THE MOTORCYCLE SAFETY LEVY: PROVIDING AN INTEGRATED PROGRAM TO IMPROVE MOTORCYCLIST SAFETY IN VICTORIA, AUSTRALIA

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ABSTRACT

A Motorcycle Safety Levy was introduced in Victoria in 2002 in recognition of the vulnerability of motorcyclists and their over-representation in road trauma statistics. The Levy enables the implementation of a program of road safety initiatives that address the key issues causing trauma to motorcyclists. Since implementation of the Levy, alongside the Victorian road safety strategy, motorcycle fatalities have decreased in Victoria, whilst increasing across the rest of Australia.

A strategic framework to guide expenditure of Levy funds was developed with input from Monash University Accident Research Centre, motorcycle safety professionals, and members of the Victorian Motorcycle Advisory Council. Four priority areas were identified: engineering and technology; education and training; enhanced data collection and analysis; and enforcement.

One of the most important initiatives to be funded by the Levy is road improvements at blackspot locations where there is a history of motorcycle crashes. The Levy is also being used to develop and implement education, training and research projects. These are expected to provide improvements in rider safety over the longer term.

This paper will provide an overview of the Motorcycle Safety Levy and the program of initiatives it funds and discuss the expected and potential benefits for motorcyclist safety in Victoria.

1. INTRODUCTION

Motorcycle (including scooter) riding is becoming increasingly popular as both a mode of transport and a recreational activity within Victoria. Although new motorcycle sales fell in 2009 and again in 2010 after reaching a peak in 2008 [1], registrations have steadily increased. Motorcycles are seen by many as efficient transport modes that can reduce traffic congestion and are more economical and environmentally friendly than cars. However, motorcyclists are over-represented in road trauma statistics. In Victoria, motorcyclists comprise 3.7% of all vehicle registrations but 13% of fatalities and 14% of all serious injuries.

In October 2002, in response to the increasing numbers of a motorcyclists being seriously and fatally injured, a Motorcycle Safety Levy was incorporated into the Transport Accident Commission (TAC) premium on motorcycle registrations (TAC is the compulsory third party personal injury insurer for transport accidents in Victoria). The aim of the Levy is to enable a greater level of funds to be spent on improving motorcyclist safety. Levy funds enable a program of road safety initiatives that address key issues causing trauma to motorcyclists. This includes improvements to high risk roads, popular with motorcyclists which are not always prioritised for funding under State and Federal funding for road programs. The Levy funded program is conducted over and above the motorcycle safety programs implemented by Victoria's road safety authorities.

In August 2009, *Victoria's Road Safety and Transport Strategic Action Plan for Powered Two Wheelers 2009-2013* [2] was released. The plan combined both road safety and mobility initiatives.

This paper will provide an overview of the Motorcycle Safety Levy and the program of initiatives it funds and discuss the expected and potential benefits for motorcyclist safety in Victoria.

2. DISCUSSION

2.1. Rationale for the Levy - Motorcycle Crashes in Victoria

Across Australia motorcycle fatalities have been gradually increasing. An average of 236 riders has been fatally injured each year over the past five years. In 2010, motorcycle riders and pillion passengers comprised 21% of the road toll in Australia.

Many positive achievements have been made over recent years to reduce the number of serious casualties on Victorian roads. In particular, reduced speed limits, improved vehicle design and safety features, and changes to infrastructure such as wire rope barriers and blackspot programs have reduced both the crash risk and injury severity for vehicle occupants.

However, motorcyclists have not benefited to the same degree from these developments. The unprotected nature of motorcyclists makes them vulnerable to injury in the event of a crash. In Victoria, between 2005 and 2009 there were 221 fatalities, 5038 serious injuries and 5615 other injuries to motorcycle riders and their pillion passengers. In this period motorcyclists comprised 13% of the road toll, with 46 riders fatally injured and 924 riders seriously injured on average per year [3]. In comparison, motorcycle registrations comprise only 3.7% of all registered vehicles. The average number of annual fatal and serious injury crashes per 1,000 registered motorcycles for the period 2005 to 2009 was 8.4. It has been estimated that motorcycle crashes cost Victoria an average of $372 million per year [4].

Over the past ten years in Victoria the number of registrations and serious casualties have both been increasing steadily.

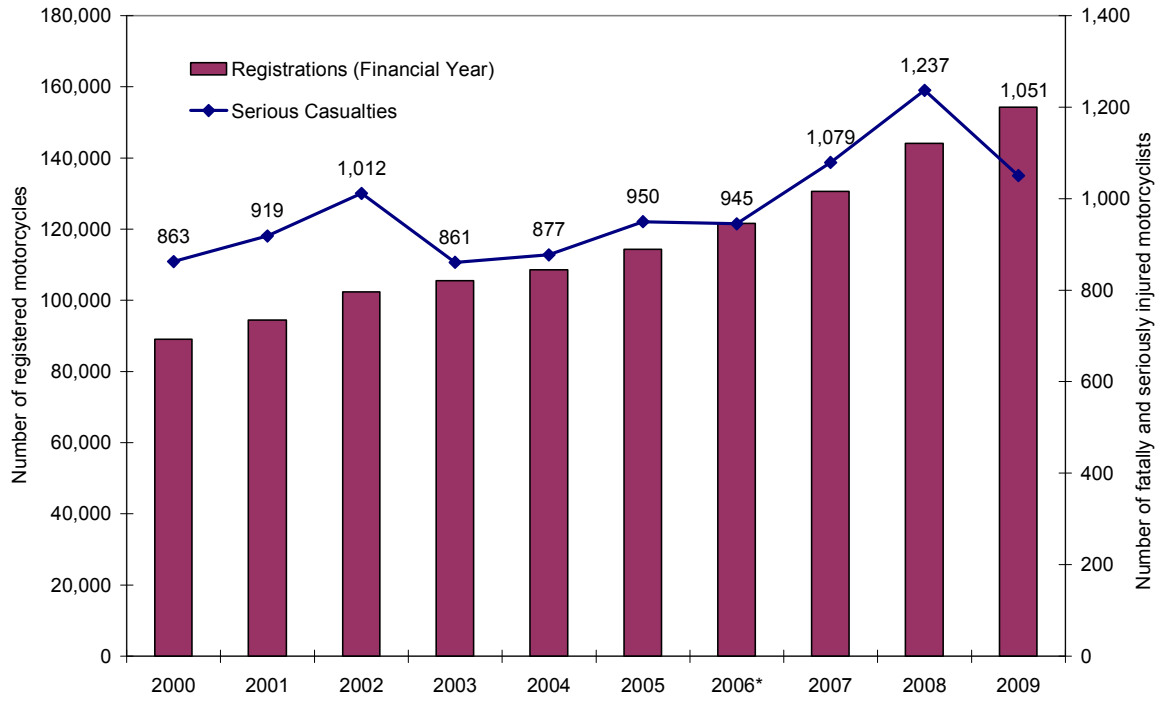

Figure 1 - Motorcycle rider serious casualties (inc fatalities) and registrations in Victoria (2000 - 2009).

2.2. The Motorcycle Safety Levy

The Levy is included as part of the TAC premium on new motorcycle registrations and registration renewals. A Levy is applied to motorcycles registered for on-road use that are of 126cc capacity and greater. It does not apply to 'recreation registered' motorcycles or special category motorcycles such as vintage registrations. The amount is revised according to the consumer price index (CPI) change each year. Any motorcyclist with multiple bikes registered in their name is only required to pay the Levy for one motorcycle (this does not apply to companies registering multiple bikes). The TAC insurance premium with the levy included does not cover the most conservative estimate of the injury costs associated with motorcycle crashes.

Between October 2002 and December 2010, $38.3 million was raised by the Levy, approximately $5 million per year. At the end of December 2010, $40.8 million had been spent on or committed to motorcycle specific road safety initiatives.

2.3. Process for Program Development

Initially a strategic framework to guide expenditure of Levy funds was developed with input from the Monash University Accident Research Centre (MUARC), motorcycle safety professionals, and members of the Victorian Motorcycle Advisory Council (VMAC). The VMAC is comprised of individuals from motorcycle rider groups, manufacturers, retailers and rider training organisations as well as VicRoads, the TAC, the Victoria Police, Royal Automobile Club of Victoria (RACV) and MUARC. The VMAC met regularly to provide advice to the Victorian Government on motorcycling issues. This framework guided how Levy funds were allocated to projects.

2.4. Increasing knowledge and understanding

2.4.1. Hazard perception and responding project.

The time taken to respond to hazards is strongly associated with crash involvement [5]. Hazard perception training has, therefore, been identified as one of the key components that should be incorporated into a motorcycle training program [6]. Earlier stages of this project involved a review of the literature on hazard perception and responding, an examination of the best training methods for teaching motorcycle riders hazard perception and responding skills, and research to determine the critical aspects of hazard perception and how riders with different levels of experience anticipate and respond to hazards. Findings indicated that 'motorcycle riders were faster to respond to road-user-based hazards, and detected a greater number of these hazards than car drivers' [7]. The potential for a training and testing package to address hazard perception in inexperienced riders is currently being investigated.

2.4.2. Speed and motorcycle crashes

Speed plays a major role in many crashes as it influences both the likelihood of being involved in a crash and the resulting crash severity. However, there has been significant debate about the contribution of speed and speeding in motorcycle crashes. This project examined the separate effects of inappropriate and excessive motorcycle speed and changes in traffic speed on the frequency and severity of motorcycle crashes. There were 115 (57.2%) crashes in which the riders' speed relative to the speed limit could be confidently judged. Of the 115 crashes, almost half (56; 48.7%) involved excessive speed, that is, the rider was travelling faster than the speed limit [8]. Whether or not the rider's speed was inappropriate for the conditions was confidently judged for 135 (67.2%) crashes. Of these 135 crashes, more than two-thirds involved inappropriate speed for the conditions (95; 70.4%). These findings will be used to guide motorcycle safety policy development.

In addition, funding has been secured to conduct a case control study in Victoria which will help to identify crash risk factors. The case control study will enable an understanding of the risk associated with different rider behaviours, road environments and vehicle types. This will help to better understand the relationship between speed, crash involvement and crash outcomes for motorcyclists.

2.5. PTWs in the transport network

An on-road infrastructure program addresses the engineering and technology component of the strategic framework. Under the Motorcycle Blackspot Program 134 high risk locations for motorcyclists have been treated over the past eight years. Other on-road projects have included research into perceptual countermeasures for motorcyclists, evaluations of the Motorcycle Blackspot Program and the Statewide Blackspot Program in relation to benefits for motorcyclists, and trials of motorcycle friendly roadside products, different types of barrier protection and vehicle activated signs.

2.5.1. Motorcycle Blackspot Program

Both generic and motorcycle specific road improvements at blackspot crash sites can significantly improve rider safety. One of the key programs that has been made possible through the Motorcycle Safety Levy is the Motorcycle Blackspot Program. A total of 148 road improvement projects have been approved for funding on popular motorcycle routes and at locations with a history of motorcycle crashes (total value $27 million). The locations treated would not have qualified for funding in other road infrastructure treatment programs.

An evaluation of the Motorcycle Blackspot Program found a 24% reduction in motorcycle casualty crashes at 85 sites treated since the program commenced [9]. When the data was disaggregated by the treatment categories, the 54 blacklength sites (excluding long routes and intersection treatments) showed a 40% reduction in motorcycle casualty crashes. The evaluation clearly shows that a targeted road improvement program is effective in improving rider safety.

However, even generic blackspot treatment programs have been found to be beneficial. Scully et al. (2006) found that two generic blackspot programs, the Accident Blackspot component of the $240m TAC-funded Statewide Blackspot program and the $85m TAC-funded blackspot program conducted in Victoria reduced motorcycle casualty crashes by 31% and 24%, respectively.

2.5.2. Barrier Protection & Motorcycle Friendly Product Trials

As technologies are developed and refined, there is a variety of barrier protection and motorcycle friendly products emerging that are designed to specifically address the needs of motorcycle riders. Many of the products have to be tailored for use in the Australian road environment. Although it will take some time to build a sufficient dataset from which to draw conclusions about their road safety benefits they do show great potential, particularly for targeted implementation on popular motorcycle routes.

VicRoads has been trialling a number of products to identify installation, maintenance and durability issues. Products tested include Rubrail, Stack Cushion and Polybuffer barrier protection, SupaFlex signs and PolySafe posts.

Trials in Victoria have found that some products are easier to maintain than others. We have also identified a need to ensure that sufficient product is available for replacement during the life of the trial. There is potential for greater sharing of information of the maintenance and durability issues associated with various products. Evaluation of their impact on road safety in Victoria has not been possible due to the small number of locations at which products have been trialled.

2.5.3. Making Roads Motorcycle Friendly

The road surface and environment can have a significant impact on both the likelihood of a motorcycle crash and on the severity of outcomes should a crash occur. Hazards in the road environment can be reduced through the use of motorcycle friendly engineering products, practices, and maintenance procedures. To achieve this, it is important that those involved in the design, construction and maintenance of roads are aware of and consider the specific needs of motorcycle riders.

To address some of these issues, VicRoads has developed a seminar and associated materials aimed at increasing the awareness of the need to adopt more motorcycle friendly engineering products, practices and maintenance procedures.

The *Making Roads Motorcycle Friendly* materials were developed based on a multi-stage project that identified safety issues for motorcyclists that are impacted by road maintenance practices. The project also examined relevant maintenance practices and standards and then investigated the appropriateness of these standards for motorcyclists. The purpose of the materials is to raise awareness of the vulnerability of motorcyclists and highlight how road design, construction and maintenance works can be performed in ways which improve safety for motorcyclists.

The *Making Roads Motorcycle Friendly* materials include a DVD and printed material specifically developed to complement the seminars. The seminars are being targeted at local government, VicRoads, road design and construction contractors, and utility providers. To date, seminars have been delivered by VicRoads state-wide. Local councils are increasingly showing interest in delivering the program. VicRoads has also started to engage with tertiary institutions and professional associations to explore ways to increase the motorcycle awareness of engineering students and engineering professionals.

2.6. Rider and pillion passenger safety

2.6.1. Assisted rides project

The effectiveness of motorcycle rider training has often been questioned, with international research suggesting that it is, at best, only slightly beneficial [10]. However, inexperience has been identified as a key factor that contributes to motorcycle crashes.

The assisted rides project involves the development, delivery and evaluation of an on-road coaching program to at least 2,000 newly licensed riders. Coaching has been reported as having great potential for improving the effectiveness of motorcycle training [11]. The project is seeking to develop an on-road program based on best practice and conduct a comprehensive evaluation of its effectiveness in improving rider safety. Each program involves a four hour ride for up to three riders with an experienced instructor who has been trained in coaching techniques.

The project is being delivered as a randomised control trial. This will enable determination of whether the observed impact of the program on rider safety over a 12 month period can be attributed to the program.

2.6.2. LAMS

In July 2008, Victoria introduced a new Learner Approved Motorcycle Scheme (LAMS) for novice riders. This scheme was designed to reduce the risks for novice riders by limiting them to moderately powered motorcycles that are more appropriate for their level of experience. This has provided greater access to more motorcycles that have safety features such as ABS and combined braking systems, and restricted access to high powered race replica motorcycles. VicRoads plans on conducting an evaluation over the next few years to see what impact the introduction of LAMS has had on novice rider safety.

2.6.3. GLS

Graduated licensing systems (GLS) allow novice drivers and riders to gain valuable experience under conditions of reduced risk. As the individual gains experience, they progress through the phases of licensing until they become a full licence holder. In Victoria, there is scope for improvements to the motorcycle GLS to improve novice rider safety, particularly when it comes to learning to ride in the traffic environment. These improvements can be covered under four broad categories:

- Type and duration of phases
- Test requirements
- Training and skill development
- Restrictions/sanctions on novice riders

`In September 2010, VicRoads released a discussion paper [12] as part of an 8-week public consultation. In addition, information forums were held across the state. In developing recommendations for the Victorian Government to improve the motorcycle GLS,

VicRoads has given consideration to the best available evidence, general road safety principles and community and stakeholder feedback. Any changes to be made to the motorcycle GLS in Victoria are likely to be announced during 2011.

2.6.4. Community Policing and Education

A combination of both covert and overt enforcement is one of the key elements of effective road safety operations. There are often opportunities for a range of stakeholders to work together to deliver such programs. In January 2009, a two-year Community Policing and Education project was launched in Victoria. The project involves a series of coordinated education and enforcement activities across the state conducted by the Victoria Police.

Under the initiative five major state-wide enforcement operations are being conducted each year, complemented by a further 10 regional operations annually. These strategic operations are taking place in well known areas popular with motorcyclists, areas with a high number of motorcycle collisions and other emerging hot spots in both metropolitan and rural areas.

A major component of the operations is the education of riders and drivers about motorcycle issues on behaviours which put motorcyclists at risk. Information highlighting risks and advice is being provided to both riders and drivers intercepted by police during operations. Whilst education is the main focus of the program, penalties are administered when required.

The Community Policing and Education project is currently being independently evaluated, and a report is due in April 2011.

2.6.5. Returning riders

In 2009, VicRoads commissioned research to investigate the crash patterns of returning riders and identify whether these patterns differ from those of new riders (licensed less than 5 years) and continuing riders (licensed 5 years or more and with an unbroken riding history).

This research was commissioned in response to concerns that the “spike” in fatalities amongst older motorcyclists was the result of riders returning to riding after a lengthy break. It was hypothesized that the lack of recent riding experience had eroded these riders’ skills, leading to an increase in crash risk.

The research sets out to determine whether there are specific skill, knowledge, attitudinal or developmental issues, peculiar to returning riders, that would warrant developing a training curriculum targeted at riders returning after a break from riding.

The first stage of the research has not identified any noteworthy differences between the overall skill levels of returning and continuing riders [13].

2.7. Safer PTWs and rider equipment

2.7.1. Consumer advice on motorcycle protective clothing

Wearing protective clothing has been found to be very beneficial in preventing and reducing minor and more serious injuries in riders [14]. However, many motorcyclists do not wear sufficient protective clothing to protect them in the event of a crash [15]. Scooter riders are of particular concern, tending to wear little if any protective clothing.

Providing reliable, independent advice to riders about what gear they should buy and wear is difficult when there is no easy way for consumers to differentiate between the effectiveness of various protective clothing products.

VicRoads and the TAC in Victoria are investigating the feasibility issues around the laboratory testing of protective clothing garments to provide independent advice to riders. The testing protocol will be based on the European Standards for motorcycle protective clothing. This project will help determine the potential for a consumer awareness program to advise riders about the likely protective nature of motorcycle protective clothing.

2.8. Expected and Potential Benefits of the Levy

The Motorcycle Safety Levy has provided for an extensive program of motorcycle specific safety initiatives that would not have otherwise been achievable in Victoria. It has enabled many key issues to be addressed over the past decade and substantially added to the road safety programs already being conducted by VicRoads, the TAC, Victoria Police, local government and community road safety committees. While these road safety organisations continue to drive activities addressing motorcycle safety, the resources provided through the Levy have enabled a much greater number and breadth of projects to be undertaken.

A recent review of Victoria's motorcycle safety program, conducted by the Victorian Auditor General's Office (VAGO) found that:

"*…the directions in the strategic guide for improving safety on public roads are reasonable. Approximately two-thirds of levy funding to date has been used to improve road locations which are high risk for motorcyclists. These treatments have proven effective and the allocation of this funding is reasonable.*" [16]

3. CONCLUSIONS

The Motorcycle Safety Levy has funded project providing a number of benefits for motorcyclists in Victoria. Levy-funded projects have also raised the profile of motorcycle safety and motorcycling as a component of the transport mix.

In addition to a suite of baseline research projects, which provide the foundation for safety policy development, the Levy funds road and roadside improvements tailored for motorcycle safety, research into education and training, enhancements to the licensing system and improvements to enforcement and emergency response. Evaluations of the Levy program have shown the program to be beneficial, making a positive contribution to the safety of Victoria's motorcyclists.

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