

## **Survey of motorcyclists and their safety initiatives**

Author: Liz de Rome,(LdeR Consulting); Guy Stanford & Brian Wood (Motorcycle Council of NSW)

### **Abstract**

Almost 800 motorcyclists across NSW were surveyed in a project was funded by the MAA. The objectives were to obtain information on crash experience and other issues associated with risk perception and management by motorcyclists, and to develop a profile for designing and delivering motorcycle safety information.

Responses suggested that the most effective channels of communication within the motorcycling community are through the club network, motorcycle magazines and the internet. It was apparent that a substantial proportion of respondents were actively involved in ensuring their own safety through post license training, accessing safety information and use of protective clothing.

Two thirds had been involved in at least one motorcycle crash during their riding career. Of those who had crashed: 65% reported injury to themselves or to a pillion passenger; 55% had been in crashes with another vehicle and 47% had been in single vehicle crash. There were differences in crash experience according to age and type of motorcycle currently ridden. When asked what they could have done to have avoided the crash, almost one third of all respondents said that there was nothing they could have done. However respondents who had undertaken some form of rider training were less likely to have believed there was nothing they could have done than were those who had no formal training. Over two thirds (69%) of respondents to the survey had undertaken some form of training in the last 4 years and 33% had completed some form of advanced rider training.

The results of the survey have stimulated discussion about safety issues and attitudes to riding amongst rider groups. The survey report provides a useful resource of information to guide researchers and road safety authorities in the most effective means by which they can communicate with motorcyclists.

### **1. Introduction**

In 2001 Australia ranked 9<sup>th</sup> best for road safety amongst 27 OECD nations, but 9<sup>th</sup> worst for motorcycle safety. Motorcycle fatalities were almost double the median for OECD nations (6.2 vs 3.6 per 10,000 registered vehicles).<sup>1</sup> By contrast Australia's fatality record for all road users was below the OECD median (1.4 vs 1.8).<sup>2</sup> Despite this disparity, motorcyclists were not singled out by road safety authorities for targeted safety programs. There were a number of reasons for this apparent failure of policy but perhaps primarily, it was simply assumed that motorcyclists were adequately covered by general road safety campaigns directed at all motorists. There was a lack of research and therefore lack of understanding of the issues involved in motorcycle safety. There was also a view that it would be difficult to effectively deliver targeted information to such a relatively small but divergent group of road users.

A survey of 796 motorcyclists was conducted by the Motorcycle Council of NSW to inform the development of a road safety strategic plan for riders in NSW. The objectives of the survey were to obtain information relating to road safety and risk

management by motorcyclists, and to identify effective channels of communications that could be used for the delivery of road safety information in the future.

## 1.1 Methodology

The survey questionnaire was distributed through four methods. These were through motorcycle club networks, a motorcycle magazine, motorcycle parking areas and through motorcycle retail stores and training facilities.

A total of 3170 surveys were distributed and 796 (25%) returned. The motorcycle club network was the most effective means of distribution and yielded a response rate of 65% (n=470). The response rate for the parking areas was 27% (n=67) and for the motorcycle magazine it was 12% (n=242). Distribution through dealers and trainers was least successful with a return rate of 2% (n=17).

## 1.2 The sample

The majority of respondents were male (86%) with an average age of 43 years, compared to females (13%, n=101) with an average age of 39 years. There was a significant gender difference in the length of time respondents had held their motorcycle licence. Males had held their licence on average for 20 years compared to 9.4 years for females.

Almost two thirds (64%, n=510) of respondents belonged to a motorcycle club, this is not surprising given the distribution method, however it does raise the question as to whether the sample was representative of motorcyclists in general.

Club membership does not necessarily indicate a higher than average level of activity. There are clubs for each of the major brands and some manufacturers provide introductory membership with the purchase of a new bike (e.g. Harley Davidson & Honda). The five largest motorcycle clubs in NSW list some 26,200 members in NSW which accounts for 31% of the registered owners in the state.<sup>i</sup> However, the respondents also tended to be older and to ride larger motorcycles than the general distribution of registered owners in NSW (see table 1 & 2).

**Table 1. Age of survey respondents compared to registered owners in NSW, 2000<sup>3</sup>.**

	19-24	25-30	31-40	41-50	51-60	61+	Unknown
Survey (n)	31	93	200	240	154	75	3
Survey (%)	4%	12%	25%	30%	19%	9%	0%
NSW registered (n=85,000)	10%	13%	28%	25%	12%	5%	

**Table 2. Size of survey motorcycles compared to registered owners in NSW, 2000<sup>4</sup>.**

	0-250	251-500	501-750	751-1000	1001-1250	1251+
Survey (%)	12%	4%	24%	31%	20%	8%
NSW registered*	31%	6%	22%	18%	11%	13%

\*Excluding Australia Post and registered off road 250 cc motorcycles.

## 2. Communicating with motorcyclists

The response rate to the survey demonstrated the effectiveness of working through the club networks to communicate with motorcyclists. Motorcycle magazines

<sup>i</sup> Personal communication with Ulysses, Honda Riders Club, Harley Owners Group, Ducati Owners Club and the United Motorcycle Council.

provided 31% of respondents, although these represented a relatively poor response rate of 12% for the number of surveys distributed. Perhaps the most surprising result was the high proportion (27%) of riders who completed and returned questionnaires that had been attached to their handle bars in parking areas. Such a positive response may be because the survey was promoted as a rider initiative.

The internet and motorcycle magazines were communication channels accessed by a majority of respondents. Seventy nine percent (79%, n=625) had access to the internet, and three quarters of them used it to find motorcycle related information (74%, n=478). The proportion with access to the internet was relatively high compared to 54% of the general population in 2001 (ABS, 2004).<sup>5</sup> The preferred means of accessing motorcycle information was through web sites (80%, n=382) rather than newsgroups (12%, n=57) or e-mail subscriptions (12%, n=55).

A similarly high proportion of respondents read motorcycle magazines (80%, n=638) compared to only 63% of the wider community reading magazines (ABS, 2004).<sup>6</sup> Women riders were less likely than men to read motorcycle magazines (59% vs 84%). The magazines named included Two Wheels (52%), Australian Motorcycle News (30%), Road Rider (15%) and Riding On (11%).<sup>ii</sup>

Respondents were asked about the last motorcycle related road craft/ safety or riding skill message they had heard that made them pay attention. More than two thirds (71%) could recall such a message and 83% said that it had been of value to them.

Motorcycle magazines were by far the most frequently cited source of safety messages (35%).

Rider training courses (20%), television advertisements (11%) and motorcycle clubs (10%) were the next most frequently mentioned sources.<sup>iii</sup> A few slogans (e.g. Look Bike, n=11 and Don't Ride Us Off, n=25) were mentioned but most respondents referred to more complex messages conveyed at a personal level rather than to media campaigns.

### **3. Crash experience and causes**

Two thirds of the respondents had been involved in at least one motorcycle crash over their riding life. There were differences in crash experience according to gender and age. Women riders were less likely than males to have crashed (48% vs 69%). Although the numbers of novice riders was small (n=23 learner licences, n=23 provisional licences), it is of concern that over one third (35%) of the learners and almost half (48%) of those with provisional licences had already been involved in a crash.

Just over half (55%) of the respondents had been involved in a crash with another vehicle and 45% had been in single vehicle crashes. This study was particularly interested in aspects of single vehicle crashes in relation to causes and responsibility.

#### **3.1 Age and crash experience**

---

<sup>ii</sup> The high proportion of Two Wheels readers includes 31% of responses from surveys distributed in Two Wheels magazine.

<sup>iii</sup> The television advertisements mentioned were those designed and funded by motorcyclists through the Celebration of Australian Motorcycling Committee. At the time of this survey there had not been any State funded motorcycle safety campaigns in NSW.

While young riders (Under 26) reported proportionately fewer crashes, they were the group most likely to have been involved in single vehicle crashes (77%). The oldest group of riders (60+) also reported more single than multi-vehicle crashes, whereas the middle aged riders (40-59) had fewer single vehicle crashes. See table 3.

**Table 3. Age group and crash experience.**

Age	All respondents	All crashed	Multi vehicle	Single vehicle
Under 26	31	43%	23%	77%
26-39	277	66%	49%	49%
40 – 59	410	68%	59%	40%
60 +	75	64%	43%	57%
Total	796	66%	55%	45%

### 3.2 Type of motorcycle and crash experience

Crash experience also appears to be related to type of motorcycle. Those currently riding light commuters or scooters and cruisers were less likely than other riders to have ever been involved in a crash. However, where they had been in a crash, the cruiser riders were more likely to have been involved in a single vehicle crash than the riders of any other machine. Light commuter and scooter riders were most likely to have been involved in a multi-vehicle crash (67%).

**Table 4. Type of motorcycle currently ridden and crash experience.**

Type of motorcycle	Ever crashed	Multi-Vehicle	Single Vehicle
Cruiser (n=126)	52%	44%	56%
Sports (n=278)	67%	52%	48%
Trail (n=21)	67%	56%	44%
Touring (n=279)	71%	58%	42%
Light commuter/ Scooter (n=27)	44%	67%	33%
Other (n=55)	75%	46%	54%

Loss of traction (70%, n=167) was the most commonly cited circumstance of single vehicle crashes, followed by avoiding the action of another vehicle (24%, n=56), excessive speed (16%, n=38), cornering error 14% and slow speed manoeuvring (12%, n=29). See table 5.

**Table 5. Circumstance of single vehicle crashes**

	Loss of Traction	Other vehicle	Excess speed	Cornering error	Slow speed maneuver	Rider Impaired	Unfamiliar motorcycle
n	167	56	38	32	29	13	15
%	70%	24%	16%	14%	12%	5%	6%

Respondents were also asked to nominate from a range of options, what they could have done to avoid these single vehicle crashes (Table 6).

On the whole responses indicated a degree of awareness of their own contribution to the incident. Twenty eight percent said it could have been avoided if they had slowed down earlier, this included 59% of those who crashed due to a cornering error, and 79% of those who crashed due to excessive speed. Twenty nine percent thought better observation could have helped.

Relatively few believed that operational skills, such as better braking (16%), cornering (17%) or slow speed manoeuvring skills (9%), would have enabled them to avoid the crash.

However, 27% reported that there was nothing that they could have done to avoid the crash. These were principally those riders whose crashes were due to loss of traction (32%) or attempting to avoid a situation created by another vehicle (36%).

**Table 6. What riders could have done to avoid single vehicle crashes**

	Nothing	Better braking	better observation	Slowed down	Better cornering	Not ridden	Slow speed skills
All crashes	27%	16%	29%	28%	17%	4%	9%
Loss of	32%	15%	32%	26%	14%	4%	10%
Other vehicle	36%	20%	32%	20%	11%	9%	9%
Excess speed	5%	26%	30%	79%	50%	11%	16%
Cornering	9%	31%	34%	59%	59%	9%	19%
Slow speed	31%	24%	31%	28%	28%	7%	55%
Impaired	8%	15%	54%	31%	23%	69%	8%
Unfamiliar	13%	27%	47%	40%	47%	13%	47%

Note: Rows do not add to 100% due to multiple responses.

There were few difference between age groups in their assessment of what they might have done to avoid their crash, however older riders were more likely to say that there was nothing they could have done.

**Table 7. Age distribution of riders by what they could have done to avoid crashes**

Age group	Nothing	Better braking	Better cornering	Better observation	Slowed down	Not ridden	Slow speed skills
Under 25	10%	0%	10%	16%	13%	0%	0%
25-39	18%	11%	10%	18%	17%	5%	7%
40 – 59	24%	12%	9%	15%	16%	4%	6%
60 +	25%	5%	3%	12%	16%	3%	7%
Total	22%	11%	9%	16%	16%	4%	6%

#### 4. Rider training

Two thirds (65%) of the survey respondents had undertaken some form of training. Twenty three percent had completed compulsory rider training<sup>iv</sup>, 31% had undertaken post licence, advanced rider training (eg Stay Up Right Advanced Course) and 10% had completed high level road based training (eg Superbike School). The majority of those with any sort of training (72%) had undertaken some training within the last 4 years. Respondents overwhelmingly rated training to have been of value to their road craft or safety skills, machine handling and confidence on the road.

**Table 8. Perceived benefits of training**

The course improved:	n	Compulsory	Post license	All training
Road craft or safety skills	488	90%	97%	95%
Machine handling	482	88%	96%	93%
Confidence on the road	457	84%	91%	89%

The question of post license rider training is of particular interest due to evidence that advanced driver training may contribute to increased crash risk, particularly for young males.<sup>7</sup> The essential principle behind discouraging skills based advanced driver training courses is that safe driving is more dependent on attitudinal and cognitive factors than on operational skills. Research with car drivers suggests that training in advanced vehicle handling skills may create a false sense of confidence leading to increased risk taking behaviour.

The same principle may not necessarily apply in the motorcycle environment. This is because there is a substantial difference in the operational skill demands for safe riding compared to safe driving. Advanced rider training courses generally focus on refining essential skills, such as cornering and braking.

There is some evidence to suggest that advanced rider training may be of significant value in reducing crash risk. Haworth et al (1997) found that ineffective braking occurred in 20% and a failure to respond to a threat occurred in 17% of the motorcycle crashes that they examined. They also found that a significant decrease in the odds of crashing was associated with having completed an advanced course.<sup>8</sup>

<sup>iv</sup> Compulsory rider training as a part of the licensing process was introduced into NSW in 1989.

The proportion of the riders in the current study who had been in a single vehicle crash and reported that there was nothing they could have done to have avoided that crash (27%), raises the issue of externalizing responsibility. It is a basic tenet of any road safety training that there is always something one could have done to avoid a crash.

Responses to that question were cross tabulated with riders' training experience. The results suggest that those who had undertaken some form of rider training were less likely to believe there was nothing they could have done than were those who had no formal rider training. It would appear that rider training may open up options for the rider that are not recognized by those without training. See table 9.

**Table 9. Training and belief about avoiding single vehicle crash (n= 247)**

Single vehicle crashes	No training (n=79)	Compulsory (n=60)	Post license (n=108)	All riders (n=247)
Nothing	38%	15%	25%	27%
Better braking	10%	15%	20%	16%
Better observation	20%	37%	31%	29%
Slowed down	23%	25%	32%	28%
Better cornering	8%	17%	24%	17%
Not ridden	5%	3%	4%	4%
Better slow speed skills	3%	8%	15%	9%

## 5. Personal protection

Forty three percent of all respondents had been involved in a crash that had resulted in injury to themselves or to a pillion passenger. They accounted for 65% (n=338) of all those who had been involved in a crash (n=522). Four respondents had been involved in crashes that resulted in a fatality. Twenty four percent of those injured had been hospitalized and 29% had sustained broken bones. Sprains, bruises and gravel rash were the most common forms of injury reported.

**Table 10. Types of injury for riders and pillions in crashes**

	Damaged gear/ pride	Gravel rash	Sprains bruises	Gashe s cuts	Broken bones	Hospital admitted	Fatal
Injury crash (n)	107	155	164	77	99	82	4
Respondents (n=796)	13%	20%	21%	10%	12%	10%	1%
All crashed (n=522)	20%	29%	31%	15%	19%	16%	1%
All injured (n=338)	32%	46%	49%	23%	29%	24%	1%

Riders were asked to nominate from a list, the types of clothing they and their pillion would usually wear when riding. While protective clothing is unlikely to prevent serious injury from impacts in a collision with another vehicle or fixed objects such as crash barriers or signposts, it can reduce gravel rash, torn or severed ligaments and some broken bones<sup>9</sup>.

The head and upper body were generally well protected. All riders and pillions wore helmets and most had some form of eye protection. The majority wore full face helmets (87% & 86%) and motorcycle gloves (89% & 80%). Most riders also wore motorcycle jackets either full leathers (26%), leather jacket (51%) or a non-leather motorcycle jacket (36%). Pillions were less likely to have full leathers (12%) but

equally likely to have leather (51%) or non leather motorcycle jackets (37%). Twenty percent of riders and 9% of pillions also wore body armour.

The legs were less well protected particularly for pillions. Over half the riders 55% usually wore jeans and 2% reported wearing shorts. The remainder wore either leather pants (20%) or motorcycling pants with armour (21%). Pillions were more likely to wear jeans (64%) and less likely to wear leather pants (13%) or motorcycling pants with armour (13%). Riders were also more likely than pillions to wear motorcycle boots (85% vs. 60%).

In order to develop a means of assessing general levels of protection, all listed clothing items were classified according to the level of protection they afford and the area of the body protected. Table 11 shows the proportion of riders and pillions who were assessed as having high protection for each area of the body. On this assessment it is clear that legs and feet, particularly for pillions were least likely to be adequately protected. This is particularly of concern, as the legs are generally agreed to be the area of the body most likely to be injured in a motorcycle crash.<sup>10</sup>

**Table11. Levels of protection of clothing usually worn by riders and pillions**

	n	Head <sup>v</sup>	Body	Hands	Legs	Feet
Rider	796	96%	97%	89%	45%	85%
Pillion	417	92%	92%	80%	36%	60%

It was also apparent that there are considerable differences in the usage of motorcycle clothing according to the type of motorcycle ridden. Riders of light commuters and scooters were least likely to have any specific motorcycle gear apart from a helmet and gloves. Trail and dirt bike riders were similarly under equipped although they were more likely to have motorcycle boots (71%) and to use impact protectors (29%). Of the three main groups, cruiser riders were relatively less likely than sports bike or tourer riders to wear motorcycle pants (33%), gloves (83%) or body armour (9%) and were more likely to use an open face helmet (45%). See table 12.

**Table12. Type of clothing usually worn by type of motorcycle**

	n	MC gloves	MC boots	MC pants	MC jacket	Full face helmet	Open face helmet	Impact protectors
Commuter/	27	89%	41%	19%	81%	74%	22%	19%
Trail	21	71%	71%	38%	90%	86%	14%	29%
Cruiser	126	83%	86%	33%	95%	57%	45%	9%
Sports	278	91%	86%	50%	98%	96%	2%	29%
Tourer	279	86%	86%	49%	97%	89%	15%	21%
Other	55	91%	89%	40%	100%	85%	16%	22%
All	796	87%	84%	45%	96%	85%	15%	22%

There have been significant developments in the protective quality of motorcycle clothing particularly since the European Union Directive requiring motorcycle

<sup>v</sup> The level of protection for heads is less than 100% because although all riders and pillions normally wore helmets, they did not all wear some form of eye protection.



protective clothing to comply with established standards.<sup>11</sup> However new products have tended to focus on injury protection for track racing and off road riding, and weather protection for touring. As a result, the style of gear reaching the market is more acceptable to riders of sports and trail bikes or tourers because it is in keeping with their image. There has been less attention paid to the development of protective clothing for riders of scooters or light commuters, who require multi-purpose clothing that can be worn comfortably at their destination. The issue of image versus protection is even more relevant in the case of cruisers with a tradition of riding in jeans with pull-on boots, a leather jacket and open face helmet.

In order to determine whether crash experience or training might influence riders decisions about projective clothing, these factors were cross tabulated with their choice of clothing.

**Table 13. Protective clothing usually worn by riders and their rider training experience.**

	MC Jacket	MC Pants	MC Boots	MC Gloves	Full Face Helmet	Open face Helmet	Impact protectors
No training	96%	39%	81%	85%	83%	19%	16%
Learner	95%	36%	71%	88%	86%	14%	29%
Provisional	94%	30%	78%	88%	83%	14%	20%
Advanced	98%	57%	90%	89%	86%	15%	25%
High	99%	68%	90%	89%	94%	7%	35%
All riders	96%	46%	84%	87%	85%	15%	22%

Riders who had completed post licence training courses were slightly more likely to wear full protection particularly motorcycle boots and pants. Those who had not progressed beyond learner training were least likely to have motorcycle boots, where as riders who had never undertaken any formal rider training were least likely to use body armour including back protectors. See table 13.

There was also an age factor with young riders being least likely to have motorcycle pants or boots, but more likely to use impact protectors. This may simply be a reflection of the cost of the initial outlay on a machine and gear.

**Table14. Type of clothing usually worn by age group**

	MC Gloves	MC Boots	MC Pants	MC Jacket	Full face helmet	Open face helmet	Impact protectors
Under 26	89%	65%	26%	96%	91%	93%	28%
26-39	87%	85%	46%	98%	89%	90%	25%
40-59	86%	85%	45%	95%	82%	81%	21%
60+	91%	88%	61%	97%	84%	81%	15%
All	87%	84%	45%	96%	85%	85%	22%

Proportionately fewer riders who had been involved in a crash wore an open face helmet, and more wore motorcycle boots and to used impact protectors.

**Table15. Levels of protection of clothing usually worn by riders compared to their crash experience**

	MC Jacket	MC Pants	MC Boots	MC Gloves	Full Face Helmet	Open Face Helmet	Impact protectors
Never crashed	96%	48%	78%	88%	84%	17%	18%
Crashed	97%	45%	87%	86%	86%	11%	24%

## 6. Conclusion

The response rate to the survey confirmed that well established and effective channels of communication exist within the motorcycling community through the club network, motorcycle magazines, web sites and rider training courses. These channels can be used to deliver motorcycle safety information to riders.

Riders who had completed some form of rider training were more likely to acknowledge their own contribution to crashing. They were also more likely to suggest behavioural factors (slowed down and better observation) rather than skills (braking or cornering) as the means by which the crash could have been avoided. This was evident amongst younger riders who had completed compulsory basic training and older riders who were more likely to have completed post licence training. It was also apparent that many of those without training failed to learn from their crash experiences.

Compulsory rider training is already well established, however research into the current and potential role of post licence rider training may indicate further opportunities for improving rider safety. In particular, consideration could be given to encouraging riders who have been involved in crashes to attend remedial training courses.

Most riders and their pillions used appropriate gear to protect their heads and upper body but it would appear that there is a need to inform motorcyclists about the benefits of also protecting the lower body.

The variable usage of protective clothing according to motorcycle type highlighted the image rather than equipment aspect of motorcycle gear. Consideration needs to be given to the means by which the accessories market can be encouraged to provide protective gear that is viable and acceptable to the wider range of rider groups.

It is apparent that a high proportion of respondents were actively engaged in strategies to manage and reduce their own crash and injury risk. The survey results indicate opportunities for other road safety stakeholders to work together with motorcyclists to support and extend these initiatives.

## References

---

- 1 ATSB (2004) **International Motorcycle Safety Update**, Compiled by the Australian Transport Safety Bureau using data from the International Road Crash Database, January 2004. ATSB (2003) **International Road Safety Comparisons, The 2001 Report**, ISSN: 1447-8218.
- 2 ATSB (2003) **International Road Safety Comparisons, The 2001 Report**, ISSN: 1447-8218.
- 3 RTA (2001), **RTA Road Traffic Accidents in New South Wales Statistical Statement: Year ended 31 December 2000**, Sydney.
- 4 RTA (2001), *IBID*.
- 5 ABS (2004) *Measures of a knowledge-based economy and society, Australia Information and Communications Technology Indicators*, Australia Bureau of Statistics.
- 6 ABS (2004) *Culture and Recreation: Literature and Print Media, Year Book Australia, 2001*, Australia Bureau of Statistics.
- 7 Christie, R. (2001), *The effectiveness of driver training as a road safety measure: An international review of the literature*, **Road Safety Research, Policing and Education Conference**, Melbourne, 19-20 November.
- 8 Haworth N, Smith R, Brumen I, Pronk N, (1997), *Case Control Study of Motorcycle Crashes*, Monash University Accident Research Centre, CR 174 for the Federal Office of Road Safety, Department of Transport and Regional Development.
- 9 de Rome, L & Stanford, G (2003) *Motorcycle Protective Clothing*, **Road Safety Research, Policing and Education Conference**, Sydney, 24-26 September, 2003.
- 10 EEVC (1993), **Report on Motorcycle Safety**, European Experimental Vehicles Committee.
- 11 CEC (1989) **The Council of the European Communities Directive on the Approximation of the Laws of the Member States relating to Personal Protective Equipment 89/686/EEC**, Office for Official Publications of the European Communities, CONSLEG: 1989L0686-08/10/1996.