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# Effective drink driving prevention and enforcement strategies: Approaches to improving practice

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**Foreword |** *Although Australia has achieved significant reductions in drink driving since the 1980s, it continues to be a leading cause of road fatalities and injuries. A range of countermeasures have been used to address drink driving, although their effectiveness can be affected by a range of implementation issues.*

*Through a review of Australian and international literature, this paper outlines principles of effective drink driving countermeasures. It presents guidelines for the effective enforcement and prevention of drink driving through random breath testing, publicity campaigns, penalties and targeted interventions.*

*The evidence outlined in this paper highlights the importance of implementing effective countermeasures for different populations. Among the general population, personal contact with random breath testing has the strongest deterrent impact on drink driving. Also, targeted interventions that identify the underlying causes of offending are crucial in addressing recidivist drink drivers; a group that contributes disproportionately to road trauma. Strategies that effectively decrease drink driving are vital in the ongoing effort to improve road safety in Australia.*

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Drink driving continues to be a concern in Australia, with a significant proportion of the population reporting such behaviour. A survey of drivers by Owens and Boorman (2011) found that 58 percent reported ever drinking and driving and of those, 72 percent had driven after consuming alcohol at least twice in the previous year. Drink driving also continues to be one of the main causes of road fatalities and injuries, responsible for 30 percent of fatalities and nine percent of serious road injuries in Australia (ATC 2011). In addition to the emotional trauma and social costs, there are significant economic costs associated with road fatalities and injuries. In 2006, the cost of each fatality crash to the Australian community was estimated at approximately $2.6m, while the cost of each hospitalisation crash was estimated at approximately $266,000 (BITRE 2009).

The propensity to drink and drive varies significantly through the driving population, ranging from those who would never consider such an activity to those who offend on a regular basis. Research shows between 20 and 30 percent of drink drivers reoffend and due to their repeat offending and high blood-alcohol concentrations (BAC), contribute disproportionately to road trauma (Freeman & Liossis 2002a; Henderson 1996; Longo, Hunter & Loan 1996; Ryan et al. 1996). Importantly, this high-risk subgroup of drink drivers is less responsive to drink driving countermeasures that have been shown to be relatively effective in addressing drink driving in the general population (Freeman & Liossis 2002a; Harrison et al. 2003).

This paper reviews factors associated with the effectiveness of drink driving countermeasures aimed at the general population and recidivist drink drivers. The review encompasses four key aspects of drink driving enforcement and prevention—random breath testing (RBT), publicity campaigns, drink driving penalties and targeted interventions. The aim of this review is to focus attention on how existing practice can be improved to achieve a greater impact. As such, it is not intended to be a comprehensive

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review of the effectiveness of each measure. Instead, this paper aims to draw out the implications for policy and practice in relation to each of the measures examined.

## Random breath testing

### Background

RBT is a leading drink driving countermeasure implemented in all Australian jurisdictions and many overseas jurisdictions, and has been shown to reduce BAC levels and harms associated with drink driving (Drummond, Sullivan & Cavallo 1992; Henstridge, Homel & Mackay 1997).

First implemented in Nordic jurisdictions in the mid-1970s, RBT involves the random stopping of drivers for the purpose of breath testing for alcohol impairment. RBT is conducted by police in static, highly visible checkpoints or by mobile police on normal patrol duties (Homel 1993). Through RBT legislation, police are empowered to stop any driver at any time for breath testing even if they do not exhibit behaviour suggesting alcohol impairment. In addition, drivers are determined to be impaired if their BAC exceeds a legally prescribed amount.

RBT can be contrasted with sobriety checkpoints (common in the United States), which aim to systematically check every vehicle in order to increase the driver's perceived risk of drink driving detection as a result of the certainty of being stopped. By contrast, RBT is intended to increase the perceived risk of detection as a result of the uncertainty of being stopped, derived from the randomness of the measure. Both appear to achieve similar levels of effectiveness, although it has been argued sobriety checks are perceived to be avoidable by drivers and are considered to be resource intensive, resulting in variable implementation (Babor et al. 2010).

### Deterrence mechanisms

The primary aim of RBT lies in the deterrence of drink driving, with the detection of drink drivers being a secondary aim (Homel 1988). Nagin (1998) noted that perceptions of risk of detection were negatively related to offending behaviour in general. As perceived risk increases, so offending behaviour declines. Homel (1993: 28) argued RBT could be used to influence drivers' perceived certainty of detection for drink driving through the 'unpredictable, unavoidable and ubiquitous' manner in which enforcement was undertaken. Therefore, drivers who are aware of RBT enforcement are less likely to engage in drinking driving behaviour, as they will perceive drink driving as a potentially costly and illegal act (Homel 1988). This is partly due to the direct impact of the sanctions imposed for drink driving (fines, license suspension etc), but also as a result of the social stigma created by drink driving (such as the views of family, friends and employers). However, Nagin (1998) has noted that the stigmatising effect of a sanction only remains if a sanction is imposed infrequently. Indeed, if all drivers received a sanction for drink driving, it would lose its stigmatising influence.

There are two types of deterrence mechanisms derived from RBT—general deterrence and specific deterrence. General deterrence applies to all motorists who are discouraged from drink driving by their awareness of RBT enforcement. General deterrence is largely created and sustained through publicity and importantly, through static, highly visible RBT enforcement. Specific deterrence applies to drivers who have been previously detected and punished for drink driving (Homel 1988). In both cases, the raised awareness of the risks of detection for drink driving affects the decision of drivers to drink and drive. Indeed, in the case of specific deterrence, Homel (1998) found that those convicted of drink driving often cited fear of arrest as a reason for not subsequently drinking and driving.

Deterrence is an unstable process. Drivers who have been previously deterred can be undeterred for various reasons including a failure to observe RBT enforcement and a failure to be detected when they have ventured to drink and drive again. Therefore, the purpose of RBT is to create deterrence and more importantly, to sustain deterrence (Homel 1988).

### Impact on road safety

There have been numerous evaluations of RBT as a road safety measure and these have largely produced positive outcomes. For example, in New South Wales, the introduction of RBT in 1982 led to an initial 48 percent reduction in fatal crashes over a four and a half month period and an average 15 percent reduction in fatal crashes over a subsequent 10 year period. Further, RBT led to a reduction in fatal crashes of 35 percent in Queensland and 28 percent in Western Australia over a four year period (Henstridge, Homel & Mackay 1997). In 1990, the use of static, highly visible RBT checkpoints in Victoria led to a 19 percent net decrease in fatal crashes during peak periods of alcohol consumption commonly referred to as *high alcohol hours* (Monday to Thursday 6 pm to 6 am, Friday 4 pm to Saturday 8 am, Saturday 2 pm to Sunday 10 am and Sunday 4 pm to Monday 6 am; Drummond, Sullivan & Cavallo 1992).

Overseas evaluations of RBT have also been largely positive. In Finland, the introduction of RBT led to a 58 percent decrease in drink driving between 1979 and 1985 (Dunbar et al. in Solomon et al. 2011). In New Zealand, the introduction of RBT in 1993 led to a reduction in fatal and serious crashes of 38 percent in rural areas and 35 percent in urban areas during high alcohol hours (Monday to Sunday 10 pm to 3 am; Mara, Davies & Frith 1996). In Ireland, the introduction of RBT led to a 19 percent decrease in road fatalities in 2006 (RSA 2007).

### Deterrence versus detection-based enforcement

The general deterrence of static, highly visible RBT checkpoints was demonstrated in Victoria in the late 1980s. Although Victoria was the first state in Australia to introduce RBT in 1976, static checkpoints were not introduced until the end of 1989 when 13 'booze buses' were gradually introduced accompanied by an anti-drink driving advertising campaign. From 1989 to 1991, the number of drivers tested increased from 500,000 to 1.1 million as a result of RBT enforcement at the new static checkpoints. As noted earlier, the static RBT enforcement led to a 19 to 24 percent decrease in road

fatalities during high alcohol hours (Delaney, Diamantopoulou & Cameron 2006).

Unlike static RBT checkpoints, mobile RBT units can be discretionary and can be used to breath test specific drivers who draw police attention. These mobile units tend to have higher detection rates of drink drivers compared with static RBT checkpoints. For example, in South Australia, mobile units were found to detect 29 drink drivers for every 1,000 tested, while static RBT checkpoints were found to detect 5.7 drink drivers for every 1,000 tested (Wundersitz & Baldock 2008). Similarly, in Western Australia, mobile units were found to detect one drink driver for every 98 tested, while static RBT checkpoints were found to detect one drink driver for every 131 tested (Harrison et al. 2003). Due to the discretionary nature of mobile RBT operations, they are often used by jurisdictions in targeted operations. This type of enforcement maximises specific deterrence.

Homel's (1988) deterrence model supported static, highly visible RBT enforcement to create and sustain general deterrence. Indeed, recent research provides support for Homel's deterrence model, as direct contact with breath testing was shown to have the strongest deterrent impact on drink driving (Owens & Boorman 2011).

Research also supports mobile RBT enforcement as a means of maximising specific deterrence and complimenting static, highly visible operations (Wundersitz & Woolley 2008). However, Homel (1993) argued that a focus on mobile (detection-based) RBT enforcement would be detrimental to the desired outcome of general deterrence and improved road safety.

Hart's (2005) review of the literature highlighted key reasons why police may focus on detection-based RBT enforcement:

- general deterrence-based enforcement can seem boring to police due to the low detection rates of drink drivers;
- police conducting RBT may lack understanding of the mechanisms underlying general deterrence-based RBT enforcement;
- police may mistakenly believe the detection of drink drivers to be the main mechanism for deterrence and therefore believe testing many drivers with low detection rates is not important; and
- deterrence-based operations can be at odds with traditional perceptions of police roles.

This highlights the importance of training for police involved with RBT operations, particularly in regards to the mechanisms underlying general deterrence-based RBT enforcement.

## Detection and deterrence-based enforcement in rural areas

A number of issues have been identified with rural RBT enforcement that suggest a modified approach may be required. RBT enforcement methods that have been shown to be effective in urban and densely populated areas are less likely to be effective in rural or remote areas for several reasons, including:

- limited access to public transport, coupled with lengthy travel distances between people's homes and alcohol establishments, which leads to increased vehicle use;
- the existence of effective word-of-mouth communication networks in small communities, which significantly undermine RBT operations;
- the relatively high cost of RBT operations due to low traffic on remote roads and limited police resources; and
- police involved with RBT operations are commonly known to drivers (Harrison et al. 2003).

As a result of these confounding factors, a study of rural Australian towns failed to find a link between increased RBT enforcement and perceived probability of detection (Harrison 2001).

Studies suggest a focus on mobile RBT operations may be beneficial in rural areas to address the word-of-mouth effect (Wundersitz & Woolley 2008). Indeed, detection-based practices by police in mobile RBT units may have a greater deterrent impact in rural areas, particularly because their locations can remain relatively unpredictable when compared with static RBT operations (Harrison 2001; Wundersitz & Woolley 2008). This approach can also be beneficial in rural areas where police resources may be limited (Wundersitz & Woolley 2008).

Static, highly visible RBT operations are still valuable in rural areas, as they contribute to general awareness of drink driving enforcement (Harrison 2001). However, these should be supported by mobile units, which can patrol back-roads that may be used by evading drivers (Harrison et al. 2003). A survey of police involved with RBT in rural Queensland suggested there was a preference for smaller 'booze buses', as they could be relocated with relative ease to maximise unpredictability and could be operated with fewer police officers (Hart, Watson & Tay 2003). Harrison's (2001) study of RBT in rural South Australia and Victoria also concluded smaller 'booze buses' would be preferable in rural areas.

## Inability to avoid breath testing and drink driving penalties

The inability of drivers to evade breath testing and drink driving penalties plays a key role in sustaining deterrence. Wilson and Mann (1990) noted RBT operations need to be 'threatening'. That is, drivers should not be able to evade breath testing by using avoidance tactics such as performing U-turns and turning into back-roads.

The problem of drivers evading RBT checkpoints has been demonstrated in studies that have explored the displacement effect of drink drivers. Harrison et al.'s (2003) review of the literature noted:

- after the introduction of RBT in South Australia, there was a 40 percent increase in night-time road crashes on Adelaide's back-roads;
- increased enforcement and publicity led to increased use of back-roads in rural areas; and
- single vehicle crashes were more likely to occur on back-roads compared with main roads due to the relatively low quality of such roads.

The prevalence of avoidance tactics was also highlighted in a recent national study,

which found 13 percent of participants adopted avoidance tactics such as using back-streets and drink driving when RBT enforcement was expected to be likely (Owens & Boorman 2011).

### Strategic deployment of random breath testing operations

The potential for drink driving does not occur uniformly over time and the strategic deployment of RBT operations in accordance with this understanding can be effective at deterring drink driving.

In 1983, a study was conducted in Victoria to explore the relative effectiveness of RBT operations between 4 pm and 8 pm when drink driving was expected to be low and between 8 pm and 4 am when drink driving was expected to be high. The evaluation found a significant 24 percent decrease in serious injury crashes in areas where RBT operations occurred at night between Thursday and Saturday, while there was a non-significant 13 percent decrease in areas where RBT operations were conducted in the afternoon (Armour et al. in Delaney, Diamantopoulou & Cameron 2006). It was concluded that RBT operations during high alcohol hours can be effective at decreasing drink driving and related road trauma (Delaney, Diamantopoulou & Cameron 2006).

While focusing on specific times, RBT operations should still appear to be unpredictable (Harrison et al. 2003; Hendrie 2003). Operations targeting specific establishments and locations should also appear random because persistent targeting may influence drivers' drinking locations, rather than their drink driving behaviour (Harrison et al. 2003).

### Random breath testing as a method of improving police–citizen encounters

Given the scale of RBT operations in many Australian states and territories, the experience of RBT represents one of the most frequent means by which members of the public come into contact with the police. An encounter through an RBT therefore offers an opportunity to improve the sense of procedural justice experienced by the public. By changing the script used by the police in RBT encounters to one that is more procedurally just, satisfaction with the encounter can be improved (Mazzerolle et al. 2012).

### Level of breath testing

The number of drivers tested must be sustained at high levels for RBT to be an effective deterrent (Homel 1988). This is supported by research that demonstrated increasing the number of drivers tested could lead to decreases in drink driving and related road trauma (Delaney, Diamantopoulou & Cameron 2006).

Police commonly utilise RBT blitzes during specific seasons or events. These are periods of increased RBT enforcement when the potential for drink driving is expected to be high. While such blitzes may be beneficial in urban areas, a study in South Australia and Victoria indicated they were less effective in rural areas. Increased levels of enforcement had little impact on the perceived probability of detection and this was likely because rural drivers' perceptions were based on long-term observations of RBT enforcement and were less likely to be influenced by short-term strategies such as RBT blitzes (Harrison 2001).

## Publicity campaigns

### Media campaigns

Publicity campaigns are an important aspect of RBT operations. They are used to create awareness and educate the public about drink driving and RBT operations. They also play an important role in creating and sustaining deterrence (Homel 1988).

Publicity campaigns can highlight particular aspects of drink driving. In a review of eight media campaigns in Australia and the United States, it was concluded

> no clear difference in effectiveness was observed between campaigns that highlighted the legal deterrence of AID [alcohol-impaired driving] and those that highlighted the social and health consequences (Elder et al. 2004: 64).

However, it was noted that media campaigns highlighting the probability of detection and severity of legal sanctions were more likely to influence individual behaviour, while media campaigns highlighting the harm caused by drink driving were more likely to increase community support for measures such as RBT and other drink driving countermeasures (Elder et al. 2004).

Paid media campaigns were highlighted as most preferable as they are given priority by broadcasting stations and screened at specifically desired times and days when the target demographic is more likely to be engaged. In addition, it is important for media campaigns to be pretested with the target demographic prior to broadcasting to ensure they convey the desired message (Elder et al. 2004).

Research from Victoria and New Zealand indicate media campaigns are most effective when linked to RBT enforcement. The evaluation in Victoria assessed the relationship between anti-drink driving television advertising and serious casualty crashes. The research concluded that the anti-drink driving advertising had led to a reduction in serious casualty crashes between 1990 and 1993 (Cameron et al. 1993). A strong link was also established between the advertising campaign and RBT enforcement levels (Cameron et al. 1993).

A similar evaluation was conducted in New Zealand; however, in this case, the drink driving media campaign was not linked to RBT enforcement. The study found the anti-drink driving advertising had little impact on the number of positive breath tests, which the authors attributed to the media campaign's lack of coordination with RBT as demonstrated in Victoria (Macpherson & Lewis 1998).

A recent self-report study also highlighted the need for a link between publicity campaigns and RBT enforcement. The study found creating the perception that motorists will be breath tested solely through publicity campaigns had minimal deterrent impact. It was concluded drink driving publicity would be more effective if followed up with police action to give

drivers personal experience with breath testing (Owens & Boorman 2011).

The study further suggested publicity campaigns focusing on the facts of RBT would be most effective at deterring drink driving as they add credibility to RBT operations. Facts can include information such as the number of drivers tested, detected and penalised, the inability of drivers to avoid breath testing (eg by using avoidance tactics) and drink driving penalties (Owens & Boorman 2011).

### Media campaigns in rural areas

Research in rural areas suggests drivers who drive to establishments where alcohol is served are highly unlikely to use alternate transport to leave the establishment and more likely to drink drive (Harrison 2001). Based on this finding, it was argued that media campaigns and public education should focus on influencing decisions made by drivers before rather than after they choose to drive to an establishment that serves alcohol. For example, a media advertising campaign could focus on alternative transport options a driver can use to travel to establishments. It was also suggested media campaigns in rural areas may be more effective if they focused on community values and the community's disapproval of drink driving (Harrison 2001).

## Drink driving penalties

### Fines and licence disqualification/ suspension

It is widely agreed drink driving penalties should involve fines and licence disqualification/suspension (Wilson & Mann 1990). However, road safety research suggests harsher penalties have minimal impact on driver behaviour particularly when the probability of detection among drivers remains unchanged (Zaal 1994).

For example, two evaluations conducted in Sweden found no link between increased penalties for speeding and rates of speeding (Aberg et al. in Zaal 1994; Andersson in Zaal 1994). Evaluations of drink driving penalties also indicate harsher penalties alone may not have a significant impact on drink driving and road safety (Hart 2005).

This was demonstrated by an evaluation in New South Wales to determine the impact of increased drink driving penalties (most of which were doubled) introduced in 1998 (Briscoe 2004). The study involved a comparison of 1997 and 1999 drink driving court data to investigate the impact of increased penalties on first-time and repeat offending. The results showed a decrease in recidivist drink driving in non-Sydney areas after the new penalties, but this was minimal compared with the severity of the new penalties. Briscoe (2004) noted drivers charged with drink driving after the new penalties may have taken longer to reoffend due to lengthier sanctions that incapacitated them from driving.

Briscoe (2004) concluded the increased penalties would have been more effective if combined with improved drink driving enforcement and importantly, a consistent application of licence disqualification (20% were not disqualified due to dismissals despite the existence of mandatory minimum disqualification periods). Similarly, Smythe and Morris (1996: 11) argued the substitution of licence disqualification/ suspension undermines the sanction as

> research indicates that the most effective penalty appears to be licence suspension, even allowing for the fact that many of those whose licences are suspended continue to drive.

Evaluations from the United States also indicate licence suspension is an effective drink driving penalty (Wagenaar et al. 2007).

### Imprisonment

There is little support in the literature for imprisonment. Indeed, for offenders generally, imprisonment can be criminogenic, leading to higher levels recidivism (Bales & Piquero 2011). Most studies indicate imprisonment is costly and ineffective at reducing drink driving (Henderson 1996; Wilson & Mann 1990). In Arizona, for example, the introduction of statutory minimum jail terms for drink driving in 1990 had no impact on the proportion of drink driving arrests in the five year evaluation period (Fradella 2000).

## Targeted interventions

### Rehabilitation programs

Largely targeted at high BAC and recidivist drink drivers, rehabilitation programs emerged due to a need for less costly and more effective alternatives to imprisonment. They aim to separate drinking and driving by involving drink drivers in education programs to improve knowledge and attitudes, and involving those identified with alcohol disorders in alcohol therapy programs (Ferguson et al. 1999).

Evaluations suggest rehabilitation programs can improve drink drivers' attitudes and decrease recidivism. A long-term evaluation of the Sober Driver Program in New South Wales found drivers who participated in the program were 44 percent less likely to reoffend compared with a matched group (Mazurski, Withaneachi & Kelly 2012). In Queensland, an evaluation of the Under the Limit program found, although participants' drinking and lifestyle behaviour did not differ from a comparison group, they were significantly less likely to report incidents of drink driving compared with the comparison group (Ferguson et al. 2001).

Screening of participants is an important aspect of rehabilitation programs as it helps determine the most appropriate treatment for each drink driver (Ferguson et al. 1999; Freeman & Liossis 2002a). That is because drink drivers are not an homogenous group and may engage in drink driving for a number of reasons including lack of education, lack of skills to separate drinking and driving, and due to the existence of alcohol-related disorders. The underlying causes of drink driving should be identified to inform the type of treatment that is more likely to be effective at addressing drink driving behaviour.

Rehabilitation programs can incorporate a number of treatments.

> They can consist of either educative or health programs, skills-based programs,

short-term and long-term treatment programs, social skills and assertion training, other forms of counselling or a combination of a number of treatments (Freeman & Liossis 2002a: 3).

There is strong support for programs that incorporate education-based and counselling-based treatments to address lack of education and alcohol-related disorders commonly found among repeat drink drivers (Ferguson et al. 1999).

Rehabilitation programs have been found to be most effective when used in conjunction with sanctions aimed at limiting drink drivers' access to vehicles such as licence disqualification/suspension and ignition interlocks (DeYoung 1997).

### Ignition interlocks

Ignition interlocks are primarily aimed at high-BAC and recidivist drink drivers. The ignition interlock device is wired to the ignition system of the vehicle and requires a sample of breath that does not exceed a pre-set BAC level before allowing the engine to start. The device may also require the driver to provide breath samples while the vehicle is in motion to minimise the likelihood of bystander intervention. All BAC readings are recorded and can be downloaded to monitor the drink driving behaviour of interlock participants.

Installation of ignition interlocks may be court-ordered (also known as judicial interlock programs) or may be voluntarily installed (also known as administrative interlock programs) by the drink driver in exchange for benefits such as reduced licence disqualification/suspension periods (Elder et al. 2011; Schonfeld & Sheehan 2004).

Two key challenges have been identified with ignition interlocks. The first challenge relates to recidivism after removal of the device. Ignition interlocks have been shown to be highly effective at preventing drink driving while they are installed, but drink driving behaviour tends to return when they are removed (Freeman & Liossis 2002a; Willis, Lybrand & Bellamy 2009). This was highlighted in a meta-analysis of ignition interlock evaluations from the United States, Canada and Sweden (Elder et al. 2011).

The meta-analysis found the installation of ignition interlocks consistently decreased the re-arrest rates of drink drivers, but re-arrest rates increased after the removal of the device (Elder et al. 2011). This highlights the importance of combining ignition interlocks with interventions that are more likely to foster long-term behavioural change such as rehabilitation programs (Freeman & Liossis 2002a).

The second challenge relates to the limited use of ignition interlocks, despite evidence demonstrating their effectiveness. This is partly because ignition interlocks are costly to install and maintain and in most cases, are paid for by the drink driver (Schonfeld & Sheehan 2004). Further, drink drivers may be unaware of ignition interlocks and some magistrates may be unwilling to offer ignition interlocks when sentencing drink drivers (Freeman & Liossis 2002b). This has led to their limited use, particularly in jurisdictions where the installation of the device is not mandatory (Schonfeld & Sheehan 2004).

The use of ignition interlocks in Australia has been relatively limited compared with overseas jurisdictions such as the United States and Canada. However, their use is likely to increase as jurisdictions such as Queensland, Victoria and South Australia have now implemented ignition interlock-specific legislation mandating the installation of the device for recidivist and high-range drink driving offenders (DPTI 2012; DTMR 2010; Vicroads 2012).

## Conclusion

A significant proportion of road deaths and injuries are caused by drink driving. Recognising factors associated with successful drink driving countermeasures is essential in informing effective drink driving policy and operational decision making. This paper has reviewed research on four types of drink driving responses—RBT, publicity campaigns, drink driving penalties and targeted interventions—and has explored the factors that may influence the success associated with each measure. In particular, it highlights:

- police should aim to breath test a large proportion of licensed drivers each year because direct contact with RBT has the strongest deterrent impact on drink driving. However, it remains unclear how large a proportion of the population needs to be targeted to achieve the optimum deterrent effect and this is a potential area for further research;
- RBT enforcement should be deployed strategically over time and space to sustain deterrence effectively;
- enforcement in rural areas could benefit from a focus on mobile RBT enforcement and the use of smaller 'booze buses' that can be easily relocated to maximise unpredictability;
- RBT offers an important method of police-initiated contact with the public and can be used as a means of improving public satisfaction with police in such encounters;
- publicity campaigns should be coordinated with RBT enforcement to reinforce anti-drink driving publicity through police action and maximise their deterrent impact;
- publicity campaigns in rural areas should aim to influence the decision to drive to establishments that serve alcohol;
- drink driving penalties should be supported by effective RBT enforcement because penalties alone, even when severe, have minimal impact if the perceived probability of detection remains low or unchanged;
- licence disqualification/suspension needs systematic application as it is the most effective penalty for drink driving;
- the underlying causes of repeat offending should be identified to inform effective treatment responses for recidivist drink drivers through rehabilitation programs; and
- jurisdictions should aim to increase ignition interlock use among repeat offenders as the device has been shown to be highly effective at preventing drink driving while installed.

There remain a number of unanswered questions in relation to drink driving countermeasures. For example, what proportion of the driver population should experience an RBT each year? What is the

optimum distribution of RBTs in time and space to maximise a deterrence effect? How can the experience of RBTs as a police-initiated encounter with the public be further improved? Why do ignition interlocks fail to foster long-term behavioural change once removed from vehicles?

Research in these areas would assist in further developing existing drink drive countermeasures to become both more efficient and effective in preventing drink driving.

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