



Dead tired

Road Safety Series

December 2017



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NSW Police Force

About the NRMA

Better road and transport infrastructure has been a core focus of the NRMA since 1920 when our founders lobbied for improvements to the condition of Parramatta Road in Sydney. Independent advocacy was the foundation activity of the organisation and remains critical to who we are as we approach our first centenary.

From humble beginnings, the NRMA has grown to represent over 2.6 million Australians principally from NSW and the ACT. The NRMA also provides motoring, mobility and tourism services to our Members and the community.

Today, the NRMA works with policy makers and industry leaders to advocate for increased investment in road infrastructure and transport solutions to make mobility safer, provide affordable and efficient transport options and ensure communities remain connected to business and employment opportunities.

By working together with all levels of government to deliver integrated transport options, we can give people a real choice about how they get around. The NRMA believes that integrated transport networks, including efficient roads, high-quality public transport and improved visitor facilities and cycleways, are essential to solve the challenge of growing congestion and provide for the future growth of our communities.

Road Safety Series

The NRMA has prepared a series of reports with the aim of identifying the main factors involved in road crashes and initiatives that may help to reduce the risk of loss of life and injuries.

We acknowledge the next major tool to prevent and reduce loss of life will be driven by technology, as was seen with seatbelts and random breath testing. While we move towards an autonomous future, continued investment in road infrastructure, vehicle technology and public education campaigns are needed to improve the safety of motorists on our roads.



Introduction

Sleep is a basic biological need, so it is no wonder that tiredness is one of the three biggest killers on NSW roads, contributing to 17 percent of crashes.

Tiredness affects drivers of all skill level and experience. Drivers who are tired have slower reaction times, impaired performance and judgement. Tired drivers are more likely to fall asleep at the wheel which can have devastating consequences.

There is a misconception that driving for long distances causes fatigue, when in fact hopping into a car tired or sleep deprived can be just as dangerous. For example, being awake for 17 hours is the same as having a Blood Alcohol Content (BAC) of 0.05.

While it is important to get a good night's sleep, we know that four in 10 adults suffer from inadequate sleep.¹ Research shows that people who are most at risk behind the wheel are shift workers or those that work long hours, people with sleep disorders and young drivers.

However, the NRMA also recognises that new parents experiencing less shut-eye represent a significant yet potentially underreported cohort more susceptible to a crash or near miss due to fatigue. Very little is done to educate new parents of the dangers of driving tired.

Over the years, the NRMA has supported initiatives to address driver fatigue, but we believe more could be done. The only way to address fatigue is sleep, however the NRMA supports technological solutions such as fatigue detection technology, roadside fatigue testing, greater visibility of safe rest areas and road treatments that minimise and prevent fatigue-related crashes.

What the NRMA wants

- 1.** Increase the number of rest stop areas to accommodate both light and heavy vehicles.
- 2.** Conduct an audit of rest stop areas and upgrade facilities so that they:
 - Have an acceptable level of cleanliness.
 - Have adequate facilities, including showers and wifi.
 - Are spaced at appropriate driving time intervals.
 - Are sufficiently signposted.
- 3.** Develop a free Australian rest stop app providing details of rest stops on popular touring and freight corridors.
- 4.** Investigate the instances of drowsy driving among new parents and develop fatigue education campaigns targeting new parents.
- 5.** Undertake additional research exploring the potential benefits of roadside fatigue testing.
- 6.** Give priority to implementing tactile line marking on high risk rural roads known for fatigue related crashes.
- 7.** Fleet owners including Government should consider the use of new technology with fatigue alerts. Our Connected telematics solution provides fleet managers with real-time data about their employees' driving and alerts them to breaches of safe driving time limits.

The dangers of drowsy driving

17%

Fatigue is a contributing factor in 17 percent of crashes in NSW.

65%

Of the 460 participants of our corporate driver training program in 2017, two-thirds admitted to driving more than 2 hours without a break.

People who drive while tired have:

- slower reactions times
- impaired judgment and performance
- experienced loss of attention
- an increased probability of falling asleep.

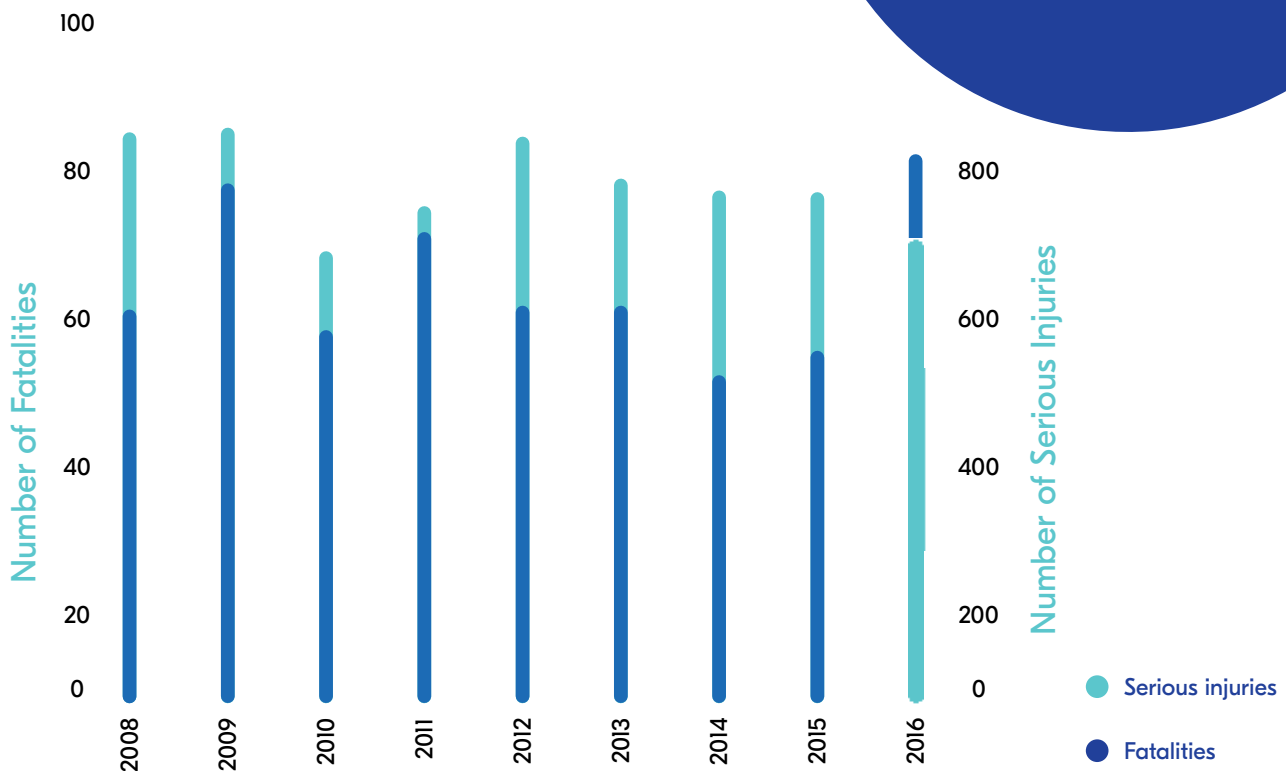


Figure 1. Fatigue related fatalities and serious injuries from 2008 to 2016

40%

Four in 10 adults frequently suffer from inadequate sleep³.

82

In 2016, 82 people lost their lives due to fatigue related crashes². This was the highest since 2008.

The only cure for tiredness is sleep

17 hours awake =
BAC of 0.05

24 hours awake =
BAC of 0.10

Signs of tiredness

- Constant yawning
- Sore or heavy eyes
- Difficulty remembering the last few kilometres
- Drifting in the lane
- Changes in speed
- Daydreaming or zoning out
- Unable to concentrate on driving
- Slower reaction times

Most at risk

- Young drivers
- Shift workers and people who work long hours
- Freight and truck drivers
- People with sleep disorders
- Parents

Taking a break

When driving, the only way to combat tiredness is to take a break. Research shows that a power nap of 15 minutes can significantly reduce the chance of a crash.⁴

Motorists driving long distances are encouraged to take regular breaks from driving in order to reduce fatigue related crashes. In fact, newer fleet cars will usually alert the driver when they have been on the road for longer than two hours.

It is vital that motorists don't start these journeys tired and the NRMA encourages people to delay getting in the car if they are not rested. The NRMA believes that more should be done to encourage drivers to take a break. The development of an interactive app that maps the locations of all rest stops areas, public toilets and points of interest such as scenic outlooks could have road safety and tourism benefits.

The interactive Rest Areas map developed by NSW Roads & Maritime, for example, provides the foundation of information that should be made available to motorists on their smartphone.

The NRMA believes that the number of rest stop areas should be increased and adequately signposted to provide drivers with the opportunity to take a break, including both heavy vehicle and light vehicle drivers. Rest stops should also be clean and have adequate facilities such as showers, wifi, toilets, shelter and picnic tables. Regional rest stops should also include playgrounds to encourage young families to take a break. The NRMA also believes that in the future, rest stops could also include electric vehicle charging stations.

Along certain stretches of highway in remote and regional NSW, rest stop areas designated for truck drivers can become overpopulated with caravan and camping drivers. There is a need to share and ensure all road users have appropriate access to these sites.



Safer roads

A safe road environment is crucial in helping to reduce the number of fatigue related crashes. Fatigue crashes tend to be run-off-road and head on crashes. Road treatments that address these types of crashes include audio tactile line marking, divided roads, and the removal of roadside hazards such as utility poles, trees, sign posts, and fences.

The vibration of tactile edge-lines on roads can help alert drivers when they are drifting off the road. Studies have found a 29 per cent reduction in single vehicle run-off-road crashes on rural, two lane roads where tactile edge lines were added on sealed shoulders.⁵ The NRMA believes that priority should be given to implementing tactile line marking on high risk rural roads known for fatigue related crashes or have an AusRap rating of 2 stars or below.

Vehicle technology

We know that 94 per cent of road crashes are caused by human error, with fatigue being one of the main contributing factors. Over the years we have seen the development of vehicle technologies that help address fatigued driving. Vehicle technologies such as Lane Keep Assist or Lane Departure Warning alert drivers that their car is getting close to crossing over the line marking and leaving the lane of travel without indicating.

Further, fatigue detection technology, such as Optalert and Seeing Machines is already being used in heavy vehicle fleets in the mining and logistics sectors. Companies such as Toll and Caterpillar have adopted technology that monitors and tracks head and eye movements, detecting when a driver is having a micro sleep. The driver receives an immediate in-car audio and seat vibration to help prevent an incident. Telematics of the incident are also sent to the fleet manager, to allow for intervention by management and to monitor staff occupational health and safety. Fleet owners should consider the use of these technologies including NRMA's Connected telematics solution in keeping their employees safe on the road.

The NRMA believes that until we have fully autonomous vehicles on our roads, which will eliminate all types of human error, vehicle technologies such as these will go a long way to reducing fatigue related crashes.

What's next? Fatigue detection seatbelts.

A group of technology companies in the UK have joined forces with the University of Manchester and the Biomechanics Institute in Spain to develop a hi-tech seatbelt that alerts the driver they are about to fall asleep. The system can also be adapted to warn drivers with heart conditions that they may be experiencing a heart attack.

The Heart And Respiration In-Car Embedded Non-intrusive sensors, or HARKEN, is being funded by a research grant from the European Union.

Mercedes-Benz has also unveiled a basic-fatigue detecting system that monitors steering movement and other driver behaviour to try and determine if the driver is tired.



The future of detection: roadside fatigue testing.

Currently in Victoria, a test is being developed that will allow police to measure the tiredness levels of drivers by the roadside. Researchers from Austin Health have tested technology that uses 'smart glasses' that track eye movements and measure the length of a driver's blinks to determine their level of fatigue, in laboratories and off-road driving simulations.⁶ The researchers are now working on

developing a one-size-fits-all test that police can use to detect tired drivers by the roadside.

We know that the only way to change driver behaviour is to pair education with enforcement. The NRMA believes that revolutionary technology that can reliably detect tiredness levels for all drivers will ultimately save the lives of many.

References

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