

# *Overcoming barriers to creating a well-functioning safety culture: A comparison of Australia and the United States*

Allan F. Williams and Narelle Haworth

## **Introduction**

---

An effective highway safety culture is an environment in which public and political attention is paid to motor vehicle injuries commensurate with the size of the problem, and there exists a balanced, evidence-based approach for reducing the problem, incorporating behavioral, environmental, and vehicle factors. There are barriers to achieving an effective safety culture, largely having to do with the psychology of driving. These barriers are discussed in the context of the United States, which has a weak safety culture. Other countries have made greater strides in overcoming these barriers. One such country is Australia. The experience of Australia is discussed in relation to the United States, and an assessment is made of what can be learned from this comparison about establishing a more effective highway safety culture.

## **The United States situation**

---

There is a significant highway safety problem in the United States. More than 40,000 people have died in each of the past ten years, and death rates per capita, per miles driven, and per registered vehicles have declined only slightly during this period (National Highway Traffic Administration 2004). There is no mystery as to how and why injuries occur. Simply put, they occur when the energy released in collisions exceeds the human injury threshold. This is a man-made problem, and societies can choose the extent to which they control it.

High-speed mobility is dominant in the United States. Very high speeds are allowed on many highways and speed limits are routinely exceeded (Insurance Institute for Highway Safety 2003). The horsepower of the vehicle fleet has increased in recent years, with many vehicles having speedometers that reach 160 miles per hour, twice the highest speed limit. Vehicles are blatantly advertised for their power and performance characteristics (Ferguson, Hardy, and Williams 2003). Most importantly, there is not a sufficiently safe vehicle and road infrastructure for prevailing speeds on the road network (Johnston 2004b).

## **Apathy toward the problem**

Unfortunately, both government and the general public are pretty much accepting of the large yearly toll of injuries and deaths, the byproduct of mobility. They are part of the fabric, seemingly acceptable collateral damage. Dinesh Mohan (2003) writes: "Road traffic injuries are the only public health problem for which society and decision-makers still accept death and

disability among young people on a large scale. This human sacrifice is seen as a justifiable externality of doing business: the only discussion revolves around the number of deaths and injuries that are acceptable.” Whether this is a conscious acceptance, based on an accurate knowledge of the size of the problem, or stems from a lack of understanding, is an issue that deserves further research.

It is customary to attribute the apathy toward the problem to the fact that although there are more than 100 highway deaths on an average day in the United States, they happen primarily in ones and twos scattered around the country, and the total death count for the day is not known until many months later. From 1996 to 2002, the single-day fatality count ranged from a low of 45 to a high of 252, with a daily average of 117. Ninety-four percent of the deaths occurred in crashes where one or two people died (Farmer and Williams 2005). The contrast is usually made with commercial airline crashes, which effectively capture public attention and concern, and in fact, Secretary of Transportation Secretary Norman Mineta has reportedly said, “If we had 115 people die per day in aviation crashes, we wouldn’t have a plane in the sky.” (Kristof 2004)

The large number of fatalities per year also has another, perhaps subtler, influence on the way that the highway deaths are perceived. A statistical feature of such large numbers is that they do not vary by a large fraction from year to year, unlike smaller numbers such as commercial airline crashes or passenger train crashes which can easily double from one year to the next. The relative stability and predictability of the number of highway deaths gives an aura of being under control, suggesting there is no crisis to which we must respond. The largely unvarying number of yearly deaths and the manner in which highway deaths are distributed and tallied may be reasons why the highway safety problem remains in the background, but this is not the whole story.

## ***Psychology of driving***

The primary issue in our approach to the problem has to do with the psychology of driving. We all drive. We all know that crashes often happen, and it is apparent that driver behavior is usually a contributing factor. The link between driver behavior and undesirable outcomes is much more obvious than in the case of diseases, where behavioral antecedents are often not so clear or immediate.

People think, in general, that they are less likely than the average person to encounter negative events, and this is particularly the case for driving. It is well known from risk-perception research that in very familiar activities there is a tendency to minimize the possibility of bad outcomes as a way of allaying personal concerns (Douglas 1985). People underestimate risks that are supposed to be under their control. They insulate themselves by creating “illusory zones of immunity” around routine, everyday activities (Jasanoff 1998). This sense of subjective immunity is bolstered by most people’s beliefs that their driving and crash avoidance skills are above average. Surveys around the world have indicated that most people think their driving skills are superior. For example, in a United States study, 20% thought their skills were far above average, 52% thought their skills were above average, and the other 28% thought their skills were average (Williams, Paek, and Lund 1995). People think that with their special skills, they can largely control their crash involvement. One survey indicated that 37% thought they have almost total control in preventing their own involvement in motor vehicle crashes, 45% thought they had a lot of control, 15% thought some control, and 2% very little (Teknekron Research 1979). There is recognition that crashes happen, but they happen to other drivers, who are not so

skilled or careful. It is the mythical “other driver” who is the problem. In the Teknekron survey, motorists estimated the likelihood of their being in a motor vehicle crash in the next year. The true likelihood was calculated as 1 in 7, but only 18% said their chances were 1 in 10, 25% said 1 in 100, 24% 1 in 1,000, 12% 1 in 10,000, 13% 1 in 100,000, and 9% were not sure. These zones of immunity we create around ourselves help to engender public indifference. At one level, people understand that motor vehicle crashes and injuries are a problem, but it is somebody else’s problem. As Ian Johnston (2004a) puts it, personal road safety is valued, but community road safety is not because people believe they can largely control their own safety.

We do have a vested interest in how others drive. We may view drivers who crash as victims of their own making, but they can also cause harm to us. We have a social contract with others that all will drive responsibly. The concern is that while we ourselves are competent drivers, others are not and they pose a threat to us. When drivers in the Teknekron survey were asked the likely cause of a crash if they happened to be in one, only 6% said it would be because they were at fault, whereas 59% said it would be the fault of the other driver or just bad luck (17%) or due to some roadway or vehicle factor (18%) or something else. We are quick to put the blame on other drivers, who make the highways more dangerous for drivers like us. This view is reinforced by the reality that the likelihood of a crash on any one car trip is extremely low, yet we observe that crashes (involving other drivers) are happening all the time.

## **Consequences**

The low priority accorded to the highway safety problem and the attribution of the problem to the “other” driver has two consequences. First, it means that the field is woefully underfunded. This is evident when you “follow the money.” In 2004, the U.S. federal budget for the National Cancer Institute was \$3 billion, for the National Heart, Lung and Blood Institute \$2.3 billion, and for highway safety research (the National Highway Traffic Safety Administration and the Federal Highway Administration) \$164 million. These are huge differentials, even though in terms of adjusted years of life lost before age 75, cancer and heart disease are each only 2 to 3 times that of motor vehicle injuries. The National Institute of Dental Research received \$349 million for research in 2004, more than twice what was spent for highway safety research.

Secondly, the approach to dealing with the highway safety problem has been limited and often misdirected, effectively wasting some of the scarce funds received. Behavioral strategies have been relied upon as the primary approach to the problem. We blame people for driving poorly and getting into crashes, and we don’t want their misbehavior to hurt us. As Dinesh Mohan (2003) says, “If human error is seen as the root cause of road-traffic injuries, it follows that the solution must be the education of road users...This mindset has continued in the face of all scientific evidence that educating road users is not the most effective way to reduce road-traffic injuries.”

This approach to the problem has resulted in many programs being embedded without regard to evidence of their effectiveness or, indeed, in the face of evidence that they are in fact ineffective or even counterproductive (Insurance Institute for Highway Safety 2001). This is in sharp contrast with the introduction of measures for the alleviation of other public health problems.

One reason the success of public information and education programs is limited is that we all pretty much know what we are supposed to do and not do on the highways. What we do,

however, is another matter, often unrelated to knowledge about the appropriate behavior. Moreover, safety messages are easily deflected. Skilled drivers such as ourselves are safe drivers; safety messages are obviously aimed at other drivers who need such education, not ourselves. In one study, it was found that drivers exaggerated the perceived speed of other motorists, believing that they themselves drove slower and, thus, were inclined to ignore campaigns urging people not to speed (Walton and McKeown 2001). If, at some level, we recognize that the messages pertain to us, we ignore them.

Educational programs for motorists remain popular. In one survey, 80% of drivers in the United States said that they thought the number of serious injuries could be reduced by increased public education efforts (Boyle and Sharp 1998). There are still programs, such as a recent campaign in the United States which used federal and other money to “raise awareness about the dangerous and costly problem of running red lights.” It seems highly unlikely that any adult (or child for that matter) does not know that you are not supposed to run red lights and programs like this, rarely subjected to evaluation, are unlikely to have any effect.

The irony is that while much money and effort have been spent on ineffective “feel-good” programs, there is a vast array of measures, shown by research to reduce the problem, that are grossly underused. There is, according to the National Academy of Sciences a “yawning gap” between what we know and what we do (Bonnie, Fulco, and Liverman 1999). Ian Johnston (2004b) notes that “the gap between knowledge and action in road-traffic injury prevention is arguably the widest among the major public health issues.” The public apathy that besets the problem of motor vehicle injuries and the human-failure bias do not readily engender the political will to implement effective policies and practices.

Of course, great advances have been made through a public health, or systems, approach, embodied in the Haddon matrix. The emergence of this more sophisticated approach helped move the field away from exclusive attention to the pre-crash human cell of the matrix, to include approaches focusing on vehicles and the environment. Such approaches involving roadway-engineering and vehicle-design changes provide many opportunities both to avoid crashes and to reduce their severity. The intention is not to downplay these developments. Indeed, the United States is rightfully considered a world leader in vehicle design and roadway improvements. However, advances that have come through engineering practices and enhanced vehicle designs always seem to be accompanied by pleas to get back to the real source of the problem, the irresponsible driver. It is as though we are letting these drivers off the hook by not addressing them directly. And, as Ian Johnston (2004a) has pointed out, the belief that most crashes involve blameworthy behavior is continuously reinforced by our justice system and our largely fault-based insurance system.

It should be noted that behavior-change attempts have not been limited to education programs for drivers. Laws and their enforcement have been effective in dealing with behaviors, such as seat belt use, alcohol-impaired driving, speeding, and motorcycle and pedal cyclist helmet use. However, other countries, in particular Australia, have used this approach more extensively.

News coverage of highway crashes also reinforces the driver-behavior emphasis, focusing on behavioral errors and encouraging fear of the “other” driver. In a study of newspaper reporting in four midwestern cities in the United States, it was concluded that papers, “presented fatal motor crashes as mini-dramas, with clearly defined victims and villains. Papers under-represented the proportion of drivers killed in fatal crashes by focusing disproportionately on those crashes in

which “at-fault” drivers survived to take the blame. Thus, the choice of stories covered and the narrative strategies employed give readers the impression that the undeserving and unsuspecting are more likely to be killed, while those whose mistakes contribute to crashes are more likely to survive.” (Connor and Wesolowski 2004)

With some exceptions, politicians in the United States are not attuned to or informed about the highway safety problem. Leonard Evans concluded that “protecting public health is a major government responsibility and U.S. performance in the area of ground traffic safety has been abysmal compared with that of other countries.” (Evans 2003)

To the extent attention is paid to the problem in the United States, it moves from issue to issue: alcohol-impaired driving in the 1980s, then “aggressive” driving, and currently “distracted” driving. Note that these are all types of drivers whose behavior can harm others; thus, the attraction.

## ***A way forward***

Given these background factors that work against an effective safety culture, how do we overcome them and create an environment that is more attentive and appropriately responsive to the highway safety problem? The psychology of driving that keeps the highway safety problem under the radar and skews our approach to it is thought to be universal. Indeed, others who have written about safety culture barriers, such as Ian Johnston and Dinesh Mohan, both quoted liberally in this paper, are from Australia and India, respectively. We need first to learn more about factors related to the psychology of driving. We need more in-depth studies of perceptions of the highway safety problem, individual risk perception, and attributions of risk, compared with other health threats, and the extent to which there are cross-cultural differences in these phenomena. Secondly, we need to learn from other countries that have made strides in overcoming barriers to an effective highway safety culture. The most prominent example is Sweden’s “Vision Zero,” with its enlightened view of the role of human behavior, basically, to encourage people to take responsibility to drive safely but also to protect them from injury even if they do not (Tingvall and Haworth 1999). Another example is Australia.

## **The Australian situation**

---

Australia is often cited as an example of a country that has made much more progress in road safety than the United States and as an example of a country with a stronger safety culture. The remainder of this paper discusses the extent to which this assertion is true and some of the underlying political, cultural, and historical factors that appear to have shaped the differences between highway safety in Australia and the United States. In brief, these differences involve governments being more willing to intervene to protect people’s safety and to adopt a scientific approach in doing so, support for safety initiatives from parliamentary committees focused on road safety and the availability of funds for safety endeavors, policies being easier to implement because there are fewer decision makers involved, and a public that is more accepting of government interventions, in part, because of intensive community education undertaken during pre-law periods.

Comparisons of highway safety performance between countries can often be misleading because of differences in the level of motorization and differences in the mix of road users and many authors have cautioned against these comparisons (Johnston 1991; O'Neill and Kyrychenko 2006). While these differences suggest it is unwise to compare Australia or the United States with many European or Asian countries, Australia and the United States are sufficiently similar on these dimensions to allow reasonably valid comparisons. The percentages of fatalities that are vehicle occupants are roughly similar in the US and Australia, and both countries have high levels of motorization. In the 1980s, the motor vehicle death rates per 100,000 population were similar in the United States and Australia. In 1981, the rates were 22 in the United States and 21 in Australia, and these numbers fell somewhat to reach 18 and 17, respectively in 1989. But the rates in the United States have fallen little since then, despite dramatic decreases in Australia. In 2004, the death rate was 15 in the United States and 8 in Australia.

## ***Structure of government***

There are many similarities between the United States and Australia. Australia is roughly the same size as continental US. Australia has a federal system of government, like the United States (but only since 1901). Similarly to the US, the powers of federal government are limited. The Australian States only yielded income taxation to the Federal Government during the 1940s, so until then it had few resources as well. In road safety, the Australian Federal Government has responsibility only for vehicle standards and national highways (and potentially advertising through its telecommunications powers). Thus, the issues of federal versus state division of responsibility and resources for highway safety are, on the surface, somewhat similar in the two countries.

Yet there are some important differences. Australia's 20 million people live in only six States and two Territories. The two most populous States (New South Wales and Victoria) comprise almost 60% of the national population. Local government in Australia has relatively little power compared to in the United States. There are no city or county police, only state police (the small Australian Federal Police has little to do with highway safety). These governmental factors have influenced the ability to implement highway safety measures in Australia. Decisions by only two Police forces (or by two driver-licensing authorities) to implement a new highway safety measure can affect 60% of the nation's drivers.

Another governmental difference is that Australia does not have a Bill of Rights. While there have been some moves towards such an approach, its opponents have argued that codifying individual rights will restrict them. Australia's legal system is based on the British system, and the Australian Constitution focuses on maintaining the rights of the States against encroachment by the Federal government, rather than maintaining the rights of individual citizens. Thus constitutional challenges to highway safety measures on the grounds of infringement of the rights of the individual do not occur in Australia.

## ***Geography***

Like the United States, the Australian States and Territories vary considerably in their road safety performance. In 2005, the fatality rates in the Australian Capital Territory (akin to Washington D.C.) were lower than any Australian State or Territory and lower than any country

in the OECD (ATSB, 2006), while the fatality rates in the Northern Territory were more than double that of the better-performing states. In general, these differences in fatality rates reflect differences in the extent of urbanization. Highly urbanized areas have lower crash rates. Better-quality roads and lower travel speeds in urban areas account for part of this pattern, but differences in safety culture between urban and rural areas are also important. In urban areas of Australia, there is intensive random breath testing to prevent drunk driving crashes and widespread use of speed cameras to reduce speeding crashes. These measures are not as feasible or successful in rural areas, and so the extent of drink driving and speeding and the resulting crashes are much greater in rural areas. Poorer emergency treatment also plays a role.

## ***Relative emphases on different types of traffic safety programs***

Despite their different traffic safety cultures, the US and Australia both have strong traffic safety programs in some areas. Very broadly, there are strong Australian programs that aim to prevent traffic crashes. Random breath testing to deter drunk driving and, thus, prevent drunk driving crashes is a widespread and intensive approach in Australia, whereas the US Constitution is interpreted as prohibiting this practice. The US approach to drunk driving involves some use of sobriety checkpoints but has been much more based on punishment than prevention. Vehicle impoundment for drunk driving occurs in some part of the US, while it is yet to be implemented anywhere in Australia.

Relative to Australia, there has been less government involvement in the US in changing driver behavior through laws and their enforcement. Australia led the world in passing laws in the areas of drunk driving, seat belts, and bicycle and motorcycle helmets, and accompanying these legislative changes with fairly massive amounts of enforcement and paid mass media programs.

Government has played an important role in improving traffic safety in the United States, however. The Australian perception is that traffic safety in the US has benefited from very large expenditures on better roads and on better vehicles. This perception has some support: our international benchmarking study of heavy vehicle safety (Haworth, Vulcan, and Sweatman 2003) demonstrated that the better levels of heavy vehicle safety in the United States than Australia could be largely ascribed to more travel on divided roads.

What does this mean for the argument that traffic safety culture is more developed in Australia than the US? The large US expenditures on better roads may not really be part of the traffic safety culture, but instead another manifestation of enhancement of individual mobility and freedom (which in other areas such as increased speed limits and lower licensing ages has actually worsened traffic safety).

The greater emphasis on vehicle safety in the US than in Australia has led to many US vehicles (let's forget SUVs) being safer than their Australian counterparts. Vehicle safety in Australia lags because only a relatively small proportion of vehicles are manufactured locally and this proportion has fallen in recent decades when emphasis on vehicle safety has increased. Thus, many imported Australian vehicles are "de-specified" versions (i.e., with some safety features removed) of their overseas cousins. While the Australian Federal Government has responsibility for vehicle safety, the Australian Design Rules are changed only slowly and so give little impetus for vehicle safety improvements.

## **Why is Australia's safety culture different?**

---

Given that Australia's highway safety culture appears to be different, why is this so? The first point to be made is that the safety culture differences between the United States and Australia are not confined to traffic safety. Similar differences exist in terms of gun control and in health insurance (although government involvement in the latter is decreasing). In Australia, government appears to be more willing to intervene to protect the health and safety of the community than in the United States.

The acceptance of government intervention in Australia may not be a characteristic of the types of people who originally came to Australia (convicts who came as part of a dependent, authoritarian regime) as speculated by Johnston (1991), but because of traditional dependence on government to provide infrastructure and initiatives across a wide variety of areas.

Hancock was an Australian historian who coined the phrase "socialism without doctrine" to describe Australian politics. He maintains that Australians have developed a learned dependency on government that has a historical basis. In Australia much of the development of crucial infrastructure was done by government, e.g., development of the railways because of low population density and, therefore, the lack of an economic base to support private infrastructure. Another historian, Nigel Buckland, noted the huge growth of government-owned infrastructure in Australia in the 19<sup>th</sup> century which was financed by overseas borrowing.

The role of government in infrastructure development may have led to a habituation on the part of Australians to government control and ownership of infrastructure and other initiatives (with only a recent aberrant shift to economic rationalism). John Hirst, a Monash academic, argues from the example of South Australia that the state capital (and state government) was so important for outlying rural centers because low population density made local structures unsustainable, leading to a natural recourse to central government.

In contrast, private enterprise has historically been much more important in the United States.

Some of the effective traffic safety measures that have been implemented by Australian governments are not popular, and media criticism of governments commonly occurs. A telling contrast with the United States comes from an investigation of how Australia was able to achieve widespread adoption of speed cameras and what the United States could learn that might facilitate their greater adoption in the US. The same controversies about speed cameras were found to exist in both countries. However, Australian states, based on studies indicating the safety benefits of speed cameras, have maintained and even increased their use, whereas they have been resisted in the United States (Delaney et al. 2005).

In Australia, populist dislike and distrust of authority has always existed alongside the dependence on government for basic infrastructure services. This can be potentially reconciled as a disagreement with what government is doing, rather than a denial that they have the authority to undertake that course of action.

## ***How effective measures have been introduced in Australia***

In addition to the willingness to accept government intervention that has just been discussed, we have identified three factors that have assisted the adoption of effective highway safety measures in Australia. These are a willingness to take a scientific approach to highway safety, the existence of Parliamentary committees focused on road safety, and institutional responsibilities or arrangements that facilitate the implementation of road safety measures.

### ***Willingness to take a scientific approach to highway safety***

In Australia, there has been a history of road safety measures being introduced or expanded because of expert input and the results of local or international evaluations. This has both helped to get effective measures introduced and (generally, but not completely) to prevent the introduction of popular, but ineffective measures.

In Australia, community groups have played no major role in the introduction of effective traffic safety measures. There have been attempts to set up chapters of MADD in Australia, but they have been unsuccessful. Partly this may be because the public are satisfied with current government actions in combating drunk driving, but partly it may reflect the view that if additional measures are necessary, then government will ensure that this occurs, rather than public agitation being required.

### ***Parliamentary committees as a mechanism for improving safety culture***

The three most populous States (NSW, Victoria, and Queensland) and the Federal Government have Parliamentary Committees that conduct Inquiries into road safety matters. Each of these Committees has representation from all major political parties, thus minimizing party politics and promoting bipartisan support for its recommendations. While the Committees do not have legislative powers, for most of the Committees the Government is required to respond to the recommendations of the Committees within a set period (three or six months).

The role played by the Parliamentary Committees in the introduction of new road safety measures is not always direct but has been significant, particularly in Victoria (see Clark, Haworth, and Lenné 2005). The Inquiries gather material and discuss and air new road safety issues or proposed initiatives. This serves two purposes: it identifies or defuses opposition from interest groups, the public, or other political parties, and it also educates parliamentarians about road safety. The effectiveness of the Federal Committee is limited by the restricted role that the Federal Government can play in road safety but, nevertheless, its Inquiries have raised the profile of road safety issues such as truck driver fatigue.

## ***Institutional arrangements***

While Australia is sometimes viewed from abroad as a monolithic entity, in reality, the approaches taken to road safety have varied considerably among the States. The States have differed in the nature (overt versus covert, mobile versus fixed) and extent of speed camera programs and the nature, extent, and coordination with enforcement of road safety advertising. Since the mid-1980s at least, the different approaches may have reflected not so much difference in what people think, but in how institutional responsibility for road safety is organized, which influences the amount of resources available to be distributed.

In Victoria, all vehicle owners are required to pay their compulsory third-party injury-insurance premium to the government-owned Transport Accident Commission (TAC) which is required as part of its Act to undertake road safety measures. Beyond its legal requirements, the Transport Accident Commission has spent large sums on road safety advertising and other initiatives (e.g., purchase of improved breath-testing and speed-enforcement equipment for the Victoria Police tied to evaluation requirements), viewing this expenditure as investments in reduced claims, rather than as “dead money.” In addition, the Victorian Government has extracted dividends from the TAC to pay for large-scale programs to treat hazardous road locations.

This paradigm has identified the importance of identifying the organizations that benefit financially from improvements in road safety. If such organizations treat road safety expenditures as investments, then they will also fund evaluations to monitor the process of implementation and to measure the road safety benefits (particularly in terms of their own financial performance). Thus, the investment cycle becomes sustainable.

Yet this does not work for all organizations. The public health system benefits financially from reductions in hospital admissions and presentations resulting from successful road safety initiatives, but does not “make” money. Even in Victoria, the public health system does not invest in road safety.

In New South Wales and Queensland, the government acts as a regulator of compulsory third-party injury insurance, rather than as a monopoly insurer. In these States, the regulator has a keen interest in road safety, but relatively little revenue to use to influence the implementation of road safety measures.

At least in some States, Australia is different, not just in the types of road safety measures that have been introduced, but also in their magnitude. Evaluations have shown that there is a threshold for effectiveness for some programs (e.g., random breath testing and, perhaps, road safety advertising) that means that limited investment may not give proportional returns. Part of this threshold effect is that the perceived risk of detection by enforcement needs to reach a certain level before widespread behavioral change occurs. A more subtle contributor is that Government needs to show by its allocation of resources that it is serious about an issue before the public will also become serious. In this way, the safety culture functions by having the government leading the way.

## ***Public education to reduce the “other driver” effect***

One of the psychological factors identified earlier in this paper is the “other driver” effect, where drivers consider that they are safer than other drivers and that the other driver causes crashes and, therefore, should be the subject of education and enforcement. While some Australian researchers point out that this effect still exists in Australia (e.g., Tay and Watson 2002), the coordination of high levels of public education and enforcement has targeted these views with some measure of success. We identify three components of this approach that have contributed to changes in driver behavior.

Firstly, the public education campaigns included advertisements where the harmful outcome was being detected by Police and fined or arrested, rather than a fatal crash. Thus, the consequence was changed from one which was a statistically unlikely event (which could be argued would only happen to other drivers) to a statistically much more likely event (particularly given the high levels of enforcement that accompanied these campaigns).

Secondly, the public education campaigns involved extensive research to maximize their effectiveness in changing driver behavior. Messages and concepts were pretested with focus groups of the target audience, ongoing audience monitoring was undertaken, and evaluations of the effects on the target crash types for the target populations were undertaken. This allowed campaigns to be designed and modified to increase their effectiveness. For example, pretesting and other research identified that young people were more concerned by disfigurement and disability than death. This led to an advertisement that stressed disability and the pain and social isolation associated with rehabilitation.

Thirdly, the drivers in the advertisements were portrayed as ordinary people in ordinary situations, rather than villains. For example, speeding was detected as something that a mother might do in hurrying to pick up her child or fatigue might be part of leaving for a holiday trip. The aim was to create scenarios that the target audience could identify with.

## ***Next steps for Australia***

The reductions in fatality numbers and rates in Australia have slowed in recent years, and this has been a cause for concern and a catalyst for reassessment of strategic approaches. In some States of Australia, there is increasing realization that the big advances possible from behavioral-control strategies have been achieved and that while the effort is needed to maintain these advances (e.g., maintain the level of deterrence of drunk driving), significant breakthroughs require other approaches. In other States, there is still much that could be done to improve behavioral-control strategies for speeding (e.g., introduce more covert speed cameras). In rural and remote areas, the behavioral control strategies that have been so successful in some cities have not proven to be feasible because enforcement is relatively difficult. Thus, the Australian National Road Safety Strategy and the newly developing strategies in Victoria and Western Australia are focusing less on interventions to change driver behavior and more on moving towards a safe system. The safe system approach is, in essence, an Australian adaptation of the European Vision Zero and Sustainable Safety models. It could be described as Vision Zero without the moral imperatives. The 2005 and 2006 Action Plan for the Australian Road Safety

Strategy (ATC undated) introduces the Safe System concept as the “overarching framework for road safety intervention”. This approach emphasizes the ways in which the safety of roads and roadsides, speeds, and vehicles combine to affect total road trauma.

Australia still has a long way to go to achieve an optimum safety culture. The need to match speed limits to road infrastructure quality has been identified as one of the fundamentals to producing a Safe System, but speed limits are still often the same on divided and undivided roads, 2- and 4-lane roads, and sealed and unsealed roads. Unless there is a reassessment of the relative costs of lives saved and time delays used in calculating the benefits and costs of road safety initiatives, the matching of speed limits and road-infrastructure quality will remain biased toward mobility and away from safety.

## **Some steps towards creating a better-functioning traffic safety culture**

---

As part of the development of this paper, several steps to creating a better-functioning traffic safety culture in the United States have been identified.

Firstly, there is a need to investigate what the US public knows about the size of the highway safety problem and effective measures. This would help us to know how much the government and public acceptance of traffic injuries and deaths result from lack of knowledge, rather than conscious acceptance and could guide strategies to change this apathy. Potentially this investigation could form the basis of a credible, on-going monitoring system that could be used to measure the effects of public education and changes in safety culture in the US (modeled on Community Attitudes to Road Safety surveys in Australia).

Secondly, we need to find out more about where is it best to put efforts in changing the highway safety culture. For which issues, when and how should we target public, bureaucracy, or politicians?

Thirdly, the paper found that there are strengths in some areas of safety culture in the US, specifically in relation to roads and vehicles. It would be useful to identify what currently exists in both cultures that can be used as a resource to create a well-functioning (or better-functioning) traffic safety culture.

Fourthly, we know that there are stronger safety cultures in some other transport modalities such as aviation and rail. It may be useful to investigate how they got to where they are and whether we can recreate or adapt some of these factors to improve highway safety culture.

## **Acknowledgment**

---

The authors would like to acknowledge the input of Associate Professor Malcolm Vick of James Cook University, Queensland, Australia into the discussion of historical factors influencing government intervention in Australia.

# References

---

- ATC. undated. *National Road Safety Action Plan 2005 and 2006*. Canberra: Australian Transport Council.
- ATSB. 2006. *International road safety comparisons. The 2004 report. A comparison of road safety statistics in OECD nations and Australia*. Canberra: Australian Transport Safety Bureau.
- Bonnie, R. J., C. E. Fulco, and C. T. Liverman, eds. 1999. *Reducing the burden of injury*, Institute of Medicine: National Academy Press, Washington DC.
- Boyle, J., and K. Sharp. 1998. *National Highway Traffic Safety Administration customer satisfaction survey*. DOT HS 808 797, Washington DC.
- Clark, B., N. Haworth, and M. Lenné. 2005. *The Victorian Parliamentary Road Safety Committee—A history of inquiries and outcomes* (Report No. 237). Melbourne: Monash University Accident Research Centre.
- Connor, S. M., and K. Wesolowski. 2004. Newspaper framing of fatal motor vehicle crashes in four Midwestern cities in the United States, 1999–2000. *Injury Prevention* 10:149–53.
- Delaney, A., H. Ward, M. Cameron, and A. F. Williams. 2005. Controversies and speed cameras: Lessons learnt internationally. *Journal of Public Health Policy*, 26 (4): 404–15.
- Douglas, M. 1985. *Risk acceptability according to the social sciences*. New York, NY: Russell Sage Foundation.
- Evans, L. 2003. A new traffic safety vision for the United States. *American Journal of Public Health* 93 (9): 1384–6.
- Farmer, C. M. and A. F. Williams. 2005. Temporal factors in motor vehicle crashes. *Injury Prevention* 10:149–53.
- Ferguson, S. A., A. P. Hardy, and A. F. Williams. 2003. Content analysis of television advertising for cars and minivans: 1983–1998. *Accident Analysis & Prevention* 35 (6): 825–31.
- Haworth, N., B. Ungers, P. Vulcan, and B. Corben. 2001. *Evaluation of a 50 km/h default urban speed limit for Australia*. Melbourne: National Road Transport Commission.
- Haworth, N., P. Vulcan, and P. Sweatman. 2003. Benchmarking truck safety in Australia. *Road & Transport Research* 12 (1): 64–70.
- Insurance Institute for Highway Safety. 2001. Education alone won't make drivers safer. *Status Report* 36 (5), Arlington VA.
- . 2003. Faster travel and the price we pay. *Status Report* 38 (10), Arlington VA.
- Jasanoff, S. 1998. The political science of risk perception. *Reliability Engineering and System Safety* 59: 91–99.
- Johnston, I. J. 1991. Effective strategies for transport safety: An Australian's perspective. *1991 Westminster Lecture on Transport Safety*.
- . 2004a. *Improving road safety in the longer term—finding the right buttons to push*. Monash University Accident Research Centre, Melbourne, Australia.

- . 2004b. Reducing injury from speed related road crashes. *Injury Prevention* 10 (5): 257–9.
- Kristof, N. D. 2004. 117 deaths each day. *New York Times*. March 13, 2004.
- Mohan, D. 2003. Road traffic injuries—a neglected pandemic. *Bulletin of the World Health Organization* 81 (9): 684–5.
- National Highway Traffic Safety Administration. 2004. *Traffic safety facts 2004*. DOT HS 809 919, Washington DC.
- O’Neill, B., and S. Y. Kyrychenko. 2006. Use and misuse of motor vehicle crash death rates in assessing highway safety performance. *Traffic Injury Prevention* 7: 307–18.
- Tay, R., and B. Watson. 2002. Changing drivers’ intentions and behaviours using fear-based driver fatigue advertisements. *Health Marketing Quarterly* 19 (4): 55–68.
- Teknekron Research, Inc. 1979. *1979 survey of public perceptions on highway safety*. DOT HS 805 165, Washington DC.
- Tingvall, C., and N. Haworth. 1999. *Vision Zero—an ethical approach to safety and mobility*. Presented to the 6<sup>th</sup> ITE International Conference Road Safety & Traffic Enforcement Beyond 2000. Melbourne, Australia.
- Walton, D., and P. C. McKeown. 2001. Drivers’ biased perceptions of speed and safety campaign messages. *Accident Analysis & Prevention* 33: 629–40.
- Williams, A. F., N. N. Paek, and A. K. Lund. 1995. Factors that drivers say motivate safe driving practices. *Journal of Safety Research* 26 (2): 119–24.

## Biographical statements

---

**Allan F. Williams** is a Social Psychologist with a Ph.D. from Harvard University. He has spent his career doing research on social issues, including drinking behavior, preventive health behavior, and motor vehicle injuries. In 1972 he joined the Insurance Institute for Highway Safety, where he held various positions in his 30+ years there, retiring as Chief Scientist in 2004. Dr. Williams is now consulting on highway safety issues. He has published more than 300 articles in a wide variety of areas, with emphasis on young drivers, alcohol and other drugs, occupant restraints, and the status of highway safety as a social problem.

Dr. Williams has received a Widmark Award from the International Council on Alcohol, Drugs and Traffic Safety, and a Public Service award from the National Highway Traffic Safety Administration. In 2006 he received a Distinguished Alumnus award from Wesleyan University in recognition of his contributions to highway safety.

**Narelle Haworth** is Professor in Injury Prevention and Rehabilitation at the Centre for Accident Research and Road Safety–Queensland, Australia. Prior to her current appointment she spent 18 years at the Monash University Accident Research Centre in Melbourne, Australia, where she led research projects in almost all areas of road safety, including fatigue in driving, seat belt wearing by truck drivers, road user behavior in developing countries, improving data collection methodologies, driver training and licensing, coin-operated breath testing, motorcycle safety and single vehicle crashes. In addition to undertaking research, Narelle has assisted States and large organizations in the development of road safety strategies and provided advice and monitored their implementation. is Professor in Injury Prevention and Rehabilitation at the Centre for Accident Research and Road Safety–Queensland, Australia. Prior to her current appointment, she spent 18 years at the Monash University Accident Research Centre in Melbourne, Australia, where she led research projects in almost all areas of road safety, including fatigue in driving, seat belt wearing by truck drivers, road user behavior in developing countries, improving data collection methodologies, driver training and licensing, coin-operated breath testing, motorcycle safety and single vehicle crashes. In addition to undertaking research, Narelle has assisted States and large organizations in the development of road safety strategies and provided advice and monitored their implementation.