

Road Safety culture development for substantial road trauma reduction:

Can the experience of the state of Victoria, Australia, be applied to achieve road safety improvement in North America?

Eric Howard
VICROADS, Australia

Peter Sweatman
University of Michigan Transportation Research Institute (UMTRI)

Overview

The State of Victoria, Australia has improved its road safety performance substantially in the periods 1989 to 1992 and since 2001. The lessons learned from this experience suggest that mechanisms by which governments and communities can achieve improved road safety outcomes are not well understood and have received little research attention. A clear recognition and understanding of principles and processes which will assist change are fundamentally important if new countermeasure proposals are to achieve community acceptance over time. Proponents of change need to be well equipped if their ideas are to negotiate the difficult course of public debate and bring about greater acceptance (albeit, often incrementally) in public attitudes.

This paper outlines the new road safety thinking developed in Victoria, Australia including the focus on road safety performance measurement which is a key driver of road safety management. It compares road safety outcomes with the current situation in the USA. The paper suggests that consideration be given to implementation of a tailored pilot implementation in selected states of the US. Such implementation would be based, in particular, on a more complete understanding of how the transition from concept to implementable reality can occur.

Introduction

Any community can have the level of road trauma it is prepared to accept. The challenge in achieving beneficial change is to galvanize awareness of facts about crash risks, develop and promote an understanding of options available to reduce these risks and associated trauma, and achieve community ownership (with leadership by governments) of the solutions.

While the US has shown leadership in vehicle and highway technologies for reducing the consequences of crashes and for avoiding crashes, Victoria, Australia has demonstrated leadership in many community-based road safety initiatives over the past 35 years. While many

of these Victorian initiatives have employed technology, there has been an over-arching focus on the raising of risk awareness in the community. Since 1970, initiatives such as compulsory wearing of seatbelts, random breath testing for alcohol, mandatory bicycle helmet wearing and most recently, random roadside saliva testing for drugs and tough speed enforcement have been pioneered on an international basis in the Victorian community.

While Victoria has a long tradition of innovative road safety action by governments, there has been a concerted effort since 2001 to implement a further extensive list of road safety initiatives, including expanded speed enforcement, lower speed limits and speed enforcement thresholds, tougher penalties for speeding and drink driving, extensive targeted infrastructure safety investment programs, introduction of alcohol interlocks for drunk-driving offenders and random roadside saliva testing for drug-impaired drivers, immobilization of vehicles of disqualified drivers, promotion of adopted vehicle safety and motorcycling safety strategies, adoption of measures to extend graduated licensing arrangements to improve novice driver safety, and an accompanying extensive range of supporting public information campaigns.

These initiatives have resulted in the Victorian road toll falling to an all time low with the State's three lowest tolls recorded in the last three years. Fatality metrics, whether determined as total annual fatalities or as rates per head of population, per registered vehicle or per kilometer of travel have all fallen substantially. The fatality rate per 100,000 population for the past twelve months has fallen to 6.3.

It is interesting to contrast crash rates in the Australian State of Victoria with those in Michigan, USA; these are the two home States of the authors. Michigan, USA has for many years been a powerhouse of the world-wide automotive industry and has, therefore, produced many vehicle innovations which have improved safety. Michigan is a highly motorized state with an extensive and diverse highway network which incorporates some of the most sophisticated infrastructure in the nation, along with certain areas which have lacked attention. The fatality rate per 100,000 population fell to 11.8 in the twelve months 2004 through 2005, and fatality rates have also been decreasing.

Michigan has a long record of attention to road safety. Michigan established a Governor's Traffic Safety Commission as long ago as 1941, involving representatives from transportation, health, education, and police. Michigan also established a Truck Safety Commission in 1988, with assistance from industry and unions, and developed an emphasis on innovative enforcements programs through the Department of State Police, Motor Carrier Division. As required in the current federal highway authorization bill—SAFETEA-LU—Michigan has developed a Strategic Highway Safety Plan which sets a goal of 1.0 fatalities per 100 million vehicle-miles traveled by 2008; this equates to 10.8 fatalities per 100,000 population, an improvement on the current fatality rate. Michigan also made significant progress from 1995 to 2004 with traffic deaths falling 24.6% to represent a rate of 11.5 fatalities per 100,000 population. Nevertheless, the current Michigan fatality rate remains much higher than that in Victoria: 11.8 fatalities per 100,000 population versus 6.3 fatalities per 100,000 population. Can differences in the safety culture of the two States, more than differences in actual safety programs, help explain this large apparent gap in safety performance?

Comparison of changes in absolute fatality levels in the United States and Australia (and Victoria) between 1995 and 2003 is instructive. The number of persons killed in road crashes in

the United States has increased by 2 percent in those nine years. In contrast, the number of persons killed in Australia has decreased by more than 20 percent in the same period and by 21% in Victoria.

This disparity indicates the major opportunity that exists to reduce deaths of Americans on their road network.

Many of these gains in Victoria have been hard won over a period of years as the battle to change public attitudes towards fresh potential and actual initiatives was waged in the media, at the political level, with special interest groups, and in the broader community. It is a tough task and requires relentless energy to address constant, uninformed reactions to suggestions for change.

How have so many contentious measures made it onto the starting blocks and successfully run the gauntlet of often hostile initial public reaction to become accepted practice over time for a majority of the community?

What are the new approaches that could be utilized to achieve fundamental and ongoing road safety improvement in other jurisdictions?

Potentially, there is substantial benefit for all jurisdictions to embrace new thinking, including a better understanding of enabling factors required to overcome barriers to acceptance which exist in their environments: the “how” of developing, maintaining, and strengthening a safety culture. This is asserted to be so, even in situations where current cultures are very different from Australian/Victorian settings. While the starting point is, of course, highly relevant to the challenges to be addressed and will be different from country to country, it is the quality of the approach, the tools and methods proposed for use, and the commitment to achieving successful outcomes that will deliver benefits.



While this paper utilizes crash rates and international comparisons in an illustrative sense, it is recognized that there are many subtle differences in methodologies used in crash statistics and many qualitative and quantitative differences in exposure to crashes. For example, the amount of vehicle miles of travel per head of population is higher in the USA than in Australia.

New thinking in road safety

The sheer volume of road use—numbers of vehicles, numbers of drivers, and distances traveled—increases inexorably over time. Unless improvements in the rate of safety outstrip increases in the volume of road use, then the total number of people seriously injured or killed will increase. This is exactly what is happening in the United States; while the safety rate per mile traveled has improved, the improvement has slowed over time and is not at a sufficient level to prevent an increase in the total numbers killed.

Table 1 shows that the number of persons killed in road crashes in the United States has increased by 2 percent in the past ten years. In contrast, the number of persons killed in Australia has decreased by more than 20 percent in the same period, with improvements in the rates of traffic safety two to three times greater than those achieved in the United States.

Table 1. Road traffic fatalities between 1995 and 2004.

Country	Time	Total deaths	Deaths per 100,000 population	Deaths per 10,000 vehicles
 United States	1995	41,798	15.9	2.1
	2004	42,636	14.7*	1.8*
	% change	+2%	-8%	-14%
 Australia	1995	2,013	11.2	1.8
	2004	1,596	8.0	1.2
	% change	-21%	-29%	-33%

* 2003

Source: Data extracted from Web sites of USDOT and Australian Transport Safety Bureau

How do we explain these very different levels of performance? How can the issue be reconsidered in order to provide US citizens with the levels of road safety enjoyed by the world's most developed countries? It is suggested that the approaches adopted in Victoria, Australia be carefully considered and that the experience obtained there be drawn upon to build new approaches to road safety in the United States.

As illustrated in Figure 1, Victoria has adopted “new thinking” in the way it tackles this issue, building of course upon proven established measures, but looking at the challenges in a different way.

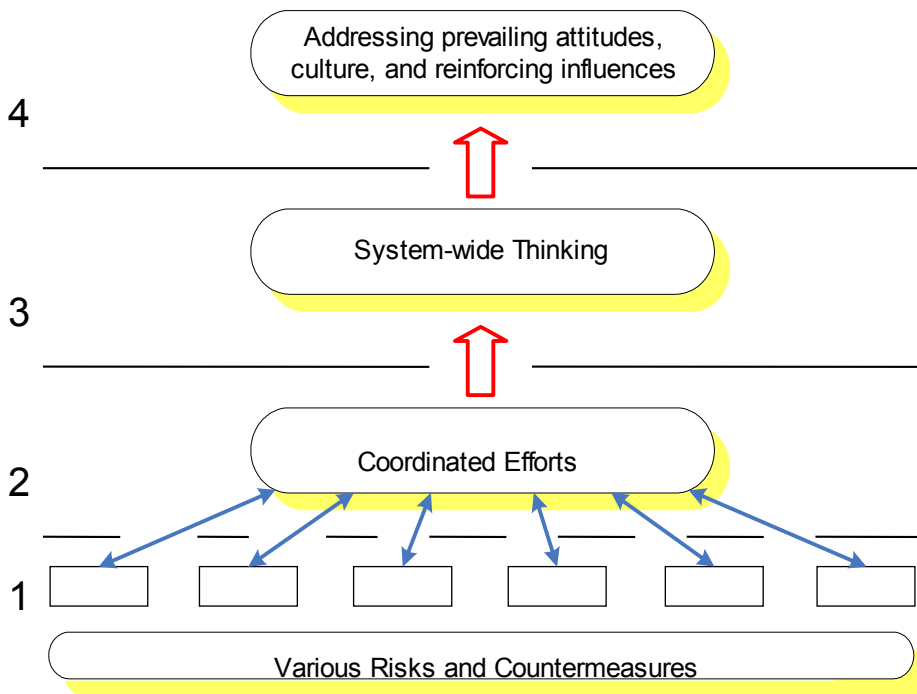


Figure 1. Increasing levels of road safety management capacity and effectiveness

What is this “new thinking” that has underpinned Victoria’s efforts? How can these elements be implemented in a successful manner in a different environment?

Based on the Victorian experience with raising government and community risk awareness, the following four critical areas of new thinking offer particular promise for research (as pilot implementations) for changing the traffic safety culture in the US.

These are:

- Performance Measurement
- Effective Leadership, Management and Co-ordination
- Adopting a Safe System Approach and a Strategy with Targets
- Promoting a Social Contract Approach

Performance measurement

The FHWA Scan team that conducted a Study of Performance Measurement in Road Authorities in selected Pacific countries in 2004 commented in their Report—with particular relevance to the visit to Victoria, Australia—“**Safety was viewed as a strategic use of performance measurement that has resulted in a significant decline in fatalities. A great deal can be learned from this application of performance measurement, especially as it relates to the identification of strategies and actions that need to be put in place to achieve reductions in road fatalities.**”

The importance of a clear understanding of your current position

Critical to any effective development of strategies and actions to improve road safety is a clear understanding of current issues and recent (for example, three-year) crash trends.

A preparedness to measure detailed performance by assessing road trauma levels against other jurisdictions—nationally and internationally—ensures that practitioners “know their business.” It can also provide a reality check at the senior executive and political levels and encourage further development of proposals to improve that jurisdiction’s relative position.

Accurate assessment of these issues depends upon effective capture and analysis systems which collect and process a comprehensive set of data.

Collection and recording of a key set of outcome measures are essential. These include fatalities, serious and minor injuries, age and sex and category of road users involved in crashes, crash types, crash locations, road conditions, vehicle types in crashes, those crashes involving alcohol and/or speeding, and /or where seat-belts and helmets were not worn. Monitoring and necessary periodic analysis of this data on an ongoing basis are important means of focusing interest and encouraging an action-oriented approach to crash reduction. Both Victoria and Michigan have highly effective crash data capture and analysis systems.

In Victoria, a daily summary of fatalities by user category comparing last year-to-date to the figures for the current year-to-date (up to midnight the previous evening) are provided on the desks of relevant politicians and key agency staff before 8 am each weekday morning. The material is available to the public and the media on the web. There would be few, if any, jurisdictions in North America where this occurs. This approach generates interest and discussion and can raise the priority of road safety issues compared with other government programs in the minds of senior officials and elected members.

It is also vital that a range of intermediate measures are collected on an ongoing basis. These typically include the mean and 85th percentile free-speed levels, percentage compliance rates at speed and red-light camera sites, seat belt wearing and helmet wearing rates, the proportion of the fleet with key safety features fitted (such as electronic stability control), alcohol-impaired driving rates, drug-impaired driving rates and the results of community attitude surveys over periods of time on specific issues.

This relentless emphasis on measurement is akin to the business management practices embodied in the “balanced scorecard.” All levels of the enterprise must have specific measures which are relevant to their activities and are connected to the next level.

In addition, records of input effort by the agencies are necessary to enable comparison of outcomes, particularly any change in crash trends with any changes which may have occurred in levels of inputs. This is especially important for enforcement effort, where behavior can deteriorate quite rapidly if enforcement levels reduce significantly.

Measurement and ongoing monitoring should also include detailed assessment of vehicle safety levels and the presence of safety features in the fleet plus road-network risk levels across the whole network for various categories of roads.

Sophisticated tools are now available to cost-effectively produce risk ratings along a road based upon physical and traffic data inputs. For example, ARRB Transport Research has developed “NetRisk”—a road network safety assessment tool. It is designed to enable road authorities to rapidly assess the safety condition of any section of the road network. It involves a network level assessment, based on collection and analysis of extensive physical road environment data—utilizing intelligent video data capture—to identify high-risk sections of the network followed by a detailed investigation of the high-risk sites within those sections to develop specific cost-effective treatments. This approach is being used in Victoria by VicRoads, the State road authority and by other road authorities in Australia

It is necessary to conduct an analysis of the data and publish it widely within the road safety agencies and Ministries. The purpose is to have the data presented in such a way that it “speaks for itself” and contributes strongly to driving debate and discussion about trends, progress, and further countermeasures. North American road safety would benefit from this much more proactive approach to data awareness.

Monitoring adverse trends

There are activities in any society where adverse links to road safety risks and outcomes can be established. These include increased travel exposure, the rate of aging (and, therefore, increased

fragility) of a population, increased higher-strength alcohol consumption in a community (e.g., the growth of a mixed-drink culture), and increases in unacceptable motor vehicle advertising. Such trends need to be monitored and any increased activity identified as quickly as possible; proposed countermeasures should then be developed purposefully, promoted to the public, and introduced.

The need for leadership and effective management and co-ordination arrangements

Clear political leadership is essential for effecting road safety change at a transformational level, and this is the second area where it is asserted “new thinking” can deliver major benefits.

While there are many models of management and co-ordination internationally, Victoria has adopted a Ministerial Road Safety Council (now a Cabinet Committee) of three Ministers—for Transport, Police, and the TAC, (the Government motor accident insurer)—which has responsibility to achieve improved road safety outcomes.

This is in contrast to most North American jurisdictions where the legislator responsible for road safety is usually only visible when some horrendous road crash has occurred and a reactive activity is taking place.

The approach in Victoria is a critically important mechanism to achieve strong representation for road safety initiatives at the Cabinet table, given the political trade-offs so often involved in the introduction of road safety measures, such as mobility, environment, privacy, and civil liberty/public safety impacts.

But this is hardly enough!

Victoria has developed a strong partnership between the key agencies:

VicRoads—Responsible for road infrastructure, traffic management, vehicle registration, driver licensing, commercial vehicle regulation, and road safety legislative development.

Victoria Police—Responsible for enforcing traffic safety legislation and regulations.

Department of Justice—Responsible for enforcement technology operation and traffic offense adjudication processes.

Transport Accident Commission (TAC)—The government-owned monopoly provider of no-fault injury compensation for transport accident victims in Victoria.

The overall road safety management arrangements in Victoria are shown in Annex 1 at the end of this paper.

How can collective and individual accountability be clearly defined, supported, and reinforced by management and reporting structures? Can this be extended to personal accountabilities of agency heads and senior staff? How can a real partnership focussed only on “the plan,” willing to share success, recognizing the value of the participants and sharing leadership, be developed?

Any jurisdiction seeking to improve road safety outcomes needs to implement its own appropriate arrangements for leadership, management and co-ordination. But the accountability arrangements are crucial, and if a government sets out its requirements clearly in terms of outcomes (through a strategy plan, actions, and agreed targets) it is a clear signal of effective leadership and a powerful incentive for effective agency performance. In Victoria, there is clear individual agency responsibility for specific actions, but there are also numerous issues for which there is shared accountability between agencies. Reporting to the regular ministerial council meetings is through one consolidated reporting framework by the agencies. This requires that rare concept of “joined up government” to become a reality, requiring a great deal of energy and maturity from the key agency players. Are North American agency heads willing to reach out and embrace this shared leadership approach?

Designation of a lead agency is a vital and challenging issue. This needs to be “small l” leadership with the agency selected to “lead” charged with the responsibility to co-ordinate activities, (including strategy development and implementation and reporting on performance) and to convene meetings of the other agencies on a cooperative basis.

Chairing of those meetings of management, executive and ministerial groups could, however, be rotated between agencies.

How do we avoid doing the things which will undermine our intent and efforts? While government strategies and agency actions should focus on implementing actions that deliver certain benefits, thoughtful analysis is needed to guide initial efforts to those countermeasures where political and community support can be more readily achieved and which can be delivered in the desired time frame.

The benefits of:

- developing quality understandings of crashes and crash risk,
- assessing performance by crash type against other jurisdictions and monitoring trends within the jurisdiction,
- introducing regular and often small adjustments to legislation and regulations to improve deterrence and enforceability without drawing difficult adverse public reactions, and
- producing high-quality draft policy and business cases for government investment

need to be better understood by road safety agencies and practitioners.

These are important approaches, requiring patience and commitment from policy developers. It is also essential that high standards of organizational knowledge and capability are in place if policy proposals are to be soundly developed, regarded as credible, and supported by governments. Recognition that government intervention is essential to address certain issues in a society—including road trauma reduction—is also a prerequisite for public understanding and support for action.

What has been Victoria’s experience in fostering Government preparedness to introduce challenging measures and agreement to further regulate individual behaviors and freedoms?

The importance of the nature and quality of the interaction between agencies and Ministers, Secretaries, and for the US—Governors.

Agency advocates need to be experienced—capable of depth and breadth in policy development, with a capacity to influence senior political figures.

Strengthening the capability and credibility of agency advice to government, including their processes for addressing externalities (in terms of policy impacts on non-road safety areas), assessing levels of public support and the deliverability of outcomes.

Senior staff in the road safety agencies require a strong grasp of relevant community attitudes and aspirations and a comprehensive understanding of the requirements of public policy debate including media relations. It is also vital that impacts of proposed policies on areas other than road safety which may be considered adverse are actively addressed and constituencies engaged. However, it is also crucial that there is a realistic and hard-headed awareness of likely acceptance by the public of policy measures under consideration, certainly in the short to medium term. This implies the presence of experienced campaigners in the senior agency roles. This implies that sufficient incentives exist within the public sector to retain key competent people.

Use of measures which encourage agencies to work closely and effectively together to provide a whole of government view on policy, program, or operational matters to relevant Ministers and Secretaries.

Allocation of clear accountabilities to individual agencies and a joint reporting arrangement for multisectoral actions across more than one agency to a ministerial council will focus agencies on a whole of government approach. The multi-level organizational arrangements set out in Annex 1 are also a key support. How can these arrangements be replicated in the United States? Many thousands of lives could be saved annually in the US if this co-operation could be achieved.

The benefits of a published comprehensive Strategy, with Targets which stretch the efforts of the government and agencies and are based upon quantified outcomes of proposed measures.

While many jurisdictions internationally have adopted strategies and targets for road safety improvement, it is remarkable that very few have modelled the outcomes that could be achieved if specified inputs were pursued. It is essential, if targets are to be credible, that an objective methodology be developed, based on research outcomes, local evaluation of previous intervention programs, and based also on local conditions. Devising approaches which will optimize the likelihood that measures survive the policy development and public response phases is essential. Staged introduction or substantial education programs over one or two years before legislative initiatives are introduced are typical methods available to increase successful passage down the implementation pipeline.

Victoria has utilized the Monash University Accident Research Centre (MUARC) to prepare such models to assist this target setting process in a transparent way, in order to achieve greater political and public understanding of the target setting process and of the links between input countermeasures and evaluated outcomes.

Public consultation on draft strategies assists ventilation of proposed initiatives and encourages debate and understanding of the issues, especially at the Ministerial level.

There needs to be a range of independent inputs to the public debate about road safety issues beyond government. This is necessary to win public support for the development and introduction of policies and actions.

Some of these potential inputs include bipartisan parliamentary committees (such as the all-party Victorian Parliamentary Road Safety Committee), independent credible research organizations (such as MUARC), and other safety advocates (individuals and groups).

The insurance industry is an underutilized resource. In Victoria the existence of a government-owned monopoly personal-injury insurer is a major road safety strength.

Jurisdictions should review injury insurance arrangements in their State. There will always be opportunity for the companies to invest further in safety, either in behavioral programs (education and enforcement) or infrastructure or through encouragement via pricing signals to consumers encouraging, for example, the purchase of safer vehicles. The commercial benefits and short payback periods for appropriate investments are substantial.

Finding ways to address the community interest and still protect individual freedoms remains a delicate balancing act which is of critical importance to road safety achievement as much as the desire for continued political tenure.

Ministers and other government leaders depend on timely, quality advice in order to display committed leadership. This in turn is an important reinforcing influence for the professionals in the road safety agencies in devising and proposing effective (while also potentially challenging) policy changes and initiatives. This crucial interdependence, and its importance in further strengthening the likelihood of successful introduction of initiatives, needs to be better understood. Skilled ministerial advisers, with knowledge of the subject can be pivotal to success.

The important role of agencies in providing operational advice on a daily basis—both proactively and reactively—to support their Ministers’ public positioning as a road safety champion, and, therefore, to better inform the public debate, also needs to be more widely recognized. These are important issues in developing capability to achieve road safety improvement in the US states.

Clearly a secure Government at an early stage in the electoral cycle will be more confident about making contentious decisions. Policy recommendations need to recognize this.

Adopting a safe system approach and a strategy with targets

The community is confronted by road safety in many and varied ways, often through media responses to more unusual crashes, multiple fatalities, and so on. So often the public response to crashes (the great majority of which involve a range of complex factors) is to blame the victim.

Sometimes this may have some justification, but often, fatal crash outcomes depend upon a number of factors which interact and lead to death. We need to consider the role that all the elements play in a fatal outcome—the road and roadside, the vehicle, the speed limit, and behavior of the road users involved.

A logical framework which examines these road safety elements and their interactions is essential to enable practitioners to develop their thinking and understanding around risk and countermeasure possibilities. It is also of vital assistance in providing more readily understood explanations of road safety risks and their potential treatment to the wider community.

The safe system approach provides this framework. It is derived from the work of the Swedish Road Authority and Road Safety Agencies in the Netherlands and has been adopted as the basis for road safety activity in Victoria, Australia since 2003. It is also adopted across Australia in the current National Road Safety Action Plan.

What is the safe system approach?

As road users are human, crashes are always likely to happen, even though there is a continuing focus on prevention. The safe system approach recognizes that there are limits to the capacity of the human body to survive various crash types above certain speeds of impact. It places a priority on systematically addressing major factors involved in specific crash types to achieve substantial road trauma reduction benefits over time.

The safe system approach aims to minimize the severity of injury and is based on the premise that road users should not die because of system failings.

The basic premise for survivability is that in the case of a five-star driver (obeying the law), in a five-star vehicle and driving on a five-star road and roadside with a five-star speed limit for the risk on that section of road, any road user in or outside the vehicle should not—if they or the driver make a simple mistake or error of judgement—be subjected to a crash in which they lose their lives.

It assumes that

- crash analysis and ongoing development of better understanding of crash causes in a very broad sense is a mainstream and continuing activity of road safety agencies.
- adequate road rules to provide safe travel and the necessary enforcement of those rules to achieve high levels of compliance are in place (both areas of great opportunity).
- an adequate licensing system exists.
- an informed and aware community is very supportive of the settings required to achieve and maintain an increasingly safe road transport system.

It challenges “system designers” to achieve a balance in the three key factors on the physical network—the road and roadside safety, the travel speed as influenced by speed limits, and the primary and secondary safety features of vehicles in order to achieve safe conditions, which result in non-fatal crash outcomes.

However, it also anticipates that there are many other “system designers”—beyond the road and vehicle engineers—who impact on use of the network—and who also carry a major responsibility for these safer, survivable outcomes.

Some examples include the legislators/regulators/enforcement agencies who are expected to identify unsafe, but currently legal behaviors, and convince the public and elected representatives over time to implement new compliance measures to create a safer operating system for road users; the employers providing vehicles—both light passenger and heavy commercial—for use by their staff and requiring a range of driving tasks as part of employment contracts; the road trauma agencies providing onsite and hospital care; the licensing authorities seeking to improve the safety of drivers when licensed; and the road safety agencies, road users themselves, and local road safety groups in the community who provide public education and information (effectively the “users manual” guidance) for operating within the system.

Measures associated with improved compliance are a challenge. Extensive research studies have demonstrated that inappropriate speeds, including speeding, are major factors in crash risk and severity of crash outcomes and that small reductions in mean travel speeds will result in substantial reductions in fatalities. For example, in a 60km/h zone, a 1% mean travel speed reduction (i.e., 0.6 km/h) will reduce fatalities on that section of road by some 4%!

Victoria has introduced a raft of measures to lower travel speeds and bring them closer to posted speed limits across the whole road system and the reductions in fatalities which occurred concurrently with these measures have been substantial, reflecting research predictions.

But issues such as speed enforcement and speed-limit reductions remain highly contentious. They run foul of strong desires by many not to slow down, and the notion of reducing risk by reducing speeds (usually by small amounts) is often greeted with trepidation at the political level. It leads to limited interventions with, for example, 10 km/h enforcement tolerances on speed limits permitted by many enforcement agencies (that is, for example, a 60 km/h limit really means 70 km/h) and reliance on installation and operation of highly conspicuous speed cameras rather than covert mobile camera use. This certainly reduces crashes at those fixed locations, but it also advises motorists where speed enforcement is unlikely to be carried out (everywhere else). Why is there such reluctance to introduce “anywhere, anytime” speed enforcement, at tougher levels, when so many lives could be saved? How can a developed society endure three or so drivers in every 100 breaking the enforced speed limit at any time and endangering the other 97 users? Why are the tabloid and “shock jock” media allowed to peddle wild assertions about speed and risk without challenge? This is an extreme failure at the political and operational enforcement level in many jurisdictions.

There are thoughtful ways to educate the public about the benefits of these programs over time and in advance of action. Proponents of change need to develop and implement a considered public awareness strategy with strong advocacy if they are to progress. A high level of implementation skills is necessary.

In applying safe-system thinking in practical terms, the major crash types in a jurisdiction are analyzed to consider what measures of targeted on-road infrastructure, vehicle safety features, speed limit, and licensing and behavioral compliance measures can be introduced to reduce the frequency and severity of that crash type.

For example, in Victoria, the major crash types have been run-off-road hit-object, side impact at intersections, pedestrian crashes, and head on crashes.

The safe system approach assists countermeasures for these crash types to be identified that will achieve a synergy if introduced over the same time frame. For example, to address side impact crashes at intersections, countermeasures to be introduced could include provision of roundabouts or improved traffic signalization, introduction of skid-resistant road surfacing, encouragement of buyers to demand increased presence of head protecting side curtain airbags in their vehicles, and the adoption of a lower speed limit through intersections (to reduce side-impact speeds below the critical 50 km/h level for this crash type). These measures would, individually, reduce crash outcome severity. In combination, the outcomes in terms of crash reduction over time would be very much greater.

Put simply, the safe system approach leads to a focus of effort and investment on those components of the system that require change in order to be forgiving of unintentional errors.

This is not to suggest that all the answers are known! We also, of course, need to continually ask: what can be done (and what would a community be prepared to do) to address unacceptable, unsafe behaviors by the few on the network which impact on the majority of responsible road users?

This includes for example impaired driving (alcohol, drugs, and fatigue), speeding, not selecting an appropriate speed for the conditions, and not obeying road rules. We also need to continue to find ways to reduce the risks that face young, novice drivers in their first year of driving. How can we better understand and counter driver distraction?

The safe system approach is aspirational.

It seeks over time (perhaps over 20 to 30 years or more) to create a safe operating road and street transportation system in which avoidable deaths and serious injuries are prevented.

Introduction of a safe system approach provides a powerful platform for development, adoption, and implementation of a road safety strategy.

Why is a road safety strategy necessary?

In developing a road safety strategy for the longer term, it is important to have a vision of where a jurisdiction would like to be by the end of the planning horizon and a clear understanding of how its achievement would be recognized.

In pursuit of this vision, the focus will be on building institutional capabilities in transport, health, education, and justice sectors and creating the supporting partnerships within central, regional, and local government, communities, non-governmental organizations, and the private sector that are critical to achieving positive and sustainable results.

It is suggested that a suitable vision could be:

“Within 15 years,...(the nominated states)...will build a robust road safety management system that produces best practice road safety outcomes on a manageable and sustainable basis.”

How can this be realized? A critical element is the preparation of a strategy and action plan by the road safety agencies working together and its subsequent adoption by government.

Victoria has implemented many countermeasures since 2001 in accordance with its “*arrive alive, 2002–2007*” road safety strategy, strongly influenced by the adoption of safe system thinking in mid 2003.

The strategy was based on independent estimations of the likely road safety impacts of various countermeasures; it was placed before the public for meaningful consultation as a draft, adopted a target of a 20% reduction in fatalities and serious injuries by 2007, was signed by the three relevant Ministers, and launched as a public document by the Premier (Governor). A strategy in the development phase becomes the focus for dialogue within and beyond government and provides for the crucial understanding of what efforts and measures are required and are inherent in a strategy which has a particular target for trauma reduction as an outcome. It is, in short, a reality check and the basis of an informed conversation for all involved.

With a strategy that has necessary achievable stretch in the targets it sets and which addresses all the major issues (there are 17 major areas of challenge in “arrive alive”), any government has a powerful public policy basis for—and clear commitment to— implementation, albeit, in a patient and thoughtful manner.

Social contract approach

How can a “social contract” approach be developed with the community seeking to (a) improve road safety through promoting complementary roles with government and (b) highlight prevailing cultural settings including the reinforcing influences in the community which tend to block opportunities for road safety improvement?

A first step is to encourage recognition by the public of those existing cultural and attitudinal settings and “accepted” views that compromise road safety improvement.

The public should also be encouraged to be active participants in the policy dialogue. The “social contract” concept is based on mutually supportive efforts by all system designers, operators, and users and encourages the community to commit to a safety culture which seeks improved road safety in areas they can influence in the various roles, including: road users, employers, community group members; and consumers. The road safety agencies for their part would commit to moving over time to a safer road transport system through improved infrastructure standards, risk-adjusted speed limits, vehicle safety, legislative, enforcement, and public information measures.

This is not a trivial task and will require considerable effort on the part of the road safety agencies in particular, to provide best practice guidance in areas such as:

- Heavy-vehicle safety policies and targets
- Acceptable vehicle advertising by manufacturers
- Community and local government road safety promotion programs
- Risk-reduction strategies for novice and older drivers
- Power pole location policies of utility companies
- Licensed premises operator policies for responsible serving of alcohol
- Speedometer redesign by manufacturers
- Limiting the power/maximum speeds of light passenger vehicle engines
- Drivers limiting travel when influenced by fatigue and low-level alcohol (i.e., less than legal limits)
- Company vehicle and driving safety policies for employees.

There is a fundamental need to seek useful ways to encourage public understanding of the relative risks of individual travel on a length of road, what factors contribute to that risk and to increase public support for implementation of measures to improve safety on the higher-risk road sections. Road safety agencies need to be, and be seen to be, continuously engaged in identifying and responding to risks.

How can consumer activity be supported in the areas of vehicle and road/roadside safety to increase demand for improvements by the providers?

The promotion of the New Car Assessment Program (NCAP) will continue to be an important consumer information activity. It is a valuable national program which would benefit from local promotion of the advantages of safer vehicles (and specific safety features) to inform the public and increase consumer demand for those features. The US has, of course, led the way with its strong focus on vehicle safety and infrastructure investment, often benefiting safety.

The extent of trauma reduction which can be achieved through more rapid introduction of safer vehicles into the fleet is substantial. It is not sufficient to wait for drawn-out and, perhaps, controversial regulatory change. Road safety agencies should foster consumer demand for safer vehicles now as a priority and press automakers to offer these new features as standard or at least as unbundled options. New features, such as electronic stability control, head protecting curtain airbags, and other active and passive safety improvements are providing very substantial safety benefits.

However, the picture in terms of actions to address higher-risk behaviors is quite dismal. The notion that individual behavioral freedoms should outweigh risks to other road users, including passengers in the same vehicle, is increasingly unacceptable in Victorian society. It is not considered acceptable for individuals to argue that they are entitled to do as they please on the roads in pursuing their freedom of expression. Their unsafe behaviors impact upon other road

users, either as a result of a crash or as a result of the poor role models they are for younger citizens by not supporting responsible harm minimization strategies such as wearing seat belts and helmets on motorcycles.

There is a great benefit in fostering an informed and involved community, active in its dialogue about road safety matters and willing to be an active participant in road safety improvement. Widespread availability of relevant, simply expressed, but forceful, factual material is a crucial part of promoting and achieving a social contract approach, as is the disarming question, “What are you prepared to do to improve road safety in your community?”

There are many potential benefits in better understanding the driving forces behind public and media interest in road safety. There is a long history in many places which would be instructive in anticipating likely concerns and issues and in making available high quality, relevant resource material. Seeking to lead the debate with many aligned contributors, rather than finding themselves in a reactive position is an important issue for the road safety agencies. The resource implications associated with such an intention would, of course, require careful consideration. Involving the community in debate about current risks and future solutions and fostering their support are threshold activities for agencies. Improved ways and means of informing, involving, and empowering stakeholder and community groups need to be developed. It does require some courage and leadership to publicly articulate the road safety message—but that is the task requirement.

It is not necessary, or indeed feasible, to legislate for all required or desired behavioral changes in the short term. A proven approach for the medium term is to educate and promote to the public desired behavioral changes over a period of some years, engaging the community in debate. When or if the measure can be regarded as an accepted maxim for the bulk of the community, governments can move in a far less contentious environment to introduce the provisions as legislation or regulation, cementing the safety benefits in place.

We must ask the question: how do states in the US currently address these issues?

The opportunities to reduce the deaths of Americans on the US road network each day are substantial.

Can the community be motivated to seize these opportunities?

Recommendations

(1) Comparison of changes in absolute fatality levels in the United States and Australia (and Victoria) between 1995 and 2003 is instructive. The number of persons killed in road crashes in the United States has increased by 2 percent in those nine years. In contrast, the number of persons killed in Australia has decreased by more than 20 percent in the same period and by 21% in Victoria. Australian agencies followed a model of corporate leadership and management techniques embracing the safe systems approach. There is a need to recognize and pursue the major opportunity that exists to reduce deaths of Americans on American roads.

(2) The FHWA Scan Team examining Transportation Performance Measures in Australia, Canada, Japan, and New Zealand in 2004 included in their recommendations...“The most integrated and impressive application of a performance measurement framework the scan team observed was in the area of safety. The team believes that the Australian model and the significant results achieved in the safety area are worthy of sharing and ultimately implementing in the United States.

Two safety implementation strategies are recommended:

- Bring Australian safety leaders to the United States to tell their story to key groups.
- Encourage states to implement the best practices learned.”

This recommendation is endorsed.

(3) Develop a pilot road safety implementation program in, say, two groups of three US states and negotiate application of as much of the relevant elements of the “Victorian” approach as is feasible. Implement over a five-year period, monitor and compare outcomes, and promote successes.

(4) Mechanisms by which governments and communities can achieve improved road safety outcomes are not well understood and have received little research attention. Identify and understand those principles and processes which will assist change to achieve community acceptance over time of new countermeasure proposals. Proponents of change need to be well equipped if their ideas are to negotiate the difficult course of public debate and bring about greater acceptance (albeit, often incrementally) in public attitudes.

(5) Based on the Victorian experience with raising government and community risk awareness, the following four critical areas of new thinking are recommended as offering particular promise for research (as pilot implementations) for changing the traffic safety culture in the US.

These are:

- Performance Measurement
- Effective Leadership, Management, and Co-ordination
- Adopting a Safe System Approach and a Strategy with Targets
- Promoting a Social Contract Approach

Performance measurement

(6) Resolve to conduct analysis of the data and publish it widely within the road safety agencies and departments. The purpose is to have the data presented in such a way that it “speaks for itself” and contributes strongly to driving debate and discussion about trends, progress, and further countermeasures. North American road safety would benefit from this much more proactive approach to data awareness.

(7) Develop a preparedness to measure detailed performance by assessing road trauma levels against other jurisdictions—nationally and internationally—to ensure that practitioners “better know their business.” It can also provide a reality check at the senior executive and political levels and encourage further development of proposals to improve that jurisdiction’s relative position.

Effective leadership, management, and co-ordination

(8) Seek to introduce a “ministerial cabinet” committee for road safety in your State, comprising key Secretaries (e.g., transportation, police and health, or justice), recognizing that it is a critically important mechanism to achieve strong representation for road safety initiatives at the Cabinet table and to deal with the political trade-offs so often involved in the introduction of road safety measures, such as mobility, environment, privacy, and civil liberty or public safety impacts.

(9) Governments should provide effective leadership and implement appropriate arrangements for management and co-ordination of road safety activity including:

- building institutional capabilities in transportation, health, education, and justice sectors.
- providing clear statements of required outcomes (through a strategy plan, actions, and agreed targets).
- definition of collective and individual accountability, supported and reinforced by management and reporting structures.
- requiring a “joined-up Government” partnership of agencies, focussed only on “the plan,” willing to share success, recognizing the roles and contributions of the participants and sharing leadership.
- creation of the supporting partnerships within central, regional, and local government, communities, non-governmental organizations, and the private sector that are critical to achieving positive and sustainable results.
- requiring one consolidated reporting framework to government by the agencies.

(10) While government strategies and agency actions should focus on implementing actions that deliver certain benefits, thoughtful analysis is recommended to guide initial efforts to those countermeasures where political and community support can be more readily achieved and which can be delivered in the desired time frame.

(11) Recognize that high standard organizational knowledge, capability, and commitment—applied in a patient manner—is critical if policy proposals are to be soundly developed, regarded as credible and achieve support by governments. Move to develop public acceptance that government intervention is essential to address certain issues in a society—including road trauma reduction—as a prerequisite for building public understanding and support for action.

(12) Senior staff in the road safety agencies require a strong grasp of relevant community attitudes and aspirations and a comprehensive understanding of the requirements of public policy

debate, including media relations. Ensure that the impacts of proposed policies on activity other than road safety that may be considered adverse are actively addressed and constituencies engaged.

It is also crucial that there is a realistic and hard-headed awareness of likely acceptance by the public of policy measures under consideration, certainly in the short to medium term. This requires the presence of experienced campaigners in the senior agency roles and implies that sufficient incentives exist within the public sector to retain key competent people.

(13) Require the development of an objective methodology linking interventions to outcomes, based on research assessments, local evaluation of previous intervention programs and based also on local conditions, as the basis for consideration and adoption of targets.

(14) Utilize approaches which optimize the likelihood that measures survive the policy development and public response phases. Staged introduction or substantial education programs over one or two years before legislative initiatives are introduced are typical methods available to increase successful passage down the implementation pipeline.

(15) Ensure there are a range of independent inputs to the public debate about road safety issues (beyond government). This is necessary to win public support for the development and introduction of policies and actions. Some of these potential inputs could include bipartisan legislative committees (such as the all-party Victorian Parliamentary Road Safety Committee), independent credible research organizations, and other safety advocates (individuals and groups).

(16) Review road crash injury insurance arrangements in your State. There will always be opportunity for the companies to invest further in safety, either in behavioral programs (education and enforcement) or infrastructure or through encouragement via pricing signals to consumers, for example, for the purchase of safer vehicles. The commercial benefits and short payback periods for appropriate investments are usually substantial.

(17) Legislators depend on timely, quality advice in order to display committed leadership. This, in turn, is an important reinforcing influence for the professionals in the road safety agencies in devising and proposing effective (while also potentially challenging) policy changes and initiatives. Recognize and develop this crucial interdependence, and understand its importance in further strengthening the likelihood of successful introduction of initiatives. Skilled legislative staffers, with knowledge of the subject, can be a crucial component for success.

(18) Recognize the important role of agencies in providing operational advice on a daily basis—both proactively and reactively—to support their legislators’ public positioning as a road safety champion informing the public debate.

Adopting a safe system approach with targets

(19) Adopt safe system thinking in your state, recognizing that:

The safe system approach is aspirational and seeks over time (perhaps, over 20 to 30 years or more) to create a safe operating road and street transportation system in which avoidable deaths and serious injuries are prevented.

- The approach provides a powerful platform for development, adoption, and implementation of a road safety strategy.
- It requires the major crash types in a jurisdiction to be carefully analyzed to consider what measures of targeted on-road infrastructure, vehicle safety features, speed limit, and licensing and behavioral compliance by road users can be introduced to reduce the frequency and severity of that crash type.

(20) It is suggested that an appropriate strategic safety vision for States in the US could be:

“Within 15 years,...(the nominated states)...will build a robust road safety management system that produces best practice road safety outcomes on a manageable and sustainable basis.”

(21) Develop a road safety strategy and action plan. A strategy in development becomes the focus for dialogue within and beyond government and provides for the crucial understanding of what efforts and measures are required to achieve a desired target for trauma reduction. It provides a reality check for all involved but is also a vehicle to build community understanding of the issues.

Promoting a social contract approach

(22) Promote recognition by the public of those existing cultural and attitudinal settings and “accepted” views that compromise road safety improvement as a first step in developing a social contract with the community.

(23) Encourage the public to be active participants in the policy dialogue. The “social contract” concept is based on mutually supportive efforts by all system designers, operators, and users and challenges the community to commit to a safety culture which seeks improved road safety in areas they can influence in their various roles, including: road users, employers, community group members, and consumers.

(24) Find ways to encourage public understanding of the relative risks of individual travel on a length of road and what factors contribute to that risk and to increase public support for implementation of measures to improve safety on the higher risk road sections. Road safety agencies need to be, and be seen to be, continuously engaged in identifying and responding to risks.

(25) Recognize the challenges inherent in changing community perceptions and in winning support to address higher-risk behaviors. Such challenges include the notion that individual behavioral freedoms should outweigh risks to other road users, including passengers in the same vehicle, and the notion that individuals are entitled to do as they please on the roads in pursuing their freedom of expression. Their unsafe behaviors impact upon other road users, either as a result of a crash or as a result of the poor role models they are for younger citizens, in particular,

by not supporting responsible harm minimization strategies, such as wearing seat belts and helmets on motorcycles. These attitudes need to be addressed.

(26) Seek to have the road safety agencies lead the public debate on risks and countermeasures with many aligned contributors, rather than finding themselves in a reactive position.

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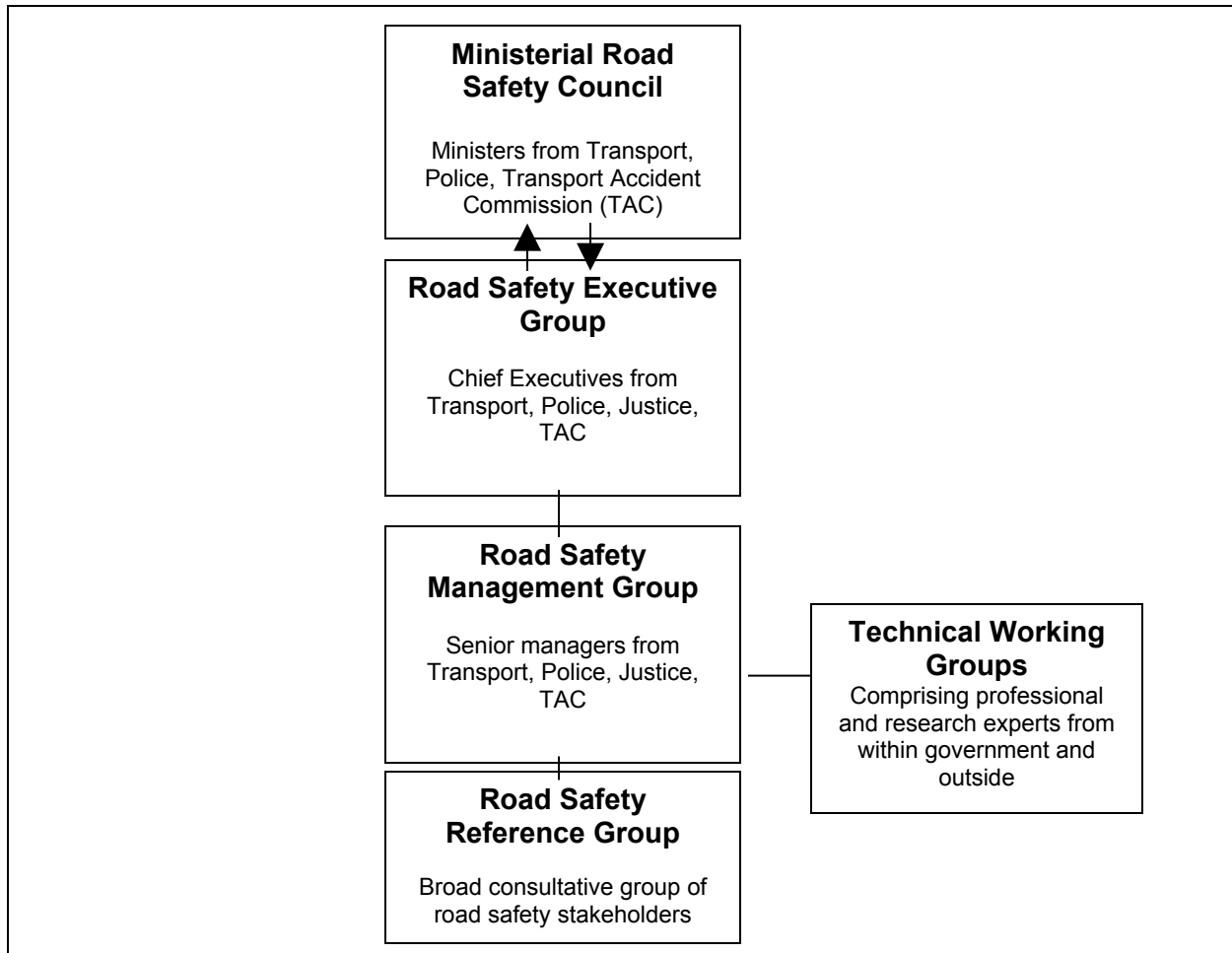
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Annex 1. An organizational model for multi-sectoral governmental coordination in road safety—Victoria, Australia.



The *Ministerial Road Safety Council* meets four times each year to ensure a coordinated approach to road safety. It can provide a powerful voice in cabinet for the pursuit of road safety policies, funding of new initiatives including legislation. The Chair is rotated at each meeting. The group signs off the road safety strategy based on detailed methodologies for established likely outputs by the main stakeholders for certain key policy initiative inputs.

The *Road Safety Executive Group* reports to, supports, and receives direction from the Ministerial Council. The Group determines strategic directions, monitors and reports progress to the Government through the Ministerial Council. The Group meets approximately four times each year and the Chair rotates between agencies.

The *Road Safety Management Group* is the hub of the road safety coordination—meeting monthly. The Chair rotates between agencies. With the lead agency as the key link, the group coordinates implementation of the road safety strategy, develops and implements programs and countermeasures, reviews identified programs, identifies research priorities, promotes a coordinated statewide program of activities, and supports development and implementation of educational initiatives including the Traffic Safety Education Action Plan and links with the State Trauma System.

The *Road Safety Reference Group* is a consultative body comprising all the main road safety stakeholders including the non-governmental sector which meets quarterly and is chaired by the lead agency head of road safety.

Biographical statements

Eric Howard was General Manager – Road Safety with VicRoads from 1998 to 2006. He was responsible to the Ministerial Road Safety Council for development of Victoria’s road safety strategy “*arrive alive - 2002 to 2007*”—and for many road safety policy initiatives—in association with Victoria’s road safety partners, including infrastructure standards; new safety programs and treatments; comprehensive speed management; public promotion of safer vehicles; legislation for random roadside saliva based drug testing of drivers and for introduction of alcohol interlocks; tougher penalties for speeding, drink driving and other offences; introduction of road safety partnership programs with local government and development of policy for expanded graduated licensing measures. “*arrive alive*” has been a successful strategy and the targeted fatality reductions of 20% have been achieved.

Eric has provided strategic road safety advice to Australian and international jurisdictions in recent years, particularly about the benefits of a “safe system” approach to road safety, adopted in Victoria from 2003. He has presented regularly to Victorian and Australian Parliamentary Road Safety Committee Inquiries.

Prior to taking up the appointment with VicRoads, Eric was an experienced senior manager in local government in Victoria, most recently as Chief Executive of the Shire of Yarra Ranges in eastern Melbourne - appointed at the time of major local government amalgamations in 1994 - following 5 years as Corporate Manager and Acting Chief Executive of the City of Melbourne and other Senior executive management roles in Victorian Local Governments for more than 20 years.

Eric established his own consultancy—Eric Howard and Associates—early last year to provide strategic road safety advisory services, internationally and within Australia. Recent projects include guidance for the new draft Victorian road safety strategy for the Victorian Government; Reviews of road safety management capacity for the World Bank in Ukraine, Armenia, and currently Bosnia and Hercegovina; an on-going mid-term Review of the Canadian road safety strategy; strategic road safety projects for the Australian Road Research Board and VicRoads; leading the development of the Speed Management Manual for the Global Road Safety Partnership and a continuing role on Vicroads behalf as Chair of the OECD/ECMT Working Group examining “Achieving Ambitious Road Safety Targets”, to report later in 2007.

Eric was a Member of the Board of the Monash University Accident Research Centre, a Director of the Driver Education Centre of Australia, a member of the National Road Safety Strategy Panel and Chair of the Victorian Road Safety Reference Group. His contribution to road safety improvement in Victoria was recognized in 2005 by the Victorian Parliamentary Road Safety Committee and the Minister for Transport.

Dr. Peter Sweatman was appointed Director of the University of Michigan Transportation Research Institute (UMTRI) in September 2004. He came to UMTRI after a long career in transportation research and development in his native Australia, and with extensive international connections.

Dr. Sweatman is an acknowledged international leader in the scientific field of heavy commercial vehicle interaction with the infrastructure and built a successful freight technology innovation business. He has a strong interest in advanced safety systems which help drivers to avoid crashes, and in communication technology which will not only prevent crashes but also improve traffic flow. He is active in a number of TRB committees, the Ford Global Citizenship Review Committee and the University of Michigan Energy Research Council.

In Australia, Dr. Sweatman's achievements were recognised in being elected a Fellow of the Academy of Technological Sciences and Engineering in 1997 and in being awarded a Centenary Medal in 2002 by the Prime Minister of Australia – *For Service to Australian Society in Transportation Engineering*.