



# Motorcycle Safety

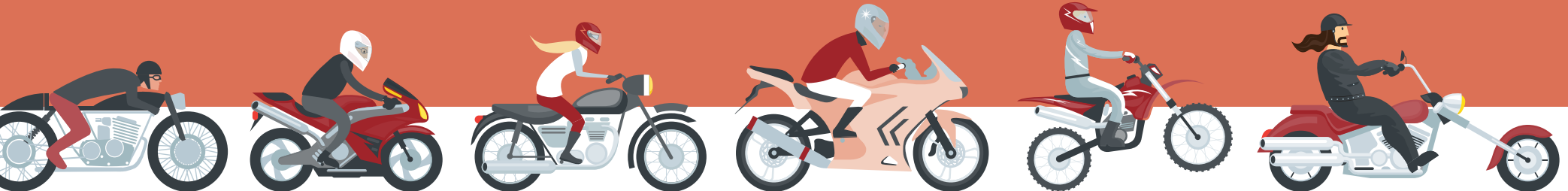
## A Single Point of Truth

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**Motorcycle Safety Advisory Council**  
Making Motorcycling Safer

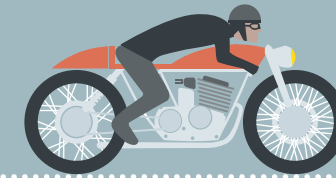
bringing together motorcycle safety information  
from the different data sources into one document



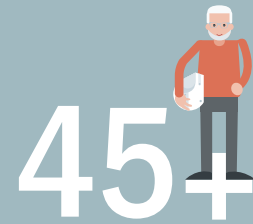
Data sources include ACC, Ministry of Transport, NZ Transport Agency, NZ Police and National Health Statistics  
(Courtesy of the Transport Agency and Ministry of Transport)

# 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 affordability and other factors.
- In 1951 there were 454 motorcycle injury crashes per registered motorcycle. In 2015 the figure was 135



There's been a shift in ridership to older riders particularly those



15-29 yr old travel reduced by **84%↓** from 1989/90 to 2009-2014

**45+ TRAVEL** increased by **280%** Over the same period, The **30-44** age group increased but not so dramatically ↑

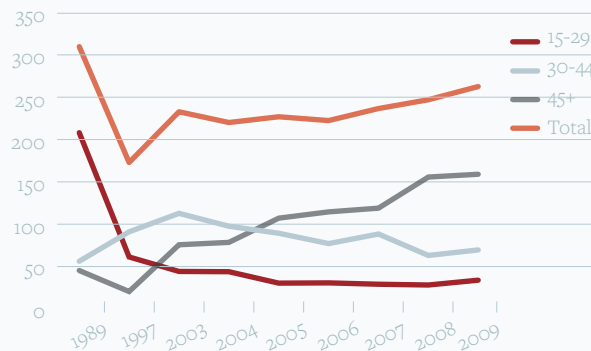
**Motorcycling is now much safer**

per registered motorcycle than in 1951 as is all vehicle travel

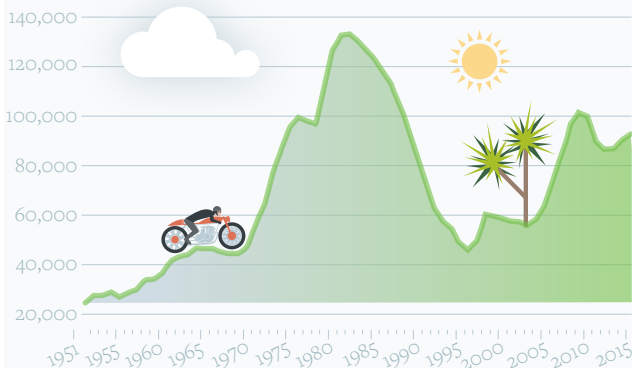


Overall, motorcycle travel has increased markedly since 1997/98 but has not yet regained the levels of 1989/90

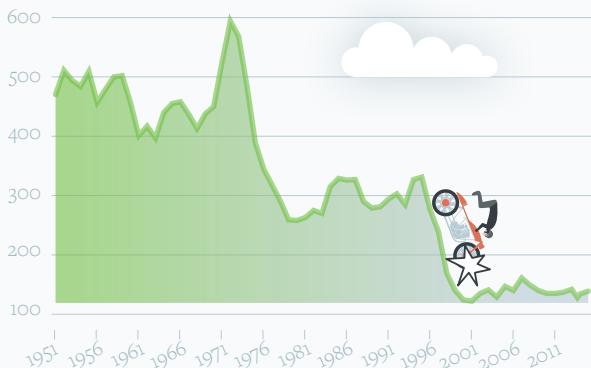
Distance travelled per year on motorcycles by age group of rider



Registered motorcycles in New Zealand by year since 1951



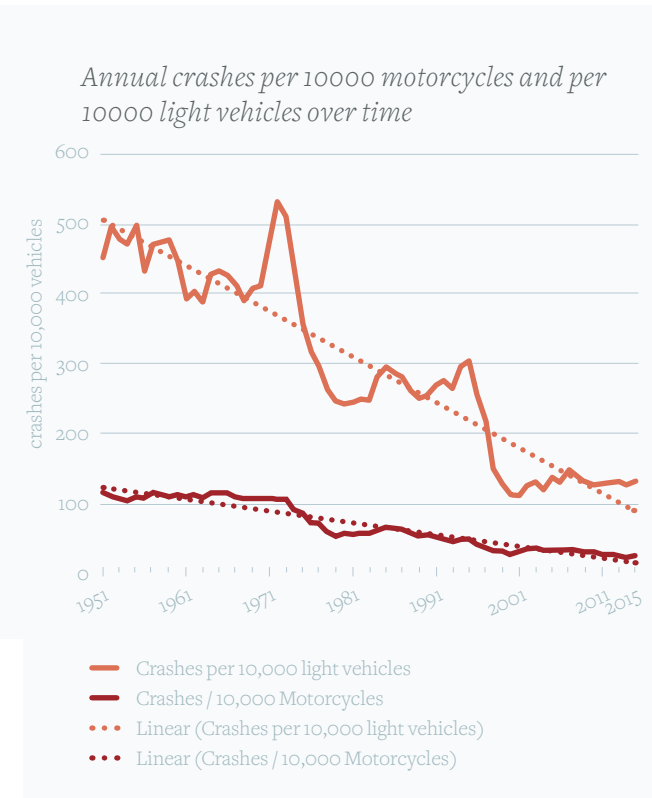
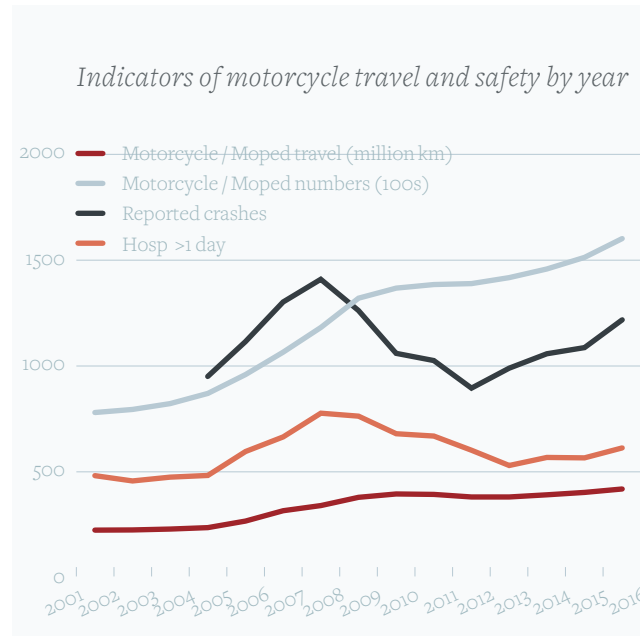
Annual crashes per 10,000 registered motorcycles



## How Motorcycle use and safety has changed over time continued...

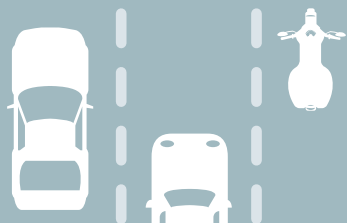


- Motorcycling increased by around 60% from 2005 to 2015
- Motorcycle / moped Police reported crashes increased by around 40% from 2005 to 2015
- ACC claims serious enough to involve ongoing entitlements increased 14% from 2005 to 2015
- The per vehicle motorcycle crash rate has been generally on the increase since 2002 following a sharp decline from 1996.
- The per motorcycle crash rate has oscillated between 3.5 to 6 times that of light vehicles. It has been generally on the increase since 2002 following a sharp decline from the mid-1990s.



Motorcycling crashes have increased by less than the increase in motorcycling

Motorcycle safety has decreased relative to light vehicle safety since 2002



The per vehicle motorcycle crash rate has been generally on the increase since 2002 following a sharp decline from 1996

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

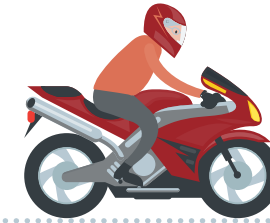


Safety has improved but there is plenty left to be achieved

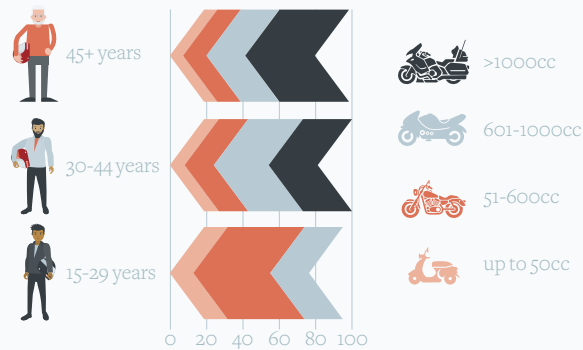


“Motorcycling has increased particularly in the older age groups”

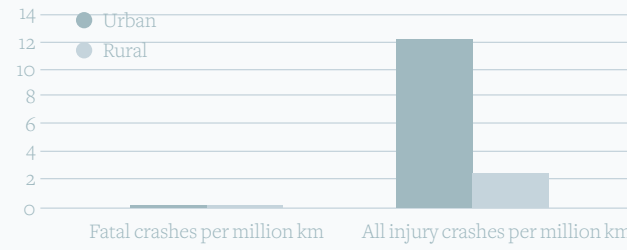
# Motorcycle travel & safety information from travel surveys



Percentage of age-group travel on motorcycles in different cc rating groups



Fatal crashes and injury crashes per million km by urban and rural



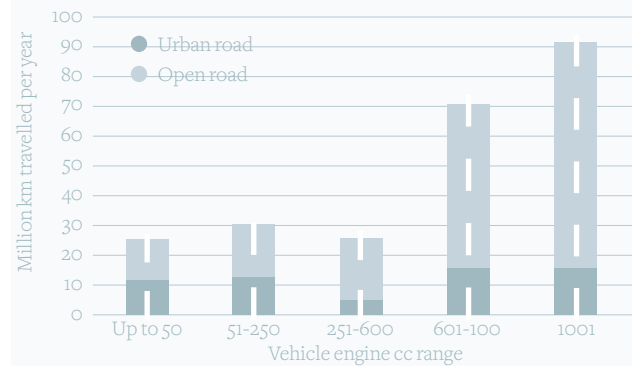
“Rural crashes are more severe – More riding at faster speeds”

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/h and under and rural means speed limit greater than 50km/h.

Urban and open road motorcycle travel by engine size



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

Older people predominantly use larger motorcycles

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

In urban areas, there is on average around 1 injury crash per 80,000 km of riding and in rural areas 1 injury crash per 400,000 km of riding

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

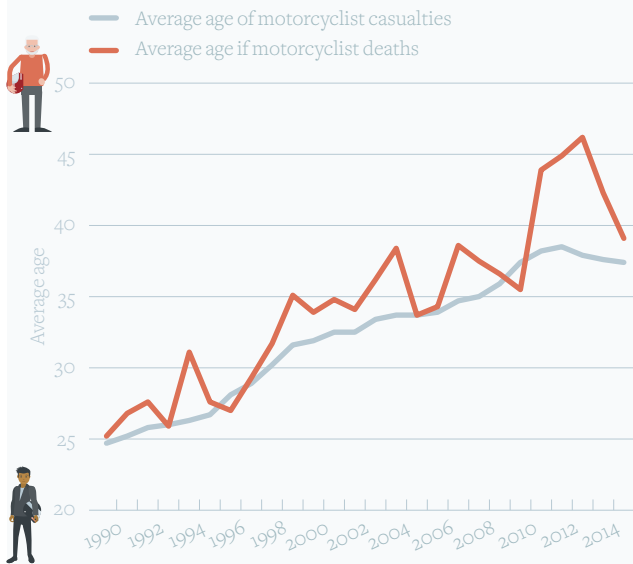
In urban & open road areas, on average motorcyclists have around one fatal crash per 5.5 million kilometres of riding



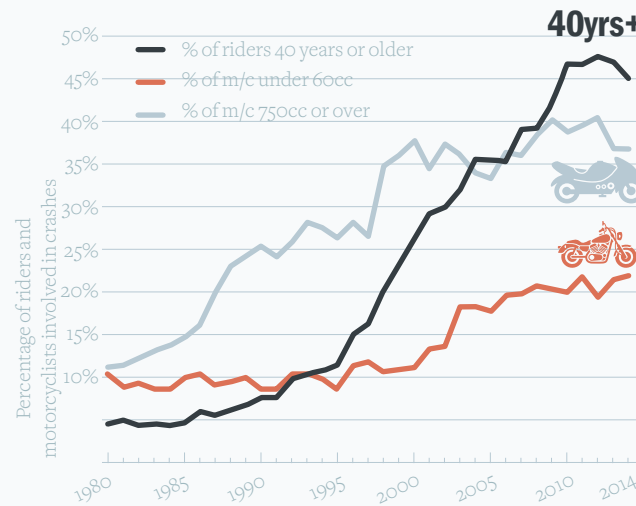
# Motorcyclist age and gender related to risk



Average age of motorcyclists killed and injured by year



Percentage of riders 40 years and over, percentage of motorcycles under 60cc and percentage of motorcycles 750 cc and over involved in crashes by year



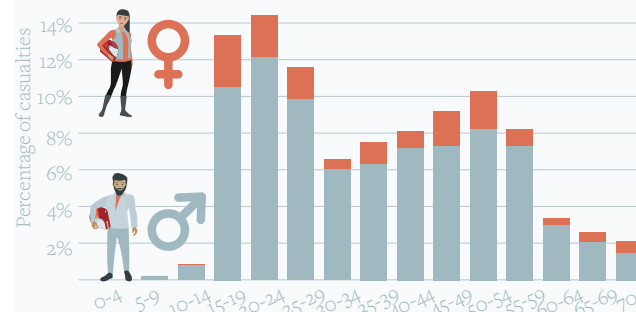
“Young and 40+ motorcyclists are most at risk with the 40+ risk increasing the most”

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 40years plus riders has increased considerably.

The percentage of small machines under 60cc has also increased from around 11% to over 20%.

Motorcycle casualties by age and gender



Since 2000...

Motorcyclists have become an older group

The average age of both killed & injured riders has moved from around 25 to over 35yrs



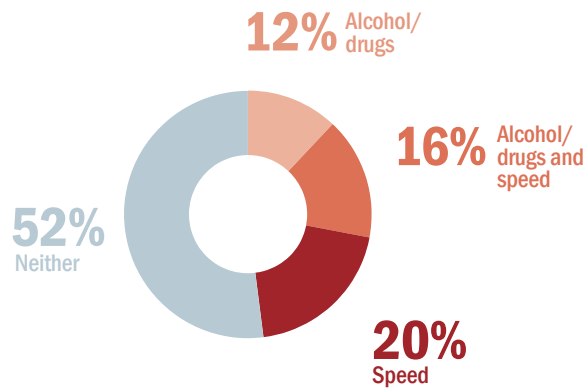
40yrs+ 

The percentage of injured riders 40 plus has risen from around 30% to around 40%

 The vast majority of motorcycle casualties are men

# Alcohol, drugs & speed in motorcycle crashes

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



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%.

“Speed alone is present in 20% of fatal motorcycle crashes”



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



## Speed

without alcohol or drugs was present in **20%** of fatal crashes

Alcohol or drugs were present in **12%** of fatal crashes



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

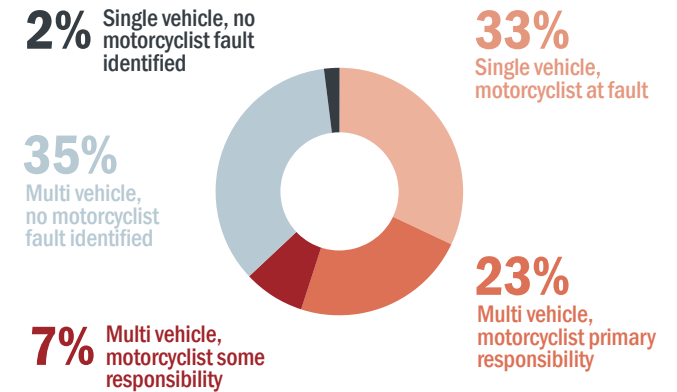
They are not being caught much for **alcohol**



but alcohol is a factor in **12%** of fatal motorcycle crashes

# Motorcyclist fault in crashes

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



**55%** Motorcyclists are primarily responsible for 55% of the crashes they are involved in

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



# Type and cc rating of crashed motorcycles

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 with engines more than 600 cc are involved in most fatal crashes”



The bike types most in fatal crashes were  
**CRUISE BIKES**  
&  
**SPORTS BIKES**

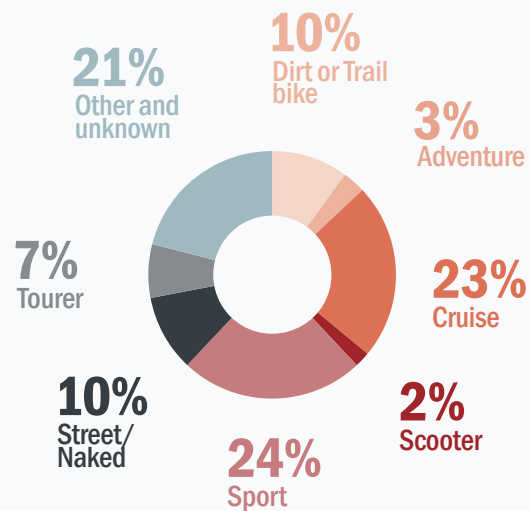
**Scooters**

were in **2%**  
of fatal crashes

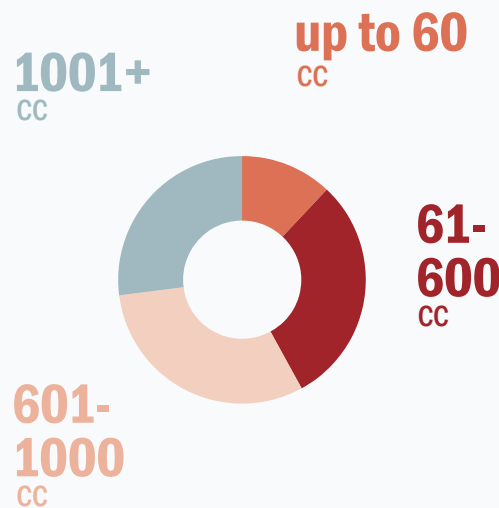


bikes in over **600cc+** bracket are involved in **58%** of fatal & serious crashes

Percentage of sample of motorcycles in fatal crashes by type



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

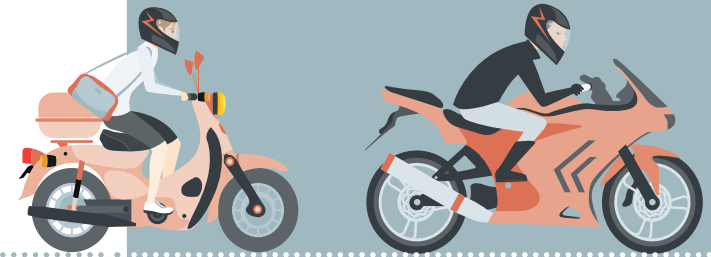







# Motorcycle size related to risk

- Most fatal crashes (75%) are on rural roads.
- Most injury crashes (63%) are on urban roads
- 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.”



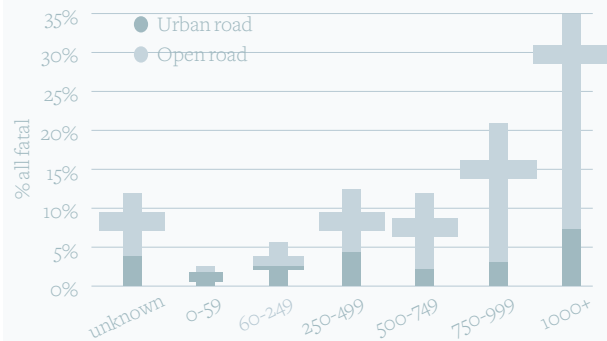
On average riders on bikes  >1000cc have around:

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

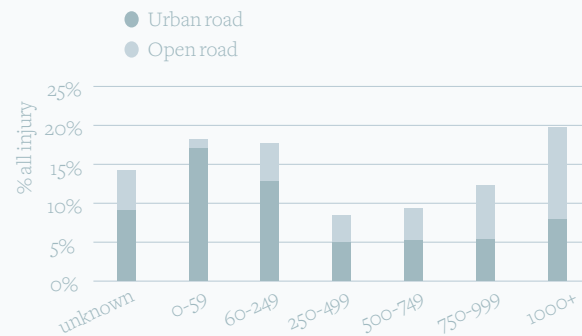
Larger cc motorcycles dominate in open road **injuries & fatalities**

For fatalities, larger bikes dominate while most **injuries** per bike **occur** in the **up to 60cc** range

Percentage of fatal crashes by CC range by urban/ rural



Percentage of injury crashes by CC range by urban/ rural





# What time & day do crashes and injuries occur?



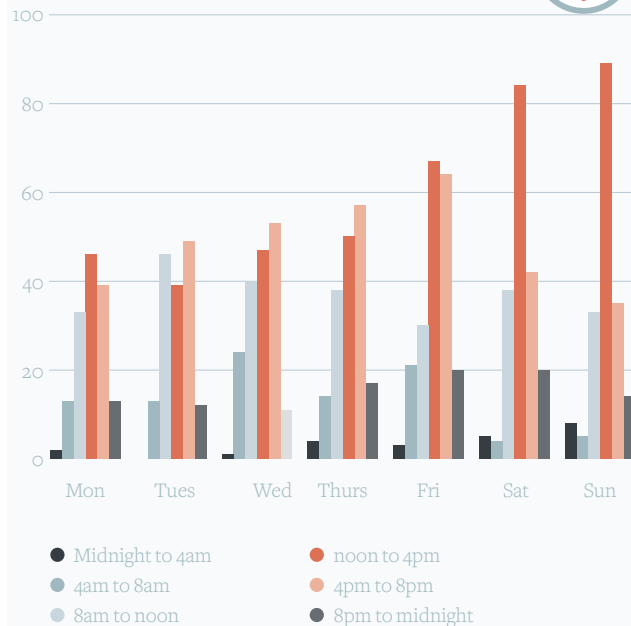
“Most motorcycle crashes occur between noon and 8pm with a large weekend peak between noon and 4pm”

- The two charts on crashes show that most motorcycle crashes occur during the day

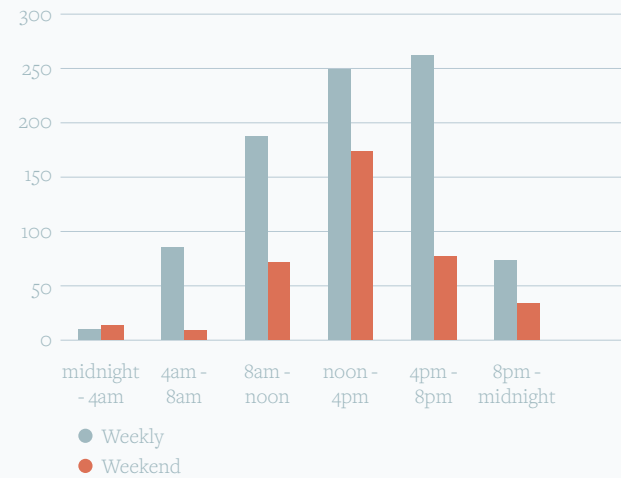
- This is particularly so at weekends when there is a large peak from noon to 4pm.

- The chart on claims shows a similar pattern over the day for claims.

Motorcycle crashes 2015 by day of week and time of day

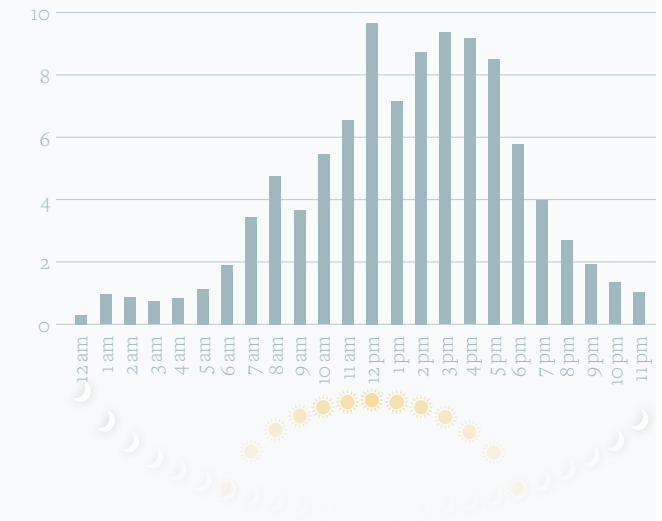


Motorcycle crashes by weekday/weekend



Average motorcycle claims by crash time in proportion from CY2007 to CY2016.

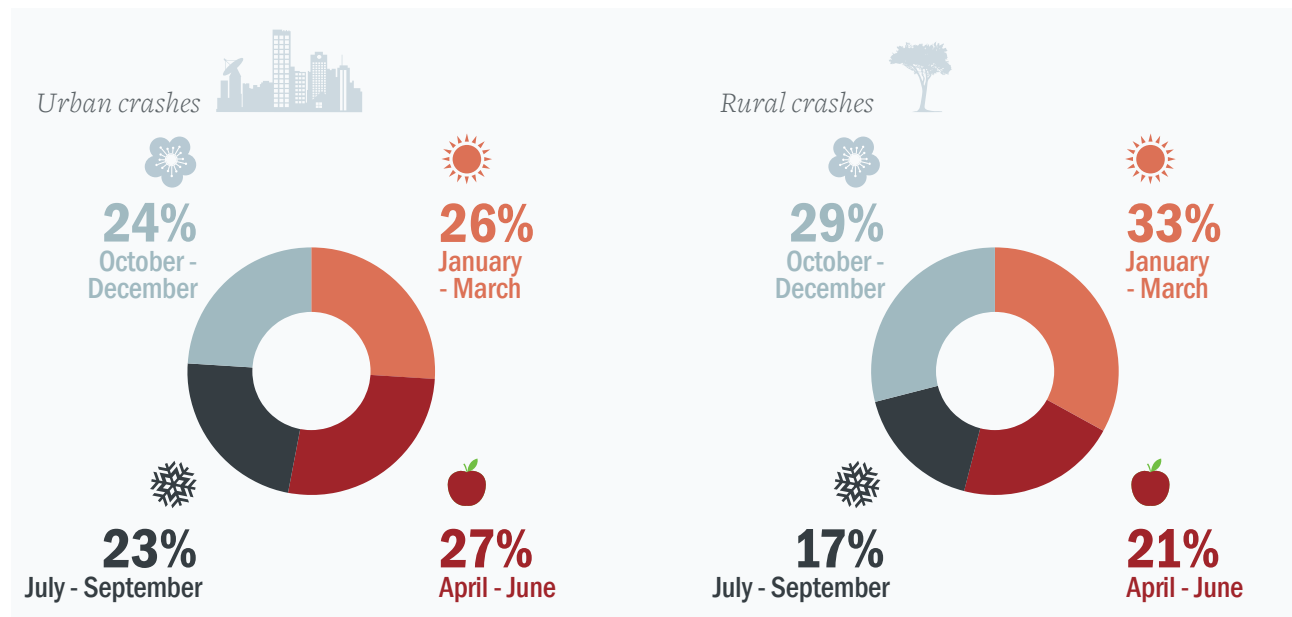
(CY means claims year)



# 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 percent 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

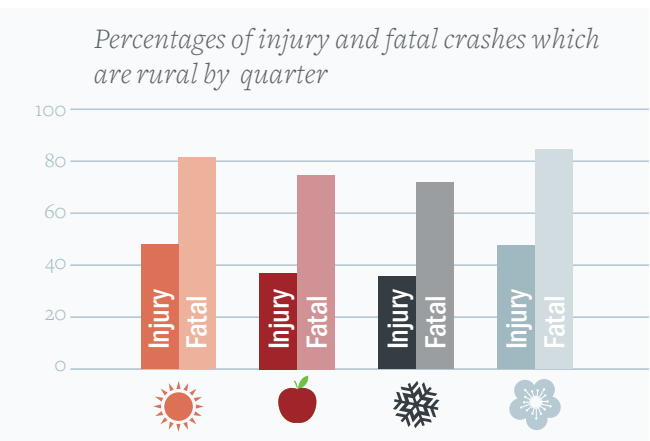
“Rural crashes peak during warmer weather & improved conditions for rural riding”



Motorcyclists 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

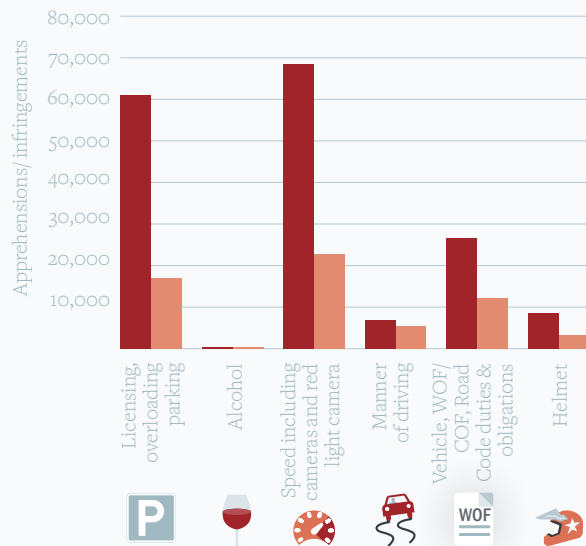
With the quarters differing from 27% in April - June to 17% in July - September



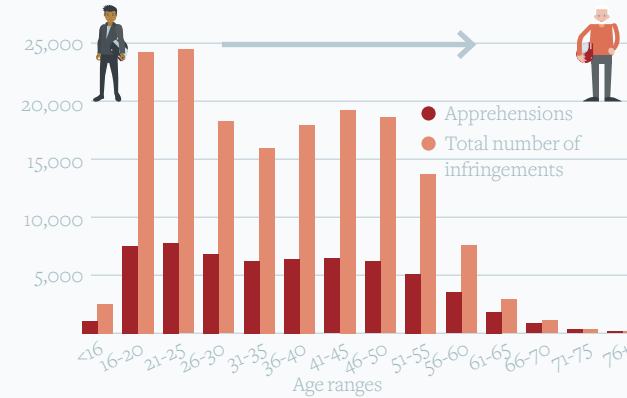
# Motorcyclists' interactions with Road Policing

- 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.

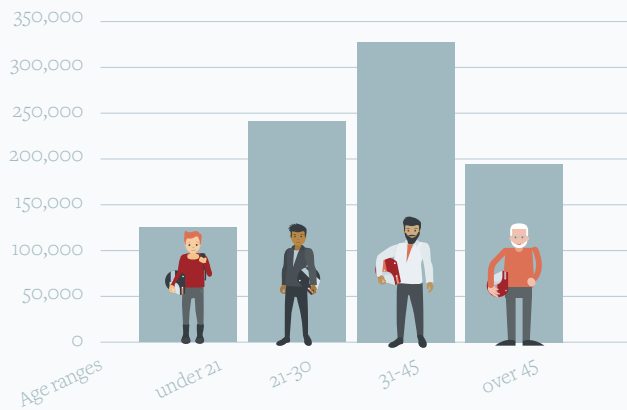
Apprehensions/Infringements vs primary infringement type



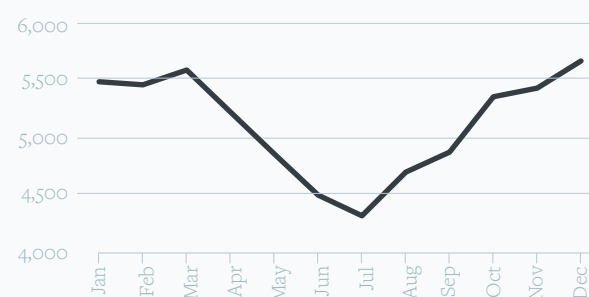
Apprehensions/Infringements vs rider age



Demerit points accrued by riders by age range



Police apprehensions of Motorcyclists-2007-2016



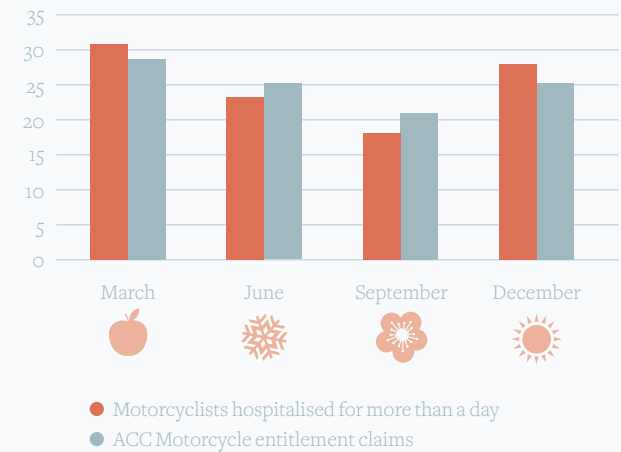
Motorcyclists are mainly caught for **SPEEDING & LICENSING/WOF INFRINGEMENTS**



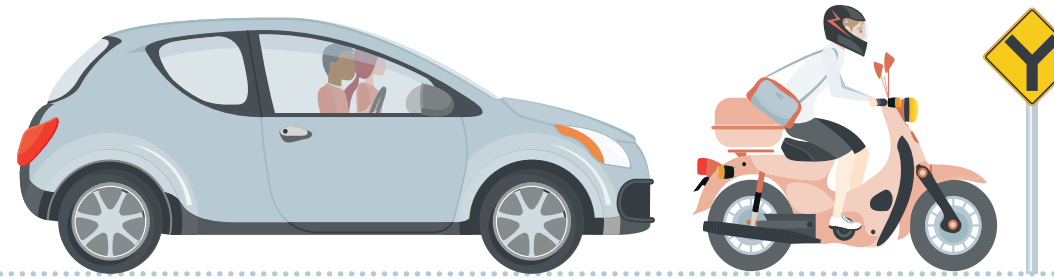
Teens & early 20 year olds are the main offenders, although demerit points accrued do not drop off until age ranges 50+ are reached



Hospitalised and ACC entitlement claims by quarter



# Vehicle movements in motorcycle crashes



These charts look at vehicle movements in motorcycle crashes involving injury or death.

## For urban crashes

- Almost half are at intersections
- A fifth are lost control
- Rear-end/obstruction crashes and manoeuvring both comprise around 10%

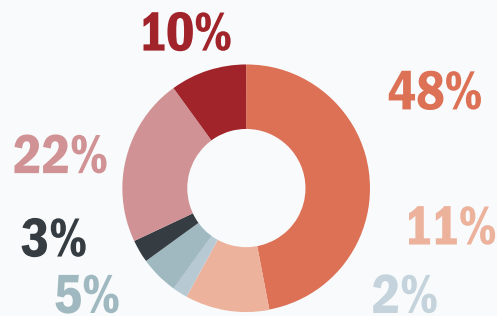
## For rural crashes

- 55% are lost control
- 12% are rear end obstruction
- 14% are at intersections
- Overtaking/lane change and head on total 16%

Of those who lost control on a straight a quarter ended up onto the left, 10% to the right and two thirds on the road itself.

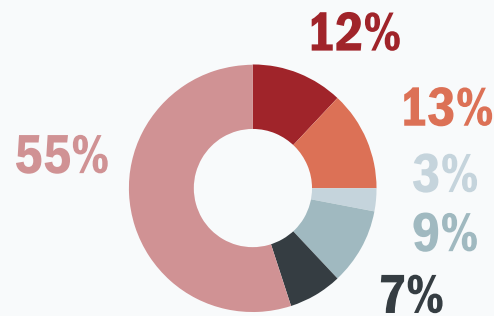
“Be cautious at intersections and keep your bike under control when out on the highway”

Movements in urban injury or fatal crashes



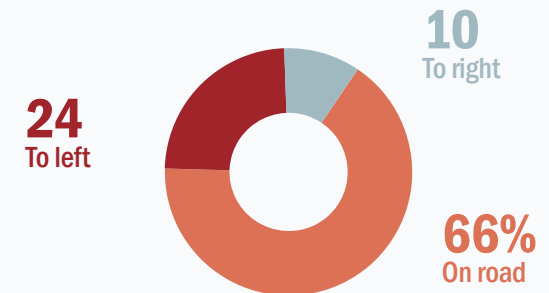
- Overtaking/lane change
- Head on
- Lost control/run off road
- Rear end/obstruction
- Intersection
- Manoeuvring/miscellaneous
- Pedestrian

Movements in rural injury or fatal crashes



- Overtaking/lane change
- Head on
- Lost control/run off road
- Rear end/obstruction
- Intersection
- Manoeuvring/miscellaneous
- Pedestrian

Lost control on straight



# The consequences of crashes-injury



- A quarter of ACC injuries are entitlement claims, serious enough for the claimant to have ongoing entitlements
- 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.

“Safety gear works – Wear it!”



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

Head injuries are relatively rare – indicating helmets work



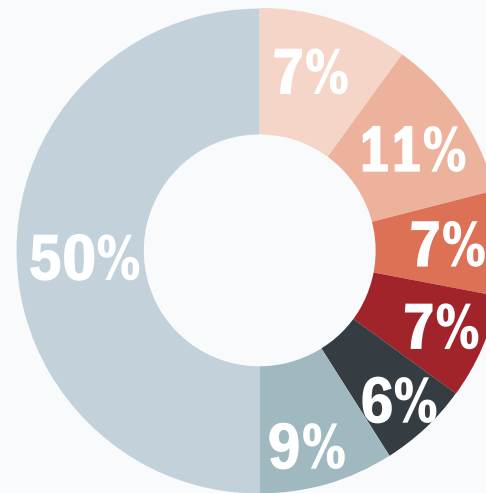
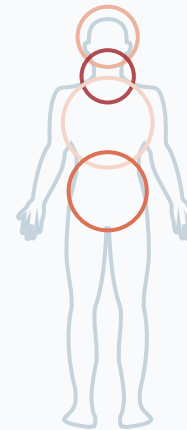
Low rate of face injury when it is a major impact site indicates

**full face helmets work**

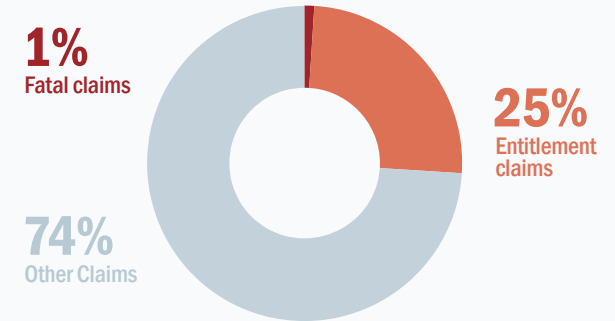


## Site of ACC injuries

- Chest
- Head and face
- Lower back/spine
- Neck, back of head vertebrae
- Unobtainable
- Other
- Limbs and extremities



## ACC Motorcycle Claims 2007-2016



## The result of crashes injury



Concussion/  
Brain injury



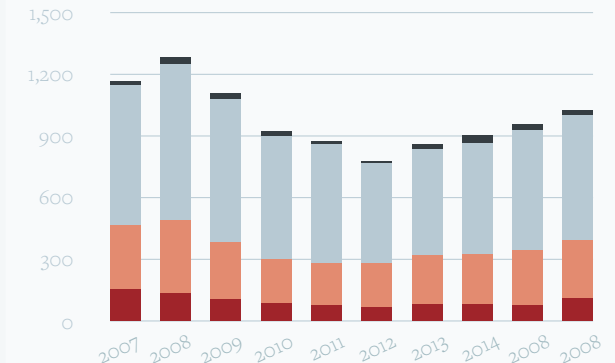
Soft tissue injury  
(contusion, internal organ, strain)



Fracture/  
Dislocation



Infected/ Non-infected laceration, puncture wound, sting



# Motorcycle Safety

## A Single Point of Truth



1 Motorcycling has increased particularly in the older age groups



4 Young and 40+ motorcyclists are most at risk, the 40+ risk increasing the most



2 Rural crashes are more severe – More riding at faster speeds



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



3 Older riders tend to buy larger bikes and ride for recreation



6 Speed alone is present in 20% of fatal motorcycle crashes



7 Safety gear works – wear it!



8 Higher-powered bikes with engines more than 600 cc are involved in most fatal crashes



9 Rural crashes peak during warmer weather & improved conditions for rural riding



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



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