THE EFFECTIVENESS OF DRINK/DRIVE AND SPEED COUNTERMEASURES IN VICTORIA AUSTRALIA

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1 Abstract

The State of Victoria, Australia has significantly reduced the overall road toll and the contribution of drinking drivers by a combination of counter-measures. In the three years to June 1992 road deaths were reduced by an average 53%. Over twenty years this is a reduction from 80 deaths to 17 per 100,000 registered vehicles, or from 31 to 13 per 100,000 population, giving Victoria the lowest death rate per vehicle in the developed world. Random Breath Testing is widespread and results in 1.2 million tests per year. Introduction of automated speed detection equipment has lead to a reduction of average road speeds.

1.1 Introduction

Victoria is the second most populous state of Australia, located in the south-eastern corner of the vast continent. It has a population of 4.5 million people, most of whom live in the sprawling capital city of Melbourne. There are 2.9 million registered vehicles in the state which
gives us one of the highest car ownership rates in the world. With widely separated communities and sprawling cities, Australians are very dependent on their cars. As communities we have paid dearly for our personal mobility.

Victoria has a single state police force of 10,000 sworn members and 2,500 public servants. The Department of Forensic Medicine is part of the Victoria Police providing clinical forensic medical services to persons involved in a judicial inquiries. There are full time forensic physicians and forty part-time forensic medical officers. Although the forensic practitioners are employed through the police department they have fought for recognition of their independence and professionalism. Traffic Medicine is one of the facets of the work of the Department.

Traffic safety has long been a significant public health and law enforcement issue. Over the past 25 years there have been numerous road safety initiatives. It became compulsory to wear seat belts in 1970. In 1974 a state-wide speed limit of 100 kilometres per hour was set for all highways. Random Breath Testing for alcohol began in 1976. Newly licensed drivers were limited to zero blood alcohol concentration in 1984. Automated speed detection commenced in 1989. These legislative and law-enforcement strategies have been complimented by community education programs which have resulted in a significant reduction in the road toll and associated casualties at a rate greater than the national average. Victoria now boasts one of the lowest rates of traffic casualty in the western world.

2 The Victorian Road Safety Strategy

2.1 Objectives

Road trauma is still the single greatest cause of death in Victorians aged less than 45 years. In the 1980's the trend towards declining road fatalities, which had been evident for most of that decade, slowed considerably and then the death toll began to rise. In 1989 there were 776 people killed on Victorian roads: the highest number for ten years.

In that year the State Government established a Road Safety Coordinating Council to bring together all the agencies involved. The aim was to develop strategies that would reduce traffic collisions, injuries and fatalities. The Council set itself the target of reducing the road deaths by 30% to less than 500 annually, and reduce serious casualties by 40% by the year 2000. It was estimated that this would save 1000 lives, prevent 10,000 serious injuries and save at least $Aust 2 billion.

The campaign was so successful that the target of less than 500 deaths per year was achieved in the first two years. This paper looks at some
of the law-enforcement components of that change. A companion paper looks at the marketing of road safety strategies.

2.2 Implementation

The achievement of these road safety objectives challenged policy makers to ponder how to modify driver behaviour whilst maintaining a high level of community support. Critical analysis of fatal collisions revealed that the human factors that contributed to 93% of collisions were -

- inappropriate speed
- alcohol and drug impairment
- failure to use seat belts
- fatigue
- impatience and carelessness.

It was reasoned that behaviour is determined by three main factors - values, attitudes and perception. Values are those things the individual holds to be culturally or personally important. Values are essentially prejudices that are deeply ingrained and cannot easily be changed. Attitudes are learned judgements based on experience. Although attitudes can change with time, it is only as a result of suitable experience. Perceptions or the way we see the world about us are instantaneous, stimulated by the environment and short lived. We can change peoples perception by modifying the environment. The philosophy behind the Road Safety Strategy is that law enforcement initiatives can be used to modify perceptions to produce short term behavioural change. If this experience persists for long enough and is combined with community education, it will act to change attitudes.

One of the most important attitudes to change was the apparent acceptance by so many people that road trauma was inevitable. Compared to homicide, road trauma has been between five and ten times more prevalent yet is more easily accepted. The aim of the Road Safety Coordinating Council was develop a "safety culture" in which the community accepted ownership of road safety.

All government agencies were directed to support the strategy by:

- targeting problem areas;
- reducing number and severity of crashes;
- improved engineering of cars, roads and traffic systems;
- altering behaviour of road users;
- reduce demand for road travel.

It was recognised that the limited resources available could best be utilised by obtaining community support for and involvement in road safety.

2.3 Random Breath Testing

Community attitudes to drinking and driving have been targeted for nearly thirty years. Victoria adopted the use of evidential breath
analysis in the 1960s and we began Random Breath Testing (RBT) in 1976. In those days the objective was based on detection and prosecution of offenders:

"to identify and prosecute as many alcohol affected drivers as possible with a view to removing them from our roadways".

The effectiveness of that early program was limited by the technology available for screening tests. The only device in use in Victoria was the Draeger "Alcotest" and less than 75,000 tests were conducted annually. In the 1984 small buses were purchased to give the program mobility and more resources were devoted to the task producing encouraging results. The change to fuel cell based instruments improved efficiency and cost effectiveness. The early results were encouraging. The percentage of drivers killed with a blood alcohol concentration above 0.05% had been around 49% form the early 1950s. In the early 1980s it began to drop reaching 33% in 1989.

In 1988 a national study of Random Breath Testing identified that the primary benefit from the program not the detection of intoxicated drivers, but the generalised deterrent effect that prevented drink driving. The study concluded that to gain maximum benefit from Random Breath Testing the program must be

- highly visible;
- rigorously enforced;
- sustained;
- well publicised.

The earlier more punitive approach of the 1970's gave way to a preventative and educational approach in the late 1980's. The Road Safety Component of the Victoria Drug Strategy identified the aim that a feature of a safer road system would be to develop the community attitude that:

"Drink driving is socially unacceptable and the adverse effects of various drugs on driving must be more clearly understood."

The Victoria Police established a specialised Traffic Alcohol Section to administer a program of High Profile Random Breath Testing. The section has thirteen specially built buses which are equipped as mobile police stations. Over one million tests are now conducted per year (one in two licensed drivers). The police administering the program have come to see that apprehending offenders is not nearly as important as creating the perception that drinking drivers are likely to be caught.

Associated with this initiative on the street has been a highly visible advertising campaign on prime-time television and radio that is described in another paper. The hospitality industry has developed educational programs to encourage the safe dispensing of alcohol. The
brewers and distillers are cooperating with research and education into the safe and responsible use of their products.

2.4 Speed Cameras

Another high risk behaviour targeted by law-enforcement initiatives is excessive speed. The introduction of a state-wide limit of one hundred kilometres per hour was followed by a reduction in fatalities. As an integral part of the State Road Safety Strategy it was decided to introduce automated speed detection equipment on an unprecedented scale. There are 2.9 million vehicles in Victoria. Around 2.4 million vehicles are currently checked for speed each month. In other words, every vehicle in the state is likely be speed checked within a six week period on average. There has been a massive change in driver behaviour and road speeds have dropped significantly. In July 1990 15% of vehicles were travelling over the speed limit in 100 km/h zones. By July this year this had dropped to less than 2%.

Great care is taken in choosing sites for speed camera location. The sites are chosen because they represent areas of known or potential speed hazard, and where speed monitoring does not interrupt traffic flow. The sites must be away from sources of technical interference, and avoid situations that the motorist would consider unfair (e.g. bottom of hill). In the interest of both fairness and community acceptance, the threshold on the speed detectors is set 10% above the posted speed limit to allow for vehicle instrument error. A further 3 kilometres per hour is allowed for instrument error.

Film from the cameras is developed and digitally scanned into a computer which uses artificial intelligence to locate the characteristic shape of the vehicle registration plate. The computer then attempts optical character recognition to "read" the number plate. If the plate is readable the computer will automatically retrieve owner details from the licensing authority by modem link. If the plate is unreadable the operator can use the computer to optically enhance the photographic details. The operator must verify that legally enforceable speed infringement has occurred. A second operator at another screen checks the details and is responsible for quality assurance. This system can process one infringement per minute on each of 15 work stations.

The reality of speed infringement by otherwise law-abiding citizens is being brought home to most drivers. In the eighteen months to June 1992 almost one million speed infringement notices had been issued. This means that every Victorian driver either has received a speeding fine or knows someone who has. More importantly those drivers who have a tendency to speed have had several notices.

Apart from the financial penalty, each infringement notice costs the driver between one and three points from their licence. Twelve points
lost in a three year period leads to loss of licence. Those drivers sitting on ten or eleven points are very thoughtful and have modified their behaviour. As the hours spent by police in the use of this technology have gradually increased to the target of 4000 hours per month, the number of vehicles exceeding the threshold speed has fallen.

The effectiveness of this program is best illustrated by the targeting of "black spots. One identified high risk area was specially chosen as a speed camera site after several serious injury and fatal accidents occurred in which speed was implicated as a causative factor. In July 1990 twenty-one percent of vehicles were detected passing through this area travelling in excess of the threshold. By June 1992 this had dropped to 1.4%.

3 CONCLUSIONS

Both of these law enforcement initiatives have a general deterrent effect by creating a perception that detection of infringement is more likely. By themselves random breath testing and speed cameras might have been just a pair law enforcement initiatives associated with short term gains. But the initiatives have been associated with the public education campaigns discussed elsewhere and are associated with a high level of public acceptance and a gradual changing of public attitudes.

In the three years to June 1992 road deaths were reduced by 43% compared with reduction of 20% nationally. Over twenty years this is a reduction from 80 deaths per 100,000 registered vehicles to 17, or from 31 per 100,000 population to 13. In Victoria all medical and rehabilitation costs associated with road trauma are met by a single insurer. The savings in the 1991/92 financial year allowed the Traffic Accident Commission to return $Aust 750 million to the Government for other purposes.