

## Survey of motorcyclists aged over 30

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### Abstract

The number of motorcyclists killed in Australia and in Victoria has increased in recent years. This trend appears to reflect an increase in riding and crashes involving older motorcyclists. While the number of motorcyclists aged 30 and under involved in casualty crashes in Victoria almost halved from 1991 to 2000, the number and percentage of motorcyclists aged over 30 more than doubled. A survey was undertaken to develop a better understanding of the patterns of riding and risk factors associated with older motorcyclists. Of particular interest was comparing the size and characteristics of three groups 1) riders who have held licences and ridden for many years (continuing riders), 2) riders who have held licences for many years but have only returned to riding recently (returned riders), and 3) riders who have only obtained a licence recently (new riders). A questionnaire was mailed to 4,000 holders of motorcycle licences aged over 30 years. Almost half of the motorcycle licence holders who responded had not ridden in the previous 12 months. Among those who had ridden, 43% were “continuing riders”, 27% were “returned riders” and 31% were “new riders”. Returned riders were less likely than new riders to have undertaken a training course and were more likely to ride for recreation than continuing riders. They were also more likely to have never commuted, have stopped commuting, have started touring and have never ridden for general transport. New riders rode more than returned riders and were more likely to ride in urban areas 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. They were more likely than returned riders to have continued commuting and riding on a farm and to have continued touring and riding for general transport. The probability of involvement in a crash per rider per year is likely to be highest for continuing riders and new riders. The probability of involvement in a crash per rider per kilometre travelled is likely to be highest for new and 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 travel, including general road safety measures. Possible specific measures include a system of “reactivation” of motorcycle licences and refresher courses for returning riders.

While the number of motorcyclist fatalities in Australia halved from 1987 to 1997, this trend appears to be changing. The number of motorcyclists killed in Australia increased from 176 in 1999 to 191 in 2000. In Victoria, the number of motorcyclists 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. While the number of motorcyclists aged 30 and under involved in casualty crashes in Victoria almost halved from 1991 to 2000, the number and percentage of motorcyclists aged over 30 more than doubled. This pattern was found for each of the age groups 30-39, 40-49, 50-59 and 60+ years.

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).

The increase in sales of new road motorcycles since the mid-1990s provides evidence of greater riding by older motorcyclists (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 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). Similarly, in Victoria during the period 1991 to 2000, riders aged 30 and over were involved in relatively more rural crashes than younger riders. In New South Wales and Victoria, older riders (defined in NSW as riders aged 40 and over) were more likely than younger riders to be involved in single vehicle crashes and in crashes on curves and were less likely than younger riders to crash at intersections (Haworth, Mulvihill and Symmons, 2002; de Rome and Stanford,

2002). The finding that older riders were also over-involved in crashes in medium (65-95km/h) and high speed zones (100-110 km/h), suggests that this pattern of crashes may indicate a pattern of open road riding rather than commuting.

Older riders can be categorised into three groups:

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

Analyses of Victorian casualty crash data have shown that riders aged 30 and over with learner permits or probationary licences are involved in more crashes per 10,000 licences held than riders aged 30 and over who have standard licences (Haworth et al., 2002). Thus new riders appear to be at higher risk of casualty crash involvement than other riders.

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

While analyses of crash data allow the extent and nature of crash involvement of new riders to be compared with other riders, continuing and returned riders cannot be separated in the crash data. For this reason, a survey of motorcycle licence holders was undertaken 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 riders aged over 30.

## **Method**

A questionnaire was mailed to 4,000 motorcycle licence holders who were aged over 30 years. The sample was drawn from a data file containing current records of approximately 50,000 motorcycle licences where the date of birth of the licence holder was prior to 1 January 1972. This data file was provided by Vic Roads Registration and Licensing Department. 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. The random selection of cases function in SPSS was used to select particular licence holders from the data file.

Licence holders were classified as metropolitan or rural residents according to their postcode. A small number of licence holders were excluded from the sample because their date of birth was missing, their address was missing or incomplete or their postcode was missing or not in Victoria.

The licence holders who responded that they had ridden during the previous 12 months were classified as 'riders'. The riders were classified into three groups:

**Continuing riders** 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** 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** 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.

Those who had not ridden in the last 12 months were classified as 'non-riders'.

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.

Reminder letters were sent two weeks after the original mailing to the entire sample with the exception of those 116 licence holders whose questionnaires has already been received marked "return to sender".

## **Results**

### ***Response rates***

Overall, 1,948 questionnaires were received, corresponding to a response rate of 48.7%. There were 1,025 questionnaires from riders and 923 questionnaires from non-riders. Only 53% of licence holders 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. Further analyses of data from non-riders can be found in Haworth et al. (2002). Among the riders there were 384 “continuing riders” (42.7% of riders), 240 “returned riders” (26.7%) and 275 “new riders” (30.6%). An additional 142 questionnaires were received marked “returned to sender”.

### ***Demographics***

New riders were significantly younger than continuing riders and returned riders (mean age: 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 gender distribution of the groups differed significantly ( $\chi^2(2)=37.5$ ,  $p=.000$ ). This reflects the lower percentage of males among new riders (82.8% versus 94.4% of continuing riders and 96.3% of returned riders).

New riders appear more likely to be single than continuing or returned riders (13.1% vs 8.6% and 6.4%, respectively) and were somewhat more likely to be in part-time work.

The proportions of riders that lived in the metropolitan area (Melbourne or Geelong) compared with the rest of Victoria differed ( $\chi^2(2)=24.6$ ,  $p=.000$ ). Fewer continuing riders lived in the metropolitan area (42.4% compared with 50.8% of returned riders and 62% of new riders).

### ***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 ( $\chi^2(4)=271.1$ ,  $p=.000$ ). Thus, new riders were more likely to have undertaken training than continuing or returned riders.

The type of course that had most commonly been taken was a licence course (28.8% of all respondents). Compared to other riders, their last course completed by continuing riders was relatively more likely to have been an advanced course.

### ***Amount of riding***

The distance ridden in an average week differed among the riders ( $\chi^2(10)=36.9$ ,  $p=.000$ ). Returned riders were more likely to ride less than 50 km per week than continuing or new riders.

The frequency of riding also differed among continuing, returned and new riders ( $\chi^2(10)=48.0$ ,  $p=.000$ ) with returned riders being less likely to ride three or more days per week (or one to two days per week) than continuing or new riders.

The main means of everyday transport differed among the riders ( $\chi^2(4)=32.7$ ,  $p=.000$ ). 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.

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).

### ***Reasons for riding***

Riders were asked to indicate the purposes that they had used their motorcycles for in the last 12 months and when they first started 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.

Continuing 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 ridden for general transport

### ***Where does riding happen***

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.

### ***Motorcycles owned***

Riders were asked about the motorcycles they currently own and other motorcycles they have owned in the past. Overall, 85.1% of riders who responded provided details of at least one motorcycle that they currently owned. The engine capacities for motorcycles owned by continuing and returned riders were similar. New riders, not surprisingly, currently owned more motorcycles with engine capacities of 125 to 259 cc than continuing or returned riders. 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%). 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 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 motorcycles owned now and in the past. 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. Continuing and returned riders did not differ in the percentages who currently own a larger capacity motorcycle than previously ( $\chi^2(2)=1.0, p=.599$ ).

### ***Membership of motorcycle clubs***

Overall, 24% of riders who responded to the survey were members of motorcycle clubs. Some riders belonged to more than one club. The largest numbers of riders belonged to the Ulysses Motorcycle Club, followed by Harley Owners Group and Motorcycle Riders Association of Australia.

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 clubs than riders under age 50. The percentages of continuing riders, returned riders and new riders who were members of clubs did not differ ( $\chi^2(2)=1.5, p=.483$ ).

### ***Crash involvement***

Riders were asked how many crashes they had been involved in while riding their motorcycles on the road in the last five years in which someone was hurt, the police were called or a vehicle was damaged to the extent that it had to be taken away. 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 was little difference in the crash involvement of continuing, returned and new riders.

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 the small number of 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.

### ***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. 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,  $\chi^2(2)=0.38$ ,  $p=.828$ ).

### **Discussion**

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 licence holders. It also provides a deal of confidence that the results are fairly representative of the population of motorcycle licence holders in general.

The survey found that almost half of the motorcycle licence holders aged 30 and over had not ridden in the previous 12 months. The percentage who had not ridden in the previous 12 months increased with age. This suggests that the lower crash rates per licence holder for older motorcyclists may largely reflect lower amounts of riding. Conversely, it shows that the number of potential riders (and therefore potential crashes) is very large.

The finding that recreation was the main purpose of riding may contribute to the increased crash involvement of older riders. A similar pattern was evident in the NSW survey in which it was found that approximately half of all riders aged 25 years and over used their motorcycles for recreational purposes in addition to commuting (de Rome, 2002). Haworth, Smith, Brumen and Pronk (1997) demonstrated that the crash risk associated with recreational riding is at least double that of commuting or general transport.

The survey found that continuing, returned and new riders differed with respect to a large number of dimensions. They differed in terms of demographic characteristics, rider training, amount of riding, reasons for riding, location of riding and type of motorcycle owned.

Christie and Newland (2001) speculate that the increase in crashes of older riders may reflect the return to riding by previously dormant or inactive licence holders (returned riders) who lack currency and competence in important riding skills such as obstacle avoidance, curve riding and braking. The survey found that 27% of motorcycle licence holders who had ridden in the previous 12 months were returned riders. Returned riders were less likely than new riders to have undertaken a training course and were more likely to ride for recreation than continuing riders. Returned riders were more likely to have never commuted, have stopped commuting, have started touring and have never ridden for general transport. The pattern of riding among returned riders is suggestive of a pattern of open road riding; one that possibly has a greater potential for severe crashes. The combined effects of a possible reduction in skills and lack of rider experience and training among returned riders might place them at a higher risk of crash involvement than the other groups. However, the frequency of crashes involving returned riders is likely to be moderated because they rode fewer times per week and fewer kilometres per week, on average, than other riders.

Analyses of the Police-reported casualty crash data and the self-reported crash involvement in the survey both showed higher crash rates for novice riders aged 30 and over, compared to more experienced riders aged 30 and over. Self reported crash involvement in the last five years showed no marked differences between the groups. However, given that new riders would have ridden for less than five years, on average, the self-report data suggest that the annual crash involvement of new riders was somewhat higher than for continuing or returned riders. In addition to inexperience, the increased crash involvement of new riders may also reflect the survey finding that these riders rode more than returned riders.

Continuing riders were more likely to ride all year round and less likely to nominate a car as their main means of transport. Continuing riders were more likely than returned riders to have continued commuting and riding on a farm and to have continued touring and riding for general transport. In general, this group appears to ride the most, but probably in circumstances that are less likely to result in serious injury.

Haworth et al., (1997) found that inexperience with the particular motorcycle is associated with increased crash risk. Mullin, Jackson, Langley & Norton (2000) found that familiarity with the specific motorcycle was one measure of experience associated with a strong protective effect against motorcycle injury. In the current study, the engine capacities of motorcycles currently owned were compared with those owned in the past to assess the possible extent of inexperience with the current motorcycle. This comparison was possible for continuing and returned riders. More than 40% of continuing and returned riders currently owned a motorcycle with a larger capacity than any they had previously owned, suggesting that inexperience with the current motorcycle may be contributing to crashes of these riders.

If crash risk is measured in terms of the probability of involvement in a crash per rider per year, then continuing riders and new riders are probably associated with the highest level of risk. If crash risk is measured in terms of the probability of involvement in a crash per rider per kilometre travelled, then new and returned riders are probably associated with the highest level of risk.

#### ***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 exposure and by measures that reduce the risk per unit of distance travelled, including general road safety measures.

The relative ease with which a motorcycle licence holder can become an active rider may be contributing to the increased amount of riding by motorcycle licence holders over the age of 30. 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 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.

#### **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. (2002). *MCC Survey of Motorcyclists 2001. Presentation to Motor Accidents Authority*. Motorcycle Safety Seminar, Sydney.
- de Rome, L and Stanford, G. (2002). *Positioned for safety: Road Safety Strategic Plan 2002-2005*. Sydney: Motorcycle Council of NSW.
- Haworth, N., Mulvihill, C. and Symmons, M. (2002). *Motorcycling after 30*. Melbourne: Monash University Accident Research Centre.
- Haworth, N., Smith, R., Brumen, I. and Pronk, N. (1997). *Case control study of motorcycle crashes (CR174)*. Canberra: Federal Office of Road Safety.
- Mullin, B., Jackson, R., Langley, J. and Norton, R. (2000). Increasing age and experience: are both protective against motorcycle injury? A case control study. *Injury Prevention*, 6, 32-35.
- US DOT and Motorcycle Safety Foundation (2000). *National Agenda for Motorcycle Safety (DOT HS 809 156)*. Washington, D.C.: Department of Transportation.