



## Motorcycle Safety Research Project

### Interim Summary Report Research Deliverable 1:

# INVESTIGATE AND DEVELOP A PRE-LEARNER MOTORCYCLE LICENSING PACKAGE

Report to Queensland Department of Transport and Main Roads

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# Preface

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# Executive Summary

Motorcycle trauma is a serious road safety issue in Queensland and throughout Australia. In 2009, Queensland Transport (later Transport and Main Roads or TMR) appointed CARRS-Q to provide a three-year program of Road Safety Research Services for Motorcycle Rider Safety. Funding for this research originated from the Motor Accident Insurance Commission. This program of research was undertaken to produce knowledge to assist TMR to improve motorcycle safety by further strengthening the licensing and training system to make learner riders safer by developing a pre-learner package (Deliverable 1 which is the focus of this report), and by evaluating the Q-Ride CAP program to ensure that it is maximally effective and contributes to the best possible training for new riders (Deliverable 2), which is the focus of this report. Deliverable 3 of the program identified potential new licensing components that will reduce the incidence of risky riding and improve higher-order cognitive skills in new riders.

While fatality and injury rates for learner car drivers are typically lower than for those with intermediate licences, this pattern is not found for learner motorcycle riders. Learner riders cannot be supervised as effectively as learner car drivers and errors are more likely to result in injury for learner riders than learner drivers. It is therefore imperative to improve safety for learner riders. Deliverable 1 examines the potential for improving the motorcycle learner and licence scheme by introducing a pre-learner motorcycle licensing and training scheme within Queensland. The tasks undertaken for Deliverable 1 were a literature review, analysis of learner motorcyclist crash and licensing data, and the development of a potential pre-learner motorcycle rider program.

## Review of the literature

Pre-learner programs are part of a broader licensing system where restrictions, education, and assessment are central to rider safety at all phases. Approaches to pre-learner programs for motorcyclists are founded within a graduated licensing system with the aim to reduce the risk associated with riding. However, a secondary benefit of pre-learner programs is likely to be less riding due to the increased cost or effort associated with obtaining a licence, leading to a delay in licensing (or a decision not to become licensed) that may assist in reducing crashes involving learner riders. While there is a potential for any additional licensing requirements to contribute to unlicensed riding, no evidence exists to quantify the extent of this outcome.

Pre-learner training aims to ensure that the rider obtains a level of basic riding knowledge and skills in a relatively safe off-road environment before obtaining a learner permit and riding on the road. Current programs in Australia vary in terms of whether they are mandatory or voluntary, the duration of training, and assessment protocols. Queensland and Western Australia are the only states that currently do not offer structured pre-learner training as an option or requirement to obtain a learner permit. Pre-licence programs are only completed by the majority of riders where they are mandatory or where they are perceived by riders to facilitate passing an assessment that is required to receive the learner permit. Thus,

jurisdictions that desire all riders to undertake pre-learner training cannot divorce pre-licence programs from the structure of the licensing system. Therefore, substantial changes would be required to the current system if pre-learner training for all riders was desired in Queensland.

From a pedagogical perspective, there is considerable scope for the improvement of traditional rider training in terms of content, delivery protocols, and the structuring of training within an overall graduated licensing system. Delivering training in stages within a graduated licensing system is important as learners may be more able to integrate information learnt from training once they have had some riding experience as opposed to the pre-licence stage where there is potential for information overload.

An Australian model for best practice is described which could provide a foundation for reduced crash involvement by learner motorcyclists within Queensland. It is based on the following conclusions from the research evidence:

- Compulsory training appears to result in greater crash reductions than voluntary training. This is because compulsory training appears to deter would-be riders from applying for a licence, thereby discouraging riding and, hence, exposure to risk;
- There is no clear scientific evidence of current programs or components leading to reductions in crash risk;
- An increased emphasis on roadcraft (without reducing the time spent on vehicle control skills) appears to be necessary at both the pre-learner and pre-licence levels;
- Longer or more costly compulsory programs might also be expected to lead to crash reductions. Such courses may also act to deter would-be riders from applying for a licence, thereby discouraging riding and hence, exposure to risk;
- Hazard perception training holds promise for the future for reducing behaviours known to increase crash risk and,
- Some coverage of attitudinal and motivational issues is also warranted in the pre-learner stage with continued reinforcement of such issues during pre-licence training because risk taking has been shown to be an issue for riders (particularly young males with some previous riding experience).

There is a fundamental difficulty in identifying best practice in pre-learner motorcycle programs due to the lack of rigorous evaluations of the extent to which the programs achieve their stated aims. This makes it difficult to specify best practice in terms of curriculum, frequency and duration of training, learning aids, training venues and assessment techniques. Best practice can only really be assessed in terms of the extent to which the program includes components which have been shown elsewhere or in theory to be beneficial (e.g. programs which embody the underlying concept of graduated licensing; i.e. that experience should be gained in low-risk situations before graduating to higher-risk situations). This is a drawback in many areas of motorcycle safety, not just in pre-learner programs.

## **Learner motorcyclist crash and licensing analyses**

The analysis of licensing data found that half of the riders obtaining a motorcycle licence in Queensland held their learner licence less than 27 days. More than 90% of novices obtain their licence through Q-Ride which has no minimum learner period (unlike Q-SAFE has a mandatory minimum learner period of 180 days and NSW and VIC which have a minimum of three months). This means that Q-Ride effectively functions as a pre-learner program given that most trainees have held a learner licence for a very short period of time and have little or no riding experience as a learner.

Learner riders can be easily identified in the crash data, but newly licensed riders are hard to identify because most are granted open, rather than provisional, licences. Learner riders appear to be involved in more severe crashes and to be more often at fault than fully-licensed riders but this may reflect problems in reporting, rather than real differences. Some of the differences between learner riders and fully-licensed riders appear to reflect differences in riding patterns of younger riders, rather than increased risks relating to inexperience. The analysis of contributing factors in learner rider crashes suggests that hazard perception and risk management (in terms of speed and alcohol and drugs) should be included in a pre-learner program. However, the short time the learner licence is held poses serious constraints upon delivery of a pre-learner program.

### **Development of a pre-learner program**

The steps in the development of a pre-learner program involved observations in other states, consultation with stakeholders, identifying alternative approaches to delivery and detailing the content for the program.

#### ***Observations of existing pre-learner training***

There were several similarities noted between the courses observed in NSW and Victoria. It was apparent that most differences lie between the licensing systems more so than the training content *per se*. It was concluded that the NSW system may provide the most useful framework for developing future *pre-learner* training and assessment in Queensland. However, *pre-licence* training and assessment may require further investigation. The NSW course is subsidised which is a matter for consideration for the Queensland context with regard to how this may influence the uptake of riding versus a more costly system that may have benefits for reduced crashes through exposure control (i.e., people electing not to ride).

Components of the NSW pre-learner phase that require *further development* for their application in the Queensland context are:

- the simulated road ride (does not currently progress beyond 2<sup>nd</sup> gear); and
- the relatively limited time spent on hazard perception and risk taking issues.

#### ***Interviews with stakeholders***

The interviews with Q-Ride rider trainers and TMR licensing examiners found general support for introduction of a pre-learner training program. Participants thought that the content should be similar in rural and metropolitan areas and that it should include both

vehicle handling skills and traffic skills. Most favoured a pre-learner licensing package modelled on current Q-Ride delivery practices such as competency-based training and assessment outsourced to accredited organisations. However, they believed that the program should be mandatory.

### ***Identifying alternative approaches to delivery***

Based on the research evidence of risk for novice riders, pre-learner training for motorcyclists has the potential to provide riders with the skills, knowledge, and safety strategies to avoid injury. Ideally pre-learner training would involve training in basic riding skills, hazard perception, and developing attitudes to risk taking that are consistent with the licensing system. The introduction of pre-learner training could be incremental, commencing with the initial introduction of computer-based training, followed by mandatory face-to-face training at a later date. However, given the current lack of research evidence, careful monitoring, piloting and evaluation would need to be undertaken to assess the effectiveness of any of these interventions in reducing crash risk and their effects on the uptake of motorcycle licensing and unlicensed riding.

### ***Detailing the content for a potential pre-learner program***

A five-step program was developed with a rationale for the inclusion of each objective, how each step is linked to specific learning outcomes, and program content to achieve this. In line with the research evidence, the interactive nature of the program is central to achieving the desired learning outcomes. For similar reasons, short exercises and feedback are included rather than just presentation of information. The five steps are:

Step 1 - Introduce the program & engage students in the learning process

Step 2 - Provide knowledge of common motorcycling hazards, road positioning, and survival space

Step 3 - Enhance understanding of responsible riding attitude and self-management strategies to reduce risky riding behaviours.

Step 4 - Foster an appreciation of the differences between riding off-road and riding in the traffic environment for different types of motorcycles (i.e. transition to the road).

Step 5 – Create an understanding of the benefits of different types of protective clothing and strategies to overcome potential barriers for non-use (e.g. heat)

### ***Feedback on the potential pre-learner program***

A presentation of the results from the Deliverable 1 tasks, culminating in the development of potential options for a pre-learner training package, was made to internal TMR stakeholders in July 2011. After the presentation, the group discussed opportunities and barriers for the implementation of a pre-learner training package in Queensland. The stakeholders recommended not proceeding with the further development of a pre-learner package at this stage, based upon the current lack of evidence supporting the effectiveness of the pre-learner package options.

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# 1. INTRODUCTION

While learner car drivers have the lowest injury risk of all drivers, this is not the case for learner motorcycle riders. Inexperience has been shown to be a major factor in many motorcycle crashes (Rutter & Quine 1996; Mullin, Jackson, Langley & Norton 2000), presenting a particular challenge for the safety of learner riders. While fatality and injury rates for learner drivers are typically lower than for those with intermediate licences, this pattern is not found for learner riders. In New South Wales in 2009, learner car drivers comprised 1.1% of drivers in casualty crashes (fatal or injury) while 17.1% of drivers in casualty crashes held a provisional licence (RTA, 2010a). In contrast, learner motorcycle riders made up 12.9% of riders in casualty crashes and riders with provisional licences were involved in 7.6% of casualty crashes. It is therefore imperative to improve safety for learner riders.

Whilst supervision for learner car drivers offers direct feedback to assist in the learning and decision making processes, learner motorcyclists generally need to make decisions in regard to traffic situations and respond to hazards while endeavouring to master vehicle control skills without the benefit of immediate feedback or direction. Pre-learner training aims to ensure that the rider obtains a level of basic riding knowledge and skills in a relatively safe off-road environment before obtaining a learner permit and riding on the road. At present there is no requirement for pre-learner motorcycle rider training to be undertaken to obtain a motorcycle learner permit in Queensland.

Currently to obtain a learner permit for a motorcycle in Queensland an applicant must first have held a provisional or open licence for another class of vehicle for at least one year during the last five years. The applicant is required to undertake a written multiple choice road rules test administered by the state authority. Upon passing the written road rule test the applicant is then issued with a learner permit and is permitted to ride a motorcycle while displaying an L Plate and under the supervision of a person who has held an open motorcycle licence for 12 months for the class of motorcycle used by the learner. RE (restricted motorcycle licence holders) are restricted under the Learner Approved Motorcycle Scheme (LAMS) to a combined power-to-weight ratio of 150 kilowatts/tonne and an upper engine capacity limit of 660 ml.

In 2009, the then Queensland Transport (later the Department of Transport and Main Roads or TMR) appointed CARRS-Q to provide a three-year program of Road Safety Research Services for Motorcycle Rider Safety. Funding for this research originated from the Motor Accident Insurance Commission. The research was undertaken to produce knowledge that will assist TMR to improve motorcycle safety by further strengthening the licensing and training system to make learner riders safer by developing a pre-learner package (Deliverable 1), by evaluating the Q-Ride CAP program to ensure that it is maximally effective and contributes to the best possible training for new riders (Deliverable 2) and by identifying potential new licensing components that will reduce the incidence of risky riding and improve higher-order cognitive skills in new riders (Deliverable 3).

## 1.1 AIMS AND SCOPE

This report addresses Deliverable 1 of the broader motorcycle safety research program that CARRS-Q was commissioned to undertake by TMR. The purpose of this report is to summarise material covered in detail in a number of previous individual project deliverable reports. The citation details of the reports and the aims and scope of the tasks undertaken for Deliverable 1 are presented below.

Rowden, P. & Haworth, N. (2009b). *Literature review of issues related to improving the safety of learner motorcyclists and approaches to pre-learner motorcycle programs (Deliverable 1.1)*. CARRS-Q report to Queensland Department of Transport.

The aims of Deliverable 1.1 were to:

1. Highlight issues that are specific to the safety of learner motorcyclists; and
2. Investigate approaches to pre-learner programs for motorcyclists with a view to identifying best practice to be applied within the Queensland context.

Haworth, N., Rowden, P. & Schramm, A. (2011) *Analysis of Crash and Licence Data for Learner Motorcyclists. Deliverable 1.2*. CARRS-Q report to Department of Transport and Main Roads.

The aims of Deliverable 1.2 were to:

1. Analyse licensing data to examine the current characteristics of learner motorcyclists;
2. Analyse crash data to develop a profile of crashes involving learner and newly licensed motorcyclists; and,
3. Use the above information to identify if there are particular situations or locations in which learner motorcyclists are over-involved in crashes that can then be targeted in a pre-learner package.

Rowden, P., Wishart, D. & Haworth, N. (2011) *Observations of existing pre-learner training in selected jurisdiction. Deliverable 1.3*. CARRS-Q report to Department of Transport and Main Roads.

The scope of Deliverable 1.3 included the following:

1. Observations of pre-learner training in New South Wales
2. Observations of pre-learner training in Victoria

Buckley, L., Rowden, P., Haworth, N. & Wishart, D. (2011). *Stakeholder interviews regarding pre-learner motorcycle rider programs. Deliverable 1.4a*. CARRS-Q report to Department of Transport and Main Roads.

Rowden, P., Buckley, L., Haworth, N. & Wishart, D. (2010). *Stakeholder interviews regarding pre-learner programs: Round Two. Deliverable 1.4b*. CARRS-Q report to Department of Transport and Main Roads.

The aims of the qualitative phase of the research Deliverables 1.4a and 1.4b were to:

- Identify the level of support for implementation of a pre-learner program in Queensland and perceived barriers for implementation by rider trainers and government licence testing officers;
- Determine the key issues for pre-learner rider training as perceived by rider trainers and government licence testing officers;
- Assess the level of alignment between the perceptions of rider trainers and government licence testing officers and what has been previously identified in the literature as key issues for pre-learner rider training; and
- Inform the development of a quantitative survey to be delivered to rider trainers and driving examiners throughout Queensland.
- Investigate options for implementation of pre-learner training if it was potentially introduced in Queensland.

Haworth, N., Rowden, P., Buckley, L. & Wishart, D. (2010). *Development of a preliminary pre-learner motorcycle rider program Deliverable 1.5*. CARRS-Q report to Department of Transport and Main Roads.

The aim of Deliverable 1.5 was to outline a potential approach to the staged implementation of pre-learner training initiatives for motorcyclists in Queensland.

#### *Workshops to gain feedback on the preliminary package*

The scope of Deliverable 1.6 included gaining feedback on the preliminary package via workshops.

## **1.2 STRUCTURE OF THIS REPORT**

The methods used to undertake the research are described within the relevant Chapters. The review of literature of issues related to improving the safety of learner motorcyclists and approaches to pre-learner motorcycle programs, Deliverable 1.1 is contained in Chapter 2. An analysis of crash and licence data for learner motorcyclists, Deliverable 1.2 is presented in Chapter 3. Chapter 4 presents information from Deliverable 1.3, observations of existing pre-learner training in selected jurisdictions. Chapter 5 presents information from stakeholder interviews regarding pre-learner motorcycle rider programs Deliverables 1.4a (round one) and 1.4b (round two). Chapter 6 identifies alternative approaches to motorcycle rider programs, and Chapter 7 describes the feedback received on the program following workshop consultation. The discussion and conclusions are presented in Chapter 8.

## **2. ISSUES RELATED TO IMPROVING THE SAFETY OF LEARNER MOTORCYCLISTS AND APPROACHES TO PRE-LEARNER MOTORCYCLE PROGRAMS**

This section presents information from the report *Literature review of issues related to improving the safety of learner motorcyclists and approaches to pre-learner motorcycle programs*, Deliverable 1.1. This review was commissioned to examine safety issues pertaining to learner riders and to identify approaches to safety programs that may be suitable for riders wishing to obtain their learner permit.

### **2.1 ISSUES FOR LEARNER RIDER SAFETY**

The issues that impact on the safety of learner riders may be categorised into three broad groups:

1. Issues inherent to motorcycling in general, which may be compounded by a lack of experience (e.g. impairment and vulnerability to injury);
2. Issues related to the nature of people attracted to motorcycling and the choices that they make in regard to the motorcycle they ride, the type of riding they undertake, and their safety consciousness / motives to protect themselves or take risks; and,
3. Issues more directly under the control of the licensing system such as rider training, evaluation of safety initiatives, requirements for supervised riding, and minimum licence periods.

All of the abovementioned issues require consideration when formulating policy. For example, the heterogeneity of the learner rider population dictates that safety must often be considered at the lowest denominator (i.e. to protect those most at risk). Implementation of measures to mitigate the effect of such issues must be considered in the context of an overarching system. This system may aim to directly address the aforementioned issues of risk or mitigate these effects by exposure control. The following sections of this report highlight the role of graduated licensing, current approaches to pre-learner safety, and prescribe a model for best practice.

### **2.2 EXISTING MODELS OF BEST PRACTICE**

Models of best practice in motorcycle training and licensing have been developed in the United States (NHTSA/MSF, 2000; Baldi, Baer & Cook, 2005) and Australia (Haworth, & Mulvihill, 2005).

The Motorcycle Safety Foundation (MSF), the National Highway Traffic Safety Administration (NHTSA) and the American Association of Motor Vehicle Administrators (AAMVA) have developed a model “Motorcycle Operator Licensing System” that contains features of graduated licensing. The model is designed to guide state motor vehicle administrators who are interested in improving their motorcycle licensing program. The

description of the learner permit components of the model licensing system that follows is taken from the National Agenda for Motorcycle Safety (NHTSA/MSF, 2000).

*Stage 1 - Learner's permit.* General applicants who satisfy application prerequisites are screened for vision and tested on rules of the road and subjects specific to motorcycling. Upon successful completion of the tests, applicants are granted a learner's permit authorising restricted, on-street riding privileges.

Conditions of permit include:

- 90-day permit period;
- Supervision by older rider/driver;
- Parental participation;
- No passengers;
- Mandatory helmet and eye protection use;
- Zero BAC tolerance;
- High-visibility clothing;
- No interstate-highway riding; and,
- Daylight hours only.

Baldi, Baer, and Cook (2005) developed guidelines for best practice in motorcycle training and licensing following examination of practices across US jurisdictions. It is a broad descriptive model that highlights three main areas of best practice: program administration, rider education, and licensing.

In regard to learner permits, the best practice model supports graduated licensing programs for motorcyclists where riders obtain learner permits with a limited validation period and without automatic renewals. It supports restrictions on the operation of their motorcycles, such as riding during daylight hours.

The model recommends that jurisdictions should provide learners with an operator's manual to prepare for testing and mandate that riders under the age of 21 complete a rider education course before receiving a licence. Baldi et al. (2005) state that "compulsory rider education for minors is essential because teenage motorcyclists often engage in risky behavior that may result in crashes" (p.23). They also maintain that licensing agencies should offer riders incentives for seeking licensing such as licence test waivers for completion of rider education courses (even if undertaken in another state).

Baldi et al. (2005) present preliminary evidence from bivariate and multivariate regression analyses that suggests that US states whose practices conform more closely to the best practices model have lower motorcycle fatality rates than states whose practices conform less closely.

Haworth and Mulvihill (2005) proposed a best practice model of motorcycle rider training, licensing and testing within the Australian context (see Table 1). For each component, the

likely effect on crash risk (crash involvement per km ridden), crash severity and exposure (amount of riding) are separately assessed. Within the categories of licensing, training and testing, the components are listed in order from most important to least important (to the extent that this was possible to determine). The most important components are those that have been demonstrated to, or are considered likely to reduce both crash risk and the amount of riding.

In terms of learner riders, the best practice model proposes:

- A higher minimum age for motorcycle learner permit (and provisional licence) than for car;
- Zero BAC;
- Restrictions on carrying pillion;
- Power-to-weight restrictions;
- Minimum and maximum durations for the learner permit to be held;
- Display of L plates;
- Following supervisor;
- Speed limit restrictions;
- Compulsory training for L and P;
- Extensive roadcraft training for L and P; and
- Off-road testing for L.

A general principle of the model in Table 1 is that, given the high crash risks associated with motorcycling, the system should not encourage increased exposure (either in terms of getting a licence or in terms of increasing distance travelled). For this reason, the total costs of obtaining a motorcycle licence (including those associated with training and practice) should not be cheaper than for a car licence.

The model also reflects the principle that while some skills relevant to safe riding are obtained by driving and that risk taking generally decreases with age, experience in riding is also important. Therefore it does not have any reductions in minimum durations of L and P for older applicants. For this reason, it also attempts to prevent riders with little recent experience from easily returning to riding. A number of mechanisms could achieve this outcome. The approach taken in the model is to require retesting every 10 years to retain a motorcycle licence.

**Table 1. Summary of Best Practice Components of a Motorcycle Licensing and Training System.**

<b>Component</b>	<b>Effect on crash risk</b>	<b>Effect on crash severity</b>	<b>Effect on amount of riding</b>	<b>Reason for effect</b>
<b>GENERAL</b>				
No exemptions from licensing, training or testing requirements for older applicants	Unknown	Unknown	↓	Older riders need to develop riding-specific skills. May make licensing less attractive.
<b>LICENSING</b>				
Minimum age for learner and provisional motorcycle licences higher than for car licences	↓		↓	Consistent with graduated licensing principles. Crash risk has been demonstrated to decrease with age among young novices. Increasing the minimum age would also almost eliminate riding and therefore crashes among riders below this age.
Zero BAC for L and P	↓		↓	Reducing drink riding will reduce crash risk. Zero BAC will also reduce the amount of riding after drinking.
Restrictions on carrying pillion passengers for L and P	↓	↓		Pillions have been shown to increase crash risk and severity.
Power-to-weight restrictions for L and P	↓		↓	Crash risk may be reduced if less powerful motorcycles result in less deliberate speeding and risk taking or problems with vehicle control. Restrictions may dissuade some potential high-risk riders from riding.
Minimum periods for L and P				To ensure that other requirements have sufficient duration.
Maximum period for L				To prevent riders who are unable to pass licence test being permanent learners.
<b>Component</b>	<b>Effect on crash risk</b>	<b>Effect on crash severity</b>	<b>Effect on amount of riding</b>	<b>Reason for effect</b>
Display L and P plates				To assist in enforcement of conditions and restrictions.
Following supervisor for Ls			↓	Provide feedback and reduce high-risk behaviour. Limited availability of supervisors might reduce riding.
Speed limit restrictions for L and P			↓	Could discourage potential riders or travel on high speed roads.

<b>TRAINING</b>				
Compulsory training to obtain L and P	Small reduction	Unknown	↓	Ensure a basic level of competency. May make licensing less attractive.
Increased roadcraft training at both L and P (may require longer training duration and better educational skills of trainers)	↓	↓	↓	Improved ability to detect and respond to hazards by novice riders. Longer and potentially more expensive training may deter some applicants.
Off-road training for L, mix of on- and off-road training for P				Ensure a basic level of competency gained under situations that are appropriate for current level of competency. Allow safe practice of responses to hazards.
<b>TESTING</b>				
Off-road testing to obtain L, on-road testing for P	Unknown	Unknown	↓	Ensure a basic level of competency. May make licensing less attractive.

Research suggests that it probably requires about four days of training to take a completely novice rider to a stage at which they could be considered adequately safe to be allowed to ride unsupervised on the road (Haworth & Smith, 1999). However, there is little real or perceived demand from riders for such a comprehensive (and necessarily costly) course in the Australian context. Moreover, mandating compulsory four day training in Queensland would be logistically challenging due to the geographical remoteness of some riders. For this reason the balance between learner rider safety and riders' lack of willingness to invest in safety requires consideration in a voluntary system. Whilst a four day course can include coaching the rider from basic to more advanced skills, pre-learner programs in most jurisdictions focus on basic vehicle control and manoeuvring, with more advanced skills taught during subsequent training to obtain a provisional licence.

As the components of the licensing system are interactive, best practice for pre-learner programs needs to be discussed in the context of not only the pre-learner and learner phases but also with consideration of how requirements for the provisional stage will be structured (e.g. training).

### **2.2.1 Conclusions regarding best practice training**

There is a fundamental difficulty in identifying best practice in pre-learner motorcycle programs due to the lack of rigorous evaluations of the extent to which the programs achieve their stated aims. This makes it difficult to specify best practice in terms of curriculum, frequency and duration of training, learning aids, training venues and assessment techniques. Best practice can only really be assessed in terms of the extent to which the program includes components which have been shown elsewhere or in theory to be beneficial (e.g. programs which embody the underlying concept of graduated licensing; i.e. that experience should be gained in low-risk situations before graduating to higher-risk situations). This is a drawback in many areas of motorcycle safety, not just in pre-learner programs.

Given these caveats, the following conclusions from the research evidence have been drawn regarding best practice in training:

- Compulsory training appears to result in greater crash reductions than voluntary training. This is because compulsory training appears to deter would be riders from applying for a licence (because of the effort involved in completing the training), thereby discouraging riding and, hence, exposure to risk;
- There is no clear scientific evidence of current programs or components leading to reductions in crash risk;
- An increased emphasis on roadcraft (without reducing the time spent on vehicle control skills) appears to be necessary at both the pre-learner and pre-licence levels;
- Longer or more costly compulsory programs (e.g. four day courses) might also be expected to lead to larger reductions in riding. Such courses may act to deter would be riders from applying for a licence (because of the effort involved in completing the training), thereby discouraging riding and hence, exposure to risk. However, riding

lobbyists have expressed concerns regarding social equity. Whether these concerns are as relevant for motorcycling (which is often a discretionary activity) as they are for car driving (which is perceived by many as a mobility requirement) has received little discussion;

- Hazard perception training holds promise for the future. Horswill and McKenna (1998) found that hazard perception training for car drivers not only improved their hazard perception ability but also reduced their risk-taking propensity. Given that motorcyclists have been found to engage more often in behaviours known to increase crash risk (e.g., Horswill & Helman, 2001), it might be expected that the potential benefits of a hazard perception training program designed specifically for motorcyclists would be even more critical for this group. Deliverable 3 has identified that programs specifically targeting risk taking may also be useful.
- Off-road training is considered necessary at the pre-learner stage to allow the most basic vehicle control and road system knowledge to be acquired under the safest conditions. Whilst limited information regarding specific pre-learner course content was freely available for review, it appears that basic riding skills such as changing gears, cornering, and braking would be a minimal requirement in addition to issues such as how to use mirrors, indicators, and maintain tyre pressure.
- As risk taking has been shown to be an issue for riders (particularly young males with some previous riding experience) some coverage of attitudinal and motivational issues is also warranted in the pre-learner stage with continued reinforcement of such issues during pre- licence training. Whilst assessment of rider attitude within the licensing context is impossible due to the likelihood of “faking”, facilitated discussion of risk taking and appropriate management strategies may instil a sense of appropriate behaviour in riders from the outset. Research in this area by CARRS-Q continues and preliminary results show promise.
- Further to the content issues discussed above, reviews have demonstrated that individual motorcycle trainers vary in their teaching skills and in the way that they deliver the same program (Haworth, Smith & Kowadlo, 2000). This suggests a need for quality assurance either by training organisation or the regulator (or both). There is insufficient evidence to assess whether *specific* qualifications in motorcycle training are helpful.
- While there is a potential for any additional licensing requirements to contribute to unlicensed riding, no evidence exists to quantify the extent of this outcome

### **2.3 FINDINGS OF THE REVIEW**

A graduated licensing system offers a framework in which to address some of the issues that influence learner rider safety. Approaches to pre-learner programs for motorcyclists are founded within a graduated licensing process with the aim to reduce risk for motorcyclists. However a secondary benefit of reduced exposure may assist in reducing crashes involving learner riders. Both the Australian and US best practice models for motorcycle licensing

incorporate training for learner riders. They highlight that pre-learner programs are part of a broader, interactive system that impacts on the safety of riders at each stage as they progress in their riding careers.

With the exception of some new European programs, current pre-learner programs for motorcyclists focus predominantly on providing basic skills training in a comparatively safe off-road environment. Programs vary in terms of whether they are mandatory or voluntary, the duration of training, and assessment protocols. Unfortunately, there is no specific evidence for the effectiveness of any particular program. Similarly, jurisdictions vary in the restrictions applied during the learner period. Pre-licence programs are only widespread where they are mandatory or where they are perceived by riders to facilitate passing an assessment that is required to receive the learner permit. Thus, pre-licence programs cannot be divorced from the structure of the licensing system.

From a pedagogical perspective, there is considerable scope for the improvement of traditional rider training in terms of content, delivery protocols, and the structuring of training within an overall graduated licensing system. Programs to address learner rider safety not only have potential to protect riders through the learner phase, but also provide them with appropriate skills and behaviour management strategies for their entire riding career.

Delivering training in stages within a graduated licensing system is important as learners may be more able to integrate information learnt from training once they have had some riding experience as opposed to the pre-licence stage where there is potential for 'information overload' due to the cognitive resources required in initial skill acquisition (Christie et al., 2004). Additionally, there is more potential that the information will be personally relevant to them once some experience has been gained. However, there is much information that would potentially benefit riders from the outset.

Whilst a pre-learner program is limited by the level of information that trainees can actually process and internalise, the course curriculum must contain sufficient content to maximise safety. Research suggests that it probably requires about four days of training to take a completely novice rider to a stage at which they could be considered adequately safe to be allowed to ride unsupervised on the road (Haworth & Smith, 1999). However, there is little real or perceived demand for such a comprehensive (and necessarily expensive) course in the Australian context. For this reason the balance between learner rider safety and riders' lack of willingness to invest in safety requires consideration in a voluntary system. Whilst a four day course can include coaching the rider from basic to more advanced skills, pre-learner programs in most jurisdictions focus on basic vehicle control and manoeuvring, with more advanced skills taught during subsequent training to obtain a provisional licence.

### **3. ANALYSIS OF LEARNER MOTORCYCLIST CRASH AND LICENSING DATA**

This section presents information from the report *Analysis of Crash and Licence Data for Learner Motorcyclists*, Deliverable 1.2. The report was an analysis of motorcycle licensing and crash data and examined the current characteristics of learner motorcyclists and their crashes and how this has been affected by recent changes to motorcycle licensing.

One of the fundamental requirements to underpin the development of a pre-learner package that is tailored to be effective in Queensland is a clear understanding of the characteristics of learner motorcyclists in Queensland and their subsequent licensing and crash experience. This section presents analyses of licence and crash information to provide such a picture.

#### **3.1 METHOD OF ANALYSIS OF CRASH AND LICENCE DATA**

The Data Analysis Unit of TMR provided three Microsoft Excel spreadsheets summarising motorcycle licensing data. The first spreadsheet summarised the number of written tests passed to obtain a motorcycle learner licence in the calendar years 2006, 2007 and 2008 and by 30 June 2009 by location. The locations were customer service centres (CSCs) and police stations.

The second spreadsheet presented the number of motorcycle learner licences on record at the end of the calendar years 2006, 2007 and 2008, disaggregated by Queensland Transport Region, Local Government Area, class of licence (R/RE), gender and age group.

The third spreadsheet summarised the number of Q-SAFE motorcycle practical tests passed and failed each month from 1 January 2006 to 30 June 2009. It also presented the number of motorcycle licences obtained by Q-Ride during the same period. The numbers are disaggregated by class of licence (R/RE).

#### **3.2 CURRENT CHARACTERISTICS OF LEARNER MOTORCYCLISTS**

The following characteristics were analysed:

- Number of motorcycle learner licences issued in each of the last three years;
- Proportion of learners who went on to obtain a provisional or open licence;
- Licensing approach taken (Q-Ride versus Q-SAFE, R versus RE);
- Duration that the learner licence was held;
- Gender and age profiles of learners; and,
- Geographical spread of learner riders.

### **3.2.1 Number of learner licences issued**

The number of motorcycle learner licences issued in Queensland decreased from 27,543 in 2006 to 25,094 in 2007 to 20,075 in 2008. There were 7,599 learner licences issued in the first half of 2009, which suggests that the downward trend has continued. There was a large increase in the number of learner licences issued in the months prior to the licensing changes on 1 July 2008 and relatively few learner licences issued in the remainder of 2008.

It should be noted that during 2006-2008, the number of learner licences issued in a year was only about a fifth of the total number of learner licences on record. This reflected a large number of riders who obtained a learner licence and did not go on to obtain a provisional or open licence and whose learner licence thus remained current.

### **3.2.2 Progression to provisional or open licence**

In each year, the number of motorcycle learner licences issued was considerably greater than the number of new provisional or open licences issued, as is the case in other jurisdictions (where the equivalent to provisional for those who have already an open car licence is sometimes termed restricted). The average “conversion rate” over the period 1 January 2006 to 30 June 2009 was 67.9%, varying from a low of 55.1% in 2006 to a high of 90.6% in 2008. The high conversion rate for 2008 may have two components: applicants who obtained their learner licence in 2008 and completed quickly in order to obtain a licence before the regulations changed on 1 July 2008 and applicants who obtained their learner licence prior to 2008 and wanted to obtain a licence before the regulations changed.

### **3.2.3 Licensing approach selected**

Overall, 94.1% of riders who obtained a provisional or open licence between 1 January 2006 and 30 June 2009 had completed Q-Ride. The percentage varied from 96.1% in January-June 2008 to 90.6% in January-June 2009. While the number of licences obtained by completing Q-Ride peaked in January-June 2008 and was lower in January-June 2009 than in the rest of the period, there was no discernible trend in the number of licences obtained by Q-SAFE.

Prior to July 2008, between 76% and 84% of new motorcycle licences issued were R class licences. This fell to 49% in July-December 2008 and 20% in January-June 2009. This pattern is largely influenced by licences issued after completing Q-Ride. The percentage of new motorcycle licences issued after completing Q-SAFE that were R class licences remained reasonably consistent from January 2006 to June 2009 at between 42% and 55%.

### **3.2.4 Duration learner licence was held**

During the period under review, there was no minimum duration that the motorcycle learner licence was required to be held to obtain a licence by Q-Ride (except for those aged under 17 years) but a six-month minimum duration before a licence could be obtained by Q-SAFE. While there were some difficulties in clearly identifying those riders who obtained a licence by Q-SAFE in the transactions data, it was evident that most riders who obtained a licence by Q-Ride held a learner permit for a very short period of time. Of the riders who went on to obtain their licence by Q-Ride, some riders held a learner licence for only one day and half of

the riders held a learner licence for less than 26 days. The very small fraction of riders who obtained their licence by Q-SAFE held their learner licence for an average of about 210 days.

Younger riders appeared to hold their learner licence somewhat longer than older riders. Before 1 July 2007, learners aged under 17 held their learner licence for an average (median) of 196 days before obtaining their licence by Q-Ride or Q-SAFE. Before 1 July 2007, riders aged between 17 and 18 held their learner licence for a median of 57 days, with the medians for 18-20 year old riders and riders aged over 20 being 40 and 23 days, respectively. The somewhat longer duration that the learner licence was held by 18-20 year olds than older riders remained after both sets of changes to licensing requirements. It is not clear what underlies these observed differences, although it should be noted that the relatively longer duration for the younger riders is still a very short period of time compared to the requirements in other Australian jurisdictions.

### **3.2.5 Gender and age profiles of learners**

About three-quarters of learner licences were issued to males. Male learner licence holders were more likely to go on to obtain a provisional or open licence than females and were relatively more likely to obtain an R class licence than an RE licence. Of those riders who obtained their licence through Q-Ride, males held a learner licence for about half as long as females. These trends did not change over the period 1 January 2006 to 30 June 2009.

At the end of each year, almost half of the learner licence holders were aged 20-29 years, with about a quarter aged 30-39 years. The introduction on 1 July 2007 of the requirement for a motorcycle licence applicant to have held a car licence for 12 months led to an annual reduction in the number of learner licences issued to riders aged 17 years from 261 to zero (2.4% of learner licences) and for riders aged 17 years to under 18 years from 208 to zero (1.9% of learner licences). Thus, the overall effect of the changes in the de facto minimum age was relatively small.

For riders who went on to obtain a provisional or open licence, the median age at the time of obtaining a learner licence was 32 years prior to 1 July 2007 and 34 years after this date. Riders who did not go on to obtain a provisional or open licence during the analysis period were younger at the time of receiving a learner licence, with a median age of 21 prior to 1 July 2007, and 27 or 28 after this date. Thus, younger motorcycle learners are less likely to continue on to obtain a provisional or open licence.

The age profile of learners also differed according to whether licensing occurred by Q-Ride or Q-SAFE. Prior to 1 July 2007, the median age at obtaining the learner licence of riders who later obtained their licence by Q-SAFE was lower than for Q-Ride (20 versus 32). This effect had a large contribution from riders aged 17 and 18 and so virtually disappeared after 1 July 2007.

### **3.2.6 Geographical spread of learner riders**

Analyses of the geographical pattern of issuance of learner licences was undertaken to aid in the assessment of the feasibility of potential changes to the licensing system elsewhere in this project. Of the learner licences on record at the end of 2006, 2007 and 2008, 58.2% were

issued in the Queensland Transport Region of South East Queensland, 14.3% in Southern Region, 14.7% in Northern Region and 12.8% in Central Region. Only 4.6% of the motorcycle learner licences issued from 1 January 2006 to 30 June 2009 were issued at Police stations, with this percentage decreasing from 5.7% in 2006 to 3.3% in 2008 and 3.8% in the first half of 2009. There were relatively few learner licences issued in locations not serviced by Q-Ride providers.

### **3.3 CRASHES OF LEARNER AND NEWLY LICENSED MOTORCYCLISTS**

Learner riders can be easily identified in the crash data, but there are many more challenges in identifying newly licensed riders. As noted earlier in this report, during 2002-07 most newly licensed riders were issued with an open licence, rather than a provisional licence, and so cannot be distinguished from experienced riders in the crash data. Overall, there were 567 learner licence holders and 735 provisional licence holders in crashes in 2002-07. A specific data request undertaken by TMR for this research identified that 1755 motorcycle riders had held their licence less than 12 months prior to the crash date in the same period. Thus, about 400 newly licensed riders in crashes had open licences and so could not be identified in the crash data.

Other research has identified both age and inexperience as factors contributing to crashes of learner and newly licensed riders and drivers. For this reason, many of the analyses examined the 330 crashes of younger (aged under 25) and 237 crashes of older learners (aged 25 and over) separately. Given that half of learner licence applicants were aged over 34, these crash numbers suggest that younger learners had a higher crash rate than older learners, supporting the decision to analyse the two groups separately.

#### **3.3.1 Crash involvement, rates and trends**

In 2002-07, learners comprised 5.7% of motorcycle riders in crashes. Crashes of learner riders were more severe on average than those of other licensed riders, although under-reporting of less serious crashes could underlie this finding. Learners may be less likely to report less serious crashes because of concerns that they would be more likely to be penalised than more experienced riders. Learners were more likely to be judged at fault in crashes than other licensed riders. It is difficult to clearly measure the effects of the changes to motorcycle licensing from 1 July 2007, because crash data were only available for 6 months following this date. However, the analyses show that the percentage of riders in crashes who were learners fell from 5.9% to 3.8% and the percentage of learners in crashes of riders aged 17-20 fell from 20.9% to 12.7%. There was no evidence of an increase in unlicensed riders in crashes following the change in licensing.

An attempt to estimate the crash rate for learner riders was made based on a large number of assumptions detailed in Deliverable 1.2. The learner crash rate for 2006-07 was estimated at 3.7 crashes per 1,000 learner licence years but there is no simple method of determining the robustness of the estimate. It is more defensible, however, to estimate the crash rate for newly licensed riders. The overall annual crash rate for newly licensed riders in 2006 and 2007 was calculated as 22.3 crashes per 1,000 newly licensed riders. At this stage it is unclear whether there is truly a higher crash rate for newly licensed riders than learners

(which potentially could reflect more kilometres ridden per year per newly licensed rider than per learner or more risky riding by newly licensed riders) or whether the difference is an artefact of the different estimation methods.

### **3.3.2 Characteristics of crashes of learner riders**

The characteristics of crashes of learner riders were compared with those of other riders to provide some guidance on what should be included in a pre-learner program.

Some of the overall differences between learner and open riders were found to reflect differences in the age distributions of these riders, rather than licence status. For example, learner riders had relatively more crashes at night, but this reflected the greater proportion of learner riders who were younger and a trend of more crashes at night among younger riders (including open licence holders). Thus, the over-representation of learner riders in night-time crashes may reflect a general higher level of night-time riding among younger riders, rather than learners experiencing higher risks at night.

While there was no overall difference between learner and provisional riders compared with open licence holders in the proportion of single-vehicle crashes, there were some systematic differences in the types of crashes. Learner and provisional riders had relatively more crashes in speed zones of 50 km/h and lower and fewer in 100 and 100 km/h zones. Like open licence holders, older learners had more single vehicle crashes than younger learners, which together with more crashes in higher speed zones by older riders, suggests a pattern of more riding in higher speed zones by older riders. The configurations of crashes of younger and older learners supported this view.

By default, inexperience was coded as a contributing factor to crashes of learner and provisional licence holders much more commonly than for open licence holders. Alcohol or drugs and drink riding were more commonly coded for learner riders, suggesting that these issues need to be covered in a pre-learner program.

Inattention was also coded as a contributing factor more often for learner riders (and also for provisional riders to some extent). Some of the “inattention” crashes of learner riders potentially involved failures of hazard perception in terms of anticipating the behaviour of other vehicles (e.g. vehicles from same direction, manoeuvring), but almost half of the “inattention” crashes were off-path on straight or curve, suggesting a lack of vehicle control skills or misjudgement of speed. Speeding was coded as contributing to a larger proportion of learner and provisional rider crashes than crashes of open licence holders. Together, these results support the inclusion of hazard perception and risk management in a pre-learner program.

## **3.4 FURTHER ANALYSES AND DATA COLLECTION**

It would be useful to obtain more up-to-date crash data and reanalyse the crash involvement of learner and newly licensed riders for a longer period after 1 July 2008.

In terms of future data collections, it would be useful to have some information on the amount of riding by learner riders to gain a better understanding of their crash rate.

### **3.5 CONCLUSIONS FROM THE ANALYSIS OF LEARNER MOTORCYCLIST CRASH AND LICENSING DATA**

The very short duration that a motorcycle learner licence is held in Queensland for many riders that progress to licensing is an important finding from the research. Unlike some other Australian states (e.g. NSW and VIC) where a learner licence is required to be held for a minimum of three months, riders that progress to licensing in Queensland do not hold their learner licence for an extended period. The median duration a learner licence was held for was merely 27 days. Whilst Q-SAFE has a mandatory minimum learner period of 180 days, licensing through Q-Ride has no minimum learner period as a prerequisite. Generally the learner licence is only held for the amount of time it takes for riders to commence and progress through the competency-based training and assessment, which can be as little as one day. As can be seen in the findings, most applicants choose Q-Ride. This has potential implications for the subsequent safety of riders in that they may not practise skills and manoeuvres whilst holding a learner licence beyond what is required by the course. The median duration of holding a learner licence was generally not affected by the legislative changes. Overall, the minimal duration found for holding a motorcycle learner licence in Queensland before licensing means that the population of newly licensed riders are essentially ‘learners’ with very little practical riding experience. Q-Ride effectively functions as a pre-learner program given that trainees have held a learner licence for a very short period of time and are likely to have little or no riding experience as a learner. It should be noted that Q-SAFE has no minimum hours of riding, so it also does not guarantee that experience is gained during the minimum six month learner period it requires.

The introduction of the requirement to hold a car licence for at least a year before obtaining a motorcycle licence has affected only a very small proportion of motorcycle learners (less than 5%). The introduction of the requirement to hold an RE licence for 12 months prior to obtaining an R licence appears to have had a much greater effect on the patterns of motorcycle licensing.

Learner riders can be easily identified in the crash data, but newly licensed riders are hard to identify because many are granted open, rather than provisional, licences. Learner riders appear to be involved in more severe crashes and to be more often at fault than fully-licensed riders. Some of the differences between learner riders and fully-licensed riders appear to reflect differences in riding patterns of younger riders, rather than increased risks relating to inexperience. The analysis of contributing factors in learner rider crashes suggests that hazard perception and risk management (in terms of speed and alcohol and drugs) should be included in a pre-learner program. However, the analyses of licensing data show that there is only a very short time between the issue of the learner licence and the provisional or open licence and that this poses serious constraints upon delivery of a pre-learner program.

## **4. OBSERVATIONS OF EXISTING PRE-LEARNER TRAINING IN SELECTED JURISDICTIONS**

This chapter presents information from the report *Observations of existing pre-learner training in selected jurisdictions, Deliverable 1.3*. It was considered pertinent as part of the overall program of research into pre-learner programs to observe training in select states to inform the development of any new pre-learner program in Queensland. To achieve this aim, rider training centres in NSW and Victoria were visited by members of the research team to observe programs being conducted. This chapter describes each of the two observed programs, highlighting potential advantages and disadvantages of each for application in the Queensland context.

### **4.1 OBSERVATIONS IN NSW**

Pre-learner training in NSW is mandatory (with some exemptions for remote areas) and standardised across the state, with private training organisations contracted to deliver the Roads and Traffic Authority (RTA) program. The course is delivered over two days, each of 3.5 hours duration. Overall, the course provided a basic level of skill and knowledge for riders and is designed to suit those who have never ridden before. It was well structured to incrementally guide trainees through basic riding manoeuvres (e.g. finding the friction point and moving off, braking, changing gears) and provided some information regarding common hazards. Riders were unobtrusively assessed by the instructor as they progressively met each of the educational outcomes during the course. Teaching techniques such as group discussion and modelling of correct skills by the instructor appeared to work well for riders at this pre-learner stage.

### **4.2 OBSERVATIONS IN VICTORIA**

Rider training in Victoria does not follow a tightly regulated, standardised curriculum and it is not mandatory (although the participation rate is very high, which may stem from a perception that it is mandatory or that it is easier to pass the learner and licence tests if training is completed). The licensing system is regulated by VicRoads and training and assessment outsourced to registered providers, however there is no single curriculum that all providers must follow. Hence, whilst adhering to a designated set of training objectives and assessment requirements, the exact curriculum for each provider varies from other providers. Riders are assessed by instructors with a summative off-road skills test.

The two day pre-learner course observed in Victoria comprised 12 hours of training inclusive of test time and was conducted over consecutive days. Whilst the 12 hour course offered by the nominated training provider is ideally suited to riders with little or no previous experience, more experienced riders may choose to complete only the second day of the course, then be assessed.

### 4.3 SIMILARITIES AND DIFFERENCES IN APPROACHES

There were several similarities noted between the courses in the two states:

- almost all learner permit applicants complete pre-learner training in each state;
- training occurs exclusively off road (i.e. bitumen training range);
- all training and assessment is outsourced to private organisations who are accredited by the licensing authority; and
- once a learner permit is obtained, a minimum learner period of 3 months applies in both states before progression to the next licensing stage.

Whilst these similarities were noted and the course content for pre-learner training appears to be largely the same in the two states, there were several differences noted between the two courses, with some additional differences noted that are artefacts of the licensing systems:

- there was more classroom based training in the Victorian course, with the additional use of aids such as PowerPoint presentations and riding videos;
- the NSW course included a simulated road ride that was not included in the Victorian course;
- training is mandatory in NSW (however there is a remote area exemption) while it is voluntary in Victoria;
- in NSW there is a standardised 7 hour course for all riders across all service providers. Course curriculum and duration may vary in Victoria depending on previous riding experience and which provider is selected;
- training is subsidised by the licensing authority in NSW but not in Victoria. NSW pre-learner course \$76, while costs in Victoria range from roughly \$200 to \$300 depending on the provider;
- there is government administration of course booking in NSW while there is commercial competition between providers who market directly to the public in Victoria; and
- Victoria has a summative skills test as assessment, whilst in NSW the applicants are assessed as they master each objective during pre-learner training (i.e. akin to competency-based training and assessment).

It is therefore apparent that most differences lie between the licensing systems more so than the training content *per se*. This issue should primarily guide future discussions with Queensland stakeholders regarding implementation options for a pre-learner program.

Based on the information gathered in this study it was concluded that the NSW system may provide the most useful framework for developing future *pre-learner* training and assessment in Queensland because the centralised scheme appears to result in more consistency of programs and avoids many potential issues related to competition among private providers. However, *pre-licence* training and assessment may require further investigation.

The NSW course is subsidised which is a matter for consideration for the Queensland context with regard to how this may influence the uptake of riding versus a more costly system that may have benefits for reduced crashes through exposure control (i.e., people electing not to ride).

Components of the NSW pre-learner phase that require *further development* for their application in the Queensland context are:

- the simulated road ride (does not currently progress beyond 2<sup>nd</sup> gear and so is limited in the extent to which it teaches real on-road riding skills); and
- the relatively limited time spent on hazard perception and risk taking issues.

In order to progress toward an improved motorcycle learner and licence scheme it is worth investigating the plausibility of introducing a pre-learner motorcycle licensing and training scheme within Queensland.

## **5. STAKEHOLDER INTERVIEWS REGARDING PRE-LEARNER MOTORCYCLE RIDER PROGRAMS**

This section presents information from stakeholder interviews regarding pre-learner motorcycle rider programs, Deliverable 1.4a (round one interviews) and Deliverable 1.4b (round two interviews). The aim of this study was to examine the views and expert opinions of a sample of Q-Ride rider trainers and TMR licensing examiners regarding potential content, delivery and operational issues for the development of pre-learner motorcycle rider programs in Queensland.

### **5.1 STAKEHOLDER INTERVIEW METHODOLOGY**

#### **5.1.1 Participants**

Participants in the first round of interviews were 7 Q-Ride Registered Service Providers [RSPs], 12 Accredited Rider Trainers [ARTs]) and 14 TMR driving examiners (3 of whom were Principal Advisor Driver Assessment officers (PADAs)). All participants were over the age of 35 years with a range of years of motorcycle riding experience and were recruited from across Queensland.

The second round of interviews involved 5 TMR regional staff, 7 RSPs and ARTs from Cairns, Mackay, Toowoomba and the Sunshine Coast, and representatives of the Motorcycle Riders Association (MRA) Queensland Chapter; Queensland Police Service motorcycling and/or rider training (2); and the RACQ (2).

The research procedures adhered to those approved by the Queensland University of Technology Human Research Ethics Committee. Participants were provided an information sheet and all signed a consent form and volunteered their time to participate in the study.

#### **5.1.2 Recruitment Procedure**

Recruitment of Q-Ride experts involved contacting RSPs from across the state including coverage of rural, remote and metropolitan areas. Initial contact involved phoning the RSP with an invitation to participate or request that they invite an ART in their organisation to participate. Participants were provided with the key interview questions at this time via email such that they had at least one day to peruse the prompts.

The recruitment of TMR assessors was assisted by TMR's Coordination Unit, regional managers and PADAs. Those interested in participation were sent an email that included the key interview questions so that prospective participants could consider the central issues prior to interview.

### 5.1.3 Procedure of Discussions

All round one discussions were face-to-face and held at the primary location of the participant in September and October 2009. Discussions were facilitated by one of two experienced facilitators who were also active motorcycle riders. Most of the discussions were one-to-one except at the request of either the RSP or PADA when there were small group interviews conducted. The interviews ranged in length from 19 to 52 minutes and were digitally recorded (audio). Participants were instructed in an initial introduction that their opinion was valued and encouraged to share their thoughts. The discussions were guided by semi-structured questions that explored the key constructs of interest: pre-learner motorcycle rider training, and addressing risk taking and hazard perception as part of the licensing system (presented in Table 2). Additional issues specific to hazard perception were discussed however the details of this additional component are not discussed in this report but are contained in the report Training & Licensing Interventions for Risk Taking and Hazard Perception for Motorcyclists (Haworth, Rowden, Wishart, Buckley & Watson, 2011). In general, the Q-Ride participants spoke for longer and gave more detailed responses than Q-SAFE participants.

**Table 2 Prompts used for the discussions on pre-learner training and licensing**

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Prompt items
1. Do you think there is a need for some sort of safety/training program before potential riders qualify for their learners and if so what would it be?
2. How should this be delivered/implemented?
3. Would it need to be different in city areas versus regional areas and if so how?
4. What would be some of the problems you could see with the future implementation of learner training programs?
5. What other skills beside motorcycle control skills do you think new riders need?

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In the round one interviews, few participants took a global view of motorcycle training and licensing as a complete system. Therefore, the core questions were reframed in the second round of interviews to encourage consideration of issues primarily associated with possible implementation of pre-learner programs across Queensland as shown in Table 3.

**Table 3. Interview prompts for pre-learner training implementation**

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Prompt items

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1. If rider training to obtain a motorcycle *learner* permit in Queensland was introduced, should it be mandatory or voluntary and why?
  2. Should there be some form of assessment for pre-learner training and, if so, should this be a test *or* should assessment be competency-based, and why / why not?
  3. Who should deliver pre-learner training and / or assess riders (e.g. should it be outsourced to registered service providers, or should TMR play some role in delivery *or* assessment)?
  4. Should a set standardised curriculum be delivered or should each provider develop their own if outsourced? Please explain the advantages of this approach.
  5. Would computer-based training and / or assessment be suitable for some pre-learner tasks?
  6. Are there any other challenges you see for implementing pre-learner rider training in Queensland?
- 

## **5.2 FINDINGS FROM THE INTERVIEWS**

Analyses of the discussions revealed themes and codes related to the addition of extra licensing requirements or a mandatory requirement for training prior to the current learner stage. A number of issues were raised within each of these three areas and they are discussed in turn below.

### **5.2.1 Support for Implementation**

Largely there was support for the implementation of a pre-learner motorcycle rider program in Queensland. The majority of participants agreed that additional requirements to be incorporated into the licensing system prior to a motorcyclist obtaining a learners permit should be implemented. Multiple participants agreed that the current five question written test is an inadequate step to precede riding on-road with supervision from an individual who may not be a qualified trainer. Further, the two individuals who indicated the current system was adequate later identified specific additions to the current licensing system that may be applied to the pre-learner stage of licensing.

### **5.2.2 Key Content Issues**

Key issues were able to be identified for pre-learner rider training as perceived by rider trainers and government licence testing officers and there was overall consistency with the four key areas of: rider skills; roadcraft; knowledge of road rules; and hazard perception. Existing programs in comparable jurisdictions generally include training to: improve basic riding skills (e.g. balance, manoeuvring, clutch control); and improve basic knowledge of key

safety issues and issues relating to roadcraft (rather than the actual application of roadcraft on public roads).

### **5.2.3 Key Process Issues**

Whilst key issues relating to the delivery of pre-learner rider training as perceived by rider trainers and government licence testing officers were reported, there was disparity in perspectives. Different participants indicated there was value in classroom, off-road and on-road components, although overall the most consensus regarded undertaking a combined approach with a need to develop some skills off-road before any on-road component. The combination of classroom and off-road training is consistent with pre-learner training programs that operate in other jurisdictions.

Primarily participants focused on training aspects of a pre-learner program rather than testing components. Key issues in delivery also included the amount of time spent on training and who might deliver the training. Whilst the focus on training is most likely a result of the framing of the prompts, it is of note that the issue of testing was rarely raised. In the context of potential conflict of interest, a TMR participant indicated that an RSP may have a “vested interest in passing people.” Some RSPs recognised that testing is complicated and whilst multiple choice questions may be easy to assess, there may be concerns regarding the accuracy of assessing an individual’s skills.

### **5.2.4 Deliverer**

The issue of responsibility for developing and for subsequently managing the quality of any training was raised. Participants generally recognised that there was a role for government however the extent of this role was less clear. The role of deliverer of any training was suggested to depend somewhat on the nature of the training. There was much debate about the role of government in designing material to be implemented by RSPs and how much RSPs could be free to adapt the curriculum based on guidelines and there was debate about the role of government in ensuring quality control. In general, RSPs were more in favour of industry developing programs, while TMR participants were more in favour of government developing and regulating programs.

### **5.2.5 Location of Training: Rural versus Metropolitan Areas**

Participants generally agreed that there are challenges with implementing one program across the state. In particular, participants agreed that the skills needed to avoid and respond to hazards were the same despite the hazard itself perhaps being different in rural versus metropolitan areas. They also pointed out that the learner permit allowed riders to ride in any part of the state and so they needed to be competent across a wide range of riding scenarios. Therefore rural and metropolitan training needed to cover riding in both contexts.

### **5.2.6 Alignment between Participant Groups**

One of the aims of this qualitative phase of the research was to assess the level of alignment between the perceptions of rider trainers and testing officers and what has been previously

identified in the literature as key issues for pre-learner rider training. This has been done by comparing the results from the interviews with the findings of the literature review undertaken as Deliverable 1.1 of this research program (Rowden & Haworth, 2009b), although it is noted that the literature review concluded that there is a fundamental difficulty in identifying best practice in pre-learner motorcycle programs due to the lack of rigorous evaluations of the extent to which the programs achieve their stated aims. Thus, there are no definitive research findings regarding best practice in pre-learner motorcycle training programs against which the interview material can be compared. Nevertheless, the extent to which the issues raised in the interviews are aligned with the conclusions of the literature review is discussed below.

The literature review considered that off-road training is necessary at the pre-learner stage to allow the most basic vehicle control and road system knowledge to be acquired under the safest conditions. This finding is consistent with the sentiments of the majority of interviewees; as many reported that there should be an off-road component, either with a practical component or in the classroom. Many participants described a need to include a combination of classroom, off-road and on-road training, like the current Q-Ride approach.

In regard to content, the literature review concluded from the limited information available that basic riding skills such as changing gears, cornering, and braking would be a minimal requirement of a pre-learner motorcycle program in addition to issues such as how to use mirrors, indicators, and maintain tyre pressure. The literature review suggested that facilitated discussion of risk taking and appropriate management strategies may instil a sense of appropriate behaviour in riders from the outset. The interviewees identified similar content to be covered.

The literature review suggested that a rider handbook has the potential to provide guidance by describing vehicle control and roadcraft issues and techniques, suggesting exercises, and emphasising the importance of protective gear and maintenance. DVDs and other online products can help extend training beyond the training venue. Only a small number of interviewees nominated delivery methods other than face-to-face training, and generally considered these approaches only for riders who were unable to access training providers.

The literature review concluded that it probably takes about four days of training to take a completely novice rider to a stage at which they could be considered adequately safe to be allowed to ride unsupervised on the road (Haworth & Smith, 1999). The interviewees varied in their comments regarding the appropriate length of a pre-learner program. Many of the interviewees appeared to use Q-Ride training as a benchmark when making decisions about the length of a pre-learner program. Some interviewees seemed to consider that it should be shorter than a pre-licence course (as exemplified by Q-Ride) and therefore should be at least half a day in duration. Many considered it should ideally be longer but were concerned whether this was viable from a business viewpoint.

The literature review and the interviews both identified the interactive nature of the components of the training/licensing/testing system as an important issue to be considered when developing pre-learner motorcycle programs. A change to pre-learner programs will have consequences for later stages of licensing. A considerable number of interviewees

expressed the view that most of the current Q-Ride program would be applicable as a pre-learner program and if that occurred, then the content of the pre-licence training component would then need to be changed. It is interesting to note that the interviewees did not express the opinion that the Q-Ride program is a de facto pre-learner program, given that most riders have little or no on-road riding between obtaining the learner permit and commencing the Q-Ride course.

The literature review identified that compulsory training appears to lead to larger crash reductions than voluntary training. Compulsory training may act to deter potential riders from applying for a licence (because of the effort involved in completing the training), thereby discouraging riding and, hence, reducing crashes. The interviewees appeared to assume that any pre-learner program would be compulsory, much like the current knowledge test is compulsory. It would be useful in further research to investigate whether the economic viability of a pre-learner program would require it to be compulsory (this might also depend on what other changes were made to the licensing system, as noted in the previous paragraph).

In summary, there was general alignment between the findings of the literature review and the responses provided by interview participants, suggesting that interview participants are aware of the wider issues in their field.

### **5.2.7 How pre-learner training may be best implemented if introduced**

Further to the initial round of stakeholder interviews conducted in 2009 which found general support for the introduction of pre-learner training in Queensland, the aim of this round of interviews was to gauge views regarding how pre-learner training may be best implemented if introduced. As found in the first round of interviews, stakeholder opinions varied on many issues in this current round of interviews. However, there appeared to be a consensus among most stakeholders on several issues in this round of interviews:

- pre-learner training should be mandatory if introduced;
- program delivery of practical riding components should be conducted off-road;
- a competency-based training and assessment regime is preferred with no set duration; and
- training and assessment should be outsourced to suitably qualified personnel (e.g. to RSPs) rather than directly involving TMR staff.

The extent to which these views may be influenced by commercial interests was not explicitly examined in the interviews.

Whilst stakeholders appeared to be generally unfamiliar with the specifics of existing pre-learner programs in other Australian states, the above findings suggest that existing models for pre-learner training (e.g. NSW or Victoria) may be resisted if introduced in Queensland, particularly by existing Q-Ride RSPs, as these models do not readily align with stakeholder perceptions. Aspects of existing models were incorporated into the stakeholder interview prompts in an endeavour to elucidate why or why not such issues were considered of value

for application within the Queensland context. However, unfortunately little elaboration was evident in this regard by stakeholders. That is, they often readily expressed opinions without providing further details to support their views.

Options regarding mandatory versus voluntary training were rarely elaborated upon; such as if training was voluntary what alternate assessment would be viable and who would conduct it. Issues of equity were mentioned and most participants acknowledged that it would be difficult to deliver a mandatory program in sparsely populated regional areas; unfortunately no solutions were offered apart from the mention of a possible exemption for relevant applicants where it would not be commercially viable for RSPs to be located. The finding that stakeholders generally supported mandatory pre-learner training reflected the perceived importance of ensuring ALL riders have basic vehicle-control skills at the very least before commencing on-road riding. The importance of addressing rider attitudes was also often mentioned.

Whilst several RSPs spoke of a standardised curriculum, it was generally evident from their comments that they were referring to standardising assessment only, as is currently the case with Q-Ride. Many participants mentioned the need for tight regulation and auditing of a pre-learner program to ensure assessment standards are met and unscrupulous operators did not prosper, however the potential benefits of a standardised curriculum in terms of a set delivery time or set costs were rarely discussed. Rather, most RSPs supported competency-based training and assessment to accommodate individual needs and timeframes, which is associated with open-ended cost.

There was limited support for computer-based training applications. This may be because some stakeholders were considering the applicability of computer-based training practical skills, rather than in conjunction with practical training.

Many participants had little or incorrect knowledge and understanding of training and licensing beyond current practice in Queensland. This was also found in the initial round of interviews where many participants essentially prescribed elements of Q-Ride as the basis for a pre-learner training program. In the current round of interviews it appeared that participants did not readily conceptualise training and assessment across several temporal stages (e.g. a graduated system) nor mention the possible benefits this may bring in terms of learning or subsequent safety for riders. On the whole, this suggests that whilst awareness of the needs to improve novice rider safety exists, extensive resources would need to be allocated to training of RSPs and ARTs prior to implementation of any program. Similarly, careful communication of any measures to the public prior to implementation would be required to gain community support.

### **5.3 SUMMARY AND CONCLUSIONS FROM THE STAKEHOLDER INTERVIEWS**

The aim of this Deliverable was to examine the views and expert opinions of a sample of Q-Ride rider trainers and TMR licensing examiners regarding potential content, delivery and operational issues for the development of pre-learner motorcycle rider programs in Queensland. The interviews found general support for introduction of a pre-learner training

program, with detailed comments being offered regarding potential content (particularly by Q-Ride participants). Participants thought that the content should be similar in rural and metropolitan areas and that it should include both vehicle handling skills and traffic skills. One of the issues not resolved was which content topics/areas should be left for the licensing training.

The second round interviews found that the development of a pre-learner licensing package modelled on current Q-Ride delivery practices such as competency-based training and assessment outsourced to accredited organisations appears to be most favoured by current stakeholders. However, implementation of such a program would differ from Q-Ride in regard to the mandatory requirement for training. The views obtained from this study are mainly consistent with implementation issues that arose from the first round of interviews (where discussed), however further clarified that whilst on-road training and practice is valued, off-road training is the only practical approach for pre-learner programs.

Stakeholder support for the possible future introduction of pre-learner training in Queensland is needed. The results found in this study indicate that ongoing efforts are required to inform stakeholders of broader issues relevant to pre-learner training as well as continued consultation with RSPs regarding final program development.

## 6. IDENTIFICATION OF ALTERNATIVE APPROACHES TO MOTORCYCLE RIDER PROGRAMS

This chapter presents information from the report *Development of a preliminary pre-learner motorcycle rider program*, Deliverable 1.5. The aim is to outline a potential approach to the staged implementation of pre-learner training initiatives for motorcyclists in Queensland.

At present the predominant Queensland motorcycle licensing system Q-Ride does not include a minimum learner period, which therefore limits the potential for introduction of face-to-face pre-learner training that currently exists in other states. An analysis of licensing data found that the median duration a learner licence is held is 27 days. Therefore, without legislative change to introduce a minimum learner period for Q-Ride, pre-learner training and Q-Ride could be separated by as little as one day which is effectively the same as not having a learner period. However, in the current system there is scope for introduction of a computer-based safety program to replace the existing road rules knowledge test applied to obtain a motorcycle learner licence.

CARRS-Q developed an optimal model for motorcycle licensing and training and then presented three pragmatic options for implementation within Queensland to TMR. These options varied in prospective effectiveness for the subsequent safety of learner riders, primarily as a function of their compatibility with existing licensing systems and potential level of acceptance by stakeholders:

**Option 1** was a mandatory face-to-face program which is likely to be supported by the rider training and testing industry and was expected to have broad reach. However, there is insufficient research evidence of likely effectiveness to justify the mandatory requirement and the cost to all learner riders.

**Option 2** was a voluntary face-to-face program which is likely to be supported by the rider training and testing industry but have limited reach because take-up rates are likely to be low.

**Option 3** was a computer-based module that would replace the current motorcycle learner licence knowledge test and, for maximum effectiveness, be mandatory.

Discussions with TMR revealed a preference for a staged approach to introducing pre-learner initiatives that provides the opportunity for trialling lower cost options that can be implemented without legislative change prior to the gradual implementation of those initiatives that require more significant resources and justification for implication. Thus, further development of Option 3 was undertaken.

Unfortunately, the proposed computer-based module cannot ensure that basic riding skills are obtained prior to the learner licence being issued, however it incorporates components addressing factors recognised in the literature as related to high risk; risk taking, hazard perception and protective clothing. Option 3 is compatible with both Q-Ride and Q-SAFE. Learner applicants could complete the electronic module then obtain a learner licence to

progress to Q-Ride (immediately if they choose) or progress to Q-SAFE testing following the current six month minimum learner period applied to that licensing stream. One particular benefit of Option 3 is that potentially it can be applied in remote area, whereas face-to-face programs rely on services being provided in these areas (which currently do not exist for Q-Ride).

It is envisaged and encouraged that face-to-face training would be introduced with the relevant legislative changes at a later date. The effect on exposure (i.e. the uptake of motorcycling) of the introduction of any particular program cannot be conclusively determined, however it is likely that a subsidised program may result in higher uptake rates (and potentially lower rates of those who progress to licensing).

## **6.1 COMPONENTS OF A COMPUTER-BASED PRE-LEARNER PROGRAM**

Specific content should be suitable for riders with minimal or no previous on road riding experience, while acknowledging that riders will have a minimum of 12 months driving experience and so will be familiar with road rules etc. Research by Rowden, Watson and Haworth (2007) found that riders often required some actual riding experience before some concepts of defensive riding actually made sense to them. Therefore, concepts and messages should be reasonably simplistic and piloted with the target audience prior to final development. They should also be framed to engage potential riders in the process of personal reflection regarding their specific characteristics and circumstances (e.g. personality, type of motorcycle, reasons for riding, social groups, type of riding) and how motorcycling risks may apply to them rather than ‘other’ riders. It is recommended that questions, scenarios, and specific courses of action for riders should be further refined in consultation with industry experts.

A five-step program was developed with a rationale for the inclusion of each objective, how each step is linked to specific learning outcomes, and program content to achieve this. In line with the research evidence, the interactive nature of the program is central to achieving the desired learning outcomes. For similar reasons, short exercises and feedback are included rather than just presentation of information. The five steps are:

Step 1 - Introduce the program & engage students in the learning process

Step 2 - Provide knowledge of common motorcycling hazards, correct road positioning, and survival space

Step 3 - Enhance understanding of responsible riding attitude and self-management strategies to reduce risky riding behaviours.

Step 4 - Foster an appreciation of the differences between riding off-road and riding in the traffic environment for different types of motorcycles (i.e. transition to the road).

Step 5 – Create an understanding of the benefits of different types of protective clothing and strategies to overcome potential barriers for non-use (e.g. heat)

## **6.2 FEEDBACK ON THE PRELIMINARY PACKAGE**

A presentation of the results from the Deliverable 1 tasks, culminating in the development of potential options for a pre-learner training package, was made to internal TMR stakeholders in July 2011. After the presentation, the group discussed opportunities and barriers for the implementation of a pre-learner training package in Queensland. The stakeholders recommended not proceeding with the further development of a pre-learner package at this stage, based upon the current lack of evidence supporting the effectiveness of the pre-learner package options.

## 7. DISCUSSION AND CONCLUSIONS

Pre-learner training aims to ensure that the rider obtains a level of basic riding knowledge and skills before obtaining a learner permit and riding on the road. The potential for improving the motorcycle learner and licence scheme by introducing a pre-learner motorcycle licensing and training scheme within Queensland was investigated in this deliverable by means of a literature review, analysis of learner motorcyclist crash and licensing data, and the development of a potential pre-learner motorcycle rider program.

The literature review identified that the safety of learner riders is a significant issue and that learner motorcycle licensing systems are not able to provide the level of safety that learner car licensing systems provide. The best practice models for motorcycle licensing incorporate training before riding on the road as a learner. With the exception of some parts of Europe, the current pre-learner programs for motorcyclists focus predominantly on providing basic skills training in a comparatively safe off-road environment. They vary in terms of whether they are mandatory or voluntary, the duration of training, and assessment protocols but there is no specific evidence for the effectiveness of any particular program. Pre-licence programs only have widespread reach where they are mandatory or where they are perceived by riders to facilitate passing an assessment that is required to receive the learner permit. Thus, pre-licence programs cannot be divorced from the structure of the licensing system.

The analysis of the licensing data identified that there is no effective learner licence period for most new Queensland motorcyclists, with half of those obtaining a licence having held a learner licence for less than 27 days. This limited time as a learner poses a significant constraint in implementing a pre-learner program under the current licensing requirements. The crash data shows that learners comprised 5.7% of motorcycle riders in crashes in 2002-07, with crashes being more severe and learners being more likely to be at fault. The limited available data suggested a small reduction in learner rider crashes and no evidence of an increase in unlicensed riders in crashes following the change in licensing. The learner crash rate for 2006-07 was estimated at 3.7 crashes per 1,000 learner licence years but there is no simple method of determining the robustness of the estimate. The overall annual crash rate for newly licensed riders in 2006 and 2007 was calculated as 22.3 crashes per 1,000 newly licensed riders. It is unclear whether there is truly a higher crash rate for newly licensed riders than learners (which potentially could reflect more kilometres ridden per year per newly licensed rider than per learner or more risky riding by newly licensed riders) or whether the difference is an artefact of the different estimation methods.

The observations of existing pre-learner training identified that the NSW system provides a useful framework if mandatory pre-learner training were to be considered in Queensland.

The interviews with Q-Ride rider trainers and TMR licensing examiners found general support for introduction of a pre-learner training program. Participants thought that the content should be similar in rural and metropolitan areas and that it should include both

vehicle handling skills and traffic skills. Most favoured a pre-learner licensing package modelled on current Q-Ride delivery practices such as competency-based training and assessment outsourced to accredited organisations. However, they believed that the requirement to undertake pre-learner training should be mandatory.

The interstate experience and the stakeholder consultation suggested that a mandatory face-to-face approach to pre-learner training was preferred. However, given that such an approach was considered unlikely to be adopted by government, attention was given to the development of a computer-based module that could replace the current motorcycle learner licence knowledge test and could be implemented as a mandatory requirement. This option would also be compatible with both Q-Ride and Q-SAFE and could be applied in remote areas, whereas face-to-face programs would rely on services being provided in these areas (which currently do not exist for Q-Ride). The content of the module could also be used in the development of a face-to-face program at a later stage if desired.

A five-step program suitable for computer delivery was developed including a rationale for the inclusion of each objective, how each step is linked to specific learning outcomes, and program content to achieve this. A presentation of the results from the Deliverable 1 tasks, culminating in the development of the potential options for a pre-learner training package, was made to internal TMR stakeholders in July 2011. The stakeholders recommended not proceeding with the further development of a pre-learner package at this stage, based upon the current lack of evidence supporting the effectiveness of the pre-learner package options.

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