Draft Road Safety Plan 2021

TOWARDS ZERO

Contents

Executive summary

Introduction

Now that we are half way through implementation of the NSW Road Safety Strategy 2012-2021, this draft Road Safety Plan 2021 has been developed to set new road safety priorities. These priorities will help NSW work toward the State Priority target of a 30 per cent reduction in road fatalities by 2021. The Plan:

- Uses national and international evidence to prioritise high-benefit road safety initiatives based on the trauma profile
- Supports the longer term road safety Towards Zero vision for NSW which underpins the Future Transport Strategy priority area for safety.

Between December 2016 and June 2017 over 20,000 people were engaged in the development of the draft Road Safety Plan 2021, commencing with the NSW Government's Road Safety Advisory Council, around 2,800 people who completed an online survey, and more than 600 road safety practitioners and community members who attended workshops and forums across the State.

Initiatives under investigation in this draft Plan align to the Future Transport Strategy directions and vision of zero trauma for all transport customers and road users. This will assist with embedding safety and the Safe System principles across the Future Transport Strategy.

The issue

Last year 380 people were killed and over 12,000 seriously injured using NSW roads. While two thirds of fatalities occur on country roads, two thirds of serious injuries occur on metropolitan roads. Road trauma costs the community over $7 billion each and every year.

The challenge for country roads includes higher speeds, longer distances and infrastructure issues. Metropolitan roads have higher vehicle volumes, more vulnerable road users and greater number of conflict points such as intersections.

Priority areas for action include reducing deaths on country roads, and serious injuries in metropolitan areas, as well as safer road design, addressing road user behaviour and increasing safety of the vehicle fleet.

Safe system

The draft Road Safety Plan 2021 reflects the internationally proven Safe System approach, which recognises human vulnerability in the event of a road crash.

Safe roads

The NSW Government is providing safer roads, including continued implementation of the Safer Roads Program – with $713 million committed investment between 2014/15 and 2022/23.

Priority areas and initiatives under investigation will support a safer network, safer country roads, and liveable urban streets and movement corridors.

Safe people

We are taking a whole of life approach to road safety education that supports safe road use - from early childhood education to first becoming licensed to choosing a child restraint and even retiring from driving.

This includes ongoing comprehensive road safety education in schools, road safety education campaigns for the whole community and providing young people with access to the Safer Drivers Course.

Our regularly reviewed penalty frameworks and the Enhanced Enforcement Program delivered in partnership with the NSW Police Force further ensure safe and compliant road use.

Priority areas and initiatives under investigation will ensure road users are informed and motivated to behave in a safe way, and build strong community and sector partnerships.

Safe vehicles

We are also facilitating uptake of safer vehicles, including support for the Australasian New Car Assessment Program (ANCAP), support for truck and bus safety features and standards, and innovation such as connected and automated vehicles.

Priority areas and initiatives under investigation will develop and promote vehicle and other technology to reduce crash risks and trauma.

Development of the draft Road Safety Plan 2021

Our road safety vision

Vision

The Road Safety Plan 2021 will set new priorities and help NSW work towards the State Priority target of a 30 per cent reduction in road fatalities by 2021, and the longer-term aspirational goal to move Towards Zero as part of the Future Transport Strategy.

2021

Reduce the number of road fatalities by at least 30 per cent from 2008-2010 levels by 2021. This is our State Priority target.

2026

New road safety targets will be set every 10 years to continue to move Towards Zero trauma on our roads.

2056

By 2056, NSW will have a transport network with zero trauma, including road based transport where there are no fatalities or serious injuries.

Strategic context for the draft Road Safety Plan 2021

NSW Road Safety Strategy 2012-2021

The NSW Road Safety Strategy 2012-2021 (the Strategy) established:

- Directions for road safety activities in NSW for the 10 years to 2021
- The State Priority target to reduce the number of road fatalities by at least 30 per cent by 2021.

Through this Strategy, significant reductions in NSW fatalities have been achieved, with the 2014 road toll of 307 representing the lowest number of fatalities since 1923. The fatality rate in 2014 was 4.1 per 100,000, the lowest since records began in 1908.

However, in 2015 and 2016, there were successive increases in the road toll and this higher level of trauma has continued so far in 2017.

The draft Road Safety Plan 2021

Now that we are half way through the Strategy's implementation, this draft Road Safety Plan 2021 has been developed to set new road safety priorities to help NSW work toward the State Priority target. The Plan:

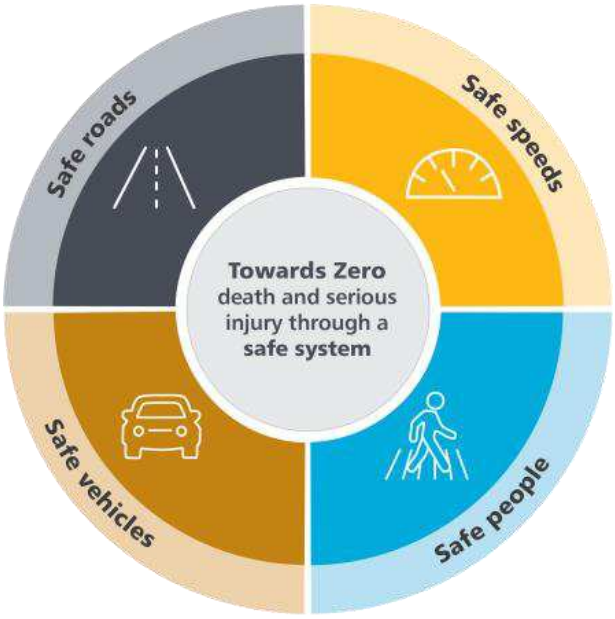
- Uses national and international evidence to prioritise high-benefit road safety initiatives based on the trauma profile
- Supports the longer term road safety Towards Zero vision for NSW which underpins the Future Transport Strategy outcome area for Safety and Performance.

Future Transport 2056

Safety is a key part of creating a sustainable transport network for the prosperity of all people, and NSW has set an aspirational target of zero trauma on the transport system by 2056 under the draft Future Transport Strategy, which starts with a 30 per cent reduction in road deaths by 2021.

Close cooperation between transport partners who play a key role in the safety of the road system is important for working toward the Future Transport Strategy vision of zero trauma. Transforming the road system to ultimately be as safe as rail and air travel will involve commitment and action by road designers, vehicle manufacturers, enforcement agencies, freight industry leaders, community leaders, transport providers, and road users working together towards this common goal.

Developing the draft Road Safety Plan 2021



The Safe System

The development of this draft Road Safety Plan 2021 has been based on:

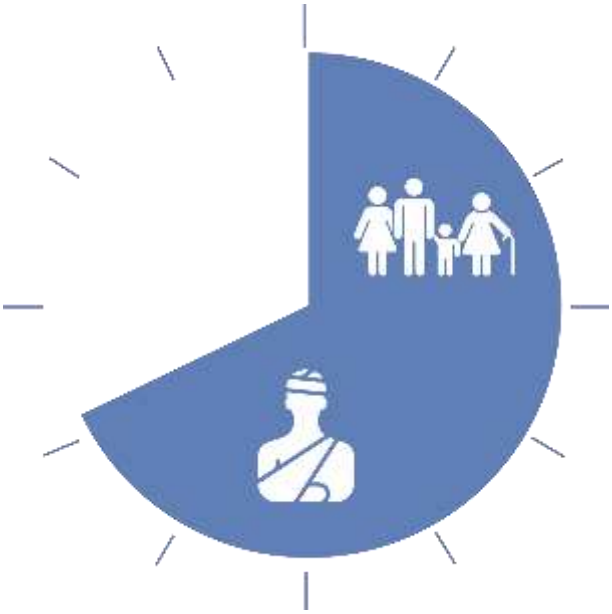
- Detailed review of current road trauma statistics and evidence in NSW
- Review of best practice to identify initiatives to achieve a 30 per cent reduction in deaths by 2021 and Towards Zero in the long term
- Consultation with the NSW Government's Road Safety Advisory Council
- Consultation with expert researchers and practitioners
- Community consultations and consultations with key stakeholder and practitioner groups.

Over 20,000 people have been engaged, with around 4,000 people participating in consultations and more than 16,000 others engaging online* through social media (Facebook, Twitter and LinkedIn) and the Towards Zero email.

**Engagement = number of people who post, click, like, share or comment on post.*

Our road trauma challenge

Road trauma touches many lives in NSW



EVERY 41 MINUTES SOMEONE IS KILLED OR HOSPITALISED BECAUSE OF A CRASH ON NSW ROADS*

Last year 380 people were killed and over 12,000 seriously injured while using our roads in NSW, including drivers, passengers, motorcyclists, cyclists and pedestrians.

This costs the community **over $7 billion** each year using the nationally accepted Willingness-to-Pay values which include values for fatalities, serious, moderate, minor and other injuries.**

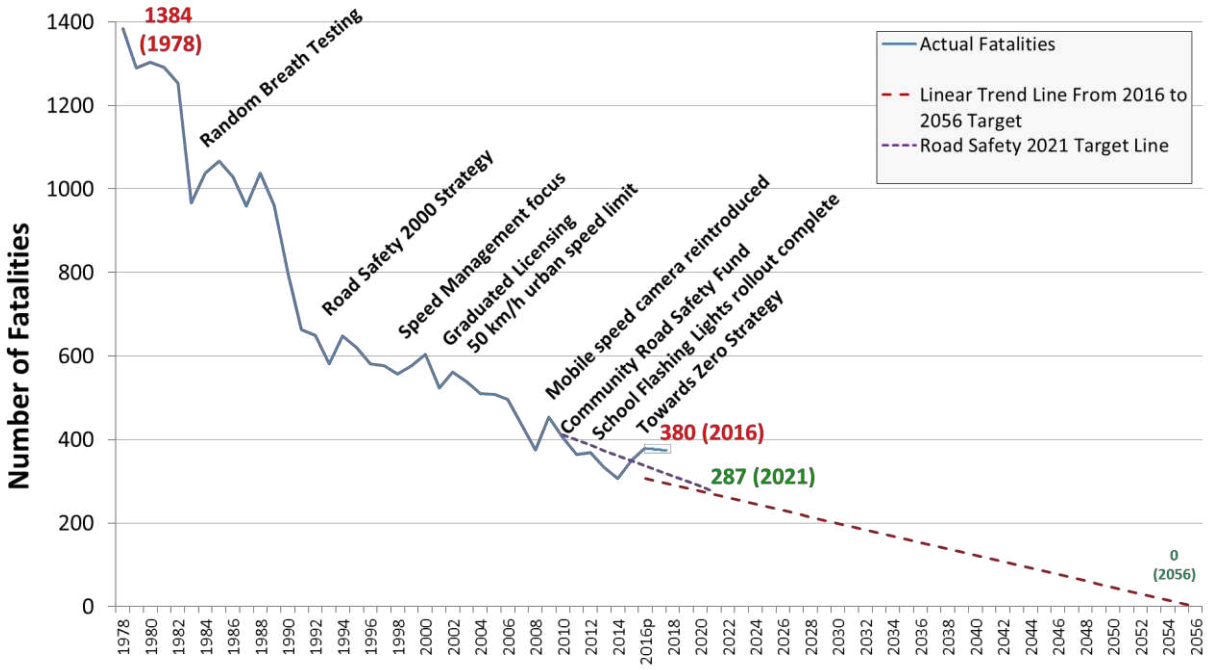
We have made progress addressing trauma

NSW has been successful over the long term in reducing fatalities. In 2014, the road toll was 307, the lowest number since 1923. That's around 1,000 fewer lives lost compared to 1978 when 1,384 people died on NSW roads. However, we have seen successive increases in the road toll in 2015 and 2016, with this level of trauma continuing so far in 2017. Recent increases in fatalities in 2015 and 2016 have meant we are now above our 2021 target. In contrast the number of serious injuries has remained relatively stable.

**Road trauma in NSW derived from NSW road crash data average 2014-2016p.*

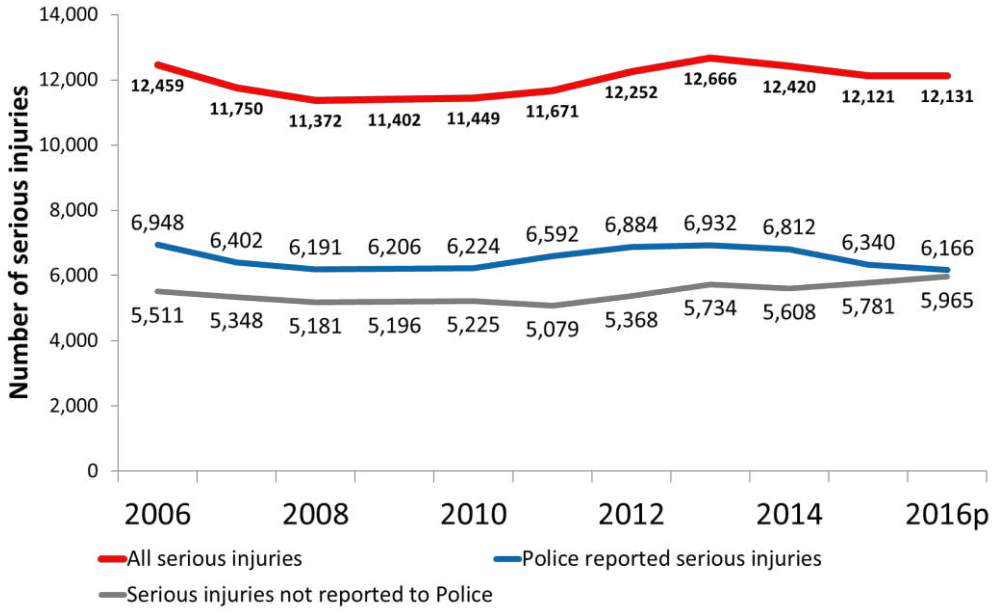
*** Method first derived in NSW by Price Waterhouse Coopers and Hensher Group for Roads and Maritime Services in 2008.*

Figure 1. NSW fatalities – 1978 to 2056



Source: Transport for NSW, Centre for Road Safety

Figure 2. Serious injuries for 12-month periods, NSW



Source: Transport for NSW, Centre for Road Safety

Our metropolitan and country roads have different challenges

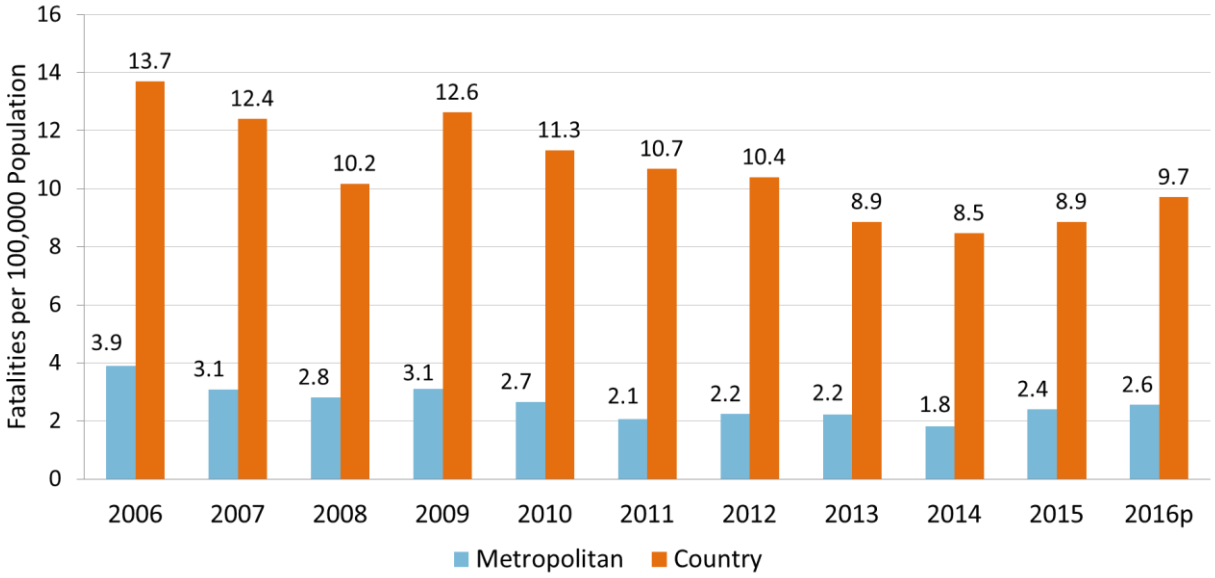
Two thirds of fatalities happen on NSW's country roads - where the fatality rate is approximately four times higher than on urban roads.

In contrast, almost two out of three serious injuries occur on metropolitan roads.

Higher traffic volume, concentrations of vulnerable road users and conflict points, such as intersections, contribute to the concentration of serious injury crashes and serious injuries in urban places.

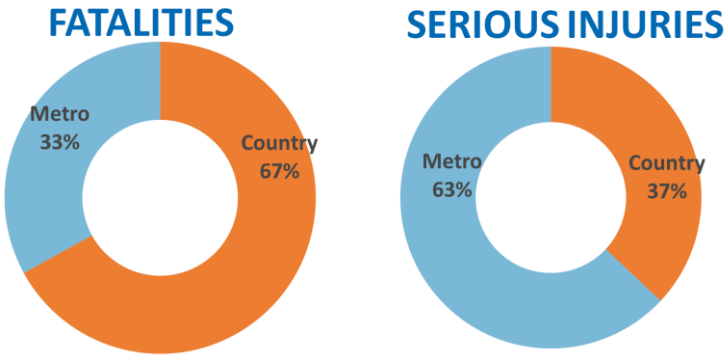
Higher speeds and shortcomings in road infrastructure mean that country roads are less forgiving in a crash. Longer distances and less frequent enforcement to ensure safe behaviour, also contribute to the different trauma profile.

Figure 3. Fatalities per 100,000 population, NSW, 2006 to 2016p, Metropolitan v Country



Source: Transport for NSW, Centre for Road Safety

Figure 4. Comparison of fatalities and serious injuries in metropolitan and country areas



Source: Transport for NSW, Centre for Road Safety

How our fatality rate compares to other countries

By adopting the Safe System approach to road safety, countries like the United Kingdom (UK), Sweden, and the Netherlands have significantly reduced their road toll making their road transport systems the safest in the world.

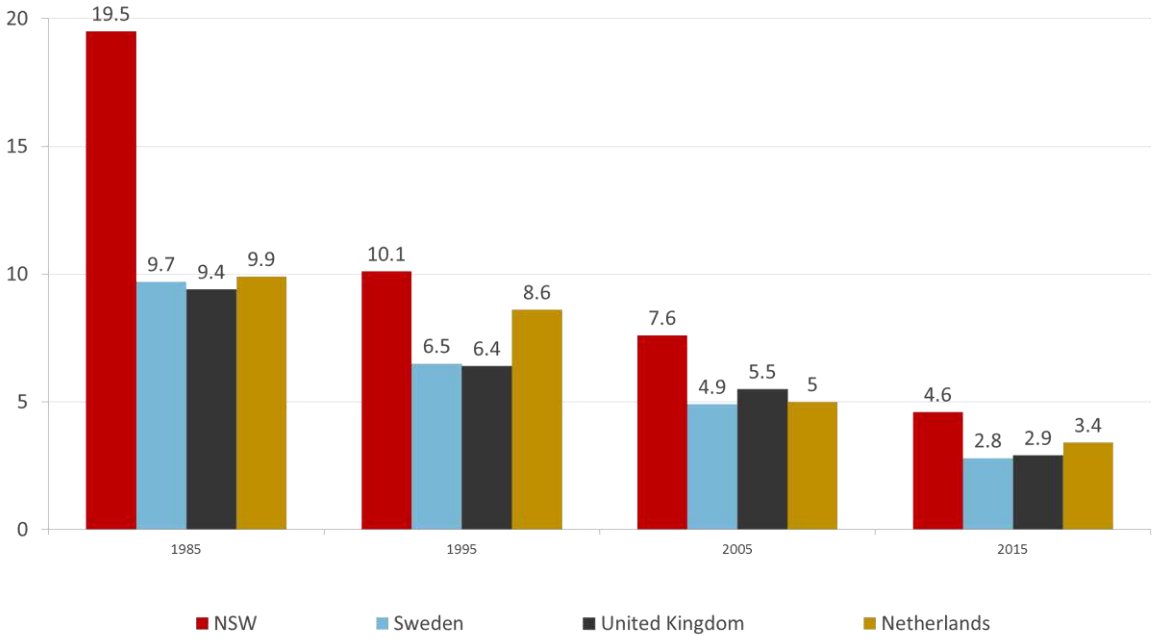
While these countries may vary in size, population and transport options to NSW, we can still learn from their success and adapt proven initiatives to the NSW context.

Figure 5. Fatality Rate – International Comparison (Fatalities per 100,000 population 2016)

Source: Compiled by Transport for NSW using NSW Crash, Bureau of Infrastructure, Transport and Regional Economics (BITRE) and Organisation for Economic Co-operation and Development (OECD) data.

Our fatality rate has moved closer to best performing countries

Figure 6. Fatality rate per 100,000 population – NSW comparison against top three countries



Source: Compiled by Transport for NSW using NSW Crash and Organisation for Economic Co-operation and Development (OECD) data.

Over the last four decades, the NSW fatality rate has moved closer to leading countries – through key initiatives to improve road user behaviour such as random breath testing, improved vehicle safety and safer roads – but more can be done.

We also know other countries have similar disparities in safety between their metropolitan and country roads (see Figure 7) – but their improvements highlight the opportunity to save more lives on country roads in NSW.

Figure 7. Fatality rate comparison - NSW and Sweden (per 100,000 population 2015)

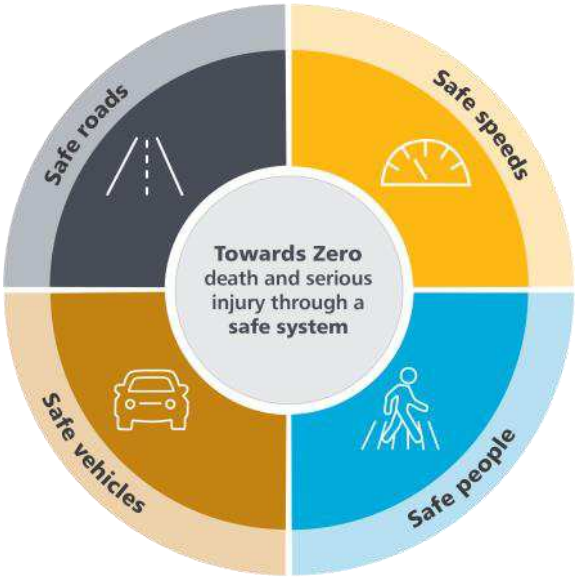
Fatality rate comparison - NSW and Sweden
(per 100,000 population 2015)

	NSW	Sweden
Metro Roads	2.4	0.65
Country Roads	8.9	3.02

Source: Transport for NSW, Centre for Road Safety

The Safe System approach

We know the Safe System approach adopted by leading jurisdictions saves lives. **An estimated 167 lives would have been saved in 2016 if NSW had the same fatality rate as Sweden or the UK.**



The Safe System

The **NSW Road Safety Strategy 2012-2021** adopted the internationally proven Safe System approach to road safety initiatives. The approach was first developed through the Netherlands' Sustainable Safety Strategy in the 1990s and Sweden's Vision Zero Strategy in 1997 before being adopted in-principle across Australia in 2003.

This approach is underpinned by the following principles:

- The human body is fragile and not designed to tolerate the impact forces experienced in a road crash
- People are human and sometimes make mistakes – a simple mistake shouldn't cost anyone their life
- Roads, roadsides and vehicles need to be designed to minimise crashes and reduce forces if a crash happens
- Road safety is a shared responsibility – everyone needs to make safe decisions on and around the road to prioritise safety.

Initiatives that create safer roads, speeds, people and vehicles should be implemented together so the road system not only keeps us moving, but safe and protected.

The draft Road Safety Plan 2021 builds on this internationally proven approach to road safety. The draft Road Safety Plan 2021 also considers how the Safe System approach applies within the Future Transport Strategy's movement and place framework – i.e. how we integrate safe roads, people, speeds and vehicles within the environments of motorways, movement corridors, living streets, local streets and places for people.

Key initiatives implemented by leading jurisdictions

Safe roads

- Sweden, Denmark, Germany and the UK have extensively re-engineered two-lane rural roads into narrower three-lane roads separated by a median barrier – where the 'passing lane' alternates directions. This has provided an estimated 45-50 per cent reduction in fatalities and serious injuries in Sweden[*]
- In Sweden, 75 per cent of the traffic volume on roads with a speed limited greater than 80km/h are separated with centre median barriers. Road side barriers also prevent run-off road crashes
- Sweden, Netherlands and the UK have:
  - constructed roundabouts at intersections, instead of traffic lights. Estimated 30-50 per cent reduction in serious injuries and 50-70 per cent reduction in fatalities where implemented (Sweden)[**]
  - traffic calming measures in urban areas and residential streets, including raised pedestrian crossings.

Safe vehicles

- Sweden, Netherlands and the UK have had progressive improvements in vehicle safety. This has provided an estimated 20 per cent reduction in fatalities (Sweden)[***]
- Sweden has high uptake of active vehicle safety features such as Electronic Stability Control (ESC) to ensure drivers are less likely to lose control. Estimated 35 per cent reduction in fatalities and serious injuries due to ESC (Sweden)[#]
- Sweden, France and Germany have established and continue to develop the European New Car Assessment Program (Euro NCAP) for crash testing and safety ratings of vehicles in Europe
- Sweden and the Netherlands require Government fleets to have the safest vehicles, meaning a flow-on to improve the safety of the overall fleet.

Safe speeds

- Sweden and the Netherlands have:
  - ensured speed zones are matched to the safety levels provided by the design and features of the road, the mix of road users and the reasons people use the road
  - implemented 30km/h speed zones in residential or highly pedestrianised and cycling areas.
- The UK has implemented 20 miles per hour zones (approximately 32km/h) across London and other high pedestrian areas[##]
- In the developing world, speed zones are a key aspect of iRAP – the International Road Assessment Programme – as appropriate speed is a cost effective way to

cut trauma when other road features are lacking. In Australia, AusRAP is part of this international approach to holistically assessing and star rating road networks.

Safe people

- Australia and NSW have led the world in improving safety behaviour through effective laws and enforcement, and public education which has shifted unsafe behaviour and social norms over time
- In the UK, Sweden and Norway there are extensive speed camera operations. Speed cameras are combined with other speed management measures such as speed limit reductions. Estimated 47 per cent reduction in all crashes, and 25 per cent reduction in fatalities (Netherlands).###

* Larsson et al. Flexible barriers systems along high-speed roads: A lifesaving opportunity (2003)

** Elvik, R., Effects on road safety of converting intersections to roundabouts: review of evidence from non-US studies (2003)

***Koornstra et al., SUNflower: a comparative study of the development of road (2002)

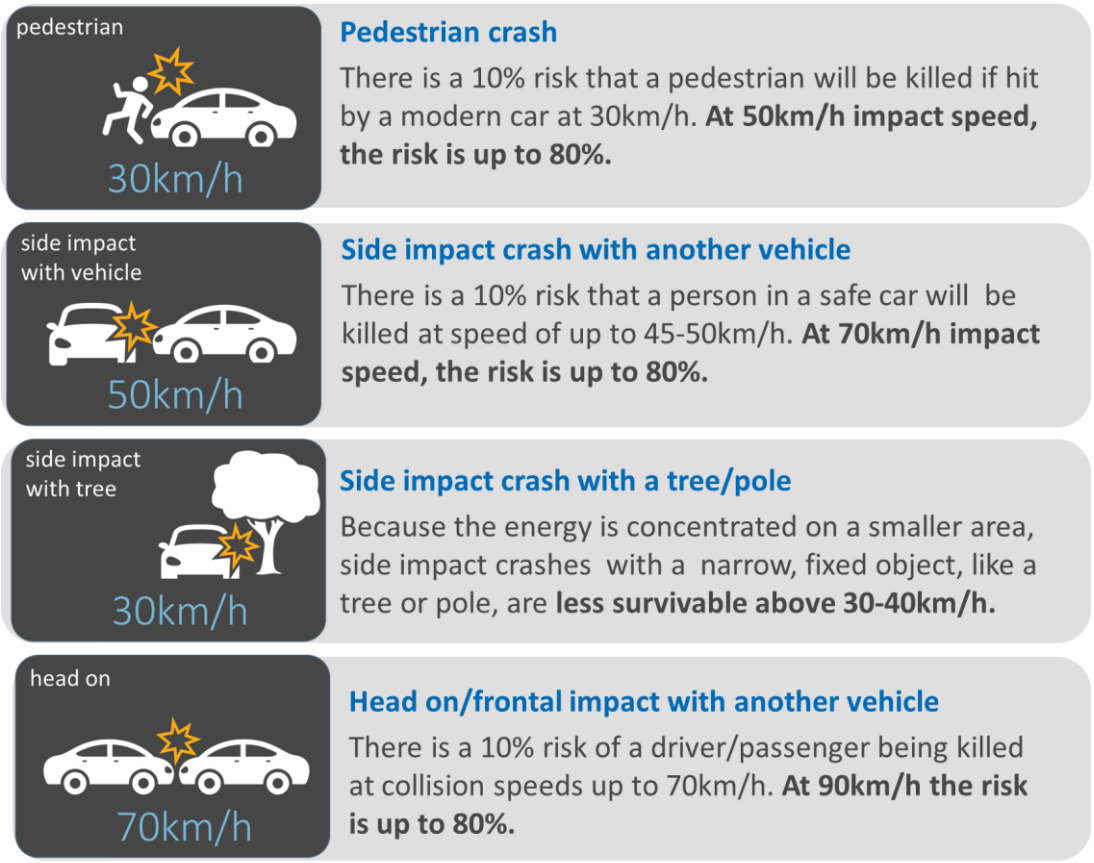
Lie, A., et al., The effectiveness of electronic stability control (ESC) in reducing real life crashes and injuries (2006)

Grundy C, et al., 20 mph Zones and Road Safety in London (2008)

Soole, D.W. et al., Effects of average speed enforcement on speed compliance and crashes: A review of the literature (2013)

Collision speeds and human vulnerability

Human biology means that the body can only take so much force in the event of a crash before death becomes a highly likely outcome. As collision speeds increase the likelihood of surviving dramatically decreases.



Source: Austroads Research Report Balance between Harm Reduction and Mobility in Setting Speed Limits: A Feasibility Study (2005)

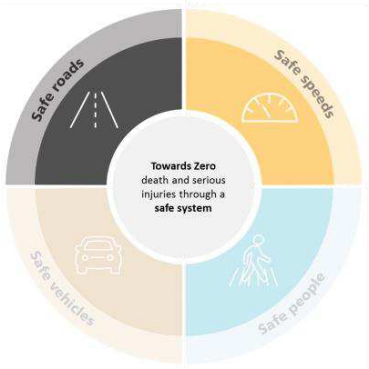
Commitment to good governance and a strong evidence base

Attendees at the Road Safety Plan 2021 - Countermeasure workshop

To support the delivery and success of the Road Safety Plan 2021 we will explore:

- Developing and implementing a Governance framework that includes:
  - robust engagement and reporting in collaboration with partner agencies to ensure delivery and achievement of targets
  - ongoing consultation with stakeholders from a broad range of industry, road user groups and community organisations, including the NSW Government's Road Safety Advisory Council.
- Further enhancements to data collection and supporting systems to increase our understanding of road trauma and make information available to road safety practitioners, delivery partners and the community.
- Setting road safety performance targets to 2021 for each of the priority areas.
- A research and innovation program which will focus on priorities, visionary goals and initiatives. The program will include program evaluation, safe system analysis of fatalities, research into connected and emerging vehicle and infrastructure technology, as well as driver distraction and impairment.

Safe roads



Safe Roads – an element of the Safe System approach

We know some roads pose greater risks

Together, non-urban country roads, local residential and neighbourhood streets, and intersections where road users mix, account for up to 75 per cent of all deaths and serious injuries on NSW roads.

Non-urban country road crashes*

54% of fatalities (185 lives)

23% of serious injuries (1,508 people)

Common crashes are run off road or head-on.

Neighbourhood streets

15% of the fatalities (51 lives)

27% of serious injuries (1,711 people)

Key crashes on these roads involve pedestrian or bicyclists, or drivers running off the road.

Crashes at intersections

21% of fatal crashes (67 crashes)

41% of serious injury crashes (2,345 crashes)

Signalised intersections are sites of high traffic volume and risk, where crashes involving pedestrians or turning vehicles are more likely.

Note: Crash data reflects three year average 2014-16p

* Non-urban country roads: Outside the NSW metropolitan area with a speed limit of 80km/h and above

What does the community support?

As part of initial consultations on the draft Road Safety Plan 2021 the community believed the following measures were important to improving road safety:

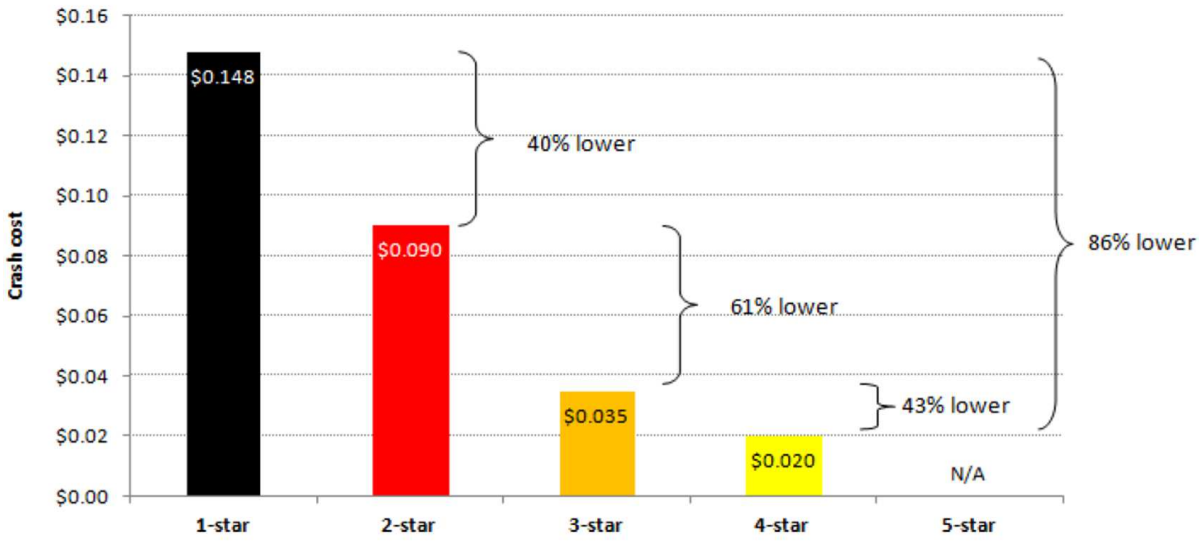
- Safety barriers and audio-tactile line marking
- Better maintenance
- Separation of traffic on high volume, high speed roads
- Safety is standard in all infrastructure projects
- Greater consideration of pedal cyclists/pedestrians in urban areas
- More controlled turning at intersections
- Consideration of safety during road construction
- Appropriate speed settings to match road conditions
- Lower urban speed zones to protect vulnerable road users.

An example of a high risk road that lacks safety features to prevent head on and run off road crashes.

Source: CrashLink database

Safe roads: What the evidence suggests

Figure 8. iRAP – Fatal and serious injury crash costs per kilometre by star rating



Source: International Road Assessment Programme irap.org

Priority area: A safe network

The way that we plan, develop, design, operate and maintain roads plays a key role in reducing the risk of road trauma. Setting targets for the proportion of all travel completed on the safest modes and routes, and ensuring safety features that reduce crashes are built into developments, will help make roads safe from the start.

Best practice is also to treat risk across the network for safe journeys - rather than focussing primarily on black spots. Star rating road assessment, which looks at the road features and the way it is used to provide a 'star' score, is a consistent and robust way to benchmark how safe roads are, and to plan improvements. International Road Assessment Programme (iRAP) analysis highlights that roads with a low star rating have higher fatal and serious injury costs because of higher crash rates. Improving a road star rating from a 2 star to a 3 star reduces fatal and serious injury crash costs by around 60 per cent (see Figure 8.).

Priority area: Safe urban places

Our vibrant 'people' places, such as transport interchanges, shopping precincts and the streets where we live, need design and infrastructure that supports safe driving, walking and riding. This is particularly true of community hubs and places along new transport corridors such as the Sydney Metro West, which will generate pedestrian traffic.

In NSW, 40km/h high pedestrian area speed zones have 38 per cent fewer crashes that result in death or injury, and are strongly supported by the community.* Internationally, speed zones consistent with survivability for vulnerable road users (30km/h) in highly trafficked pedestrian areas also show promise.

*Martin Small Consulting for Transport for NSW (TfNSW) NSW Centre for Road Safety – Evaluation of 40km/h speed limits (2017)

Across urban NSW, intersection safety can be addressed with measures that calm and control traffic such as controlled right arrow signals that reduce turning type crashes by up to 80 per cent.* Exclusive and advanced crossing for pedestrians at high traffic locations can protect vulnerable users, and roundabouts reduce casualty crashes by 70-80 per cent, as they reduce speed and reduce the potential for more dangerous T-bone type crashes.** Elevated platforms are emerging as a feature that can be installed in a wider range of urban situations to reduce crashes at high risk intersections.

Priority area: Safe country roads

Each year, around 230 lives are lost on country roads which can lack safety features that protect road users in the event of a crash.

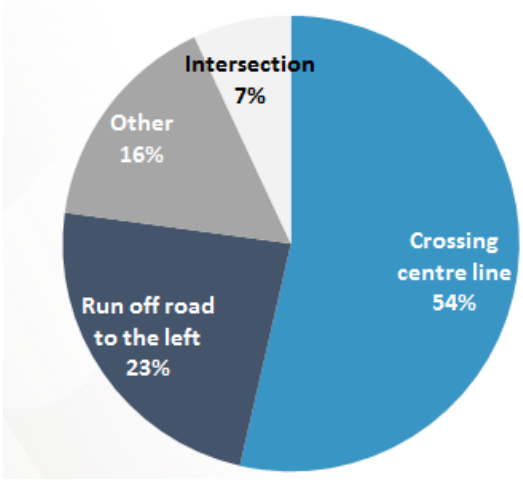
Of these, around 135 people (58 per cent) die on country roads that are key movement corridors for people and goods.# In almost 8 out of 10 of these fatalities (see Figure 9.), the vehicle either crossed the centre line or ran off the road to the left.

Proven road safety infrastructure, such as wire rope barriers separating opposing directions of traffic and protecting vehicles from roadside hazards can reduce crashes by up to 85 per cent.##

Simple and low cost tactile treatments (e.g. rumble strips) and wide-centre lines can also reduce key dangerous crash types by around 25-35 per cent - delivering a very strong return on investment.##

In Sweden, road safety benefits on country roads have been achieved through safer, '2+1' design on country movement corridors (see image on page 27), where barriers are installed in the middle and side of the road, and overtaking space is provided. This delivers safety and movement benefits like a dual carriageway – but generally at a lower cost – meaning that more could be delivered for our investment.

Figure 9. Fatalities on country roads (100km/h or above), 2014-16#



Source: Transport for NSW, Centre for Road Safety

*TfNSW Centre for Road Safety - Safer Roads Program - Review of Crash Reduction Factors (2015)

**Bureau of Infrastructure, Transport and Regional Economics (BITRE) Evaluation of the National Blackspot Program Volume 1 (2012)

#Country roads where the speed limit was 100km/hr or above

##TfNSW Centre for Road Safety - Safer Roads Program - Review of Crash Reduction Factors (2015)

Safe roads: Committed initiatives

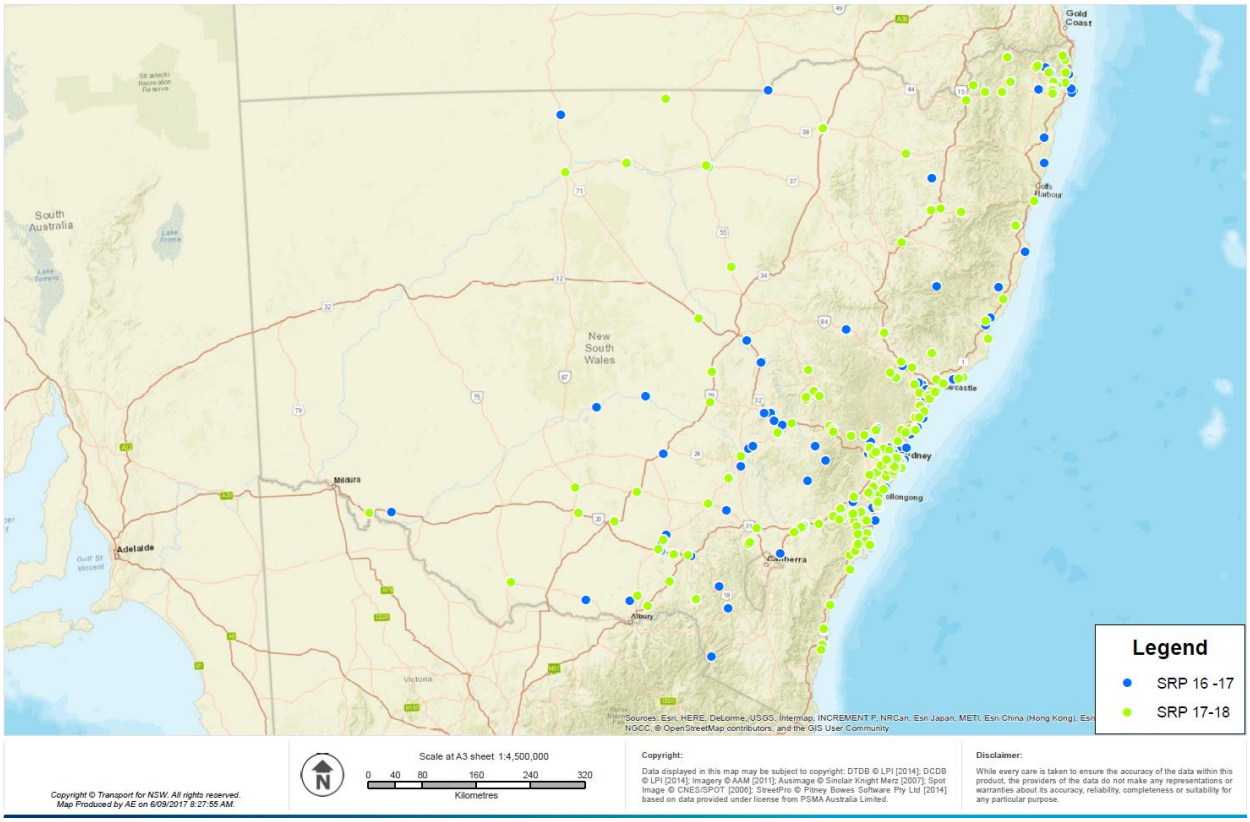
Key achievements since 2012:

- Developed an expanded Safer Roads Program, targeting high risk locations for road safety infrastructure and delivered over $195 million in more than 500 projects since 2014/15
- Completed the rollout of flashing lights to every school in NSW – totalling over 3,000 schools
- Completed a trial and developed a policy for the use of pedestrian countdown timers on NSW roads, introduced at over 30 locations
- Established and expanded the 40km/h zone in the Sydney CBD to improve pedestrian safety, as over 90 per cent of daily trips in the CBD are made on foot
- Expanded the red-light speed camera program to an additional 80 intersections to reduce red-light running, speeding and pedestrian crashes as there is a 30 per cent reduction in the number of fatal and serious injury crashes at red-light speed camera locations.

Building on what has been delivered, we will continue to:

- Deliver the Safer Roads Program, including almost $70 million in 2017/18 to deliver over 170 projects, with $713 million committed investment between 2014/15 and 2022/23
- Deliver the pedestrian protection program (‘Green on Green’ removal) program at over 500 signalised intersections, with over 300 sites already completed
- Review speed zones across the network to ensure greater consistency, matched to the road conditions
- Invest in the Level Crossing Improvement Program and public education
- Contribute to the safe design of transport projects, including light rail, through safety reviews and assessment of design
- Trial and research the latest infrastructure applicability, such as new barrier, signage and connected infrastructure technology, in NSW conditions.

Figure 10. Safer Roads Program 16/17 and 17/18



Source: Transport for NSW, Centre for Road Safety

Safe roads: New initiatives under investigation

Priority area: A safe network

- Investigate a target for achieving 4 and 5 star safety levels on high volume roads
- Investigate options to further design safety outcomes into the earliest phase of planning and also during the construction of:
  - road upgrades and projects
  - brownfield and greenfield development – including transport interchange upgrades and development around pedestrian and cycling generating locations.
- Consider enhancing road design and corridor strategy requirements so core safety features are required for different road types (including Smart Motorways) based on:
  - the purpose and use of the road
  - star rating of the road
  - the vehicle mix, including the needs of connected and automated vehicles.
- Investigate options to ensure low cost safety measures that upgrade the safety of a road (such as better line-marking, wide median strips, audio tactile centre and edge-lines or rumble strips) are delivered systematically through maintenance programs to cost-effectively increase the amount of the network with these features over time
- Test and implement technology to report damage to road safety infrastructure and improve maintenance (for example, where wire rope is hit and damaged). Options may include sensors, community reporting or automated technology
- Consider the potential to use and promote emerging international safety systems that help road managers and other organisations take a more systematic, standards based approach to road safety (ISO Standard 39001 Road Traffic Safety Management Systems)
- Investigate innovative ways to increase education and training on the Safe System approach and road safety requirements for state and local road authorities who are responsible for day-to-day management and maintenance of roads.

Priority area: Safe country roads

- Investigate options to increase investment in and accelerate the rollout of safety infrastructure (including barriers and tactile/rumble strips) that can prevent and reduce the severity of run-off road and head-on crashes
- Assess high risk curves and investigate options to increase investment in reducing the risk of crashes
- Assess opportunities to increase the proportion of roads where vehicles are protected from oncoming traffic or roadside hazards through design or with barriers at the side and in the middle of the road, such as by further integrating safety into corridor and major projects planning

- Assess options for ensuring travel speeds are appropriate and suitable to the road conditions on high risk routes with limited infrastructure and barriers to protect vehicles from hazards.

Example of a 2+1 road

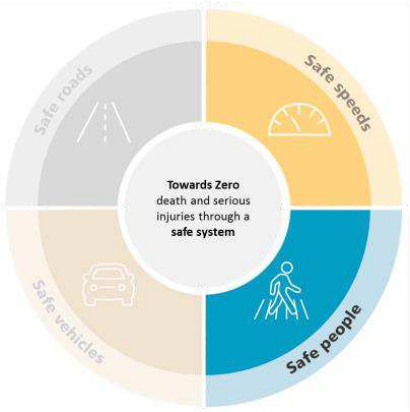
Source: Swedish Transport Administration Road Safety: Vision Zero on the Move

Priority area: Safe urban places

- Explore options for expanding 40km/h to more high pedestrian activity areas and to increase safety in local neighbourhood streets, and trial 30km/h in timed, high volume or high risk locations
- Investigate increased investment in a Pedestrian Safe System program to target high-risk pedestrian hot spots and deliver safety infrastructure such as pedestrian crossings, refuges and traffic calming
- Explore options to accelerate treatment of high risk intersections with proven safety infrastructure and technology, including:
  - traffic signal changes to ensure safer and more controlled turning
  - signal changes, technology and infrastructure to support enhanced pedestrian protection and priority
  - expanded use of raised intersection or advanced profile treatments and greater use of innovative roundabouts.
- Maximise safety integration in bicycle network programs to facilitate safer movement, provide separation from other traffic where appropriate and manage vehicle speeds.

Busy pedestrians

Safe people



Safe People – an element of the Safe System approach

We know some people are more vulnerable

People who walk, ride a bicycle or a motorcycle are vulnerable when they are involved in a crash as they do not have the protection of a car to absorb the crash forces.

Some people lack the driving experience of others and are therefore more at risk of being involved in a crash. Young children are at risk because of their not yet developed sense of harm and their physical size and stature. Older people can become more vulnerable in a crash as they age.

Motorcycling

19% of fatalities (64 lives)

19% of serious injuries (1,222 people)

Bicycle riding

2% of fatalities (8 lives)

16% of all serious injuries (1,979 people who were admitted to hospital)*

Walking

17% of fatalities (58 lives)

11% of serious injuries (695 people)

Younger drivers are involved in

26% of fatal crashes (84 fatal crashes)

27% of serious injury crashes (1,551 serious injury crashes)

*Includes all serious injuries i.e. those admitted to hospital who had a police crash report plus those who did not report the crash to police.

Older drivers (over 65) are involved in

23% of fatal crashes (73 fatal crashes) 17% of serious injuries (971 serious injury crashes)

What does the community support?

As part of initial consultations on the draft Road Safety Plan 2021, the community believed the following measures were important to improving road safety:

- Road safety education for children and young people
- Existing education approach and driver licensing framework for young people
- Improving information for older drivers
- Protective clothing for motorcycle riders
- Partnerships with Aboriginal communities.

We know some people take more risks

Some people continue to drive and behave in a way that increases their risk of a crash.

Driving at unsafe speeds, drinking and driving, taking drugs and driving, or being tired or distracted all increase crash risk.

Speeding is involved in

42% of the fatalities (144 lives)

23% of serious injuries (1,509 people)

Drug driving – illicit drugs were present in

19% of fatalities (66 lives)

Drink driving

15% of fatalities (51 lives)

Tired drivers are involved in

18% of fatalities (63 lives)

12% of serious injuries (746 people)

Distracted driving

There is limited crash data available – but clear risks.

Seat belt wearing

12% of fatalities (43 lives)

3% of serious injuries (163 people)

What does the community support?

As part of initial consultations on the draft Road Safety Plan 2021 the community believed the following measures were important to improving road safety:

- Reducing risky behaviour and enforcement of the road rules
- Enforcement of drink and drug driving and investigating lower blood alcohol limits
- Freight industry continuing to advocate high industry standards
- Assisting drivers to comply with speed limits using smart vehicle technology to underpin safety
- Speed enforcement by NSW Police and cameras.

NSW Police roadside mobile drug testing

Safe people: What the evidence suggests

Enforcement and penalties

Safe road user behaviour is achieved when clear, well-understood and appropriate laws and penalties are paired with enforcement. Effective sanctions include licensing sanctions for those who take risks and do the wrong thing, including repeat, high risk offenders.

Internationally, research suggests lower legal alcohol limits have contributed to overall reductions in fatal crashes by 10 per cent.* Alcohol interlock devices have also been shown to reduce drink driving reoffending by over 60 per cent** and can influence both first time and repeat offenders.

Automated enforcement, when the right type of camera is used in the right location, is effective - with red-light speed cameras in NSW associated with a 42 per cent reduction in deaths and 31 per cent reduction in serious injuries.***

Licensing framework

A supportive, whole-of-life approach to licensing, including an enhanced Graduated Licensing Scheme (GLS) that protects people while they are learning is critical to improving the safety of young drivers, and has been consistently supported by research. Since the introduction of the GLS on 1 July 2000, there has been a 50 per cent reduction in the number of young drivers killed on NSW roads. Options that assist older road users to understand and manage risks while staying mobile and active, are also vital.

Education and cultural shifts

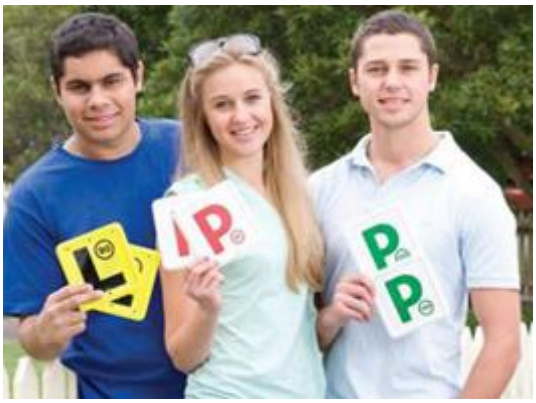
Individuals, organisations, key sectors such as education, industry employers and government can actively engage and collaborate, to normalise and promote shared responsibility for road safety.

This can accelerate innovative solutions to the road safety challenge, and build capacity in high need groups and communities so that people are protected across their whole life, from early childhood and adolescence through to working and family life and as needs change with ageing. Engagement results for the Towards Zero campaign highlight the importance of promoting a shared responsibility for road safety, with the campaign recognised by the majority of NSW drivers, and 71 per cent agreeing that it makes them think that ‘zero’ is the only acceptable number of road deaths.

* Norstrom T. and Laurell H., Effects of the lowering of the legal BAC limit in Sweden (1997)

**US Department of Transportation, National Highway Traffic Safety Administration, Evaluation of the New Mexico Ignition Interlock Program (2010)

*** TfNSW Centre for Road Safety, Speed Camera Programs: 2016 Annual Review (2016)



Learner, Provisional P1 and Provisional P2 licence holders

Provisional motorcycle rider

Safe people: Committed initiatives

Key achievements since 2012:

- Introduced the Mandatory Alcohol Interlock Program for serious and repeat drink drivers, with over 4,000 enrolled to date
- Delivered the NSW Speed Camera Strategy 2012, which is an overarching evidence based speed camera strategy for NSW. This included expansion of red light speed and mobile speed camera programs, and annual speed camera reviews which have consistently shown the benefits of cameras, for example a 92 per cent drop in fatalities at fixed camera locations
- Delivered new education campaigns targeting key road safety behavioural issues, including driving tired, drink and drug driving, mobile phone distraction, cyclist safety, motorcycle safety and Towards Zero
- Launched the first online road safety education website for primary students on 19 July 2016. Since then (as at 19 October 2017), Safety Town (www.safetytown.com.au) has had 720,041 page views and has 55,432 users
- Designed and implemented the Safer Drivers Course for young drivers in July 2013, with over 77,000 course completions to date
- Developed and delivered the NSW Breakdown Safety Strategy
- Trialled and implemented motorcycle lane filtering, and the bicycle rider compliance and minimum passing distance reforms
- Finalised the Older Driver Taskforce and On the Road 65+ communications package for older road users.

Building on what has been delivered, we will continue to:

- Develop road safety education campaigns targeting key behavioural areas and road user groups.
- Provide mandatory road safety education for every child in NSW.
- Provide young people with access to the Safer Drivers Course and Driver Licensing Access Program.
- Deliver the Enhanced Enforcement Program partnership with the NSW Police Force, including continuing the expanded Mobile Drug Testing program.
- Support safety around schools, including school zones, flashing lights and pedestrian infrastructure.
- Enhance road safety data, including Aboriginal road trauma data, to better inform safety measures.
- Refine road rules and regulations to ensure penalties for unsafe behaviours reflect road safety risks.
- Support the Local Government Road Safety Program – to deliver road safety in local communities across the state.
- Deliver a comprehensive research and data program to evaluate, monitor and inform new directions and current programs.

- Offer Community Road Safety Grants, and build on the 37 local projects delivered in 2015/16 and 2016/17 (total value of over $480,000).
- Implement and review the enhanced Graduated Licensing Scheme.

Road safety initiatives for NSW road users

Safe people: New initiatives under investigation

Priority area: Informed and motivated road users

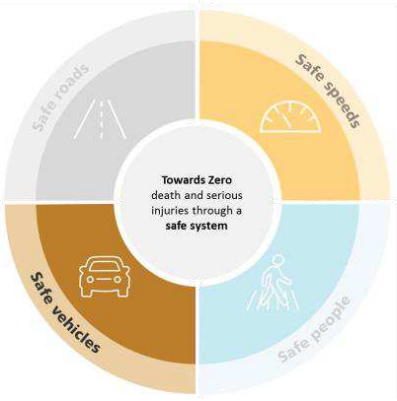
- Investigate developing an enhanced police enforcement strategy in partnership with NSW Police that reflects trauma trends, priorities in metropolitan and country areas, and community concern about the need for safe heavy vehicle movements
- Explore a package of reforms to penalties and processes for certain drink and drug driving offences, supported by public education, to deter impaired driving, including:
    - options to manage lower range and first time offences through penalty notices to deliver swift, certain and targeted penalties and ensure court resources are directed to the most serious offenders
    - increase the offenders required to install interlock devices and attend proven behaviour change programs, in co-ordination with other penalties such as vehicle sanctions.
- Review the NSW Speed Camera Strategy 2012 and options to increase safety benefits and reflect new technology and research
- Review the motorcycle Graduated Licensing Scheme (GLS) and investigate options to improve policy and programs
- Review and consider options to modernise the NSW Road Rules and safety legislation. For example, to better address distraction, driving tired and emerging technology, and supported by education to increase compliance
- Investigate options to deliver integrated communications about licensing, safer transport and health factors for older road users, their family/carers and the medical network
- Scope delivery of new platforms and enhanced road safety content in driver testing, alongside new interactive education for young drivers and their parents/carers
- Explore expanding driver licensing access and mentoring programs to improve licensing access for disadvantaged drivers, including in Aboriginal communities.

Adam Goodes discussing road safety at the Adam Goodes Talent Camp, sponsored by the NSW Government

Priority area: Community and sector partnerships

- Consider enhancing communications, initiatives and tools such as Safe Driving Guides and Policy to enable employers and industry to build safer road user culture and requirements, including:
    - targeting high risk groups such as shift workers who have fatigue management challenges
    - encouraging safe journey planning and measures to reduce distraction
    - ensuring use of protective clothing and helmet use by bicycle riders and motorcyclists, and encourage safer walking behaviour.
- Develop and implement an Aboriginal road safety community engagement and capacity building program to support road safety in Aboriginal communities
- Investigate the needs of culturally and linguistically diverse (CALD) road users and new residents
- Explore opportunities to increase proactive use of alcohol interlocks in fleet vehicles, including partnership with industry
- Consider a Towards Zero Town partnership with local government, institutions and business to improve safety locally across NSW, and explore how community grants can further support grassroots action
- Explore re-developing childhood and high school road safety education resources to embrace technology and emerging education approaches
- Investigate a new partnership framework for engaging with and enhancing outcomes with road safety advocates and community and commercial road safety education providers.

Safe vehicles

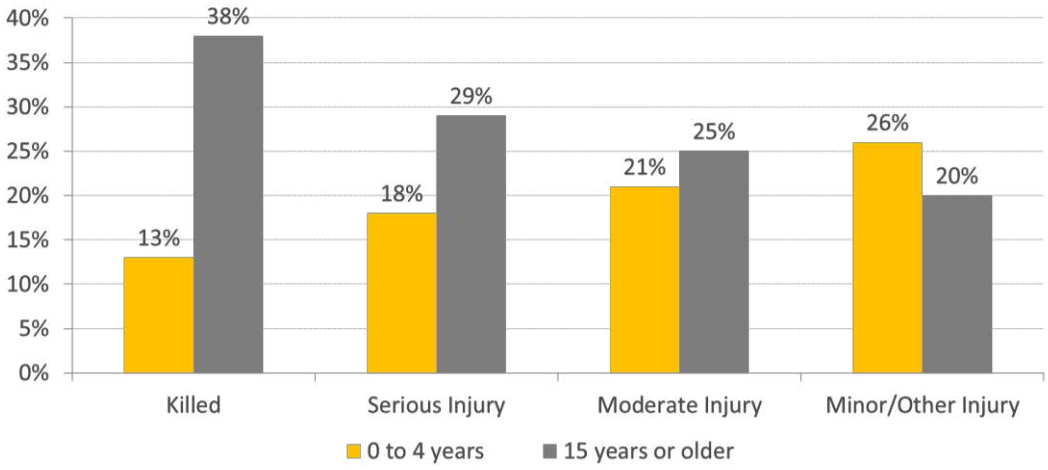


Safe Vehicles – an element of the Safe System approach

We know some vehicles lack the latest safety features

Most fatalities and serious injuries are car drivers or passengers. The design of a car can save lives and prevent crashes, but only one third of the current light vehicle fleet on our roads is rated with a 5 Star safety rating (at end 2015).

Figure 11. Age of car, by occupant casualty level*



Source: Transport for NSW, Centre for Road Safety

**3 year average: 2013-2015*

Newer vehicles are more likely to have extra safety features, such as auto-emergency braking, side curtain airbags and lane departure warnings. Of those killed in cars on our roads:

- 38 per cent were in cars 15 years old or older – despite these vehicles making up only 16 per cent of registered vehicles
- 13 per cent were in cars less than 5 years old.

Light trucks typically have fewer safety features than passenger vehicles and we have seen an increase in fatal crash involvement, with light trucks involved in 26 per cent of fatalities on NSW roads in 2016.

In heavy vehicles, technology such as side underrun protection which stops pedestrians, bicyclists and motorcycles from being run over by the rear wheels are not currently required but leaders in industry have installed to improve safety.

Safe vehicles: What the evidence suggests

Life-saving vehicle technology

Newer technologies, including lane keep assist, auto emergency braking and speed assist in passenger and commercial vehicles will save lives and reduce lifelong injury.

Auto-emergency braking has been found to reduce rear-end crashes by 38 per cent* and on motorcycles Anti-Lock Braking Systems (ABS) can cut fatal and serious injury crashes by 39 per cent.**

Initiatives of business and government can accelerate the typically slow integration of safety technology in both the light and heavy vehicle fleet, including by setting policies that prioritise the safest vehicles.

Crash avoidance and protective features on heavy vehicles, including advanced braking systems, blind-spot monitoring, underrun, and monitoring systems offer industry safer transport of goods and safer workplaces.***

Targeted information on safer vehicles and technology also drives consumer demand, and in turn can increase availability and fast track development of safety features in ways that regulation alone cannot. It has been estimated that for older drivers, influencing vehicle decisions so a safer choice is made could reduce crashes by at least 19 per cent.****

What does the community support?

As part of initial consultations on the draft Road Safety Plan 2021, the community believed the following measures were important to improving road safety:

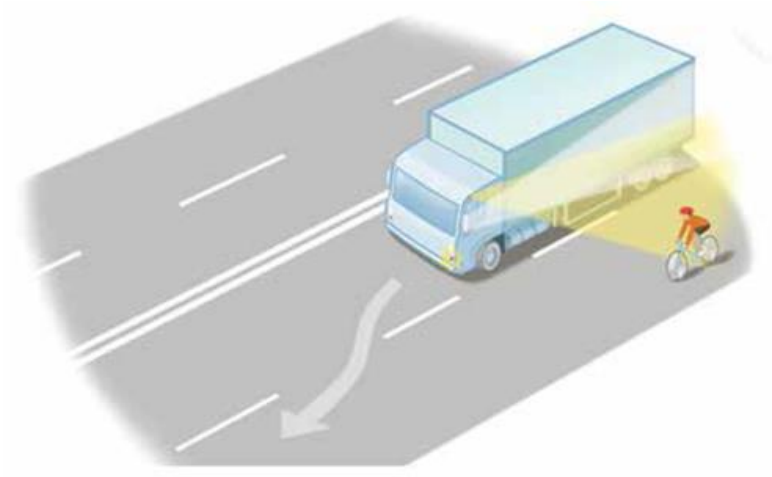
- Technology that prevents driver distraction
- Newer vehicles important for at-risk groups
- Seatbelt reminder technology
- Auto Emergency Braking
- Fatigue alarm devices
- Underrun barriers on trucks
- Assisting drivers to comply with safe speeds using smart vehicle technology underpins safety
- There were some concerns about over-reliance on technology and possible loss of driving skills.

* Fildes et al. Effectiveness of emergency autonomous braking on real-world rear end crashes (2015)

** Fildes et al. Evaluation of the Effectiveness of Anti-Lock Braking Systems on motorcycle safety in Australia (2015)

*** TfNSW Centre for Road Safety, Safety technologies for Heavy Vehicles and Combinations (June 2017)

**** Budd et al., The potential crash and injury reduction benefits of safer vehicle choices for older drivers in Australia and New Zealand (2012)



Blind spot elimination / enhanced daytime vision system

Safe vehicles: Committed initiatives

Key achievements since 2012:

- Published the annual Buyer's Guide to Used Car Safety Ratings to help consumers make informed decisions when purchasing used cars
- Released the 'Speed Adviser' smart phone app, which provides speed zone information and audible warnings to drivers if they are speeding
- Made changes so that NSW motorcycle helmets with Global Standard (UNECE 22.05) are able to be sold and legally worn
- Amended the high performance vehicle restrictions in the Graduated Licensing Scheme to allow P-plate drivers to drive vehicles with enhanced safety features
- Provided information to parents and carers of young children via the Child Restraints Evaluation Program to ensure consumers have access to the latest safety information when buying a child restraint
- Undertook helmet testing under the Consumer Rating and Assessment of Safety Helmets (CRASH) program to provide independent and consistent information on the levels of protection provided by motorcycle helmets in a crash, as well as their comfort levels.

Building on this, we will continue to:

- Support and promote ANCAP and Used Car Safety Ratings
- Work with the heavy vehicle industry to ensure they have access to the latest safety information and technology
- Continue the Child Restraints Evaluation Program that tests child seats and provides safety information for consumers
- Support the Australian Naturalistic Driving Study, Cooperative Intelligent Transport Initiative and FleetCat initiatives which enable us to build research understanding and trial fatigue, distraction monitoring and smarter collision avoidance technologies
- Drive positive road safety outcomes in national vehicle standards groups and support the implementation of truck and bus safety features and standards
- Support helmet safety through motorcycle and bicycle helmet safety research and testing
- Undertake Crashlab testing to determine roadworthiness and safety of vehicles
- Develop post-crash response initiatives including automated crash notification and motorcycle route emergency phones.

Safe vehicles: New initiatives under investigation

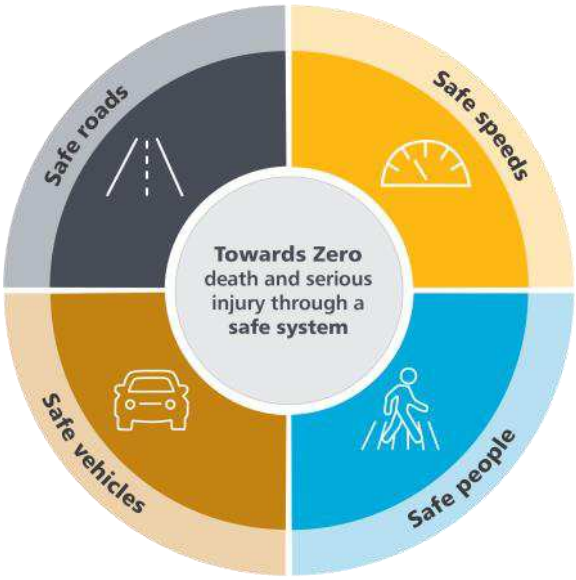
Priority area: Proven vehicle technology for a safer fleet

- Explore opportunities to review Government fleet vehicle policy and increase the proportion of the fleet with the latest safety technologies, and options to also maximise the safety of Government contractor vehicles
- Investigate increasing safer vehicle uptake, particularly by younger and older road users and fleet managers, through an integrated public communications program and potential incentives
- Partner with the heavy vehicle industry to:
  - increase safety features in the fleet (such as enhanced underrun and blind spot monitoring)
  - investigate ways to better integrate fleet safety into heavy vehicle access policy.
- Explore ways to promote and, if feasible, incentivise uptake of motorcycles with lifesaving anti-lock braking systems (ABS)
- Continue to explore ways to increase the use of motorcyclist protective clothing
- Explore options to ensure the highest safety standards in connected and automated vehicle trials and early uptake, and supporting road and regulatory conditions
- Consider opportunities to further support the adoption of new technologies into vehicle standards, including for commercial and heavy vehicles, and to support E-alert systems when crashes happen.

ANCAP vehicle testing

Source: ANCAP

What does a safe system look like beyond 2021?



The Safe System

Safe roads

Motorways are our safest and most efficient movement corridors and school zones are our safest places for people.

Like school zones, we will apply the safe system standards at the heart of design of places to improve urban places and vibrant streets. Like motorways, we improve separation between vehicles and high safety standards to movement corridors between towns and urban centres.

Safe vehicles

We will move towards half of vehicles on our roads being 5-star. We will continue to prepare for fully connected and automated vehicles by promoting the uptake of critical safety technologies such as autonomous emergency braking, adaptive cruise control and lane assist that prevent crashes. We will ensure our vehicle technology eliminates unsafe behaviours like drink driving and distraction and minimise crash forces for all road users if a crash cannot be avoided.

Safe speeds

We will continue to transform the road network to match safe speeds to the design of our roads. Safety features of the road environment, the mix of road users and survivabililty in the event of a crash, will inform road design and operation.

Smart vehicle technology and automated compliance systems will support drivers, as the driving task is increasingly automated.

Safe people

People are the most unpredictable element of a safe system. Innovative technology, education, incentives and enforcement will shift behaviour and ultimately design human error out of the road system. Increasing connectivity will mean that people can be engaged in finding and sharing solutions to safety, mobility and transport challenges.

Reference material

Support materials for the draft Road Safety Plan 2021

- NSW trauma reports (including key data) prepared by TfNSW Centre for Road Safety to inform 2017 Expert Workshops for the draft Road Safety Plan 2021 development, covering ten key themes.

Definitions and research references

Data definitions

- Data is average of 2014-2016p unless otherwise specified. Crash data for 2016 is preliminary
- Serious injuries data is 'matched' serious injuries data unless otherwise stated. Matched serious injuries data are where a Police report has been matched to hospital admissions data
- As a proxy for neighbourhood street crashes the analysis uses data relating to unclassified roads with a speed limit of 50km/h or lower.

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