

# RESPONSE TO THE NATIONAL ROAD SAFETY STRATEGY

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## 1. Our background in road safety

Dr de Rome is a psychologist and injury epidemiologist, with over 20 years' research experience in the area of crash/injury data analysis and road safety strategic planning. She has over 180 publications relating to road safety with particular focuses on vulnerable road user safety and local government planning. Dr de Rome developed the first Australian motorcycle safety strategic plans<sup>1,2</sup> in addition to guides for local councils on road safety strategic planning.<sup>3-5</sup> She also led the research and development for the motorcycle protective clothing star rating program (MotoCAP).<sup>6-16</sup> Other projects include the review of motorcycle crash emergency responses,<sup>17</sup> crash factors in motorcyclist, cyclist and pedestrian crashes<sup>18-28</sup>, and the development of the Victorian Motorcycle GLS<sup>29-35</sup>. Professional memberships include: Australian College of Road Safety, (2004-2021) National and State Executives; US Transportation Research Board, sub-committee on motorcycles and mopeds (2008-2021).

Dr Hurren is a material scientist with over 25 years' experience with textile materials and testing. He has spent 10 years developing a specialty testing facility for motorcycle protective clothing at Deakin University. Together with Dr de Rome and other experts, he established the test protocols for MotoCAP, and is Chief Scientist at the Australasian Motorcycle Clothing Assessment Laboratory at Deakin University responsible for the MotoCAP testing program.

## 2. Introduction

As long-time researchers in the area of motorcycle safety, we have been frustrated by the lack of appropriate strategies to address key safety issues for motorcyclist in successive National Road Safety Strategies (NRSS). We were very encouraged by the frank and practical recommendations of the 2018 Inquiry into the National Road Safety Strategy 2011-2020<sup>36</sup> and have great hopes for the next NRSS.

We strongly support the decision in the draft NRSS to include serious as well as fatal injury in the targets for 2050, and also the recognition and inclusion of indigenous Australians and workplace road safety as a priority issues.

However, we are also concerned that the draft does not currently address some major national initiatives, which have been proposed in other forums, these include:

1. The establishment of a national Parliamentary Standing Committee of Road Safety.
2. National RSS to state commitment to the program of assessing roads for their safety for all road user groups and publishing their Star Rating to encourage road authorities to

accept their responsibilities. The star rating of roads has been defined as a significant performance measure by the UN.

3. Funding for road safety specific research as a separate and dedicated area linked to the NRSS priorities to be available for research institutions. Road safety research struggles to be competitive under the criteria for the Australian Research Council or National Health and Medical Research Council programs.
4. Ensure Australian Design Rules are consistent with, and continually updated to, global best practice in road safety.

### 3. Evidence-based policy and programs

#### 3.3 3.1 Crash rates based on specific road user populations

It is incontestable that injury prevention strategies should be determined and assessed in relation to the population at risk, in order to accurately monitor change. However, it is not clear from the draft NRSS, whether the use of 'per capita' rates is to be based on the population in general or separately on the population of each of the specific road user groups to be considered.

The total Australian population cannot present an accurate representation of exposure, particularly for the smaller road user groups. The relevant 'at risk' segment of the population varies according to road user group, as well as for other demographic factors. From our own research, we can confirm that the population of active motorcyclists is most accurately represented by the registered owners of motorcycles.<sup>26</sup> This is because while registration numbers overestimate active motorcycling population by some 15%, counts of rider licences exceed registered motorcycles by approximately three to one (3:1).<sup>22,26</sup> The means of estimating the size of other populations at risk, including cyclist and pedestrians may be more challenging, but not impossible using Australian Bureau of Statistics resources including census data.

In the case of motorcycles, their registration numbers in Australia have been volatile in recent years. After expanding rapidly during the first decade of this century to an increase of 11% between 2008/2009, it has been slowing down and is now increasing at just 3% per annum while motorcycles still represent only some 6% of the total motor vehicle fleet.

The impact of the variations in registration numbers on crash rates is illustrated in Table 1 based on motorcycle crashes in New South Wales between 2006 and 2018.<sup>37,38</sup> Over that period, the number of motorcycle fatalities varied between 54 and 71 per annum, without any apparent trend over time. However, when calculated as a rate per 10,000 registered motorcycles, there is a clear downward trend from 5.5 to 2.3 fatalities over that period. Similarly, while injury numbers fluctuated between a high of 2702 in 2012, to a low of 2096 in 2018, the injury rate has maintained a downward trend over time despite those fluctuations.

**Table 1. Motorcycle injuries and fatalities by number and rates per 10,000 registered motorcycles in NSW for the periods 2006, 2009,2012-2018**

Casualties	2006	2009	2012	2013	2014	2015	2016	2017	2018
All injury	2326	2625	2702	2624	2550	2210	2215	2214	2096
Fatality	66	69	61	71	69	67	67	59	54
Total injury	2392	2694	2763	2695	2619	2277	2282	2273	2150
Registrations	120,833	162,076	187,464	197,667	208,451	216,833	225,027	232,027	238,123
Per 10,000 reg.									
Injury rate	192.5	162.0	144.1	132.7	122.3	101.9	98.2	95.4	88.0
Fatality rate	5.5	4.3	3.3	3.6	3.3	3.1	3.0	2.5	2.3

Table 2 compares national crash rates for motorcycles and passenger vehicles (cars) in 2008 and 2017.<sup>39-42</sup> By using the relevant population at risk, we can see that between 2008 and 2017, crash rates for cars had reduced for fatalities but not injuries, whereas rates for both fatality and injury rates were substantially reduced for motorcycles. The crash rates for motorcycles were and are still substantially greater than those for cars, but by taking account of relative exposure for each class of vehicle, we obtain more useful indicators for monitoring the impact of countermeasures. It is worth noting that over those ten years car registrations increased by 19% and the injury rate increased by 21%, compared to 38% and 9% for motorcycles over that period and the lack of movement.

**Table 2. Australian national casualty rates per 10,000 registered vehicles for passenger vehicles and motorcycles comparing 2008 and 2017.**

Vehicle Class	Registrations	Fatalities	Rate <sup>1</sup>	Injuries	Rate <sup>1</sup>
<b>Passenger vehicle</b>					
2008	12,023,098	973	0.8	15,800	13.1
2017	14,330,432	801	0.6	19144	13.4
<b>Motorcycle</b>					
2008	624,090	245	3.9	7,987	128.0
2017	860700	211	2.5	8733	101.5

1. Rate per 10,000 registered vehicles by class

### 3.4 3.2 Professional training for road crash investigators

There are currently no requirements in any Australian jurisdiction for police to investigate the causes of road crashes. The decision whether to investigate any particular crash is up to the attending police on the basis of whether there could be any prospect of identifying fault leading to prosecution. In most cases police do investigate fatal and most serious crashes, but not necessarily single vehicle crashes where the driver/rider is automatically assumed to be at fault.

The lack of full investigations into the majority of road crashes effectively deprives the community of the understanding to inform road safety improvements. This is particularly an issue relating to road infrastructure when design or maintenance factors have contributed to crash causes. This situation is exacerbated by some jurisdictions reducing requirements for property damage crashes to be reported to police at all. In the past the volume of property damage only crashes could be an important indicator of problems at a particular

road location. In most other high-income countries, there is a mandate to conduct blameless investigations of all serious road crashes in the national interest. Blameless investigations focus on understanding the respective roles of the road, vehicles and people involved without assigning fault.<sup>43</sup>

The relatively low demands on police expertise in crash investigation is exemplified by the lack of professional training requirements or standards for road crash investigators. Police crash investigations are generally conducted by general duties or highway patrol officers who learn on the job and are not required to have any formal training in crash investigation. Those officers who do have any formal training have often obtained it privately at their own initiative.

**Action:**

3.2.1 Establish national standards and requirements for police and private crash investigators based on the principles of blameless crash investigations, which are the most effective means of identifying appropriate crash countermeasures.

3.2.2. Mandate all serious crashes to be investigate as a matter of public interest and under the responsibilities of road authorities to ensure the safety of their networks.

3.5 Single and multivehicle crashes

Motorcyclists and cyclists have substantially higher risk of single vehicle crashes than any other road users due to the inherent instability of single-track vehicles and vulnerability to road surface hazards. This is why all serious single-vehicle crashes should be fully investigated.

It is also important to analyse motorcycle and bicycle crash data separately for single and multivehicle crashes, this is because very different patterns of error are apparent when another vehicle is involved. Whereas the other vehicle is the key vehicle in a majority of multi-vehicle motorcycle and bicycle crashes, it is road surface hazards that are a factor in many single vehicle crashes. This is particularly pertinent when applying Safe Systems approaches to these road users, who are commonly assumed to be at fault in all single vehicle crashes despite evidence to the contrary.<sup>21,24,44-47</sup>

(Note: please do not use the term motorbike, which is a less formal term than motorcycle. It is not common practice in the Australian motorcycle community nor amongst motorcycle road safety researchers and its usage suggests a lack of familiarity with the area.)

## PRIORITY AREAS

### 4. Infrastructure planning and investment

#### 4.1. Making roads safer for motorcycles and bicycles

There is substantial evidence of a relationship between the design and maintenance of road infrastructure and motorcycle and bicycle crash risk, however this is not reflected in the current draft NRSS nor previous NRS Action Plans.

A recent Australian population-based study of motorcycle crashes (n=1479) found road surface defects were associated with 15% of all motorcycle crashes and 24% of single-vehicle motorcycle crashes. Loose gravel on sealed surfaces was the major factor accounting for 16% of all single vehicle crashes, most of which (78%) occurred in rural areas.<sup>21</sup> The findings of this report demonstrate the significance of road surface defects in motorcycle crashes, particularly those on curves. However, as such apparently minor road surface defects do not present a safety risk to cars, they tend not to be considered a priority in standard maintenance contracts. In a truly ‘Safe system’ such a risk to any road user group, should set the minimum standard for repairs as a priority to ensure the safety of the system for all road users. Similar studies of cyclists have found that over half were injured in single-vehicle crashes.<sup>24,48,49</sup>

To safely negotiate a turn, motorcyclists and cyclists are taught to look ahead to where they intend to go. When surface irregularities occur within a curved section of road, their attention will be divided between checking the road surface for potholes, raised repair patches or loose gravel and focusing on their line of travel. This may compromise their stability and positioning in anticipation, before they even encounter a surface hazard. Road surface hazards are more commonly found on rural and regional roads where recreational riders are most likely to be unfamiliar with the roads which increases their exposure to the risk.

There are a number of evidence-based guidelines for engineers on designing and maintaining roads to reduce crash risks for vulnerable road users, particularly motorcyclists, who, unlike cyclists and pedestrians, tend not to be recognised as a separate class of vehicle with specific safety requirements.<sup>50-54</sup>

It is our understanding that road user safety is not required as a criteria for setting works priorities in road infrastructure design and maintenance contracts issued by State, Territory or Local Government agencies across Australia. Our recommendations are:

- 4.1.1. Promote a Safe Systems culture amongst road engineers and works managers to understand and accept that the critical differences in road surface requirements for motorcycles sets a standard that improves safety for all road users. The assumption being that as motorcyclists are the highest risk group this would set standards for the benefit of all road users.

- 4.1.2. Evidence-based guidelines for engineers on designing and maintaining roads to reduce crash risks for vulnerable road users, particularly motorcyclists, to be provided to all road authorities and their contractors.<sup>50-53</sup>
- 4.1.3. Road infrastructure funding to require design and road maintenance contracts to routinely specify 'safety for all road users' as the primary criteria. For example, this would mean tolerances for road surface conditions and the installation of crash barriers to be based on motorcycle safety to ensure the highest standard for all road users.
- 4.1.4. Automated road monitoring be undertaken on identified major motorcycle crash routes to assess parameters including sight lines, corner angle, sealed surface width, surface angles, surface imperfections, etc. for remediation.
- 4.1.5. Road monitoring assessment of road parameters to be used to provide accurate data for advisory and warning signs about road conditions that are relevant to motorcyclists (e.g., extreme angles on curves).
- 4.1.6. Publication of star ratings on roads to be one of the conditions for any Federal Government infrastructure funding.
- 4.1.7. Roadside flexible barriers and all treatments to reduce the risk of run-off road and head-on crashes be required to pass motorcycle risk assessments and the results to be published and made readily accessible to all road users.
- 4.1.8. Police to be required to report to the relevant road authority when road design or maintenance conditions may have been a contributing factor in a crash or present a potential crash risk to other road users.

## 5. Regional roads

### 5.1 Local government road safety

Local government are responsible for some 80% of the entire road network but are expected to fund roadworks from their rates-based income.

Under the former federal agencies Office of Road Safety (FORS) and ATSB funding for road safety projects was available to Local Councils, which enabled them to have some independence from their State Governments. Some of the best road safety initiatives, such as establishment of the role of Road Safety Officers in NSW Local Councils and the development of local government road safety strategic plans originated from Federally funded project grants.

- 5.1.1 Introduce a road safety research grants scheme for researchers and road safety practitioners.
- 5.1.2 Require local government Councils to develop road safety strategic plans,<sup>5</sup> linked to the NRSS to provide the supporting evidence for grant applications, and the means of monitoring the implementation of funded road safety projects.

## 6. Vehicle and equipment safety

### 6.1 Protective equipment

6.1.1 Remove sales tax on protective clothing for motorcycle and bicycle riders.

## 7. Heavy vehicles

### 7.1 Underrun crashes

Underrun protective devices for heavy vehicles have been mandatory in Europe since the 1970s, the situation in Australia is unclear with exemptions for some classes of heavy vehicle.

7.3.1 Front, rear and side underrun protective devices for all heavy vehicles to reduce the risks to pedestrians, cyclists and motorcyclists to be mandatory under Australian Design rules.<sup>55</sup>

## 8. Workplace road safety

### 8.1 Professional users of motorcycles and bicycles

There are many organisations who employ vulnerable road users in their full-time workforce and who may ride motorcycles rather bicycles but who are not identified in the draft NRSS. These include police, ambulance, firefighters, mail and parcel delivery and forestry workers who ride motorcycles as a part of their jobs but are not routinely provided with motorcycle personal protective equipment.

The wearing of motorcycle protective clothing has been shown to significantly reduce injuries during a crash. A code with minimum requirements for protective clothing for professional riders of motorcycles/scooters and cyclists would reduce the risks that they face. The code of conduct or minimum requirements could also extend to the type of vehicle being used.

8.1.1 Ensure employers and contractors are aware of their responsibilities to ensure employees and contractors are required to wear approved helmets and protective clothing as relevant to the road safety risks incurred.

8.1.2 Introduction of requirements for the minimum protective equipment and vehicle standards for motorcycles or bicycles required to be ridden as a part of employment or contract conditions.

## 9. Vulnerable road users

### 9.1 Vulnerable road users as three distinct groups

The draft NRSS, identifies vulnerable road users as one of the nine priorities, which is appropriate as pedestrians, cyclists and motorcyclists together account for over half (51%) of all casualties including 34% of fatalities and 66% of seriously injured. However, there is little further detail about these three groups who have very different risk profiles and relevant counter measures and should not be treated as a single class.

A classic example of this is the practice of converting footpaths to shared paths, to accommodate the increasing population of cyclists despite the well-documented disadvantage and risks to pedestrians.<sup>24,56,57</sup> Table 3 presents the distribution of vulnerable road users and car occupants as a proportion of all seriously injured and killed road crash casualties<sup>41,42</sup>.

**Table 3. Distribution of serious and fatal casualties by road user group, Australia 2017**

Road user group	Serious injury		Fatal		All casualties	
Car occupants	19144	34%	801	66%	22,242	49%
Motorcycle	8733	24%	211	17%	14,952	22%
Bicycle	7077	20%	39	3.2%	12,270	18%
Pedestrian	2711	6.6%	161	13%	4,311	7%
All casualty groups	39330	100%	1212	100%	63,600	100%

The actions for Vulnerable road users currently provided in the draft NRSS (page 18) focus almost exclusively on road user behaviour and most specifically at motorcyclists. The actions include rider training, protective equipment, speeding, alcohol and drugs.

### 9.2 Actions to identify specific infrastructure measures known to reduce risks for each vulnerable road user group.

There does not appear to be any thought as to improving the behaviour of cyclists or pedestrians. Nor is there any mention of the role of other road users, specifically drivers, who are the key vehicle in many vulnerable road user casualty crashes.

Most particularly, there are no actions relating to the well-established role of road infrastructure design and maintenance as risk factors for vulnerable road users. A safe system means creating a system, that guides road users to use the road safely. It is the responsibility of road authorities is to design and maintain their road networks to reduce the risks of crashes, by making the system easy to use safely and by reducing the severity of consequences when road users fail. As noted in our recommendation for the first priority - **Infrastructure planning and investment / Regional roads**, tolerances for road design and surface conditions should be those specified for motorcycle safety.

While the reference to **Movement and Place framework** does mention tailored safe system road treatments, that is too vague for an action. Woolley and Crosier<sup>36</sup> found there to be



stated commitment to safe systems principles, but lack of evidence of their implementation in practice. This is most particularly an issue in areas of road design and maintenance.

### **9.3 Motorcycle rider training:**

A graduated licencing scheme for motorcycle riders is provided in most states in Australia. The cost of these programs varies widely across jurisdictions, being approximately \$900 in Victoria, \$350 in NSW, \$650 in Queensland, \$1150 in Tasmania, \$794 in South Australia and \$247 in Western Australia. Those with very high costs may deter young or disadvantaged people from undertaking rider training.

While expensive driver training is also an issue for some people, a high proportion of the population are able to be taught to drive by their parents. This is not possible under the graduated licensing schemes for motorcycle riders, where novice riders must practice while riding alone. It is a particular issue of equity and access as there is evidence that motorcycles may be the only affordable form of transport for disadvantaged youth to be able to commute to work.<sup>26</sup>

9.3.1 Commission a national review and ongoing monitoring of motorcycle rider training schemes, including their curriculum, methods and costs.

9.3.2 Investigate the factors associated with riding unlicensed to establish whether cost is a major disincentive.

9.3.3 Federal government to subsidise graduated licence scheme schemes to encourage and support novice riders in obtaining a licence and riding unlicensed.

### **9.3 9.4 Rider advice:**

The wearing of protective gear has been shown to reduce injury severity in a crash. Educating a rider on the protective levels of the clothing and helmets that they currently wear or may be looking to purchase can help to allow them to make a better decision in what they wear when they ride.

Promoting consumer information about protective clothing and helmets will benefit riders. Australia has CRASH and MotoCAP that are two world leading consumer-based star rating systems for providing riders with advice on buying helmets (CRASH) and gear (MotoCAP). Both are administered by Transport for NSW. The current awareness of both of these programs amongst riders is low. Both would benefit in increased rider awareness across Australia. This could be done by putting a note about both programs into registration renewal correspondence for motorcycle owners.

9.4.1 Promote MotoCAP and CRASH consumer information programs about protective clothing and helmets. An example would be awareness materials in registration renewal correspondence with riders.

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