From the Director

This is the last Big Impact for the year and it highlights a number of successes at MUARC.

The first of these is our B-HERT Award which recognises excellence in partnerships between industry and academia. We were awarded this for our very successful Used Car Safety Rating program which has been operating for more than 20 years. This award recognises the contribution that Associate Professor Stuart Newstead and his team have made in translating research that influences consumer choice when purchasing used cars.

In addition, we ran the inaugural Road Safety Management and Leadership Program with positive feedback from those who attended this niche program. We are looking to extend the program into low-income and middle-income countries in the region next year.

We have been successful in securing competitive National Health and Medical Research Council and Australia Research Council grants, along with many competitive contract research projects this year. In addition, our doctoral and post-doctoral research programs are growing and we have a number of large research initiatives in planning; so 2013 looks set to be a busy one.

On behalf of all of the staff at MUARC, I would like to wish you all a safe and relaxing holiday period and we look forward to working with you throughout 2013.

Professor Mark Stevenson
Director, MUARC

Recent publications

Here are a sample of some of our reports and publications that we have produced over the last quarter. These reports have generated considerable interest in the community and media, emphasising the positive impact transport safety research makes.


20 years of making the roads safer

The scientific robustness and continuity of the program has provided a clear link between regulation for vehicle safety performance and improvements in the crashworthiness of the vehicle fleet as well as providing drivers with clear impartial evidence to help them make safer vehicle choices.

This year marks the 20th anniversary of the publication of the Used Car Safety Ratings. From a humble brochure covering a hand full of vehicles, the rating have expanded to a comprehensive online presence covering the vast majority of vehicles over 5 years old. The Vehicle Safety Research Group comprises government and automobile club funding partners collaborating with MUARC to set a research agenda that is relevant to current and emerging issues in vehicle safety and to translate the research findings rapidly into policy and practice.

The annual Used Car Safety Ratings evaluates the crashworthiness, aggressivity and total secondary safety for over 500 vehicle models. The crashworthiness ratings were the initial focus of the ratings and estimate the risk of a driver of the focus vehicle being killed or admitted to hospital when involved in a crash. The ratings were expanded in the mid 1990s to incorporate vehicle aggressivity, which estimates the risk of another vehicle driver or unprotected road user being killed or admitted to hospital when colliding with the rated vehicle model. A final measure, termed the total secondary safety index, was developed to measures the combined crashworthiness and aggressivity performance of a vehicle, identifying vehicles which offer the best combined safety performance.

Over the 20 years the program has been running, the emphasis of the research has expanded to incorporate evaluation of vehicle safety technologies, modelling and prediction of the vehicle fleet composition and its effects on safety, estimating crash risks, considering the impact of vehicle choice on high risk road user groups and examining the relationship between ANCAP and actual crash outcomes. These projects have contributed significantly to understanding and optimising the safety of the vehicle fleets in Australia and New Zealand.

The scientific robustness of the program provides a clear link between regulation for vehicle safety performance and improvements in the crashworthiness of the vehicle fleet. For example, the evaluation of ESC effectiveness was instrumental in the Commonwealth Government mandating the fitment of ESC to light passenger vehicles from 2011 and informing the consideration of extending that mandate to light commercial vehicles in the future.

The potential for this research program continues to develop with the expansion of the research platform to allow the program to expand its research focus to include the contribution of vehicle design and specification to specific injury outcomes and to assess the potential and actual benefits of the full range of emerging vehicle crash avoidance technologies.

Road Safety Management and Leadership Program a resounding success

During November, we held the inaugural Road Safety Management and Leadership Program over five days at the Monash University Law Chambers in the Melbourne CBD.

It integrated road safety management, science and leadership topics through an interactive engagement between senior Faculty members from the Monash University Accident Research Centre, the University of Adelaide’s Centre for Automotive Safety Research and the Melbourne Business School (The University of Melbourne). The program participants appraised best practice science and its contribution to improved road safety, and the leadership challenges raised and how they could best be met. Road safety leaders from Australian state and national agencies and agencies and companies from New Zealand and East Asia overwhelmingly agreed that the program’s learning objectives were achieved. Participation provided them with a greater appreciation of the linkages between road safety science, management and their leadership roles, and an improved capacity to address the challenges they face, with this improved capacity including future networking opportunities with each other and mentoring support from program Faculty members. Planning has now commenced for the next program, which will benefit from the lessons learned during its highly successful introduction.

Faculty and participants at the inaugural program
Although crashes between vehicles and trains at railway level crossings (RLCs) are relatively few in number, when they do occur, they usually involving multiple fatalities and serious injuries as well as significant disruption to the transport system. There is abundant anecdotal speculation as to the contributing factors to these type of crashes but little supporting evidence.

In a world first, MUARC researchers from the Human Factors team lead by Associate Professor Michael Lenné, are using instrumented vehicles to observe what drivers actually do at RLCs and will apply Human Factors modelling techniques to analyse the data.

Previous studies generally relied upon an observer at the roadside coding driver behaviour at RLCs. The use of the MUARC instrumented vehicle allows collection of considerably more in-depth data including driving performance measured from the car’s black box recorder, head checks and eye tracking. In addition, post-drive interviews are being undertaken to better understand driver strategies when encountering RLCs.

The first phase of the study has already been completed in a rural setting around Bendigo in Victoria and has yielded interesting results.

Driver situation awareness was assessed using a network analysis approach. The analysis revealed key differences between novice and experienced drivers’ situation awareness. In particular, the novice drivers seemed to be more reliant on active rail level crossing warnings (bells, lights and boom gates) with their situation awareness less focussed on the environment outside of the rail level crossing. This was verified through analysis of head checking behaviour.

Taking this systems approach to RLCs provides novel and unique insights into how level crossing design and warnings shape driver behaviour. As the study progresses, metropolitan situations will be observed and further analysis will take place using Human Factors analytical techniques with findings validated through simulator studies.

The study will yield a rich source of scientific evidence supporting the improved design and operation of RLCs to trigger more appropriate driver responses and ultimately reduce the frequency of crashes.

The Application of contemporary systems-based methods to reduce trauma at rail level crossings project is funded by an Australian Research Council Linkage Grant (LP100200387) to Monash University in partnership with Victrack Access, Public Transport Safety Victoria, Transport Accident Commission, VicRoads, Victorian Government Department of Transport and V/Line Passenger Pty Ltd.

MUARC gratefully acknowledge the support of the project partners and community participants. Without their valuable input and commitment, this research would not be possible.
Further information

Monash University Accident Research Centre
Building 70, Clayton Campus
Monash University, VIC 3800
Telephone: +61 3 9905 4371
Email: miri-enquiry@monash.edu