A Review of
Serious Casualty Motorcycle Crashes
in Tasmania

Department of Infrastructure, Energy and Resources

Tasmania
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A Review of
Serious Casualty Motorcycle Crashes
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Traffic and Infrastructure Branch
Department of Infrastructure, Energy and Resources
July 2010

Contents

	Name	Signature	Date
Written by:	Donald Howatson		July 2010
Reviewed by:	Simon Buxton		July 2010

1. INTRODUCTION

The purpose of this Report is to improve our understanding of the incidence and circumstances of serious casualty crashes involving motorcyclists in Tasmania.

2. Understanding Motorcycle Crashes

2.1 Crash data

Details of all crashes reported to Tasmania Police are recorded on Traffic Accident Report forms that are then electronically stored on the Crash Data Manager computer system which is maintained by DIER.

The Traffic Accident Report categorises the severity of the crash based on the most severe injury that was received by any person involved in the crash. Crash categories are as follows:

- fatal – a person dies within 30 days of the crash;
- serious injury – a person is admitted to hospital for at least 24 hours;
- minor injury – a person is admitted to hospital for less than 24 hours;
- first aid – a person is treated at the scene; and
- property damage only.

In this Report, the term 'serious casualty' is used to collectively describe crashes that resulted in serious injury or death.

The Table below sets out the crash statistics for Tasmania for the five-year period (2005-2009). The numbers are based on counting each crash once – they do not allow for the fact that more than one person could be injured in the same crash.

Severity	Total number of crashes	Number of crashes involving motorcyclists	Percentage of crashes involving motorcyclists
Fatal	220	34	15.5%
Serious	1,298	321	24.7%
Minor	5,635	734	13.0%
First aid	1,979	159	8.0%
Property damage	22,610	433	1.9%
Not known	3,195	40	1.3%
Total	**34,937**	**1,721**	**4.9%**

Table 2.1 – Crash history for five-year period (2005-2009)

During the five-year period (2005-2009) there were almost 35,000 reported crashes and over 9,100 of these were casualty crashes (fatal, serious injury, minor injury and first aid).

There were 1,517 serious casualty crashes, and of these 355 (23%) involved motorcyclists.

In contrast, motorcycles only represent 2.4% of vehicles registered in Tasmania.

Chart 2.1 compares the number of crashes for the main types of road user groups and Chart 2.2 compares the crash severity.

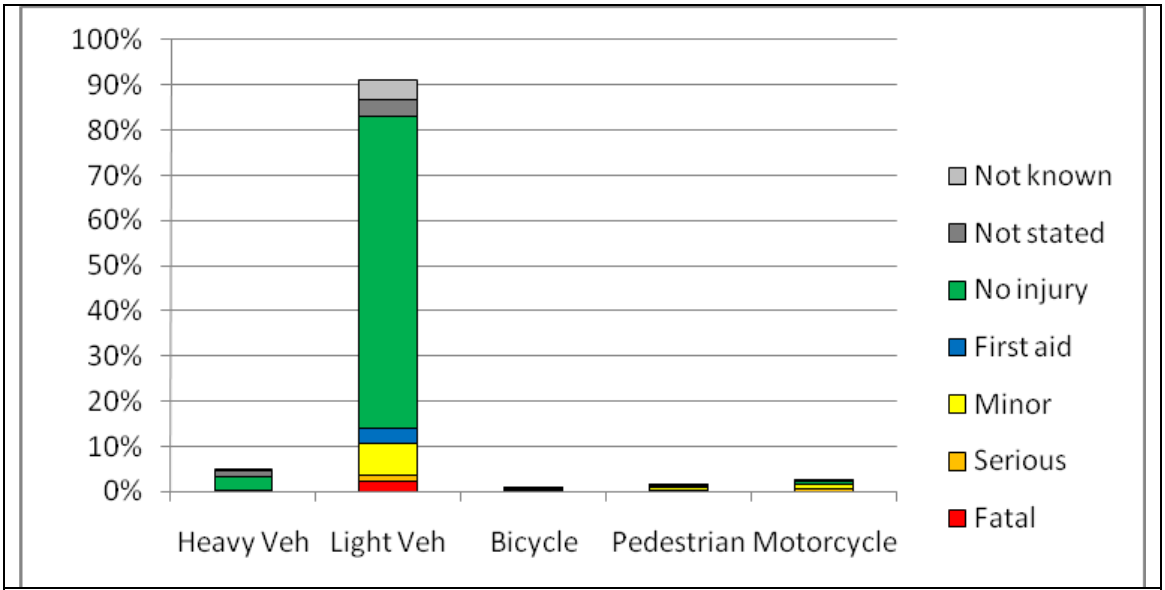

Chart 2.1 – Number of crashes for different types of road users (2005-2009)

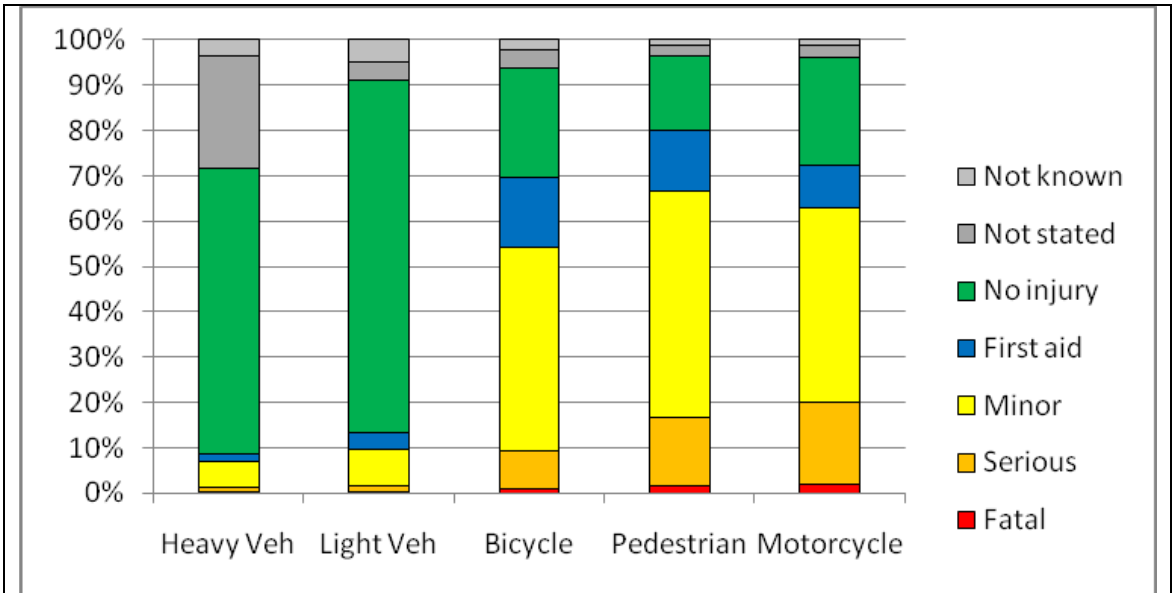

Chart 2.2 – Crash severity for different types of road users (2005-2009)

Motorcyclists are the road user group that is most likely to be seriously injured when they are involved in a crash. Motorcyclists are sometimes referred to as 'vulnerable' road users because, when they are involved in a crash, it is more likely to be of higher severity.

2.2 Month of year

The pattern of serious casualty motorcycle crashes by month of year shows remarkable variation. A substantially greater number of crashes occur in the summer months and a substantially lower number in the winter months. This is despite the fact that wetter weather and shorter hours of daylight tend to make motorcycling more hazardous during the winter months.

Further analysis of traffic volume data collected on various State roads has shown that the amount of motorcycling is substantially lower during the winter months.

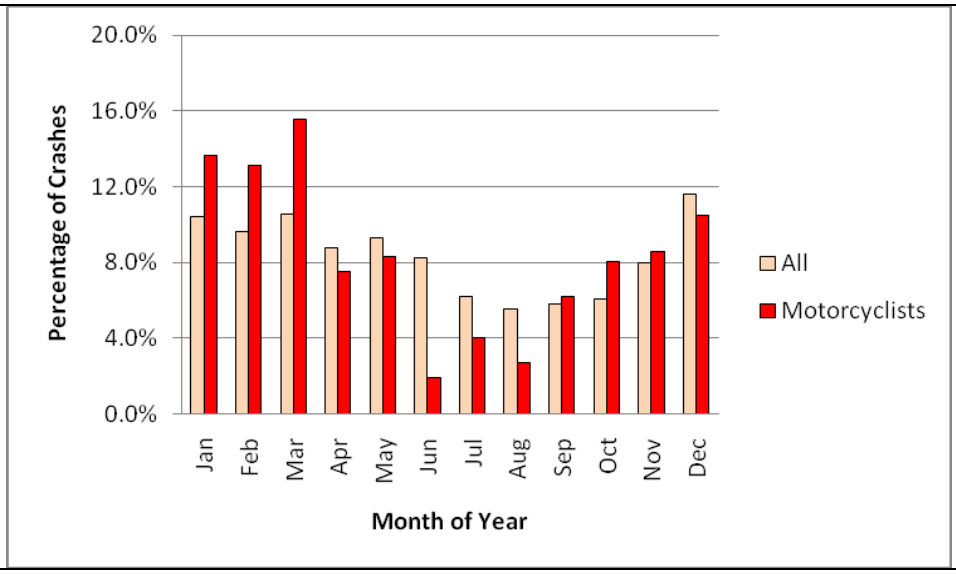

Chart 2.3 – Serious casualty motorcycle crashes (2005-2009), Month of year

2.3 Day of week

The variation of serious casualty motorcycle crashes by day of week shows a significantly higher number of crashes at the weekend. This suggests that a significant proportion of motorcycle riding is for recreational purposes.

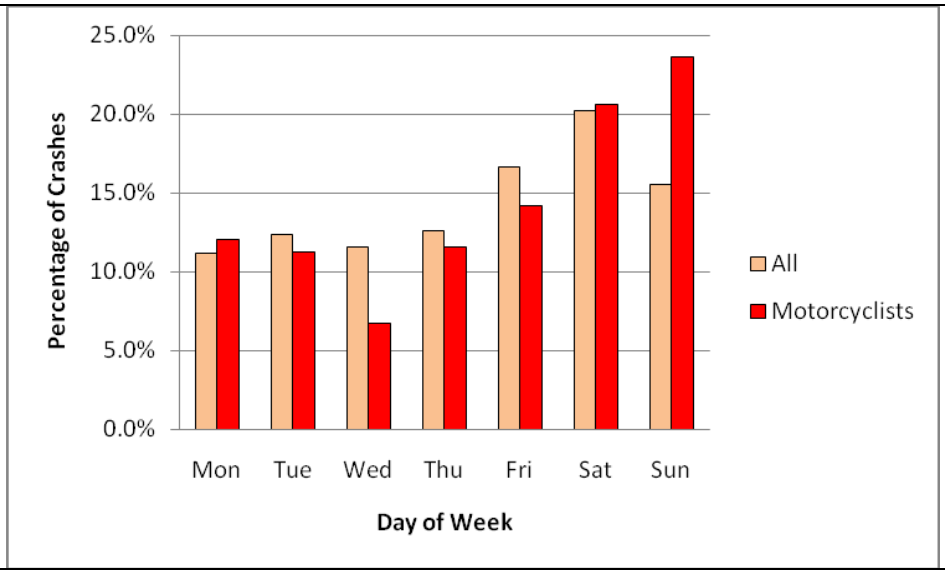

Chart 2.4 – Serious casualty motorcycle crashes (2005-2009), Day of week

2.4 Time of day

The pattern of serious casualty motorcycle crashes by time of day shows few crashes during the morning peak period but otherwise follows a similar pattern to that for all crashes.

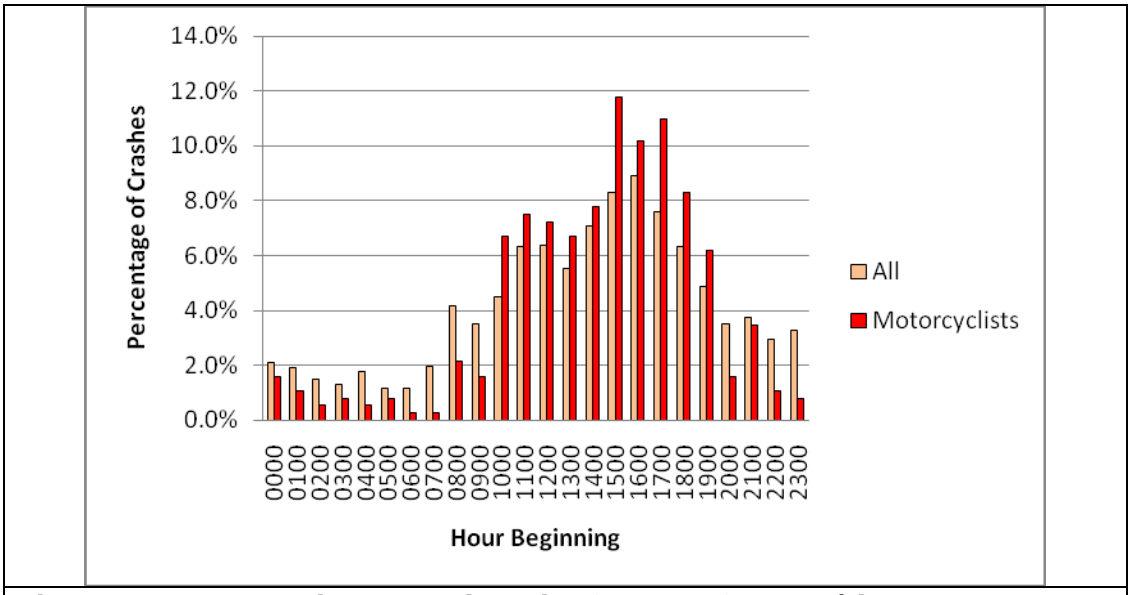

Chart 2.5 – Serious casualty motorcycle crashes (2005-2009), Time of day

2.5 Light condition

Chart 2.5 compares the light conditions for all serious casualty crashes with those for serious casualty motorcycle crashes. It can be seen that crashes involving motorcyclists are more likely to occur during the day, with comparatively fewer happening at night.

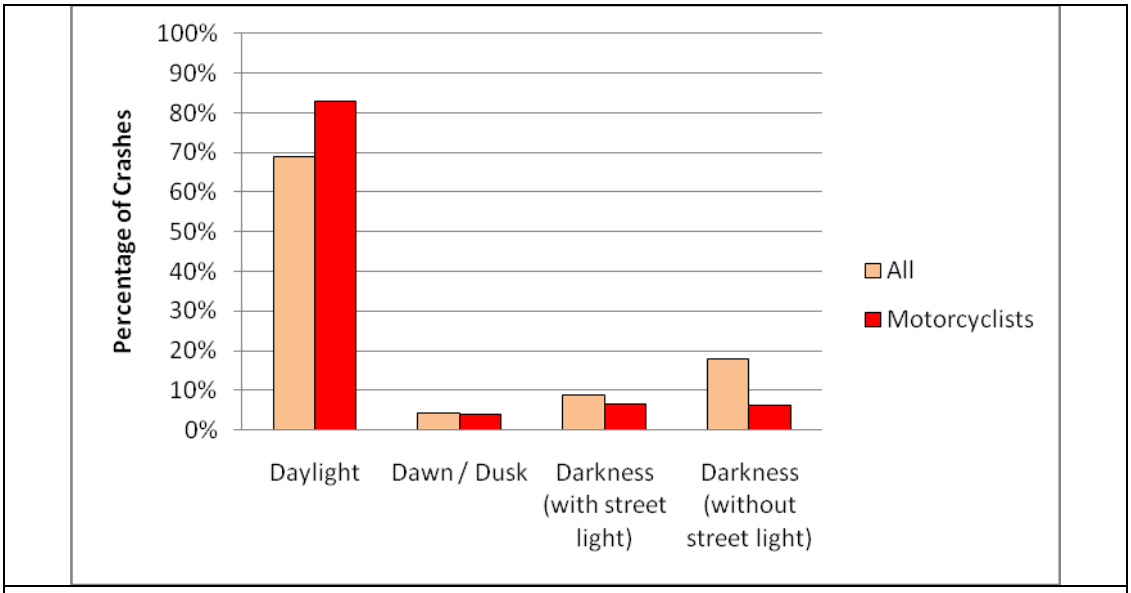

Chart 2.6 – Serious casualty motorcycle crashes (2005-2009), Light condition

2.6 Road surface condition

Chart 2.6 compares the road surface conditions for all serious casualty crashes with those for serious casualty motorcycle crashes. It can be seen that crashes involving motorcyclists are more likely to occur in dry conditions, with fewer in the wet and none reported in icy conditions. This is counter-intuitive but may reflect motorcyclists tending not to ride in adverse weather conditions.

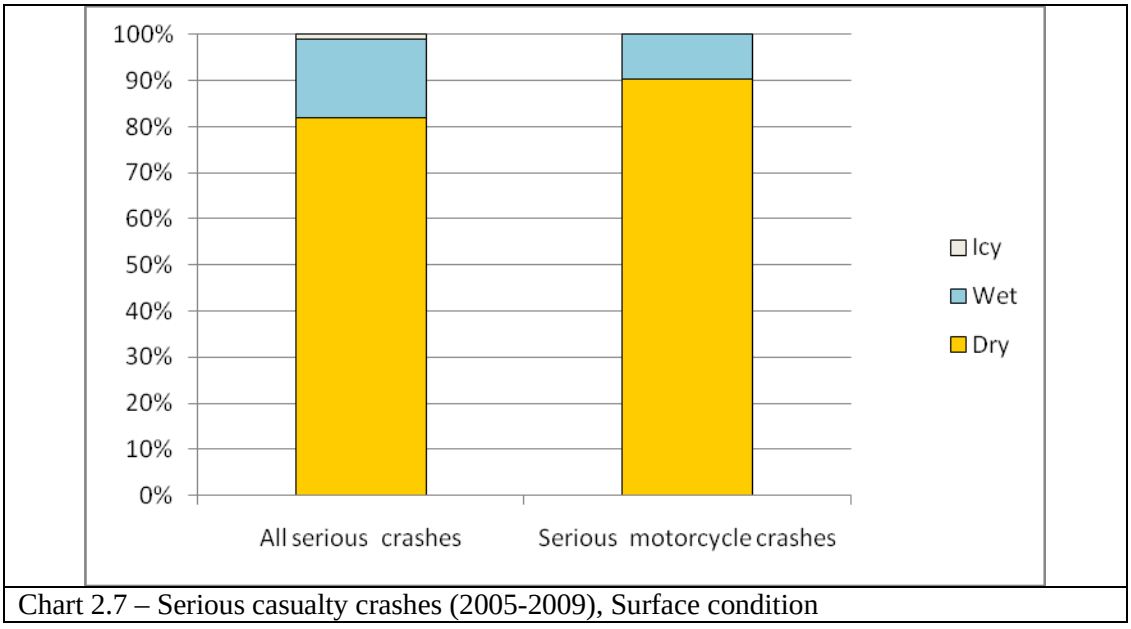

Chart 2.7 – Serious casualty crashes (2005-2009), Surface condition

2.7 Type of location

Chart 2.7 shows the type of location where the crash occurred for all serious casualty crashes and for serious casualty motorcycle crashes. The higher incidence of motorcycle crashes at off-road and unsealed locations is mainly related to the use of trail bikes.

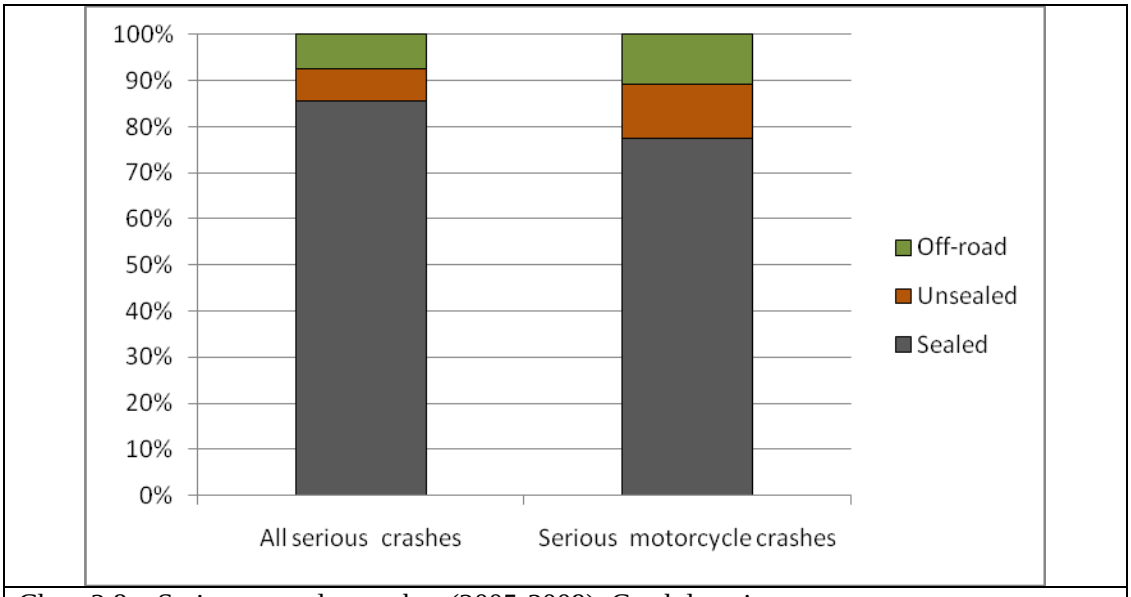

Chart 2.8 – Serious casualty crashes (2005-2009), Crash location

2.8 Speed zone

The distribution of serious casualty motorcycle crashes by speed zone shows that almost 60% occur on rural roads (where the speed limit is 80 km/h or greater). Over 10% occur in off-road locations where the speed limit is recorded as less than 40 km/h.

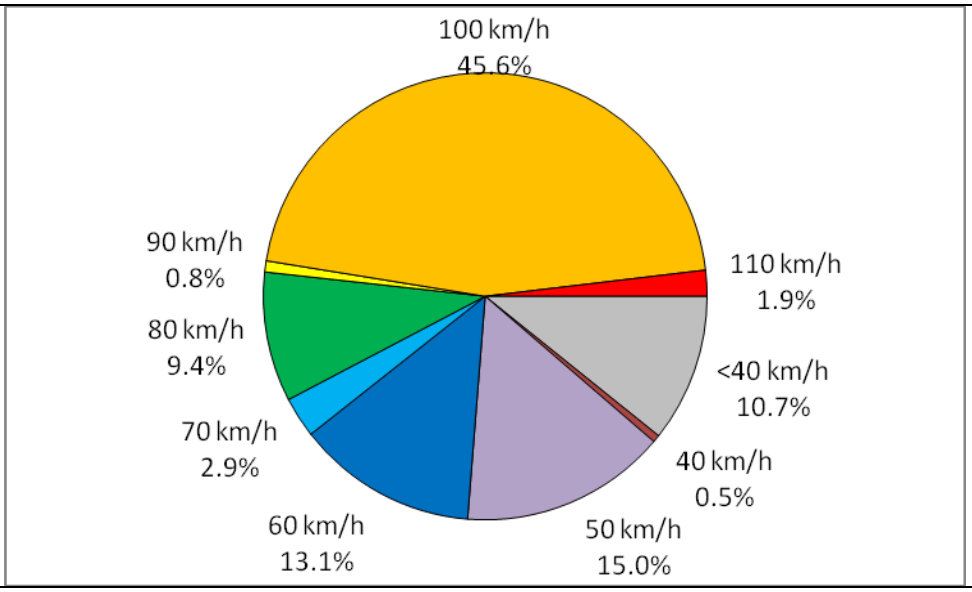

Chart 2.9 – Serious casualty motorcycle crashes (2005-2009), Speed zone

2.9 Crash type

The following charts compare the crash types for all serious casualty crashes with serious casualty motorcycle crashes.

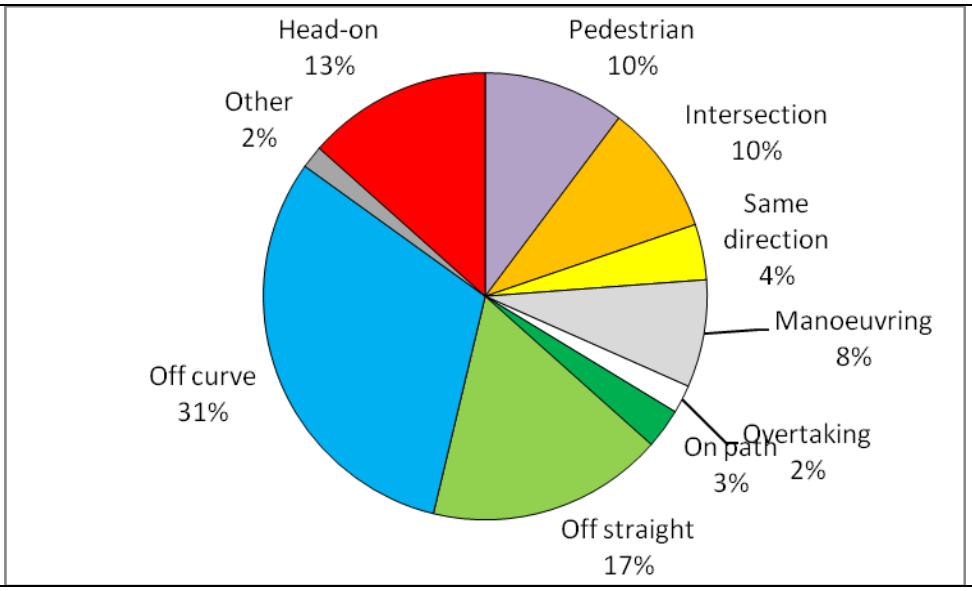

Chart 2.10 – All serious casualty crashes (2005-2009), Type of crash

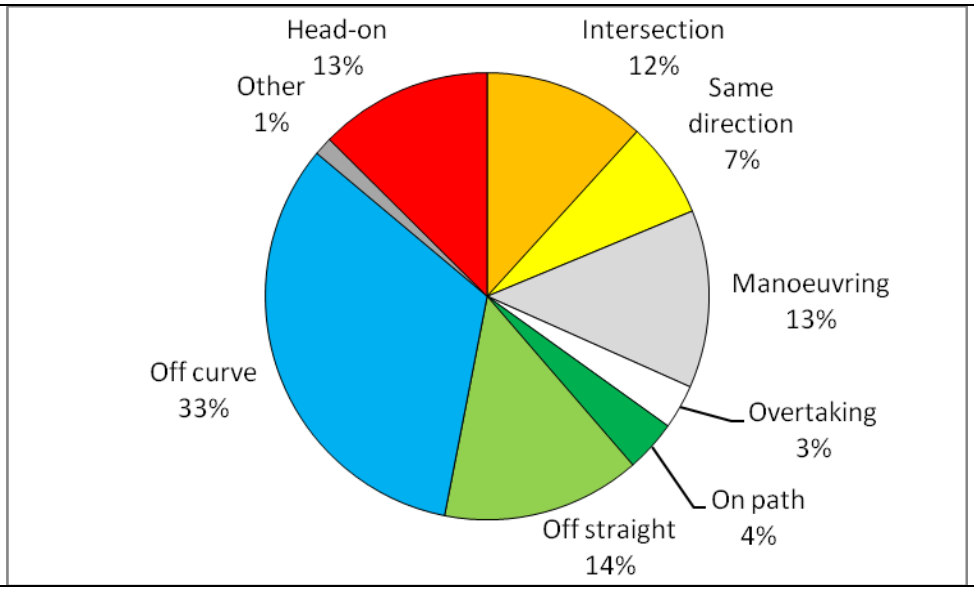

Chart 2.11 – Serious casualty motorcycle crashes (2005-2009), Type of crash

The pattern of crash types is similar. The most noteworthy differences were that less than 1% of serious casualty motorcycle crashes involved pedestrians, and the proportion of crashes involving manoeuvring is significantly higher for motorcyclists. The majority of manoeuvring crashes involving motorcyclists relate to off-road activity.

The dominant crash type is single vehicle loss-of-control crashes. There are also a significant number of head-on crashes, most of which are caused by someone losing control and crossing onto the incorrect side of the road.

The Traffic Accident Report form includes a description of the circumstances of the crash by the Police. This description can be used to gain a better understanding of the mechanisms of crashes involving motorcycles. The 200 fatal and serous casualty crashes involving motorcyclists during the three-year period (2007-2009) were analysed and it was found that:

- 63% of the crashes were single vehicle loss-of-control or manoeuvring crashes, where the motorcyclist was the only person involved. These include most of the crashes that occur on unsealed roads and at off-road locations.
- 18% of the crashes were multiple vehicle crashes that appeared to be primarily the result of a mistake by the motorcyclist. These included most head-on crashes, most same direction crashes (rear-end and side-swipe), and some intersection crashes. The great majority of head-on crashes are the result of a rider / driver losing control and crossing onto the incorrect side of the road.
- 17% of the crashes were multiple vehicle crashes that appeared to be primarily the result of a mistake by the other road user (not the motorcyclist). These included most intersection crashes (particularly not giving way to an oncoming motorcyclist when turning right into a side street) and some head-on crashes.
- 2% involved multiple vehicles, but it was not clear which road user had made a mistake.

2.10 Cause of crash

The Traffic Accident Report form includes a section where the Police can record the factors that led to the crash occurring. Crashes are often multi-factor events and more than one crash cause can be recorded.

Compared with all serious casualty crashes, motorcycle crashes are more likely to be attributed to inexperience or excessive speed for the conditions. Motorcycle crashes are comparatively less likely to be attributed to alcohol consumption or fatigue / falling asleep. This information is summarised in the table below.

Crash cause identified by Police	% for all serious casualty crashes	% for serious casualty motorcycle crashes
Inexperience	26%	35%
Excessive speed for conditions	24%	30%
Alcohol	23%	17%
Fatigue / asleep	7%	1%

Table 2.2 – Crash cause identified by Police

2.11 Single vehicle crashes

Over 60% of serious casualty motorcycle crashes are single vehicle crashes where the motorcyclist is the only person involved. The 125 fatal and serious casualty crashes during the three-year period (2007-2009) where the motorcyclist was the only person involved were analysed in detail, to try and better understand how the motorcyclist was injured.

About half of the Traffic Accident Reports do not describe the motorcyclist colliding with any specific object. In these crashes the motorcyclist has been injured by landing on the ground and then sliding along the road and / or the road shoulder / verge.

Some of the Traffic Accident Reports do identify specific things which the motorcyclist has collided with, and these are summarised in the table below.

Motorcyclist collided with	Number of single vehicle serious casualty motorcycle crashes
Ditches / embankments	20
Trees / roadside vegetation	15
Walls / fences	10
Safety barrier	9
Animal on road	5

Table 2.3 – Single vehicle serious casualty motorcycle crashes (2007-2009)

There were nine serious casualty motorcycle crashes involving collisions with safety barrier during the three-year period (2007-2009). Only one of these involved wire rope safety fencing.

Notwithstanding the fact that few motorcyclists collide with safety barrier, but recognising concerns expressed by the Tasmanian Motorcycle Council, DIER has been trialling the use of 'rub-rail' on w-beam crash barrier installations and 'stack cushions' on wire rope safety fencing. These treatments are designed to protect motorcyclists from being injured by colliding with the vertical posts that support the safety barrier.

w-beam safety barrier with 'rub rail',
Tasman Highway, west of Buckland

Wire rope safety fencing with 'stack cushions',
Tasman Highway, eastbound off-ramp to Mornington interchange

2.12 Age of rider

The age of the motorcycle rider for serious casualty motorcycle crashes shows higher numbers of young riders and also a higher number of riders aged 36 to 40 years.

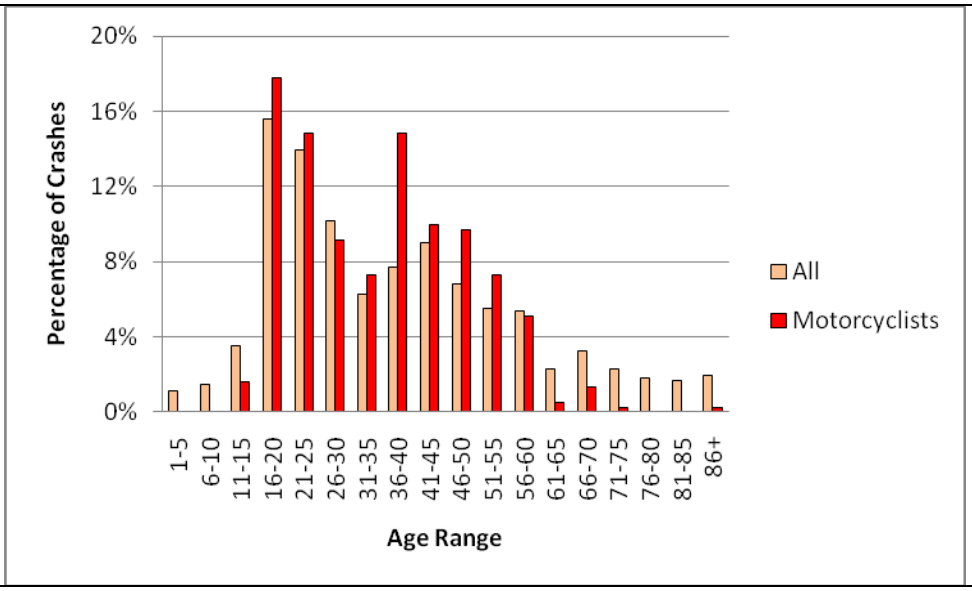

Chart 2.12 – Serious casualty motorcycle crashes (2005-2009), Age of rider

Further analysis found that just less than 10% of the motorcyclists involved in serious casualty crashes were from outside Tasmania. The great majority of these were from Victoria.

2.13 Annual trends

The following chart shows the annual number of fatal and serious motorcycle crashes during the last decade.

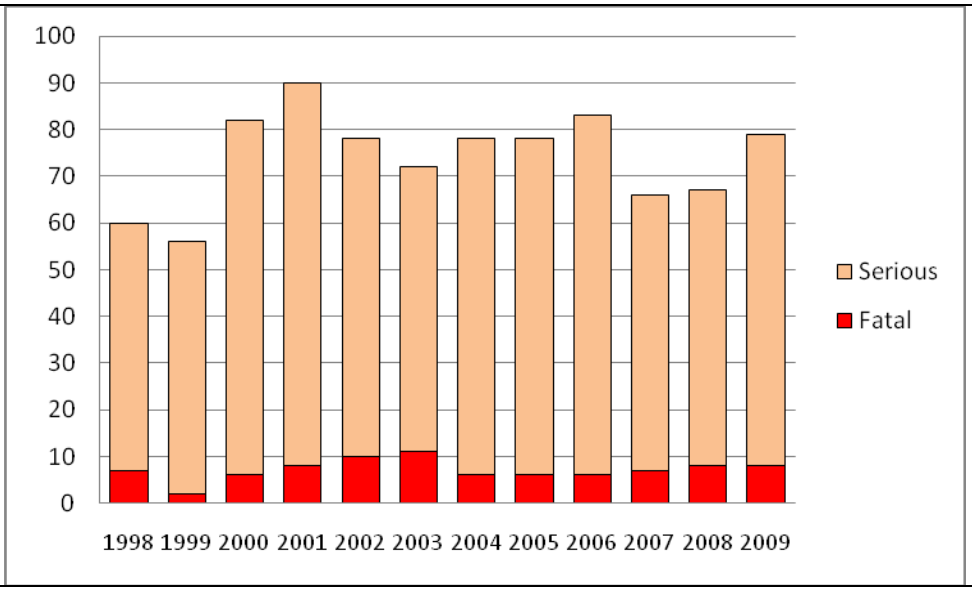

Chart 2.13 – Serious casualty motorcycle crashes (1998-2009), Annual trend

The annual number of registered motorcycles in Tasmania during the last decade is shown in Chart 2.14.

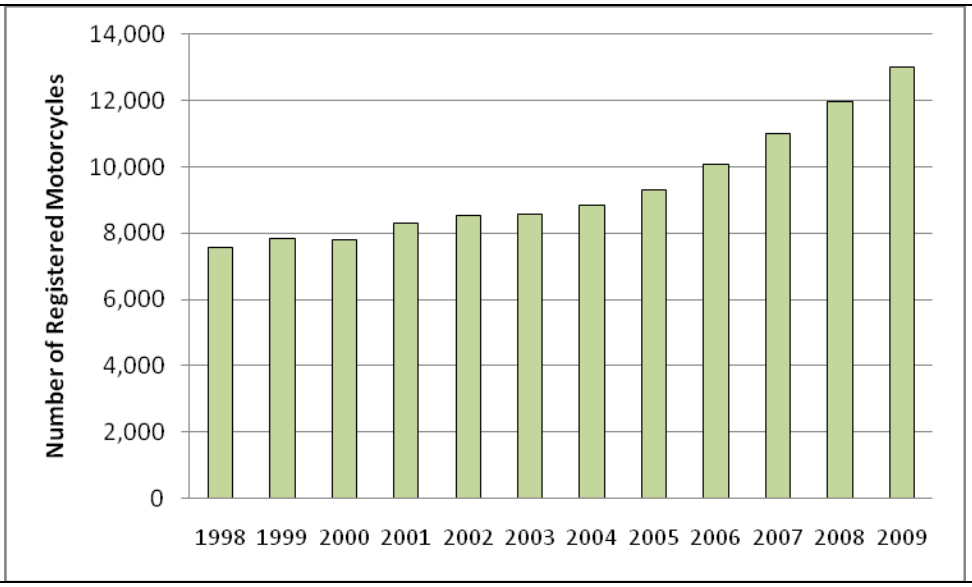

Chart 2.14 – Annual number of registered motorcycles in Tasmania (1998-2009)

3. Discussion

Crashes involving motorcyclists account for 23% of all serious casualty crashes in Tasmania. Motorcyclists are sometimes referred to as 'vulnerable' road users because, when they are involved in a crash, they are more likely to be injured than other road users.

Motorcycle crashes are more prevalent in the summer months and at the weekends, suggesting that a significant proportion of motorcycle riding is for recreational purposes. Compared with all serious casualty crashes, motorcycle crashes are less likely to occur at night and are less likely to occur in wet conditions.

Over 60% of serious casualty motorcycle crashes are single vehicle crashes where the motorcyclist is the only person involved. Detailed analysis of the Traffic Accident Reports for multiple vehicle crashes involving motorcyclists found that about half were the result of a mistake by the motorcyclist, and about half were the result of a mistake by the other road user.

Serious casualty motorcycle crashes involving loss-of-control and manoeuvring were also analysed in detail, to try and better understand how the motorcyclist was injured. About half of the crashes did not involve the motorcyclist colliding with any specific object, in these crashes the motorcyclist was injured by landing on the ground and then sliding along the road and / or the road shoulder / verge. Roadside elements that motorcyclists were most frequently recorded as colliding with include: ditches / embankments, trees / roadside vegetation and walls / fences.

Serious casualty motorcycle crashes are most likely to involve young riders (aged 16 to 25 years) and riders aged 36 to 40 years.

TRAFFIC & INFRASTRUCTURE

Roads & Traffic Division

Department of Infrastructure, Energy & Resources

GPO Box 936, Hobart 7001

Ph: 1300 135513

Visit: www.dier.tas.gov.au