



THE UNIVERSITY  
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# At the Scene

Newsletter of the Centre for Automotive Safety Research

## Feature



### Autonomous Emergency Braking paper presented at ESV Conference

Robert Anderson attended the 23rd International Technical Conference on the Enhanced Safety of Vehicles (ESV). He presented a paper on the potential benefits of autonomous emergency braking (AEB), a study based on CASR's in-depth crash investigations.

Robert and his co-authors identified 104 serious injury and fatal crashes that had been investigated at the scene and carefully reconstructed the pre-crash movements of the vehicles involved. The crashes were then simulated to examine the likely effect of AEB on crash speeds.

The ESV conference is increasingly emphasising pre-crash safety. With the advent of technologies designed to prevent or mitigate crashes, recent research from many countries has focused on methodologies of testing and assessment of the various technologies and emerging effects in real crashes. The ESV conference will remain an important forum for the dissemination of findings of such research over coming years.

CASR is grateful to ANCAP who helped support Robert's attendance at the conference.

## Identifying education resources to increase public acceptance of reduced speeds

In 2012 CASR reviewed the availability and quality of online speed education resources.



Principal author Simon Raftery explains 'while the association between speed and road safety outcomes is well documented, the public continue to resist lower speed limits. This project sought to identify educational materials that may be useful in increasing public acceptance of reduced speed limits'.

A search of the internet and contact with relevant agencies throughout Australia identified 203 speed education resources, 70 of which met the criteria for inclusion in the study. Public media

campaigns were excluded from the review. All 70 resources were found to be evidence based, drawing on one or more of 27 central arguments.

The nine best resources were identified based on the following criteria:

- > Use of evidence
- > Ease of understanding
- > Potential to influence the general public
- > Extent that the resource supported the speed management principles of the National Road Safety Strategy

Compared to others, these resources addressed a wider range of evidence and often included information addressing other objectives such as travel time, fuel economy, or environmental benefits. The better resources were also considered to be more accessible to the public both in context and how the information was presented.

The general purpose of current speed education resources is to promote adherence to speed limits in order to achieve a level of safety on our roads.

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# Message from the Director

Welcome to the November 2013 edition of At the Scene.

In this edition we highlight some of our recently completed research and also our partnership with IFSTTAR, one of our most long-standing and productive collaborations. Working in partnership with other researchers and practitioners is vital to us all achieving our goals in improving road safety. These collaborations can take many forms, for example last week we partnered with injury researchers from Nihon University and the Japanese Traffic Safety and Environment Laboratory and also hosted another very successful CASR-MUARC seminar.

Opportunities for researchers to share and discuss their work are also important. In August a large group of CASR researchers attended the annual Road Safety Researchers Conference in Brisbane and a small smaller group attended the preceding ICADTS conference. The organisers of both conferences should be congratulated on providing an interesting program with opportunities for researchers and practitioners to meet and discuss their work.

Finally I hope you find this edition of the newsletter interesting and informative. Please contact us if you would like copies of the publications or more information about any of the projects described.



This will be our final newsletter for 2013 so let me be the first to wish everyone a successful end to 2013 and a safe and happy Christmas

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While there is nothing inherently wrong with such an approach, Simon believes 'the efficacy of the materials can be improved further by addressing the ways in which drivers rationalise their speeding behaviour. Such justifications can include the perception that risk is minimal, the belief that hoon drivers are the problem and that reducing speeds will increase travel time'.

'Useful online resources need to counter these arguments by emphasising that road safety is a community issue, dispelling the belief that speeding is 'normal' behaviour and individually countering other popular attitudes and beliefs'.

Improving the information available to the public online, whether by enhancing the existing resources, combining several resources or developing new resources 'may contribute to a change in drivers' attitudes to speed and speed limits'.

This project was sponsored by the National Road Safety Council.

For a full list of resources analysed for this project please go to: <http://casr.adelaide.edu.au/casrpubfile/1364/CASR114.pdf>

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## CASR/IFSTTAR (France) collaborations continue

CASR's collaboration with IFSTTAR (The French institute of science and technology for transport, spatial planning, development and networks) was strengthened recently by the renewal of the MOU between IFSTTAR and the University of Adelaide.

Dr Thierry Serre from IFSTTAR-LMA (Laboratoire Mécanismes d'Accidents) located in Salon-de-Provence recently visited CASR in order to renew the MOU and to hold meetings with students being jointly supervised by Dr Serre and Robert Anderson. The Pro Vice Chancellor (international) of the University of Adelaide (Prof Kent Anderson) was on hand to sign the MOU and to meet with Dr Serre, Robert Anderson and Mary Lydon (pictured).

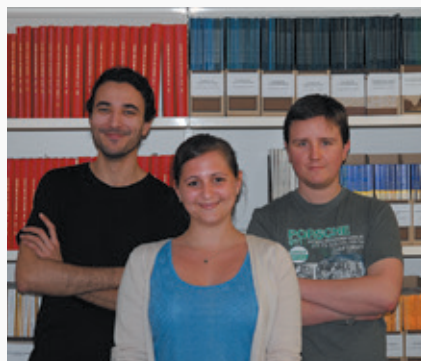
The students being supervised by Thierry and Robert, Hedi Hamdane and Kieran

Gockowiak, are examining the interactions between the effects of autonomous emergency braking and secondary (crash phase) safety, in pedestrian and vehicle occupant injury crashes. Hedi is visiting Australia this year and then will return to France to complete his studies. It is expected that Kieran will spend 12 months in France commencing in 2014 to aid in his research and to take advantage of research facilities located in Salon-de-Provence and in Marseilles.

We were also delighted to host another French student Floriane Boban from Strasbourg. Floriane worked at the Centre for 12 weeks from June 2013 as in intern, performing numerous research tasks for projects being supervised by Robert Anderson and Jeremy Woolley. We are all grateful to Floriane for her hard work and dedication during her time at the Centre.



Mary Lydon and Robert Anderson, both of CASR, with Thierry Sierre of IFSTTAR and Kent Anderson, Pro Vice-Chancellor (International)



Hedi Hamdane, Floriane Boban and Kieran Gockowiak



## Work related crashes

Historically, work-related crashes were treated like any other crash and considered to be purely a road safety issue. However, more recently it has been acknowledged that work-related driving should also be considered in the context of workplace health and safety (WHS). This presents additional opportunities to reduce work-related crashes as employers can purchase safer vehicles, plan scheduling to avoid fatigue/stress, and promote a safe driving culture.

Unfortunately, due to the historical approach, work-related crashes are not explicitly classified in Australian crash data. Thus, the frequency and characteristics of work-related crashes are unknown.

Recently, CASR sought to overcome this gap in knowledge and estimate the burden of work-related light vehicle crashes in South Australia. Crashes involving a light vehicle that was being used for work purposes between 2006 and 2010 were identified through matching of crash data with workers compensation data.

“...results indicate that work vehicles have an increased crash risk in South Australia...”



Unsurprisingly, work-related crashes were found to be more common on weekdays during work hours, and work vehicles were likely to be driven by males of working age.

One surprising finding was that the crash rate for work vehicles was 20 per cent higher than that for private vehicles. Further analysis showed that this increased crash rate was most pronounced in right angle and side swipe crashes. An explanation of this increased crash risk for work vehicles was sought but none could be identified.

One suggestion is that drivers of work vehicles are more likely to be travelling in unfamiliar vehicles or to unfamiliar locations and so may be less focused on the driving task.

While the analysis methods used have some limitations, the results are indicative that work vehicles have an increased crash risk in South Australia which warrants further research and attention from WHS and road safety agencies.

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## Staff profile



### Giulio Ponte

Giulio started working at CASR in 1995 as an engineer involved in at-scene crash investigation. The team worked on a major project to quantify the relationship between free travelling speed and the risk of involvement in a casualty crash. Giulio says 'I am proud to be part of the research team that provided the evidence that the risk of involvement in a casualty crash doubles with each five km/h increase in travelling speed above 60 km/h'.

Having been involved in the at-scene investigation of over 600 urban and rural casualty crashes in South Australia he regrets that in each crash a person was injured. He acknowledges however that 'on-going research into crash causation and understanding the mechanisms of injury are fundamental for improving road safety, but death and serious injuries are also unacceptable and should not be tolerated.'

One area Giulio has had significant involvement in while at CASR is assessing vehicle design for mitigating pedestrian injuries. He has seen the consequences and injuries resulting from real world pedestrian crashes. Giulio explains 'in my ongoing role at CASR's Vehicle Testing Laboratory (which conducts pedestrian assessment of vehicles for the Australasian New Car Assessment Program) I have been encouraged to see real change and commitment in vehicle design specifically to consider safety for vulnerable road users.'

In addition to being an accredited road safety auditor since 2000, Giulio recently completed a Post Graduate Diploma in Transport and Traffic Engineering. This

has broadened his knowledge in this field of engineering to better understand the various interacting elements of the road and transport system.

Giulio has been involved in a variety of other projects at CASR including the development of a prototype head band for protecting car occupants and the examination of mass crash data to examine the contribution of structural incompatibility to asymmetrical injury risks in crashes between two passenger vehicles. The research papers resulting from both of these projects have won awards at the respective conferences they were presented at. Recently Giulio has been involved in examining the benefits of various vehicle technologies such as autonomous emergency braking and automatic crash notification systems.

Despite acknowledging that travelling in a car is more protective than riding a bicycle, Giulio is a keen cyclist. He rides to work every day, appreciating the health benefits of active transport.

Anderson, R. W. G., Hutchinson, T. P., & Ponte, G. (2013). The impact of changes in the Australian light vehicle fleet on crashworthiness and crash outcomes (AP-R428-13). Sydney: Austroads.

Anderson, R. W. G., Raftery, S. J., Grigo, J. A. L., & Hutchinson, T. P. (2013). Access to safer vehicle technologies by young drivers: factors affecting motor vehicle choice and effects on crashes (CASR118).

Baldock, M. R. J., Royals, J., Raftery, S. J., Bailey, T. J., & Lydon, M. (2013). Developing measures to reduce unlicensed driving (AP-R424-13). Sydney: Austroads.

Doecke, S. D., Mackenzie, J. R. R., & Woolley, J. E. (2013). Post

impact trajectory of vehicles at rural intersections (CASR086).

Lindsay, V. L. (2013). Injured cyclist profile: an in-depth study of a sample of cyclists injured in road crashes in South Australia (CASR112).

Mackenzie, J. R. R., Searson, D. J., & Anderson, R. W. G. (2013). Work-related road safety in South Australia (CASR116).

Raftery, S. J., & Grigo, J. A. L. (2013). The conspicuity of South Australian cyclists: implications for safety (CASR113).

Raftery, S. J., Kloeden, C. N., & Royals, J. (2013). Safer speeds: an evaluation of public education materials (CASR114).

Raftery, S. J., Woolley, J. E., & Grigo, J. A. L. (2013). Heavy vehicle safety data (AP-R441-13). Sydney: Austroads.

## Publications

### Improving heavy vehicle crash reporting

A new study by CASR staff Jeremy Woolley and Simon Raftery identified data necessary to monitor heavy vehicle safety performance. The project, funded by Austroads, was conducted in three stages.

The first stage involved a literature review of international best practice regarding the collection of heavy vehicle safety and crash reporting; no ideal database format was identified. 'This review also identified the benefits of supplementing police recorded crash data with information from other sources, including follow-up investigations of crashes, Jeremy explains. 'We investigated the availability of heavy vehicle data from existing sources including the Australian Road Deaths Database and the (now obsolete) Australian Truck Crash Database'. Other sources explored include hospital records, workplace safety data, insurance data, and Australian Bureau of Statistics resources.

Stage two involved a review and comparison of the crash databases maintained in each Australian and New Zealand jurisdiction. This revealed large variation in both the way that heavy vehicle data is recorded and the information available. The most notable of these is inconsistency in the reporting of injury severity. While a basic level of reporting using raw crash numbers can currently be obtained, a more intricate picture of heavy vehicle safety cannot be achieved with current road crash databases. 'It would be beneficial to harmonise several variables'



Jeremy says, 'and develop a standard approach towards reporting heavy vehicle crashes'.

The final stage of the project involved identifying Safety Performance Indicators (SPI). These are intended to facilitate the monitoring of heavy vehicle safety performance in areas such as industry sectors, vehicle configurations, and interstate versus intrastate transport.

Following this, a number of recommendations for the development and

later improvement of a database were also provided. A data collection pro-forma for use at-scene by police was also developed. Simon says 'this is intended to supplement standard crash recording practices when heavy vehicles are involved'.

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