

## Project Update

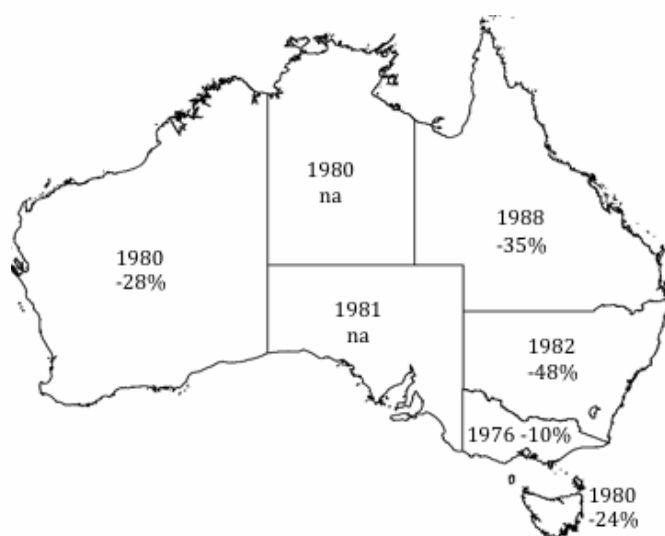
## Random Breath Testing: Impact on Alcohol Related Crashes

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## Overview

In 1962, the World Health Organisation released a seminal paper on road traffic accidents noting that “there is much evidence to indicate that alcohol consumption by a road user is a major factor in road traffic accident causation”.<sup>1</sup> Yet, forty-years on, driving whilst under the influence of alcohol remains an ongoing and serious problem in motorised countries.

Random Breath Testing (RBTs) as a mechanism to reduce alcohol-related traffic accidents was introduced in Australia in 1976.



**Figure 1: By state, year of first RBT and estimated impact of road fatalities**

Following the introduction there was a significant decline in alcohol-related traffic crashes (ARTC) with RBTs being attributed to an almost 50% reduction in the number of fatal accidents; and by extension the introduction of RBTs has resulted in a reduction in the social and economic impacts of alcohol-related crashes. Figure 1 highlights the year in which each state first conducted an RBT program and the estimated reduction on road fatalities associated with RBTs.

The effectiveness of RBTs in reducing ARTC has principally resulted from *detering* drivers from drink-driving for fear of being caught. That is, the mechanisms of deterrence models, as describe by Ross Homel is to discourage motorists from engaging in acts of criminality – in this case driving under the influence of alcohol – of which RBTs are an effective deterrence model.<sup>2</sup>

## The Emergence of Random Breath Testing in Australia

The abuse of alcohol is one of the most prominent causes of preventable illness, injury and fatality within Australia. Four

1 L. G. Norman (1962). *Road traffic accidents: Epidemiology, control and prevention*. Geneva, Switzerland, World Health Organisation. P62

2 R. Homel (1988). 'Random Breath Testing in Australia: A complex deterrent.' *Australian Drug and Alcohol Review* 7(3): 231-241.

people are killed and 90 people are injured daily on Australian roads as a result of alcohol-related traffic accidents. The social and economic costs are staggering. In order to reduce alcohol-related crashes and their related impact on individuals and society, significant resources have been allocated to develop appropriate strategies to reduce and deter drink-driving; one of these measures was the introduction of RBTs.

## RBTs: A ratio against licensed drivers

Currently in Australia no federal regulatory policy exists to set how many RBTs should be conducted annually. Whilst Queensland police has an 'in-house' agreement for the annual number of RBTs to be conducted (1 RBT:1 licensed driver), most other states and territories simply adopted Homel's original suggestion of 1 RBT per 3 licensed drivers.<sup>3</sup> Our research provides a preliminary analysis of alcohol related crash outcomes for two states – Queensland and Western Australia.

## Data sources

Our research draws on three administrative data sources: the number of annual random breath tests conducted; the monthly number of ARTC - where blood alcohol concentration reaches or exceeds 0.05g/dL of alcohol in blood; and the annual number of licensed drivers (all supplied by jurisdictional police). For Western Australia, administrative data from all three sources spans was available from January 2001 to December 2010 (inclusive). Due to administrative restrictions, Queensland data for RBTs spanned January 2000 to December 2011, for ARTC July 2004 to June 2009, and for number of licensed drivers, June 2002 to December 2011.

## Results

The primary finding of this research reveals different patterns of RBTs and ARTC exists between Queensland and Western Australia (see Figure 2). In Queensland (see Figure 2a), the average rate of RBTs has steadily increased to maintain the 1:1 RBT to licenced driver ratio. The average number of ARTC between 2004 and 2008 remained relatively steady with an average of 150 crashes per month, before the number of ARTC slowly increased, with an average of 163 crashes per month between 2008 and 2009.

In Western Australia, the monthly average of RBTs conducted decreased over the ten year period. The average number of RBTs conducted in 2010 was almost half that of the number of RBTs conducted in 2001. This highlights a notable shift from a deterrence-based to a targeted-based RBT initiative. Between 2005 and 2009 the rate of RBTs decreased by one-third, yet drink-driving charges were on the rise. This data reflects a transition towards targeting resources to apprehend drink drivers. Notably, this approach contradicts the purpose of RBTs as a deterrent. And as other crash data shows, the steady rate of alcohol-related crashes averaging 77 per month between 2001 and 2006, surged dramatically between 2006 and 2009 to an average of 100 ARTC per month.

3 R. Homel (1989). *Crime on the Roads: Drinking and Driving*. Alcohol and Crime Conference, Perth, Australian Institute of Criminology.

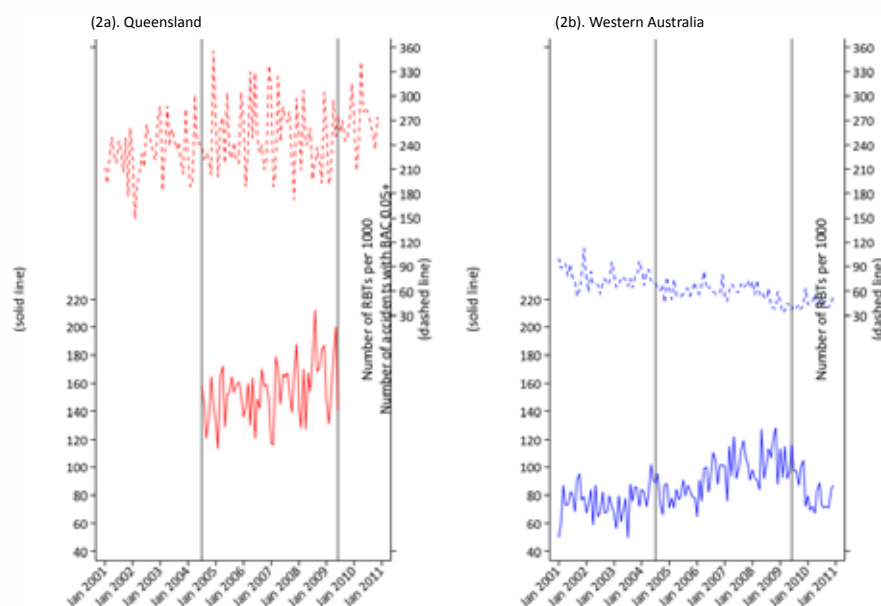


Figure 2: Absolute number of alcohol related traffic crashes and RBTs by state

While the absolute number of ARTC in Queensland is roughly twice that observed in Western Australia (see Figure 2 above), the total number of licensed drivers in Queensland is more than double that of Western Australia. We have adjusted for this difference by modelling the proportion of alcohol related traffic accidents relative to the number of monthly RBTs conducted (presented per 10,000 RBTs).

Figure 3 highlights a downward trend between the number of ARTC per 10,000 RBTs (y-axis) and the ratio of RBTs conducted against the annual number of licensed drivers (x-axis). The nature of the data suggests that where the ratio of RBTs to licensed drivers is less than 1:1 (or 100%), the gain by improving the ratio of RBTs to licensed drivers on reducing

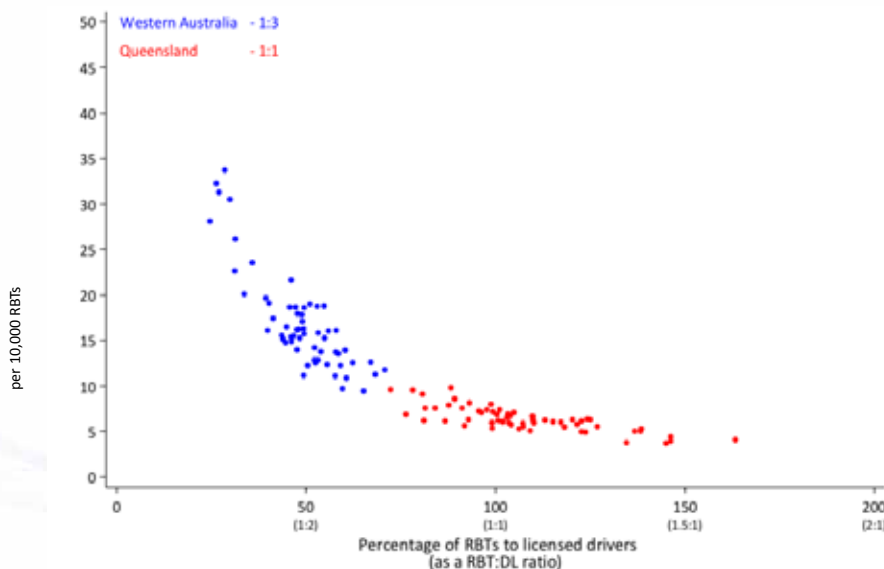


Figure 3: Number of alcohol-related accidents per 10,000 RBTs relative to the percentage of RBTs to licensed drivers

ARTC is substantially greater compared to ratios that exceed 1:1. Our results suggest that increasing the ratio of RBTs to the number of licensed drivers from the Australian default of 1:3 to the Queensland standard of 1:1 could result in a reduction of 17 ARTC for every 10,000 RBTs conducted. While exceeding the Queensland ratio of 1:1 should result in fewer ARTC, the gain is not as substantial. For example, increasing the Queensland ratio to 1.5:1 from 1:1, the reduction of ARTC per 10,000 RBTs would be approximately two.

### The Need to Create a National RBT Minimum

Our research demonstrates a strong link between the number of RBTs conducted annually and the number of alcohol-related traffic accidents that occur where a driver's BAC reached or exceeded 0.05g/dL of alcohol in the blood. The effectiveness of RBTs lies in deterrence

and a key component to deterrence is exposure. Our research shows that as the rate of RBTs conducted increases, exposure to the presence of police increases. Consequently, the number of driver's willing to risk being detected for drinking driving decreases, which in turn lowers the number of ARTC.

The comparison between Western Australia and Queensland showed that Queensland's ARTC rate was almost half the rate of Western Australia while their RBT rate was, in some periods, over four times that of Western Australia. Moreover, if the commonplace RBT ratio of 1:2 in Western Australia doubles to a ratio of 1:1 RBTs to the number of licensed drivers, the expected number of ARTC per 10,000 RBTs should more than halve, from almost sixteen ARTC per month to seven. Using data from Western Australia as an example, these results give

strong credence to the need to increase the number of RBTs conducted in most states and the Federal Government to introduce a national RBT minimum rate.

### Summary

The introduction and use of RBTs in Australia has become an effective law enforcement initiative that has been embraced by the community as both a general and specific deterrent measure against drinking and driving. This initiative has been adopted by law enforcement agencies all over the world, and has been in practice within Australia for over 35 years. As a deterrent measure, its aim is to increase an individual's level of risk towards the ramifications of driving while under the influence of alcohol as it pertains to apprehension or serious injury or death from an ARTC.