

Assessment of Personal Crash Risk among Rural Drivers: Perception versus Reality

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ABSTRACT

The higher incidence of road crashes in rural areas is well-known to safety researchers and practitioners. High rates of rural road fatalities and serious injury crashes are inevitably followed by calls for interventions to lower these tolls. However, interventions that have reduced the road toll in urban areas have not achieved the same successes on rural roads. To develop effective countermeasures and interventions for rural road users, further efforts are required to understand rural drivers' beliefs about their driving risks and abilities. This study used focus groups to explore the views of 58 rural drivers, and compared this information with data obtained from 143 patients hospitalised after a rural road crash and 290 rural drivers interviewed as roadside controls. Focus groups participants inaccurately appraised the risk factors associated with rural road crashes, when compared with information obtained from the patients hospitalised after such crashes. The majority of rural road users in all three groups gave very positive appraisals of their own driving ability. The implications of these findings for rural road safety interventions are discussed.

1. INTRODUCTION

Explanations for the disparities in road crash fatalities and hospitalisation injuries between urban and non-urban areas include greater exposure to road travel, the lack of transport alternatives, more adverse road conditions, and longer retrieval times following crashes. However, in-depth crash studies have shown that road user behaviour, rather than simply road conditions or exposure, is the most significant factor in road crashes (Evans, 1991, 2004; Haworth & Richnitzer, 1993).

Remote and rural drivers perform more poorly on the “fatal four” behaviours of speeding (FORS, 1995), drink driving (Queensland Transport, 2001), seat belt use (FORS, 1996) and fatigued driving (ATSB, 2002). Twenty six percent of drivers and motorbike rider fatalities in Australia in 1998 had a blood alcohol concentration of over 0.05 percent (ATSB, 1998). A FORS (1995) study found nearly double the incidence of alcohol involvement among rural and remote fatalities when compared with urban areas. Alcohol was considered a causal factor in 6.17 fatal crashes per 100,000 population in rural Queensland in 2000, compared with 1.43 fatal crashes per 100,000 population in urban areas (Queensland Transport, 2001).

Vehicle speed was a contributing factor in 17 percent of fatal crashes in Queensland in 2002 (Queensland Transport, 2003). However, speeding was more frequently noted as a factor in rural and remote areas, with around 25 percent of fatal non-urban crashes associated with speed (FORS, 1995). Given the nature of rural roads, vehicles in these areas typically travel at higher speeds and are more likely to sustain more fatalities, severe injuries and greater property damage from crashes.

Non seat-belt wearing was a factor in 22 percent of Queensland fatal crashes and 8 percent of hospitalisation crashes in 2002 (Queensland Transport, 2003). Lower belt use rates have been found in various studies of rural and remote areas (eg: Henderson, 1995), and almost twice as many non-urban fatalities have involved failure to wear seat belts (FORS, 1996).

There are various methods of identifying crashes as fatigue related. Using the criterion outlined by the Australian Transport Safety Bureau (2002), it was found that 16.6 percent of fatal crashes in Australia in 1998 involved driver fatigue. Haworth and Rechnitzer (1993) used coronial findings and police data to identify crashes as fatigue related, and found rates for fatal crashes at five percent.

Ryan, Wright, Hinrichs and McLean (1988) questioned drivers involved in crashes in rural South Australia about their state of fatigue, and over 31 percent of accident surveyed drivers had felt fatigued before crashing.

The higher risks associated with rural road use may be evident to researchers, but it is unclear if rural road users share this knowledge of the variables associated with rural crashes. Knowledge alone may not be sufficient to lead to behaviour change, yet it is unlikely that rural road users will adopt safer driving practices if they do not see their current actions as increasing their crash risk. Kreuter and Strecher (1995) argued that an inaccurate perception of risk can decrease the adoption of positive health behaviours. Thus, it would be expected that a lack of knowledge, or inaccurate knowledge, of rural driving risks would decrease the safe driving practices of rural drivers.

Another explanation for the failure to adopt safety practices is the existence of an “optimism bias”. Weinstein and Klein (1996) described an optimism bias as a person’s belief “that they are better than others”, have more desirable attributes than others, and are less likely to experience a range of negative events than others (p1). Known also as a “superiority bias”, “unrealistic optimism” or “positive illusions”, this bias has been found for a range of negative and positive events, including health issues, personality attributes, and susceptibility to injury, crime and natural disaster. If a person believes that they are competent and safe, they are unlikely to see change as necessary.

It has been repeatedly found that drivers rate their own abilities as superior to those of other drivers, and see themselves as less likely to be involved in a road crash than others. For example, nearly 60 percent of the 454 French drivers surveyed by Delhomme (1991) considered themselves to be better than other drivers, regardless of their age, gender, driving experience, recent violations or crash experience. The sample generally reported themselves as being more cautious drivers, having better reflexes than other drivers and committing fewer driving offences than “average” drivers.

It would be hoped that the provision of valid information on risk factors would decrease the optimism bias. However, the lack of a clear connection between safety knowledge and adoption of safe practices is well-known. Kreuter and Strecher (1995) suggested that there may be differences between an individual’s perception of societal vulnerability and their personal vulnerability. Within the driving situation, a rural road user may acknowledge that rural driving has a higher level of crash risk, while maintaining that their personal risk level is low. These beliefs may lead to positive perceptions of road safety information in general, but a low personal receptivity to such information as a basis for behaviour change.

Locus of control concepts have also been used to explain individual differences in behaviour and outcome in a wide range of health behaviours (Rotter, 1966). Persons with an internal locus of control believed that their life circumstances and behavioural outcomes were the result of their own efforts, talent and behaviours. As a result, they were more active in seeking out information, making personal efforts and working to overcome issues. Persons with an external locus of control were more likely to believe that fate or the actions of others dictated their circumstances. This caused them to be less active in self-management efforts, and to abandon such efforts when encountering difficulties. Ozkan and Kajunen (2005) found that a perception of other drivers and the environment as being responsible for crashes was positively correlated with driving offences and numbers of driver errors. In Delhomme’s study (1991), drivers who considered themselves to be superior (ie: “optimism bias”) attributed the primary causation for crashes to external factors, and particularly to other drivers.

The purpose of this study is to investigate rural drivers’ perceptions of crash risk, including their beliefs about the factors they consider likely to be associated with a crash and their views of their driving ability. Variables of inaccurate information regarding crash risks, optimistic views regarding driving ability, and locus of control for crash causation were investigated. This data, obtained through focus group discussions, was compared to information obtained from persons involved in actual crashes within the same geographical area and roadside interviews with a comparison group to highlight areas of misinformation and contrast. The results of this study may assist in developing intervention strategies that more specifically target issues facing rural drivers.

2. METHODOLOGY

2.1 Participants

Three sources of information were used. Seven focus groups were conducted in the Atherton Shire of Far North Queensland to investigate rural drivers' attitudes towards road safety and rural crash risk. Between 1998 and 2002, Atherton's road fatality rate was about 19.1 per 100,000 population, being higher than the Queensland rate of 8.6 per 100,000 (Sheehan & Siskind, 2006). Focus group participants were 39 males and 19 females aged between 16 and 67 years. The mean age of group members was 36.6 years. They were recruited by community advertising and word of mouth, and paid \$10 for their participation.

All participants identified themselves as predominantly driving in rural areas. They had held their driving licences for an average of 18 years. About 19 percent had been involved in a crash in the past five years, and 32 percent had received a traffic fine during this time.

The second source of information was structured interviews undertaken with 143 patients who had been hospitalised for 24 hours or more after their involvement in a road crash in Far North Queensland. These patients were interviewed to elicit information about their rural crash, and their views about rural road safety. Of these, 114 were vehicle or motorcycle drivers, and 29 were passengers. There were 113 males and 28 females (2 missing data), aged between 16 and 79 years. The mean age of the crash sample was 39.47 years (SD 15.47).

Hospitalised driver/riders had held their licences for an average of 20.89 years (SD 17.19). Nearly 24 percent had been involved in a crash in the previous five years, and 56 percent had received a traffic fine in the past five years.

Structured interviews were conducted at the roadside with 290 road users in Far North Queensland. There were 173 males and 100 females (17 missing data), aged between 17 and 90 years. The average age of roadside comparisons was older than the focus groups and hospitalised patients, being 47.72 years (12 missing data) (SD 14.75). These interviews were conducted near the site of the crash of a hospitalised patient and served as a "non-crash" comparison sample for the hospitalised patients.

Roadside comparisons had held their licences for an average of 27.52 years (SD 14.99). Nearly 23 percent had been involved in a crash in the previous five years, and 50 percent had received a traffic fine in the past five years.

2.2 Procedure

All rural residents who were able to complete a group discussion were considered for inclusion. Information was obtained from focus group participants using a series of open-ended questions and a semi-structured interview style about their perceptions of: (1) drivers, vehicles and other variables likely to be associated with rural crashes; and (2) their own skills as a rural driver.

Approximately 80 percent of hospitalised crash patients approached consented to an interview. Eligible participants were hospitalised for 24 hours or more after a road crash, over 16 years of age, and judged by hospital staff to be capable of completing an interview. Crashes that involved a fatality were excluded for ethical reasons. The structured interview with hospitalised patients included a narrative account of the circumstances of their crash, and a series of questions about driving behaviours and attitudes. Separate interview protocols were used for driver/riders and passengers. The data from the hospitalised patients was collected as part of the Rural and Remote Road Safety project¹.

Participants in the roadside interviews were typically recruited at service stations near the site of the comparison crash, and one week after this crash. Interviews were conducted by two researchers for one hour before and one hour after the crash time. Drivers of vehicles or motorcycles were approached as they fuelled their vehicles to request their participation in the interview. All drivers who were able to complete an interview in English were considered for inclusion.

¹ Rural and Remote Road Safety Study, Centre for Accident Research and Road Safety – Queensland, Queensland University of Technology

Consenting participants completed a structured interview with content similar to that of the hospital interview and were given a \$10 voucher to spend in the service station shop. Approximately 37 percent of drivers approached consented to an interview.

2.3 Data Analysis

Focus groups were tape-recorded and transcribed. This information was analysed using the qualitative data analysis programme, NVIVO 2.0 (QSR, 2003). Questionnaire data obtained from focus group members, hospitalised patients and roadside comparison interviews was analysed using SPSS.

3. RESULTS

3.1. Risk factors in rural crashes:

Focus group members described their beliefs about people who were most likely to become involved in road crashes. Three prominent themes emerged - the age of the road user, the type of vehicle driven, and familiarity with the road. In general, focus group participants typically believed that crash prone drivers were quite unlike themselves, and that they belonged to a non-crash prone group. There was a perception that personal crash risk lessened as one became more dissimilar from those road users whose characteristics were perceived as increasing the risk of crashes.

Young drivers were most frequently nominated as being at the highest risk for rural crashes by focus group participants in all age groups, although older group members made more frequent references to crash risk of younger drivers than did younger group members. The second most frequently nominated age group was older drivers. Again, participants from all age groups made references to older drivers, with numerous references to older drivers as the primary candidates for crashes, or as causing crashes for others due to their driving practices. Interestingly, none of the group members considered themselves to be an "older driver".

However, these perceptions regarding age of persons involved in rural crashes were not well supported by data from local crash cases. The average age of crash involved patients interviewed was 39.47 years. Crash involvement rates were highest in the 20 to 34 year age group, and with a generally decreasing number of crashes involving older persons.

Focus group participants perceived that some vehicle types were more likely to be involved in crashes. Most commonly, these vehicle types were different to the vehicle type driven by the focus group participant. For example, motor cycle riders believed that cars were more likely to cause crashes, while car drivers blamed motor cycles for high crash rates. Other vehicles nominated (in order of frequency) were trucks, vehicles towing caravans, and farm machinery. Few focus group members saw their own vehicle type as likely to be over-represented in crash statistics.

Data from hospitalised crash patients showed that 73 patients were involved in motor vehicle crashes (including passenger vehicles, four wheel drives, utes and vans). There were 65 patients involved in motorcycle crashes (including on- and off-road crashes and quad bikes). There were two patients involved in truck crashes, and one involved with driving machinery. No caravan or other towing crashes were recorded.

Focus group members believed that people who were not familiar with local road conditions were at a very high risk of being involved in crashes. There were numerous references to the driving behaviour of "tourists" and "city people" as a major factor in crashes. Conversely, there was a theme of over-familiarity with the roads causing complacency among local residents, and leading to an increased crash risk.

Contrary to the strong opinions of focus group members, most crashes involved local residents, rather than visitors to the area from either the nearest large urban centre of Cairns, or other areas of Queensland or Australia.

Sixty seven of the 112 crash involved drivers were residents of rural towns and areas of Far North Queensland. Twenty one lived in Cairns and 10 in other areas of Queensland. Seven crash involved drivers were from other states. There were no overseas residents among the hospitalised sample (see Figure 1).

The majority of hospitalised driver/riders were familiar with the road on which they crashed, with 58 percent using the road monthly or more frequently. Eighty percent of the comparison group had used the road monthly or more frequently. There were about 21 percent of hospitalised driver/riders who were using the road for the first time, as compared to around five percent of the comparison group (see Figure 2).

Speeding was most frequently mentioned by focus group participants as the factor they perceived to be causing rural crashes. Most focus group members felt that speeding was commonplace, and many admitted to frequent speeding. While they perceived the speeding of others as due to attitudes of “impatience”, disregard for other road users, and the low probability of detection, they cited reasons for their own speeding as inadvertent, being late or the capabilities of modern vehicles. A number of younger drivers commented on their involvement in particular speed related incidents involving powerful cars, such as drag racing or having fun with mates.

About 80 percent of the hospitalised driver/riders denied exceeding the speed limit in the 10 minutes prior to their crash. Ninety five percent of roadside comparisons also reported travelling at or below the speed limit prior to being interviewed. Less than 9 percent of hospitalised driver/riders admitted to having exceeded the speed limit in the 10 minutes prior to crashing, as compared to around four percent of comparison cases interviewed.

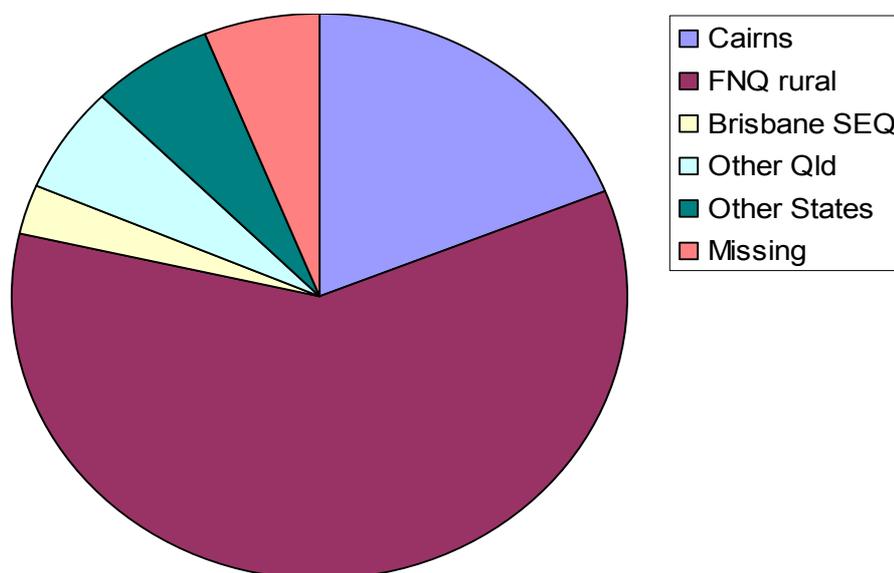


Figure 1 - Normal residence of hospitalised driver/riders

The second most frequently nominated issue perceived by focus group members as causing crashes was the actions of other drivers. Other road users were typically described in derogatory terms including “bloody idiot” and “stupid ones”. Most references to other drivers included descriptions of negative driving practices or incidents. There were no references to positive actions by other drivers.

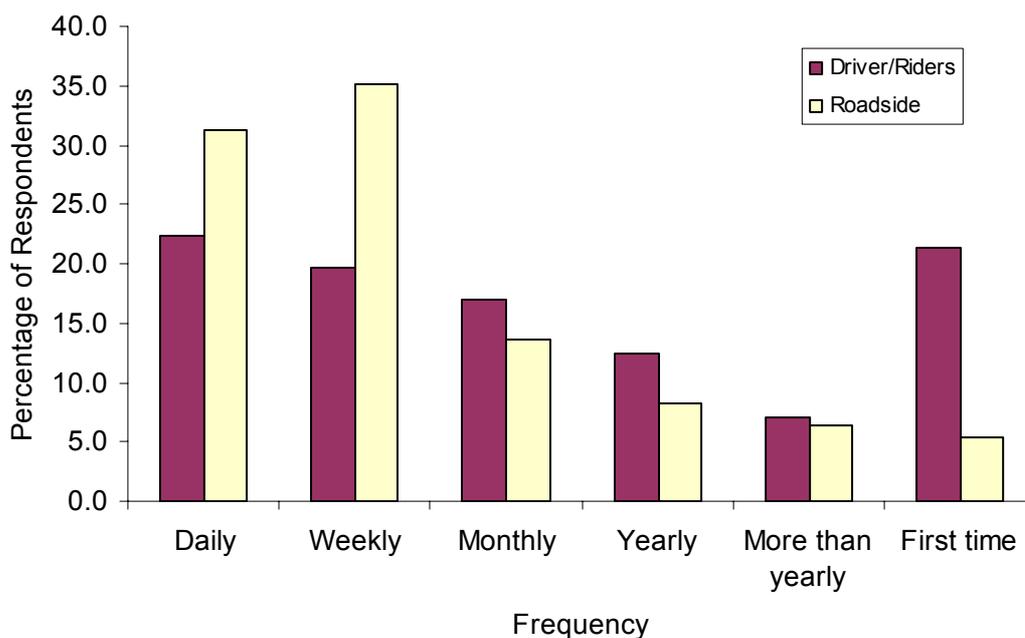


Figure 2 - Frequency of road use

However, data from hospitalised crash patients showed that there were more crashes involving single vehicles (70 percent) than multiple vehicles (30 percent). Only 22 of the hospitalised patients (driver/riders and passengers) (15.4 percent) reported in their narrative accounts that another vehicle had played a role in causing their crash. Despite this, most hospitalised driver/riders (around 63 percent) and 53 percent of comparison cases agreed with the statement that “road crashes are inevitable, because you can’t control the behaviour of other road users”. Injured passengers were more likely to disagree with this statement than were hospitalised driver/riders and comparison cases.

Numerous additional factors were perceived by focus group members as causing rural crashes. Driver behaviour issues were most frequently mentioned, such as speeding, dangerous overtaking, disobeying road rules, drink driving, fatigue and mobile phone use. Other themes included negative driver attitudes, road conditions, the lack of law enforcement, weather, mechanical issues, and factors in rural driving.

The frequency of factors reported by driver/riders and passengers in their narrative accounts as causing their crashes are outlined in Figure 3. Driver/riders were more likely to report that external issues had contributed to their crashes, including road conditions, mechanical problems and animals on the road. Passengers were more likely to report that driver factors, such as alcohol use, speeding, inexperience and inattention were responsible for crashes.

3.2. Skills and vulnerabilities as a driver:

Most focus group members described their driving skill and safety in very positive terms. Virtually all references to their own driving were in terms of their awareness of risk factors, efforts to overcome risk, improved skills over time, and ability to overcome the poor driving practices of others. Most references to negative aspects of their own driving related to past experience, and were described as an illustration of the improvement of their driving since that time.

This positive perception of one’s own driving ability was shared by the hospitalised driver/riders and roadside comparisons. Over 80 percent of hospitalised driver/riders believed that their driving was safe, with less than four percent disagreeing with this statement. Ninety two percent of roadside comparison cases believed that their driving was safe, with around one percent disagreeing with this statement (see Figure 4).

Focus group members tended to focus on the negative behaviours of other rural road users, giving very few positive references to any behaviours of other drivers.

Instead, other drivers were typically described in very negative terms. Virtually all references to poor driving practices were illustrated by descriptions of incidents they had witnessed involving other drivers, rather than referring to their own driving. Hospitalised driver/riders appeared to share this view of themselves as better driver than others on the road to some extent, with about 40 percent agreeing with the statement that “I am a better driver than others I see on the road”. Unlike the focus group members, about 30 percent of hospitalised crash patients disagreed that they were better drivers than others, while thirty percent were neutral. Roadside comparisons were more likely to believe that they were better drivers than others, with around 50 percent agreeing with this statement. About 15 percent disagreed with this statement.

4. DISCUSSION

Focus group members believed three issues were important in determining road users who were most at risk of rural crashes - the age of the road user, the type of vehicle driven, and familiarity with the road.

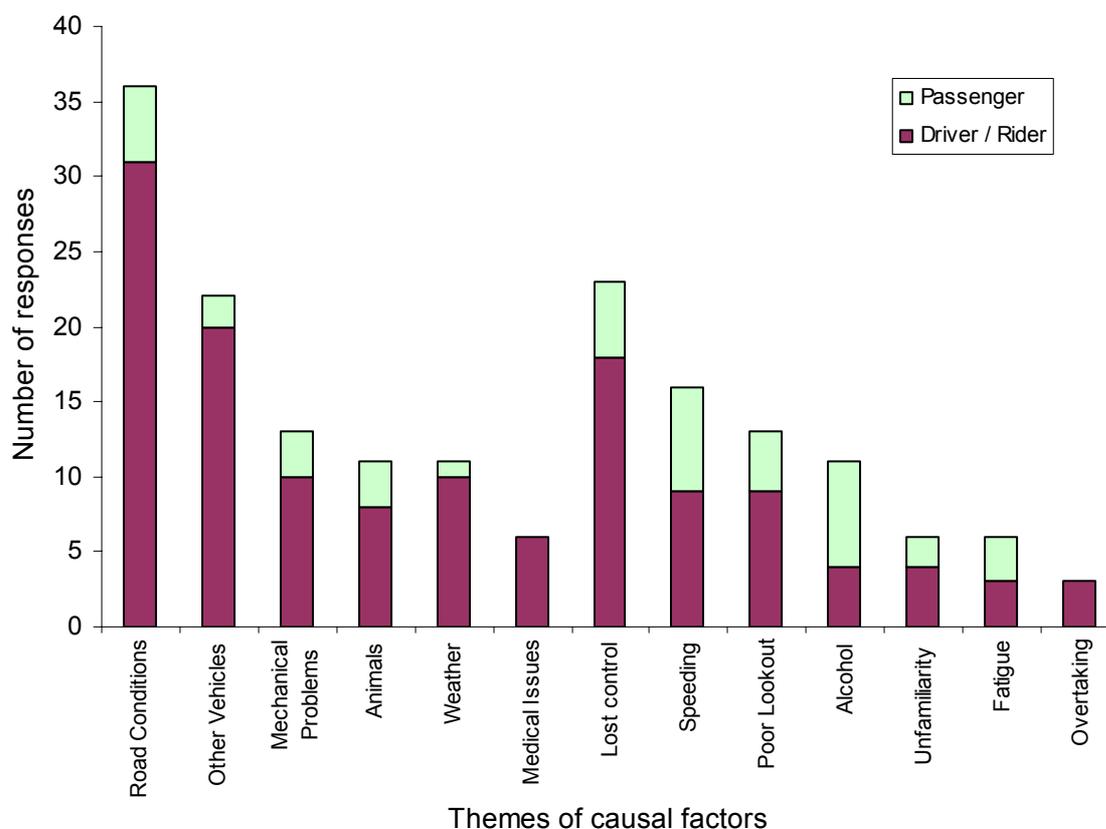


Figure 3 - Driver/Rider and Passenger responses to crash causes

Most believed that younger drivers were at the highest level of risk, and that crash risk generally decreased with age. Many focus group participants, and particularly younger participants, thought that older drivers also had a higher crash risk. This perception was not entirely supported by data from local crash cases. Crash involvement rates were highest for the 20 to 34 year age groups, with an average age of crash involved persons being almost 40 years.

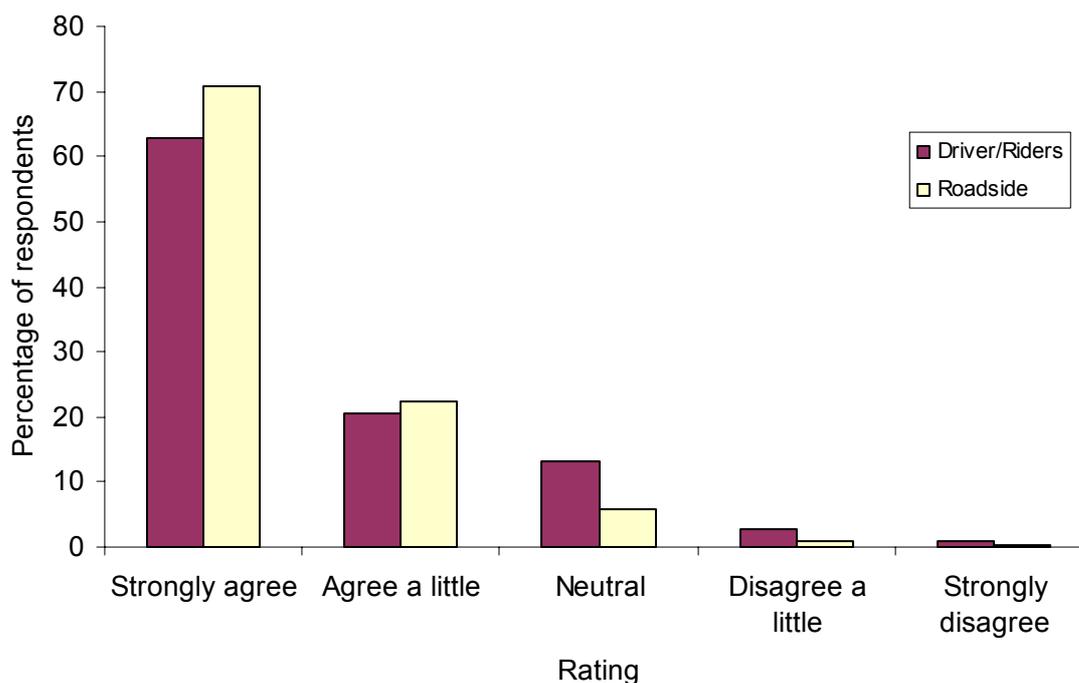


Figure 4 - I think my driving is safe

The beliefs of focus group participants regarding the involvement of certain types of vehicles in crashes was not well supported by the data. Passenger cars, including vans, four wheel drives and utilities, were the most common type of vehicle involved in crashes, with the second largest category being motorcycles. Despite the views of focus group members, there were very few crashes involving trucks or machinery, and none involving the towing of caravans.

Contrary to the strong opinions of focus group members, most crashes involved persons who lived in rural areas of Far North Queensland, with very few crash cases from other areas of Queensland or interstate. No hospitalised crashes were recorded involving overseas drivers. The majority of drivers were familiar with the road on which they crashed, with less than one quarter using the road for the first time. This would suggest that factors of over-familiarity and possible complacency associated with reduced attention are a more prominent crash risk in rural areas than lack of familiarity with road conditions.

There was a strong emphasis by focus group members on the behaviour of other drivers as causing crashes. Other drivers were generally considered in negative terms by focus group members, with the majority of hospitalised driver/riders and comparison cases also agreeing that crashes were inevitable due to the behaviour of other road users. Despite these perceptions, crash data showed that the majority of crashes were single vehicle crashes, with less than 20 percent of hospitalised driver/riders referring to the role of another vehicle in causing their crashes.

Crash involved drivers readily identified external factors as contributing to their crashes, including road conditions, mechanical failures and weather conditions. Focus group members also identified external issues in crash causation, but tended to emphasise internal factors of driver behaviour and attitudes. However, they typically attributed these negative qualities to other drivers rather than themselves, thus further supporting the hypothesis of an optimism bias.

There was a strong pattern of focus group members believing that crash prone drivers were quite unlike themselves, and that they belonged to a low risk group. There was a perception that personal crash risk lessened as one became more dissimilar from those road users whose characteristics were perceived as increasing the risk of crashes. Although crash involved driver/riders did not clearly consider their driving as better than that of others, they nonetheless believed that it was safe. This is consistent with previous findings of an “optimism bias” among drivers (Weinstein & Klein, 1996).

The findings of this study suggest that intervention programmes targeting behaviour change may be thwarted by attitudes and beliefs among rural drivers, including an inaccurate appraisal of existing risks, optimistic beliefs about driving abilities and an external locus of control regarding crash causation. Using the Stages of Change Model (Prochaska and DiClemente, 1983), rural drivers may be described as being in a “pre-contemplative” stage, where they are not ready to undertake change due to issues of non-recognition of problem behaviour, denial of the reality of the problem behaviour, or a belief that change is beyond their capability. The Stages of Change model suggests interventions for “pre-contemplators” that raise motivation for change towards the “contemplation” stage. This is achieved by techniques to raise disparities between perceptions of risk and reality, and enhance personal ownership of problems, rather than initially focussing on suggesting behavioural alternatives. For rural road users, an optimism bias and external locus of control for personal crash risk may be addressed by the provision of information about the differences between existing perceptions of what is causing crashes and reality. Such attitude change interventions may need to precede behaviour change interventions to initiate a culture of safer driving practices among rural road users.

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