of the involved riders lived there. While 25.2% of the involved riders lived in a small town or village, only 7.3 % of the accidents took place there.

Hurt (1979) classified the accident locations in the City of Los Angeles and its freeways as being 10% on the freeways, 46% on major or minor arterial roads and 30% on non-arterial roads. Only 9.4% of the accidents in the Hurt study were in rural areas, the locations of accidents were predominantly urban and suburban. (Hurt, 1979)

Table 5. Accident location versus the motorcyclist's address, Ontario 1990-1991 fatal motorcycle accidents.

Location	% of Accidents	% of M/cyclists Resident
Metro. Toronto	10.6	8.1
Large city or Town	31	43.9
Small Town/Village	7.3	25.2
Rural & Prov. H'way	51.1	22.8

iii) Distance from Rider's Residence to Accident Site

For each case, an estimate was made of the straight-line distance between the address recorded for the motorcycle rider and the location of the accident scene. This distance was found to range between 20 metres and 800 kilometers. The mean distance was 24.9 km. This average includes the two longest distances, one of a rider resident in Quebec City, another of a rider resident in the state of Illinois. There were no cases of an Ontario resident rider being farther than 180 km from home at the time of an accident.

Discounting the two out-of-province cases the remaining 121 Ontario-resident riders were an average of 14.3 km from

home.

Ten of the accidents occurred one km. or less from the rider's address; 58 were between 1 and 5 km. from home. 18 accidents were 5 to 10 km. and 13 were 10 to 20 km. distant. 16 were 20 to 50 km. away, 4 between 50 and 100 km, and 2 between 100 and 200 km. from the rider's home. (See Figure 3).

80% of the 123 accidents in this study took place less than 20 km. from the rider's home. In the Hurt study, 81.1 % of the 898 cases were found to occur after 30 minutes or less riding time. (Hurt, 1979)

iv) Road Type and Surface

The accident report form requires information on the major road ("R1") on which the accident occurred and also details of any intersecting road involved ("R2"). Evaluating the major road ("R1") showed that 40% of the fatal accidents occurred on roads where the speed limit posted was 50 km/or, 13.4% where the speed limit was 60 km/h, 32.8% where the speed limit was 80 km/h and 6.7% where the posted limit was 100 km/h.

Table 6. Road width and Speed Limit

Posted Speed Limit	2 lane road	>2 lanes	Total
100	0	8	8
90	4	1	5
80	32	7	39
70	1	1	2
60	13	3	16
50	21	27	48
40	1	0	1

The road surface on which these accidents took place was nearly always an asphalt paving. Of the 123 cases, 118 were on asphalt, one on cement, one on oiled gravel, two on gravel roads and one on an earth road. In 28 cases of single vehicle accidents, at some stage of the accident, the motorcycle traveled on the unpaved shoulder of the road.

v) Posted Speed Limit and Motorcycle Speed

The posted speed limits on the road used by the motorcycle in each case were compared with the speed of the motorcycle as noted by the investigating officer. Also considered were any comments such as "Speed too fast" or "over speed limit" which might have been deduced from skid marks during the investigation. In 30.9 % of all cases the officer reported that the motorcycle was traveling at a rate which was over the posted speed limit. This was the situation in 33 % of the cases in 50 km/h zones, 50 % of the cases in 60 km/h

Figure 3: Distance from Accident Scene to Rider's Home Address, 1990-91 Data

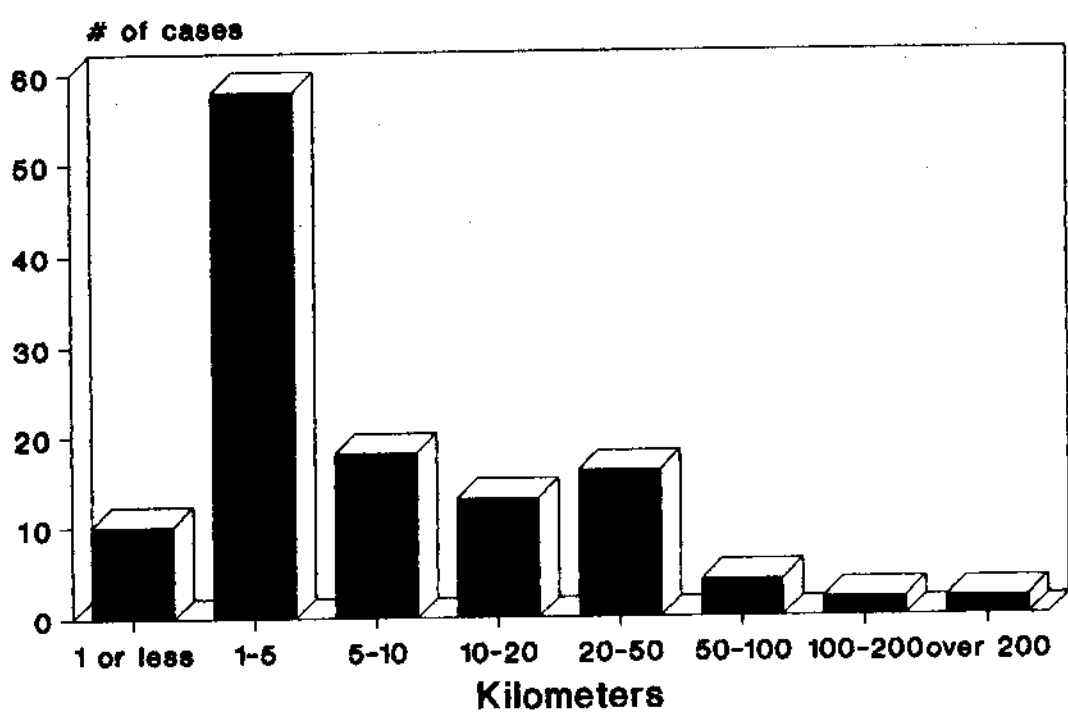
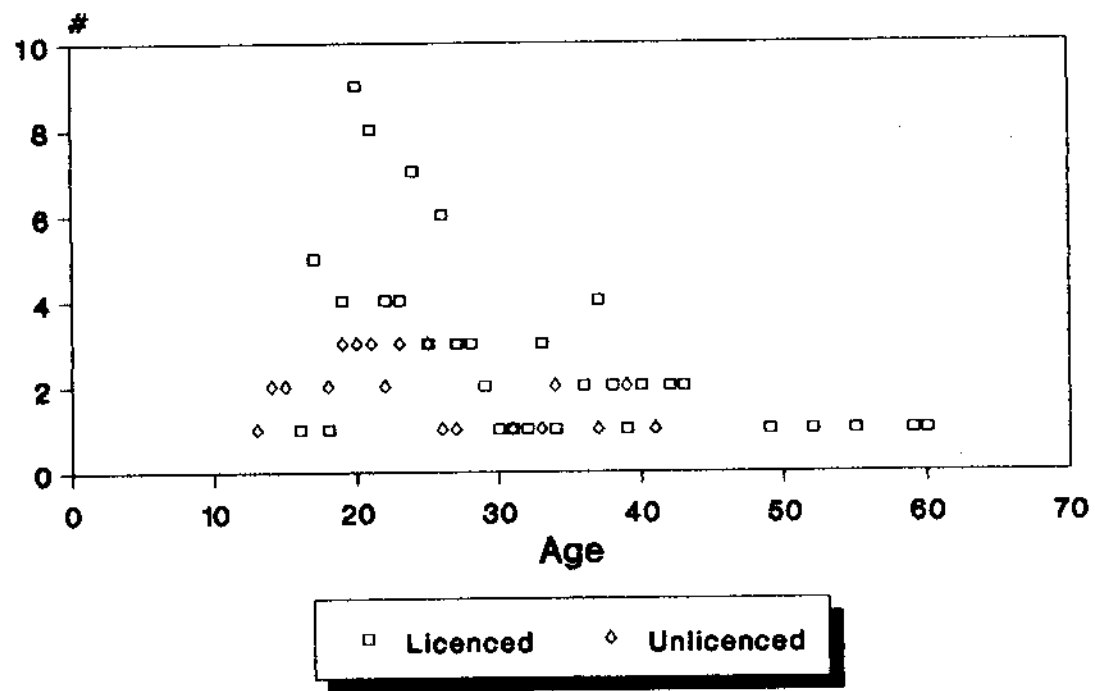


Figure 4: Age Distribution of Motorcycle Drivers, 1990-91



zones, 31 % of the cases in 80 km/h zones and 25 % of those in 100 km/h zones.

The speed of the motorcycle was estimated by the investigating officers in 50 cases out of 123. In 35, the motorcycle was judged to be exceeding the posted speed limit, in 10 it was below the speed limit and in 5 cases the motorcycle was judged to be at the speed limit. Of the 35 cases exceeding the speed limit the average exceedence was calculated to be 35.0 kph ranging between 5 and 170 kph. For the 10 cases where the motorcycle was estimated to be going slower than the speed limit the average amount under the speed limit was 32.6 kph ranging between 11 and 65 kph.

vi) Weather and Road Conditions

It was raining during 11 of the 123 accidents; there was fog in 2 additional cases and in one case the low angle of the morning sun blinded the car driver to the approach of the motorcycle. The road was wet in 12 cases (including the 11 where it was actually raining).

In this data set, 9% of the accidents occurred in rainy conditions; in the Hurt study only 1% of the accidents occurred in rain. Hurt concluded that "Motorcycle traffic essentially disappears in adverse weather conditions". This does not appear to be the case in Ontario. 7 of the 11 accidents which occurred in the rain were also at night.

c) Who?

By Who?, this section means not only both the rider and motorcycle data but also, in multiple vehicle cases, the involvement of others.

i) Motorcycle Driver's Licence Status

In Ontario, motorcyclists may be licensed to ride a motor cycle as a learner ("R" or restricted) motorcyclist (restricted to daylight operation, no passengers and no travel on restricted access highways) or as a full motorcyclist licensed in the "M" class. The "M" class may be held along with various endorsements for automobile or truck driving. The possession of a "G" licence, which permits the driving of a private automobile or light truck, does not permit a person to drive a motorcycle.

In assessing whether or not a particular motorcycle licence was valid, note was made of the time of the accident, the class of highway, etc, to determine if any of the four cases involving "R" licensed motorcyclists were in situations where their licences were not valid. Only one case of this could be seen, that of a "GR" licensed rider using a controlled access 100 kph speed limit highway.

Only 68.3 % of the motorcycle drivers in this data base were properly licensed to be driving a motorcycle at the time of the accident. 17 % of the motorcycle drivers had only an automobile driver's ("G") permit. In the 1978 Hurt study only 54.5% of the accident involved riders had a current

motorcyclist's licence. (Hurt, 1979) A 1980 review of the 1972 Ontario extended accident data file found that 65% of accident-involved riders were properly licensed. (White, 1980)

Table 7. Driver's licence class, Ontario 1990-1991 Fatal Accidents.

Driver's Licence Class of Motorcyclists	# of cases
Valid for Motorcycle	
GM	68
AM	5
BM	1
DM	3
ACM	1
M	4
R	1
GR	3
Not Valid for Motorcycle	
G	21
none	9
not given	4
suspended	1
Other	
(out of province)	2
Total	123

ii) Motorcycle Ownership

The rider was the registered owner of the motorcycle in 95 of the 123 cases (77.2%). 74 of the 95 rider-owned motorcycles were insured (77.9%); a further 15 of the 28 motorcycles owned by another person were insured (53.6%).

Only 75 of the 95 riders of their own motorcycles (78.9%) were validly licensed to ride their own motorcycle. 9 of the riders of the other, presumably borrowed, 28 motorcycles in the data base were licensed to ride a motorcycle (32.1%).

Hurt (1979) did not give ownership data.

iii) Motorcycle Insurance Policy Status

Ontario law requires that motorcycles used on public property carry insurance for third party liability and accident benefits. Failure to comply with this requirement can result in a fine of \$500. In only 89 of the 123 cases (72.4%) was the

motorcycle involved in the fatal accident covered by insurance.

Of the 123 cases, 37 were insured by Jevco (Motoplan), 29 had no insurance, 10 were insured by Co-operators, 8 by State Farm, 6 by Dominion of Canada, the insurance status of 6 cases was not recorded, 5 were insured by Royal Insurance, 2 each by Canadian Surety, Guardian and Economical Mutual, and one each by 16 other companies. This distribution approximates the market share of motorcycle insurance in Ontario.

Of 22 cases involving motorcycles not registered as being owned by the rider at the time of the accident, 12 had no insurance (54.5%).

Insurance status by make of motorcycle was tabulated. 26 of 37 Yamahas, 23 of 34 Hondas, 11 of 17 Kawasakis, 13 of 19 Suzukis, all 12 Harley-Davidsons and the lone Triumph were insured.

Hurt (1980) indicated that less than 10% of the 898 riders in his study had medical insurance of any kind.

iv) Motorcyclist Helmet Use.

The wearing of an approved motorcycle safety helmet while operating a motorcycle in Ontario has been a legal requirement since 1968.

Evaluation of the data showed that 91 % of the 122 motorcycle drivers were wearing a safety helmet. 19 of 23 passengers (82.6%) were wearing a safety helmet. In the Hurt study (Hurt, 1979), which was done 14 years before the State of California required the wearing of motorcycle safety helmets, helmets were worn by 12 of the 54 fatally injured riders (22.2%). In the entire Hurt study, helmets were being worn by 39.5% of the motorcycle drivers.

In the four instances where the passenger was not wearing a helmet, the driver was also not wearing a helmet. In three of these cases, the accident took place late at night. In two of them the motorcycle was not licensed or insured and the accident took place on the same street as the address of the rider, perhaps suggesting a late evening joyride. In the third late night case a party had been in progress earlier at which the two victims were in attendance.

In the seven instances of motorcycle drivers riding alone and not wearing a safety helmet, five involved people riding motorcycles which they did not own; in four of these cases the accident site was a rural road. In two cases, the riders were under the legal age to ride a motorcycle on public roads (16 years).

Of the 11 cases involving motorcycle drivers not wearing safety helmets, 6 had data on alcohol use. 3 drivers were found to be normal (no alcohol), 2 "had been drinking" and one was legally impaired.

It would seem that the percentage of non-use of helmets seen was mostly due to people using motorcycles not belong-

ing to them and therefore not either having a helmet or knowing they were required to wear a helmet. Some riders appeared to be simply choosing to disregard the law regarding motorcycle helmets because they were, at the same time, breaking other laws in regard to licensing, insurance and drinking/driving.

v) Solo, Pillion Passenger or Sidecar?

100 of the 123 cases involved a solo motorcycle occupied only by the driver of the motorcycle. In 98 of these cases the motorcycle driver was killed; in one case a pedestrian was killed, in another a bicyclist.

The other 23 involved a motorcycle occupied by a driver and a pillion passenger. There were no cases of a motorcycle with sidecar attached in the data base. There was no mention of any motorcycle pulling a trailer.

Of the 46 people in the 23 cases where motorcycles were occupied by two people, only one person was not either injured or killed. In five cases both the driver and passenger were killed. In nine cases the driver was killed and the passenger injured; in eight cases the passenger was killed and the driver injured.

15 of the 23 cases where a passenger was being carried occurred at night. Of these 15, 10 cases had an alcohol determination, showing 2 drivers in normal condition (no alcohol), 7 who "had been drinking" and one legally impaired. Of the 8 day-time accidents, alcohol data was available for 5 cases, all were in normal condition (no alcohol).

vi) Motorcycle Driver and Passenger Age and Sex

The ages of the 123 motorcycle drivers involved in these fatal accidents ranged from 13 to 60 years. Five drivers were under 16 years of age and were therefore unlicensed to drive on public roads. 61 drivers were in the 16 to 24 year age group, 33 in the 25 to 34 year age group, 19 in the 35 to 44 year age group and 5 drivers were 45 years old or older.

The average age of all the motorcycle drivers was 26.7 years, ranging from 13 to 60 years.

If only those 16 or older are considered, the average age of the potentially licensable motorcycle drivers was 27.8 years (16-60 years). The four "R" licensed motorcyclists averaged 22 years (17-32); the four holders of "M" only licences averaged 23.5 years (17-28). Holders of a "M" licence plus qualifications to drive a car, truck or bus had an average age of 28.4 years (16-60).

The 21 holders of "G" only (car drivers licences) averaged 25.7 years of age (18-39).

Of the 123 motorcycle drivers, only four were female. Their average age was 32.5 years (25-42).

Figure 4 shows the age distribution of both licensed and unlicensed motorcycle drivers.

The 23 passengers consisted of 17 males and 6 females. The

average age of the males was 19.5 years (13-34) and the female passengers 27.2 years (19-40).

vii) Motorcycle Driver - Determination of Alcohol Use

Of the 123 cases, the accident report forms indicated a determination of alcohol involvement by the motorcycle driver in 70 cases. Of these 70 cases, 36 were stated as normal, meaning that no alcohol was detected. Therefore 34 cases, or 48.6% of the motorcycle drivers in these 70 fatal accidents had either been drinking or were impaired.

27 drivers (38.6%) "had been drinking"; 7 (10%) were legally impaired.

Of the 27 single motorcycle accidents for which alcohol determination was made, 22 or 81 % involved drivers who either had been drinking or who were legally impaired. 15% of the single motorcycle fatal accidents involved a legally impaired driver of the motorcycle.

Considering multiple vehicle accidents: of the 43 cases where an alcohol determination was made, 12 motorcycle drivers either had been drinking or were legally impaired. Five of these riders collided with other vehicles driven by alcohol-involved drivers. 28% of the motorcycle drivers involved in multiple vehicle accidents had been consuming alcohol. 7% of the motorcycle drivers involved in multiple vehicle accidents were legally impaired.

In the Hurt study (Hurt, 1979), 6.7% of the motorcyclists had been drinking and a further 4.3% were legally impaired. Considering only the 51 fatal accidents in the Hurt study data base, 15.7% had been drinking and a further 23.5% were legally impaired.

viii) Motorcycle Licence Plate Status

Of the 123 cases, the principal motorcycle in 12 cases was not plated. Six of these motorcycles appear to be off-road types of motorcycle which would not have been eligible to be plated for the public road. The other six were models which would normally qualify for a road-going motorcycle plate.

Four of the 111 plated motorcycles had personal choice or "vanity" plates.

ix) Motorcycle Age

The average year of manufacture of the motorcycles in this study was 1984. Only 3 motorcycles were 1991 models and 5 were 1990 models. One motorcycle was as old as 1968. Figure 5 shows the age distribution of the 120 motorcycles for which a year of manufacture was given.

Figure 6 compares the age structure of the fatal accident-involved motorcycles with the age of licensed Ontario motorcycles. Motorcycles of 1982 and earlier vintage were under-represented in fatal accidents. Those motorcycles of model years 1987 through 1990 and 1984 and 1985 would seem to be over-represented in fatal accidents in 1990 and 1991.

x) Motorcycle Headlamp Use.

All motorcycles sold in Canada for road use from the 1975 model year onwards were equipped with headlights which were wired to operate in the daytime as well as at night. All but two of the plated street motorcycles in this study should have been being operated with a lit headlight. The other two cases, involving a 1974 Kawasaki and a 1968 Triumph, both occurred at night when headlight use would have been mandatory. Only one accident report mentioned that the motorcycle had no headlight operating, and this was at night on a motorcycle of unidentified make.

xi) Motorcycle Engine Size

102 of the 123 cases provided information which allowed the determination of the engine size of the motorcycles in this study. Engine size is a general index of motorcycle size, weight, power and difficulty of control. It is true, however, that while some of the largest-engined motorcycles, the 1,200 cc and 1,340 cc Harley-Davidsons, are amongst the heaviest motorcycles, they do not develop the horsepower of many of the 500 cc to 1,200 cc motorcycles of other makes.

Over 88% of the motorcycles in this study had engines of 500 cc or greater capacity; in the 54 fatal cases in the Hurt study, 65% involved 500 cc or larger engined motorcycles. Figure 7 gives the breakdown of the numbers of motorcycles in each capacity size grouping. The data from the 1978 Hurt study indicates a much larger proportion of smaller sized motorcycles in fatal accidents. It seems likely that this difference reflects the greater availability of smaller sized motorcycles in the 1970's.

The 12 Harley-Davidsons in the data base averaged 1,200 cc in engine size. The average size of Hondas was 728 cc, of Yamahas was 696 cc, of Kawasakis was 644 cc and of Suzukis was 759 cc. The single Triumph was 490 cc in engine size.

xii) Motorcycle Make, Model and Type.

Six different makes of motorcycle were represented in this study. (Table 8)

A single Triumph motorcycle was involved in an accident in 1990, an unlikely occurrence since this make has not been marketed in Canada for the past decade.

The other five makes represented were Yamaha (30.3%), Honda (28.7%), Kawasaki (14.8%), Suzuki (14.8%) and Harley-Davidson (9.8%). While sales figures over the past decade are not easily translated into comparisons, the above percentages approximate the numbers of these makes in the Ontario motorcycle population.

The data from the Hurt study reflects the late 1970's when Honda had a larger market share and there were other makes as well on the U.S. market.

Figure 5: Year of Manufacture of Motorcycles in 1990-91 Data Base

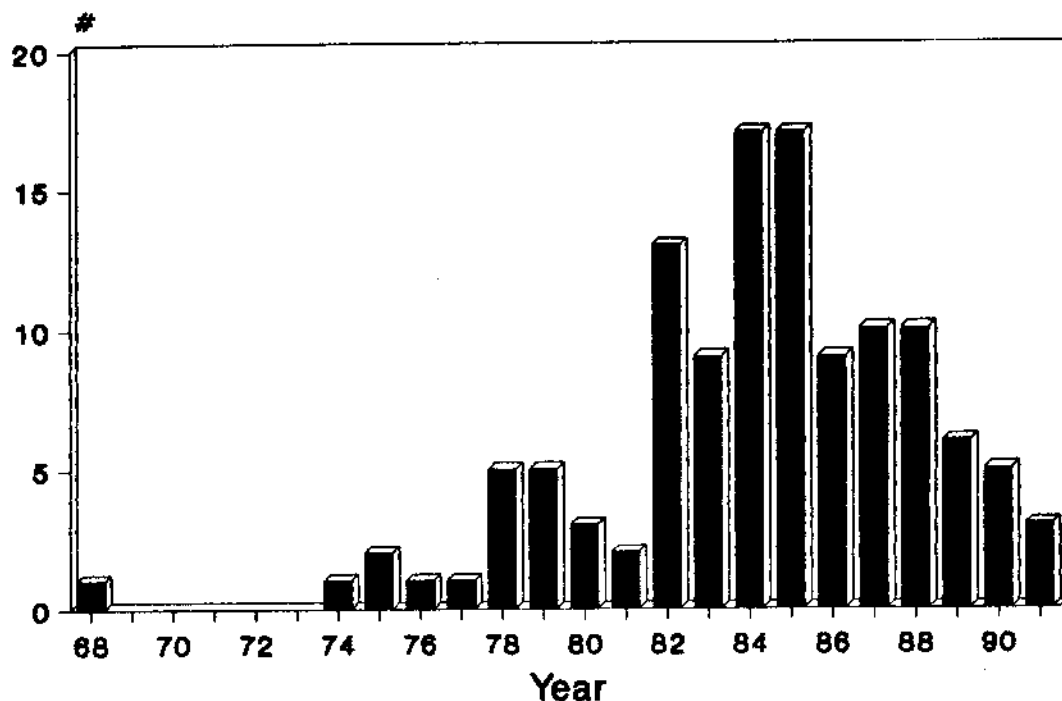


Figure 6: Age Distribution of Ont. M/Cs 1990-91 Fatal Accidents & Registrations

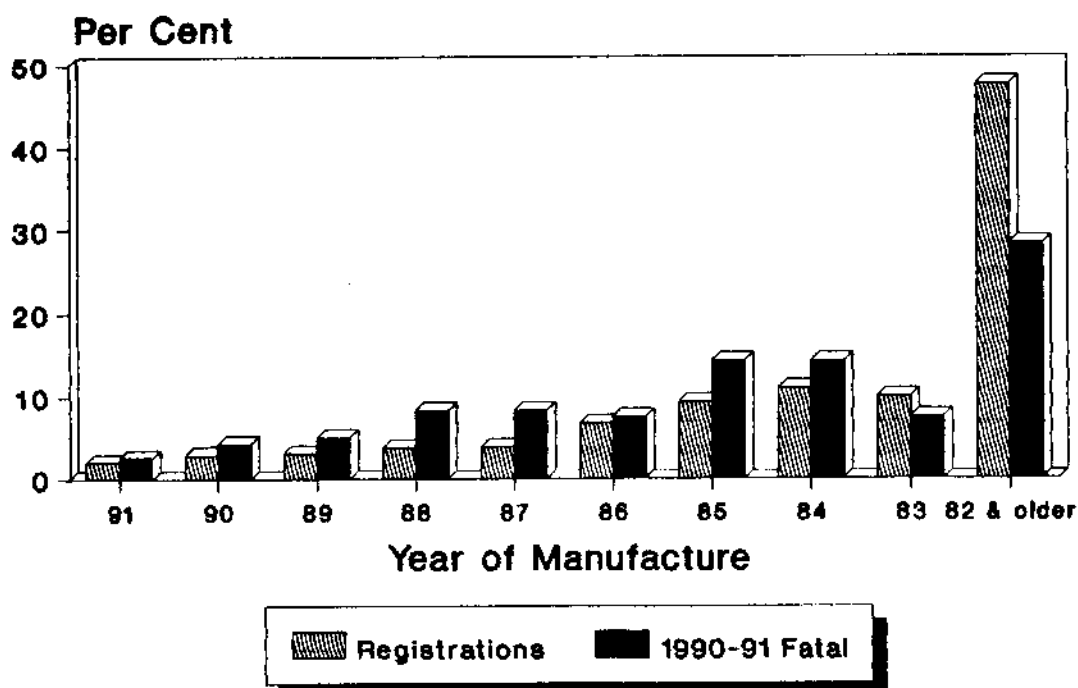


Table 8. Makes of Motorcycles represented in 1990-1991 Ontario fatal accidents and in the Hurt Study.

Make	Ontario 1990-91		Hurt Study	
	#	%	#	%
Honda	35	28.7	501	58.0
Yamaha	37	30.3	110	12.7
H-D	12	9.8	94	10.9
Kawasaki	18	14.8	73	8.5
Suzuki	18	14.8	40	4.6
Triumph	1	0.8	18	2.1
BMW	0	0	14	1.6
BSA	0	0	8	0.9
Norton	0	0	6	0.7
Total	122		864	

Much has been made in recent American studies of the "type" of motorcycle involved in accidents. Prior to the late 1960's, most road legal motorcycles were built to a "Standard" pattern. During the 1970's and continuing through the 1980's, manufacturers developed special models which have now generally replaced the "Standard" (bare motorcycle) design. These special models are chiefly the Sports (low racing handlebars, rearset footrests, extensive plastic bodywork of a low streamlined form), the Custom (high pulled-back handlebars, small fuel tank, forward footpegs or foot boards, passenger backrest), the Touring (large fairing, hard saddlebags, upright riding position), and the Dual Purpose (semi-knobby tires, high ground clearance for road or trail use).

It was possible in 100 of the 123 cases to identify the "type" of motorcycle involved.

The largest group, 41 motorcycles, were the Sport models, a reflection of the marketing success of these in recent years. All the individual motorcycles in this grouping were made in the years from 1982 to 1991. Nine of these motorcycles were 1,000 cc or larger motorcycles, 10 were 500 cc or smaller in engine size.

"Standard" motorcycles were the next biggest group at 26 cases, ranging in model year from 1968 (the Triumph 500 cc) to 1983. These machines were all 1970's to early 1980's models. 24 "Custom" model motorcycles were identified. These included 12 Harley-Davidson motorcycles of various

years. Curiously, this group included 4 examples of the 1985 Yamaha XV1000 Virago model. Touring models were represented by 3 motorcycles, all Honda Gold Wing models, the make and model which has been the most common touring model for many years.

Figure 8 shows the distribution of motorcycle "Type" in the data base.

A review of the Provincial data base on motorcycle model was done in order to calculate the number of motorcycles of each "type" on provincial roads. However, the three-letter code permitted for model number on the motorcycle licence form did not provide enough data to accurately obtain type counts, and the data base printout itself was found to include both registered and on-road vehicles.

A correlation of motorcycle make and the alcohol status of the driver was attempted; alcohol involvement of driver by make of motorcycle ranged from 22 to 31% amongst the five common makes.

A correlation was done of alcohol-involved motorcycle drivers with the "type" of motorcycle ridden. It was found that alcohol involvement was disproportionately high (58%) amongst the riders of "standard" model motorcycles rather than the "Sport" (22%) or "Custom" (21%) types. (See Figure 9.)

xiii) Motorcycle Colour

A tabulation of the colour of the involved motorcycles showed the following distribution:

Black - 37, Red - 30, Blue - 21, White - 13, Silver - 5, White/Red - 4, Green - 2, Blue/white - 2, Grey - 2, Brown - 1, Burgundy - 1, Gold - 1, Yellow - 1, and Red/Black - 1

The Hurt study found red, black, blue and green as the four most popular colours. The dark colours - black, blue, brown, purple and green represented half of the motorcycles in the data base. The Ontario data show the same conclusion; only white is more highly represented.

xiv) Other Driver Ages

Of the 75 other drivers, one was a child of 9 on a bicycle. Considering the 74 drivers of other motor vehicles, their average age was 39.9 years with a range between 16 and 81 years. 61 of these drivers were men; their average age was 39.2 years (16 - 81). The 13 female drivers averaged 42.9 years of age, ranging between 22 and 76 years.

xv) Other Driver a Motorcyclist?

10 of the 75 other motor vehicle drivers were found to also hold a licence to drive a motorcycle.

xvi) Other Driver Determination of Alcohol Use

In 68 multiple vehicle accidents the driver of the other vehicle in collision with a motorcycle had an alcohol involvement determination made. 56 of these were normal (no

Figure 7: Engine Size of Motorcycles in Fatal Accidents, Ont. '90-91 & Hurt '78

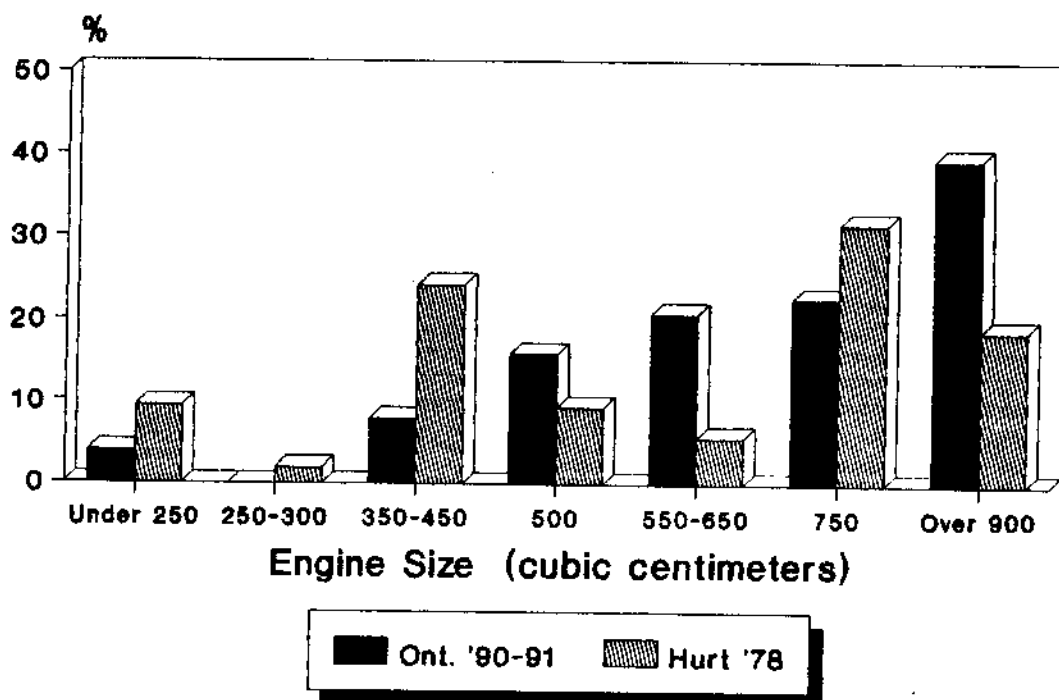
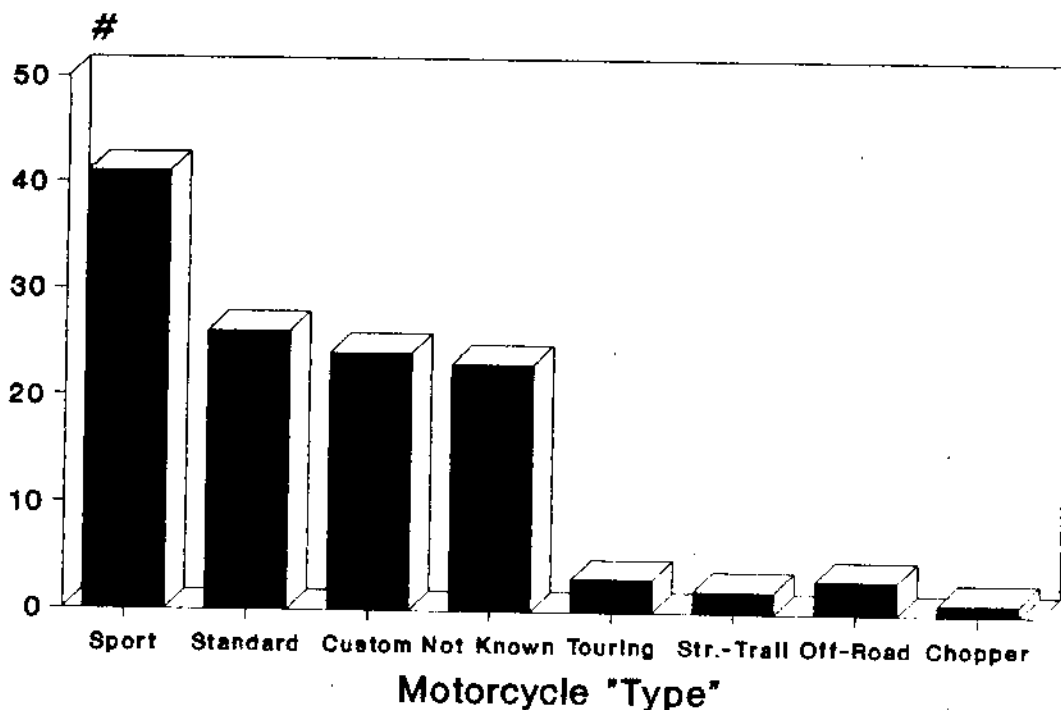
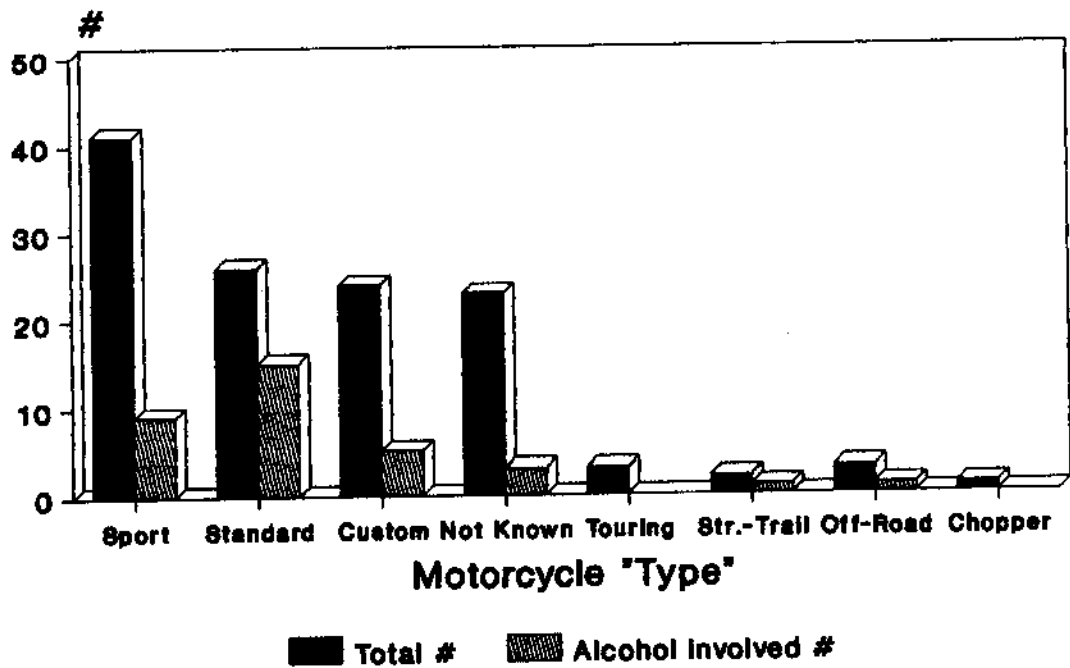


Figure 8: Motorcycle "Type" in Ontario 1990-91 Fatal Accidents



**Figure 9: Motorcycle "Type"
Totals & Alcohol Involved. 1990-91**



alcohol involvement), 7 were indicated as "had been drinking" and 5 were found to be legally impaired. Therefore, 12 of 68 (17.6%) of the drivers of other vehicles in collision with a motorcycle had been drinking, 7% (5/68) were legally impaired.

In 5 of these 12 multiple vehicle accidents the motorcycle driver had also been drinking.

xvii) Other Driver Had Valid Driver's Licence?

70 of 75 drivers of the other vehicle had a valid driver's licence.

xviii) Other Vehicle Type

The 75 other identified vehicles involved in collisions with motorcycles consisted of a variety of vehicles as follows:

Passenger cars - 41, Pick-up trucks - 9, Tractor-trailer trucks - 7, Vans - 5, Jeep-type cars - 3, Straight trucks - 2, Buses - 2, Motorcycles - 2, Bicycle - 1, Motor Home - 1, Mobile Crane - 1, CPR Freight Train - 1.

D) What?

There are two basic categories of motorcycle accident, single vehicle ones involving only one motorcycle and multiple vehicle ones involving another moving motor vehicle.

In the Hurt study, which took place in urban Los Angeles, 23.9% of the accidents involved the single motorcycle only; 75.4% were multiple vehicle. In this Ontario fatal motorcycle accident data base, 34.7% of the accidents were single vehicle and 65.3% were multiple vehicle.

i) The Single Vehicle Accident

In the case of fatal accidents where the driver of the motorcycle has died, it becomes very difficult for an investigating officer to reconstruct the accident. This is particularly true in the case of single vehicle accidents where there may be a complete absence of witnesses.

The data base was found to contain 43 single motorcycle accident cases. 25 of these accidents occurred at night, with 22 of these occurring to riders who had consumed alcohol. 4 of these were legally impaired.

27 of the 43 accidents occurred on a curve, 14 were noted to be on a straight road. Of the 27 cases on a curve, 24 went to the outside of the curve, 17 of these ending up on the shoulder of the road, the rest staying on the roadway. 12 of the 17 went to the outside onto the right hand shoulder, 5 went to the outside onto the left hand shoulder. Only in one case did a motorcycle on a curve end up going to the inside of the curve.

17 of the 27 accidents on curves occurred at night; in 4 of these night cases the driver was legally intoxicated, in 11 the rider "had been drinking".

Of the 14 motorcycles which crashed by themselves on a

straight road, 5 of these went to the right shoulder and one to the left, the rest remained on the roadway.

10 of the 14 cases occurred at night, of which six cases had data on the alcohol status of the driver; 5 riders "had been drinking" and one was legally intoxicated.

3 single motorcycle accidents occurred when the motorcycle driver failed to stop at a stop sign.

In six cases there was the indication that the motorcyclist braked for some reason, lost control and the motorcycle crashed. One of these was on wet pavement and the motorcycle was fitted with "incorrect tires".

Of the 12 wet road accidents, 5 were single vehicle ones; three of those involved alcohol consumption by the driver.

As noted earlier, of the 27 single motorcycle accidents for which data were available, 81% involved riders who had consumed alcohol. 15% of the motorcycle drivers killed in these motorcycle-only accidents were legally drunk.

ii) Multiple Vehicle Accidents

There were 80 multiple vehicle accidents. Typically these were at road junctions, intersections or places where driveways entered a public road. However not all of these involved a turning action by one or more vehicles.

The largest group of these multiple vehicle accidents, 26 cases in all, resulted from a situation where the other vehicle was ahead of the motorcycle with both vehicles facing or traveling in the same direction. Typically, the vehicle ahead slowed down or was stopped to make a turn and the motorcycle ran into the back of the other vehicle.

14 of these 26 "rear-end" accidents occurred at night. Alcohol consumption status was available for 9 cases; 5 motorcycle drivers "had been drinking" and one was legally intoxicated. Alcohol consumption status was available for 6 of the 12 daytime cases; all 6 had normal (no alcohol) status.

The second largest group, 18 cases, resulted from the motorcycle being struck by another vehicle approaching from the opposite direction and making a left turn in front of the oncoming motorcycle. Only 4 of these cases were at night; one motorcycle driver was legally intoxicated. Of the 14 daytime left turn cases, alcohol status was available in six instances, one motorcycle driver "had been drinking".

In 6 of the left turn accidents it is apparent that the motorcyclist was speeding as he approached the intersection.

There were 10 cases where the motorcycle was struck laterally from the right, 4 where the other vehicle came laterally from the left, and 5 cases where the motorcycle was hit from behind by another vehicle. In 4 cases, the motorcycle, while in its own lane, hit another vehicle head-on; in 6 cases the head-on crash was in the other vehicles lane. There were 5 cases where a motorcycle failed to stop at a stop sign and entered another roadway, striking another vehicle.

iii) The Direction of the Threat

One of the important findings of the Hurt study was that "more than three-fourths (75%) of all the accident hazards are within 45 degrees of either side of straight ahead". This was discovered in that study's determination of the pre-crash lines of sight.

A review of all 80 multiple vehicle accidents in this study indicates that the forward threat or hazard was responsible for the crash in 76.5% of all cases, the left side threat in 4.9%, the right side threat in 12.3% and the rearward threat in 6.2% of all cases.

iv) The Rider's Reaction

As noted under the single vehicle accident section, there were six cases where the rider braked for some reason and subsequently lost control. All of these were at night.

Of the 27 cases of a single motorcycle crashing on a curve, 17 of these were at night. Of the 14 crashes of single motorcycles on a straight road, 11 were at night.

There were 18 records of skid marks left by the motorcycle tires as well 4 further cases where other parts of the motorcycle skidded along the road. These skid marks, when measured in 15 cases, ranged from 0.5 metres to 104.7 metres in length, averaging 22.5 metres in length. The 104.7 metre skid mark was from a motorcycle attempting to brake from an estimated 250 kph, by far the highest estimated speed encountered in the data base.

E. Why?

As mentioned earlier, accidents may be caused by a single factor, a momentary error in human judgment, the failure of an inner tube in a tire or other small thing. However, most accidents result from a combination of factors, which taken together, increase the likelihood of an accident.

i) The Combination of Legal Factors

It has been apparent for a long time that about 30% of motorcyclists killed in accidents were not licensed to drive a motorcycle. It is not only the possession of a licence that is required to operate a motorcycle on provincial highways. Other requirements are the possession of a plated and insured motorcycle and the wearing of a motorcycle safety helmet.

Sorting the data base for combinations of factors was done for the scenario where the motorcyclist had a licence of the right class, had the motorcycle plated and insured and was wearing a safety helmet. Of the 123 cases in the data base in only 68 (55.3%) were the drivers in compliance with all three basic legal requirements.

Were we to add to the basic requirements of a motorcycle driver's licence, insurance, and the wearing of a safety helmet, the further requirement that the driver should be the

owner of the motorcycle (in order to assume some familiarity and knowledge of a particular motorcycle) it would reduce the count to 60 cases or 48.8%. However, ownership of the motorcycle by the rider of it is not a legal requirement.

Considering the situation where the driver had the correct licence, the motorcycle was properly plated and insured, the driver was wearing a safety helmet and there was no indication that the speed limit was being broken reduced the case count to 45 out of 123 or 36.6%.

The alcohol status data suggested that about 10% of the motorcyclists were legally impaired. This was based on 70 of the 123 cases. If this rate held true for the entire 123 case data base, then it could be estimated that only about 33% of the motorcycle drivers in the data base would have met the five basic legal requirements of 1) being the holder of a valid motorcycle drivers licence, 2) having the motor cycle insured, 3) wearing a safety helmet, 4) obeying the speed limits, and 5) not being legally impaired.

It would therefore be reasonable to state that only about one-third of the cases in the data base were of motorcyclists who were complying with the basic legal requirements of motorcycling in Ontario at the time of the accident.

ii) The "Don't Drink and Ride" Factor

A number of motorcycle rider safety groups such as the Motorcycle Rider Safety Council have, in recent years, promoted the safety message that motorcycle riders should not drink alcohol at all before riding. This view has been strongly promoted in the M.A.Y. Motorcycle awareness campaigns held each spring and at annual motorcycle shows around the province.

From the alcohol data collected from the 70 fatal accidents where a determination was made it is estimated that approximately 39% of the motorcycle drivers killed had been drinking alcohol before the accident but were not legally impaired. It is known, and recognized in provincial law, that levels of alcohol in the human body, below the legal intoxication level, can impair the ability to operate a motor vehicle. The motorcycle is a vehicle which obviously requires greater skill and coordination to ride than does the driving of an automobile. The evidence given above of alcohol involvement, curving roads and night-time operation suggests that motorcyclists would be wise to follow the advice "Don't Drink and Ride."

It would appear though, that the percentage of motorcycle riders in the data base used in this study who had not been drinking any alcohol before riding and were also obeying the 5 basic legal requirements listed above would be no more than 20 per cent of the total.

iii) Motorcycle Factors

Apart from the few notes on the report forms regarding worn tires, there are few comments which can be made on

factors regarding the motorcycles. Many of the motorcycles were far from new. That does not mean that any particular motorcycle was not roadworthy, but it may suggest, particularly in the case of some of the Standard models that the suspension, brakes and tires may not be as effective as when they were new.

The "type" of motorcycle may be a factor only in that Standard models seemed more likely to have riders who "had been drinking". Perhaps this is indirectly connected with the fact that the age of most Standard motorcycles in Ontario will make them available for very little money on the used motorcycle market. These low-priced motorcycles are likely to be the ones selected by riders who are only casual rather than enthusiast motorcyclists.

iv) Behavioral Factors

Most studies of motorcycle accidents where the motorcycle and another vehicle are in collision cite the oncoming left turn by the other vehicle into the path of the motorcycle as the most common form of multiple accident. (Hurt, 1979; Hurt, 1980) Conventional motorcycling wisdom also considers the "left-turning car" as the largest killer of motorcyclists. This data base, though small, suggests that for fatal accidents, while there are a significant number of left-turn cases, the motorcycle rear-ending the other vehicle is more common. This suggests that these riders' behavior tended toward following another vehicle too closely, closing too quickly on a vehicle ahead, and attempting to pass before being sure of the intended actions of the vehicle they were following. All are signs of impatience. There is some indication that riders were not anticipating that slower moving vehicles may well be doing so because they are preparing to turn. Several riders were "caught out" by sudden attempted "u-turn" movements by vehicles ahead of them.

Some of the left-turn cases suggest an impatience as well, coupled with a high speed entrance to the intersection.

The single vehicle cases where the motorcycle was alone on a curve tend to suggest a lack of cornering skills. While some of the inability to corner (and generally running wide to the outside) may be the result of alcohol consumption and/or the lower night-time visibility, it is a fact that motorcycles can generally corner considerably tighter than most riders ever corner them. Nearly all the corners described in the accident report forms were mild or slight, rather than acute bends.

Conventional motorcycling wisdom tends to equate ideal cornering on the road with the ideal cornering practiced on the road racing track. The latter system emphasizes taking the best "line" through a corner at high speed. Unfortunately, this system, while it works well on the closed circuit of a known race track, is not often safe for open road use.

In conventional road riding, particularly on unfamiliar roads and especially at night, the best cornering technique is the "slow in - fast out" method. It is rare on a road curve of any severity to be able to see all the way around the corner. Therefore it is impossible to choose a proven safe line at the

start of a corner. The "slow in - fast out" cornering method has the rider slowing well before the entrance to the corner (while the motorcycle is still upright) and then "peeling off" or turning quickly into the corner on whichever line to the exit is clear and appropriate. This method avoids the common riding error of committing early in the corner to a too shallow "line" around it and running off the outside of the curve onto the shoulder and into the ditch. This problem was seen in most of the cornering accidents in the data base.

The substantial disregard for the legal requirements of motorcycling, as seen above, indicates that a major portion of the motorcycle drivers killed in Ontario in the years 1990 and 1991 had a significant attitude problem. It is popular nowadays to denigrate the government and the laws made by it. However, most traffic laws are made chiefly for the road users' protection.

It is also very popular to "get away with something", be it speeding, drinking and driving, or many other things. Unfortunately, the scofflaw attitude to the legal requirements by these motorcyclists would appear to have helped them to their deaths. Lack of a licence indicates a lack of training and the knowledge of the special skills required to properly drive a motorcycle. Lack of insurance coverage indicates that many of these riders lacked prudence or judgment. Lack of a safety helmet deprived some riders of a significant piece of safety equipment. Speeding in the wrong place at the wrong time denied them the time to take evasive action. Alcohol consumption dulled their mental abilities to the point where often a simple bend in the road could not be negotiated safely. And in the end "getting away with something", for too many of these riders, has meant getting away with nothing - not even their lives.

F. Countermeasures

Countermeasures which have been used by the MRSC have been publicity campaigns with slogans such as "Don't Drink and Ride", "M.A.Y. - Motorcycle Awareness and You" and "Look Twice - Save a Life". The latter two are also directed at automobile drivers in an attempt to improve the recognition of motorcycles and overcome their "Invisible Man" problem in traffic. MRSC has also supported the motorcycle driver training courses at Ontario community colleges and has worked with MTO on revisions to the Ontario Motorcycle Driver's Handbook.

In the light of the above fatal accident data, it is necessary to consider what could be done to reduce the number of motorcycling fatalities.

i) Don't Drink and Ride

It appears obvious that consumption of alcohol before riding has been a significant factor in many fatal motorcycle accidents. This appears to be particularly so in the single motorcycle night accident.

It would seem logical to continue the "Don't Drink and Ride" campaign efforts associated with the car-based "Red

Ribbon" campaign. However, recently an AIDS Awareness group has promoted its own "Red Ribbon" campaign, thereby confusing the meaning of the symbol. As well, most car-based "Red Ribbon" publicity is done during the month of December, along with the R.I.D.E. efforts by the police. This is at the wrong time of the year to influence motorcyclists. Perhaps it is time to consider a separate symbol or logo for motorcycling anti-drinking/riding efforts. U.S. efforts, it should be noted, use slogans such as "Ride Straight" and "Motorcycling is a big enough High!" rather than the more dictatorial "Don't Drink and Drive".

The motorcyclist is not amenable to the "Designated Driver" campaign for obvious reasons.

Communication efforts to date have centered on motorcycle show booths in the winter season and support of individual motorcycling clubs doing mall displays during the spring M.A.Y. campaign. Winter show displays, while they reach perhaps 40,000 motorcycle enthusiasts with pamphlets, do not reach them during the riding season. There may be some benefit to distributing additional materials to motorcycle rider training course participants. Other distribution possibilities such as schools or public libraries would likely not reach the post-school motorcyclists which seem to make up so much of the population in this study. Communication via the motorcycle license renewal system or the insurance system would be expensive and require the support of the MTO or the insurance broker network. These systems would not necessarily reach the illegal portion of the motorcyclists as represented by those in this study. While publicity through the media (radio, television and newspapers) would likely reach a wider audience, it has proven difficult to get the media to focus on helping in a positive effort for safety rather than a short term sensationalism of gory details of motorcycle accidents.

ii) Enforcement of Existing Laws

Clearly, many riders who end up as fatalities are riding illegally in one or more ways. The accident reports indicate, as well, that the police were generally not far away from the accident scene. And yet the fear of apprehension by the police for illegal actions on the road did not apparently inhibit these riders. Whether or not increased traffic law enforcement would have a beneficial effect in removing some of the illegal motorcyclists from the roads before they kill themselves is perhaps an academic point since government statements on the graduated license system does not indicate increased funding for police enforcement.

It is possible that improved co-ordination of motorcycle licence, motorcyclist licensing and motorcycle insurance could reduce the number of illegal motorcyclists. Any improvements will require integration of the MTO (or Road Safety Agency) computer with those of the insurance companies. Apparently this is under discussion by these groups and the Ontario Insurance Commission.

While it is not illegal for a person without a valid motorcyclist licence to own a road licensed and insured motorcycle, perhaps consideration should be given to requiring that when insurance for road use of an owned motorcycle is taken out, the rider must have a valid motorcycle drivers licence.

Some motorcycles being ridden by other than their owners in this data base appear as if they may have been motorcycles which were sold to the rider but not re-registered by the rider in his own name. This practice seems to be a way in which the purchasing rider attempts to avoid the payment of sales tax, registration fees and insurance by simply riding without legally transferring the motorcycle ownership. Perhaps the legal requirements for transfer should be more clearly put to sellers.

Two units of photo-radar speed measuring equipment will soon be introduced by the Province. It is understood that these units will generally be used on the 400, 401 and 403 class of superhighway. Since most of the fatal motorcycle accidents did not occur on this type of highway it would seem unlikely that this equipment would have much positive impact on reducing motorcycle fatalities.

iii) Graduated Licensing

The data base indicated an under-representation of "R" class learner motorcyclists, suggesting that the current restrictions on them of no night-riding, no passengers and not on 400-class highways have been effective. It is not known what degree of additional enforcement will accompany the new additional restriction for both the "R" and "M1" driver of no alcohol. Any additional enforcement would be likely to have some beneficial effect. However, the graduated licensing concept of permitting some drinking of alcohol before driving by fully licensed "M2" motorcyclists runs counter to the "Don't Drink and Ride" philosophy and sends a rather confusing message to the public.

iv) Motorcyclist Riding Skill Improvement

The gradual decline in motorcycle accidents and fatalities in Ontario over many years has been linked recently to the increasing percentage of new motorcyclists being trained and examined through the community colleges. While accident reports do not give any data on rider experience or training background, it has been generally accepted that properly trained and educated riders are under-represented in motorcycle accidents.

Some recent efforts have been made to encourage motorcyclists to improve their riding skills by learning to road race on closed tracks, with the idea that racing is only for the track, not the road.

v) Motorcycle Mechanical Condition

The data base indicates that a substantial number of motorcycles involved in fatal accidents where the rider "had been drinking" or was impaired were older "Standard" models. Whether or not this indicates that unsafe mechanical condi-

tions might also have been present or it simply indicates the use of less expensive older motorcycles due to socio-economic factors is unknown.

vi) The Other Vehicle

There is a certain amount of "it's the other guy's fault" syndrome in campaigns which ask the drivers of other vehicles to watch out for motorcyclists. This data base shows about 17% of other drivers had been drinking or were impaired; reason enough to suggest to motorcyclists that perhaps looking out for oneself is better than trusting to the benevolence of strangers.

Additional efforts to expand the current M.A.Y awareness program to areas of the province other than the large urban centers may result in it reaching a wider audience.

The requirement for day-time headlamp illumination on motorcycles, a provincial requirement since 1976 for all post-1970 motorcycles has to a considerable extent been nullified by the similar requirement for recently manufactured automobiles.

vii) Development of New Countermeasures

The data base investigated in this report only represented fatalities. A review of at least one full year of non-fatal accident data could give insights into how the non-fatal accident cases differ from the fatal kind. This could be most economically done by obtaining electronic data files from MTO rather than photocopied data.

Based on this present review, new countermeasures should be aimed at reducing the drinking/riding problem, the illegal rider problem and the awareness of other vehicles problem.

G. Conclusions

1. A review of the 1990-1991 Ontario fatal motorcycle accident report forms found that a useful data base suitable for detailed tabulation could be constructed. Larger data bases, such as the non-fatal motorcycle accident data for a single year, or a number of years of fatal accident data would be best obtained from the provincial government by electronic transfer.

2. 49.6% of fatal motorcycle accidents occurred at night. 23 of 27 "had been drinking" cases were at night. All 7 cases where the rider was legally intoxicated were at night.

3. There was a 36% over-representation of fatal accidents on weekends.

4. While there were fatal motorcycle accidents in each month of the year, 107 of the 123 cases occurred in the seven months from April to October.

5. Police arrived at 49 of the accident scenes within 5 minutes; 114 had police presence in 30 minutes or less.

6. The majority of accidents were on rural roads or ordinary

provincial (non-expressway) highways.

7. 80% of the accidents took place less than 20 km. from the riders' home.

8. 118 of the 123 cases took place on a paved, asphalt-surfaced road. 28 cases involved the motorcycle running onto the unpaved shoulder of a road.

9. Speed of the motorcycle at the time of the accident was estimated in 50 of the 123 cases. In 35 cases, the motorcycle was judged to be above the speed limit, in 5 cases it was at the speed limit and in 10 cases it was below the speed limit.

10. It was raining during 11 of the 123 accidents; in 12 the road was wet. In two other cases, fog was present. 7 of the 11 accidents in the rain were also at night.

11. 68.3 % of the motorcyclists were properly licensed to drive a motorcycle; 17.1% had only a car drivers' permit.

12. 22.8% of the motorcycles involved were not owned by the rider.

13. 78.9% of the riders on their own motorcycles were licensed to ride their motorcycles.

14. 72.4% of the motorcycles involved were insured.

15. 91% of the 123 motorcycle drivers were wearing a safety helmet. 82.6% of the 23 motorcycle passengers were wearing a safety helmet.

16. There were 100 cases where the motorcycle carried only the driver; in 23 cases the motorcycle carried both a driver and a passenger.

17. The average age of the motorcycle drivers involved was 26.7 years, ranging in age from 13 to 60 years. The average age of male motorcycle passengers was 19.5 years; for female passengers it was 27.2 years.

18. Of the 123 cases, alcohol use by the motorcycle driver was determined in 70 cases. 36 of the 70 were normal (no alcohol), 27 (38.6%) were classed as "had been drinking" and 7 (10%) were legally impaired.

19. 81% of the single motorcycle accidents, where alcohol use was determined, indicated that the rider had either been drinking or was impaired.

20. 28% of the motorcycle riders involved in multiple vehicle accidents had either been drinking or were impaired.

21. 12 of the 123 motorcycles involved were not plated for use on public roads.

22. Motorcycles in this study averaged between 6 and 7 years old.

23. 88% of the motorcycles in this study were 500cc or larger in engine size.

24. Makes of motorcycles involved in the 123 fatal accidents were: Yamaha (30.3%), Honda (28.7%), Kawasaki (14.8%),

Suzuki (14.8%), Harley-Davidson (9.8%) and Triumph (0.8%).

25. Of the 123 motorcycles, 100 could be classified as to "type". 41 were Sport models, 26 were Standard, 24 were Custom and 3 were Touring models. Proportionately more Standard models were ridden by alcohol involved riders than other types.

26. The average age of the driver of the other vehicle involved in a fatal collision with a motorcycle was 39.9 years ranging between 16 and 81 years.

27. Of 68 cases where an alcohol use determination was made on the driver of the other vehicle in collision with a motorcycle, 17.6% had either been drinking or were impaired.

28. 93.3% of the drivers of the other vehicle in collision with the motorcycle were licensed to drive that vehicle. 13.3% of the drivers of other vehicles held a motorcycle drivers' license.

29. Of 75 other vehicles in collision with motorcycles there were 41 passenger cars, 9 pick-up trucks, 7 tractor-trailers, 5 vans, 3 Jeep-type cars, 2 straight trucks, 2 buses, 2 motorcycles, 1 bicycle, 1 motor home, 1 mobile crane and 1 CPR freight train.

30. 34.7% of the accidents were single motorcycle accidents.

31. 17 of the 27 single motorcycle accidents which were on a curve were also at night. Of those 17, the rider "had been drinking" or was legally impaired in 15.

32. 65.3% of the accidents involved another vehicle as well as the motorcycle. The "direction of threat" from which the other vehicle appeared was 76.5% from ahead, 4.9% from the left, 12.3% from the right and 6.2% from behind. 35% of all fatal accidents between a motorcycle and another vehicle resulted from the motorcycle running into the back of another vehicle going in the same direction but at a slower speed. 22.5% of the accidents occurred when a motorcycle proceeding straight ahead was struck by an oncoming vehicle trying to make a left turn.

33. Considering the legal requirements for riding a motorcycle on Ontario roads to be: 1) the rider has a valid motorcycle driver's licence, 2) the motorcycle is insured, 3) the rider is wearing a motorcycle safety helmet, 4) the rider is obeying the posted speed limit, and 5) the rider is not intoxicated by alcohol, a review of the 1990 and 1991 fatal motorcycle accident data indicates that 66% of the riders killed were violating one or more requirements.

34. If consumption of alcohol to the level of "had been drinking" (not legal intoxication) is considered along with the five basic legal requirements of driver's licence, insurance, helmet, not speeding and not intoxicated, it is estimated that 80% of those riders killed in 1990 and 1991 were drinking before driving and/or violating one or more legal requirements.

H. References

Hurt, H.H. (1979). Status Report of Accident Investigation Data "Motorcycle Accident Cause Factors and Identification of Countermeasures" NHTSA, US DOT. DOT HS-804 096 174p.

Hurt, H.H. (1980). Motorcycle Accident Cause Factors and Identification of Countermeasures. Proceedings of the International Motorcycle Safety Conference, Washington, D.C., Vol. IV, p. 1753-1773.

Johnson A.F. (1976). Motorcycling Safety in Ontario. Brief to the 1976 Ontario Legislature Select Committee on Highway Safety. Toronto. 12p.

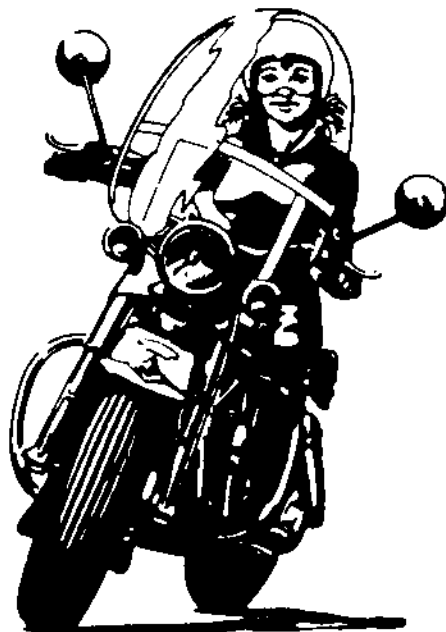
Johnson A.F. (1980) Motorcycling Safety and the Individual Rider. Proceedings of the International Motorcycle Safety Conference, Washington, D.C., Vol. III, p. 1193-1222.

MTO (1991). ORSAR 1990. Ontario Road Safety Annual Report. Toronto. 58p.

MTO (1992). ORSAR 1991. Ontario Road Safety Annual Report. Toronto. 58p.

Stewart, D. (1993). Fatal Motorcycle Collisions. Canadian Motorcycle Association. Hamilton. 28p.

White, J.G. (1980). Motorcycle Accident Study. Transport Canada, Motor Vehicle Traffic Safety Branch. Ottawa, 145p.



K. Appendix

Members of the Committee and their motorcycling biographies.

Allan Johnson, Committee Chairman and Secretary

I have been a motorcyclist since 1958, when I began by riding an old 200cc Ariel Colt as a means of getting to high school; since that time I have owned, rebuilt and ridden over 30 motorcycles. Currently I have five motorcycles on the road, from a 1927 Levis 250cc to a 1974 BMW 900cc. I became interested in the issue of motorcycle safety and government regulation in 1976 and subsequently have volunteered my training and experience as a research scientist to various Ontario motorcycling organizations who have been concerned with motorcycling safety, the environmental impact of off-road motorcycle use and the reform of the motorcycle (and automobile) insurance system in Ontario. I am a member of the Canadian Vintage Motorcycle Group and the Halton Off-Road Riders Association as well as the Motorcycle Rider Safety Council.

Ian Firth, Acting Chairman and Executive Board Member, Motorcycle Rider Safety Council

Riding motorcycles for 32 years, I currently ride a 1981 Honda CBX-6 about 10,000 km/year mostly on daily trips. Beside being Acting Chairman of MRSC, I am a Chief instructor with the Ottawa-Carleton Safety Council. I have been teaching motorcycling for 12 years and have been involved with the Basic Course, Gearing Up, and the Enhanced Skills program (developed locally 18 years ago) and also with new Instructor training for the last 7 years.

Derek Brown, Executive Board Member, Motorcycle Rider Safety Council

Riding motorcycles for over 35 years, I have also been a licensed motorcycle mechanic for 20 years and served on the Ontario Ministry of Labour Qualification Board of motorcycle mechanics for 5 years. As a competition rider, I rode in 3 International Six Days World Championship Endurance Races, many road races at Mosport and at the US Nationals at Daytona, Florida (finishing as high as 8th once). Won many ice racing events, hill climbs and have been riding Observed Trials for many years. A member of the Nortown (Toronto) Motorcycle Club for over 35 years; Ontario Road Riders Association representative to the National Coalition of Motorcyclists. Also a member of the Brampton Motorcycle Association and the Canadian Vintage Motorcycle Group. Presently, I ride an 1985 Honda Goldwing 1,200cc, a Honda 150 scooter and have some antique motorcycles; Nortons and Harley-Davidsons. As a dedicated rider I have always been involved with both safety and political issues.

Betty Anne Clark, Executive Board Member, Motorcycle Rider Safety Council

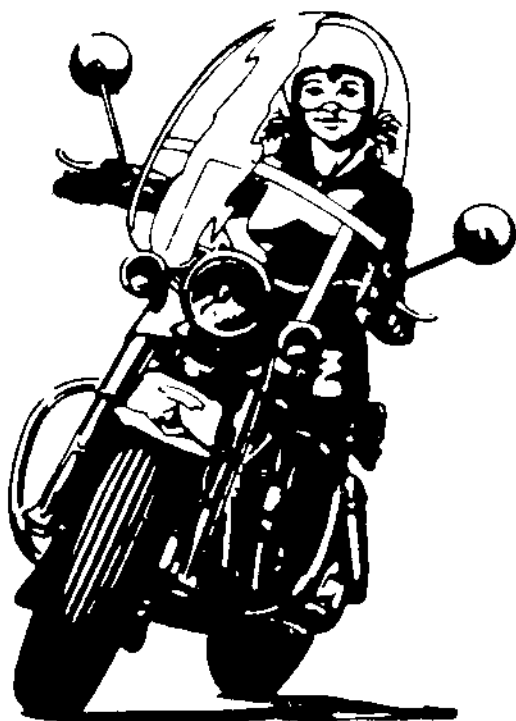
My riding career began many years ago when a trip to the local MOT office and a signature on a document gave you a motorcycle drivers' licence. After a hiatus of some 20 years, I took a motorcycle rider course at Sheridan College, traveled several times across Canada from east to west on various motorcycles which were never more than 400cc in size. In 1986 I joined the Brampton Motorcycle Association and purchased a new 800cc Honda Shadow. That is really when I began to get involved in the motorcycle community. I now have five motorcycles (all running), belong to no more than six clubs and Associations and hold several positions; Treasurer of Nortown Motorcycle Club, Secretary of the Ontario Road Riders Association, ORRA Rep. for the Ontario South Retreads club and an Executive Board Member of the Motorcycle Rider Safety Council.

Michael James Gilligan, Treasurer and Executive Board Member, Motorcycle Rider Safety Council

I have been riding motorcycles for 30 years and wouldn't be happy without one, fortunately my wife agrees. We currently ride a 1986 Yamaha Venture Royale, and have touched down in nearly every province in Canada except B.C. and the Territories (we're saving them for another "Venture") and spent many memorable miles in the USA on motorcycle rallies as well as local Sunday rides, Toy rides and the Ride For Sight. We are members of the Venture Touring Society #3 and the Nortown Motorcycle Club of Toronto. I have served as Treasurer of the MRSC and their representative to the Ontario Road Riders Association. We count ourselves no less fortunate for the association with some special riders who have donated their time and expertise to give something back to the sport of motorcycling; this report is part of that effort. I am happy to have been included.

CAUSES OF FATAL MOTORCYCLE ACCIDENTS IN ONTARIO

1990 - 1991



**SUMMARY OF A REPORT
PREPARED BY THE
MOTORCYCLE RIDER
SAFETY COUNCIL**

January , 1994

CAUSES OF FATAL MOTORCYCLE ACCIDENTS IN ONTARIO 1990 - 1991

The Motorcycle Rider Safety Council is a registered charity established by volunteers in 1988 to help promote the safe use of motorcycles. The Council has just completed a study of two years of Ontario fatal motorcycle accident data for the years 1990 and 1991. The report came to the following conclusions:

1. 49.6% of fatal motorcycle accidents occurred at night. 23 of 27 "had been drinking" cases were at night. All 7 cases where the rider was legally intoxicated were at night.
2. There was a 36% over-representation of fatal accidents on weekends.
3. While there were fatal motorcycle accidents in each month of the year, 107 of the 123 cases occurred in the seven months from April to October.
4. Police arrived at 49 of the accident scenes within 5 minutes; 114 had police presence in 30 minutes or less.
5. The majority of accidents were on rural roads or provincial (non-expressway) highways.
6. 80% of the accidents took place less than 20 km. from the riders' home.
7. 118 of the 123 cases took place on a paved, asphalt-surfaced road. 28 cases involved the motorcycle running onto the unpaved shoulder of a road.
8. Speed of the motorcycle at the time of the accident was estimated in 50 of the 123 cases. In 35 cases, the motorcycle was judged to be above the speed limit, in 5 cases it was at the

speed limit and in 10 cases it was below the speed limit.

9. It was raining during 11 of the 123 accidents; in 12 the road was wet. In two other cases, fog was present. 7 of the 11 accidents in the rain were also at night.

10. 68.3 % of the motorcyclists were properly licensed to drive a motorcycle; 17.1% had only a car drivers' permit.

11. 22.8% of the motorcycles involved were not owned by the rider.

12. 78.9% of the riders on their own motorcycles were licensed to ride their motorcycles.

13. 72.4% of the motorcycles involved were insured.

14. 91% of the 123 motorcycle drivers were wearing a safety helmet. 82.6% of the 23 motorcycle passengers were wearing a safety helmet.

15. There were 100 cases where the motorcycle carried only the driver; in 23 cases the motorcycle carried both a driver and a passenger.

16. The average age of the motorcycle drivers involved was 26.7 years, ranging in age from 13 to 60 years. The average age of male motorcycle passengers was 19.5 years; for female passengers it was 27.2 years.

17. Of the 123 cases, alcohol use by the motorcycle driver was determined in 70 cases. 36 of the 70 were normal (no alcohol), 27 (38.6%) were classed as "had been drinking" and 7 (10%) were legally impaired.

18. 81% of the single motorcycle accidents, where alcohol use was determined, indicated that the rider had either been drinking or was impaired.

19. 28% of the motorcycle riders involved in

multiple vehicle accidents had either been drinking or were impaired.

20. 12 of the 123 motorcycles involved were not plated for use on public roads.

21. Motorcycles in this study averaged between 6 and 7 years old.

22. 88% of the motorcycles in this study were 500cc or larger in engine size.

23. Makes of motorcycles involved in the 123 fatal accidents were: Yamaha (30.3%), Honda (28.7%), Kawasaki (14.8%), Suzuki (14.8%), Harley-Davidson (9.8%) and Triumph (0.8%).

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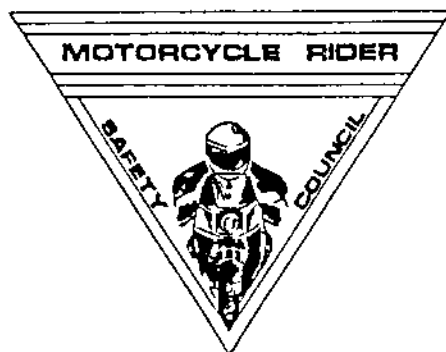
30. 17 of the 27 single motorcycle accidents which were on a curve were also at night. Of those 17, the rider "had been drinking" or was legally impaired in 15.

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32. Considering the legal requirements for riding a motorcycle on Ontario roads to be: 1) the rider has a valid motorcycle driver's licence, 2) the motorcycle is insured, 3) the rider is wearing a motorcycle safety helmet, 4) the rider is obeying the posted speed limit, and 5) the rider is not intoxicated by alcohol, a review of the 1990 and 1991 fatal motorcycle accident data indicates that 66% of the riders killed were violating one or more requirements.

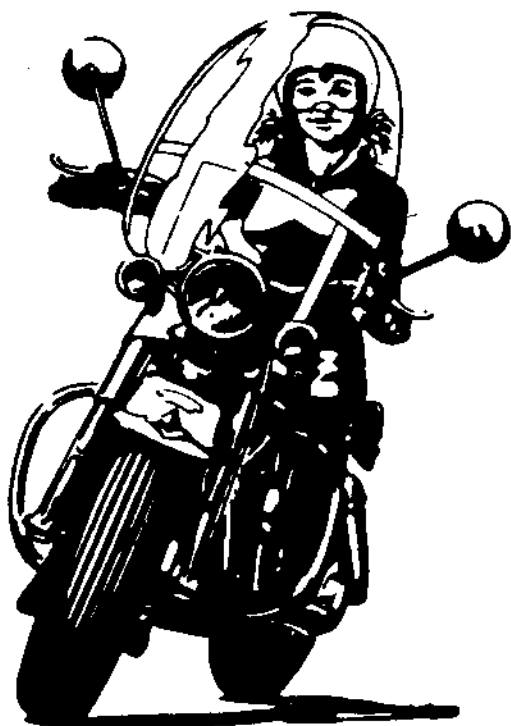
33. If consumption of alcohol to the level of "had been drinking" (not legal intoxication) is considered along with the five basic legal requirements of driver's licence, insurance, helmet, not speeding and not intoxicated, it is estimated that 80% of those riders killed in 1990 and 1991 were drinking before driving and/or violating one or more legal requirements.

While long-term studies of motorcycle safety in Ontario indicate a steady reduction in the numbers of motorcycling fatalities, the findings of this study indicate that much still needs to be done in the area of motorcycle safety. There is a need to emphasize that consumption of alcohol before riding is still a large part of the motorcycle safety problem. Also a significant factor is the habit of many riders of riding illegally, either speeding or riding without a motorcycle driver's licence or proper motorcycle registration or insurance. Too many riders do not realize that special training and driver alertness is needed in order to ride a motorcycle safely and well.



The **Motorcycle Rider Safety Council** is a federally registered charity established by volunteer motorcyclists in 1988 with the aim of promoting safer motorcycling. Any comments or questions about this report, requests for further information or other publications of the MRSC should be directed to: Motorcycle Rider Safety Council, 150 Queens Ave., Toronto, Ontario, M8V 2N6. Telephone 1(416) 255-9984 or Fax 1(416) 251-8346
MRSC Publication # 94-2

**IF YOU.....
LIVE TO
RIDE**



**THEN.....
RIDE TO
LIVE**

RIDING TO LIVE

As a motorcyclist, you get lots of free advice.

Most of it is from non-motorcycling friends and relatives telling you how dangerous motorcycling is (in their view) and that they would never get on a bike... and that you should sell yours!

And yet what do they know, you tell yourself. As a rider, you know the feeling of being out on the road on your bike, leaning into a corner, accelerating through the gears - all the while feeling truly alive and in control of that bike.

You know that there is danger out on the roads. But how to recognize the hazards of the road and how to deal with them is another thing.

The best teacher is experience, preferably someone else's.

To this end, the Motorcycle Rider Safety Council has just completed an in-depth study of the circumstances surrounding 123 fatal motorcycle accidents which took place in Ontario during 1990 and 1991. The purpose of this detailed investigation was to learn what happened in these accidents and to tell motorcycle riders like yourself about them and how you can better enjoy your motorcycle riding and avoid becoming a statistic.

This leaflet outlines some factors in fatal motorcycle accidents in Ontario and suggests some actions or countermeasures which you, the rider, may wish to adopt to make your riding not only safer, but more enjoyable.

STUDY RESULTS

The study showed that two-thirds of the motorcyclists killed were not really legally on the road! Many were not licensed motorcyclists, but merely car drivers, and so likely had no proper training in motorcycle riding. Many others were riding borrowed, unlicensed and uninsured motorcycles; some who had their own motorcycles had no insurance. A few had not bothered with a safety helmet. A number were riding over the speed limit. 10 per cent were drunk. A number of riders were illegal in more than one respect, and they were probably looking over their shoulders in fear of being caught most of the time they were riding.

In addition there were many riders who had been drinking alcohol before riding and while not legally drunk, probably did not have as quick reflexes as when they were sober. The total of illegal riders plus riders who had been drinking amounts to 80 percent, or 4 out of every 5 riders killed.

35 % of accidents involved only a motorcycle; 65% involved the collision of a motorcycle with another vehicle.

It was found that alcohol consumption was involved in 81 percent of the single motorcycle accidents, and that a large number of these accidents occurred at night on a curve where the motorcycle failed to make the corner and ran off the outside of the curve.

In accidents between a motorcycle and another vehicle, 35% of these involved the motorcycle running into the back of another vehicle. 22% happened when another vehicle

made a left turn into the straight-ahead path of the motorcycle.

In collisions between a motorcycle and another vehicle, 28% of the motorcyclists had been drinking; 18% of the drivers of the other vehicle had also been drinking.

50% of these accidents were at night; many were after midnight.

COUNTERMEASURES

As a rider you have probably been told time and time again "Don't Drink and Ride". So there is no point in repeating that simple message. It is your life to do whatever you want. It is clear from the study, however, that having had a few drinks before riding did not help these riders get their bikes around simple corners. It was often dark, raining in a few cases, and on two lane blacktop roads where they couldn't make these corners. Just ordinary corners which any rider who knew his stuff could take with ease. And they were the last corners they ever tried to make.

Some of the collisions of a motorcycle into the back of a car or truck showed that impatience, lack of judgment and inexperience by the rider who "had been drinking" were important factors. Perhaps if these riders had been just a bit sharper mentally they could have anticipated the other vehicle's action and braked that fraction of a second sooner. And lived to ride again.

In some of the accidents where a car or truck was making a left turn, the motorcyclist was

rushing through the intersection at speed. Although the motorcycle has the right of way in these cases, the experienced rider allows for the fact that larger vehicles such as cars and trucks tend not to give the proper right of way to motorcyclists. Inexperienced riders often fail to allow for this and demand their right of way - with fatal results.

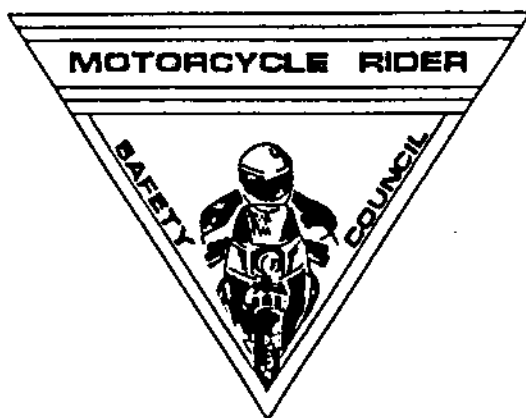
The study pointed out that inexperienced, in fact unlicensed, riders who may be on unlicensed, uninsured motorcycles are a substantial number of the fatality cases. The need to be properly qualified, licensed, insured and helmeted to be on the road may not seem important to some scofflaw riders. Just the opposite is true, however.

The motorcycle is a vehicle which responds well to a knowledgeable, skillful rider. In the hands of an untrained, incompetent novice the motorcycle can be dangerous. Where possible the new or prospective rider should take an approved motorcycle rider training course, such as those given by community colleges. The passing of a simple licence test is only the start in the long process of developing a skillful, knowledgeable rider.

Properly licensed, insured and equipped, a rider can concentrate on riding and awareness of other traffic. By following the speed limits a rider can avoid having to look out for the police rather than other traffic. By not drinking alcohol before riding, a knowledgeable rider can assure himself of being in top mental and physical condition and able to anticipate, and make allowances for the many and frequent mistakes of other road users.

As motorcyclists we all Live to Ride.

Riding to Live in a skillful, knowledgeable and safe manner will ensure that we will enjoy our motorcycles for a long time to come.



The Motorcycle Rider Safety Council is a federally registered charity established by volunteer motorcyclists in 1988 with the aim of promoting safer motorcycling. If you wish further information, or copies of other publications issued by MRSC, please contact : Motorcycle Rider Safety Council, 150 Queens Ave., Toronto, Ontario, M8V 2N6 telephone 1(416)255-9984 or Fax 1(416) 251-8346

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