

# **SAFER VEHICLES – THE MARKET DRIVEN APPROACH IN VICTORIA**

David Healy, Jonathon Passmore, John Thompson, Jessica Truong  
Transport Accident Commission

## **Introduction**

The “Safe System” approach to tackling road safety is increasingly gaining ground across Australian jurisdictions. At the heart of this approach is the primacy of human health and well-being when compared with other benefits such as convenience or economic gain. This approach demands that a significant focus is placed on managing the interaction between road-users, the vehicle and the road and roadside environment such that no death or disabling injury occurs. This paper has as its focus the critical role that safer vehicles play in helping to create a safer traffic system. The role of the market-driven model will be exemplified by describing a range of key programs and initiatives conducted by the Transport Accident Commission (TAC) in conjunction with partner agencies, with a view to accelerating the up-take of safer vehicles. A sample of initiatives that draw variously upon advocacy, public relations, advertising, infrastructure, demonstration and evaluation will be described and trends in relevant outcome indicators summarised. The paper concludes with a discussion of recommended ways to proceed to ensure both that the community can access the safest vehicles possible currently and that impetus is given to the introduction of the most effective emerging technologies in the future.

## **The role of safer vehicles**

Monash University Accident Research Centre (MUARC) estimated, if we all changed from our current vehicle to the very safest vehicle in our class, that serious road trauma on our roads would drop by 22%. Moreover, if we were to change over to a vehicle that combines all the best safety features currently

available, that serious trauma would drop by as much as 42% (Newstead et al, 2004).

While these outcomes cannot be achieved overnight, they do demonstrate the very significant potential of influencing safety outcomes on our road network through the take-up of safer vehicles. But how is this change to occur and what means are at our disposal to accelerate that change?

### **The market-driven model**

Regulation through the introduction and modification to the Australian Design Rules (ADRs) has played a significant role historically in making cars safer on Australia's roads. Significant examples include seatbelt fitment in January 1969 and side-door strengthening in January 1977 (Newstead et al, 2007).

More recently, improvements to the design rules have slowed dramatically such that regulatory change can no longer be relied upon to drive safety improvements to vehicles. While it is not the role of this paper to analyse the reasons underpinning stalled progress, it is worth noting that a number of factors are likely to be relevant including a highly cost-competitive Australian manufacturing industry where profit margins are reducing and imports from overseas growing. Secondly, the growth in vehicle-based technologies is burgeoning with companies actively marketing new products to vehicle manufacturers who must then assess their market potential. In other words, technological innovation coupled with market forces should enable the safety of new vehicles to sweep past the floor level set by ADRs. This is not an argument for dismissing the design rules as of little use in defining vehicle safety standards for the future, but rather one that supports influencing market dynamics as an important way to secure safety gains. Overseas experience supports this approach. Tingvall et al, (2007) reports that in Sweden, a country that has adopted the market-driven

model, at least 85% of new cars sold now come with electronic stability control (ESC) systems.

It is not surprising then, that many Australian jurisdictions have turned to a market-driven model as a way of helping to make our vehicles safer. A description follows of some of the key developments in Victoria that aim to accelerate the uptake of current new safety technologies and that can bring to the fore the emerging technologies for tomorrow's vehicle fleet.

### **Research and development**

Victorian partner agencies continue to support the provision of crash performance information through the Australasian New Car Assessment Program (ANCAP), as well as through the annual development of Used Car Safety Ratings (UCSR) by MUARC. The results generated by these two projects form the basis for providing consumers with reliable, accurate and timely information with regards the safety performance of both new and used cars.

In parallel with this continuing program, the TAC together with the Department of Innovation, Industry and Regional Development (DIIRD) and Bosch Australia have supported an upgrade to the facilities at the Australian Automotive Research Centre to enable ESC testing to be conducted in a timely and convenient manner for Australian and potentially overseas customers. The availability of this facility should enable the launch of new vehicles onto the Australian market with customised ESC to be brought forward and for consumers to derive the safety benefits earlier.

Most recently, a piece of work has been commissioned to review existing and emerging in-vehicle safety technologies and assess them in terms of a range of criteria including likely safety impact, community acceptability, cost, infrastructure and regulatory requirements as well as likely penetration rate into the vehicle

fleet. Recognising the importance of a national approach in achieving change, outcomes of this project will provide the basis for convening a national forum with the aim of developing, across jurisdictions, a shared view of the key technologies that should be promoted and demonstrated in future.

## **Marketing and promotions**

The TAC with its partners VicRoads and the RACV have sought to build consumer demand for safer vehicles through the following avenues:

### *Development and promotion of car safety ratings and a howsafeisyourcar website*

Both mass media and tactical advertising (for example, on car sale websites) have been deployed that serve to both educate the consumer with respect to ANCAP star ratings of vehicle crashworthiness but also to drive traffic to a specially customised website. This site provides access to more detailed information together with comparative performance of the crashworthiness of both new and used vehicles.

### *Highlighting new in-vehicle safety technologies with proven safety benefits*

In February 2007, the TAC launched a new public education campaign that specifically highlighted the life-saving potential of ESC and side curtain airbags. The campaign comprised television, radio and supporting outdoor placements and included both emotive and instructive elements. The communications were so constructed and talent fees negotiated so as to minimise the barriers to other jurisdictions adapting the advertisements for local branding and promotion.

As a complement to the advertising program, the RACV, VicRoads and the TAC staged a number of promotional events with the specific purpose of educating

consumers with the respect to the availability and utility of ESC systems. With the assistance of Bosch Australia and the State Coroner, a major event was staged at a Melbourne shopping centre in which the Bosch ESC simulator was made available for testing by the public and the Coroner drew a strong link between a number of tragic crashes and the role that ESC could have played in either avoiding it altogether or mitigating the severity of the crash outcome. Further public demonstrations were staged at additional events including the Melbourne International Motor Show and within a display marquee at the Formula 1 Grand Prix at Albert Park.

The recently held Smart Demo Conference in Melbourne organised by ITS Australia provided a further opportunity for the State Coroner to call upon all manufacturers to make ESC available as standard, labelling this safety feature as a “technology we must have”.

Further to the activities, VicRoads is now preparing a new CD which highlights the key safety features available for incorporation within vehicles and the role they play in improving safety outcomes.

In short, the level of activity directly aimed at increasing general community knowledge and pressure regarding safety technology in vehicles has undergone significant recent growth in Victoria. As well as targeting the broader community, however, a target audience of special interest is senior management and fleet managers within a workplace setting.

### **Corporate behaviour**

Australasian jurisdictions have recognised for some years the important role that corporate behaviour can play not only in helping to modify driver behaviour to safer forms, but also to help fast-track the introduction of safer vehicles into the workplace and then, as second-hand vehicles, into the broader vehicle fleet. The

main motivators for progress in this area are Occupational Health and Safety (OH&S), good corporate citizenship, maintenance and insurance costs together with a reduction in staff down-time due to road crash-related injury.

In Victoria, a number of recent developments have given impetus to this pathway for accelerating the introduction of safer vehicles into our vehicle population.

They include:

- Development of in-house vehicle lease/purchase policies by a number of government departments;
- Production and promotion by VicRoads of a Safe Driving Kit in partnership with local government, with a new DVD focusing on work place safety under development;
- Conduct of a number of highly successful seminars by a community road safety group, RoadSafe Inner South-East involving commercial companies with large fleets; follow-up surveys indicate substantive changes in policies and approaches by the majority of participating organisations;
- Fleet management consultants are increasingly incorporating the need to lease safer vehicles in the recommendations that they provide to their corporate customers;
- Collaboration between the TAC and WorkSafe Victoria in order to develop a guidance note and subsequent workplace inspector training to encourage companies to upgrade their fleet for the purpose of improved OH&S.

While recent developments have been promising in this area, the “uncollected dividends” remain substantial with cost-based decision making by fleet managers still likely to be prevalent.

**Identifying and bringing emerging technologies to the fore**

In addition to the objective of accelerating the take-up of existing effective in-vehicle technologies, there is the challenge of preparing for the future – identifying and then promoting the next generation of high-yield safety systems.

In this context, the issue of speeding and the role of technology has been the focus of considerable developmental effort, given that research shows that even small reductions in both excessive and average traffic speeds will significantly improve the safety of all road users.

Intelligent Speed Adaptation (ISA) utilises global positioning system technology to determine the location of the vehicle which is automatically cross-referenced to a digital road map containing speed limit information for each road. ISA devices can operate as either a passive audio-visual warning of instances of over speed and as an active programmable speed limiting device.

The effectiveness of ISA technology has been demonstrated in countries around the world with large-scale trials undertaken in Sweden, Denmark and The Netherlands. The United Kingdom has recently completed a six year trial of an active speed control ISA system. Full results of this study are still pending; however, the authors have estimated that a speed-limiting ISA device implemented nationally could reduce injury crashes by 36% and fatality crashes by 58% (Jamson et al, 2006).

In Victoria, the results of the on-road trial of ISA (as part of the TAC *SafeCar* project) showed that the system had a positive effect on driving performance. Use of the ISA system resulted in a significant reduction in average and peak travel speeds and in the percentage of time spent travelling above the speed limit. The system was most effective at reducing speeds in 60 km/h zones, but importantly also showed no increase in the amount of time it took drivers to reach their destination (Regan et al, 2006).

Following the successful outcomes of the SafeCar project, work has continued with ISA in order to develop a low cost device that can be retrofitted to most vehicles. The TAC is currently initiating an expanded demonstration of this technology involving key decision-makers, stake-holders and the community, as part of a concerted effort to stimulate market demand for this technology.

Associated with increasing national interest in ISA, the TAC has helped form a collaborative working group comprising representatives from road authorities across Australia. The group aims to develop an agreed set of functional requirements and standards for the technology and for its linked speed limit databases, as well as to support implementation of these systems.

### **Indicators of success**

It would be incorrect to assume that the progress reported below is directly and exclusively related to the range of activities reported in this paper. Outcomes are also influenced by the initiatives conducted by other Australian jurisdictions as well as by decisions taken off-shore by the major vehicle importers to Australia.

Nevertheless, it is important that we track what improvements have been achieved and, more importantly, what ground still needs to be made up if we are to compete internationally with the best performing countries.

Brief reporting on a series of relevant outcome indicators follows:

- There are approximately 16000 unique visitors to the “howsafeisyourcar” website each month, although numbers increase significantly during periods of intense promotion;
- The uptake of ESC (as standard) in new cars sold in Victoria has grown from 1.5% in 2001 to 34.3% in the second quarter of 2007;

- Similarly, the uptake of side curtain airbags (front) has grown from 3.3% in 2001 to 37.5% in the second quarter of 2007;
- New cars sold for which ANCAP ratings are available in Victoria now average 27 points (out of 37) - this equates to an average rating for new cars sold of four and a quarter stars (out of five);
- Awareness of ESC and side curtain airbags as important life saving technologies has now grown to 58% and 64% respectively.

Importantly, Australian vehicle manufacturers and importers have made several important decisions in recent times that will help boost the penetration of safer vehicles into our fleet. They include:

- Release of the new VE Commodore series with ESC as standard
- Introduction of the new Toyota Aurion with ESC and side curtain airbags as standard
- Introduction of ESC as standard on all automatic petrol models of the Ford Falcon, and across the Toyota Camry range
- Introduction of ESC as standard or optional, depending on the model within the Ford Focus range

In summary, while recent trends have been favourable and the response of manufacturers encouraging, significant challenges remain if we are to bridge the gap as quickly as possible with countries such as Sweden where in excess of 50% of new cars sold have a five-star EuroNCAP rating and ESC is available in at least 85% of these cars (Tingvall et al, 2007).

### **The way forward – next steps**

It is vital that active promotion of current highly effective technologies continues. In order to be cost-effective and efficient in our promotions, however, we also need to further develop an accurate picture of the market segments that purchase new cars (including within fleets) to help tailor and refine our communications.

In the longer term, success will depend not only on our promotional efforts but also on a range of supporting elements, a number of which are described below.

#### *Links between vehicle safety and environmental friendliness*

There is little doubt that the environment and climate change will continue to grow as a social issue that will demand a concerted and multi-faceted response within our society. It will be important then that vehicles that are manufactured to capitalise on alternative energy supplies and low emissions are also designed to the highest safety standards. Safety can “ride on the back” of the community’s response to global warming.

#### *Simplified consumer information on vehicle safety*

It is also important that consumers have access to a readily digestible, holistic assessment of a vehicle’s inherent safety without the need to personally reconcile a number of differing performance indices. Measures of “active” and “passive” safety performance should be combined into a simplified scale of safety assessment. Research conducted by MUARC (Newstead et al, 2004) in which a vehicle’s real-world contribution to trauma to both occupants and vulnerable road users combined is an important step in the right direction, as is the decision by ANCAP to include ESC as a star-limiter. Commencing in January 2008, only vehicles that score 32.5 points or more and have ESC fitted will be awarded a five-star rating. From a marketing perspective, it is critical that a soundly

established and commonly agreed combined indicator is settled upon to help the consumer make the correct and safe choice of vehicle.

*Boosting the range of vehicles for which crash-test information is available to the community*

Crash testing new cars is resource intensive. We need to work with the vehicle industry to find ways in which the in-house tests of manufacturers can be incorporated as part of ANCAP reporting, providing a number of agreed common protocols are introduced. This will enable crash test results and vehicle safety performance to be made available to the consumer across a broader range of vehicle models and variants.

*Stimulating the Australian manufacturing industry to demonstrate excellence in safety*

We need to be able to work cooperatively with the vehicle industry and technology suppliers to help ensure that the very best emerging technologies are fast-tracked into production with government support. A relationship between environmental amenity and safety needs to be forged through these collaborations. In this context, it is paramount that Australasian jurisdictions bring to the table a shared view with respect to those technologies (individual or linked) that for reasons of safety impact, cost, consumer acceptability, state of readiness and likely penetration rate will provide best safety value to the Australian consumer. A discussion paper is currently being developed with a forum to be convened subsequently.

*Demonstrating effective emerging technologies to the community and decision-makers*

With a view to stimulating consumer demand for new and effective technologies, both the community and key influencers need to be given an opportunity to appreciate the potential for such innovations and to form a view with respect to their utility and acceptability. Demonstration projects provide a powerful means of achieving these ends. The current ISA retro-fit demonstration projects in Victoria and WA are examples of this approach.

## **Conclusion**

To summarise, the market-driven model can be a very effective means of driving through change in relation to vehicle safety. It does not stand alone, however, and its future success is strongly dependent on the timeliness and quality of crash performance information available, as well as the strength of collaboration between government agencies and manufacturers. Importantly, jurisdictions will need to invest in developing a shared view of key emerging technologies that need to be fast-tracked into production through cooperation, demonstration and advocacy.

## References

**Newstead, S, Delaney, A., Watson, L. and Cameron, M.** 2004. A model for considering the 'total safety' of the light passenger vehicle fleet. Monash University Accident Research Center. Report 228, Melbourne, Victoria.

**Newstead, S.V., Cameron, M.H. & Watson, L.M.** 2007. Vehicle safety ratings estimated from police reported crash data: 2007 update Australian and New Zealand crashes during 1987-2005. Monash University Accident Research Center. Report 266, Melbourne, Victoria.

**Tingvall, C., Lie, A.** 2007. "Global Vehicle Safety". Proceedings 2007 Tylosand Conference, 3-5 September, Tylosand, Sweden.

([http://www.tylosandconference.com/files/1500\\_claes\\_tingvall.pdf](http://www.tylosandconference.com/files/1500_claes_tingvall.pdf)). Date of Access, 17 September, 2007.

**Regan, M.A., Triggs, T.J., Young, K.L., Tomasevic, N., Mitsopoulos, E., Stephan, K. & Tingvall, C.** (2006). On-road evaluation of intelligent speed adaptation, following distance warning and seatbelt reminder systems: Final Report of the TAC SafeCar project, Monash University Accident Research Centre, Report 253, Melbourne, Victoria.

**Jamson, S., Carsten, O., Chorlton, K. & Fowkes, M.** (2006). Intelligent speed adaptation: literature review and scoping study, Institute for Transport Studies, University of Leeds.