COVER SHEET

SUBMISSION TO PRODUCTIVITY COMMISSION INQUIRY
Post 2005 Assistance arrangements for the Automotive Manufacturing Sector

Date: 7 June 2002
Submitted by: Transport Accident Commission, Victoria
Address: Level 17, 222 Exhibition Street, Melbourne 3000
Contact Person: Samantha Cockfield, Manager Road Safety
Contact Details: Ph 03 9664 6596, fax 03 9664 6700 or samantha_cockfield@tac.vic.gov.au

PRODUCTIVITY COMMISSION INQUIRY
Post 2005 Assistance Arrangements for the Automotive Manufacturing Sector

Comment:

Submission by the Transport Accident Commission of Victoria
May 2002

INTRODUCTION

The Transport Accident Commission of Victoria (TAC) was established, and is governed by, the Transport Accident Act of 1986. The TAC administers a comprehensive no-fault compensation scheme for Victorians who are injured or die as a result of a transport accident.

As a partner with VicRoads, Victoria Police and the Department of Justice in the implementation of Victoria's road safety strategy - "*arrive alive!*" - the TAC's primary role is to introduce initiatives to modify road-user attitudes and behaviours. The TAC holds no specific responsibilities with respect to the standards for motor vehicles sold in Australia. However, in light of its increasing involvement in vehicle safety issues, it is appropriate to make some comments and suggestions in relation to the Commission's inquiry.

The TAC *Safercar* project recognises that new technologies can contribute to the reduction of road trauma. The project has brought together the Monash University Accident Research Centre (MUARC), the Ford Motor Company of Australia and the TAC. It has identified and is about to test several intelligent transport system technologies that either reduce the risk of crashing or minimise the level of injury sustained. The on-road trial will consist of 15 specially equipped Ford passenger cars using 30 drivers to assess the effect of the technologies on actual driving performance and safety. The vehicle technologies chosen for this project have significant potential to reduce road trauma.

The TAC's also intend to launch a website and tactical support campaign designed to promote the Australian New Car Assessment Program and Used Car Safety Ratings results in the near future. The campaign has been developed to make information about crashworthiness and vehicle safety features readily available to companies and individuals planning to purchase a vehicle.

THE SOCIAL AND ECONOMIC IMPACT OF CAR CRASHES

The motor vehicle is an integral part of the social and economic life of Australia. The vehicle industry contributes to economic growth, provides substantial employment, and motorised transport helps to diminish the "tyranny of distance" for most citizens. The motor car is also one of the critical links in determining the safety of road use throughout Australia. Whereas road user behaviour is generally the key factor in causing crashes, the motor vehicle in combination with the road environment, largely determines crash outcomes. Whether occupants of cars die or survive with little or no injury depends significantly on their vehicle's crashworthiness.

The National Road Toll

In the ten years to 2001, 18,700 people have died and over 200,000 have been hospitalised as a result of crashes on Australia's roads. In addition, in any one year around 200,000 "minor" injuries are sustained. It has been estimated that some 1.3 million vehicles are involved in crashes in a single year (1996) (Bureau of Transport Economics, 2000).

Drivers and passengers of vehicles comprise 70% of all road-users killed and hospitalised each year, by far the largest group. Pedestrian safety is also very much influenced by vehicle design. Even moderate improvements in vehicle safety, therefore, have the potential to produce major savings in road trauma.

The Cost of Road Trauma

The Bureau of Transport Economics (2000) has estimated that the total cost of road crashes in Australia (based on 1996 figures, CPI indexed for 2001) was approximately $17 billion. This figure is based on the human capital approach to valuation of life and injury. Even higher costs, in relation to crashes involving death and injury, would have resulted from the use of the willingness to pay approach. The total costs by injury category were:

Fatal Crashes	$3.28 billion
Serious Injury Crashes	$8.03 billion
Minor Injury Crashes	$2.78 billion
Property Damage Crashes	$2.74 billion

The human costs (which include long term care, labour, quality of life) constitute the major category of overall costs at 56% ($9.4 billion). Vehicle repair costs comprise a significant 27% ($4.6 billion) of the total. A single fatal crash is estimated to cost the economy $1.9 million and a serious injury crash $459,000.

Whether the costs are measured in terms of loss of life and health or damage to property, the inescapable conclusion is that road trauma is a major burden that all Australians either directly or indirectly have to bear. Implementation of known measures in all areas that can reduce this burden is a social and economic imperative.

CAR SAFETY - PRESENT AND FUTURE

Improved vehicle safety has a significant role to play in reducing road trauma on Australian roads.

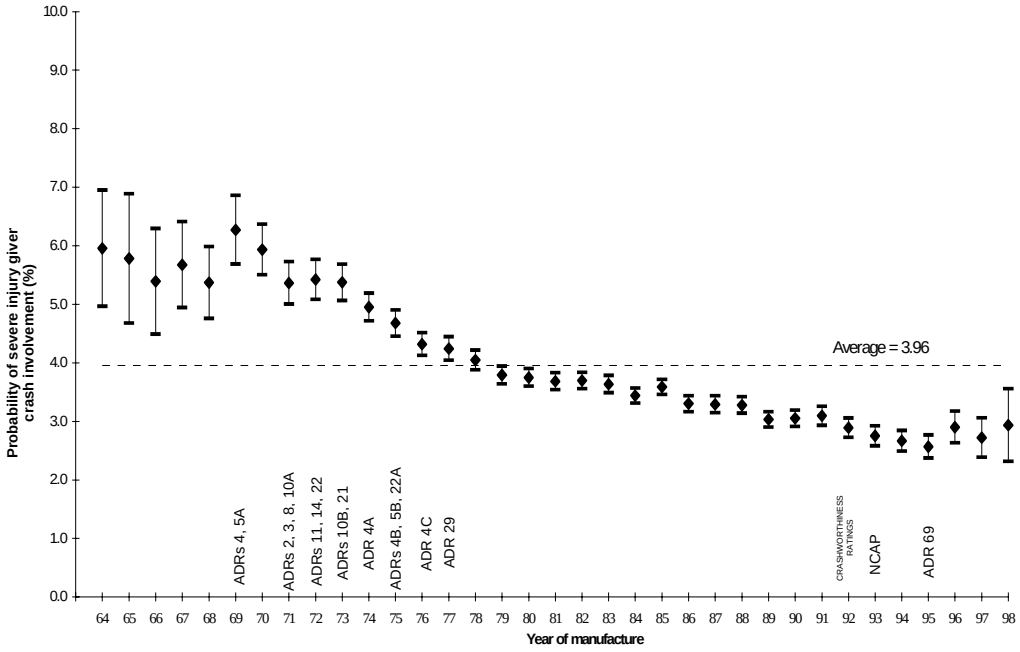
All new cars sold in Australia have to meet specified safety standards (Australian Design Rules). These set minimum levels of required performance. The standards do not require the highest levels of safety that can be achieved. In practice this means that not all cars perform equally as well in terms of safety protection. Some manufacturers include extra features that assist in crash prevention, or provide much greater levels of crashworthiness should a crash take place. High levels of driver and passenger protection depend on the car's structure, restraints and occupant protection devices being designed to work together as an integrated system.

Have Cars in Australia Become Safer?

Newstead et al (2000) have produced crashworthiness estimates for vehicles manufactured each year since 1964. Each estimate is expressed as a percentage, representing the number of drivers killed or admitted to hospital per 100 drivers involved in a tow-away crash.

The following figure shows a significant improvement in vehicle crashworthiness with increasing year of manufacture over the time period considered. Rapid improvement is evident for the years 1970 to 1978 during which Australian vehicles became subject to a number of design rules shown to be effective in providing occupant protection (Cameron, 1987). The improved crashworthiness trend has continued at a slower rate in subsequent years.

Some of the possible influences that have resulted in a continual overall improvement in safety include: manufacturers' response to more consumers being aware of the comparative safety performance of different vehicle makes and models - brought about by the release of *Used Car Safety Ratings* information (first published in 1992) and the results of the *Australian New Car Assessment Program* (ANCAP) (first published in 1993), and the impact of Australian Design Rule 69 which specifies standards for frontal impact occupant protection in passenger cars, approved in 1992 to come into effect for all newly released car models from July 1995 and for all new passenger cars sold from January 1996.



Crashworthiness by Year of Manufacture (with 95% confidence limits)

Are Australia's Cars as Safe as They Could Be?

Although improvements have been made, Case (2000) concludes on the basis of evidence from various sources that there is a very large difference between the likelihood of receiving any injury in an Australian car compared with the equivalent US car. Australian drivers and passengers may be exposed to three to four times more risk of severe head injury than that for occupants of US vehicles.

ANCAP results and MUARC crashworthiness estimates indicate that there are large differences between the safety protection provided by vehicles within the same vehicle size groups, with significant disparities also evident when the crashworthiness of various vehicle size groups is compared.

Newstead and Cameron (2000) have demonstrated significant differences in the overall trends in crashworthiness by year of manufacture between the small, medium, large and 4WD market groups. In particular, a trend towards poorer crashworthiness has been identified for the small car class from 1993, in contrast to some improvement in large and 4WD vehicles.

Some Adverse Trends

An analysis of new vehicle sales in the small car segment (from 1992 to 1998) by Newstead and Cameron (2000) showed that five vehicle models comprised around 50% of sales. In 1992 all five were of Japanese origin.
By 1998, two new low-priced foreign models had joined the top five. These vehicles had amongst the poorest crashworthiness ratings of all the vehicle models rated. It was concluded that the most likely primary cause of this shift was vehicle pricing, a particularly influential factor in the choices made by private car buyers, who represent a large proportion of small car buyers. On the other hand, the major proportion of larger (and therefore safer) cars is purchased by corporate fleet operators.

A growing problem is the increasing trend towards incompatibility between vehicles on the road, in particular the mix of small cars and large 4WD vehicles. The wider the disparity in the mass of vehicles in a collision, the greater the damage caused to the smaller vehicle. The term "aggressivity" is now applied to describe the risk of injury that a vehicle poses to the occupants of other vehicles it impacts, and to other unprotected road-users such as pedestrians, cyclists and motorcyclists (Newstead et al, 2000). The larger 4WD vehicles generally have to meet lower safety and emission requirements. This can reduce manufacturing cost. The situation is further aggravated by the lower tariffs on these vehicles. The problem of vehicle incompatibility is likely to become worse in light of the comparative price advantages experienced by 4WDs.

The Australian vehicle fleet is tending to polarise to either small or large vehicles (Newstead and Cameron, 2000). The market share of medium class cars declined from 24% in 1992 to 9% in 1998. This polarisation is having detrimental effects on the total safety of the Australian fleet by reducing vehicle compatibility in collisions, a particular problem for drivers of smaller vehicles.

Road safety agencies at both State and national level have expressed concern at the growing tendency for cars to be marketed using themes of high speed, power and reckless - even mindless - handling of vehicles. The TAC has invested significant resources to influence the attitudes and beliefs of road users since the commencement of its road safety campaign in 1989. Some current trends in vehicle advertising may well undermine the strategy of all road safety agencies in Australia to reduce irresponsible behaviour on the roads.

Improving the Safety of Australian Vehicles

If, overnight, every car owner moved to driving the most crashworthy vehicle in their current vehicle class, it is estimated that fatalities and serious injuries could be reduced by 40% (based on Swedish research and supported by the *Used Car Safety Ratings* in Australia). The wider adoption of several proven vehicle safety features depends largely on the greater commitment by manufacturers to adopt best practice in occupant protection and crash prevention.

Proven Technology

Australia has lagged behind the United States and Europe in the uptake of important vehicle safety features over the past decade. For example, in 1995 around 30% of vehicles sold in Australia were fitted with driver airbags compared with all vehicles in the United States and close to all in Europe. Similarly, the rate of uptake of passenger and side airbags is significantly behind other highly motorised nations.

The Monash University Accident Research Centre (MUARC), recognised as one of the world's leading injury research organisations, has adopted a policy for vehicle purchase that serves as a model for other organisations when specifying safety requirements for vehicle fleets (Monash University Accident Research Centre, 1999). The policy incorporates the following *mandatory* requirements:

- the highest possible score in consumer tests such as ANCAP;
- dual front airbags;
- side airbags at least in the front seat including head protection;
- three point seat belts in all seating positions with pre-tensioners at least in the front seat;
- head restraint in at least four positions with appropriate adjustment capability;
- antilock braking system;
- speed alert system; and
- cargo barriers fitted if a station wagon.

All of these features are based on current, fully developed technology and systems and within the capability of manufacturers to readily implement. Their wider uptake would have an immediate impact on reducing the social and economic cost of road trauma.

The TAC and several other Victorian Government agencies have adapted the model developed by MUARC when implementing their own vehicle purchase/leasing policies. It is the TAC's belief that Governments, both Sate and Federal, have an important role to play, as part of their duty of care to employees, in demanding vehicle manufacturers design and build the safest vehicle possible.

New Technology Capable of Early Implementation

Development of new technology is rapid, including applications in the field of in-vehicle safety. The TAC *Safecar* project is evaluating a range of systems that have the potential to reduce road trauma by at least 30% (Healy et al, 2001).

It is important to stimulate demand for such technologies initially by corporate and Government fleet owners in light of the fact that about 65% of the new vehicles produced by the major manufacturers are purchased by this important market segment (Regan et al, 2001). Many are already available for application, including:

- ***Intelligent speed adaptation system***

  Speeding remains a major contributor to trauma on Australia's roads. Crash severity increases disproportionately with increasing impact speed. Reductions in both excessive and normal traffic speeds will significantly enhance safety for all road users.

  Intelligent speed adaptation systems use auditory and visual aids to help the driver travel within the legal speed limit. These aids include flashing lights and a warning sound to indicate when the driver is exceeding the limit. One variant of the system is to provide resistance through the accelerator pedal once the driver travels above the speed limit for a set period of time. A 'kick down' override facility is available if necessary.

- ***Forward collision warning system***

  This system uses radar to assess the relative speed and proximity of objects ahead of the car, and alerts the driver if they are too close. Alerts are given in the form of visual and audible warnings indicating the relative distance to the object or vehicle in front.

- ***Seatbelt reminder system and intelligent restraint systems***

  Australia can lay claim to having one of the highest seatbelt wearing rates of any jurisdiction world-wide. In Victoria, about 97% of drivers are restrained overall with front passengers having only slightly lower wearing rates. The corresponding rate for rear seat occupants stands at about 85%. The introduction of compulsory seatbelt legislation across

Australia (commencing in Victoria in December 1970) has arguably been the single most important initiative in reducing death and injury on our roads.

Despite these achievements, at least one in every five vehicle occupants who die on our roads is unrestrained at the time of the crash. Technology can play a key role in enhancing safety by ensuring that all vehicle occupants can benefit from the protective value of seatbelts in the event of a crash.

Seatbelt reminder systems incorporate a series of sensors located in the belts and seats to determine whether all of the vehicle's occupants have their seatbelts safely and correctly fastened. If any occupant's seatbelt is not fastened, or is fastened incorrectly, the system will issue warning lights and alarms, which increase in intensity as the car's speed increases.

Smart (intelligent) restraint systems consist of sensors to detect the presence of seat occupants, determine their weight and whether they are wearing seatbelts. This information can be used to tailor airbag deployment to match the forces that occupants will experience in the event of a crash.

- ***Reverse collision warning***

  Using sonar proximity sensors in the rear bumpers, this auditory warning indicates the proximity of cars and other objects to the rear of the car, aiding pedestrian safety.

  This system not only has the potential to reduce costly property damage crashes but, more importantly, to reduce the incidence and severity of injury to pedestrians.

- ***Daytime running lights***

  This system ensures that the car's headlights are illuminated as soon as the ignition is started. The lights run at 80% of normal intensity to conserve power, and switch to 100% when the lights are turned on manually. This system has been effective in the reduction of daytime multi-vehicle crashes in a number of other countries.

RECOMMENDATIONS

The TAC strongly encourages the Productivity Commission to explore as part of its Inquiry how the adoption of new technologies in Australian vehicles could be further stimulated. In addition, it is recommended that the Commission give detailed consideration to the impact of different forms of industry assistance to accelerating the future safety of Australia's vehicle fleet, including examination of:

- incentives to manufacturers to adopt world's best practice in vehicle design to prevent crashes and reduce injuries, or setting conditions for assistance eligibility that encourage the more active uptake of known occupant protection measures

- the adverse consequences for the safety of drivers of smaller cars arising from any new tariff regime that continues to favour the competitive advantage of 4WD vehicles, thereby compounding the growing problems of vehicle incompatibility and aggressivity

- the scope for a greater contribution by the industry to in-depth research into key aspects of vehicle safety and crash investigations; should the Commission wish to seek further

comment on this matter, the Monash University Accident Research Centre is well suited to advise on needs and priorities

- the need for the industry to recognise the negative impact of new car advertising themes that run directly contrary to the aims of road safety agencies in seeking to achieve more responsible driver behaviour

- the role of government in driving vehicle safety improvements by adopting public sector vehicle purchase/leasing policies that place safety as a high priority

The 1990s saw a major improvement in the safety of vehicles in the United States and Europe. This was not matched in the Australian vehicle fleet. Australian consumers, as taxpayers, assist the motor industry. It is therefore appropriate to suggest that Government assistance in the post 2005 period should take account of how, in return, the motor industry can take a more active role in the development and promotion of safer cars.

REFERENCES

Bureau of Transport Economics (2000), "Road Crash Costs in Australia", Report 102, Canberra.

Case, M. (2000), "Learning from Dummies - Vehicle Safety", RACV Public Policy.

Cameron, M.H. (1987), "The Effectiveness of Australian Design Rules Aimed at Occupant Protection". Proceedings, Seminar on Structural Crashworthiness and Property Damage Accidents, Department of Civil Engineering, Monash University.

Healy, D., Regan, M., Tierney, P., and Williams, L. (2001), "Investing in New Technology to Reduce Road Trauma - The TAC SafeCar Project", Proceedings, I Crash Conference, Melbourne.

Monash University Accident Research Centre (1999), Annual Report, Monash University.

Newstead, S., Cameron, M., and Le, C. M. (2000), "Vehicle Crashworthiness and Aggressivity Ratings and Crashworthiness by Year of Vehicle Manufacture: Victoria and New South Wales Crashes During 1987-98, Queensland Crashes During 1991-98", Report No. 171, Monash University.

Newstead, S.V., and Cameron, M.H. (2001), "Trends in Australian Vehicle Crashworthiness by Year of Vehicle Manufacture within Vehicle Market Groups", Proceedings, International IRCOBI Conference on the Biomechanics of Impact, Isle of Man, United Kingdom.

Regan, M.A., Oxley, J.A., Godley, S. T., and Tingvall, C. (2001), "Intelligent Transport Systems: Safety and Human Factors Issues", Report No. 01/01, Prepared for the RACV, Monash University Accident Research Centre.