

ROAD CRASHES ON LOCAL GOVERNMENT ROADS: CAUSES AND SOLUTIONS

Blair Turner & Victoria Pyta (presenter), ARRB Group Ltd

Abstract

Local government roads form a significant part of the public road network, but little is known about crashes on these types of roads. This Austroads study involved a review of literature, crash data analysis, site investigations, in-depth crash analysis and stakeholder workshop to address this issue. It was identified that a significant proportion of road deaths and casualties occur on roads managed by local government. Information is provided on the types of crashes, and likely contributors to these. Information is also provided on likely barriers that may prevent improvements in safety on local government roads. A range of strategies are provided to address these barriers and improve the level of safety on local government roads.

Key Words: local government, road safety, crashes

Introduction

Every year, crashes on roads result in an estimated 1.2 million fatalities, and up to 50 million are injured or permanently disabled on the world's roads (WHO 2009). In Australia, road safety is also a significant issue, with around 1600 fatalities per year (Australian Transport Council 2008), and up to 30,000 serious injuries (BITRE 2009). This equates to an average of over 4 deaths per day, and 80 serious injuries.

Local government managed roads make up a large proportion of the public road network, but little information exists as to the number of deaths and injuries that occur on these roads, nor on the types of crashes. Similarly, there is little information on the barriers to improving safety on these roads, or solutions targeted specifically at these roads.

Austroads (the association of Australian and New Zealand road controlling authorities) recognised this issue, and commissioned ARRB to investigate.

A project was undertaken to examine:

- the scale of the road safety problem on local government managed roads
- types of crashes, and difference to crashes on state roads
- barriers to improving safety on local government roads
- examples of how safety on local government roads can be better managed.

Method

In order to address these issues, the following tasks were undertaken:

- a review of published literature on this topic
- an analysis of crash data from each Australian state, and from New Zealand for the period 2003 to 2007. This compared crash numbers and types on local government and state managed roads
- an analysis of the South Australian in-depth crash database (conducted by the Centre for Automotive Safety Research). This includes detailed information on the road environment, vehicles involved in each crash and road users (from interviews)
- around 60 site investigations on local government managed roads in New South Wales, Western Australia and Victoria. These occurred at locations with a history of crashes
- a stakeholder workshop.

Results

The review identified that 84% of the Australian network (in terms of length), and 88% of the New Zealand road network is managed by local government. A large proportion of this is in rural areas. There is no clear information on the amount of traffic on local government managed roads, but it is likely that just over a third (37%) of all vehicle kilometres travelled is on local government roads – mostly on the urban parts of the network.

The crash analysis identified that around half (51%, a total of 33,500 per year) of all casualty crashes in Australia, and two-thirds

(65%, or 7,100) of those in New Zealand occur on local government roads. The proportion of fatal crashes is slightly less than this with 40% (or around 560 per year) of all fatalities in Australia, and 46% in New Zealand (170 per year).

Given a lack of accurate information for traffic volumes on local roads, it is not possible to calculate accurate crash rates (in terms of crashes per 100 m vehicle kilometres travelled). It is therefore not possible to determine the additional risk experienced by road users on local roads compared with state roads. However, it is likely that the risk is higher (between 1.5 to 2 times the level of risk), and in some road environments may be much higher.

Long term trend data (over 10 years) indicated that despite a general downward trend in casualty and fatal crash numbers, the figures for local government managed roads had been relatively stagnant. As an example, in New Zealand there were around 180 deaths on local government roads in 1999, with a similar total in 2008. However, crashes on state roads had decreased from around 340 to 180 over this same period.

The crash analysis of local government roads indicated that:

- casualty crashes tended to occur on urban roads (around 75% of crashes) although fatal crashes were evenly split across rural and urban roads (50%)
- where a death occurred, this mostly involved motorists losing control of their vehicles either on a curve (22%) or straight (21%); or striking a pedestrian (16%). All of these were over-represented when compared to fatal crashes on state highways
- in New Zealand (where crash causation is recorded), the most common crash cause were recorded as poor observation, failing to give way or stop, speed and alcohol, and each of these factors were over-represented when compared to the state network
- of the fatal crashes, speed and alcohol were the most common cause factor
- there was a higher proportion of non-seatbelt wearing on local government roads
- 17-24 year olds were the age group most involved in crashes, with a higher proportion in this age group involved in

crashes on local government roads.

This was even more pronounced for fatal crashes (28% of fatal crashes in Australia, and 33% in New Zealand involved this age group).

Many of these issues were linked to issues identified during the site investigations and in-depth crash database analysis. This work highlighted the following issues from crashes on metropolitan local government roads:

- presence of roadside hazards
- visual obstruction of signs and traffic controls
- poor delineation
- high number of crashes at controlled intersections
- young drivers and risk taking
- impaired drivers, including pre-existing medical conditions
- driver distraction.

In rural areas, the following issues were identified as being significant in local government crashes:

- severe outcomes at intersections
- lower standard of traffic control, street lighting and delineation at rural junctions
- roadside hazards – especially trees
- poor junction geometry
- poor road alignment and delineation
- unsealed shoulders
- driver inexperience
- loss of control
- excessive speed
- impairment.

It can be concluded that crashes on local government roads are a significant public health issue. There is also some evidence to suggest that despite a general reduction in crashes on all roads over the last decade, the number of crashes on local government roads has not reduced dramatically in recent years.

Measures to address specific crash types on local roads

Low cost measures are available to address many of these issues. Most obvious are improvements to delineation (at curves and junctions) and review of speed limits. Many of the issues should be addressed through maintenance (e.g. signs, road markings and vegetation clearance). Higher cost options include removal of roadside hazards (or protection of vehicles through installation of

barriers), installation of adequate pedestrian facilities, provision of road shoulders, and improvements to road alignment. A number of enforcement options are available (including for speed, impairment and seat belts), as well as education programs (particularly to address driver speed, distraction and inattention, medical conditions and driver expectation).

Although the types of solutions to use are relatively clear, there are often barriers to making improvements to safety on local government roads.

Barriers to improving safety on local government managed roads

A workshop of key stakeholders was held to determine current barriers to delivering road safety on local government roads. Attendees from across Australia and New Zealand were invited to the event, or to contribute to the discussion through comments on the document that was produced following this. Attendees included safety experts working within local government, in liaison roles for state government, or for local government associations.

A variety of barriers were identified during discussions. These can be summarised as follows:

Crash distribution – the local government road network is extensive, and crashes tend not to cluster making treatment (e.g. engineering measures or enforcement) difficult.

Access to knowledge about how to address safety – there is a perceived need for guidance specifically for local roads, possibly with advice on how incremental steps towards road safety can best be achieved with the money that a council has available to them. Difficulties were identified in accessing information on good practice given other competing demands.

Data issues – there is difficulty in accessing data relating to road safety (e.g. crash data), and then in interpreting this.

Funding / costs – funding specifically for local government road safety is limited. Given that there are often very few ‘black spots’ on local government roads, treating existing problems is difficult under the current benefit/cost approach. There are also difficulties in applying for additional funding, as this takes time and resources.

It was also widely considered that in many cases local government cannot afford best practice.

Community and political buy-in and expectation – getting people to talk about road safety is not a difficult task, but eliciting productive discussion and convincing councils to give road safety sufficient priority to promote informed, concerted and coordinated effort is a more difficult matter. There is a need to raise the awareness of the real risks on the road.

Staff issues – local government often lacks the staff resources to deliver safety outcomes. This includes availability of staff, and staff with appropriate skills to perform their roles.

Network planning issues – it is important to build safety into design at the planning stage to maximise safety benefits, and minimise the need for remedial safety treatments in future. This is not always done.

Responsibility / liability – it was suggested that there is too much emphasis on blame-shifting between the different levels of government and not enough emphasis on problem-solving

Changing population structure, traffic volumes and composition – an ageing population, and growth in traffic (including heavy vehicles) presents a problem to local government.

Some solutions for improving local government road safety

The final Austroads report provides guidance on each of the barriers presented above. Key suggestions are as follow.

The development and implementation of an effective road safety strategy is crucial. A safety management systems approach for asset planning, building and management is a promising method for incorporating a safety philosophy (and more specifically, the Safe System philosophy) throughout local government processes.

Multiple local stakeholder coordinating arrangements are important for creating a sense of responsibility and ownership of road safety within the community and for raising the profile of road safety on the local government agenda.

Creation of ‘partnerships’ between various local governments (particularly smaller ones) is crucial to improving safety outcomes. This

can take the form of 'sister council' arrangements or clusters of councils. This will assist in the pooling of resources and staff expertise.

For every council there should be available at least one full time employee who is responsible for road safety (or more specially, a 'Safe System' position). For smaller councils, this might entail sharing of this resource across a number of councils. This Safe System expert should have a clearly defined role, and access to relevant information on addressing road safety specifically on local government roads.

There appears to be a need for specific road safety guidance for local government. In many cases, local government is not able to deliver 'best practice' solutions, but rather would perhaps best deliver safety in an incremental fashion. Guidance is needed on how to achieve this delivery.

The way in which information is provided to local government practitioners needs to be examined. It is unlikely that they will have time to access many of the research reports that exist on new and improved approaches to treatment of risk. There are some successful examples of on-line tools that are available to practitioners (e.g. the Austroads Road Safety Engineering Toolkit, available at www.engtoolkit.com.au) but wider promotion of such tools is required. It was also suggested that a database of behavioural interventions (and their effectiveness) be produced, and this idea appears to have merit.

The benefit-cost approach to funding safety projects does not fit well with the types of problems found on local government networks, and the 'bidding war' that ensues takes valuable resources in terms of time with no guarantee of success. Guidance and/or a revision of this approach is needed to help fund local government road safety improvements, including longer term projects that will increase the safety of the local government road network.

The risk assessment based approach (one that examines the level of risk not just from crash data, but also from road and roadside attributes), as well as those involving mass action or route treatments seem to be of high relevance to those managing local roads (particularly the low volume network). Greater use could be made of such tools, although

funding mechanisms might need to be altered to maximise their use.

Funding for safety is only a small proportion of total expenditure on roads in local governments. It is important to ensure that budgets and processes in other areas of road management (including planning and asset management) take account of up to date information on road safety to ensure that funds directed at these tasks maximise the safety benefit.

Improved information is required to help identify current crash problems within local government areas. Benchmarking between similar local governments (either within one state, or even potentially between states) would be a valuable tool to help authorities identify problem issues. State government has an opportunity and a responsibility to assist in this task. Better knowledge about the safety situation will help raise awareness of road safety risks, providing useful information for politicians and the public. There are good models of how such information could be presented, and these should be used as a basis for such dissemination.

Recommendations

Based on the discussion above, the following recommendations are made:

1. Development and delivery of effective local government road safety strategies is of utmost importance in delivering road safety outcomes. Local governments which do not yet have a road safety strategy should be encouraged and assisted to develop one.
2. Partnership working between local governments, and between state government and local government should be actively promoted. Various successful models exist and should be assessed by state authorities.
3. The introduction of a 'safety management system' approach for local government should be investigated.
4. Each council should have access to a full time Safe System practitioner.

5. Guidance on the delivery of safety on local government roads should be assessed, and revised to take account of barriers (and opportunities) on local government roads. This guidance should include information on mass action programs, route assessments and risk assessment.
6. Better dissemination of road safety information is required, and a tool (perhaps on-line) to assist in provision of information to local government safety practitioners (including those on behavioural measures) should be developed.
7. Funding arrangements for local government road safety should be reviewed at both state and federal level, and a model for road funding tied in to the Safe Systems approach should be developed.
8. The quality, consistency and completeness of data held at a national level on expenditure, road condition, exposure and crashes on local roads is in need of improvement. Without good quality, reliable and complete data the question of whether funding for local roads is appropriate cannot be adequately addressed.
9. There is a need for greater dissemination of Safe System principles throughout local government to ensure opportunities to improve safety benefits are maximised. This dissemination should be conducted in a systematic way.
10. Information on crashes on local government roads should be provided by state government to each local government on a regular basis. This should include information to enable benchmarking.

Conclusion

In both Australia and New Zealand, a significant proportion of fatal and injury crashes occur on local government roads. Given the volumes of traffic using these roads, the risk to an individual driver of being involved in a casualty crash are likely to be higher on local government roads than on state roads. In addition, it appears that improvements in safety on local roads have been slower in coming (over the last 10 year period) than for state roads.

This project identified a number of key crash types that occur on local government managed roads, as well as methods to address these. However, various barriers also exist in addressing this risk. These need to be addressed before improvements can be made. Responsibility for improving local government road safety lies at all levels of government (federal, state and local), and a concerted effort by each will be required to improve safety on the road.

References

Australian Transport Council (2008). National road safety action plan: 2009 and 2010, ATSB, Canberra, ACT.

BITRE (2009). Australian Transport Statistics: Yearbook 2009. Bureau of Infrastructure, Transport, and Regional Economics. Canberra, Australia.

WHO (2009). Global status report on road safety: time for action. World Health Organization. Geneva, Switzerland.

Acknowledgements

The authors would like to thank Austroads for funding this research, and the workshop attendees for their valuable input. We also acknowledge Jeremy Woolley from the Centre for Automotive Safety Research in Adelaide for the in-depth crash analysis; Sarah Zhang for help with the crash data analysis; the ARRB staff in various offices for conducting site inspections, and David Green for analysis of that data.

Author biographies

Blair Turner joined ARRB Group Ltd at the end of 2004, and has a number of years experience in road safety, both in Australasia and Europe. He initially worked for the New Zealand Government (LTSA) before moving

to the UK to continue his career. He has been involved in a wide range of road safety research projects, road safety audits and investigation of crash locations, and production of road safety reviews (including a review of the UK Road Safety Strategy). Much of his work has involved liaison with local government regarding road safety issues. Blair is now based in ARRB's Melbourne office where he is currently responsible for research on road safety engineering.

Victoria Pyta joined the road safety team at ARRB Group Ltd in April 2005. In 2003, she attained a Bachelor of Arts with Honours in Psychology from The University of Melbourne. Victoria's skills include qualitative and quantitative data analysis, survey design, literature reviews and consultation. She has worked on a wide range of research projects at ARRB. These have spanned diverse areas such as bicycle commuting, engineering-based crash reduction treatments, young pedestrians, younger and older drivers and the effects of red light cameras on crashes.