

# MOTORCYCLING AFTER 30

by

Narelle Haworth  
Christine Mulvihill  
Mark Symmons

November, 2002

Report No. 192



MONASH UNIVERSITY ACCIDENT RESEARCH CENTRE  
REPORT DOCUMENTATION PAGE

---

Report No.	Date	ISBN	Pages
192	October 2002	0 7326 1491 0	88

---

**Title and sub-title:**

Motorcycling After 30

---

**Author(s):** Narelle Haworth, Christine Mulvihill and Mark Symmons

---

**Sponsoring Organisation(s):**

This project was funded through the Centre's Baseline Research Program for which grants have been received from:

Department of Justice

Roads Corporation (VicRoads)

Royal Automobile Club of Victoria (RACV) Ltd

Transport Accident Commission

---

**Abstract:**

The project aimed to develop a better understanding of the patterns of riding and risk factors associated with older motorcyclists and to recommend measures that may reduce the crash involvement of these riders.

The survey of motorcycle licence holders aged 30 and over found that only 53% had ridden in the last year. The percentage fell with age, from 60% of licence holders aged 30 to 39 to 41% of licence holders aged 60 and over. Overall, 43% of riders who responded were "continuing riders", 27% were "returned riders" and 31% were "new riders". These groups were compared in terms of demographics, crash involvement and riding patterns and motorcycles owned now and in the past.

The number and percentage of riders in crashes who were aged 30 and over doubled from 1991-2000. Notwithstanding this increase, the crash involvement rate of licence holders aged 30 and over is lower than that of younger licence holders and it decreases with age. Reductions in the amount of riding and more experience (on average) as rider age increases may underlie this decrease.

Riders aged 30 and over were involved in relatively more rural crashes and more single vehicle crashes (even in the metropolitan area). They were also over-involved in crashes in medium and high speed zones, consistent with a pattern of open-road riding, rather than commuting.

Returned and continuing riders could not be distinguished in the crash data, but new riders were identified as those with learner or probationary licences. New riders aged 30 and over had higher crash involvement rates than other riders of the same age group, but their crash involvement rates were lower than for new or fully licensed riders aged under 30. Some of the elevation in crash involvement rates for new riders may relate to the survey finding that new and continuing riders rode further per week and rode more often than returned riders.

As for any road user group, the crash involvement of motorcycle licence holders over the age of 30 may be reduced by measures that reduce total distance travelled and by measures that reduce the risk per unit of distance travelled, including general motorcycle safety measures.

---

**Key Words:**

Motorcycle, motorcycle training, injury

**Disclaimer**

---

Reproduction of this page is authorised

Monash University Accident Research Centre,  
Wellington Road, Clayton, Victoria, 3800, Australia.  
Telephone: +61 3 9905 4371, Fax: +61 3 9905 4363

# Preface

**Project Manager / Team Leader:**

Narelle Haworth

**Research Team:**

- Christine Mulvihill
- Mark Symmons

# Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>XI</b>
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 RECENT TRENDS.....	1
1.2 AIM .....	2
1.3 STRUCTURE OF THE PROJECT.....	2
<b>2.0 SURVEY METHOD .....</b>	<b>3</b>
2.1 SAMPLING STRATEGY .....	3
2.2 QUESTIONNAIRE .....	4
2.3 PROCEDURE .....	5
2.3.1 First mailing.....	5
2.3.2 Reminder letters .....	5
2.4 ETHICS APPROVAL .....	5
<b>3.0 SURVEY RESULTS .....</b>	<b>7</b>
3.1 RESPONSE RATES .....	7
3.1.1 Examination of response rates for evidence of bias .....	7
3.2 LICENCE HOLDERS VS. ACTIVE MOTORCYCLISTS .....	8
3.3 STOPPING RIDING.....	11
3.3.1 When do licence holders stop riding.....	11
3.3.2 Why do licence holders stop riding.....	12
3.4 DIFFERENT TYPES OF ACTIVE RIDERS .....	14
3.5 RIDER TRAINING .....	18
3.6 AMOUNT OF RIDING.....	19
3.7 REASONS FOR RIDING.....	22
3.8 WHERE DOES RIDING HAPPEN.....	26
3.9 TYPE OF MOTORCYCLES OWNED .....	27
3.9.1 Motorcycles currently owned .....	27
3.9.2 Motorcycles owned in the past.....	29
3.9.3 Differences between motorcycles currently owned and those owned in the past .....	30
3.10 CRASH INVOLVEMENT .....	31
3.11 INFRINGEMENT HISTORY .....	33
3.12 MEMBERSHIP OF MOTORCYCLE CLUBS.....	33
<b>4.0 DISCUSSION OF SURVEY RESULTS.....</b>	<b>35</b>
4.1 RESPONSE RATES .....	35
4.2 LICENCE HOLDERS VS. ACTIVE MOTORCYCLISTS .....	35
4.3 STOPPING RIDING.....	36
4.4 DIFFERENT TYPES OF ACTIVE RIDERS .....	37
4.5 TRAINING EXPERIENCE .....	37

4.6	AMOUNT OF RIDING .....	38
4.7	REASONS FOR RIDING .....	38
4.8	WHERE DOES RIDING HAPPEN .....	39
4.9	TYPE OF MOTORCYCLE RIDDEN .....	39
4.10	CRASH INVOLVEMENT .....	40
4.11	INFRINGEMENT HISTORY.....	40
<b>5.0</b>	<b>ANALYSES OF CRASH DATA .....</b>	<b>41</b>
5.1	SOURCE AND SELECTION OF CRASH DATA.....	41
5.2	EXTENT OF CRASH INVOLVEMENT .....	41
5.3	TRENDS IN CRASH INVOLVEMENT .....	42
5.4	CRASH RATES PER 10,000 LICENCES HELD .....	45
5.5	CRASH INVOLVEMENT RATES PER 10,000 RIDERS.....	50
5.6	CRASH LOCATION .....	51
5.6.1	Metropolitan and rural crashes.....	51
5.6.2	Local Government Areas with high crash frequencies .....	52
5.6.3	Speed zones .....	52
5.7	TIMING OF CRASH OCCURRENCE .....	54
5.7.1	Time of year .....	54
5.7.2	Time of week .....	55
5.7.3	Time of day .....	55
5.8	TYPE OF CRASH.....	57
5.8.1	Single and multiple vehicle crashes .....	57
5.8.2	DCA codes .....	59
5.8.3	Crashes involving pillions .....	60
5.9	GENDER OF RIDERS .....	60
5.9.1	Crash involvement rates by gender .....	60
5.10	LICENCE CHARACTERISTICS .....	62
5.10.1	Crash involvement rates by licence type.....	64
5.11	ALCOHOL INVOLVEMENT .....	66
5.12	HELMET WEARING .....	66
5.13	MOTORCYCLE CHARACTERISTICS .....	67
5.14	SUMMARY OF RESULTS .....	67
5.15	DISCUSSION OF RESULTS OF CRASH DATA ANALYSES .....	69
5.15.1	Magnitude of involvement in crashes.....	69
5.15.2	Characteristics of crashes .....	69
5.15.3	New riders aged 30 and over .....	70
<b>6.0</b>	<b>CONCLUSIONS .....</b>	<b>71</b>
6.1	MAGNITUDE OF THE INVOLVEMENT OF OLDER RIDERS IN CRASHES .....	71
6.2	CHARACTERISTICS OF OLDER RIDER CRASHES .....	72
6.3	COMPARISONS OF CONTINUING, RETURNED AND NEW RIDERS.....	72
6.4	COMPARING THE CRASH RISKS OF CONTINUING, RETURNED AND NEW RIDERS.....	73

6.5 MEASURES THAT MAY REDUCE THE CRASH INVOLVEMENT OF THESE RIDERS .....	74
<b>REFERENCES .....</b>	<b>75</b>
<b>ACKNOWLEDGMENTS .....</b>	<b>76</b>
<b>APPENDIX 1: QUESTIONNAIRE.....</b>	<b>77</b>
<b>APPENDIX 2: DETAILED RESPONSE RATES.....</b>	<b>1</b>

## Figures

FIGURE 1.1	NUMBER OF MOTORCYCLISTS AGED 30 AND OVER AND UNDER 30 INVOLVED IN CASUALTY CRASHES IN VICTORIA 1991-2000.....	1
FIGURE 3.1	MAIN REASONS WHY STOPPED RIDING AS A FUNCTION OF AGE WHEN STOPPED RIDING. REASONS THAT WERE CITED BY LESS THAN 5% OF RESPONDENTS IN ANY AGE RANGE ARE NOT INCLUDED IN THE CHART. ....	14
FIGURE 3.2	DISTRIBUTION OF AGES OF CONTINUING, RETURNED AND NEW RIDERS.....	15
FIGURE 3.3	MARITAL STATUS OF CONTINUING, RETURNED AND NEW RIDERS. ....	16
FIGURE 3.4	EMPLOYMENT STATUS OF CONTINUING, RETURNED AND NEW RIDERS. ....	17
FIGURE 3.5	YEAR OF LICENCE ISSUEFOR CONTINUING AND RETURNED RIDERS. ....	18
FIGURE 3.6	TYPE OF LAST MOTORCYCLE TRAINING COURSE UNDERTAKEN BY CONTINUING, RETURNED, NEW AND ALL RIDERS. ....	19
FIGURE 3.7	DISTANCE TRAVELLED IN AN AVERAGE WEEK BY CONTINUING, RETURNED, NEW AND ALL RIDERS. ....	20
FIGURE 3.8	FREQUENCY OF RIDING BY CONTINUING, RETURNED, NEW AND ALL RIDERS. ....	21
FIGURE 3.9	MAIN MEANS OF EVERYDAY TRANSPORT BY CONTINUING, RETURNED, NEW AND ALL RIDERS.....	21
FIGURE 3.10	PERCENT OF RIDERS WHO USED THEIR MOTORCYCLE FOR THESE PURPOSES IN THE LAST 12 MONTHS AND WHEN THEY STARTED RIDING. MULTIPLE RESPONSES ALLOWED, THEREFORE PERCENTAGES SUM TO MORE THAN 100% .....	22
FIGURE 3.11	REASONS FOR MOTORCYCLING IN THE LAST 12 MONTHS BY CONTINUING, RETURNED AND NEW RIDERS. ....	23
FIGURE 3.12	REASONS FOR RIDING WHEN FIRST STARTED RIDING BY CONTINUING, RETURNED AND NEW RIDERS. ....	23
FIGURE 3.13	REASONS FOR RIDING IN THE LAST 12 MONTHS AS A FUNCTION OF AGE GROUP. MULTIPLE RESPONSES ALLOWED, SO PERCENTAGES SUM TO MORE THAN 100.....	26
FIGURE 3.14	FREQUENCY OF OFF-ROAD RIDING BY CONTINUING, RETURNED, NEW AND ALL RIDERS. ....	27
FIGURE 3.15	PERCENT OF MOTORCYCLES CURRENTLY OWNED BY CONTINUING, RETURNED, NEW AND ALL RIDERS ACCORDING TO ENGINE CAPACITY (CC).....	28
FIGURE 3.16	PERCENT OF MOTORCYCLES CURRENTLY OWNED BY CONTINUING AND RETURNED RIDERS ACCORDING TO ENGINE CAPACITY (CC). ....	30
FIGURE 5.1	NUMBER OF RIDERS IN FATAL, SERIOUS AND OTHER INJURY CRASHES BY AGE GROUP, VICTORIA 1991-2000.....	42
FIGURE 5.2	AGE DISTRIBUTION OF RIDERS IN FATAL, SERIOUS INJURY AND OTHER INJURY CRASHES, VICTORIA 1991-2000.....	43
FIGURE 5.3	NUMBER OF RIDERS IN CRASHES BY AGE GROUP, VICTORIA 1991-2000.....	43
FIGURE 5.4	PERCENT OF RIDERS IN CRASHES BY AGE GROUP, VICTORIA 1991-2000.....	44
FIGURE 5.5	NUMBER OF RIDERS IN FATAL, SERIOUS INJURY AND OTHER INJURY CRASHES BY AGE GROUP, VICTORIA 1991-2000.....	44
FIGURE 5.6	NUMBER OF MOTORCYCLE LICENCES HELD BY BY A GE GROUP, VICTORIA 1996-2001.....	45
FIGURE 5.7	NUMBER OF MOTORCYCLE LICENCES HELD BY DISAGGREGATED AGE GROUPS, VICTORIA 1996-2001.....	46
FIGURE 5.8	CRASH INVOLVEMENT RATES FOR MOTORCYCLE LICENCE HOLDERS BY AGE GROUP, VICTORIA 1996-2000.....	46
FIGURE 5.9	CRASH INVOLVEMENT RATES FOR MOTORCYCLE LICENCE HOLDERS AGED 30 AND OVER BY AGE GROUP, VICTORIA 1996-2000.....	47

FIGURE 5.10	FATAL AND SERIOUS INJURY CRASH INVOLVEMENT RATES (UPPER PANEL) AND OTHER INJURY CRASH INVOLVEMENT RATES (LOWER PANEL) FOR MOTORCYCLE LICENCE HOLDERS BY AGE GROUP, VICTORIA 1996-2000.....	48
FIGURE 5.11	FATAL AND SERIOUS INJURY CRASH INVOLVEMENT RATES (UPPER PANEL) AND OTHER INJURY CRASH INVOLVEMENT RATES (LOWER PANEL) FOR MOTORCYCLE LICENCE HOLDERS BY DISAGGREGATED AGE GROUP, VICTORIA 1996-2000.....	49
FIGURE 5.12	CRASH INVOLVEMENT RATES PER 10,000 RIDERS, VICTORIA 2000.....	50
FIGURE 5.13	PERCENT OF RIDERS IN METROPOLITAN AND RURAL CRASHES ACCORDING TO AGE GROUP, VICTORIA 1991-2000.....	51
FIGURE 5.14	PERCENT OF RIDERS IN CRASHES AS A FUNCTION OF LOCATION OF CRASH AND LOCATION OF RESIDENCE OF RIDER, VICTORIA 1991-2000. METRO-RURAL DENOTES RURAL RESIDENTS IN METROPOLITAN CRASHES. RURAL-METRO DENOTES METROPOLITAN RESIDENTS IN RURAL CRASHES. ....	52
FIGURE 5.15	PERCENT OF RIDERS IN CRASHES IN LOW, MEDIUM AND HIGH SPEED ZONES ACCORDING TO AGE GROUP, VICTORIA 1991-2000.....	54
FIGURE 5.16	PERCENT OF RIDERS IN CRASHES BY MONTH OF YEAR AND AGE GROUP, VICTORIA 1991-2000.....	55
FIGURE 5.17	PERCENT OF RIDERS IN CRASHES OCCURRING IN OCTOBER-MARCH AND APRIL-SEPTEMBER BY AGE GROUP, VICTORIA 1991-2000.....	56
FIGURE 5.18	PERCENT OF RIDERS IN CRASHES ON WEEKDAYS AND WEEKENDS BY AGE GROUP, VICTORIA 1991-2000.....	56
FIGURE 5.19	PERCENT OF RIDERS IN DAYTIME (6AM-6PM) AND NIGHT-TIME (6PM-6AM) CRASHES BY AGE GROUP, VICTORIA 1991-2000.....	57
FIGURE 5.20	PERCENT OF RIDERS IN SINGLE AND MULTIPLE VEHICLE CRASHES BY AGE GROUP, VICTORIA 1991-2000.....	58
FIGURE 5.21	PERCENT OF RIDERS IN SINGLE AND MULTIPLE VEHICLE CRASHES IN METROPOLITAN AND RURAL AREAS BY AGE GROUP, VICTORIA 1991-2000.....	58
FIGURE 5.22	PERCENT OF RIDERS IN SINGLE AND MULTIPLE VEHICLE CRASHES BY SEVERITY AND AGE GROUP, VICTORIA 1991-2000.....	59
FIGURE 5.23	PERCENT OF RIDERS IN CRASHES ACCORDING TO DCA (DEFINITION FOR CLASSIFYING ACCIDENTS) GROUP AND AGE, VICTORIA 1991-2000.....	60
FIGURE 5.24	CRASH INVOLVEMENT RATE PER 10,000 MOTORCYCLE LICENCES HELD FOR MALE AND FEMALE LICENCE HOLDERS BY A GE GROUP, VICTORIA 1996-2000.....	61
FIGURE 5.25	PERCENT OF RIDERS IN CRASHES BY LICENCE STATUS AND AGE GROUP, VICTORIA 1991-2000.....	62
FIGURE 5.26	PERCENT OF RIDERS IN FATAL, SERIOUS INJURY AND OTHER INJURY CRASHES BY AGE GROUP AND LICENCE TYPE, VICTORIA 1991-2000.....	63
FIGURE 5.27	PERCENT OF RIDERS IN SINGLE VEHICLE CRASHES BY AGE GROUP AND LICENCE TYPE, VICTORIA 1991-2000.....	63
FIGURE 5.28	NUMBER OF NOVICE (LEARNER, PROBATIONARY AND RESTRICTED) MOTORCYCLE LICENCES BY AGE GROUP, VICTORIA 1996-2001.....	64
FIGURE 5.29	NUMBERS OF RIDERS IN CRASHES ACCORDING TO AGE GROUP AND LICENCE STATUS, VICTORIA 1996-2000.....	65
FIGURE 5.30	CRASH INVOLVEMENT RATES PER 10,000 LICENCES HELD FOR MOTORCYCLE LICENCE HOLDERS ACCORDING TO AGE GROUP AND LICENCE STATUS, VICTORIA 1996-2000.....	65

## Tables

TABLE 2.1	NUMBER OF MOTORCYCLE LICENCE HOLDERS TO WHOM QUESTIONNAIRES WERE SENT AS A FUNCTION OF YEAR OF LICENCE ISSUE AND AGE GROUP. ....	4
TABLE 3.1	SUMMARY OF RESPONSE RATES (EXPRESSED AS PERCENTAGES) AS A FUNCTION OF AGE GROUP AND YEAR OF LICENCE ISSUE. ....	8
TABLE 3.2	PERCENT OF RESPONSES FROM EACH AGE GROUP THAT WERE RIDERS (LICENCE HOLDERS WHO HAD RIDDEN IN THE PREVIOUS 12 MONTHS). ....	9
TABLE 3.3	PERCENT OF RESPONSES THAT WERE FROM RIDERS (LICENCE HOLDERS WHO HAD RIDDEN IN THE PREVIOUS 12 MONTHS) CLASSIFIED BY YEAR OF LICENCE ISSUE. PERCENTAGES FOR 1949 AND EARLIER ARE BASED ON SMALL NUMBERS OF RESPONSES.....	10
TABLE 3.4	PERCENT OF LICENCE HOLDERS THAT WERE RIDERS (LICENCE HOLDERS WHO HAD RIDDEN IN THE PREVIOUS 12 MONTHS) ACCORDING TO AGE GROUP AND METROPOLITAN OR RURAL ADDRESS.....	11

TABLE 3.5	PERCENTAGES OF NON-RIDERS (LICENCE HOLDERS WHO HAD NOT RIDDEN IN THE PREVIOUS 12 MONTHS) IN EACH AGE GROUP WHO STOPPED RIDING AT PARTICULAR AGES .	12
TABLE 3.6	MAIN REASONS WHY LICENCE HOLDER STOPPED RIDING.	13
TABLE 3.7	PERCENTAGES OF CONTINUING, RETURNED AND NEW RIDERS (AND ALL RIDERS) WITH LICENCES ISSUED IN EACH GROUP OF YEARS WHO HAD UNDERTAKEN A MOTORCYCLE TRAINING COURSE .	18
TABLE 3.8	SUMMARY OF CHANGES OVER TIME IN REASONS FOR RIDING. EXPRESSED AS PERCENT OF ALL RIDERS.	24
TABLE 3.9	RANKINGS OF PURPOSE MOTORCYCLE MOST OFTEN USED FOR IN THE LAST 12 MONTHS.	25
TABLE 3.10	RANKINGS OF PURPOSE MOTORCYCLE MOST OFTEN USED FOR WHEN THEY FIRST STARTED RIDING.	25
TABLE 3.11	LOCATION OF RIDING BY METROPOLITAN AND RURAL RESIDENTS.	26
TABLE 3.12	PERCENT OF MOTORCYCLES OWNED BY RIDERS FIRST LICENSED IN 2000-02 AND 1995-99 ACCORDING TO ENGINE CAPACITY (CC).	29
TABLE 3.13	PERCENTAGES OF CONTINUING AND RETURNED RIDERS ACCORDING TO THE DIFFERENCE IN ENGINE CAPACITY OF LARGEST CAPACITY MOTORCYCLE OWNED NOW, COMPARED TO IN THE PAST.	31
TABLE 3.14	PERCENT OF CONTINUING, RETURNED AND NEW RIDERS ACCORDING TO NUMBER OF SELF-REPORTED CRASHES IN THE LAST FIVE YEARS.	31
TABLE 3.15	PERCENT OF RIDERS IN EACH AGE GROUP ACCORDING TO NUMBER OF SELF-REPORTED CRASHES IN THE LAST FIVE YEARS.	32
TABLE 3.16	NUMBERS AND PERCENTAGES OF RIDERS THAT BELONGED TO MOTORCYCLE CLUBS. PERCENTAGES ADD TO MORE THAN 100% BECAUSE SOME RIDERS BELONGED TO MORE THAN ONE CLUB.	34
TABLE 4.1	ESTIMATION OF PERCENT OF RIDERS WHO ARE IN EACH AGE GROUP.	36
TABLE 5.1	AGE DISTRIBUTION OF MOTORCYCLE RIDERS INVOLVED IN CRASHES, VICTORIA 1991-2000.	41
TABLE 5.2	THE LOCAL GOVERNMENT AREAS (LGAs) WHERE THE LARGEST NUMBERS OF RIDERS WERE INVOLVED IN CRASHES, VICTORIA 1991-2000.	53
TABLE 5.3	PERCENTAGE OF RIDERS CARRYING PILLION PASSENGERS IN CRASHES, VICTORIA 1991-2000.	60
TABLE 5.4	PERCENTAGE OF MOTORCYCLE LICENCE HOLDERS WHO WERE MALE ACCORDING TO AGE GROUP, VICTORIA 1996 AND 2000.	61
TABLE 5.5	PERCENT OF RIDERS IN CRASHES WITH BLOOD ALCOHOL CONCENTRATION (BAC) OVER 0.05 BY AGE GROUP AND CRASH SEVERITY, VICTORIA 1991-2000.	66



## EXECUTIVE SUMMARY

The project aimed to develop a better understanding of the patterns of riding and risk factors associated with older motorcyclists and to recommend measures that may reduce the crash involvement of these riders. It comprised a survey of motorcycle licence holders aged over 30 and an analysis of crash data to gain an understanding of the magnitude of the involvement of older riders in crashes and to identify the characteristics of older rider crashes.

### **Magnitude of the involvement of older riders in crashes**

The number and percentage of riders in crashes who were aged 30 and over doubled from 1991-2000. Notwithstanding this increase, the crash involvement rate of licence holders aged 30 and over is lower than that of younger licence holders and it decreases with age. The decrease in crash involvement with age is influenced to a large extent by reductions in the amount of riding as rider age increases. The survey results suggest that only 53% of motorcycle licence holders aged 30 and over had ridden in the last year. The percentage of licence holders who rode in the last year decreased from 60% of licence holders aged 30 to 39 to 41% of licence holders aged 60 and over. In addition, the survey data found that, among active riders, distance ridden per week and frequency of riding decreased with age among riders aged 30.

Another contributor to the lower crash involvement rate of older riders is that they are, on average, more experienced. The older rider group contains relatively fewer learner and probationary licence holders who have higher crash involvement rates than fully licensed riders. In addition, fewer older riders are unlicensed.

### **Characteristics of older rider crashes**

Riders aged 30 and over were involved in relatively more single vehicle crashes. While much of this reflected their relatively greater involvement in rural crashes, it was also true for metropolitan crashes. The finding that older riders were also over-involved in crashes in medium and high speed zones, suggests that this pattern of crashes may indicate a pattern of open-road riding, rather than commuting.

### **Comparisons of continuing, returned and new riders**

Overall, 43% of riders who responded to the survey were “continuing riders”, 27% were “returned riders” and 31% were “new riders”.

Compared to other riders, **new riders** are:

- younger, more likely to be single and more likely to be female
- more likely to have completed a rider training course
- more likely to ride in urban areas (and involved in relatively more crashes in urban areas, according to the crash data analysis) and less likely to ride off-road
- more likely to own smaller capacity motorcycles (less than 260cc)

Compared to other riders, **continuing riders** are:

- more likely to live in rural areas
- more likely to have undertaken an advanced rider training course
- more likely to ride all year round

- less likely to report being involved in a crash in the past five years (only if riding less than three days per week)

Compared to other riders, **returned riders**

- ride less frequently and less distance
- are less likely to use a motorcycle for commuting and general transport

Compared to continuing riders, **returned riders** are

- more likely to nominate a car as their main means of transport
- less likely to have commuted in the past and more likely to have stopped commuting
- more likely to have started touring
- less likely to have ridden on a farm in the past
- less likely to have ridden for general transport in the past
- less likely to have owned motorcycles with engine capacity greater than 750 cc in the past

Returned and continuing riders could not be distinguished in the crash data, but new riders were identified as those with learner or probationary licences (a different definition to that used in the survey).

While the crash involvement rate of new riders was higher than for other riders aged 30 and over, it was lower than for new or fully licensed riders aged under 30. Some of the elevated crash involvement rate for new riders may relate to the survey finding that new and continuing riders rode further per week and rode more often than returned riders.

While there is clear evidence that crash risk on a per rider per annum basis is higher for new riders, the comparative crash risks of returned versus continuing riders are less clear. The survey data suggest that returned riders possibly ride at higher risk per kilometre because of more recreational riding but they ride less than continuing riders.

### **Measures that may reduce crash involvement**

As for any road user group, the crash involvement of motorcycle licence holders aged 30 and over may be reduced by measures that reduce total distance travelled and by measures that reduce the risk per unit of distance travelled.

The relative ease with which a motorcycle licence holder can return to riding may be contributing to the increased amount of riding by older motorcycle licence holders. Implementing a system in which there is an active requirement to maintain the currency of a motorcycle licence could act to ensure that those individuals wishing to return to riding have to regain a minimum level of skill or competence before doing so. This would have the added benefit of improving the ability to estimate the real number of riders and therefore improving the ability to monitor trends in motorcycle safety.

Promotion of refresher courses for licence holders returning to riding may be of benefit to improve skills and reinforce to potential riders that their skills may not be up to date.

The crash involvement of older riders could also be decreased by general motorcycle safety measures that would benefit riders of all ages. These measures could include reductions in impaired driving and other unsafe road user behaviours by car drivers, reductions in both speeding and general travel speeds and improvements in roadside safety to prevent injury or reduce injury severity in the event of a crash.

## 1.0 INTRODUCTION

Motorcyclists are among the most vulnerable road users, both in Australia and internationally. Motorcycle riding is much more likely to result in injury than car travel, and the resulting injuries are likely to be more severe for motorcyclists than for vehicle occupants. Fatality and serious injury rates have been found to be more than 20 times greater for motorcyclists than car drivers, with brain and orthopaedic injuries prevalent.

### 1.1 RECENT TRENDS

While the number of motorcyclist fatalities in Australia halved from 1987 to 1997, this trend appears to be changing. The number of motorcycle riders and pillion killed in Australia increased from 176 in 1999 to 191 in 2000. In Victoria, the number of motorcycle riders and pillion killed increased from 38 in 1999 and 45 in 2000 to 64 in 2001. This trend appears to reflect an increase in crashes involving older motorcyclists. Figure 1.1 shows that while the number of motorcyclists aged under 30 involved in crashes in Victoria almost halved from 1991 to 2000, the number of motorcyclists aged 30 and over more than doubled.

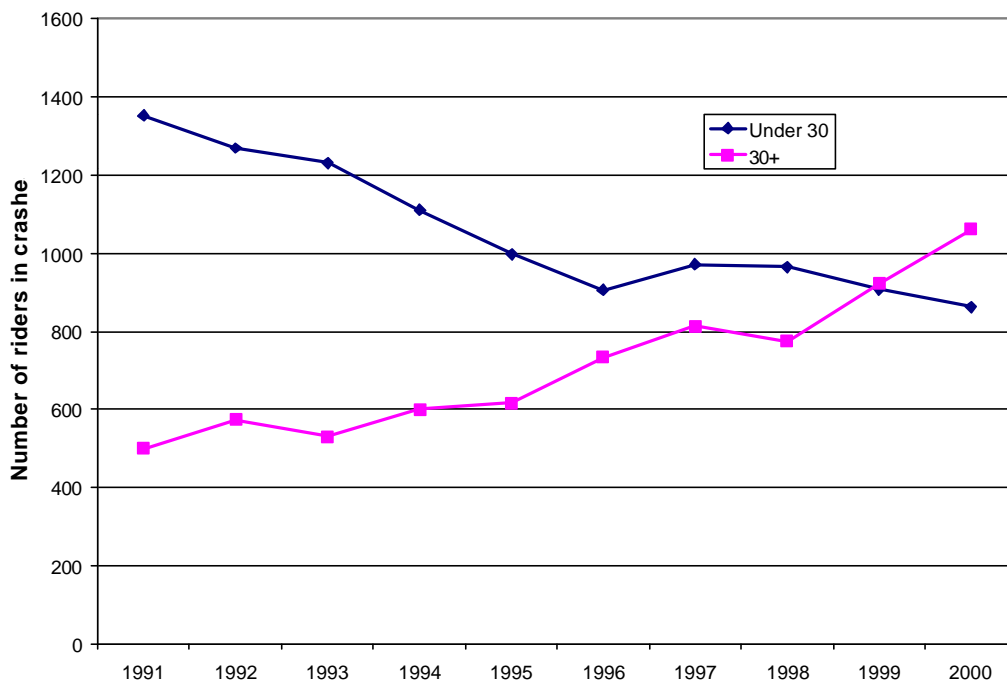


Figure 1.1 Number of motorcyclists aged 30 and over and under 30 involved in casualty crashes in Victoria 1991-2000.

Sales of new road motorcycles have increased markedly since the mid-1990s (Christie and Newland, 2001). About 40% of sales were large capacity supersports machines with purchasers generally being in the 25-35 year age group. About 25% of sales were touring, sports/touring or cruiser (similar to Harley-Davidsons) motorcycles with an engine capacity of 750 cc or more. Most purchasers of these motorcycles were aged 38 to 45.

The increase in the number of older motorcyclists is not just an Australian phenomenon. Among their list of factors affecting motorcycle safety that have changed since the publication of the Hurt report, the US National Agenda for Motorcycle Safety includes: “maturing of the motorcycle riding population” (US DOT and Motorcycle Safety Foundation, 2000).

Older riders can be categorised into three groups:

1. Riders who have held licences and ridden for many years
2. Riders who have held licences for many years but have only returned to riding recently
3. Riders who have only obtained a licence recently

Christie and Newland (2001) speculate that the increase in crashes of older riders may reflect the return to riding by previously dormant/inactive licence holders (the second group mentioned above) who lack currency and competence in important riding skills such as obstacle avoidance, curve riding and braking.

The pattern of riding by older riders may also contribute to their involvement in severe crashes. In New South Wales in 2000, older riders were involved in crashes further from home and more commonly on main roads and highways (with presumably higher travel speeds and the potential for more severe injury) than younger riders (RTA, 2000 cited in Christie and Newland, 2001).

## **1.2 AIM**

The project aims to develop a better understanding of the patterns of riding and risk factors associated with older motorcyclists and to recommend measures that may reduce the crash involvement of these riders.

## **1.3 STRUCTURE OF THE PROJECT**

This first stage of the project was a survey of motorcycle licence holders aged over 30. The crash database and the licensing database cannot provide information about whether older riders are new to motorcycling, whether they obtained a motorcycle licence many years ago but have now returned to riding after a long break from riding, or whether they have been active motorcyclists ever since obtaining a licence. One of the few ways of obtaining this information is to survey the riders.

In the second stage of this research, the Victorian crash data for 1996-2000 were analysed to gain an understanding of the magnitude of the involvement of older riders in crashes and to identify the characteristics of older rider crashes. These characteristics may help to identify potential risk factors and assist in targeting countermeasures.

## 2.0 SURVEY METHOD

A mail survey of motorcycle licence holders was undertaken to provide information about whether they ride now and their riding patterns now and in the past. The crash database and the licensing database cannot provide this information.

### 2.1 SAMPLING STRATEGY

It was proposed that a questionnaire be mailed to a sample of holders of motorcycle licences who are aged over 30 years. The VicRoads Registration and Licensing Department provided a data file containing records of 49,913 motorcycle licences where the date of birth of the licence holder was prior to 1 January 1972. Licences that had been cancelled, disqualified or surrendered voluntarily were not included in the data file. The dataset was provided on 9 April 2002. MUARC was advised that this file represented a random selection of one-quarter of the total records that satisfied this criterion. Thus, the datafile provides an unbiased sample of current Victorian motorcycle licence holders over the age of 30.

The sample was stratified in an attempt to ensure sufficient responses from licence holders in each age group and for licences issued in particular years. If the sample had not been stratified, it would have been dominated by licence holders aged 30-49 and there would have been insufficient responses from licence holders aged 50 and over (see Table A3.1). There would also have been too few instances of recently issued licences (see Table A3.2). The stratification of the sample is summarised in Table 2.1. The number of motorcycle licence holders aged 60 and over that could be sampled was limited by the restricted number of licence holders in this age range, particularly among recently issued licences. The random selection of cases function in SPSS was used to select particular licence holders from the dataset.

Licence holders were classified as metropolitan or rural residents according to their postcode (see Section A3.5 for details). The sample was not stratified according to metropolitan and rural address of the licence holder because there was considered to be sufficient rural licence holders to allow these comparisons to be made.

Licence holders were excluded from the sample if any of the following were true:

- date of birth missing
- address missing or incomplete
- postcode missing or not in Victoria

The total number of licence holders excluded was very small.

Licence holders who responded that they had ridden during the previous 12 months were classified as 'riders'. Licence holders who responded that they had not ridden during the previous 12 months were classified as 'non-riders'.

**Table 2.1 Number of motorcycle licence holders to whom questionnaires were sent as a function of year of licence issue and age group.**

Licence year	Age group				
	30-39	40-49	50-59	60+	Total
Pre-1985	275	275	275	275	1100
1985-89	150	150	150	150	600
1990-94	150	150	150	150	600
1995-99	150	150	150	150	600
2000-02	320	320	320	140	1100
Total	1045	1045	1045	865	4000

## 2.2 QUESTIONNAIRE

A written questionnaire was developed that sought information about

- patterns of motorcycle use in the past year and in the period since licensing
- reasons for riding in the past year and in the period since licensing
- type of motorcycle ridden in the past year and in the period since licensing
- training undertaken in the period leading up to and since licensing
- crash involvement in the past year and in previous years

It was expected that a large number of the sample would no longer be riding (termed ‘non-riders’) and thus most of the items in the questionnaire would not be relevant to them. To encourage responding by non-riders, a section for non-riders was placed on the front page of the questionnaire. The non-rider section asked about:

- when their learners permit and licence were issued
- when they last rode
- the main reason they stopped riding
- year they were born
- where they live

Non-riders were encouraged to complete this section only and return the questionnaire.

A copy of the questionnaire is presented in Appendix 1. The questionnaire was formatted as an A5 booklet. Most questions could be answered by ticking a box or circling a number. A small number of questions required a short answer.

## **2.3 PROCEDURE**

Sealed envelopes were prepared containing the questionnaire booklet, a covering letter and a reply-paid envelope.

The covering letter explained that participation in the research was voluntary. It also stated that none of the surveys included any identifying information and that no findings that could identify any individual participant will be published and no completed survey would be shown to any VicRoads employee or officer. The letter also provided contact details for Monash University's Standing Committee on Ethics in Research on Humans if the employee wished to complain about the survey. The reply-paid envelope allowed the respondent to return the completed questionnaire to MUARC in a confidential manner.

### **2.3.1 First mailing**

The first mailing comprised 4,000 questionnaires posted on 29 April 2002.

### **2.3.2 Reminder letters**

Reminder letters were sent to 3,884 licence holders (all 4,000 licence holders with the exception of those 116 whose questionnaire had already been received marked "return to sender"). Reminder letters were posted on 13 May 2002 (two weeks after the original mailing). The reminder letter included a new copy of the questionnaire booklet, a covering letter explaining the reminder procedure and a reply-paid envelope.

## **2.4 ETHICS APPROVAL**

Ethics approval for the study was granted by the Monash University Standing Committee on Ethics in Research on Humans at its meeting on 26 February 2002.



## **3.0 SURVEY RESULTS**

### **3.1 RESPONSE RATES**

Overall, 1,081 completed questionnaires were received from the first mailing of 4,000 questionnaires (before the reminder letters were posted). This comprised 495 questionnaires from non-riders and 586 questionnaires from riders. In addition, 129 questionnaires were received marked “return to sender” (116 of these were received before preparation of the reminder letters commenced). The response rate for the first mailing (ignoring “return to sender” replies) was 27.0% (1,081/4,000). If the returns to sender are excluded from the sample, then the response rate was 27.8% (1,081/3,884).

There were 867 questionnaires received after the reminder letters were sent to 3,884 licence holders (4,000 minus the returns to sender at the time that preparation of the reminder letters commenced). This comprised 428 questionnaires from non-riders (licence holders who had not ridden in the last 12 months) and 439 questionnaires from riders (licence holders who had ridden in the last 12 months). In addition, 13 questionnaires were received marked “return to sender”. The response rate to the reminder letter (ignoring “return to sender” replies) was 22.3% (867/3,884). If the returns to sender are excluded from the sample, then the response rate was 22.4% (867/3,871).

For the survey as a whole, 1,948 questionnaires were received by 31 May 2002 (one month after the first mailing and two weeks after the second mailing). This comprised 923 questionnaires from non-riders and 1,025 questionnaires from riders. In addition, 142 questionnaires were received marked “return to sender”. The response rate (ignoring “return to sender” replies) was 48.7% (1,948/4,000). If the returns to sender are excluded from the sample, then the response rate was 50.5% (1,948/3,858).

An additional 149 completed questionnaires (86 riders and 53 non-riders) and 11 questionnaires marked “return to sender” were received after the cut-off date of 31 May 2002 and therefore were not included in the analysis.

#### **3.1.1 Examination of response rates for evidence of bias**

Detailed numbers of responses by sampling category are presented in Appendix 2. In calculating response rates for licence holders according to age group and year of licence issue, it was assumed that licence holders responses regarding their age and the year of issue of their licence would correspond to those details recorded on the VicRoads licence database. However, Table 3.1 shows that more licence holders responded that they were aged over 40 and their licence was issued before 1985 than the number of questionnaires sent to motorcycle licence holders with these characteristics on the licence database. This may have resulted from licence holders forgetting the actual year of licence issue and nominating a year that was earlier than recorded on the database. Alternatively, some riders may have gained their first licence in another State and given this year as the response.

In general, the response rates were high for licence holders whose licences were issued before 1985. Response rates were also high among licence holders aged 30 to 39, although the response rate for this group was higher for those licensed longer (see Table 3.1).

**Table 3.1 Summary of response rates (expressed as percentages) as a function of age group and year of licence issue.**

Licence year	Age Group				
	30-39	40-49	50-59	60+	All ages (includes age unknown)
Pre-1985	57.1	118.5	144.1	130.9	114.0
1985-89	56.0	12.7	10.0	15.3	23.8
1990-94	48.0	16.0	12.0	15.3	23.2
1995-99	34.0	23.3	24.7	17.3	25.2
2000-02	18.4	17.2	18.8	11.4	17.6
All years (includes year unknown)	41.7	45.0	51.0	54.1	48.7

In the sample of 4,000 motorcycle licence holders to which questionnaires were sent, 60.5% had addresses in the metropolitan area (Melbourne and Geelong). However, only 49.7% of those who responded lived in the metropolitan area. These figures suggest that the level of responding was lower by licence holders with metropolitan addresses than those with addresses elsewhere in Victoria.

The non-rider section on the front page of the questionnaire aimed to encourage responding by non-riders who, it was felt, might otherwise consider that the questionnaire was not relevant to them. The outcome was that the number of questionnaires returned by non-riders was almost as great as the number of questionnaires returned by riders (923 versus 1,025). Given that the actual numbers of riders and non-riders in the sample is unknown, it is not possible to calculate the response rates of riders and non-riders separately.

The overall return to sender rate was 3.6%. This rate was consistent across age groups but was higher among licence holders with licences issued in 1995-99 and 2000-2002 (4.8% and 4.5%, respectively). The return to sender rate provides an indication of the number of addresses that were incorrect, but it is likely to be an underestimate because some may not have been returned.

Among the returns to sender, there were 10 responses that stated that the licence holder was deceased. Five of these licence holders would have been aged 60 and over, two would have been aged 50 to 59, one 30 to 39, and age was unknown for two of these responses.

### **3.2 LICENCE HOLDERS VS. ACTIVE MOTORCYCLISTS**

This survey provides an indication of the proportion of motorcycle licence holders who are active motorcyclists. If the response rates for riders and non-riders are similar, the percent of responses that are from riders will reflect the proportion of licence holders that are riders. If the response rate for non-riders is lower than for riders, then the percent of

responses that are from riders will over-estimate the proportion of licence holders that are riders.

From the sample of 4,000 motorcycle licence holders, there were 923 responses from non-riders and 1,025 responses from riders. If the response rates were the same for riders and non-riders, then this would suggest that 47% of licence holders are non-riders and 53% are riders. The minimum estimate of the proportion of non-riders among licence holders could be calculated by assuming that all non-riders had responded. This minimum estimate is 23% (923/4,000). The maximum estimate of the proportion of non-riders would assume that all riders had responded. This maximum estimate is 74% (2,975/4,000).

The percent of respondents who were riders decreased with age, from 59.6% for licence holders aged 30 to 39 to 41.2% for licence holders aged 60 and over (see Table 3.2). The percent of respondents who were riders also decreased with the number of years since the licence was issued (see Table 3.3). Of those licence holders whose licence was issued in 2000 or later, 89.6% were riders. This fell to about 35% for licence holders whose licence was issued before 1960.

Clearly, age of licence holder and year of licence issue are not independent. The year of licence issue is confined to more recent years for the younger riders.

**Table 3.2 Percent of responses from each age group that were riders (licence holders who had ridden in the previous 12 months).**

Age group	Percent riders
30-39	59.6
40-49	55.7
50-59	53.8
60+	41.2
Unknown	56.1
Total	52.6

**Table 3.3 Percent of responses that were from riders (licence holders who had ridden in the previous 12 months) classified by year of licence issue. Percentages for 1949 and earlier are based on small numbers of responses.**

Year of licence issue	Percent riders
2000+	89.7
1995-99	66.9
1990-94	52.5
1985-89	55.9
1980-84	43.9
1975-79	51.6
1970-74	43.5
1965-69	55.4
1960-64	39.1
1955-59	35.4
1950-54	34.2
1945-49	33.3
pre-1945	47.1
Unknown	56.7
Total	52.6

Overall, the percent of responses that were from riders was lower for licence holders that lived in the metropolitan area than for licence holders that lived in the rest of Victoria (51.1% versus 53.6%). Table 3.4 shows, however, that this pattern was not true for the youngest age group.

**Table 3.4 Percent of licence holders that were riders (licence holders who had ridden in the previous 12 months) according to age group and metropolitan or rural address.**

Age group	Percent of respondents who are riders	
	Metropolitan	Rural
30-39	62.9	55.4
40-49	52.1	60.5
50-59	48.9	59.0
60+	37.8	43.3
Unknown	57.1	16.7
Total	51.1	53.6

Comparisons of the percentages of male and female motorcyclists who are current riders were not possible because gender was not included in the non-rider questions.

### **3.3 STOPPING RIDING**

#### **3.3.1 When do licence holders stop riding**

Non-riders were asked what year they last rode. Combining this information with the year their licence was issued and their age enabled the age when they stopped riding and how long they had held a licence when they stopped riding to be calculated.

Table 3.5 summarises the ages at which the non-riders stopped riding. In general, the older non-riders stopped riding at an older age. More than two-thirds of non-riders aged 60 and over did not stop riding until they were at least 50 years of age.

**Table 3.5 Percentages of non-riders (licence holders who had not ridden in the previous 12 months) in each age group who stopped riding at particular ages.**

Age when stopped riding	Age now				
	30-39	40-49	50-59	60+	Total
Under 30	45.4	24.3	11.4	5.3	19.2
30-39	54.6	43.2	24.6	7.5	29.7
40-49		32.5	33.6	15.5	21.4
50-59			29.9	35.1	18.7
60+				36.6	10.9
Total	100.0	100.0	99.5	100.0	99.9

### 3.3.2 Why do licence holders stop riding

The questionnaire asked “What was the **main** reason you stopped riding?” The options provided were “Needed to transport family”, “Too dangerous”, “Didn’t have time” and “Other”. Many respondents ticked more than one reason and a large number of “Other” responses were recorded. These have been recoded into the categories in Table 3.6.

Table 3.6 shows that “Too dangerous” was the most frequent reason why the licence holder stopped riding, being cited by 24.5% of respondents. It was closely followed by “Didn’t have time” (20.0%) and “Needed to transport family” (18.5%). The most common “Other” reason was “Sold bike” (17.8%).

Figure 3.1 shows that the main reasons why the licence holder stopped riding differed according to their age when they stopped riding. “Too dangerous” was the most common reason offered by those who stopped riding under the age of 30 and was almost the most common reason of those who stopped riding between the ages of 30 and 39. “Need to transport family” was most commonly cited by those who stopped riding between the ages of 30 to 39. Licence holders who stopped riding between the ages of 40 and 49 or between 50 and 59 frequently cited “Didn’t have time” or “Sold bike”. “Age” was cited as a reason by 8% of those who stopped riding when they were 60 or older.

**Table 3.6 Main reasons why licence holder stopped riding.**

Reason	Count	% of responses	% of cases
Transport family	165	15.4	18.5
Too dangerous	219	20.5	24.5
Didn't have time	178	16.7	20.0
Health reasons	30	2.8	3.4
Cost	68	6.4	7.6
Sold bike	159	14.9	17.8
Awaiting repairs/new bike	9	0.8	1.0
Repairs	10	0.9	1.1
Weather	20	1.9	2.2
Bought car	45	4.2	5.0
Reduced opportunity	82	7.7	9.2
Partner	14	1.3	1.6
Age	22	2.1	2.5
Other	48	4.5	5.4
Total	1070	100.0	119.7

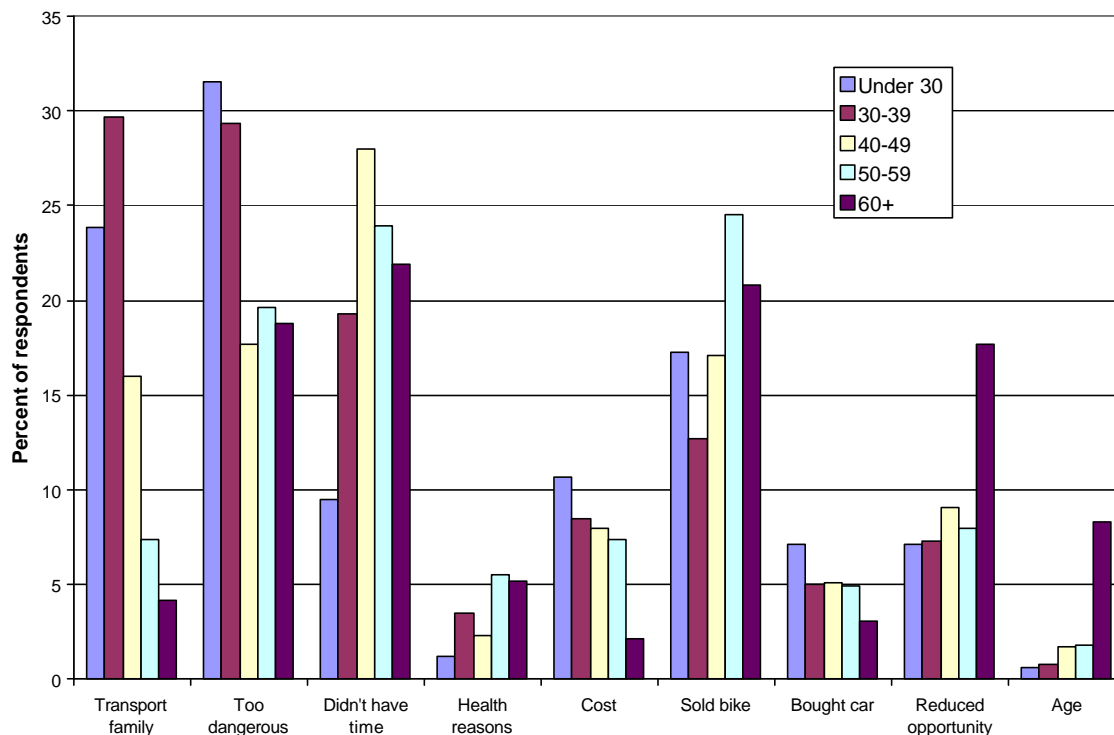


Figure 3.1 Main reasons why stopped riding as a function of age when stopped riding. Reasons that were cited by less than 5% of respondents in any age range are not included in the chart.

### 3.4 DIFFERENT TYPES OF ACTIVE RIDERS

Licence holders who reported riding in the last 12 months (riders) were classified into three groups:

**Continuing riders** Riders who have held licences and ridden regularly for many years. Defined in the data as riders who obtained their licence prior to 1995 and who agreed with the statement that “I have ridden regularly ever since I got my licence”.

**Returned riders** Riders who have held licences for many years but have only returned to riding recently. Defined in the data as riders who obtained their licence prior to 1995 and who agreed with the statement that “I rode regularly when I first got my licence and then didn’t ride much for a while and now have taken up riding again”.

**New riders** Riders who have only recently obtained a licence. Defined in the data as riders who have obtained their licence in 1995 or more recently.

The frequency of riding that corresponded to riding “regularly” was not defined in this question but the frequency of current riding was addressed elsewhere in the questionnaire.

The sample comprised 384 “continuing riders” (42.7% of riders), 240 “returned riders” (26.7%) and 275 “new riders” (30.6%). A further 126 riders were unable to be classified

because they did not provide their year of licence issue or they did not answer the item regarding riding pattern in the period between when they got their first licence and now.

Almost two-thirds of the “new riders” had obtained their licences in 2000-2002. This reflects the over-sampling of licence holders who had obtained their licences in those years.

### 3.4.1 Age

The mean age of the new riders was significantly lower than that of the continuing riders and the returned riders (46.4 years versus 48.9 years and 49.6 years, respectively, Scheffe test new vs always  $p=.019$ , new vs returned  $p=.005$ ).

The distribution of ages of continuing, returned and new riders is shown in Figure 3.2. There are relatively more new riders in the 30 to 39 age group and relatively fewer in the 60 and over age group. The largest proportion of returned riders is in the 50 to 59 age group.

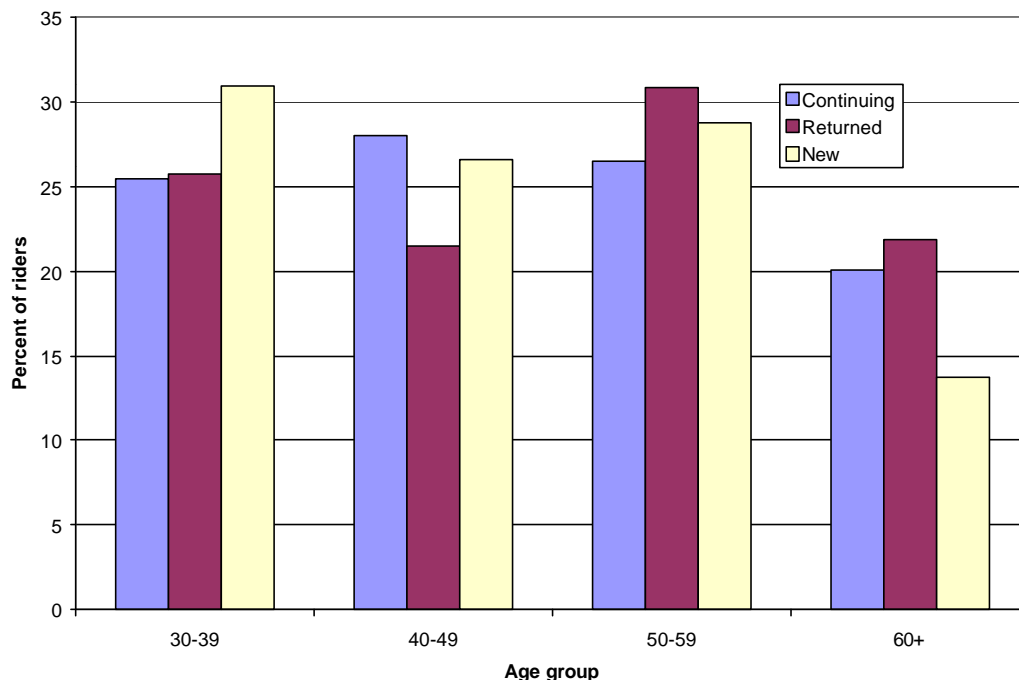


Figure 3.2 Distribution of ages of continuing, returned and new riders.

### 3.4.2 Gender

Overall, 94.4% of continuing riders, 96.3% of returned riders and 82.8% of new riders were male. A chisquare test showed that the gender distribution of the groups differed significantly ( $\chi^2(2)=37.5$ ,  $p=.000$ ). This reflects the lower percentage of males among new riders.

The lower percentage of males among new riders does not appear to be accounted for by the different age distribution of new riders. There was a lower percentage of males among new riders than among continuing or returned riders in each age group.

### 3.4.3 Level of education

The highest level of education completed by continuing, returned and new riders was similar, with about one-third of riders having finished school before Year 12 and about one-third having undertaken a TAFE or trade qualification.

### 3.4.4 Marital status

The pattern of marital status among the three groups of riders is summarised in Figure 3.3. Analysis showed that the pattern differed significantly ( $\chi^2(2)=9.7$ ,  $p<.05$ ). New riders appear more likely to be single than continuing or returned riders (13.1% vs 8.6% and 6.4%, respectively).

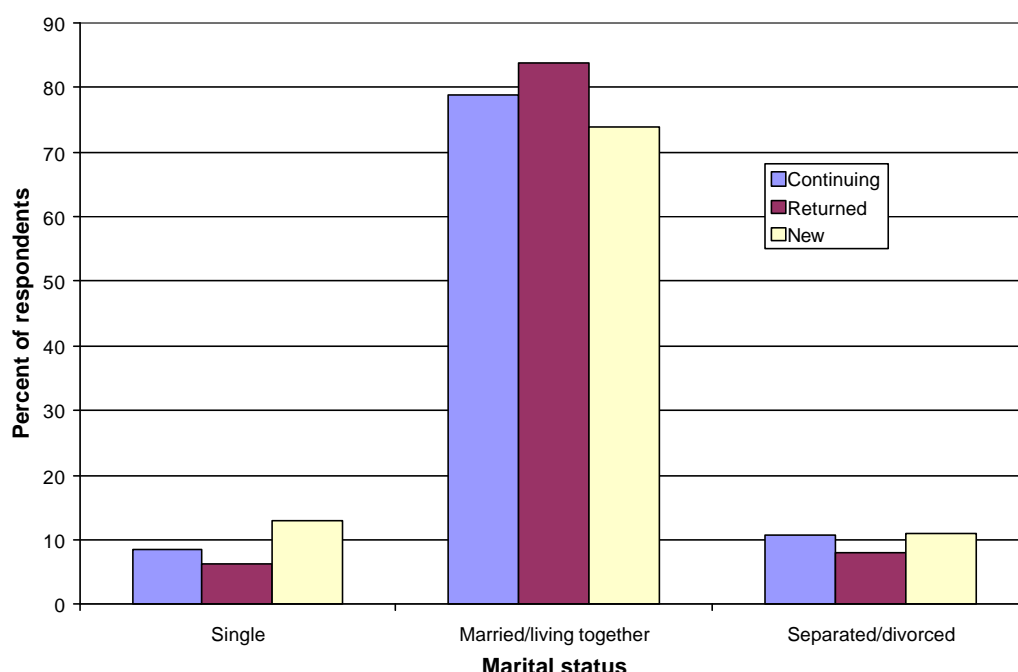


Figure 3.3 Marital status of continuing, returned and new riders.

### 3.4.5 Employment status

The employment status of continuing, returned and new riders is summarised in Figure 3.4. Generally, the patterns of employment status of the three groups are similar, with about 70% of each group in full-time work. New riders appear to be somewhat more likely to be in part-time work.

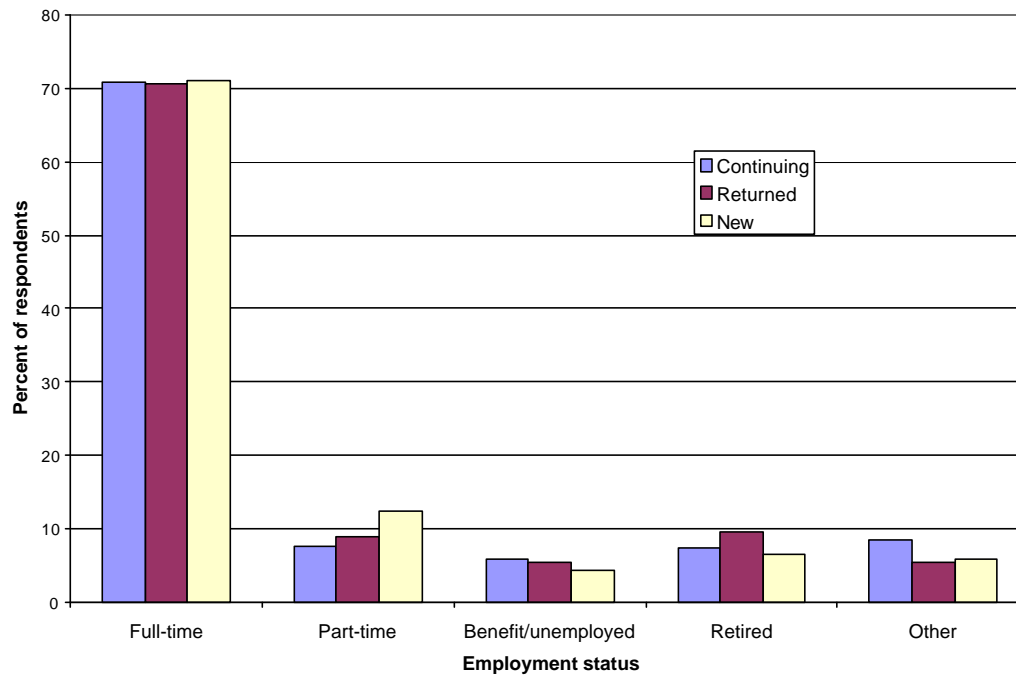


Figure 3.4 Employment status of continuing, returned and new riders.

### 3.4.6 Location of residence

The three groups of riders differ in the proportions that live in the metropolitan area (Melbourne and Geelong) compared with the rest of Victoria ( $\chi^2(2)=24.6, p=.000$ ). Overall, 42.4% of continuing riders live in the Metropolitan area, compared with 50.8% of returned riders and 62.0% of new riders.

### 3.4.7 Length licence held

Both continuing and returned riders were defined as having obtained a licence before 1995. The mean number of years that the riders had held a licence did not differ between continuing and returned riders (26.1 vs 27.1 years,  $t(622)=-1.03, p=.282$ ).

The distributions of year of licence issue were also similar for continuing and returned riders (see Figure 3.5,  $\chi^2(2)=2.03, p=.362$ ). This was also true when year of licence issue was compared for all five-year groups ( $\chi^2(11)=6.3, p=.851$ ).

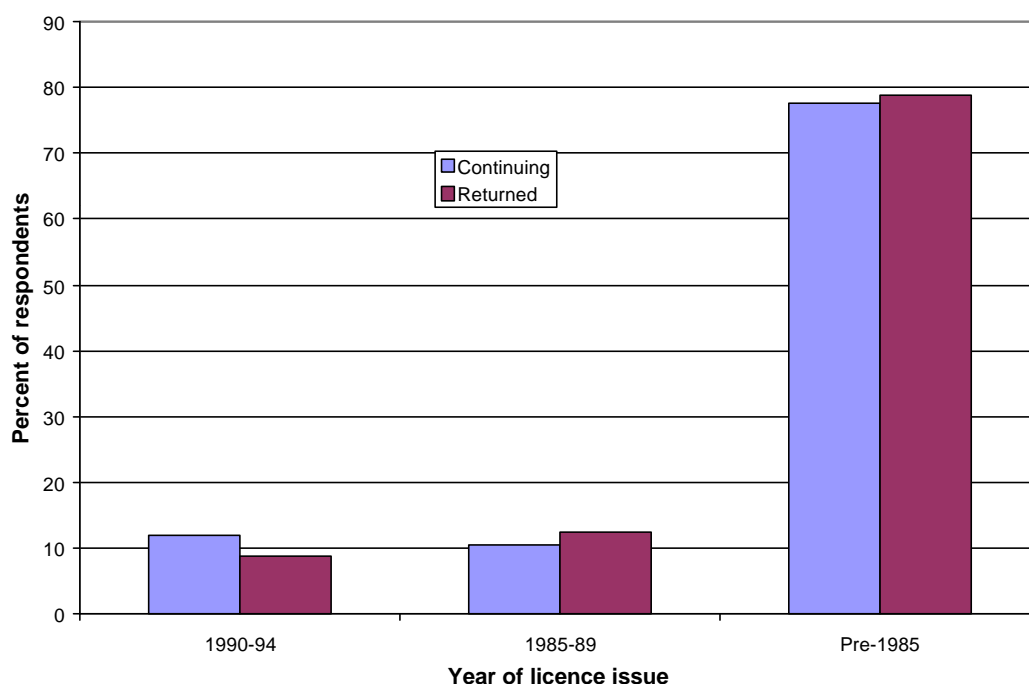


Figure 3.5 Year of licence issue for continuing and returned riders.

### 3.5 RIDER TRAINING

Overall, 44.7% of respondents had undertaken a motorcycle rider training course. Generally, riders who had obtained their licence more recently were more likely to have undertaken a training course (see Table 3.7,  $\chi^2(4)=271.1$ ,  $p=.000$ ). Almost 90% of riders who obtained their licence in 2000-02 had undertaken training, falling to 26.4% of those who had obtained their licence before 1985. As a consequence, new riders were more likely to have undertaken training than continuing or returned riders. Analyses showed new riders licensed in 2000-02 did not differ from those licensed in 1995-99 in terms of the percentage who had undertaken training ( $\chi^2(1)=1.2$ ,  $p=.275$ ). Similarly, continuing and returned riders licensed in 1990-94 did not differ in terms of the percentage who had undertaken training ( $\chi^2(1)=2.4$ ,  $p=.122$ ).

**Table 3.7 Percentages of continuing, returned and new riders (and all riders) with licences issued in each group of years who had undertaken a motorcycle training course.**

Type of rider	2000-02	1995-99	1990-94	1985-89	Pre-1985	All years
Continuing			63.0	35.0	23.4	29.4
Returned			42.9	34.5	31.0	32.5
New	88.4	83.7				87.1
All riders	88.4	83.7	54.8	35.9	26.4	44.7

### 3.5.1 Last training course

Riders were asked to describe the last course they had completed. The options provided were “learner”, “licence”, “advanced”, “off-road”, “superbike” and “other”. Those “other” responses that cited Police motorcycle course (n=10) or training to become an instructor (n=3) were recoded as “advanced”. A new category was created for the respondents that cited that their last course was an Australia Post course.

The type of course that had most commonly been taken was a licence course (28.8% of all respondents). For continuing riders, their last course were relatively more likely to have been an advanced course (see Figure 3.6).

Compared to continuing riders, returned riders were more somewhat more likely to have completed licence courses and less likely to have completed advanced courses but this apparent difference failed to reach statistical significance ( $\chi^2(4)=8.5, p=.074$ ).

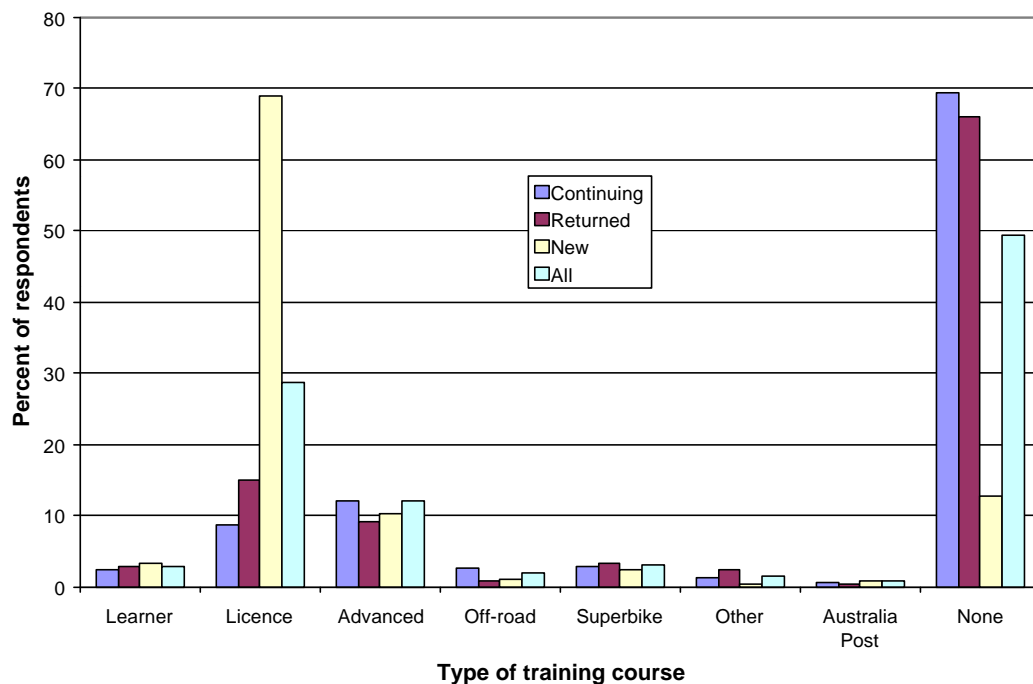


Figure 3.6 Type of last motorcycle training course undertaken by continuing, returned, new and all riders.

### 3.6 AMOUNT OF RIDING

Almost half (44.6%) of the riders reported riding less than 50 km in an average week during the last 12 months. About two-thirds (68.2%) of riders reported riding less than 100 km in an average week. The distance ridden in an average week differed among continuing, returned and new riders ( $\chi^2(10)=36.9, p=.000$ ). Figure 3.7 shows that returned riders were more likely to ride less than 50 km per week than continuing or new riders.

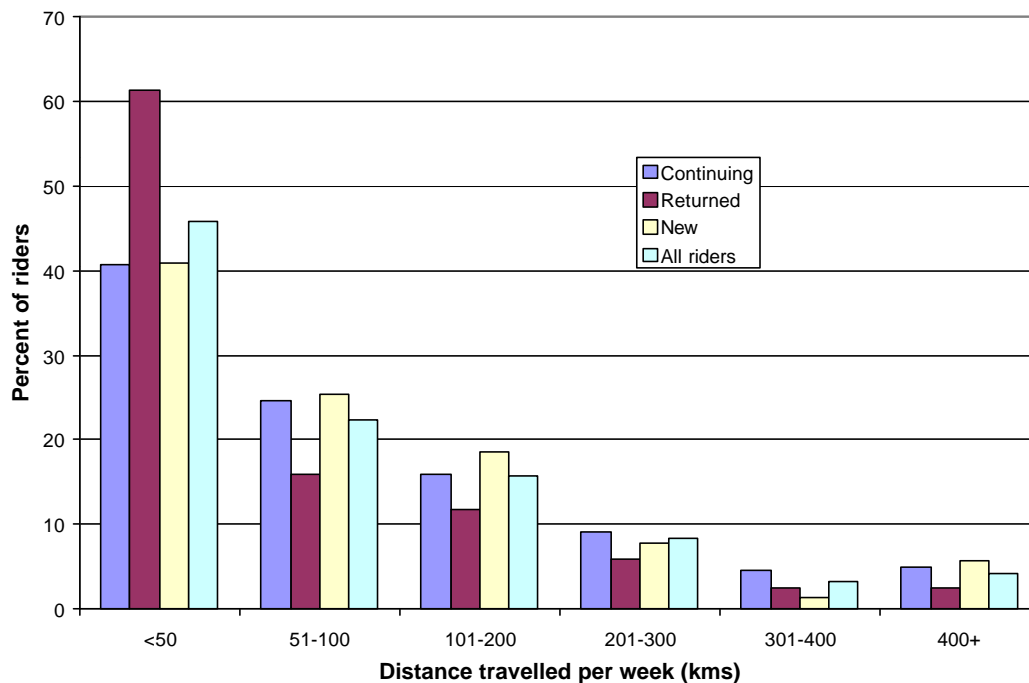


Figure 3.7 Distance travelled in an average week by continuing, returned, new and all riders.

About one-quarter (25.4%) of riders reported riding three or more days per week during the last 12 months. Another quarter (26.1%) reported riding one to two days per week and another quarter (26.4%) reported riding one to three days per month. A small number of riders reported that they had not ridden on the road during the last year, but had ridden off-road.

The frequency of riding differed among continuing, returned and new riders ( $\chi^2(10)=48.0$ ,  $p=.000$ ). Similarly to the finding for distance ridden, Figure 3.8 shows that returned riders were less likely to ride three or more days per week (or one to two days per week) than continuing or new riders.

Riders who reported riding less often were less likely to have completed a motorcycle riding training course ( $\chi^2(5)=22.2$ ,  $p=.000$ ). However, only 47.3% of riders who rode more than 3 days per week had completed a training course. Riders who reported riding less than 50 km per week were less likely to have completed a training course than riders who rode further ( $\chi^2(5)=28.3$ ,  $p=.000$ ). There was no significant relationship between main means of everyday transport and completing a training course ( $\chi^2(2)=1.1$ ,  $p=.579$ ).

Riders were also asked about their main means of everyday transport. Only 9.4% of riders stated that motorcycling was their main means of transport. About two-thirds of riders (65.6%) stated that their main means of transport was a car. A mixture of motorcycle and car (or motorcycle and other means of transport) was reported by 21.1% of riders. The main means of everyday transport differed among continuing, returned and new riders ( $\chi^2(4)=32.7$ ,  $p=.000$ ). Figure 3.9 shows that continuing riders were more likely to use 'mostly motorcycle' or 'mixture of motorcycle and other' than were returned riders. The pattern for new riders lay between these levels.

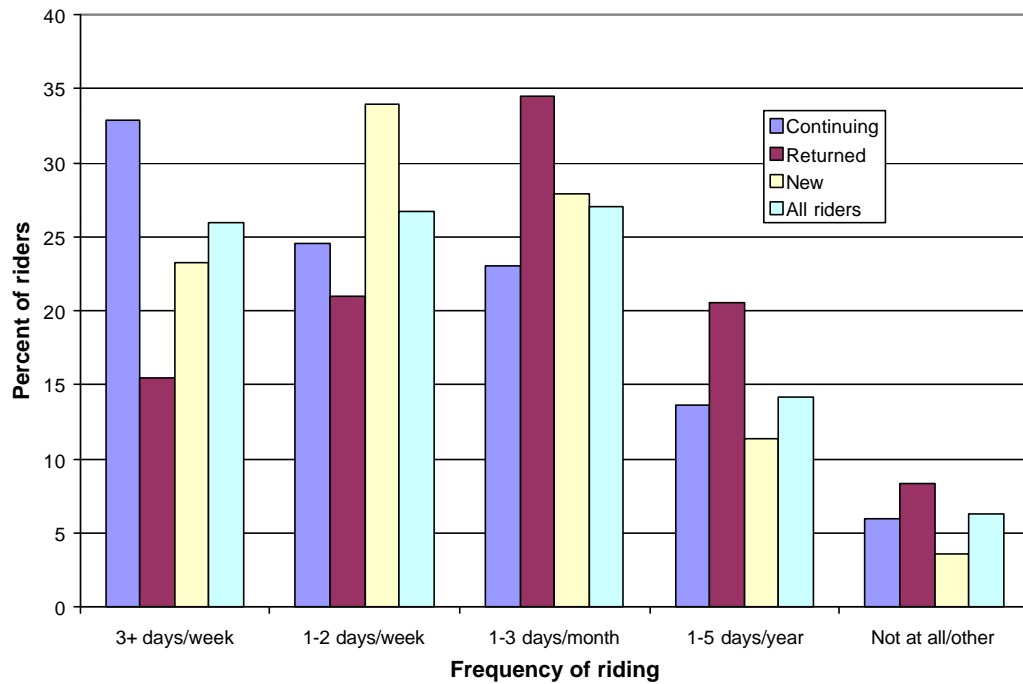


Figure 3.8 Frequency of riding by continuing, returned, new and all riders.

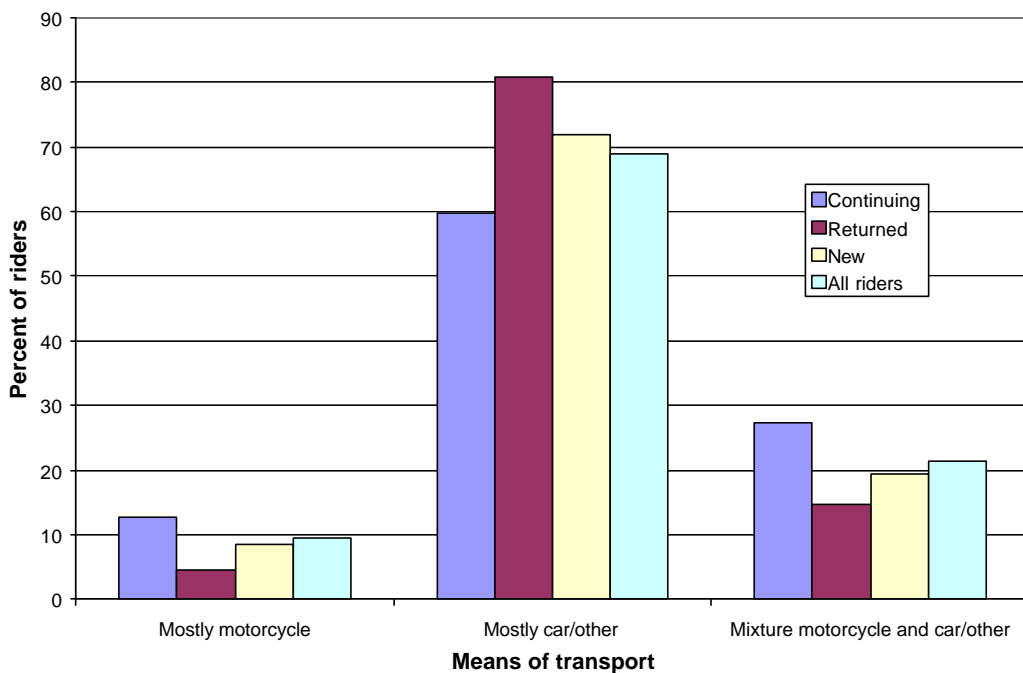


Figure 3.9 Main means of everyday transport by continuing, returned, new and all riders.

Overall, 25.3% of riders reported only riding from October to March. Continuing riders were less likely to ride only during this period than returned riders or new riders ( $\chi^2(4)=39.2$ ,  $p=.000$ , 27.2% versus 33.6% and 39.2%, respectively).

### 3.7 REASONS FOR RIDING

Riders were asked to indicate the purposes that they have used their motorcycles for in the last 12 months and when they first started riding. Figure 3.10 shows that the most common purpose of riding in the last 12 months was touring (cited by 66.9% of riders). About one-third of riders reported using their motorcycles for general transport (37.6%) and a third reported using their motorcycles for commuting (33.6%). Compared with when they first started riding, commuting has become a much less common reason for riding.

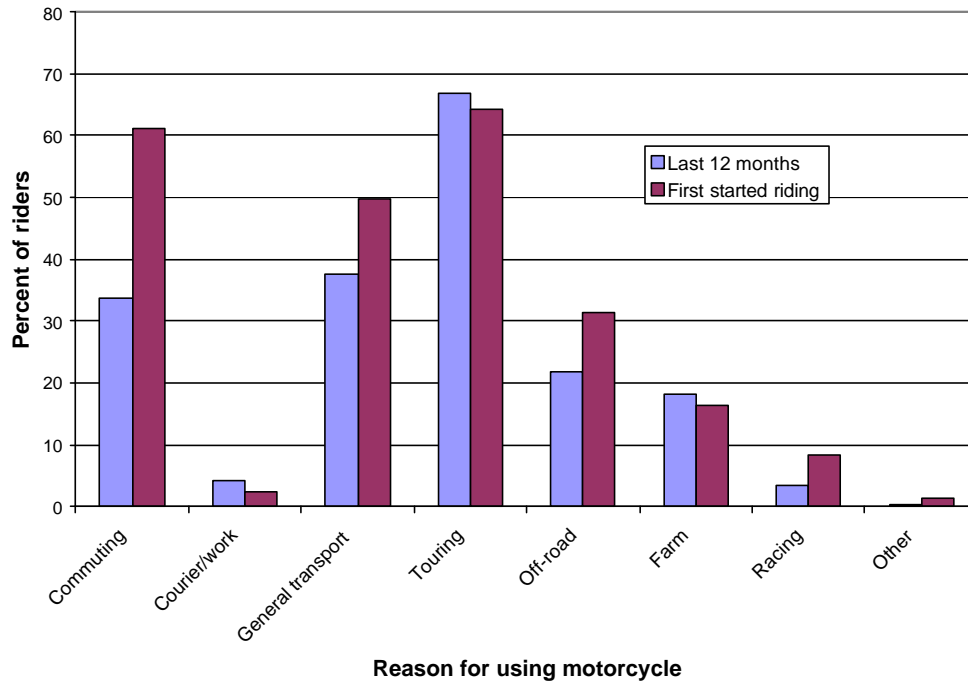


Figure 3.10 Percent of riders who used their motorcycle for these purposes in the last 12 months and when they started riding. Multiple responses allowed, therefore percentages sum to more than 100%.

Continuing, returned and new riders all cited touring as the most common reason for using their motorcycle in the last 12 months (see Figure 3.11). Returned riders appeared to be less likely to use their motorcycle for commuting and general transport than continuing or new riders.

The changes over time in reasons for riding are summarised in Table 3.8.

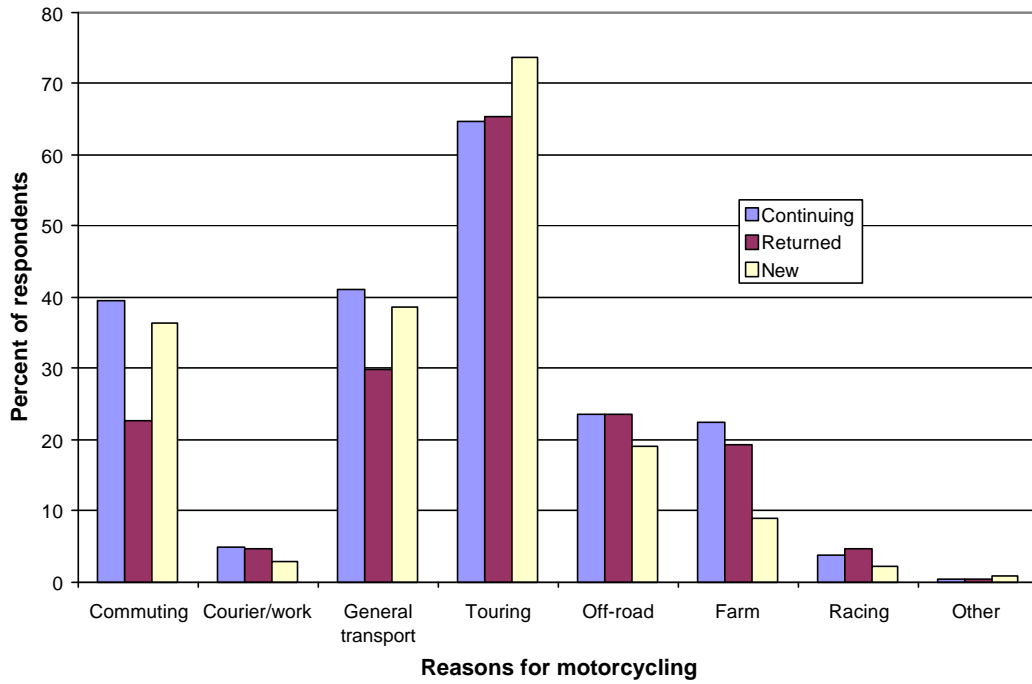


Figure 3.11 Reasons for motorcycling in the last 12 months by continuing, returned and new riders.

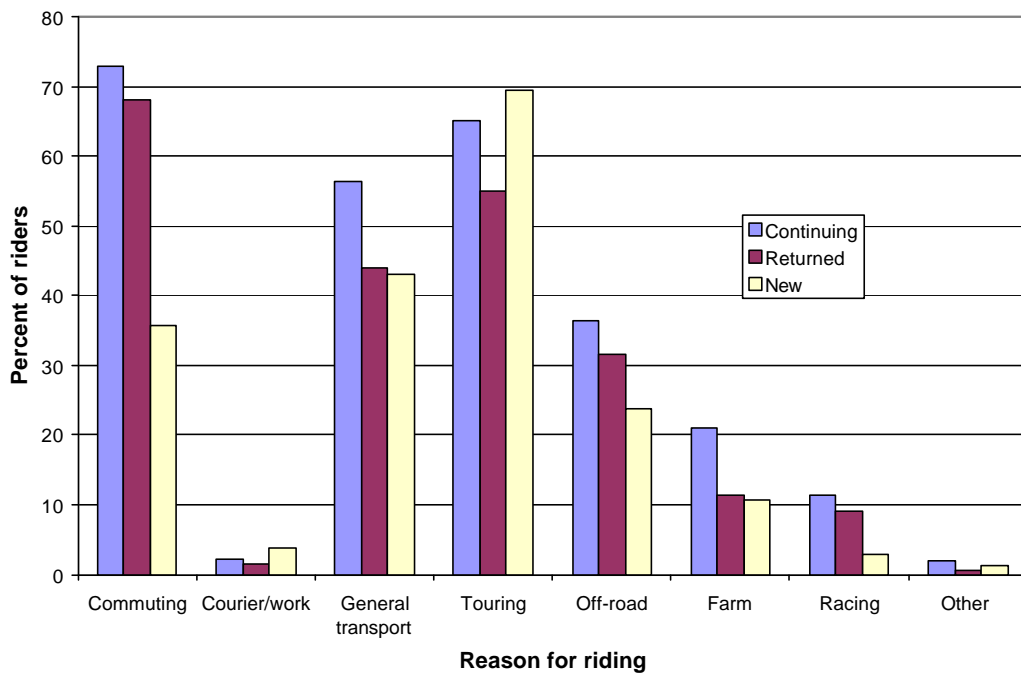


Figure 3.12 Reasons for riding when first started riding by continuing, returned and new riders.

**Table 3.8 Summary of changes over time in reasons for riding. Expressed as percent of all riders.**

Reason	Kept on	Never did	Started	Stopped
Commuting	24.7	41.8	8.0	25.6
Courier/work	0.8	96.0	2.0	1.2
General transport	27.2	49.8	9.4	13.7
Touring	42.9	25.1	22.1	9.9
Off-road	12.7	65.7	8.6	13.1
Farm	8.6	77.5	9.2	4.8
Racing	1.3	91.0	2.0	5.7

The analyses showed that continuing riders and returned riders differed with respect to changes in their reasons for riding. Continuing riders were more likely than returned riders to:

- have continued commuting
- have continued riding on a farm
- have continued touring
- have continued riding for general transport

Returned riders were more likely to:

- have never commuted
- have stopped commuting
- have started touring
- have never rode for general transport

Riders were also asked to rank the purposes that they used a motorcycle for, with “1” for the purpose that they most often use a motorcycle, “2” for the purpose they next most often use a motorcycle for, etc. Separate rankings were made relating to riding in the last 12 months and when they first started riding.

Inspection of the responses suggested that some riders had difficulty with this question. Some respondents did not rank the purposes from 1=’most often’ to 7=’least often’ as instructed in the questionnaire. Some respondents ranked only a subset of the seven purposes (possibly because they had no experience of the other purposes). If this occurred, the lowest rank was recoded to 1 and the next lowest, 2, etc. Some other respondents

ranked more than one purpose equally. Where this occurred, ties were given the average rank (e.g. two ranks of 1 were coded as both 1.5).

The rankings of the most common purpose the motorcycle was used for in the last 12 months are summarised in Table 3.9. They show that, on average, touring was the most common purpose of motorcycling, followed by commuting. Use for work was the most common purpose for a small number of respondents. Commuting was a more common purpose for motorcycling by a larger number of respondents when they first started riding.

**Table 3.9 Rankings of purpose motorcycle most often used for in the last 12 months.**

Purpose motorcycle used for	Mean rank	Median rank	Number of respondents who ranked this measure
Commuting	1.8	2.0	413
Courier/work	3.7	4.0	68
Farm	2.2	1.0	211
General transport	2.1	2.0	460
Touring	1.6	1.0	696
Off-road	2.0	2.0	255
Racing	4.5	4.5	70
Other	5.5	7.0	19
Work	1.1	1.0	14

**Table 3.10 Rankings of purpose motorcycle most often used for when they first started riding.**

Purpose motorcycle used for	Mean rank	Median rank	Number of respondents who ranked this measure
Commuting	1.5	1.0	538
Courier/work	4.0	4.0	52
Farm	2.7	2.0	167
General transport	2.2	2.0	457
Touring	2.1	2.0	580
Off-road	2.5	2.0	294
Racing	4.1	4.0	91
Other	4.7	4.0	22

The reasons for riding in the last 12 months differed across the age groups of riders (see Figure 3.13). Riders aged 30 to 39 were more likely to nominate off-road riding than older riders. Riders aged over 60 were less likely to nominate touring or commuting than younger riders and were more likely to nominate use on a farm.

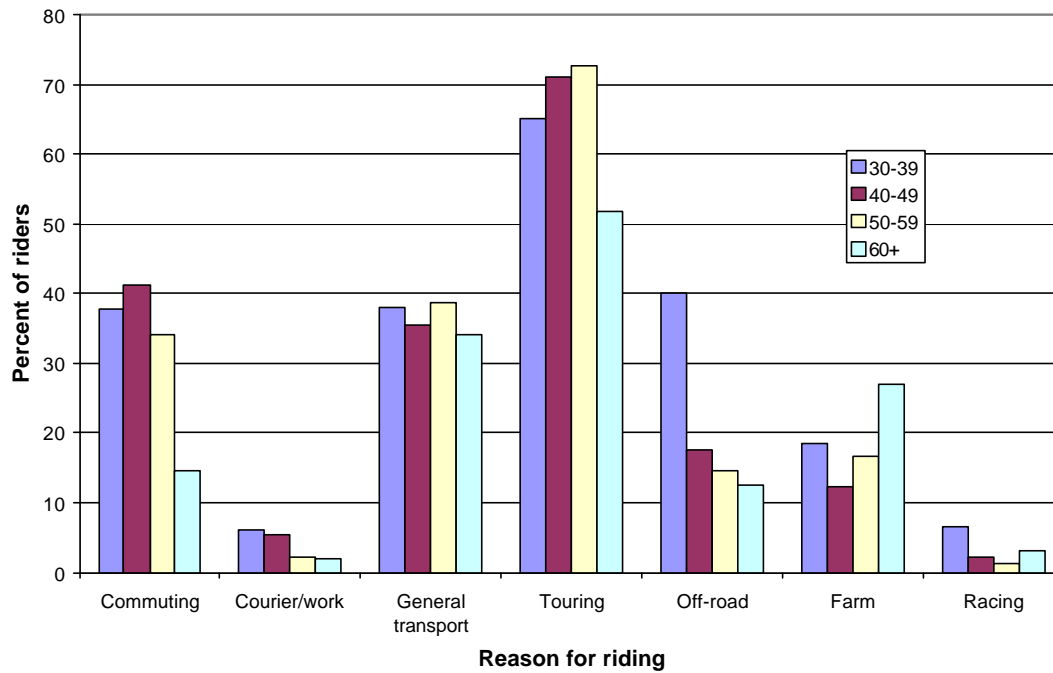


Figure 3.13 Reasons for riding in the last 12 months as a function of age group. Multiple responses allowed, so percentages sum to more than 100.

### 3.8 WHERE DOES RIDING HAPPEN

Riders were asked to indicate how much of their riding over the last 12 months occurred in urban/city areas and how much in rural/country areas on a scale from “all rural” to “all urban”. Overall, half of the riders rode all or mostly in rural areas (49.5%), about one-quarter rode in a mixture of urban and rural areas (23.3%) and about one-quarter rode all or mostly in urban areas. Not surprisingly, the location of riding was influenced by where the rider lived ( $\chi^2(2)=285.2$ ,  $p=.000$ ). However, Table 3.11 shows that even among metropolitan residents, there was significant riding in rural areas.

Table 3.11 Location of riding by metropolitan and rural residents.

Location of riding	Metropolitan residents	Rural residents	All riders
All or mostly rural	24.7	74.4	49.5
Mixture of urban and rural	27.3	19.2	23.3
All or mostly urban	48.0	6.3	27.2
Total	100.0	100.0	100.0

The pattern of location of riding differed significantly among continuing, returned and new riders ( $\chi^2(4)=31.4, p=.045$ ). Generally, new riders reported that more of their riding was in urban areas than either continuing or returned riders.

Riders were asked how often they rode off-road. About 15% of riders reported riding off-road weekly, and a further 9% reported riding off-road monthly. Just under half of the riders (44.2%) reported never riding off-road. The frequency of off-road riding differed significantly for continuing, returned and new riders ( $\chi^2(8)=48.4, p=.000$ ). Figure 3.14 suggests that new riders were less likely to ride off-road than continuing or returned riders.

Frequency of off-road riding also differed by rider age group ( $\chi^2(12)=52.1, p=.000$ ), with 30-39 year old riders appearing less likely to ride off-road than older riders. Riders who live in the metropolitan area were less likely to ride off-road than riders who lived in rural areas ( $\chi^2(4)=75.5, p=.000$ ).

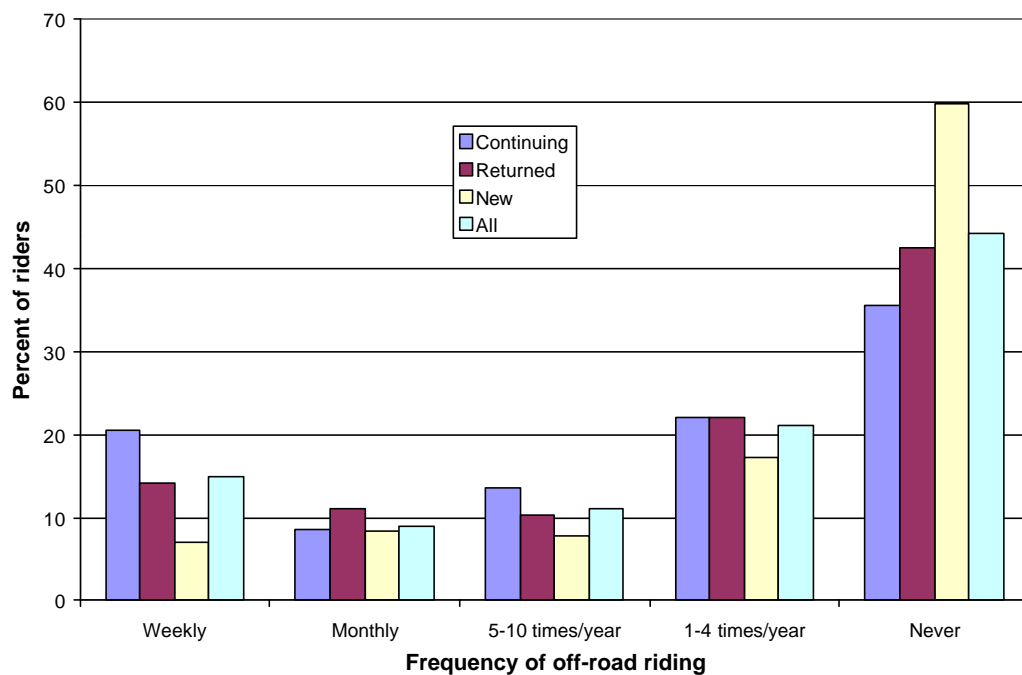


Figure 3.14 Frequency of off-road riding by continuing, returned, new and all riders.

### 3.9 TYPE OF MOTORCYCLES OWNED

Riders were asked about the motorcycles they currently own and other motorcycles they have owned in the past. The questionnaire allowed for details of four current and seven past motorcycles. Details requested were make, model, year of manufacture, engine capacity and year purchased (and year sold for past motorcycles).

#### 3.9.1 Motorcycles currently owned

Overall, 85.1% of riders who responded provided details of at least one motorcycle that they currently owned. Details of two or more motorcycles were provided by 22.3% of riders who responded. Some riders who did not respond to this item may not currently own a motorcycle.

For riders as a whole, 6.1% of motorcycles currently owned had an engine capacity of less than 125 cc, 27.8% had an engine capacity of between 125 and 259 cc, 28.3% had an engine capacity of between 260 and 749 cc and 37.8% had an engine capacity of 750 cc and over.

The pattern of engine capacities for motorcycles owned by continuing and returned riders were similar (see Figure 3.15). New riders, not surprisingly, currently owned more motorcycles with an engine capacity of 125 to 259 cc than for continuing or returned riders. However, more than 50% of motorcycles owned by new riders had an engine capacity of 260 cc or over. New riders who obtained their licence in the period 1995-99 were more likely to own a motorcycle with an engine capacity of over 260 cc compared with riders who obtained a licence in the period 2000-02 (75.3% vs 40.4%, see Table 3.12).

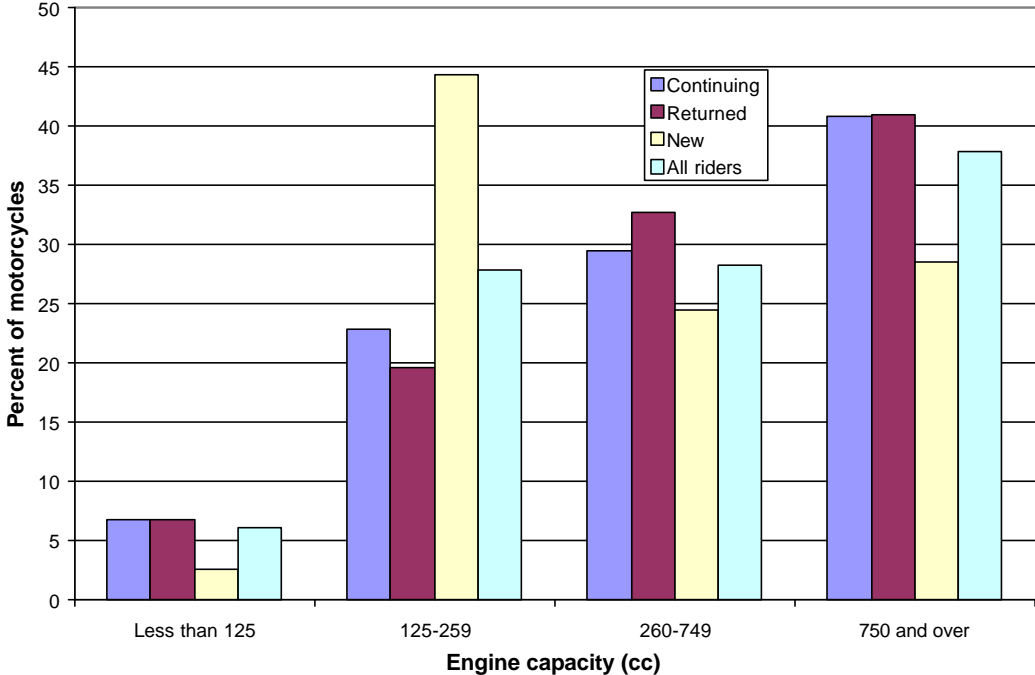


Figure 3.15 Percent of motorcycles currently owned by continuing, returned, new and all riders according to engine capacity (cc).

**Table 3.12 Percent of motorcycles owned by riders first licensed in 2000-02 and 1995-99 according to engine capacity (cc).**

Engine capacity	Year rider first licensed	
	2000-02	1995-99
Less than 125	1.6	4.4
125-259	57.9	22.1
260-749	20.2	31.0
750 and over	20.2	42.5
Total	100.0	100.0

### **3.9.2 Motorcycles owned in the past**

Overall, 78.2% of riders who responded provided details of at least one motorcycle that they owned in the past. Details of two or more motorcycles were provided by 57.2% of riders who responded. New riders may not have owned any motorcycles other than those they currently own.

For riders as a whole, 6.7% of motorcycles owned in the past had an engine capacity of less than 125 cc, 35.4% had an engine capacity of between 125 and 259 cc, 32.0% had an engine capacity of between 260 and 749 cc and 25.9% had an engine capacity of 750 cc and over.

The motorcycles owned in the past by continuing riders were more likely to have had engine capacities of 750 cc and over than the motorcycles owned in the past by returned riders (see Figure 3.16).

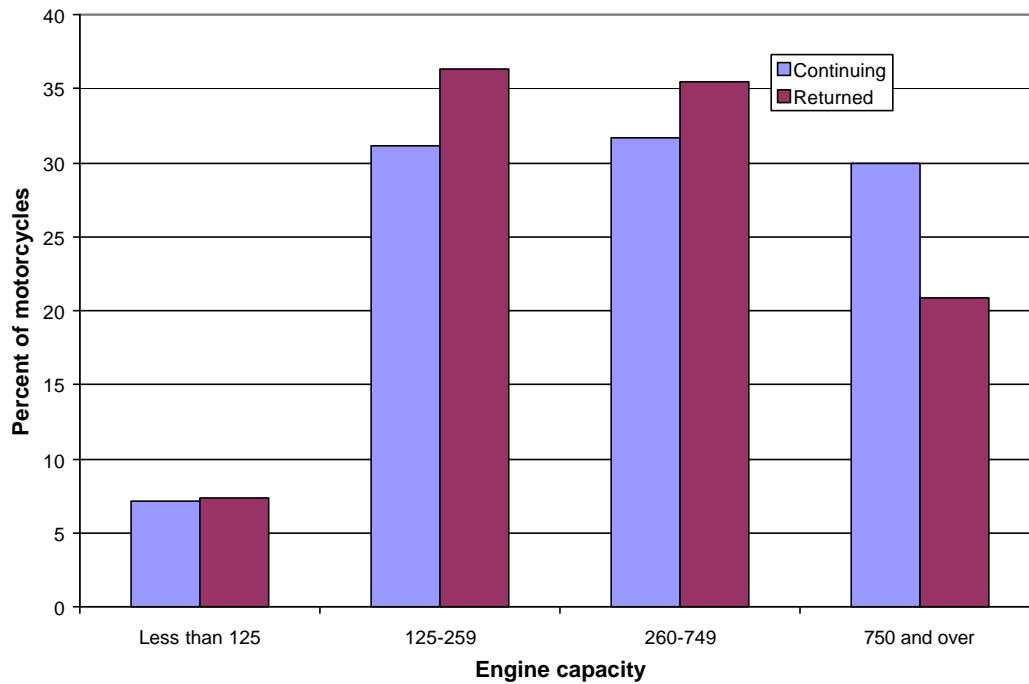


Figure 3.16 Percent of motorcycles currently owned by continuing and returned riders according to engine capacity (cc).

### 3.9.3 Differences between motorcycles currently owned and those owned in the past

Given that many riders provided details of more than one motorcycle that they currently owned and more than one motorcycle that they owned in the past, simple comparisons between current and past motorcycles were not possible.

The approach taken was to compare the engine capacity of the largest capacity motorcycle owned now with the engine capacity of the largest capacity motorcycle owned in the past. This was considered to make better use of the information provided about more than one motorcycle than simply comparing the first mentioned currently owned motorcycle with the first mentioned previously owned motorcycle. The comparison could only be made for those riders who provided an engine capacity of at least one current and at least one previously owned motorcycle (77.2% of continuing and returned riders). The analyses are only reported for continuing and returned riders.

Overall, 40.5% of continuing and returned riders currently own a motorcycle with a larger capacity than any of the motorcycles they previously owned. For 25.8% of continuing and returned riders, the largest capacity motorcycle they currently own has a smaller capacity than any of the motorcycles they previously owned. No difference in capacity was found for 10.9% of continuing and returned riders. As noted previously, the comparison was unable to be calculated for 22.8% of these riders.

Table 3.13 shows that the percentages of continuing and returned riders classified according to the difference in engine capacity between now and in the past did not differ significantly ( $\chi^2(2)=1.0$ ,  $p=.599$ ).

**Table 3.13 Percentages of continuing and returned riders according to the difference in engine capacity of largest capacity motorcycle owned now, compared to in the past.**

Capacity comparison	Continuing	Returned
Larger now	50.8	55.2
No difference	15.1	12.6
Smaller now	34.1	32.2
Total	100.0	100.0

### 3.10 CRASH INVOLVEMENT

Riders were asked how many road accidents they had been involved in while riding their motorcycles on the road in the last five years. They were asked to include only those accidents in which someone was hurt, the Police were called or a vehicle was damaged to the extent that it had to be taken away. Beyond meeting this requirement, crash severity was not measured. This question aimed to provide a measure of the risk of injury to the rider. There was no assumption that the crash was the rider's fault.

Overall, 88.5% of riders had not been involved in a crash in the last five years, 6.7% had been involved in one crash, 1.9% in two crashes and 0.5% in three or more crashes.

There appears to be little difference in the crash involvement of continuing, returned and new riders (see Table 3.14). The proportion of riders who reported being involved in one or more crashes did not differ significantly among the groups ( $\chi^2(2)=1.1$ ,  $p=.576$ ).

**Table 3.14 Percent of continuing, returned and new riders according to number of self-reported crashes in the last five years.**

Number of crashes	Continuing riders	Returned riders	New riders
None	91.9	89.4	90.9
One or more	8.1	10.6	9.1
One	5.8	8.5	5.8
Two	1.6	1.7	2.9
Three or more	0.7	0.4	0.4

Reported crash involvement appeared to decrease with age group from 12.0% of 30 to 39 year olds to 5.3% of riders aged 60 and over, but this was not statistically significant ( $\chi^2(3)=5.9$ ,  $p=.116$ , see Table 3.15).

**Table 3.15 Percent of riders in each age group according to number of self-reported crashes in the last five years.**

Number of crashes	Age group				
	30-39	40-49	50-59	60 and over	Total
None	88.0	90.2	90.4	94.7	90.6
One or more	12.0	9.8	9.6	5.3	9.4
One	8.5	7.0	7.8	3.7	7.0
Two	2.3	2.3	1.8	1.1	1.9
Three or more	1.2	0.4	0.0	0.5	0.5

Not surprisingly, the percentage of riders who had been involved in one or more crashes in the last five years differed significantly according to reported frequency of riding ( $\chi^2(5)=27.7$ ,  $p=.000$ ) and reported distance travelled per week ( $\chi^2(5)=27.9$ ,  $p=.000$ ). Overall, 17% of riders who rode three or more days per week reported being involved in a crash, compared to between 6 and 7% of other riders. Of those riders who reported riding 301-400 kms per week, 27% reported being involved in a crash. About 21% of riders who reported riding more than 400 kms per week reported being involved in a crash.

Among riders who rode less than three days per week, the percentage who had been involved in a crash was lower for continuing riders (3.1%) than for returned (8.7%) or new riders (8.0%), ( $\chi^2(2)=7.2$ ,  $p=.028$ ). This did not apply for riders who rode three or more days per week (18.3%, 21.6% and 12.5%,  $\chi^2(2)=1.6$ ,  $p=.499$ ).

When the groups were compared with distance travelled per week divided into less than 300 km per week and 300 km per week or more, the crash involvement of continuing, returned and new riders did not differ.

Riders who ride mostly for commuting are more likely to have been involved in one or more crashes in the last five years than riders who ride mostly for touring (16.2% versus 7.7%,  $\chi^2(1)=10.2$ ,  $p=.001$ ). However, riders who ride mostly for commuting are more likely to ride three or more days per week (66.7% versus 10.2%,  $\chi^2(1)=206.1$ ,  $p=.000$ ) and more likely to ride 300 km per week or more (19.2% versus 4.5%,  $\chi^2(1)=33.7$ ,  $p=.000$ ) than riders who ride mostly for touring. After adjusting for frequency of riding, there was no significant association between riding mostly for commuting and crash involvement (compared to riding mostly for touring).

Riding for commuting was not associated with increased crash involvement for riders who rode more than 300 km per week. However, among riders who rode less than 300 km per week, those who rode mostly for commuting were twice as likely to report being involved in a crash as those who rode mostly for touring (14.4% versus 7.1%,  $\chi^2(1)=7.0$ ,  $p=.008$ ).

### **3.11 INFRINGEMENT HISTORY**

Riders were asked whether at any time while riding in the last 12 months they had received any traffic tickets or had to go to Court. Overall, 7.2% of riders reported that this had occurred. The percentage of riders who had received traffic tickets or had to go to Court was lowest amongst riders aged 60 and over (1.6%) and similar among the other age groups (30-39: 8.1%, 40-49: 8.9%, 50-59: 9.2%,  $\chi^2(3)=11.8$ ,  $p=.008$ ). Similar percentages of continuing, returned and new riders had received traffic tickets or had to go to Court (7.9%, 6.7% and 6.8%, respectively,  $\chi^2(2)=0.38$ ,  $p=.828$ ).

Reported crash involvement and infringements were significantly related ( $\chi^2(1)=29.5$ ,  $p=.000$ ). Among riders who reported being involved in a crash, 21.5% had received a traffic ticket or had to go to Court, compared to 6.0% of riders who had not reported being involved in a crash.

Those riders who rode further per week or rode more often were more likely to report having received a traffic ticket or having had to go to Court ( $\chi^2(1)=36.6$ ,  $p=.000$  and  $\chi^2(1)=18.9$ ,  $p=.000$ ). Of those riders who reported riding more than 300 km per week, 25% had received a traffic ticket or had to go to Court, compared to 6.0% of riders who rode less than 300 km per week. Of those riders who rode three or more days per week, 13.6% had received a traffic ticket or had to go to Court, compared to 5.3% of riders who rode less than three days per week.

### **3.12 MEMBERSHIP OF MOTORCYCLE CLUBS**

Overall, 24% of riders who responded to the survey were members of motorcycle clubs. Whether members of motorcycle clubs were more likely to have completed the questionnaire is not known.

Some riders belonged to more than one motorcycle club. The largest number of riders belonged to Ulysses, followed by Harley Owners Group and Motorcycle Riders Association of Australia (see Table 3.16).

**Table 3.16 Numbers and percentages of riders that belonged to motorcycle clubs. Percentages add to more than 100% because some riders belonged to more than one club.**

Club	Number of riders	Percent of riders who responded
Motorcycle Riders Association of Australia	25	2.4
Ulysses	95	9.3
Harley Owners Group	31	3.0
Honda Riders Club	15	1.5
BMW Motorcycling Club	11	1.1
Other clubs	112	10.9
Did not belong to a club	777	75.8

Club members were older, on average, than non-members (51.4 years versus 47.7 years,  $t(1000)=4.5$ ,  $p=.000$ ). Riders aged over 50 were more likely to belong to motorcycle clubs than riders aged under 50.

The percentages of continuing riders, returned riders and new riders who were members of clubs did not differ ( $\chi^2(2)=1.5$ ,  $p=.483$ ). Riders who lived in metropolitan and other areas did not differ in the percentages who belonged to clubs ( $\chi^2(1)=0.9$ ,  $p=.770$ ).

About 30% of riders who rode more than once a month belonged to motorcycle clubs, compared with about 5% of riders who rode less than once a month ( $\chi^2(5)=35.2$ ,  $p=.000$ ). Riders who rode less than 50 kms per week were less likely to belong to motorcycle clubs than riders who rode further (14% versus 26-39%,  $\chi^2(5)=64.8$ ,  $p=.000$ ).

Riders who belonged to motorcycle clubs were more likely to have completed a training course than riders who did not belong to clubs (61% versus 41%,  $\chi^2(1)=27.2$ ,  $p=.000$ ).

## **4.0 DISCUSSION OF SURVEY RESULTS**

### **4.1 RESPONSE RATES**

The overall response rate for the survey was 48.7% (50.5% if returns to sender are excluded from the sample). This is a very high response rate for a mail survey and probably reflects the extent of interest in motorcycling among the licence holders.

In general, the response rates were high for licence holders whose licences were issued before 1985. Response rates were also high among licence holders aged 30 to 39, although the response rate for this group was higher for those licensed longer. The response rates according to age group and year of licence issue could not be easily measured because more licence holders responded that they were aged over 40 and their licence was issued before 1985 than the number of questionnaires sent to motorcycle licence holders with these characteristics on the licence database. This may have resulted from licence holders forgetting the actual year of licence issue and nominating a year that was earlier than recorded on the database. Alternatively, some riders may have gained their first licence in another State and given this year as the response.

The non-rider section on the front page of the questionnaire aimed to encourage responding by non-riders who might otherwise consider that the questionnaire was not relevant to them. The outcome was that the number of questionnaires returned by non-riders was almost as great as the number of questionnaires returned by riders. Given that the actual numbers of riders and non-riders in the sample is unknown, it is not possible to calculate the response rates of riders and non-riders separately.

The overall return to sender rate was 3.6%. This rate was consistent across age groups but was somewhat higher among licence holders with licences issued in 1995-2002. The return to sender rate provides an indication of the number of addresses that were incorrect, but it is likely to be an underestimate because some may not have been returned.

### **4.2 LICENCE HOLDERS VS. ACTIVE MOTORCYCLISTS**

This survey provides an indication of the proportion of motorcycle licence holders who are active motorcyclists. If the response rates were the same for riders and non-riders, then this would suggest that 47% of licence holders are non-riders and 53% are riders. The minimum estimate of the proportion of non-riders among licence holders could be calculated by assuming that all non-riders had responded. This minimum estimate is 23% (923/4,000). The maximum estimate of the proportion of non-riders would assume that all riders had responded. This maximum estimate is 74% (2,975/4,000).

The percent of respondents who were riders decreased with age, from 60% for licence holders aged 30 to 39, to 41% for licence holders aged 60 and over. The percent of respondents who were riders also decreased with the number of years since the licence was issued (which is associated with age). Of those licence holders whose licence was issued in 2000 or later, 90% were riders. This fell to about 35% for licence holders whose licence was issued before 1960.

Table 4.1 combines the percentages of licence holders and the percentage that are riders in each age group to estimate the percent of riders in each age group. Thus, while 30 to 39

year olds comprise 34.7% of licence holders, they comprise 39.3% of riders aged over 30. Similarly, 40 to 49 year olds comprise 39.4% of licence holders but 41.7% of riders aged over 30.

**Table 4.1 Estimation of percent of riders who are in each age group.**

Age group	Estimated number of licence holders	Percent of licence holders	Estimated percent of this group that are riders	Estimated percent of riders aged over 30
30-39	69,308	34.7	59.6	39.3
40-49	78,644	39.4	55.7	41.7
50-59	36,148	18.1	53.8	18.5
60+	15,548	7.8	41.2	6.1
Total	199,648	100.0	52.6	100.0

With the exception of 30 to 39 year olds, licence holders who lived in the metropolitan area were less likely to be riders than licence holders that lived in the rest of Victoria (51% versus 54%).

### 4.3 STOPPING RIDING

Non-riders were asked what year they last rode. Combining this information with when their licence was issued and their age enabled calculation of their age when they stopped riding and how long they had held a licence when they stopped riding. In general, the older non-riders had stopped riding at an older age. More than two-thirds of non-riders aged 60 and over did not stop riding until they were at least 50 years of age.

The questionnaire asked “What was the **main** reason you stopped riding?” “Too dangerous” was the most frequent reason why the licence holder stopped riding, being cited by 25% of respondents. It was closely followed by “Didn’t have time” (20%) and “Needed to transport family” (19%). The most common “Other” reason was “Sold bike” (18%).

The main reason why the licence holder stopped riding differed according to their age when they stopped riding. “Too dangerous” was the most common reason offered by those who stopped riding under the age of 30 and was almost the most common reason of those who stopped riding between the ages of 30 and 39. “Need to transport family” was most commonly cited by those who stopped riding between the ages of 30 to 39. Licence holders who stopped riding between the ages of 40 and 49 or between 50 and 59 frequently cited “Didn’t have time” or “Sold bike”. “Age” was cited as a reason by 8% of those who stopped riding when they were 60 or older.

#### 4.4 DIFFERENT TYPES OF ACTIVE RIDERS

Licence holders who reported riding in the last 12 months (riders) were classified into three groups:

**Continuing riders** Riders who have held licences and ridden regularly for many years. Defined here as riders who obtained their licence prior to 1995 and stated that they have ridden regularly during the period between when they first got their licence and now.

**Returned riders** Riders who have held licences for many years but have only returned to regular riding recently. Defined here as riders who obtained their licence prior to 1995 and stated that they have **not** ridden regularly during the period between when they first got their licence and now.

**New riders** Riders who have only obtained a licence recently. Defined here as riders who have obtained their licence in 1995 or more recently.

Overall, 43% of riders who responded were “continuing riders”, 27% were “returned riders” and 31% were “new riders”.

New riders were significantly younger, on average, than continuing riders and returned riders (46.4 years versus 48.9 years and 49.6 years, respectively). There are relatively more new riders in the 30 to 39 age group and relatively fewer in the 60 and over age group. The largest proportion of returned riders is in the 50 to 59 age group.

Overall, 94% of continuing riders, 96% of returned riders and 83% of new riders were male. The percentage of males was lower among new riders.

The highest level of education and employment status of continuing, returned and new riders were similar. New riders appear more likely to be single than continuing or returned riders. Overall, 42% of continuing riders live in the Metropolitan area, compared with 51% of returned riders and 62% of new riders.

Both continuing and returned riders were defined as having obtained a licence before 1995. The mean number of years that the riders had held a licence did not differ between continuing and returned riders (26 vs 27 years).

#### 4.5 TRAINING EXPERIENCE

Overall, 45% of respondents had undertaken a motorcycle training course. Almost 90% of riders who obtained their licence in 2000-02 had undertaken training, falling to 26% of those who had obtained their licence before 1985. As a consequence, new riders were more likely to have undertaken training than continuing or returned riders.

The type of course that had most commonly been undertaken was a licence course (29% of all respondents). For continuing riders, their last course were relatively more likely to have been an advanced course. When compared to continuing riders, there was a tendency for returned riders to be more likely to have completed licence courses and to be less likely to have completed advanced courses but this apparent difference failed to reach statistical significance.

## **4.6 AMOUNT OF RIDING**

Almost half of the riders reported riding less than 50 km in an average week during the last 12 months and about two-thirds of riders reported riding less than 100 km in an average week. About one-quarter of riders reported riding three or more days per week during the last 12 months. Another quarter reported riding one to two days per week and another quarter reported riding one to three days per month. A small number of riders reported that they had not ridden on the road during the last year, but had ridden off-road. Returned riders rode less frequently and less distance than continuing or new riders.

Riders were also asked about their main means of everyday transport. Only 9% of riders stated that motorcycling was their main means of transport. About two-thirds of riders stated that their main means of transport was a car. A mixture of motorcycle and car (or motorcycle and other means of transport) was reported by 21% of riders. Continuing riders were more likely to use 'mostly motorcycle' or 'mixture of motorcycle and other' than were returned riders. The pattern for new riders lay between these levels.

Riders who reported riding less often were less likely to have completed a motorcycle riding training course. However, less than half of riders who rode more than three days per week had completed a training course. There was no significant relationship between main means of everyday transport and completing a training course.

One quarter of riders reported only riding from October to March. Continuing riders were more likely to ride all year round than returned riders or new riders.

## **4.7 REASONS FOR RIDING**

Two-thirds of riders said that the most common purpose of riding in the last 12 months was touring. About one-third of riders reported using their motorcycles for general transport and a third reported using their motorcycles for commuting. Compared with when they first started riding, commuting has become a much less common reason for riding.

Continuing, returned and new riders all cited touring as the most common reason for using their motorcycle in the last 12 months. Returned riders appeared to be less likely to use their motorcycle for commuting and general transport than continuing or new riders.

The analyses showed that continuing riders and returned riders differed with respect to how their reasons for riding changed. Continuing riders were more likely than returned riders to:

- have continued commuting
- have continued riding on a farm
- have continued touring
- have continued riding for general transport

Returned riders were more likely to:

- have never commuted

- have stopped commuting
- have started touring
- have never rode for general transport

The reasons for riding in the last 12 months differed across the age groups of riders. Riders aged 30 to 39 were more likely to nominate off-road riding than older riders. Riders aged over 60 were less likely to nominate touring or commuting than younger riders and were more likely to nominate use on a farm.

#### **4.8 WHERE DOES RIDING HAPPEN**

Riders were asked to indicate how much of their riding over the last 12 months occurred in urban/city areas and how much in rural/country areas on a scale from “all rural” to “all urban”. Overall, half of the riders rode totally or mostly in rural areas, about one-quarter rode in a mixture of urban and rural areas and about one-quarter rode totally or mostly in urban areas. Not surprisingly, the location of riding was influenced by where the rider lived. However, even among metropolitan residents, there was significant riding in rural areas. Generally, new riders reported that more of their riding was in urban areas than either continuing or returned riders.

Riders were asked how often they rode off-road. About 15% of riders reported riding off-road weekly, and a further 9% reported riding off-road monthly. Just under half of the riders reported never riding off-road. New riders were less likely to ride off-road than continuing or returned riders. Riders aged 30 to 39 year old and riders who lived in the metropolitan area were less likely to ride off-road than older riders. Riders who lived in the metropolitan area were less likely to ride off-road than riders who lived in rural areas.

#### **4.9 TYPE OF MOTORCYCLE RIDDEN**

Riders were asked about the motorcycles they currently own and other motorcycles they have owned in the past. The questionnaire allowed for details of four current and seven past motorcycles. Details requested were make, model, year of manufacture, engine capacity and year purchased (and year sold for past motorcycles).

For riders as a whole, 6% of motorcycles currently owned had an engine capacity of less than 125 cc, 28% had an engine capacity of between 125 and 259 cc, 28% had an engine capacity of between 260 and 749 cc and 38% had an engine capacity of 750 cc and over.

The pattern of engine capacities for motorcycles currently owned by continuing and returned riders were similar. For new riders, not surprisingly, more motorcycles currently owned had an engine capacity of 125 to 259 cc than for other riders. However, more than 50% of motorcycles owned by new riders had an engine capacity of 260 cc or over.

The motorcycles owned in the past by continuing riders were more likely to have had engine capacities of 750 cc and over than the motorcycles owned in the past by returned riders.

Given that many riders provided details of more than one motorcycle that they currently own and more than one motorcycle that they owned in the past, simple comparisons between current and past motorcycles were not possible.

Overall, 41% of continuing and returned riders currently own a motorcycle with a larger engine capacity than any of the motorcycles they previously owned. For 26% of continuing and returned riders, the largest capacity motorcycle they currently own has a smaller capacity than any of the motorcycles they previously owned. No difference in capacity was found for 11% of continuing and returned riders. The comparison was unable to be calculated for 23% of these riders. The percentages of continuing and returned riders classified according to the difference in engine capacity between now and in the past did not differ.

#### **4.10 CRASH INVOLVEMENT**

Overall, 89% of riders had not been involved in a crash in the last five years, 7% had been involved in one crash, 2% in two crashes and less than 1% in three or more crashes. There was no difference in the crash involvement of continuing, returned and new riders. Reported crash involvement appeared to decrease with age group but this was not statistically significant.

Not surprisingly, the percentage of riders who had been involved in one or more crashes in the last five years differed significantly according to reported frequency of riding and reported distance travelled per week. Overall, 17% of riders who rode three or more days per week reported being involved in a crash, compared to between 6 and 7% of other riders. Of those riders who reported riding 301-400 kms per week, 27% reported being involved in a crash. About 21% of riders who reported riding more than 400 kms per week reported being involved in a crash.

Among riders who rode less than three days per week, the percentage who had been involved in a crash was lower for continuing riders (3%) than for returned (9%) or new riders (8%), but this did not apply for riders who rode three or more days per week (18%, 22% and 13%). When the groups were compared with distance travelled per week divided into less than 300 km per week and 300 km per week or more, the crash involvement of continuing, returned and new riders did not differ.

#### **4.11 INFRINGEMENT HISTORY**

Riders were asked whether at any time while riding in the last 12 months they had received any traffic tickets or had to go to Court. Overall, 7% of riders reported that this had occurred. The percentage of riders who had received traffic tickets or had to go to Court was lowest amongst riders aged 60 and over, and similar among the other age groups. Similar percentages of continuing, returned and new riders had received traffic tickets or had to go to Court.

Reported crash involvement and infringements were significantly related. Among riders who reported being involved in a crash, 22% had received a traffic ticket or had to go to Court, compared to 6% of riders who had not reported being involved in a crash. Those riders who rode further per week or rode more often were more likely to report having received a traffic ticket or having had to go to Court.

## 5.0 ANALYSES OF CRASH DATA

### 5.1 SOURCE AND SELECTION OF CRASH DATA

A subset of the Victorian road crash database for 1991-2000 inclusive was selected by specifying that the vehicle involved was a motorcycle. Records related to pillion riders in crashes were excluded so that the remaining data set comprised one case per motorcycle rider involved in a casualty crash. While the motorcycle rider need not have been injured, in most cases the motorcycle rider was injured.

While the resulting data set strictly describes motorcycle riders involved in crashes, rather than crashes per se, the number of crashes in which there was more than one motorcycle was very small (0.3%). Therefore, the number of motorcycle riders in crashes very closely approximates the number of crashes.

Age and licence status of the rider are recorded as at the time of the crash. Rider age was unknown for a very small percentage of riders (1.1%). In general, the analyses compare riders aged under 30 with those aged 30 and over. The riders aged under 30 include those below licensing age. Where crash numbers were sufficiently large, riders aged over 30 were grouped into those aged 30-39, 40-49, 50-59 and 60+ years.

### 5.2 EXTENT OF CRASH INVOLVEMENT

Over the period 1991-2000, 39.8% of motorcycle riders involved in crashes were aged 30 and over, and 59.1% were aged under 30. Among the riders aged 30 and over, most were aged 30 to 39 and involvement decreased with age (see Table 5.1). This was true for crashes at each level of severity (Figure 5.1).

**Table 5.1 Age distribution of motorcycle riders involved in crashes, Victoria 1991-2000.**

Age group (years)	Number of riders involved in crashes	Percent of riders involved in crashes
Under 30	10,574	59.1
30 and over	7,129	39.8
30-39	4,501	25.2
40-49	1,875	10.5
50-59	556	3.1
60 and over	197	1.1
Unknown	191	1.1
Total	17,984	100.0

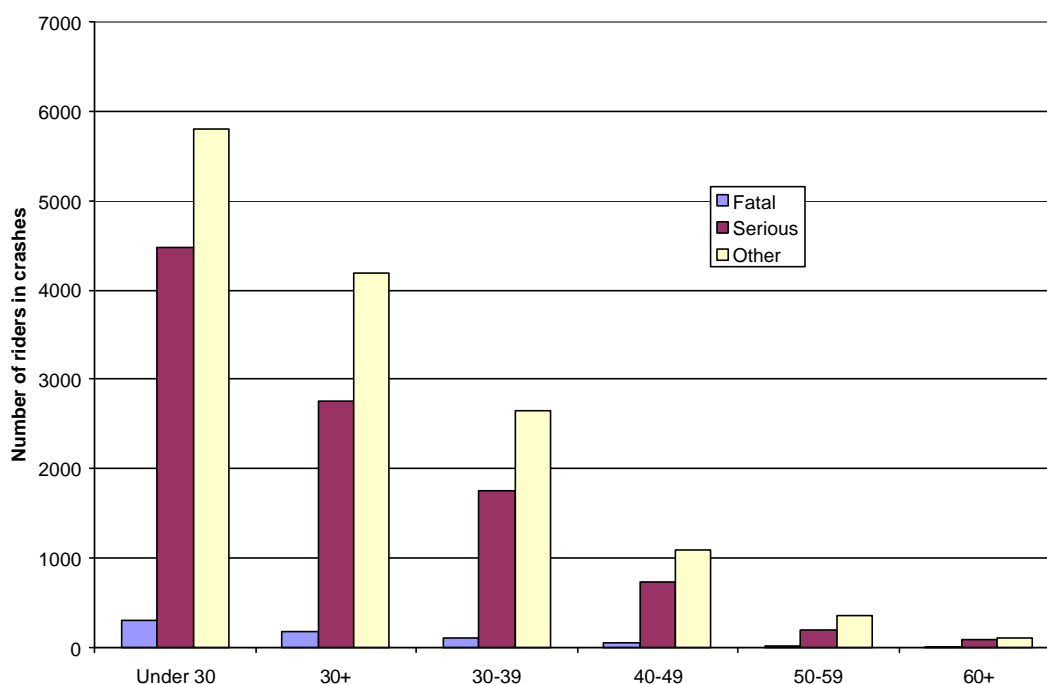


Figure 5.1 Number of riders in fatal, serious and other injury crashes by age group, Victoria 1991-2000.

The pattern of severity of crashes differed significantly between riders aged 30 and over and younger riders ( $\chi^2(2)=29.7$ ,  $p=.000$ ). Compared to younger riders, riders aged 30 and over were involved in relatively fewer serious injury crashes (39% versus 42%) and relatively more other injury crashes (59% versus 55%). The percentages of crashes that were fatal was similar (2.4% versus 2.8%).

The pattern of severity of crashes also differed significantly among the riders aged 30 and over ( $\chi^2(6)=16.9$ ,  $p=.010$ ). Figure 5.2 shows that the percentage of crashes that resulted in serious injury was similar for 30-39 and 40-49 year old riders but was somewhat lower for 50-59 year old riders and somewhat higher for riders aged 60 and over. However, the absolute number of crashes involving riders aged 60 and over was small, and so these differences may not be reliable.

### 5.3 TRENDS IN CRASH INVOLVEMENT

Figure 5.3 shows that the age distribution of motorcycle riders in crashes changed markedly from 1991 to 2000. In 1991, 501 riders involved in crashes were aged 30 and over. This increased to 1,062 in 2000. The number of riders in crashes aged under 30 fell from 1,353 in 1991 to 863 in 2000. Riders aged 30 and over comprised 27% of riders in crashes in 1991 and this increased to 55% in 2000 (see Figure 5.4). Among the riders aged 30 and over, the number involved in crashes approximately doubled for each age group (30-39, 40-49, 50-59, 60+) from 1991 to 2000.

Figure 5.5 shows that this pattern is true for crashes resulting in serious injury and crashes resulting in other injury. The pattern is less clear for fatal crashes because of the lower numbers of these crashes.

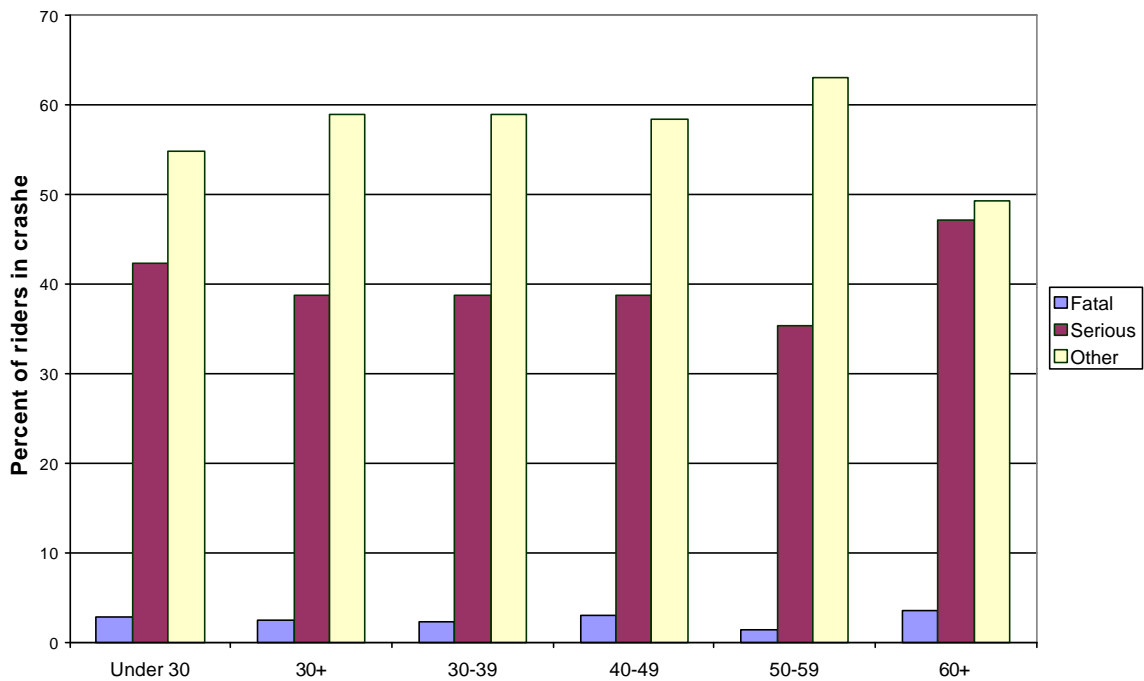


Figure 5.2 Age distribution of riders in fatal, serious injury and other injury crashes, Victoria 1991-2000.

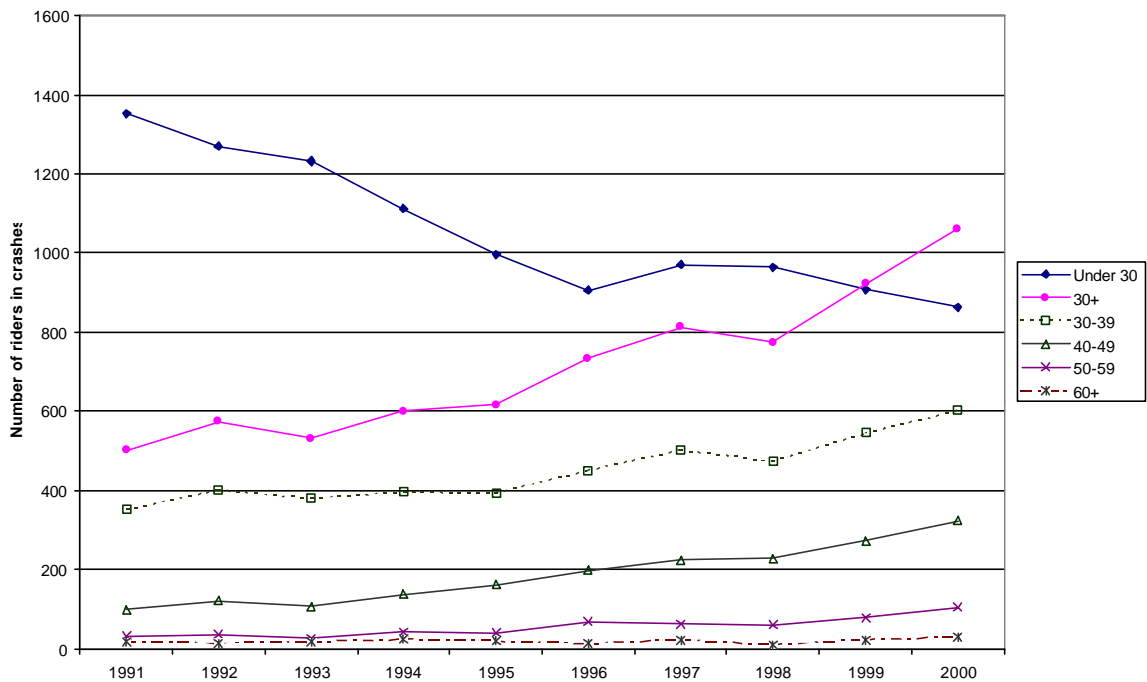


Figure 5.3 Number of riders in crashes by age group, Victoria 1991-2000.

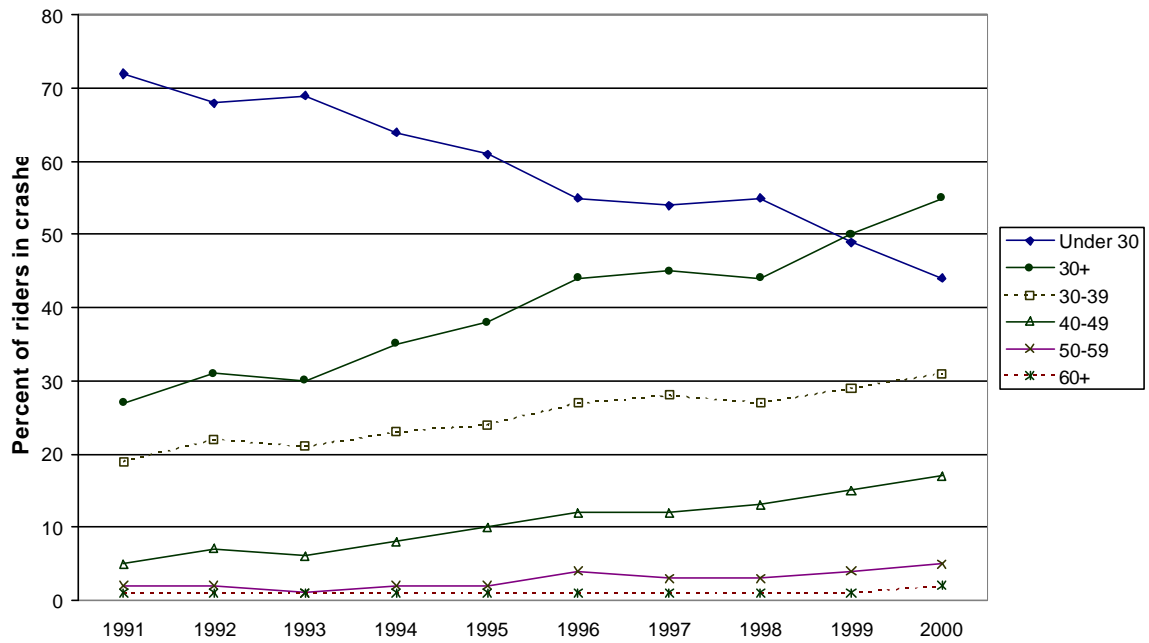


Figure 5.4 Percent of riders in crashes by age group, Victoria 1991-2000.

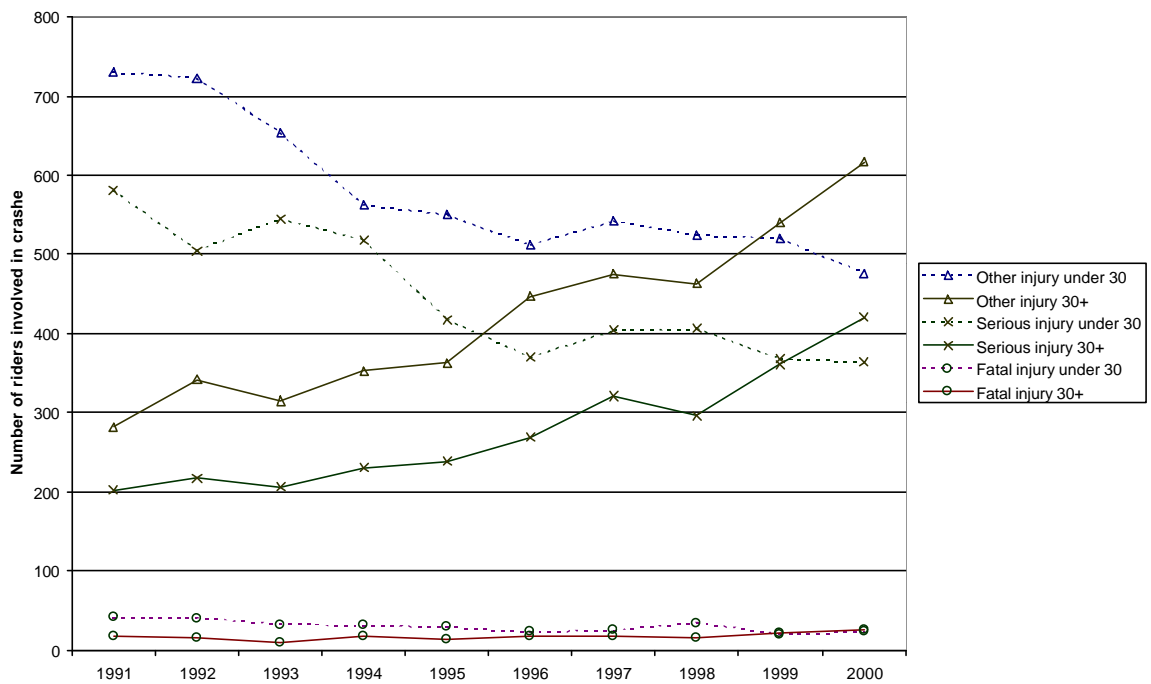


Figure 5.5 Number of riders in fatal, serious injury and other injury crashes by age group, Victoria 1991-2000.

## 5.4 CRASH RATES PER 10,000 LICENCES HELD

This section presents annual crash involvement rates per 10,000 motorcycle licences held for each of the age groups. Given that the crash frequencies for each of the age groups varied considerably across the period 1991-2000, crash rates were calculated for individual years. Numbers of licences held were available for 1996-2001 (as at 30 June, except in 1996 when data were extracted in February). Therefore crash involvement rates were able to be calculated for 1996-2000.

Figure 5.6 shows the total number of motorcycle licences held (includes learner permit, probationary, restricted and standard licences) by licence holders aged 30 and over and licence holders aged under 30. The number of licence holders aged under 30 has remained relatively constant at about 50,000 over the period 1996-2001. In contrast, the number of licence holders aged 30 and over has increased steadily from about 150,000 in 1996 to just over 200,000 in 2001. Figure 5.7 shows that the increase in number of licence holders was steeper for 40-49 and 50-59 year olds than for 30-39 year olds.

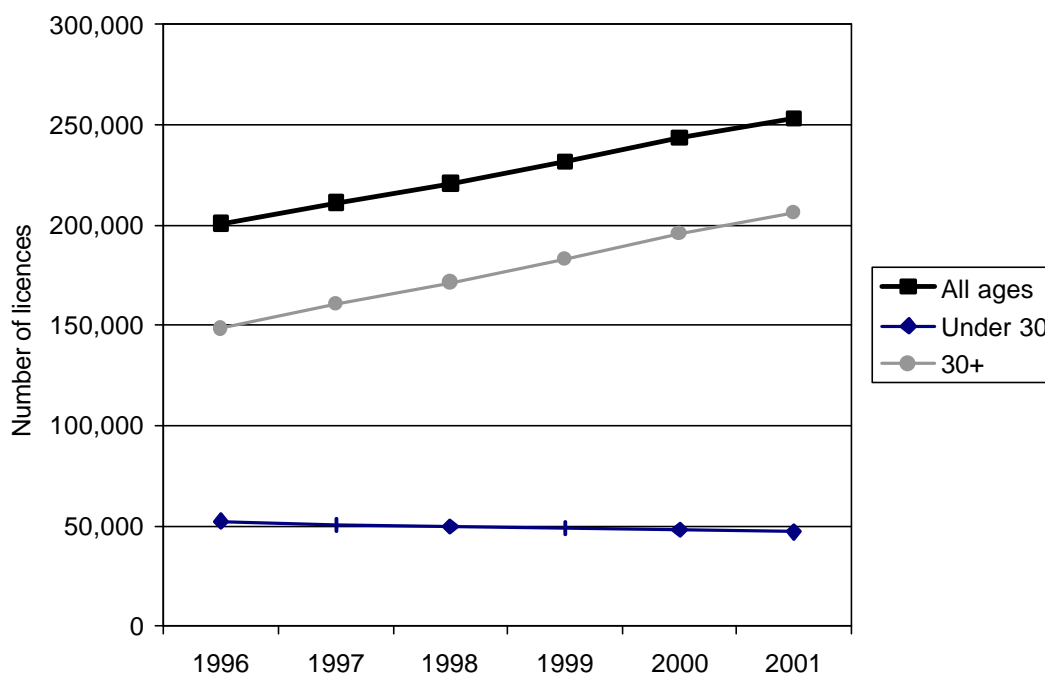


Figure 5.6 Number of motorcycle licences held by by age group, Victoria 1996-2001.

Figure 5.8 shows that the crash involvement rate per 10,000 licences held for motorcycle licence holders aged 30 and over was less than one-third of that for licence holders aged under 30. Among the licence holders aged 30 and over, the crash involvement rate decreased with age (see Figure 5.9). The crash involvement rate of licence holders aged 60 and over was only about one-third that of licence holders aged 30 to 39. However, the small numbers of both crashes and licences for licence holders aged 60 and over mean that their crash involvement rate may vary considerably as a result of random fluctuations.

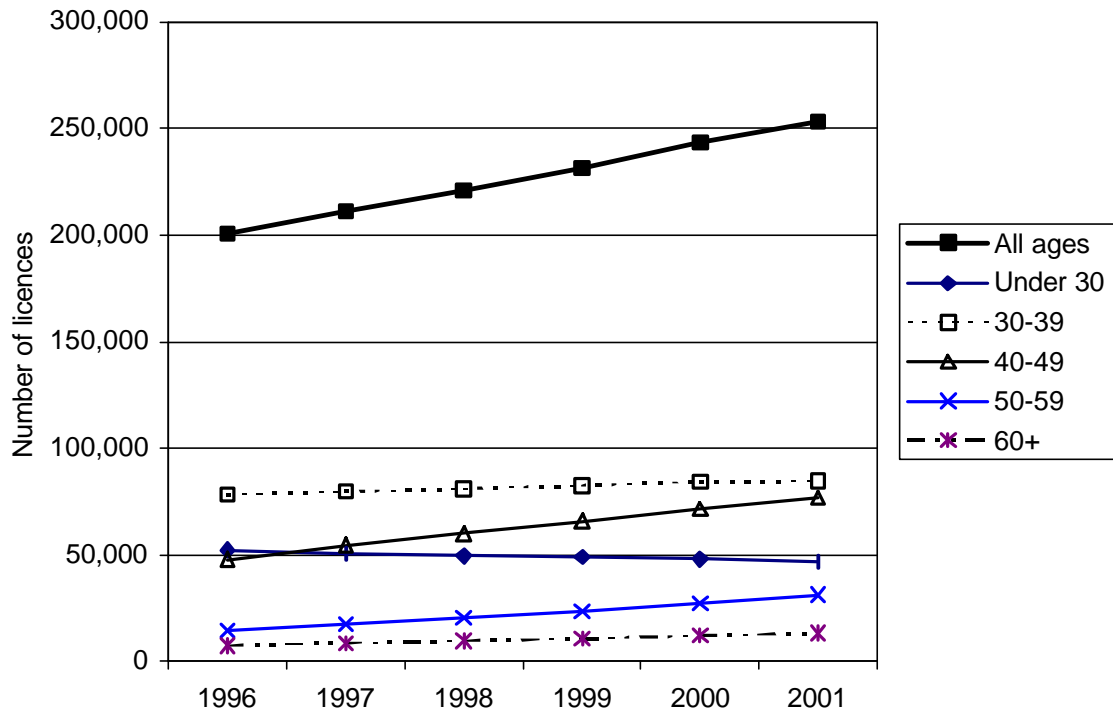


Figure 5.7 Number of motorcycle licences held by disaggregated age groups, Victoria 1996-2001.

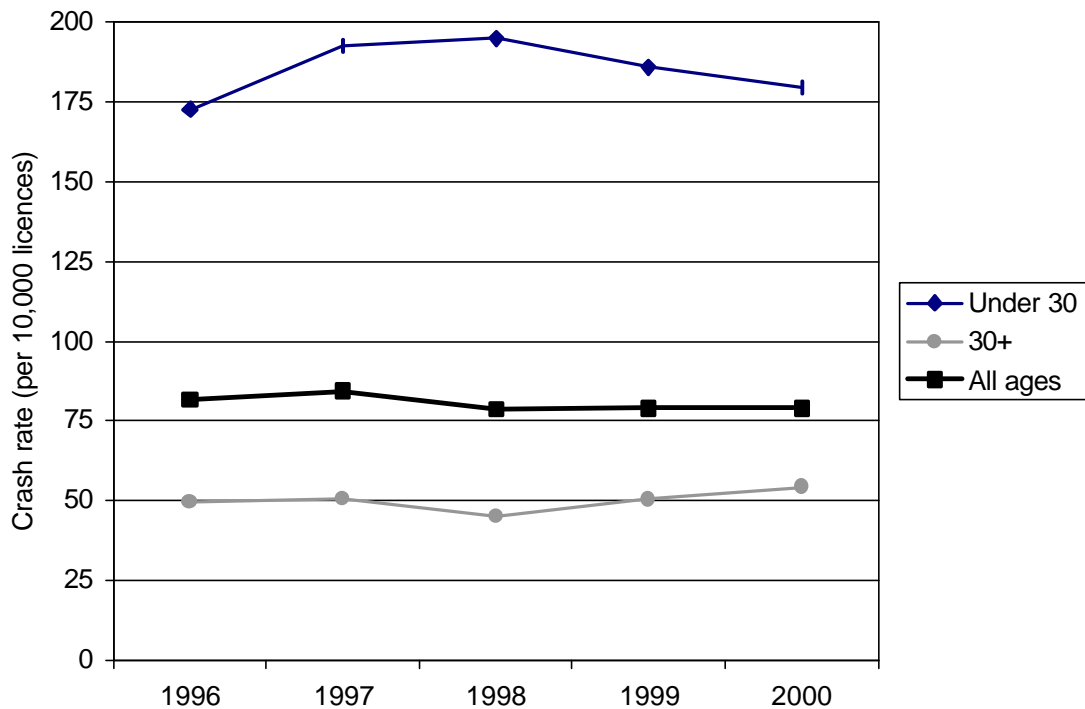


Figure 5.8 Crash involvement rates for motorcycle licence holders by age group, Victoria 1996-2000.

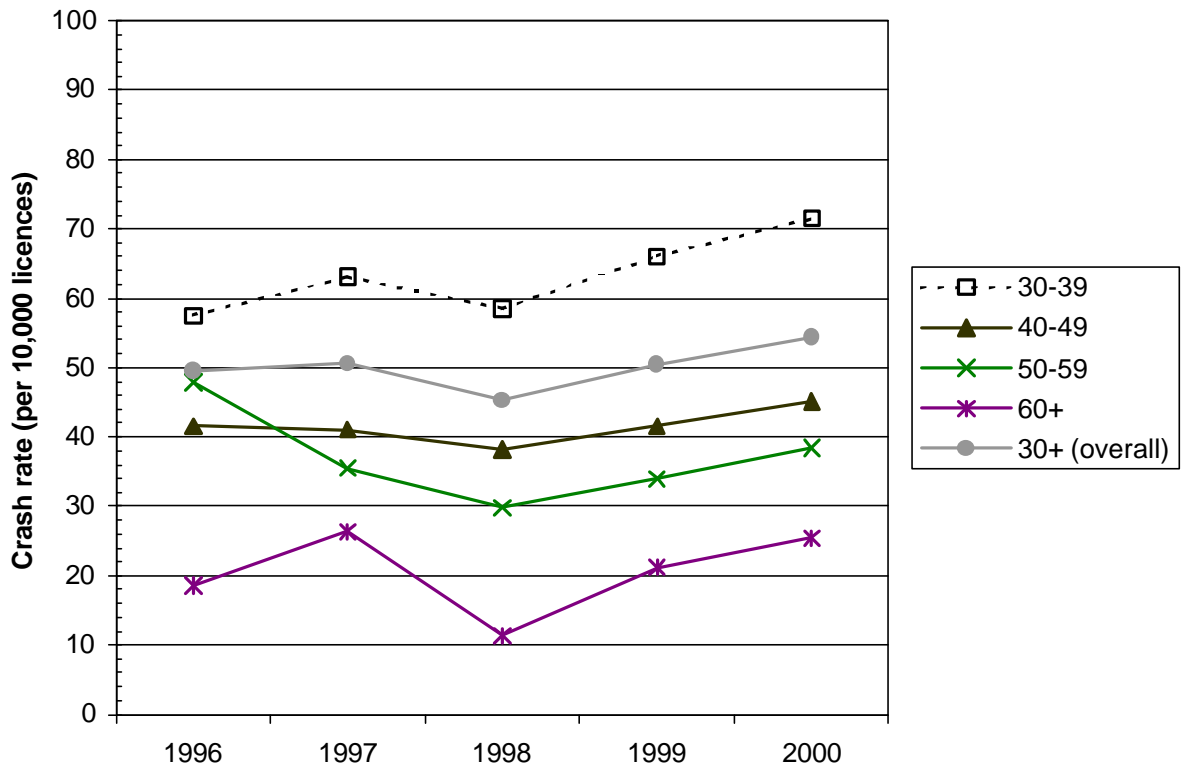


Figure 5.9 Crash involvement rates for motorcycle licence holders aged 30 and over by age group, Victoria 1996-2000.

The crash involvement rates for fatal and serious injury crashes (Figure 5.10, upper panel) and other injury crashes (Figure 5.10, lower panel) were both lower for licence holders aged 30 and over than for licence holders aged under 30. When the age groups over 30 were disaggregated, both crash involvement rates were higher for 30 to 39 year old licence holders than for older licence holders (see Figure 5.11).

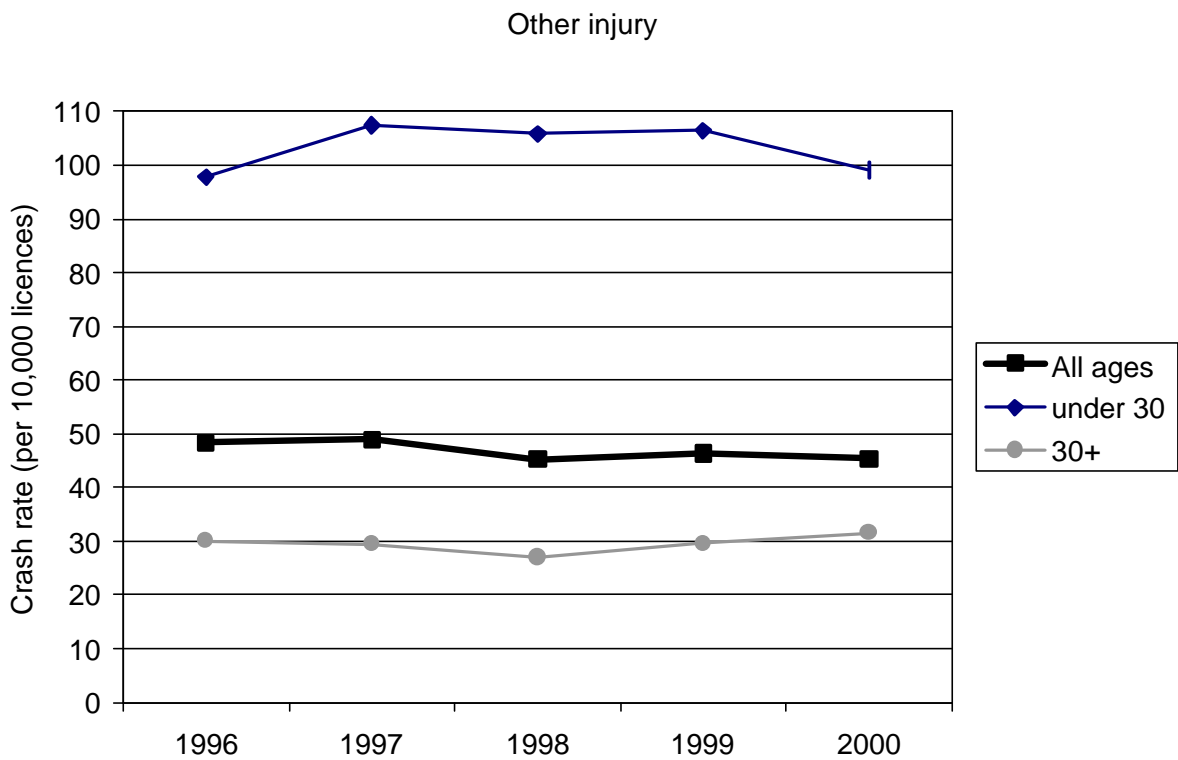
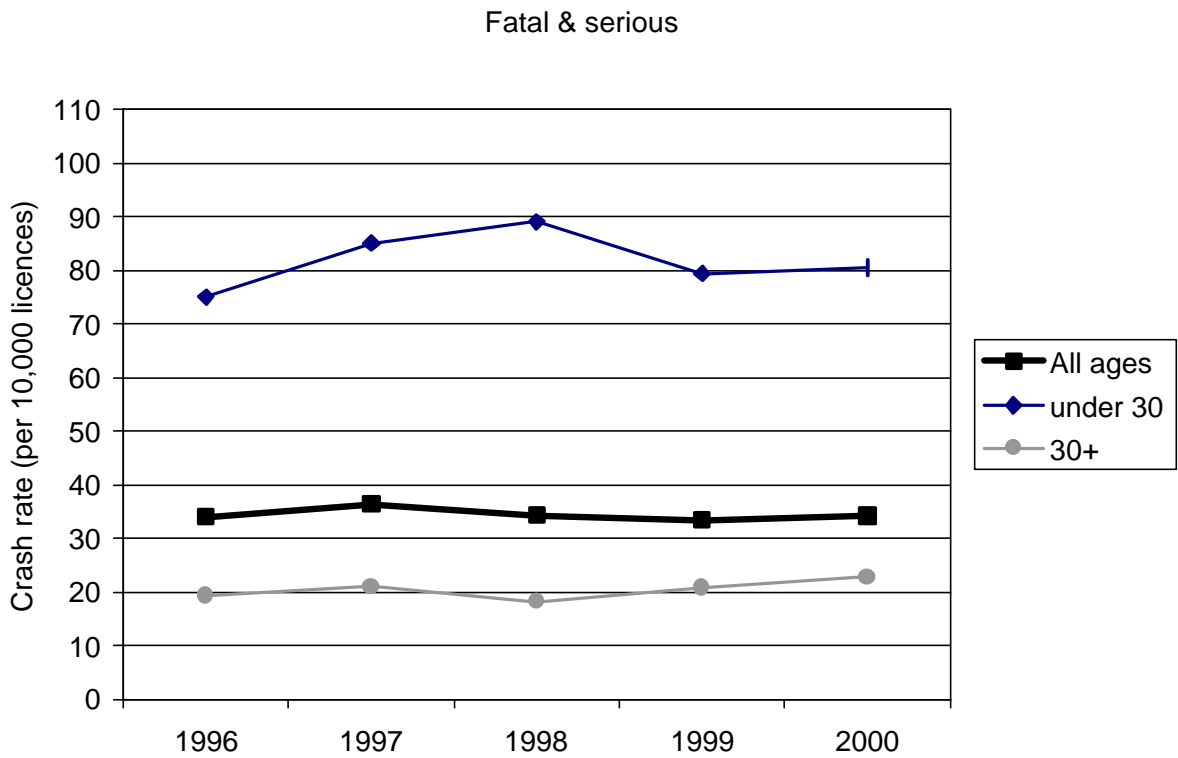
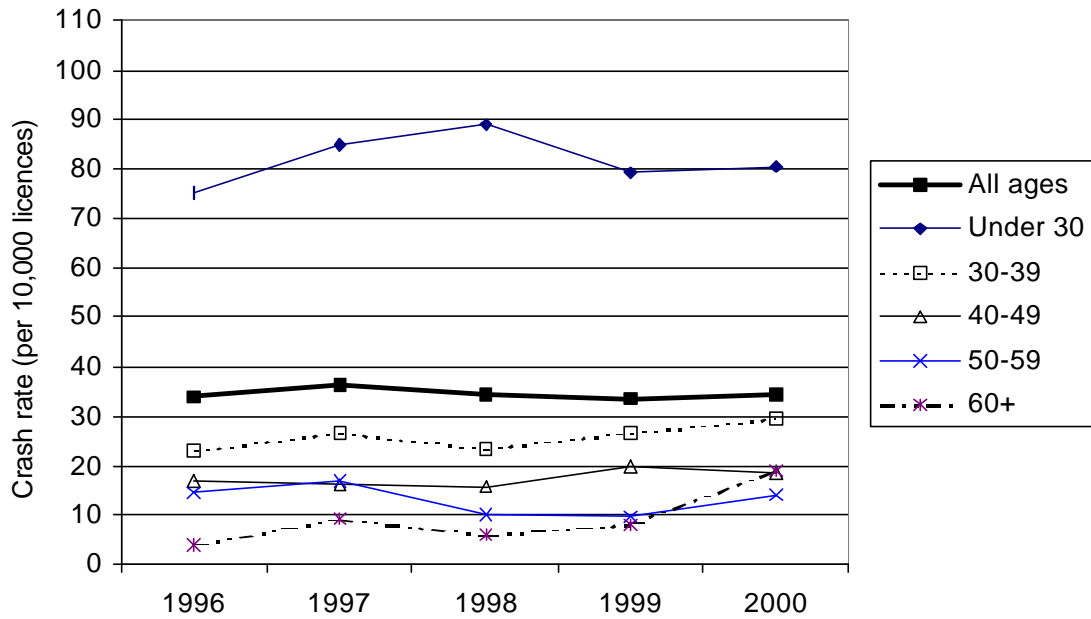


Figure 5.10 Fatal and serious injury crash involvement rates (upper panel) and other injury crash involvement rates (lower panel) for motorcycle licence holders by age group, Victoria 1996-2000.

### Fatal & serious



### Other injury

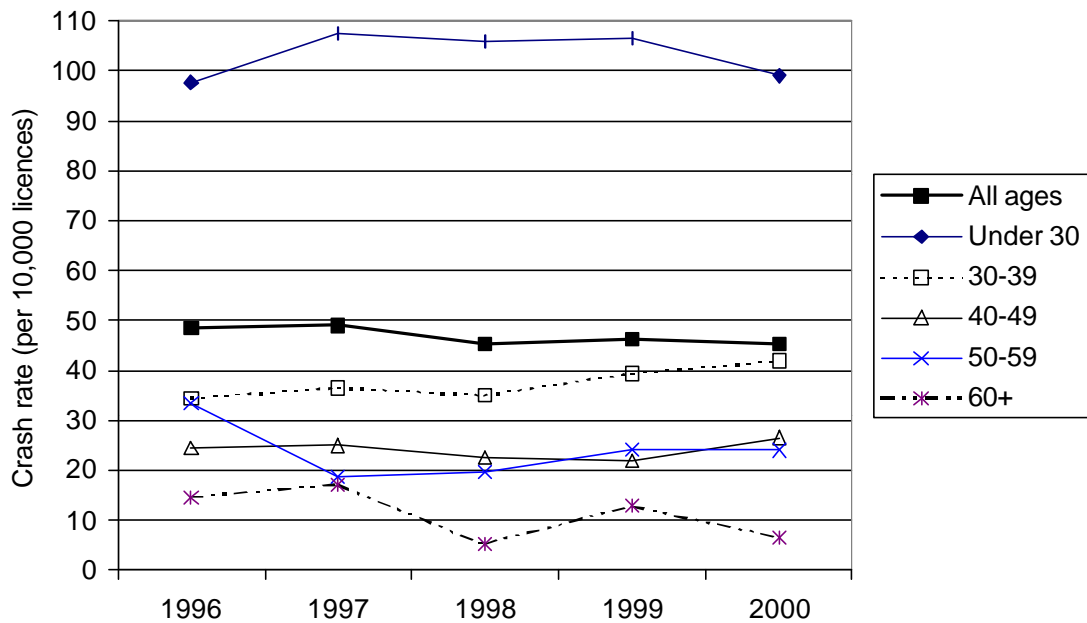


Figure 5.11 Fatal and serious injury crash involvement rates (upper panel) and other injury crash involvement rates (lower panel) for motorcycle licence holders by disaggregated age group, Victoria 1996-2000.

## 5.5 CRASH INVOLVEMENT RATES PER 10,000 RIDERS

In the survey conducted as part of this research, the percentages of licence holders who responded who were active riders decreased with age from 59.6% of 30-39 year old licence holders to 41.2% of licence holders aged 60 and over (see Table 3.2 page 9). In this section, the crash involvement rates previously calculated (page 40) are divided by the percentages of licence holders who are riders from the survey to estimate the crash involvement rate per 10,000 riders. The calculation was restricted to the year 2000, because that year is closest to when the survey data were collected and the increases in crash numbers from 1991 to 2000 suggest that the percentage of licence holders who are riders may have increased over that period. Crash rates per 10,000 riders could only be calculated for licence holders aged 30 and over, because these were the only licence holders included in the survey.

For riders aged 30 and over, the crash involvement rate per 10,000 riders was 103. The crash involvement rates for the sub-groups were: 120 for 30-39 year olds, 81 for 40-49 year olds, 71 for 50-59 year olds and 62 for riders aged 60 and over.

Figure 5.12 presents the crash involvement rates separately for fatal and serious injury crashes and other injury crashes. The other injury crash involvement rates generally decreased with age. The fatal and serious injury crash involvement rates decreased with age from 30-39 to 50-59 but increased again for riders aged 60 and over. The increase for riders aged 60 and over may reflect small numbers of both crashes and riders or may truly represent increased injury susceptibility.

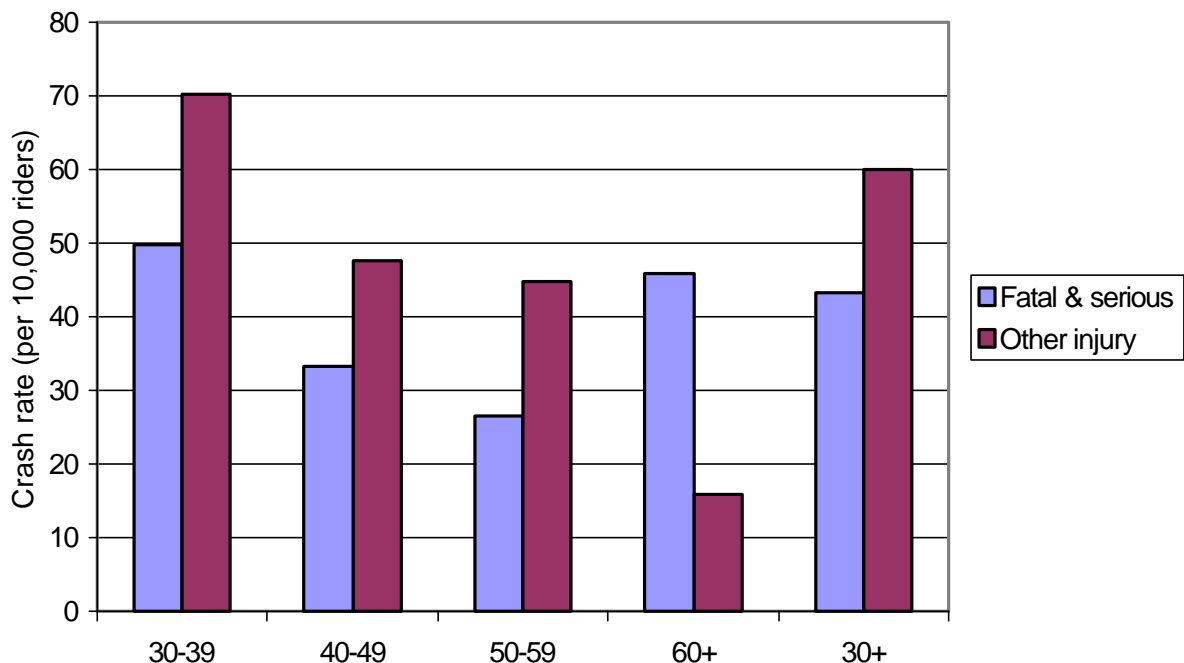


Figure 5.12 Crash involvement rates per 10,000 riders, Victoria 2000.

## 5.6 CRASH LOCATION

### 5.6.1 Metropolitan and rural crashes

Riders aged 30 and over were involved in relatively more rural crashes than younger riders ( $\chi^2(1)=32.3, p=.000$ ). Overall, 39% of riders in metropolitan crashes and 43% of riders in rural crashes were aged 30 and over. The location distribution also differed significantly among older riders ( $\chi^2(3)=36.4, p=.000$ ). The over-involvement of older riders in rural crashes appeared to be greater for riders aged 60 and over (see Figure 5.13).

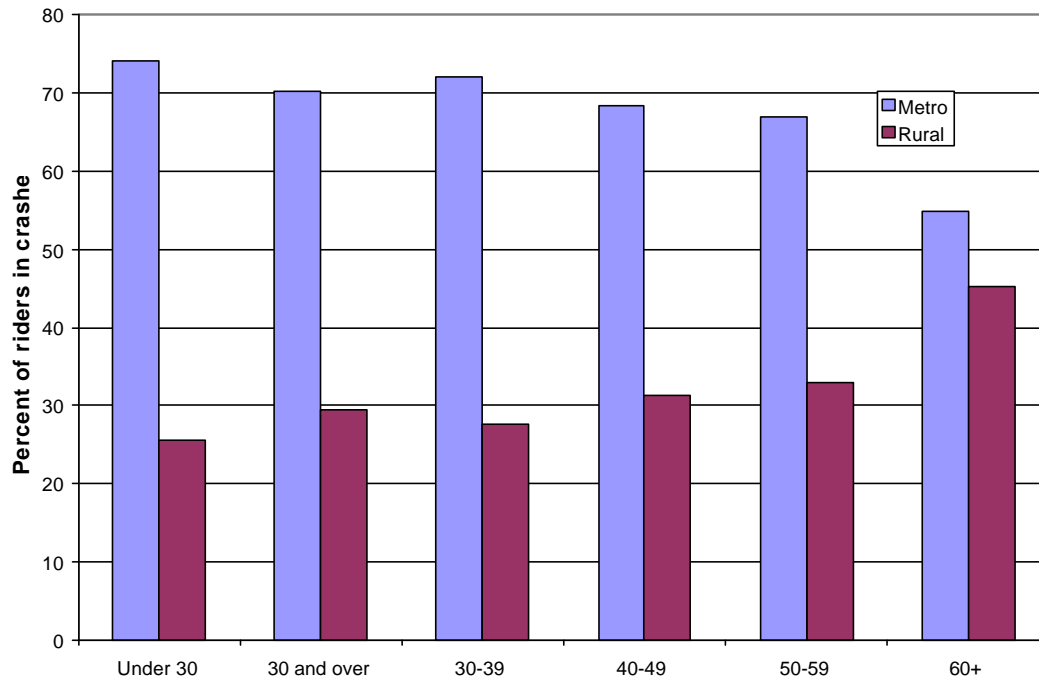


Figure 5.13 Percent of riders in metropolitan and rural crashes according to age group, Victoria 1991-2000.

Figure 5.14 shows that while most of the riders involved in metropolitan crashes lived in the metropolitan area, relatively large proportions of riders in rural crashes lived in the metropolitan area. This was more marked for riders aged 30 and over (26.0%) than for riders aged under 30 (17.2%).

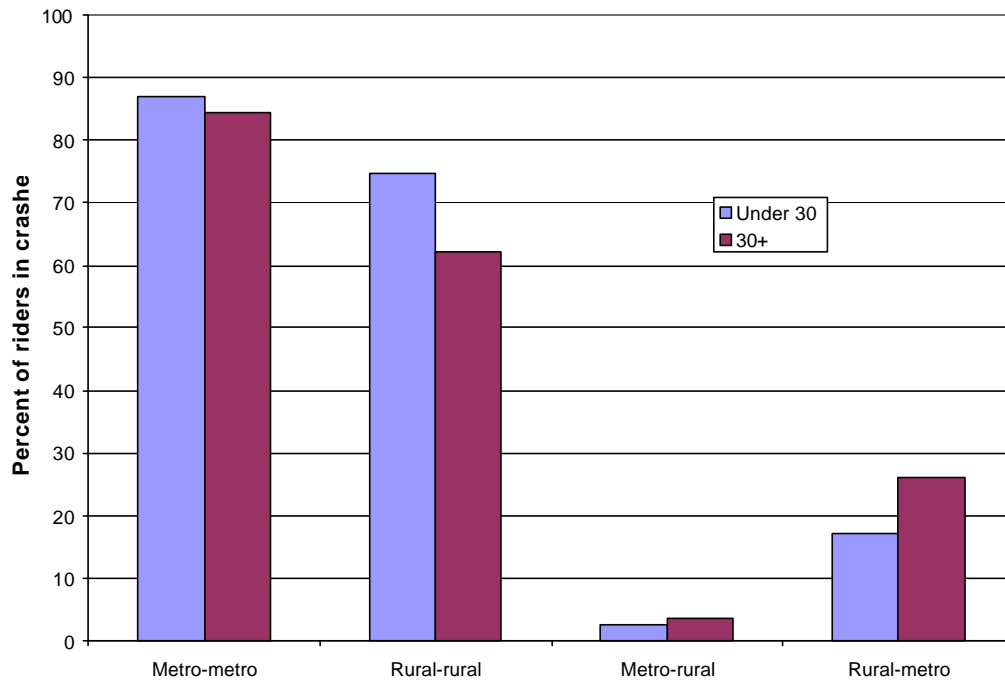


Figure 5.14 Percent of riders in crashes as a function of location of crash and location of residence of rider, Victoria 1991-2000. Metro-rural denotes rural residents in metropolitan crashes. Rural-metro denotes metropolitan residents in rural crashes.

### 5.6.2 Local Government Areas with high crash frequencies

The Local Government Areas (LGAs) where the largest numbers of riders were involved in crashes are summarised in Table 5.2. Regardless of the age of the rider, the largest numbers of all casualty crashes and other injury crashes occurred in the City of Melbourne, followed by the Shire of Yarra Ranges. Overall, the LGAs with the highest numbers of riders involved in crashes were similar for riders aged 30 and over and riders aged under 30.

### 5.6.3 Speed zones

Figure 5.15 shows that riders aged 30 and over were more likely to be involved in crashes in medium (65-95 km/h) and high (100-110 km/h) speed zones and less likely to be involved in crashes in low speed zones (60 km/h and lower) than riders aged under 30 ( $\chi^2(2)=206.2$ ,  $p=.000$ ). Among the riders aged 30 and over, the distribution of crashes across speed zones differed significantly ( $\chi^2(6)=28.3$ ,  $p=.000$ ). Figure 5.15 suggests that the pattern for 30-39 year old riders was most similar to that for under 30 year olds and involvement in crashes in high speed zones increased from 30-39 to 40-49 to 50-59.

The difference in distributions across speed zones was not merely a consequence of the greater involvement of riders aged 30 and over in rural crashes. Among riders in metropolitan crashes, more of the crashes involving riders aged 30 and over occurred in high speed zones than for younger riders (14.5% versus 10.0%). This was also true for riders in crashes in medium speed zones (17.7% versus 13.9%). Among riders in rural crashes, more of the crashes involving riders aged 30 and over occurred in high speed zone areas than for younger riders (59.7% versus 48.3%).

**Table 5.2 The Local Government Areas (LGAs) where the largest numbers of riders were involved in crashes, Victoria 1991-2000.**

<b>Fatal</b>		<b>Serious</b>		<b>Other</b>		<b>All crashes</b>	
<b>LGA</b>	<b>%</b>	<b>LGA</b>	<b>%</b>	<b>LGA</b>	<b>%</b>	<b>LGA</b>	<b>%</b>
<b>Under 30</b>							
Geelong	5.6	Melbourne	6.1	Melbourne	7.9	Melbourne	4.2
Yarra Ranges	4.0	Yarra Ranges	4.7	Yarra Ranges	4.6	Yarra Ranges	2.7
Knox	3.3	Dandenong	3.2	Boroondara	4.4	Boroondara	2.0
Port Phillip	3.3	Port Phillip	2.9	Yarra	3.3	Dandenong	1.8
Cardinia	3.0	Stonnington	2.8	Geelong	3.2	Stonnington	1.7
Melbourne	3.0	Brimbank	2.7	Stonnington	3.2	Geelong	1.7
Hume	3.0	Boroondara	2.6	Moreland	2.9	Yarra	1.7
Murrindindi	3.0	Monash	2.4	Port Phillip	2.7	Port Phillip	1.7
Darebin	2.6	Geelong	2.4	Whitehorse	2.6	Moreland	1.6
Moorabin	2.6	Moreland	1.3	Monash	2.6	Monash	1.5
Moorabool	2.6						
Mornington	2.6						
Nillumbik	2.6						
<b>30+</b>							
East Gippsland	5.9	Yarra Ranges	6.0	Melbourne	7.5	Melbourne	2.7
Melbourne	4.7	Melbourne	5.8	Yarra Ranges	5.3	Yarra Ranges	2.2
Cardinia	4.7	Yarra	2.7	Yarra	3.1	Yarra	1.2
Mornington	4.7	Port Phillip	2.6	Geelong	3.1	Geelong	1.1
Frankston	3.5	Knox	2.6	Boroondara	3.0	Boroondara	1.1
Casey	2.9	Dandenong	2.5	Port Phillip	2.6	Port Phillip	1.0
Dandenong	2.9	Casey	2.4	Dandenong	2.5	Dandenong	1.0
Bass Coast	2.3	Stonnington	2.3	Casey	2.5	Casey	1.0
Geelong	2.3	Mornington	2.3	Mornington	2.5	Mornington	1.0
Glenelg	2.3	Geelong	2.2	Baw Baw	2.4	Knox	1.0
Kingston	2.3						
Maribyrnong	2.3						
Wellington	2.3						
Wyndham	2.3						

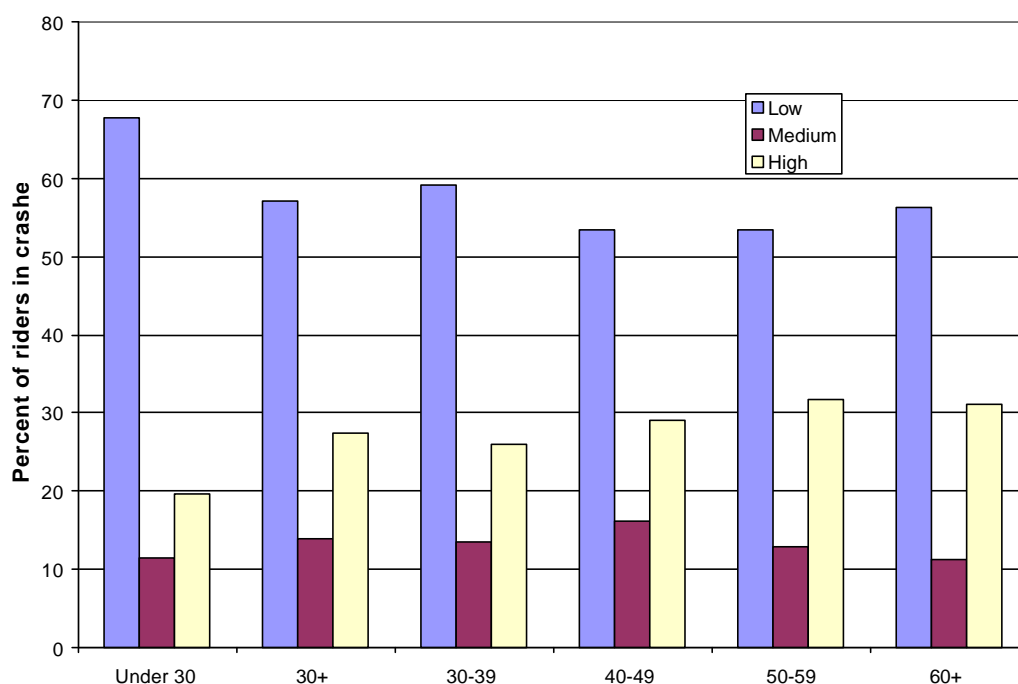


Figure 5.15 Percent of riders in crashes in low, medium and high speed zones according to age group, Victoria 1991-2000.

#### 5.6.4 Intersection and non-intersection crashes

Overall, riders aged 30 and over had relatively fewer crashes at intersections than younger riders (45.8% versus 49.3%,  $\chi^2(1)=21.2$ ,  $p=.000$ ). This was true for riders in both metropolitan (53.1% versus 55.3%,  $\chi^2(1)=6.2$ ,  $p=.013$ ) and rural crashes (28.9% versus 32.9%,  $\chi^2(1)=21.2$ ,  $p=.000$ ).

### 5.7 TIMING OF CRASH OCCURRENCE

#### 5.7.1 Time of year

The percentage of riders in crashes varied according to the month of the year with peaks in March and November for both younger and older riders (see Figure 5.16). Riders aged 30 and over were involved in relatively more crashes in warmer months (October-March) than younger riders ( $\chi^2(1)=5.3$ ,  $p=.022$ ) but the difference was very small (53.6% versus 51.9%, see Figure 5.17). However, larger differences existed among the older riders ( $\chi^2(3)=17.4$ ,  $p=.001$ ). The percent of riders in crashes that occurred in warmer months increased with age, from 53.0% for 30-39 year old riders to 63.4% for riders aged 60 and over.

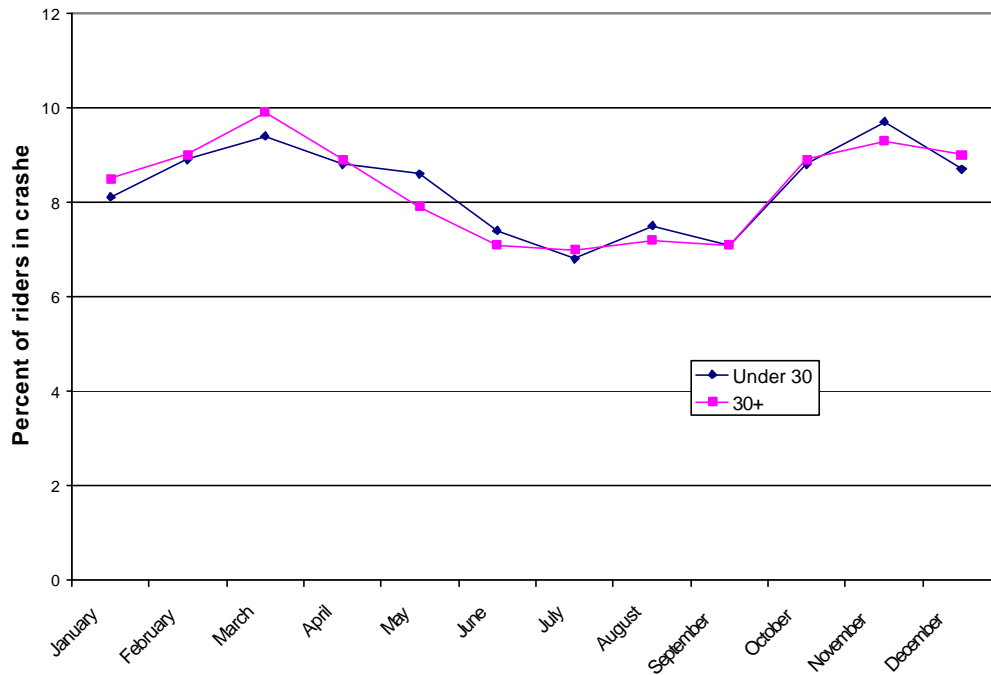


Figure 5.16 Percent of riders in crashes by month of year and age group, Victoria 1991-2000.

### 5.7.2 Time of week

Riders aged 30 and over were involved in relatively more crashes on the weekend than younger riders (35.9% versus 32.7%,  $\chi^2(1)=9.8$ ,  $p=.002$ , see Figure 5.18). Crashes on the weekend appeared relatively more common for 40-59 and 50-59 year old riders than for riders aged 30-39 or 60 and over ( $\chi^2(3)=12.9$ ,  $p=.005$ ).

### 5.7.3 Time of day

Riders aged 30 and over had relatively more daytime (6am-6pm) crashes than younger riders (80.1% versus 71.0%,  $\chi^2(1)=177.2$ ,  $p=.000$ , see Figure 5.19). Among the riders aged 30 and over, the percent of crashes in daytime appeared to increase with age ( $\chi^2(3)=347$ ,  $p=.000$ ).

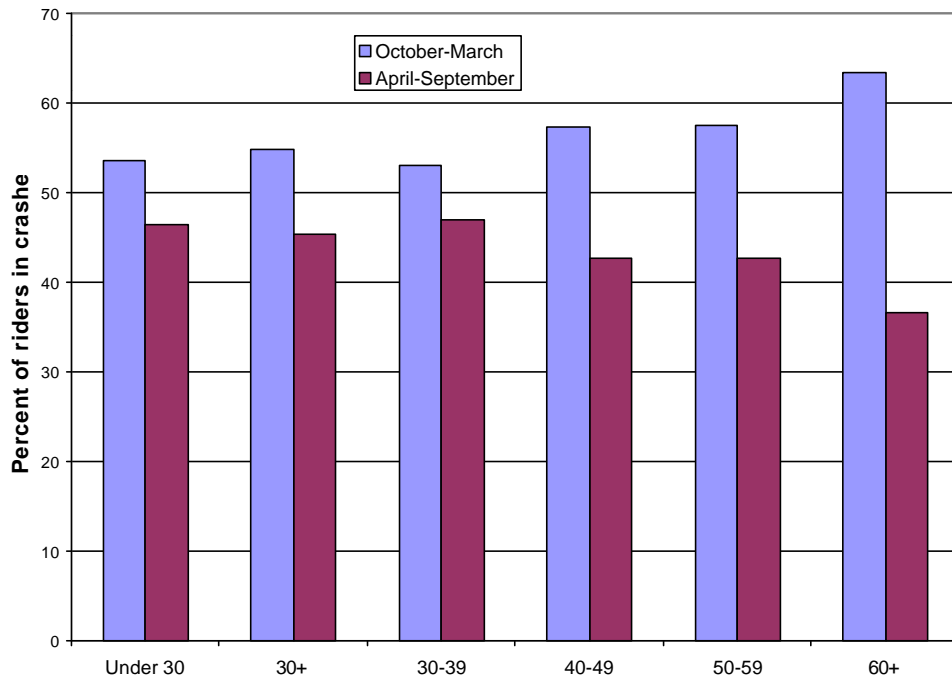


Figure 5.17 Percent of riders in crashes occurring in October-March and April-September by age group, Victoria 1991-2000.

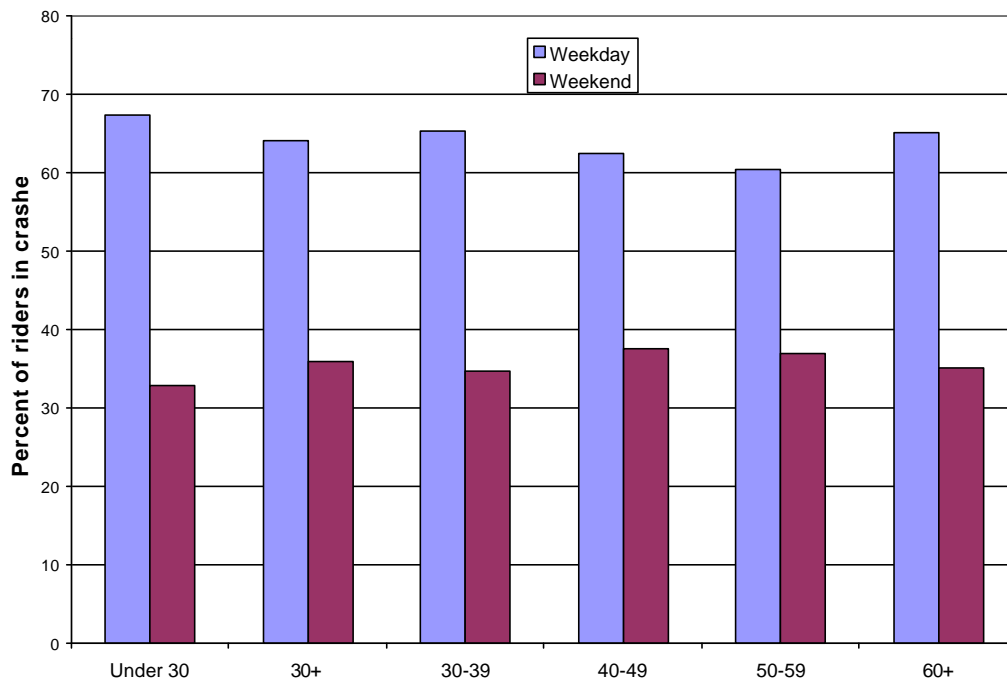


Figure 5.18 Percent of riders in crashes on weekdays and weekends by age group, Victoria 1991-2000.

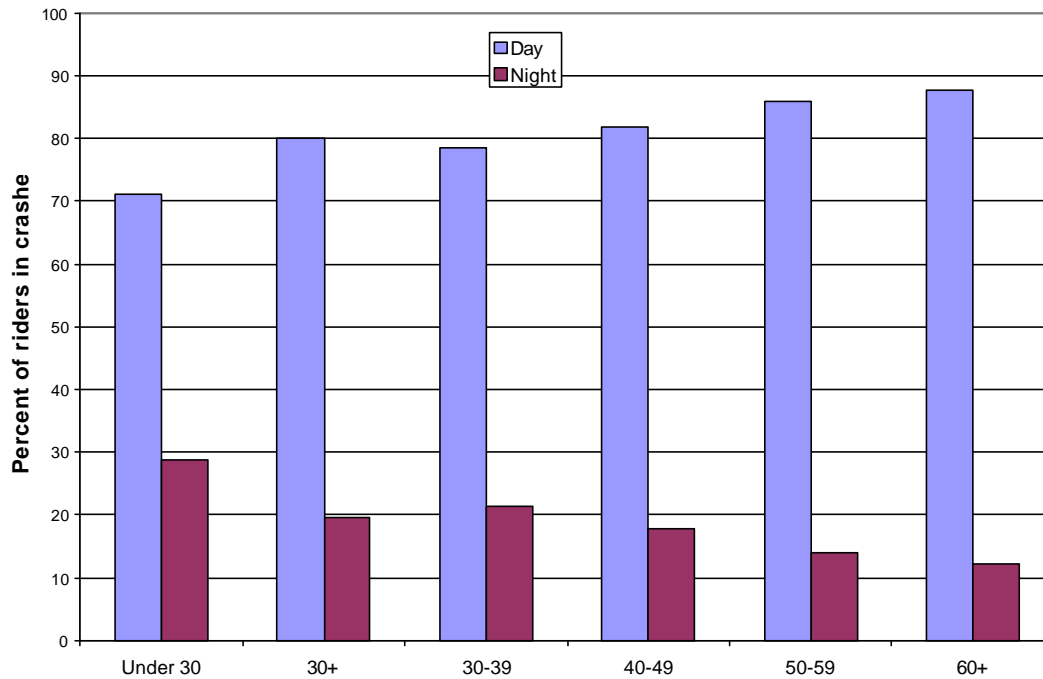


Figure 5.19 Percent of riders in daytime (6am-6pm) and night-time (6pm-6am) crashes by age group, Victoria 1991-2000.

## 5.8 TYPE OF CRASH

### 5.8.1 Single and multiple vehicle crashes

Figure 5.20 shows that riders aged 30 and over were involved in relatively more single vehicle crashes than younger riders (42.8% versus 37.4%,  $\chi^2(1)=52.0$ ,  $p=.000$ ). This was true in both metropolitan and rural crashes (metropolitan:  $\chi^2(1)=16.7$ ,  $p=.000$ , rural:  $\chi^2(1)=25.5$ ,  $p=.000$ , see Figure 5.21).

Among riders aged 30 and over, the percent of riders in single vehicle crashes differed ( $\chi^2(3)=10.4$ ,  $p=.016$ ) and generally increased with age (although this was not true for riders aged 50-59).

The overinvolvement of riders aged 30 and over in single vehicle crashes was found for other injury and serious injury crashes but not for fatal crashes, where the pattern was reversed (see Figure 5.22).

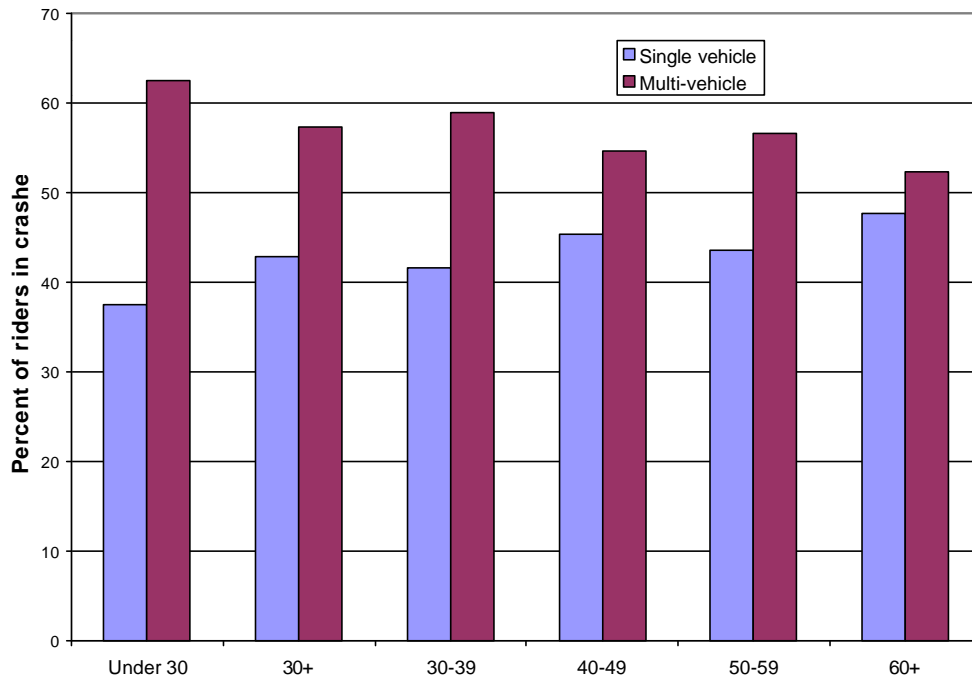


Figure 5.20 Percent of riders in single and multiple vehicle crashes by age group, Victoria 1991-2000.

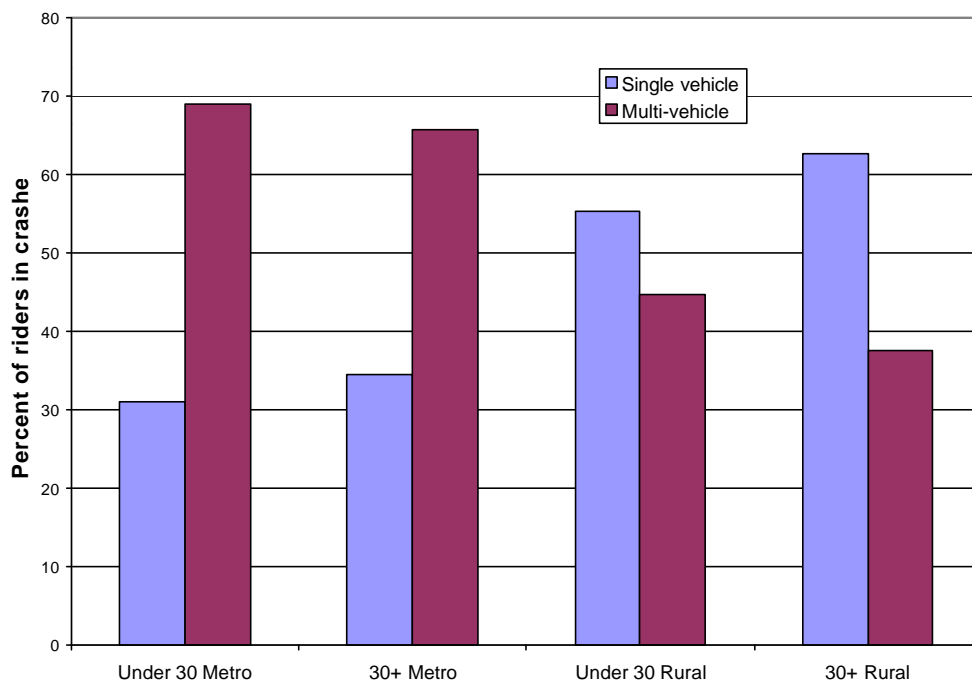


Figure 5.21 Percent of riders in single and multiple vehicle crashes in metropolitan and rural areas by age group, Victoria 1991-2000.

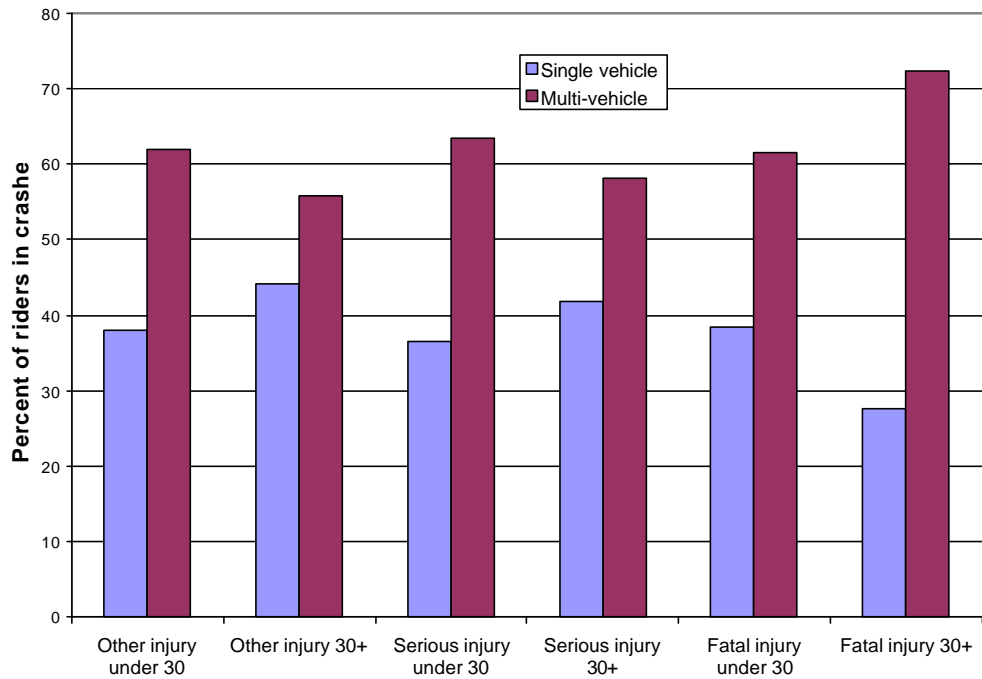


Figure 5.22 Percent of riders in single and multiple vehicle crashes by severity and age group, Victoria 1991-2000.

### 5.8.2 DCA codes

The Definitions for Coding Accidents (DCA) system provides a numerically coded description of the crash. Individual DCA codes are grouped according to a number of groups as shown in Figure 5.23. The figure indicates that compared to younger riders, riders aged 30 and over were relatively more involved in crashes coded as “on path” and “off path-on straight” and “off path-on curve” (which are single vehicle crashes).

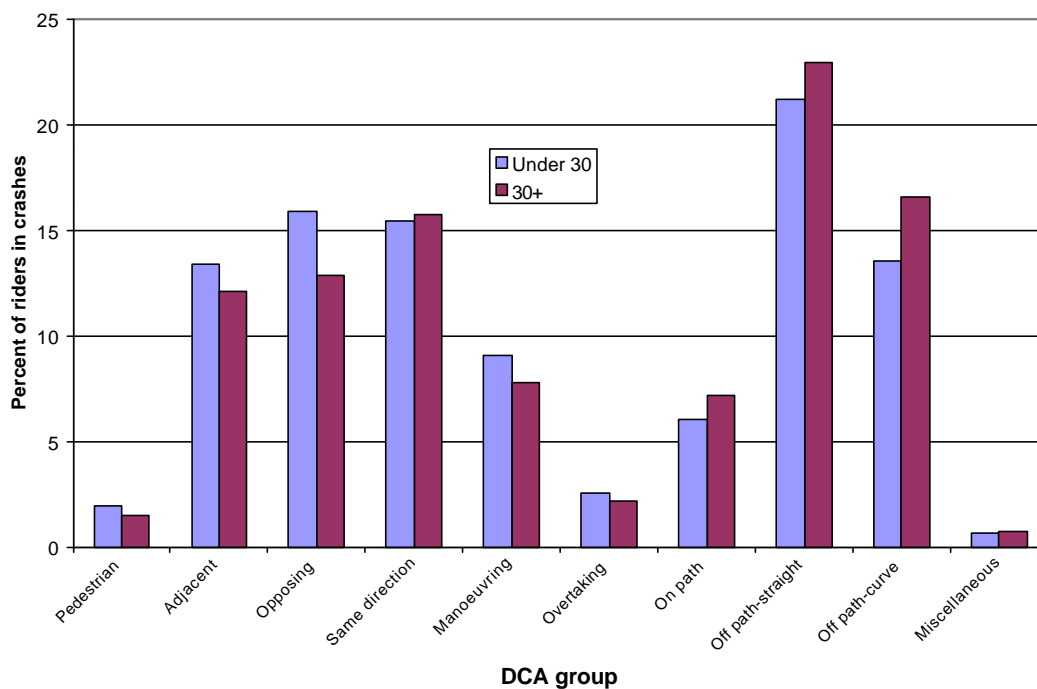


Figure 5.23 Percent of riders in crashes according to DCA (Definition for Classifying Accidents) group and age, Victoria 1991-2000.

### 5.8.3 Crashes involving pillions

Overall, 8.9% of riders aged 30 and over in crashes were carrying a pillion passenger, compared to 7.0% of riders aged under 30. Older riders were more likely to be carrying pillions in serious injury and other injury crashes, but not in fatal crashes (see Table 5.3).

Of the riders aged 30 and over in crashes carrying pillions, 2.2% held learner or probationary licences (and therefore should not have been carrying pillions) and 2.7% were unlicensed. The respective values for riders aged under 30 were 20.2% and 16.4%.

**Table 5.3 Percentage of riders carrying pillion passengers in crashes, Victoria 1991-2000.**

Crash severity	Riders aged under 30	Riders aged 30 and over
Fatal	13.2	11.8
Serious injury	8.3	10.5
Other injury	5.6	7.8
All casualty crashes	7.0	8.9

Pillion crashes of riders aged 30 and over were, on average, of lower severity than pillion crashes of younger riders ( $\chi^2(2)=9.6$ ,  $p=.008$ ). For riders aged 30 and over, 3.1% of pillion crashes resulted in a fatality and 45.5% resulted in serious injury. The respective values for younger riders were 5.4% and 50.5%.

Among riders aged 30 and over with pillions, 1.3% had learner permits, 1.0% had probationary licences and 2.7% were unlicensed. The respective values for younger riders were 10.9%, 10.4% and 17.3%.

## 5.9 GENDER OF RIDERS

The percent of riders in crashes who were female did not differ between younger and older riders (5.2% versus 5.0%,  $\chi^2(1)=0.6$ ,  $p=.426$ ). This was true at each level of crash severity and among each age group of riders aged 30 and over.

### 5.9.1 Crash involvement rates by gender

In 2000, 91.0% of licence holders aged 30 and over and 90.0% of licence holders aged under 30 were male. Generally, the percentage of licence holders who were male increased with age (see Table 5.4). For each age group, the percentage of licence holders who were male was slightly lower in 2000 than in 1996.

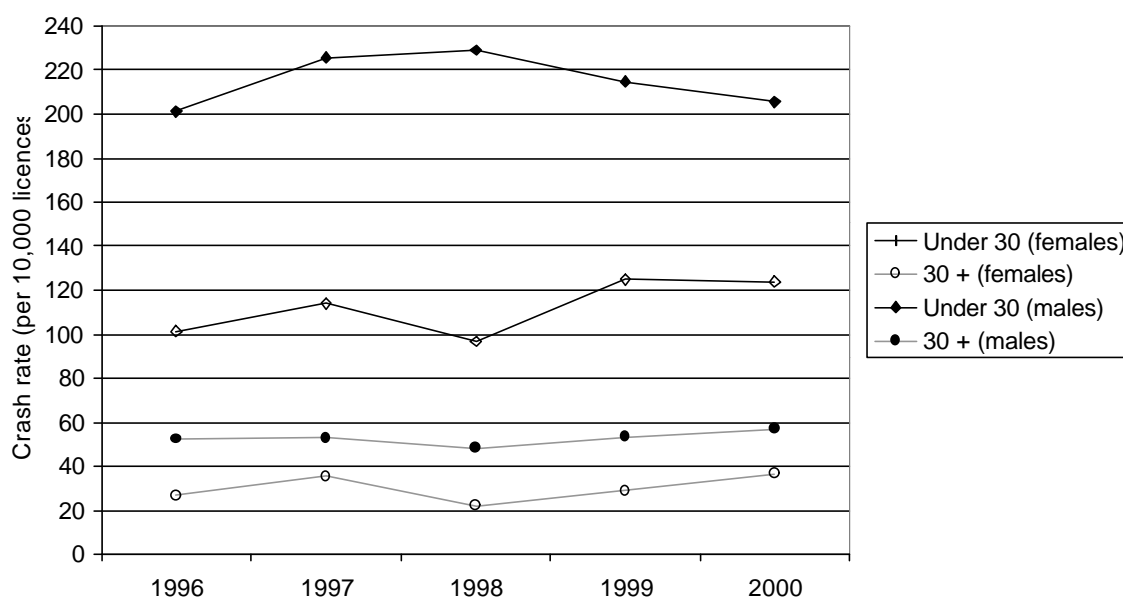
**Table 5.4 Percentage of motorcycle licence holders who were male according to age group, Victoria 1996 and 2000.**

Age group	1996	2000
Under 30	90.6	90.0
30 and over	91.8	91.0
30-39	90.8	89.7
40-49	92.2	90.9
50-59	94.4	93.1
60+	95.5	95.2
All ages	91.5	90.8

Figure 5.24 shows that the crash involvement rates were lower for females than males for each age group. The crash involvement rate for females aged 30 and over was lower than for females aged under 30.

In 2000, the crash involvement rate per 10,000 licences was 57 for male riders aged 30 and over and 37 for female riders aged 30 and over. The respective rates for riders aged under 30 were 206 and 124. The ratios of these rates are similar, suggesting that the relative involvement of male and female riders in crashes does not change with age.

The small number of crashes involving females over 30 prevents further breakdown of these age groups.



*Figure 5.24 Crash involvement rate per 10,000 motorcycle licences held for male and female licence holders by age group, Victoria 1996-2000.*

## 5.10 LICENCE CHARACTERISTICS

Not surprisingly, riders in crashes aged 30 and over were more likely to hold standard (i.e. full) motorcycle licences and less likely to hold learner or probationary licences than younger riders ( $\chi^2(3)=2926.8$ ,  $p=.000$ , see Figure 5.25). This was true at each level of crash severity. The percent of riders in crashes who were unlicensed was lower for riders aged 30 and over than younger riders (1.2% versus 6.2%).

Among the riders aged 30 and over, the distribution of licence types varied significantly ( $\chi^2(9)=35.5$ ,  $p=.000$ ). Riders aged 30-39 appeared to be more likely to hold learner permits than older riders.

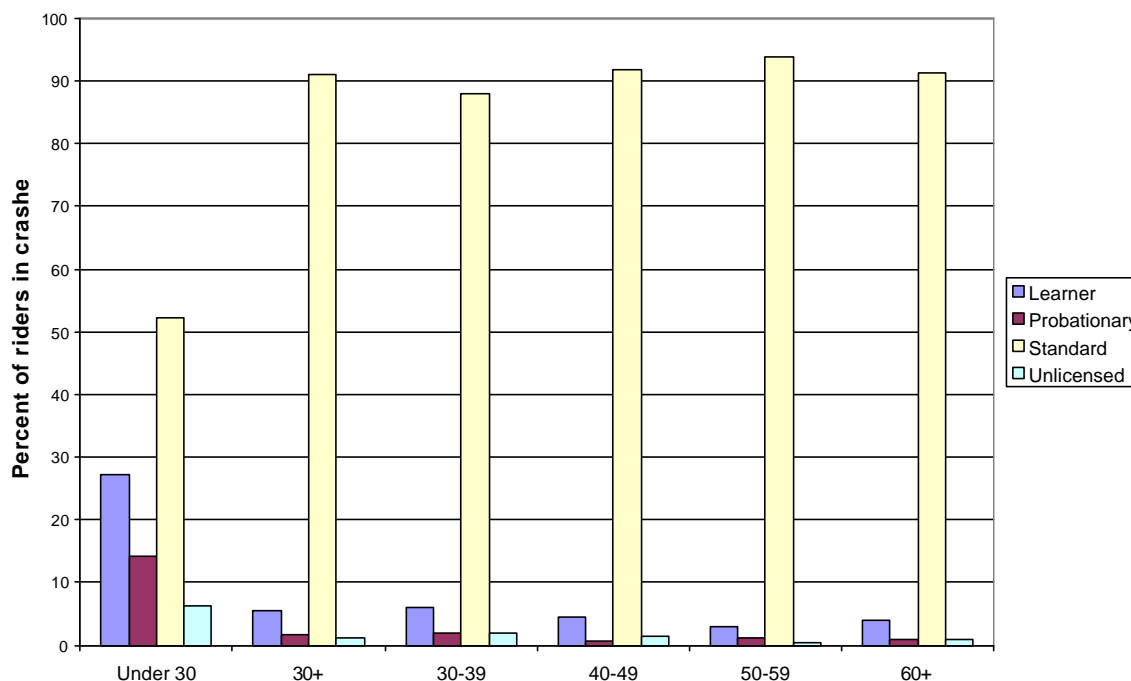


Figure 5.25 Percent of riders in crashes by licence status and age group, Victoria 1991-2000.

The severity and characteristics of crashes involving new riders aged over 30 (i.e. those holding learner permits or probationary licences) were examined.

For both riders aged 30 and over and younger riders, unlicensed riders were involved in relatively more fatal or serious injury crashes than other riders (see Figure 5.26). Once the unlicensed riders were removed, there were no statistically significant differences in the pattern of severity of crashes according to licence type for either riders aged 30 and over ( $\chi^2(4)=6.9$ ,  $p=.936$ ) or younger riders ( $\chi^2(4)=0.8$ ,  $p=.140$ ).

Among riders aged 30 and over, learner permit and probationary licence holders were more likely than standard licence holders to be involved in crashes in the metropolitan area (77.6% and 81.7% versus 70.1%).

Rider involvement in single vehicle crashes (compared to multiple vehicle crashes) differed by type of licence (Under 30:  $\chi^2(3)=40.5$ ,  $p=.000$ , 30 and over:  $\chi^2(3)=9.1$ ,  $p=.029$ , see Figure 5.27). Learner permit holders aged 30 and over were involved in relatively more single vehicle crashes compared to standard licence holders but probationary licence holders were involved in relatively fewer single vehicle crashes. Learner permit holders

aged 30 and over appeared to be involved in relatively more single vehicle crashes than riders aged under 30 (including learner permit holders).

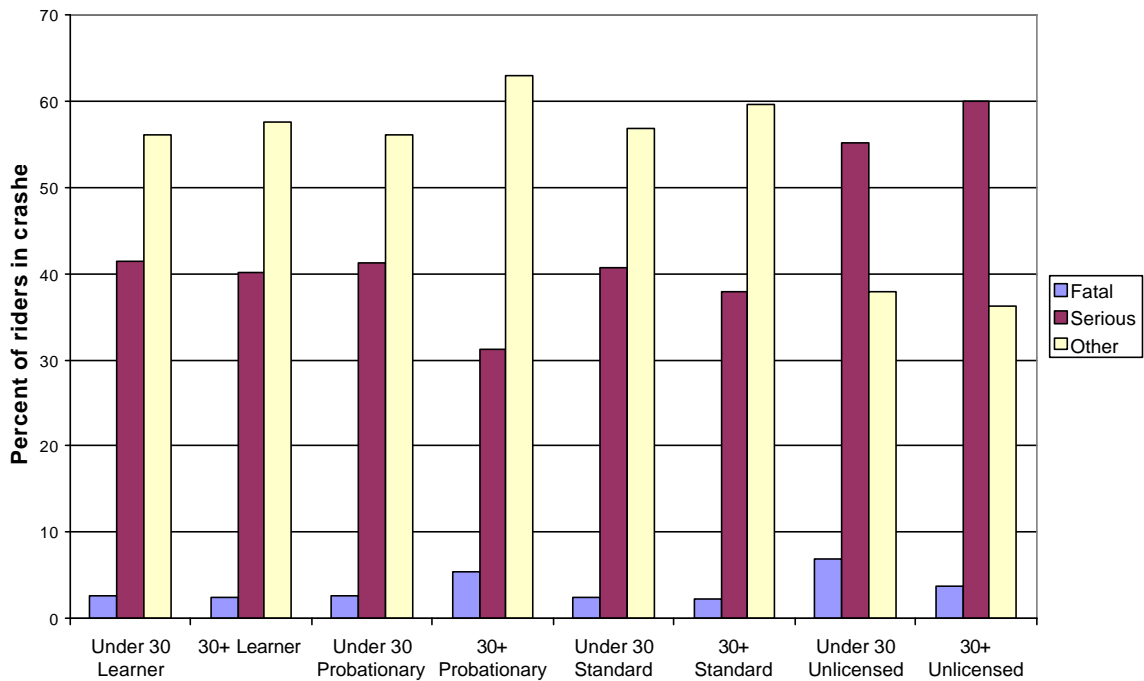


Figure 5.26 Percent of riders in fatal, serious injury and other injury crashes by age group and licence type, Victoria 1991-2000.

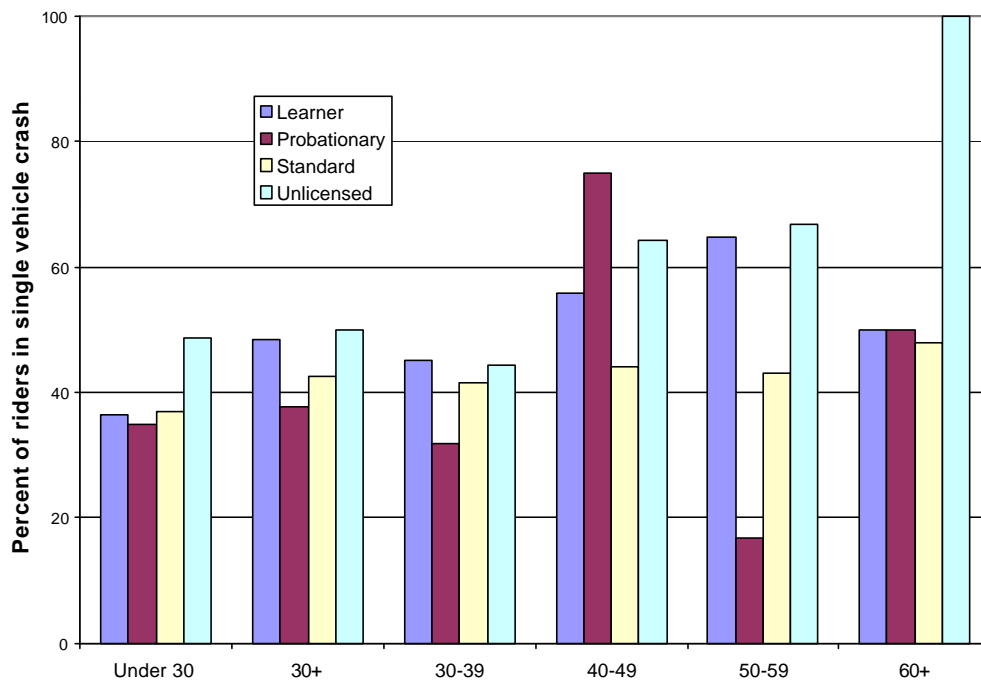


Figure 5.27 Percent of riders in single vehicle crashes by age group and licence type, Victoria 1991-2000.

### 5.10.1 Crash involvement rates by licence type

Figure 5.28 shows that the number of full motorcycle licences held by persons aged 30 and over increased from just over 140,000 in 1996 to just under 200,000 in 2001. The changes in novice (learner, probationary and restricted) motorcycle licences over this period were small and the change in the number of full licences held by persons aged under 30 fell somewhat.

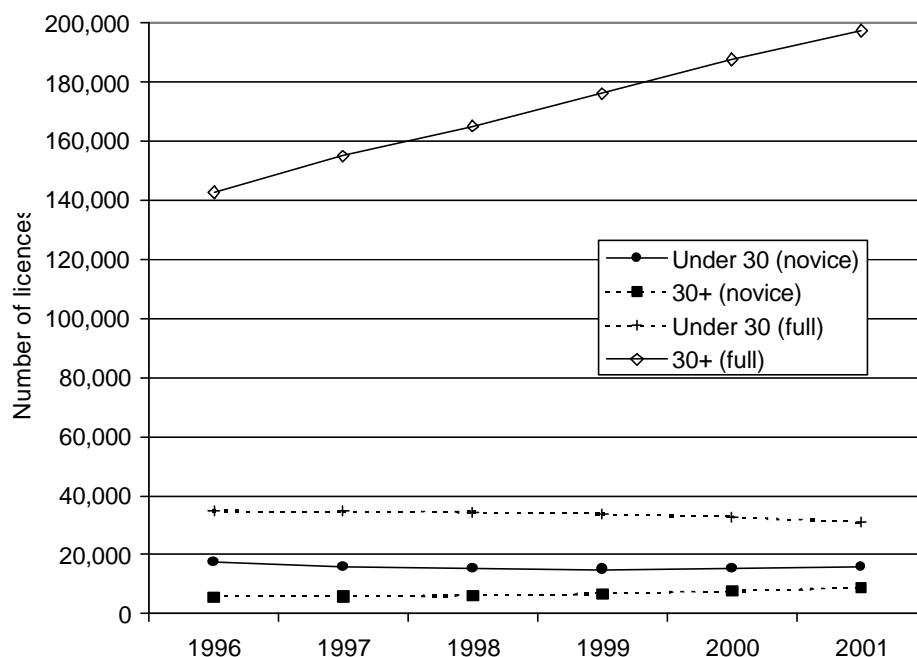


Figure 5.28 Number of novice (learner, probationary and restricted) motorcycle licences by age group, Victoria 1996-2001.

The increase in motorcycle crashes involving riders aged 30 and over from 1996 to 2001 appears to have been confined to those holding full licences (see Figure 5.29).

Figure 5.30 shows that the crash involvement rate per 10,000 licences was lowest for full licence holders aged 30 and over. The crash involvement rate for novice licence holders aged 30 and over was somewhat higher than for full licence holders in this age group, but was lower than for full licence holders aged under 30. Novice licence holders aged under 30 had the highest crash involvement rate. The increase in crash involvement rate associated with holding a novice licence appeared to be less for licence holders aged 30 and over than for younger licence holders.

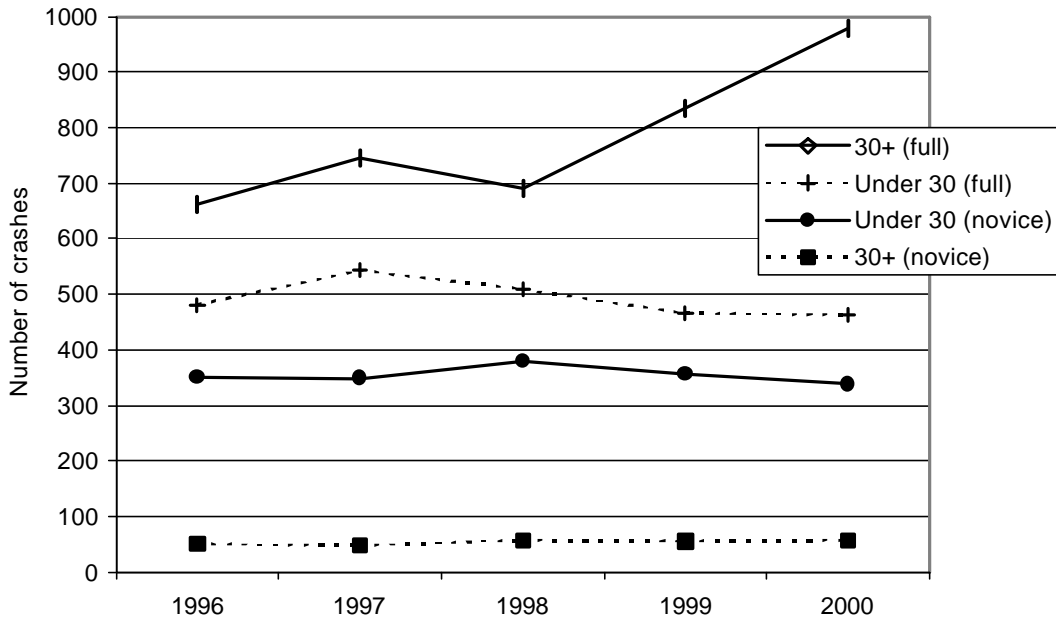


Figure 5.29 Numbers of riders in crashes according to age group and licence status, Victoria 1996-2000.

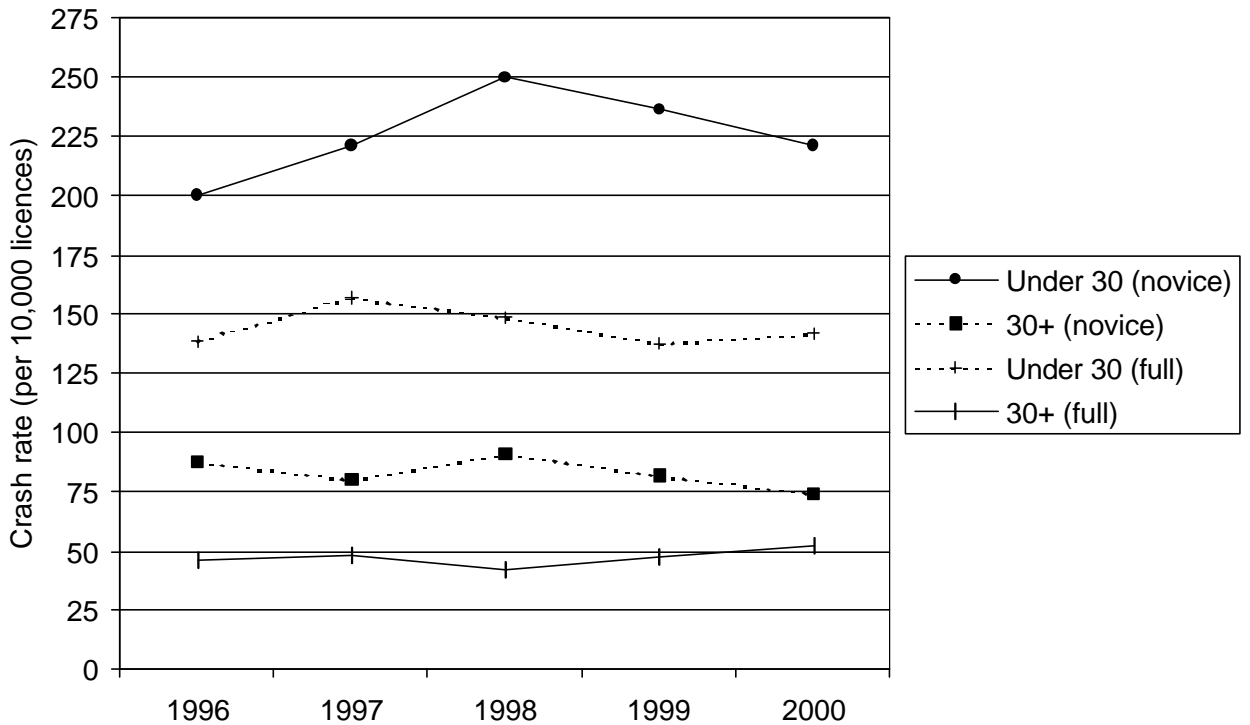


Figure 5.30 Crash involvement rates per 10,000 licences held for motorcycle licence holders according to age group and licence status, Victoria 1996-2000.

## 5.11 ALCOHOL INVOLVEMENT

The extent of drink riding in motorcycle crashes is difficult to measure because blood alcohol concentration (BAC) is missing from the data file for a large proportion of riders in crashes. BAC values are missing for about 80% of riders in crashes, with the percentage missing being greatest for the lowest severity (other injury) crashes. There is a clear need for improvements to the collection and recording of blood alcohol data in non-fatal crashes.

The missing values are more likely to be zero readings than the available values. Thus, the percentage of positive BAC values in the crashes for which data are available will be greater than in all crashes. For this reason, the percentages are presented separately for crashes in which BAC was known and for all crashes in Table 5.5.

For all casualty crashes, the percentage of riders with BAC exceeding 0.05 was similar for riders aged 30 and over and younger riders (this applied both for known and all data, see Table 5.5). For fatal crashes, the known data suggest that there is more drink riding by older motorcycle riders than younger riders. However, the percentage of riders in fatal crashes with BAC unknown was greater for older riders than younger riders (24.1% versus 12.9%). Given that unknown values are likely to be low BAC values, then the true involvement of drink riding is likely to be more similar for the two age groups. For serious injury crashes and other injury crashes, the percentages of older and younger riders with BAC exceeding 0.05 were similar.

**Table 5.5 Percent of riders in crashes with blood alcohol concentration (BAC) over 0.05 by age group and crash severity, Victoria 1991-2000.**

Crash severity	Percent with BAC>0.05 of known		Percent with BAC>0.05 of all	
	Under 30	30 and over	Under 30	30 and over
Fatal	20.9	27.1	18.2	20.6
Serious injury	19.6	21.0	6.0	6.0
Other injury	20.4	17.1	2.7	2.0
All crashes	20.0	20.3	4.6	4.0

Unlicensed riders in crashes were more likely to have positive BAC values than licensed riders. Among riders aged over 30, 18.6% of all unlicensed riders (45.8% of those with BAC known) had a BAC exceeding 0.05, compared with 3.3% of all licensed riders (15.4% of those with BAC known). Among riders aged under 30, 27.7% of all unlicensed riders (58.1% of those with BAC known) had a BAC exceeding 0.05, compared with 3.3% of all licensed riders (17.7% of those with BAC known).

## 5.12 HELMET WEARING

Information about helmet wearing was missing for almost 30% of riders in crashes. Among those for which it was known, riders aged 30 and over were less likely to have not worn a helmet than younger riders (1.3% versus 3.6%,  $\chi^2(1)=63.6$ ,  $p=.000$ ). The numbers of riders not wearing helmets were too small to permit additional analyses of non-wearing of helmets.

### 5.13 MOTORCYCLE CHARACTERISTICS

Information about the characteristics of the motorcycle in the crash database was incomplete and of little value. The variables engine cubic capacity, power units and registered make had no entries. Make, colour and year of manufacture were available for most motorcycles but these variables were considered not to be useful for this study.

Insurance class (largely a function of cubic capacity) was available for 85% of motorcycles in crashes. The pattern of capacities of motorcycles differed significantly between riders aged 30 and over and younger riders ( $\chi^2(4)=1314.8$ ,  $p=.000$ ). Compared to younger riders, riders aged 30 and over were more likely to be riding a motorcycle with an engine capacity exceeding 500 cc (65.6% versus 37.4%) and less likely to be riding a motorcycle with an engine capacity of 126-500 cc (29.6% versus 59.3%). This was true for all levels of crash severity.

The pattern of capacities of motorcycles also differed among older riders ( $\chi^2(12)=147.6$ ,  $p=.000$ ). Riders aged 60 and over were less likely to ride motorcycles with a capacity exceeding 500 cc and were more likely to ride a motorcycle with an engine capacity of 61-125 cc than other riders.

### 5.14 SUMMARY OF RESULTS

During the years 1991-2000, the number and percentage of riders in crashes who were aged 30 and over more than doubled.

Compared to riders aged under 30, riders aged 30 and over:

- were involved in relatively fewer serious injury crashes and relatively more other injury crashes
- had crash involvement rates per licence holder that were about one-third of those for licence holders aged under 30
- were involved in relatively more rural than metropolitan crashes
- were involved in relatively more crashes in higher speed zones (in both metropolitan and rural areas)
- were involved in relatively fewer crashes at intersections (in both metropolitan and rural areas)
- were involved in slightly more crashes in warmer months
- were involved in relatively more crashes on weekends
- were involved in relatively more daytime crashes
- were involved in relatively more single vehicle crashes (except among fatal crashes where the reverse was true) in both metropolitan and rural areas
- were involved in relatively more crashes coded as “on path” and “off path-on straight” and “off path-on curve” (which are single vehicle crashes)

- were involved in relatively more crashes in which they were carrying pillion (except among fatal crashes)
- were more likely to hold standard (full) licences
- were less likely to be unlicensed
- were more likely to have a blood alcohol concentration exceeding 0.05 (but this conclusion is clouded by missing data)

The extent of missing blood alcohol concentration data complicated the interpretation of the prevalence and risks associated with alcohol in these crashes. There is a clear need for improvements to the collection and recording of blood alcohol data in non-fatal crashes. Similarly, information about helmet wearing was missing for almost one-third of riders in crashes.

Holders of learner permits, probationary licences or restricted licences who were aged 30 and over had lower crash involvement rates per 10,000 licences than fully licensed riders aged under 30 (and much lower rates than novices aged under 30).

Among riders aged 30 and over:

- the number of riders in crashes decreased with age
- the percentage of crashes resulting in serious injury were similar for 30-39 and 40-49 year olds, were lower for 50-59 year olds and higher for riders aged 60 and over
- the crash involvement rate per 10,000 licence holders decreased with age
- the crash involvement rate per 10,000 riders decreased with age
- riders aged 60 and over had a larger proportion of their crashes in rural areas than other age groups
- involvement in crashes in high speed zones (relative to medium and low speed zones) increased from 30-49 to 40-49 to 50-59 year olds
- involvement in crashes that occurred in warmer months (October to March) compared to colder months (April to September) increased with age
- involvement in weekend crashes appeared relatively more common for 40-59 year old riders than those aged 30-39 or 60 and over
- relative involvement in crashes that occurred in daytime (6am to 6pm) increased with age
- relative involvement in single vehicle crashes increased with age (although this was not true for 50-59 year olds)
- riders aged 30-39 years were more likely to hold learner permits than older riders

- riders aged 60 and over were less likely to ride motorcycles with an engine capacity exceeding 500 cc and were more likely to ride a motorcycle with an engine capacity of 61-125 cc than other riders

## **5.15 DISCUSSION OF RESULTS OF CRASH DATA ANALYSES**

The crash data were analysed to gain an understanding of the magnitude of the involvement of older riders in crashes and to identify the characteristics of older rider crashes. These characteristics may help to identify potential risk factors and assist in targeting countermeasures.

### **5.15.1 Magnitude of involvement in crashes**

The analyses found that while the involvement of riders aged over 30 doubled from 1991-2000, the crash involvement rate of licence holders aged over 30 is lower than that of younger licence holders and that the crash involvement rate decreases with age. What factors underlie the lower crash involvement and the decrease in crash involvement with age?

The simplest factor that could possibly underlie the differences in crash involvement with age could be amount of riding. The rider survey found that the proportion of licence holders who reported riding in the last 12 months fell with age, from 59.6% of 30-39 year old licence holders to 41.2% of licence holders aged 60 and over. It is plausible to suggest that the proportion of licence holders aged under 30 who have ridden in the last 12 months is greater than for their older counterparts. This could explain part of the difference in crash involvement rates.

However, the proportion of each age group that has not ridden in the last 12 months is only a coarse measure of exposure and is not sufficient to account for the decreases in crash involvement with age. If all licence holders aged 30 and over had ridden in the last year, then their crash involvement rate in 2000 would increase from 54 to 103. But this remains less than the crash involvement of riders aged under 30, which is 180.

The total distance ridden per year should affect crash involvement rate more strongly than whether or not the licence holder has ridden in the last year. The survey data found that distance ridden per week and frequency of riding decreased with age among riders aged 30 and over.

One of the other contributors to the lower crash involvement rate of older riders is that they are, on average, more experienced. Learner and probationary licence holders have higher crash involvement rates than fully licensed riders and the older rider group contains relatively fewer of these novices. In addition, fewer older riders are unlicensed.

### **5.15.2 Characteristics of crashes**

The characteristics of the older rider crashes were similar to those reported in New South Wales (de Rome and Stanford, 2002). Older riders were involved in relatively more single vehicle crashes. While much of this reflected their relatively greater involvement in rural crashes, it was also true for metropolitan crashes. The finding that older riders were also over-involved in crashes in medium and high speed zones, suggests that this pattern of crashes may indicate a pattern of open-road riding, rather than commuting.

### **5.15.3 New riders aged 30 and over**

The survey found differences in riding patterns and many other aspects between new, returned and continuing riders. Returned and continuing riders could not be distinguished in the crash data, but new riders could be identified as those with learner or probationary licences (note this is a different definition to that used in the survey).

New riders comprised about 4% of licence holders aged 30 and over and comprised between 6% and 8% of crashes in 1996-2000. While their crash involvement rates were higher than other riders of the same age group, their crash involvement rates were lower than for new riders aged under 30 and were also lower than for fully licensed riders aged under 30.

Some of the elevated crash involvement rate for new riders may relate to them riding more. The survey found that new and continuing riders rode further per week and rode more often than returned riders.

Crashes involving new riders were no more severe, on average, than those involving other riders of the same age group. Among riders aged 30 and over, new riders were involved in relatively more crashes in the metropolitan area than other riders. Learner permit holders aged 30 and over were involved in relatively more single vehicle crashes compared to standard licence holders but probationary licence holders were involved in relatively fewer single vehicle crashes. Learner permit holders aged 30 and over appeared to be involved in relatively more single vehicle crashes than riders aged under 30 (including learner permit holders).

## **6.0 CONCLUSIONS**

The project aimed to develop a better understanding of the patterns of riding and risk factors associated with older motorcyclists and to recommend measures that may reduce the crash involvement of these riders. It comprised a survey of motorcycle licence holders aged over 30 and an analysis of crash data to gain an understanding of the magnitude of the involvement of older riders in crashes and to identify the characteristics of older rider crashes. These characteristics may help to identify potential risk factors and assist in targeting countermeasures.

### **6.1 MAGNITUDE OF THE INVOLVEMENT OF OLDER RIDERS IN CRASHES**

While the number and percentage of riders in crashes who were aged over 30 doubled from 1991-2000, the crash involvement rate of licence holders aged over 30 is lower than that of younger licence holders and it decreases with age.

The differences in crash involvement with age are influenced to a large extent by differences in the amount of riding. Not all motorcycle licence holders are active riders. The survey results suggest that only 53% of motorcycle licence holders aged 30 and over have ridden in the last year. Depending on the assumptions made about the relative response rates of riders and non-riders, this percentage could be as high as 74% or as low as 23%.

It is plausible to suggest that the proportion of licence holders aged under 30 who have ridden in the last 12 months is greater than for their older counterparts. This could explain part of the difference in crash involvement rates between riders aged 30 and over and younger riders.

Among riders aged 30 and over, older licence holders are less likely to be active riders. The survey results suggest that 60% of licence holders aged 30 to 39 are active riders compared with 41% of licence holders aged 60 and over. Licence holders who have held their licence longer are less likely to be active riders, but this may reflect the older average age of those who have held licences longer.

However, the proportion of each age group that has not ridden in the last 12 months is only a coarse measure of exposure and is not sufficient to account for the decreases in crash involvement with age. The total distance ridden per year should affect crash involvement rate more strongly than whether or not the licence holder has ridden in the last year. The survey data found that distance ridden per week and frequency of riding decreased with age among riders aged 30.

One of the other contributors to the lower crash involvement rate of older riders is that they are, on average, more experienced. Learner and probationary licence holders have higher crash involvement rates than fully licensed riders and the older rider group contains relatively fewer of these novices. In addition, fewer older riders are unlicensed.

## 6.2 CHARACTERISTICS OF OLDER RIDER CRASHES

Older riders were involved in relatively more single vehicle crashes. While much of this reflected their relatively greater involvement in rural crashes, it was also true for metropolitan crashes. The finding that older riders were also over-involved in crashes in medium and high speed zones, suggests that this pattern of crashes may indicate a pattern of open-road riding, rather than commuting.

## 6.3 COMPARISONS OF CONTINUING, RETURNED AND NEW RIDERS

In the analysis of the survey data, licence holders who reported riding in the last 12 months (riders) were classified into three groups:

**Continuing riders** Riders who have held licences and ridden regularly for many years. Defined in the data as riders who obtained their licence prior to 1995 and stated that they have ridden regularly during the period between when they first got their licence and now.

**Returned riders** Riders who have held licences for many years but have only returned to regular riding recently. Defined in the data as riders who obtained their licence prior to 1995 and stated that they have **not** ridden regularly during the period between when they first got their licence and now.

**New riders** Riders who have only obtained a licence recently. Defined in the data as riders who have obtained their licence in 1995 or more recently.

Overall, 43% of riders who responded were “continuing riders”, 27% were “returned riders” and 31% were “new riders”.

Compared to other riders, **new riders** are:

- younger
- more likely to be single
- more likely to be female
- more likely to have completed a rider training course
- more likely to ride in urban areas (and involved in relatively more crashes in urban areas, according to the crash data analysis)
- less likely to ride off-road
- more likely to own smaller capacity motorcycles (less than 260cc)

Compared to other riders, **continuing riders** are:

- more likely to live in rural areas
- more likely to have undertaken an advanced rider training course

- more likely to ride all year round
- less likely to report being involved in a crash in the past five years (only if riding less than three days per week)

Compared to other riders, **returned riders**

- ride less frequently and less distance
- are less likely to use a motorcycle for commuting and general transport

Compared to continuing riders, **returned riders** are

- more likely to nominate a car as their main means of transport
- less likely to have commuted in the past
- more likely to have stopped commuting
- more likely to have started touring
- less likely to have ridden on a farm in the past
- less likely to have ridden for general transport in the past
- less likely to have owned motorcycles with engine capacity greater than 750 cc in the past

#### **6.4 COMPARING THE CRASH RISKS OF CONTINUING, RETURNED AND NEW RIDERS**

Returned and continuing riders could not be distinguished in the crash data, but new riders were identified as those with learner or probationary licences (note this is a different definition to that used in the survey).

While the crash involvement rate of new riders was higher than for other riders of the same age group, it was lower than for new or fully licensed riders aged under 30. Some of the elevated crash involvement rate for new riders may relate to them riding more. The survey found that new and continuing riders rode further per week and rode more often than returned riders.

In the survey, the crash risks of continuing, returned and new riders were able to be compared using self-reported crash involvement, amount of riding and riskiness of riding as indicators.

The self-reported crash involvement of the three groups of riders in the last five years did not differ markedly. Given that, on average, new riders would have ridden for less than five years, this agrees with the findings of the crash data analyses that the annual crash involvement of new riders was higher than for other riders. Among riders who rode less than three days per week, continuing riders were less likely to report involvement in a crash in the past five years than other riders.

In terms of total amount of riding, returned riders rode fewer times per week and fewer kilometres per week, on average, than other riders. Continuing riders were more likely to ride all year round and less likely to nominate a car as their main means of transport.

Purpose of riding and whether the motorcycle ridden differs from past motorcycles provide two indices of riskiness of riding. Earlier studies have demonstrated that the crash risk associated with recreational riding is at least double that of commuting or general transport, while inexperience with the particular motorcycle also is associated with increased crash risk (Haworth, Smith, Brumen and Pronk, 1997).

Recreation was the main purpose of riding for all three groups. Returned riders rode more for recreation than continuing riders. In terms of inexperience with the particular motorcycle, this is less often a factor for continuing riders than other riders.

In summary, there is clear evidence from the crash data analyses supported by the self-reported data that crash risk on a per rider per annum basis is higher for new riders. The comparative crash risks of returned versus continuing riders are less clear. The survey data suggest that returned riders possibly ride at higher risk per kilometre because of more recreational riding but they ride less than continuing riders.

## **6.5 MEASURES THAT MAY REDUCE THE CRASH INVOLVEMENT OF THESE RIDERS**

As for any road user group, the crash involvement of motorcycle licence holders over the age of 30 may be reduced by measures that reduce total distance travelled and by measures that reduce the risk per unit of distance travelled.

The relative ease with which a motorcycle licence holder can return to riding may be contributing to the increased amount of riding by older motorcycle licence holders. The licensing practice which allows motorcycle licences to remain current at no additional cost to people who hold car licences facilitates this situation. The number of riders in the survey who were returned riders (27%) is a measure of this. Implementing a system in which there is an active requirement to maintain the currency of a motorcycle licence could act to ensure that those individuals wishing to return to riding have to regain a minimum level of skill or competence before doing so. This would have the added benefit of improving the ability to estimate the real number of riders and therefore improve the ability to monitor trends in motorcycle safety.

Promotion of refresher courses for licence holders returning to riding may be of benefit to improve skills and reinforce to potential riders that their skills may not be up to date.

The crash involvement of older riders could also be decreased by general motorcycle safety measures that would benefit riders of all ages. These measures could include reductions in impaired driving and other unsafe road user behaviours by car drivers, reductions in both speeding and general travel speeds and improvements in roadside safety to prevent injury or reduce injury severity in the event of a crash.

## REFERENCES

Christie, R. and Newland, R. (2001). Motorcyclist fatality and motorcycle sales patterns in Australia. Proceedings of the 2001 Road Safety Research, Policing and Education Conference, Melbourne, 18-20 November 2001.

de Rome, L. and Stanford, G. (2002). Positioned for Safety: Road Safety Strategic Plan 2002-2005. Sydney: Motorcycle Council of NSW.

Haworth, N., Smith, R., Brumen, I. and Pronk, N. (1997). Case control study of motorcycle crashes (CR174). Canberra: Federal Office of Road Safety.

US DOT and Motorcycle Safety Foundation (2000). National Agenda for Motorcycle Safety (DOT HS 809 156). Washington, D.C.: Department of Transportation.

## ACKNOWLEDGMENTS

This research was funded by the MUARC Baseline Research Program, which receives funding from Department of Justice, VicRoads, Transport Accident Commission. Additional funding was supplied by VicRoads.

We would like to thank the following people for their assistance:

- the motorcyclists who responded to the survey
- the members of the Project Advisory Committee, particularly Kelly Imberger
- Keith Hsuan for designing the Access database for data entry
- our data entry staff: Narelle Hayes, Bella Lough, Miriam Shrimski, Danielle Carey
- Liz de Rome for supplying information collected as part of the development of the NSW Motorcycle Council Road Safety Strategy

# APPENDIX 1: QUESTIONNAIRE





ACCIDENT RESEARCH CENTRE

# MOTORCYCLING AFTER 30

## Rider Questionnaire

The Monash University Accident Research Centre is undertaking a survey of licensed motorcycle riders who are over 30 years old.

If you **HAVE** ridden a motorcycle in the last 12 months please see the survey instructions on the next page.

If you have **NOT** ridden a motorcycle in the last 12 months please answer the questions in the box below and return this form in the reply envelope supplied. You don't need to fill in the rest of the questionnaire. Thank you.

When did you get your motorcycle learners permit? ..... (year)

When did you get your motorcycle licence? ..... (year)

When did you last ride? ..... (year)

What was the **main** reason you stopped riding?

    Needed to transport family <sub>1</sub>

    Too dangerous <sub>2</sub>

    Didn't have time <sub>3</sub>

    Other (please describe) <sub>4</sub> .....

.....

....

In what year were you born? 19\_\_

Where do you currently live?

    Metropolitan Melbourne or Geelong <sub>1</sub>

    Other areas in Victoria <sub>2</sub>

This survey is aimed at motorcycle riders who are over 30 years old and who have ridden a motorcycle in the last 12 months. The aim of the questionnaire is to find out more about your current and past riding patterns and the types of motorcycles you ride.

Please answer all of the questions honestly by ticking (✓) the relevant box or filling in the short answers. Any information you provide will remain strictly confidential and will only be used for this study.

### Your motorcycle licence and training

**1) What type of motorcycle licence do you currently have?**

- Learner <sub>1</sub>
- Probationary/restricted <sub>2</sub>
- Full <sub>3</sub>

**2) In what year did you obtain your motorcycle learner permit?**

..... (year)

**3) In what year did you obtain your full motorcycle licence?**

..... (year)

**4) Have you ever undertaken any motorcycle rider training courses?**

No <sub>1</sub> (go to Question 6)

Yes <sub>2</sub>

**5) Please complete the following to describe the LAST rider training course that you completed.**

**a) Type of course**

- Learner <sub>1</sub>
- Licence <sub>2</sub>
- Advanced <sub>3</sub>
- Off-road <sub>4</sub>
- Superbike <sub>5</sub>
- Other (please describe) <sub>6</sub> .....

**b) In what year did you complete the course? .....**(year)

**Riding in the last 12 months**

**6) Over the last 12 months, how far would you have ridden a motorcycle on the road in an average week?**

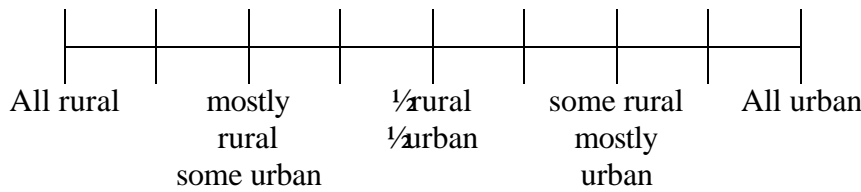
- Less than 50 kms per week <sub>1</sub>
- 51-100 kms per week <sub>2</sub>
- 101-200 kms per week <sub>3</sub>
- 201-300 kms per week <sub>4</sub>
- 301-400 kms per week <sub>5</sub>
- Over 400 kms per week <sub>6</sub>

**7) On average, how often have you ridden a motorcycle on the road over the last 12 months?**

- 3 days per week or more <sub>1</sub>
- 1-2 days per week <sub>2</sub>
- 1-3 days per month <sub>3</sub>
- 1-5 days per year <sub>4</sub>
- Not at all <sub>5</sub>
- Other (please describe) <sub>6</sub> .....

**8) How much of your riding over the last 12 months would have been in urban/city areas and how much in rural/country areas?**

(Please place an "X" on the line below to show your riding in the last 12 months)



**9) What is your main means of everyday transport?**

- Mostly motorcycle <sub>1</sub>
- Mostly car <sub>2</sub>
- Mostly public or other transport <sub>3</sub>
- A mixture of motorcycle and car <sub>4</sub>
- A mixture of motorcycle and public or other transport <sub>5</sub>
- A mixture of motorcycle, car and public or other transport <sub>6</sub>

**10) When do you mainly ride?**

- Mostly October to March <sub>1</sub>  
 All year around <sub>2</sub>  
 Other (please describe) <sub>3</sub> .....

**Riding experience**

**11) What do you use your motorcycle for?**

**a)** In the boxes below tick all of the purposes that you have used your motorcycle for. Complete the first column for riding in the last 12 months and the second column for when you first started riding.

	Last 12 months	First started riding
Commuting to and from work/study	<input type="checkbox"/>	<input type="checkbox"/>
Courier or regular delivery work	<input type="checkbox"/>	<input type="checkbox"/>
General transport close to home	<input type="checkbox"/>	<input type="checkbox"/>
Touring, weekend riding, etc	<input type="checkbox"/>	<input type="checkbox"/>
Off-road/trail riding	<input type="checkbox"/>	<input type="checkbox"/>
Use on a farm or similar property	<input type="checkbox"/>	<input type="checkbox"/>
Racing in officially sanctioned events	<input type="checkbox"/>	<input type="checkbox"/>
Other (please describe)	<input type="checkbox"/>	<input type="checkbox"/>

**b)** In the boxes below place a “1” next to the purpose you most often use your motorcycle for, then a “2” for the second most common use, etc. Complete the first column for riding in the last 12 months and the second column for when you first started riding.

	Last 12 months	First started riding
Commuting to and from work/study	<input type="checkbox"/>	<input type="checkbox"/>
Courier or regular delivery work	<input type="checkbox"/>	<input type="checkbox"/>
General transport close to home	<input type="checkbox"/>	<input type="checkbox"/>
Touring, weekend riding, etc	<input type="checkbox"/>	<input type="checkbox"/>
Off-road/trail riding	<input type="checkbox"/>	<input type="checkbox"/>
Use on a farm or similar property	<input type="checkbox"/>	<input type="checkbox"/>
Racing in officially sanctioned events	<input type="checkbox"/>	<input type="checkbox"/>
Other (please describe)	<input type="checkbox"/>	<input type="checkbox"/>

If you only started riding a motorcycle in the last 12 months skip to Question 13.

**12) How would you describe the pattern of your riding experience since you obtained your licence? Riding regularly means riding at least once a week.**

(Please tick 1 box in each section)

- |                                       |                          |                          |              |
|---------------------------------------|--------------------------|--------------------------|--------------|
| a) Just after I first got my licence, | I rode regularly         | <input type="checkbox"/> | <sub>1</sub> |
|                                       | I did not ride regularly | <input type="checkbox"/> | <sub>2</sub> |
| b) Now,                               | I ride regularly         | <input type="checkbox"/> | <sub>1</sub> |
|                                       | I do not ride regularly  | <input type="checkbox"/> | <sub>2</sub> |
| c) In between these times,            | I rode regularly         | <input type="checkbox"/> | <sub>1</sub> |
|                                       | I did not ride regularly | <input type="checkbox"/> | <sub>2</sub> |

**13) While riding your motorcycle on the road in the last 5 years, how many road accidents have you been involved in? Count only those accidents where someone was hurt, OR the Police were called, OR a vehicle was damaged to the extent that it had to be taken away?**

- |                       |                          |              |
|-----------------------|--------------------------|--------------|
| None                  | <input type="checkbox"/> | <sub>1</sub> |
| 1 accident            | <input type="checkbox"/> | <sub>2</sub> |
| 2 accidents           | <input type="checkbox"/> | <sub>3</sub> |
| 3 accidents           | <input type="checkbox"/> | <sub>4</sub> |
| More than 3 accidents | <input type="checkbox"/> | <sub>5</sub> |

**14) At any time(s) while riding in the last 12 months have you received any traffic tickets (or had to go to Court)?**

- |     |                          |              |
|-----|--------------------------|--------------|
| No  | <input type="checkbox"/> | <sub>1</sub> |
| Yes | <input type="checkbox"/> | <sub>2</sub> |

## Bike ownership details

### 15) What motorcycles do you currently own?

Make	Model	Year of manufacture	Engine capacity (cc)	Year bought

### 16) What other motorcycles have you owned in the past?

Make	Model	Year of manufacture	Engine capacity (cc)	Year bought	Year sold

### 17) How often do you ride off road?

- Weekly <sub>1</sub>  
Monthly <sub>2</sub>  
5-10 times a year <sub>3</sub>  
1-4 times a year <sub>4</sub>  
Never <sub>5</sub>



**24) What is the highest level of education that you have completed?**

- Primary school <sub>1</sub>
- Secondary school <sub>2</sub> year level.....
- Technical college or similar <sub>3</sub>
- University <sub>4</sub>
- Other (please explain) <sub>5</sub> .....

**25) Which of the following best describes your present job situation?**

(Please tick the one that best describes the present situation)

- Full-time work <sub>1</sub>
- Part-time work <sub>2</sub>
- Receiving a benefit or unemployed <sub>3</sub>
- Student <sub>4</sub>
- Home maker <sub>5</sub>
- Other (please describe) <sub>6</sub> .....

Thank you for taking the time to complete this questionnaire. Please place your completed questionnaire in the reply-paid envelope and post it to us. No postage stamp is required.

If you would like to find out about the results of the study, or about the work of the Monash University Accident Research Centre, please visit our Web site at [www.general.monash.edu.au/muarc](http://www.general.monash.edu.au/muarc) or contact us using the details on the letterhead. We anticipate that the final results of this study will be available late 2002.

You can complain about the study if you don't like something about it. To complain about the study, you need to phone 9905 2052. You can then ask to speak to the secretary of the Human Ethics Committee and tell him or her that the number of the project is 2002/031. You could also write to the Secretary. That person's address is:

The Secretary  
The Standing Committee on Ethics in Research Involving Humans  
PO Box 3A  
Monash University  
Victoria 3800  
Telephone (03) 9905 2052 Fax (03) 9905 1420  
Email: [SCERH@adm.monash.edu.au](mailto:SCERH@adm.monash.edu.au)

## APPENDIX 2: DETAILED RESPONSE RATES

Year of licence issue		Age Group					
		30-39	40-49	50-59	60+	Unknown	
Pre-1984	Sent	275	275	275	275		1100
	Nonriders	84	163	207	228	13	695
	Riders	73	163	181	132	10	559
	Return to sender	11	5	5	8	0	29
	Resp rate	57.1	118.5	141.1	130.9		114.0
85-89	Sent	150	150	150	150		600
	Nonriders	31	10	8	14	0	63
	Riders	53	9	7	9	2	80
	Return to sender	5	3	4	7	0	19
	Resp rate	56.0	12.7	10.0	15.3		23.8
90-94	Sent	150	150	150	150		600
	Nonriders	30	13	7	16	0	66
	Riders	42	11	11	7	2	73
	Return to sender	6	3	4	3	0	16
	Resp rate	48.0	16.0	12.0	15.3		23.2
95-99	Sent	150	150	150	150		600
	Nonriders	17	13	14	5	1	50
	Riders	34	22	23	21	1	101
	Return to sender	7	9	8	5	0	29
	Resp rate	34.0	23.3	24.7	17.3		25.2
2000+	Sent	320	320	320	140		1100

	Nonriders	10	4	5	0	1	20
	Riders	49	51	55	16	3	174
	Return to sender	9	19	14	7	0	49
	Resp rate	18.4	17.2	18.8	11.4		17.6
Unknown	Sent						
	Nonriders	4	5	5	12	3	29
	Riders	9	6	10	8	5	38
	Return to sender	0	0	0	0	0	0
	Resp rate						
All years	Sent	1045	1045	1045	865		4000
	Nonriders	176	208	246	275	18	923
	Riders	260	262	287	193	23	1025
	Return to sender	38	39	35	30	0	142
	Resp rate	41.7	45.0	51.0	54.1		48.7