Compulsory Breath Testing

EVIDENCE BRIEF

Compulsory Breath Testing is effective at reducing traffic crashes. International evidence suggests it could be cost effective to increase enforcement.

OVERVIEW

- Random breath testing (RBT) enables Police to test any drivers at any time without needing good cause to suspect that the driver has consumed alcohol.
- New Zealand's RBT regime includes both compulsory breath testing (CBT) and mobile breath testing (MBT). CBT is conducted at Police checkpoints while MBT is conducted by mobile patrols after a driver is pulled over. This evidence brief is focused on CBT checkpoints.[i]
- The New Zealand model of CBT, which developed in Australia, involves bus and car based operations accompanied by mass media campaigns and on-going enforcement.[ii]
- New Zealand Police intend to conduct 2-2.4 million breath tests over the 2016/17 financial year. [iii]
- International and domestic evidence consistently shows that CBT is effective at reducing traffic fatalities, injuries and crashes.
- CBT is also beneficial for uncovering other offences such as disqualified driving and drug offending.[iv]
- CBT appears to be least effective at deterring repeat drink drivers.
- International evidence suggests it could be cost-effective to increase CBT enforcement.

EVIDENCE BRIEF SUMMARY

Evidence rating:	Promising for CBT.
Unit cost:	Unknown.
Percentage reduction in harm:	One meta-analysis estimated checkpoints reduced traffic crashes causing injury by 19% and fatal crashes by 15%.
Current spend:	Exact expenditure on CBT is unknown. The Road Policing Programme estimates that investment in impaired drivers will be $63.4 million in 2017/18.
Unmet demand:	Potentially in rural locations.

New Zealand Police Nga Pirihimana O Aotearoa
Ministry of Justice Tāhū o te Ture
Department of Corrections Ara Poutama Aotearoa

WHAT IS COMPULSORY BREATH TESTING?

Under a RBT regime, Police can breath test anyone driving a motor vehicle on a road without needing good cause to suspect that the driver has consumed alcohol. In New Zealand, this authority is provided by section 68 of the Land Transport Act 1998.

RBT should be distinguished from non-random testing regimes. These are used in parts of the United States and Canada, where constitutional protections against unreasonable search and seizure prevent CBT. Under a non-random testing regime, drivers are only breath tested when the Police have reasonable grounds to suspect alcohol-impairment.[v]

CBT is a form of RBT which has been used in New Zealand since April 1993.[vi] CBT is delivered by Police through larger bus checkpoints and smaller patrol vehicle checkpoints. Mobile breath testing is another form of RBT which is conducted by mobile patrols after a driver has been pulled over. This brief is limited to CBT checkpoints.

CBT is intended to have both a specific and general deterrent effect:

- Specific deterrence - by detecting and punishing drivers who are over the legal alcohol limit.
- General deterrence – by increasing the perceived risk of being caught driving while over the legal alcohol limit across the general population.[vii]

It is difficult to isolate the effects of CBT from simultaneous road policing interventions, media campaigns and improvements in road and car design.

New Zealand's drink driving laws were recently amended. The Land Transport Amendment Act (no 2) 2014 lowered the drink driving limits for adult drivers (those aged 20 years and over).

The lower limits came into force on 1 December 2014. The breath alcohol limit for adult drivers was lowered from 400 micrograms (mcg) of alcohol per litre of breath, to 250mcg. The blood alcohol limit has reduced from 80mg of alcohol per 100ml of blood, to 50mg.

Drivers who produce breath test results between 251-400mcg face an infringement fee of $200 and receive 50 demerit points. Drivers who accumulate 100 or more demerit points from driving offences within two years receive a three month licence suspension.

The zero-alcohol limit for drivers under the age of 20 years remains unchanged.[viii]

DOES COMPULSORY BREATH TESTING REDUCE OFFENDING?

International evidence

All studies examined as part of this evidence brief have shown CBT to be effective in reducing fatal, serious injury and non-injury traffic crashes. The magnitude of this impact varies across studies.

A 2009 meta-analysis included 38 studies on the impact of breath testing checkpoints on crash rates (some studies on non-random checkpoints were included). Breath testing checkpoints were found to reduce the number of traffic crashes causing injury by 19% and fatal accidents by 15%.[ix]

This meta-analysis found the largest crash rate reductions were achieved by Australian methods of CBT, which include car-based operations, high-visibility bus-based operations (since 1989), mass-media publicity campaigns and on-going enforcement.[x] New Zealand has adopted the use of booze buses since 1996. Due to their more recent introduction, the effect of booze buses in New Zealand was underrepresented in the available studies.[xi]

This meta-analysis held that testing all drivers for the presence of alcohol was more effective at reducing road accidents than only testing some drivers.[xii]

A 2002 systematic review included twelve studies on CBT and showed a 22% decrease in fatal crashes and a 16% decrease in injury crashes.[xiii]

A 2005 systematic review of police programmes to prevent road crashes included eight studies on CBT. CBT was found to reduce the number of traffic crashes causing injury by 30.6%.[xiv]

A 2016 study held that Queensland's introduction of CBT in 1988 contributed to a 11.3% reduction in the number of traffic fatalities. The 1998 expansion of CBT in Queensland contributed to a 26.2% reduction in traffic fatalities.[xv]

Finland, Sweden, and France enacted CBT legislation in the late 1970s, followed by Norway in the 1980s. Most European countries followed in the 1990s. Ireland has had CBT since 2006.[xvi] A private members bill which would introduce CBT in Canada has passed its second reading and is currently being considered by select committee.[xvii]

New Zealand evidence

New Zealand's CBT programme was introduced in 1993 and first reviewed in 1994. Between 1992/93 and 1993/94, traffic crashes causing injury between 9pm and midnight decreased by 15.6%. Decreases in day-time and early morning accidents were also observed but were less significant (-3.4% and -8.7%).[xviii]

A subsequent review in 1996 found a 38% reduction in fatal and serious injury crashes in high alcohol hours and a 17% reduction in low alcohol hours. This review only considered urban areas.[xix]

The CBT program was reviewed again in 2004, specifically focusing on the effectiveness of:

1. intensive, moderate profile CBT
2. enhanced media campaigns
3. high profile booze buses

CBT was found to reduce expected night time crashes by 22.1% and enhanced media campaigns by 13.9%. Booze buses yielded a 27.4% reduction; however, it was noted that these buses had only been operating across a third of the country and had been implemented more recently in 1996.[xx]

Buses enhance the visibility of the testing operation and enable the entire testing process to be carried out at the roadside, including evidential breath testing and blood testing. This avoids the need for Police to take drivers back to the Police station.[xxi]

A 2013 study produced for the Ministry of Transport estimated that both CBT and MBT were responsible for reducing traffic fatalities by 1073 deaths between 1990 and 2012.[xxii]

In 2002, the Coalition to Reduce Drinking and Driving (CReDD), an inter-agency advocacy group, released a set of recommendations on best practise for CBT in New Zealand. Recommendations included on-going independent reviews, increasing the use of booze buses, dedicated Traffic Safety Enforcement Units (identifiable through specially marked vehicles) and making publicity a more integral part of the RBT programme.[xxiii]

The Ministry of Transport conducts an annual survey on New Zealanders' attitudes to road safety. In the 2016 survey, 72% of respondents agreed that CBT enforcement helps lower the road toll; however, 33% also thought that the risk of being caught drink-driving was small.

The percentage of people who said they had been stopped at an alcohol check-point dropped to 47%, down from 52% in 2015. Sixty percent of respondents said they seldom saw checkpoints except during blitzes and 38% believed that they could tell where checkpoints would be. Twenty-three percent said they could often avoid checkpoints if they saw them early enough.

Eighteen percent of respondents (increasing to 25% for male drivers and 23% for drivers aged 20-24) admitted that they had driven while "at least slightly intoxicated" during the last year.[xxiv]

WHEN IS COMPULSORY BREATH TESTING MOST EFFECTIVE?

CBT and MBT

The primary goal of CBT should be to generate and sustain general deterrence by increasing the perceived risk of apprehension.[xxv]

Evidence suggests that high visibility checkpoints contribute more to general deterrence while mobile patrols have a greater impact on specific deterrence.[xxvi]

A 2011 Australian study found that contact with breath testing, either personally or by someone known to the driver, had the strongest deterrent impact on drink driving. This suggests that Police should aim for direct contact with as many drivers as possible; this is best achieved through high visibility checkpoints.[xxvii]

Mobile breath testing tends to have higher detection rates.[xxviii] One South Australian study found that mobile patrols detected 29 drink drivers for every 1,000 tested, while checkpoints detected 5.7 drink drivers.[xxix]

CBT checkpoints need to be complemented by mobile patrols to discourage drivers from attempting to evade the checkpoint.[xxx] Most checkpoints have chase cars and may also have car based checkpoints set up in side-streets to test those who attempt to evade the main checkpoint.

Publicity campaigns

The 2009 meta-analysis held that CBT was most effective when high visibility booze buses and extensive publicity campaigns were used.[xxxi] Other studies have reiterated the importance of publicity campaigns for enhancing and maintaining the general deterrent effect of CBT.[xxxii]

These publicity campaigns should focus on the CBT process, the probability of detection and potential punishments, rather than just on the harms caused by drink driving.[xxxiii]

Optimum level of enforcement

International evidence suggests it could be cost-effective to increase levels of CBT enforcement. At least one breath test per licensed driver per year is recommended by multiple studies.

The 2016 study found that increasing the number of breath tests conducted in Victoria by 50% would reduce fatal crashes by 4.56%. This would result in 16 fewer fatal crashes and an overall societal net benefit of $153 million per annum. The study relied on transport data from 2012-13; during which Victoria conducted 3,194,332 alcohol screening breath tests.[xxxiv]

A 2012 Norwegian study found that increasing drink driving enforcement by 50% would decrease traffic fatalities nationally by 3.3% and provide a benefit-to-costs ratio of 12.87.[xxxv]

A 2015 study found that Australian states with a CBT to licensed driver ratio of 1:1 had lower reported rates of drink driving (8.38% to 12.49% across New South Wales, Queensland, Victoria and Tasmania). States where the CBT to licensed driver ratio is 1:2 or 1:3 (South Australia, Australian Capital Territory and Western Australia) reported higher drink driving rates ranged from 13% to 14.56%.[xxxvi]

A 2013 Australian best practice guide held that breath testing rates could be increased to 1.5 tests per licensed driver per year before cost-effectiveness would be in doubt.[xxxvii]

A 2013 Australian study found that for every 10% increase in the ratio of RBTs to licensed drivers, there is a 15% decrease in the rate of alcohol-related traffic accidents per 100,000 drivers.[xxxviii] The study did not specify at what point this relationship would plateau.

Timing

To alter motorists' behaviour for the rest of the evening, CBT should operate early in the evening (e.g. 6pm to 10pm) and preferably near drinking establishments.[xxxix] CBT operations should also occur later in the evening and in the early morning (e.g. midnight to 2am) as this is when most drink driving occurs.[xl] However,

Transport's Public Attitudes to Road Safety Survey shows that these are the times that drivers already expect they are likely to be breath tested. By contrast, only 28% of drivers thought they would be caught if drinking and driving between 2am and 8am and only 14% thought they would be caught during the day.[xli]

Scheduling of CBT in urban areas should be concentrated over Friday and Saturday evenings and should not return to the same testing area within two weeks. [xlii]

General deterrence is maximised by CBT operations that cover at least 20 hours per 100 square kilometres per week in urban areas.[xliii].

While focusing on specific time periods and locations near drinking establishments, CBT operations should still appear unpredictable and random to heighten the perceived risk of detection.[xliv] Persistent targeting of certain areas may influence drinking location rather than driving behaviour.[xlv]

CBT in rural areas

CBT programmes operating in rural areas need to consider the impact of word-of-mouth communication networks, higher operational costs and the increased likelihood that testing officers will be known to drivers.[xlvi]

Evidence suggests that mobile patrols or smaller checkpoints may be more beneficial in rural areas. This is because these types of operations can be regularly moved and their locations can remain less predictable.[xlvii]

An unintended consequence of increasing CBT checkpoints could be the displacement of drink drivers onto lower quality back-roads. One Australian study found that the introduction of CBT in Adelaide corresponded with a 40% increase in back-road night time crashes.[xlviii]

Effect on repeat drink drivers

Evidence suggests that drink driving counter-measures are less effective for repeat drink drivers. Addiction and other mental health issues are major factors in recidivism.[xlix]

Studies have shown that between 20-30% of drink drivers reoffend.[l] Due to their repeat offending and high blood-alcohol concentrations, these drivers contribute disproportionately to road trauma and are less responsive to drink driving counter-measures than the general population.[li]

A survey of 166 Australian recidivist drink drivers found that, despite all participants having been recently sanctioned, only 56% agreed that the chances of being apprehended for drink driving were high. While 73.5% agreed that drink driving was wrong, 77% were also not ashamed of their most recent drink driving conviction.[lii]

RBT vs other breath testing methods

The 2005 systematic review found CBT to be more effect than non-random checkpoints, finding a 30.6% reduction compared to a 22.8% reduction in traffic crashes causing injury.[liii]

WHAT OTHER BENEFITS DOES COMPULSORY BREATH TESTING HAVE?

The aim of CBT is to prevent and reduce drink driving and by extension to reduce alcohol-related traffic injuries and fatalities.

CBT checkpoints also provide a useful opportunity to detect other traffic and criminal offences, such as unrestrained, unlicensed, suspended and disqualified drivers, unwarranted vehicles and drug offending.[liv]

A 2013 Queensland study found that increasing traffic enforcement also decreased burglaries and car thefts in the surrounding area. Comparable reductions were not observed in the control areas where traffic enforcement was not increased.[lv]

CURRENT INVESTMENT IN NEW ZEALAND

In 2015, New Zealand drivers impaired by alcohol or drugs were a contributing factor in 90 deaths, 409 serious injuries and 1,214 minor injuries. The total social cost of these crashes amounted to $790 million.[lvi]

Police aimed to conduct 2.7-3 million breath tests in the 2015/16 financial year; the estimated number of tests conducted was 2 million.[lvii] Police intend to conduct 2-2.4 million breath tests over the 2016/17 financial year.[lviii]

The specific costs of New Zealand's CBT programme are difficult to isolate. The Road Policing Programme 2015-18 estimated that in 2017/18, $63.4 million would be invested in enforcement activities targeted towards impaired drivers. This figure covers the overall costs of service delivery and includes operational delivery expenditure, overheads, and capital expenditure. 'Impaired drivers' includes drivers under the influence of alcohol, drugs and fatigue.[lix]

EVIDENCE RATING AND RECOMMENDATIONS

Each Evidence Brief provides an evidence rating between Harmful and Strong.

Harmful	Robust evidence that intervention increases crime
Poor	Robust evidence that intervention tends to have no effect
Inconclusive	Conflicting evidence that intervention can reduce crime
Fair	Some evidence that intervention can reduce crime
Promising	Robust international *or* local evidence that intervention tends to reduce crime
Strong	Robust international *and* local evidence that intervention tends to reduce crime

According to the standard criteria for all Evidence Briefs[1], the appropriate evidence rating for CBT is Promising**.**

As per the standard definitions of evidence strength outlined in our methodology, the interpretation of this evidence rating is that:

- There is robust international or local evidence that interventions tend to reduce crime
- Investment may well reduce crime if implemented well; and
- Further evaluation is desirable to confirm interventions are reducing crime and to support the fine-tuning of the intervention design

First edition completed: April 2017

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[1] Available at www.justice.govt.nz/justice-sector/what-works-to-reduce-crime/

FIND OUT MORE

Go to the website

www.justice.govt.nz/justice-sector/what-works-to-reduce-crime/

Email

whatworks@justice.govt.nz

Recommended reading

Erke, A., Goldenbeld, C., & Vaa, T. (2009). The effects of drink-driving checkpoints on crashes – A meta-analysis, *Accident Analysis and Prevention,* (41) p.914-923.

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SUMMARY OF EFFECT SIZES FROM META-ANALYSES

Meta-analysis	Treatment type/population	Outcome measure	Number of estimates meta-analysis based on	Percentage reduction in harm
Erke et al, 2009	CBT	Fatal traffic crashes	116	-15%*
Erke et al, 2009	CBT	Traffic crashes causing injury	116	-19%*
Blasie & Dunpont, 2005	CBT	Traffic crashes causing injury	8	-30.6%*
Elder et al, 2002	CBT	Fatal traffic crashes	12	-22%
Elder et al, 2002	CBT	Traffic crashes causing injury	12	-16%

* Statistically significant at a 95% threshold