GOVERNMENT OF WESTERN AUSTRALIA

INFORMATION

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ROAD SAFETY STRATEGY

In 2008, the State Government released its 12 year road safety strategy, Towards Zero. Towards Zero set out the ambitious target of 11,000 fewer people killed or seriously injured (KSI) by 2020, which is a 40% reduction from the baseline period of 2005-2007.

One key aspect of safer roads is preventing crashes where vehicles run off the road, either rolling over, hitting an object such as a tree or drifting into oncoming traffic. This crash typeoccurs in metropolitan and regional areas but is the single most common crash type on regional and remote roads. Single vehicle run off the road crashes are the dominant crash type (47%) occurring on regional roads and also a contributor to urban crashes.[1]

The number of people KSI in single vehicle run off the road crashes involving risk taking behaviour has reduced by 41% since baseline (from 481 in 2005-2007 to 282 in 2016, to being 6 below the 2020 target of 288).

[1] Road Safety Commission submission to the Road Safety Council, 30 August 2018, D18-8107.

ROAD SAFETY COMMISSION

KSI single vehicle run off crashes not involving primary risk taking behaviour have also reduced by 23% (from 454 to 351). This means in 2016 there were still 79 more KSI crashes than the 2020 target of 272.

However, there were still an average of 80 fatal run off road crashes each year between 2010 and 2014 (Road Safety Commission, 2016).

WHAT IS THE SUPPORTING RESEARCH AND EVIDENCE?

Treatments for run off road crashes can be found in all elements of the safe system and are outlined below in the four cornerstones of safe roads and roadsides, safe speeds, safe behavior and safe vehicles.

Safe Roads and Roadsides

Western Australian (WA) roads are built to the standard in place at the time of their construction. Most roads are upgraded over time, but WA nonetheless has a regional network of unsealed roads, narrow, single lane sealed roads and rural highways. These roads can be improved, to reduce run off road crashes.

On average, road infrastructure investment lasts around 25 years, so safe roads and roadsides built now will continue to save lives and prevent serious injuries well into the future, especially if well targeted. In Australia, it is estimated that each $100 million spent treating high crash risk locations on the road network saves at least 20 lives, compared to about 1.5 lives for each $100 million spent on general road improvement programs (Vulcan and Corben, 1998).

Regional Run Off Road Crash Program

The Curtin Monash Accident Research Centre (CMARC) evaluated the nearly 1000 kilometres of rural WA roads that were treated under the rural Run Off Road Crash Program between 2012 and 2015 (Chow, 2016). These roads had either shoulder widening/sealing or audible edge lining, or, most commonly, both treatments. The preliminary evaluation performed by C-MARC at the end of 2016 found the WA program has reduced run-off-road crashes of all severity levels by 35.5% and run-off-road KSI crashes by 25.5% over a three-year period.

The research found that investment in regional roads is improving road safety. The research also noted that the Run Off Road Crash Program performed well in economic terms. In relation to the net economic worth of the program, the net present value and the benefit- cost ratio across the treated sites were estimated to be $100.2 million and 2.1 respectively, indicating cost savings to the community of $2.10 for each $1 invested.

Rural Intersection Active Warning System (RIAWS)

A treatment that may be of significant value in the future in managing both run off the road and rural intersection crashes is the use of Rural Intersection Active Warning Systems (RIAWS) – flashing warning lights that alert drivers on regional highways that drivers on intersecting roads are approaching to cross or merge (Meuleners, 2018).

The New Zealand Transport Agency commissioned an evaluation of the RIAWS program that outlines the medium-term benefits of the program in ten trial sites around New Zealand (Mackie, 2015). This evaluation recommended the use of RIAWS as a road safety countermeasure for high risk rural intersections and found that the countermeasure produced:

- Reductions in speeds when the signs were flashing. Modal speeds when the variable speed sign was flashing were 68-72 km/h while they were 80-95 km/h in normal flow
- Slight increases in gap selection – vehicles turning onto major roads moved into slightly larger gaps
- Generally positive driver feedback
- Early indications of reduced crash rates. Comparing the mean crash rate by month showed that fatal and serious injury crashes declined from 0.039 crashes/month in the pre-trial data to 0 crashes/month after the installation of the RIAWS.

Figure 1: Rural Intersection Active Warning System - New Zealand

WHAT ARE THE COUNTERMEASURES?

Treatments for run off road crashes can be found in all elements of the safe system and are outlined below in the four cornerstones of safe roads and roadsides, safe speeds, safe behavior and safe vehicles.

Safe Roads and Roadsides

The risk of death or serious injury due to run off road crashes in regional and remote areas can be reduced by sealing shoulders, installing audible edge lines, removing roadside hazards and installing safety barriers.

Regional Run Off Road Crash Program

In 2012, Main Roads WA (MRWA) began an extensive improvement program for key regional routes with higher crash densities. These roads radiate out of Perth into regional WA and have received a safe system improvement. Typical countermeasures would include:

- Improvements to delineation
- Widening carriageway and sealing shoulders
- Installing audible edge lines
- Reconstructing superelevation on shoulders or lanes where superelevation is below recommended guidelines
- Minor realignment of substandard curves

- Increasing surface texture and improving drainage
- Selected removal of roadside vegetation
- Provision of roadside safety barriers.

Rural Intersection Active Warning System (RIAWS)

MRWA has begun a four-year program to trial RIAWS in WA, with the first on-ground installations beginning in 2019/2020. RIAWS devices will be installed at four regional intersections and the outcomes will be monitored.

Black Spot Program

Countermeasures evaluated as effective include:

- Identifying black spots
- Audio-tactile edge lining
- Creating clear zones
- Clearing roadside hazards
- Improving curve alignment
- Improving lighting
- Using barriers.

Infrastructure improvements in this area is ongoing through MRWA and Local Government Black Spot programs, prioritising improvements to high crash risk areas. The aim of the program is to reduce road trauma by providing a road system that is safe for all road users.

Safe Speed

Speed limit reductions are a particularly effective way of reducing run off road crashes and head on crashes in regional areas (Candappa, 2013). Lower speed limits give the driver more reaction time to take evasive action to avoid crashes. Should a crash eventuate, lower travel speeds result in far less severe crash consequences.

In 2017, it was determined that there were more single vehicle run off road crashes (either right or left) on Indian Ocean Drive than would be typical for the network. As well as

long-term infrastructure improvements, there was an immediate speed limit adjustment to 100km/h from 110km/h. Modelling for the reduced speed shows a reduction of between 13.4 and 25.4 KSI crashes over a ten-year period, depending on compliance (Safe System Review, 2017).

This is in line with the priority actions from the National Road Safety Action Plan 2018-2020:

- Review speed limits on high risk regional and remote roads, in consultation with the community.
- Increase deployment of point-to-point and mobile cameras to achieve safe travel on Australia's road network.

Modeling has shown that reducing the speed of vehicles from 100km/h to 90km/h can be expected to produce a 35% reduction in fatal crashes and 31% reduction in serious injury crashes (National Road Safety Action Plan, 2018).

Enforcing the speed limits is an ongoing process, and education campaigns are constantly refreshed and include:

- Fleet safety education through the National Road Safety Partnership Program
- Youth programs run through the School Drug Education and Road Aware
- Mass media campaigns through the Road Safety Commission
- The Road Safety Community Grants program for community activities
- RoadWise community program.

Safe Road User Behaviour

The number of KSI single vehicle run off the road crashes involving risk taking behaviour has reduced by 41% over the course of *Towards Zero*. KSI single vehicle run off crashes not involving primary risk taking behaviour have also reduced over the same period, but at a lower rate – 23%.

There are a suite of ongoing enforcement and education campaigns aimed at improving road user behavior and reducing risk taking behavior. One issue of particular significance in run off road crashes is fatigue – a common scenario is that a driver loses focus and drifts off a regional road.[2]

Fatigue is a difficult issue to combat as it often does not have an intentional component. However, it can be combated through education campaigns, including encouraging drivers to use pull over bays.

One example of a localised campaign is the WA Driver Reviver Program. In 2017-18, RoadWise and community volunteers operated 19 driver reviver sites across the State over 31 days. The Driver Reviver Program is a national program, but operates at a local level, to improve awareness of fatigue.

Figure 2: Driver Reviver signage at Collie

[2] D18-11169, Road Safety Commission, Information Sheet – Fatigue.

Safe Vehicles

Lane departure warning systems alert drivers that their vehicle is about to veer out of the lane and warns them to return to the lane. Advanced forms of the technology may automatically correct if the vehicle drifts off road. This vehicle technology has the potential to reduce run off road crashes, especially crashes caused by fatigue or distraction where the driver is unaware they are leaving the road.

Lane departure warning systems rely on visible lane markings and cannot decipher faded, missing or incorrect lane markings. However, preliminary on-road trials in Western Australia indicate that lane markings on regional roads are generally visible to modern systems (Mackenzie, 2018).

Some car manufacturers are developing systems that detect when drivers begin to drive erratically due to fatigue and remind drivers of the need to take a break.

WHAT IS THE FUTURE FOCUS?

There are ongoing developments in all the cornerstones of the safe system.

- In light of the excellent evaluation of the regional run off road program, MRWA is continuing to expand the program to further high traffic volume/high crash risk roads in the regional network.
- Local Government and MRWA will continue to make improvements to high crash rate roads through the Black Spot program.
- Speed enforcement and community education campaigns about safer driving are ongoing.
- The Road Safety Commission (Commission) has engaged further research into the effectiveness of lane departure warning systems in WA road conditions.
- The Commission actively promotes vehicle safety technology for WA road users.
- The Commission maintains national partnerships to influence national evidence-based research and policy reforms relating to the regional road network within Australia.

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