Motorcycle Safety
A Single Point of Truth

Bringing together motorcycle safety information from the different data sources into one document

Data sources include ACC, Ministry of Transport, NZ Transport Agency, NZ Police and National Health Statistics
(Courtesy of the Transport Agency and Ministry of Transport)

Not all percentages add up to 100% due to rounding error

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How Motorcycle use and safety has changed over time

- In 1933 – motorcycles were 16.5% of the private light vehicle fleet, three times the figure nowadays
- Motorcycling has always had practical transport related users, enthusiast users and users motivated to a lesser or greater extent in both directions
- Motorcycling has fluctuated over the years related to affordability and other factors
- In 1951 there were 454 motorcycle injury crashes per 10,000 registered motorcycle. In 2015 the figure was 135

Registered motorcycles in New Zealand by year since 1951

Annual crashes per 10,000 registered motorcycles

Distance travelled per year on motorcycles by age group of rider

Motorcycling is now much safer per registered motorcycle than in 1951 as is all vehicle travel

Overall, motorcycle travel has increased markedly since 1997/98 but has not yet regained the levels of 1989/90

There’s been a shift to older riders particularly those

15-29 yr old travel reduced by more than trebled
About the same period, the 30-44 age group increased but not so dramatically

Motorcycling is now much safer per registered motorcycle than in 1951 as is all vehicle travel

Overall, motorcycle travel has increased markedly since 1997/98 but has not yet regained the levels of 1989/90
Motorcycle safety has decreased since 2002

The per vehicle motorcycle crash rate has been on the increase since 2002

The increase in serious ACC claims is much less than the increase in motorcycling

There is plenty left to be achieved

Motorcycling increased by around 60% from 2005 to 2015
Motorcycle / moped Police reported crashes increased by around 40% from 2005 to 2015
ACC claims serious enough to involve ongoing entitlements increased 14% from 2005 to 2015
54 motorcyclists died on our roads in 2015, up from a low of 28 in 2003

“Motorcycling has increased particularly in the older age groups”

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Motorcycle travel & safety information from travel surveys

“Older riders tend to own larger bikes and ride for recreation”

“Rural crashes are more severe”

- Ministry of Transport travel survey analyses provide information on motorcycle travel by cc rating by urban road and rural road for 2011-2014
- These can be matched with crash statistics to provide estimates of crash rates per million kilometres ridden by urban and rural
- For travel survey analyses urban means speed limit 50km/hr and under and rural means speed limit greater than 50km/hr

Older people predominantly use larger motorcycles

Similarly people under 30 are the main users of motorcycles lower than cc 251

1/4 of all riding is in urban areas and 3/4 on the open road

Rural crashes are biased towards more severe crashes - related to the amount of riding done in rural areas

In urban & open road areas, on average motorcyclists have around one fatal crash per 5.5 million kilometres of riding

In urban areas, there is on average around per 80,000 km of riding and in rural areas per 400,000 km of riding

1 injury crash
Motorcyclist age and gender related to risk

- The average age of both deaths and injuries has increased from the low 30s in 2000 to the high 30s in 2014
- As this has happened the percentages of crashes involving 40 years plus riders has increased considerably
- The percentage of small machines under 60cc has also increased from around 11% to over 20%

Since 2000...
Motorcyclists have become an older group

The average age of both killed & injured riders has moved from around under 35 to close to 40yrs

40yrs+
The % of injured riders 40+ has risen from 26% - 45%

The vast majority of motorcycle casualties are men

“Motorcyclists who are under 30 and over 40 are most at risk”
Alcohol, drugs & speed in motorcycle crashes

Motorcyclist alcohol/drugs and speed involvement in fatal crashes % fatal

- Alcohol/drugs: 12%
- Alcohol/drugs and speed: 16%
- Speed: 20%
- Neither: 52%

The pie chart describes motorcyclist alcohol/drugs and speed involvement in fatal crashes. It shows that alcohol/drugs and or speed are involved in 48% of motorcycle fatal crashes with alcohol/drugs involved in 28%, speed alone in 20% and alcohol/drugs alone in 12%.

“More than half of fatal motorcycle crashes do not involve alcohol, speed or drugs”

Alcohol, drugs or speed impacted on almost 1/2 of fatal crashes

- Alcohol or drugs: 28%
- Speed: 20%
- Neither: 52%

Alcohol or drugs were present with speed in a further 16% of crashes

Responsibility in crashes

The pie chart looks at the primary responsibility for single vehicle and multi-vehicle motorcycle crashes.

- Single vehicle, no motorcyclist fault identified: 2%
- Single vehicle, motorcyclist at fault: 33%
- Multi vehicle, no motorcyclist fault identified: 35%
- Multi vehicle, motorcyclist some responsibility: 7%
- Multi vehicle, motorcyclist primary responsibility: 23%

Motorcyclists are primarily responsible for 56% of the crashes

In crashes with other road users, the other road user is more likely to be primarily responsible

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We looked at the 100 most recent fatal motorcycle crashes on sealed roads.
The motorcycles were classified by type by a motorcycle expert.

“Higher powered bikes 600cc and over are more likely to be involved in a fatal crash”

Percentage of sample of motorcycles in fatal crashes by type

- 21% Other and unknown
- 10% Dirt or Trail bike
- 3% Adventure
- 7% Tourer
- 10% Street/Naked
- 24% Sport
- 23% Cruise
- 2% Scooter
- 12% up to 60cc
- 27% 1001+cc
- 30% 61-600cc
- 31% 601-1000cc

Fatally or seriously injured – annual average July 2009-June 2014

- 58% are involved in bikes over 600cc+

Scooters were in 2% of fatal crashes

The bike types most in fatal crashes were CRUISER BIKES & SPORTS BIKES

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Motorcycle size related to risk

- Most rural fatal crashes (60%) are on bikes known to be >749cc
- 40% of urban fatal crashes are on bikes >749 cc
- 79% of fatal crashes on 1000+ cc engines are on the open road

“Motorcyclists on big bikes tend to be injured more severely than those on smaller bikes – more rural high speed riding.”

On average riders on bikes >1000cc have around:

- 13x the risk of dying in a year than those on bikes up to 60-250cc bike riders
- 6x the risk of bike riders
- 2x the risk of those between 250-1000cc

Larger cc motorcycles dominate in open road injuries & fatalities
What time & day do crashes and injuries occur?

- The two charts on crashes show that most motorcycle crashes occur during the day.
- This is particularly so at weekends when there is a large peak from noon to 4pm.
- The chart on claims shows a similar pattern over the day.

“Most motorcycle crashes occur between noon and 8pm with a large weekend peak between noon and 4pm.”
Time of year & where on the road network are motorcyclists crashing & getting injured?

- The percentage of fatal crashes which are rural varies by quarter between 72 and 85% and is highest in the months October to March—when conditions are more conducive to rural riding. This reflects the greater severity of higher speed rural crashes.

- The percentage of injury crashes which are rural is much lower varying from 36 to 48% between quarters. The higher percentages are again in the better weather months as with the fatal crashes.

  • Rural crashes vary between quarters much more from 33% in January–March to 17% in July–September, a quarter unconducive to rural riding due to weather conditions.

  • Urban crashes tend to ride, crash, and get injured in the warmer dryer months of the year. Urban crashes are spread more evenly throughout the year than rural crashes.

  “Rural crashes peak during warmer weather with improved conditions for rural riding”

- Urban crashes vary between quarters much more from 24% in October–December to 23% in July–September.

Graph depicting:
- Urban crashes: 24% October–December, 23% July–September
- Rural crashes: 26% January–March, 29% October–December, 33% January–March, 27% April–June, 17% July–September, 21% April–June

Bar chart showing:
- Percentage of injury and fatal crashes which are rural by quarter
  - Injury: 64%, 60%, 54%, 58%, 50%
  - Fatal: 36%, 41%, 43%, 40%, 49%

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Motorcyclists’ interactions with Road Policing

- When people are stopped by Police more than one infringement may be detected
- The infringement associated with the main reason they were stopped is the primary infringement type
- The charts include infringements from automatic enforcement (speed and red light cameras) under speed

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Motorcyclists are mainly caught for SPEEDING & LICENSING/WOF INFRINGEMENTS.

Teens & early 20 year olds are the main offenders, although demerit points accrued do not drop off until age ranges 50+ are reached.

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Vehicle movements in motorcycle crashes

- These charts look at vehicle movements in motorcycle crashes involving injury or death.
- Most urban crashes occur at intersections and most rural crashes involve losing control.

“Be cautious at intersections & keep your bike under control when out on the highway”

### Movements in urban injury or fatal crashes

- **22%** Lost control/run off road
- **10%** Rear end/obstruction
- **3%** Head on
- **5%** Overtaking/lane change
- **2%** Pedestrian

### Movements in rural injury or fatal crashes

- **11%** Rear end/obstruction
- **48%** Intersection
- **11%** Manoeuvring/miscellaneous
- **54%** Lost control/run off road
- **9%** Head on
- **9%** Overtaking/lane change

**For urban crashes**

- A fifth are lost control.
- Almost 1/2 are at intersections.

**For rural crashes**

- Only 14% are at intersections.
- More than 1/2 are lost control.

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The consequences of crashes – injuries

“Safety gear works – Wear it!”

- A quarter of ACC injuries are entitlement claims, serious enough for the claimant to have ongoing entitlements
- The average entitlement claim length is around 6 months
- Most injuries are fractures/dislocations and soft tissue injuries which include injury to internal organs
- The relatively small number of concussions and other brain injuries may relate to helmet use
- Most common injury sites are the knee and shoulder joints, other joints and other parts of limbs

<table>
<thead>
<tr>
<th>Site of ACC injuries</th>
<th>ACC Motorcycle Claims 2007-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest</td>
<td>1%</td>
</tr>
<tr>
<td>Head and face</td>
<td>25%</td>
</tr>
<tr>
<td>Lower back/spine</td>
<td>1%</td>
</tr>
<tr>
<td>Neck, back of head</td>
<td>74%</td>
</tr>
<tr>
<td>vertebræ</td>
<td></td>
</tr>
<tr>
<td>Unobtainable</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
</tr>
<tr>
<td>Limbs and extremities</td>
<td>6%</td>
</tr>
</tbody>
</table>

The result of crashes injury:

- Concussion/Brain injury
- Fracture/Dislocation
- Soft tissue injury (contusion, internal organ, strain)
- Infected/Non-infected laceration, puncture wound, sting

Most injuries are at body places least protected.
Indicates that safety gear is effective.

Head injuries are relatively rare - indicating helmets work.

Low rate of face injury when it is a major impact site indicates full face helmets work.

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1. Motorcycling has increased particularly in the older age groups

2. Rural crashes are more severe and urban crashes are more frequent

3. Older riders tend to own larger bikes and ride for recreation

4. Motorcyclists who are under 30 and over 40 are most at risk

5. Higher powered bikes with engines over 600cc are involved in most fatal and serious injuries

6. Over half of fatal crashes do not involve alcohol, drugs or speed

7. Safety gear works – wear it!

8. Rural crashes peak during warmer weather with improved conditions for rural riding

9. Most motorcycle crashes occur between noon & 8pm with a large weekend peak between noon & 4pm

10. Be cautious at intersections & keep your bike under control on the highway