

Alcohol Ignition Interlocks

EVIDENCE BRIEF

There is evidence that alcohol ignition interlocks reduce drink driving recidivism while installed in offenders' vehicles. However, the evidence for an ongoing effect on recidivism after the removal of an interlock is mixed.

OVERVIEW

- The purpose of alcohol ignition interlocks ('interlocks') is to prevent a vehicle from operating while the driver is intoxicated. They typically require a breath sample before enabling a vehicle's ignition; ignition is only enabled if the alcohol content of the sample is below a threshold set for the device (in New Zealand this threshold is set at zero).
 - Evidence shows that drink driving is significantly reduced while an interlock is installed. However, there is mixed evidence on whether the effect of interlocks on recidivism continues after the devices are removed.
 - An alcohol interlock programme is currently delivered by the New Zealand Transport Agency. The programme requires the use of an interlock for a period of time before a disqualified drink driver's licence is reinstated. The Department of Corrections provides funding for interlocks for certain offenders.
 - Low uptake and high cost of installation are the main limitations on the effectiveness of interlocks. Uptake is reduced by offenders' tendency to prefer licence disqualification over the installation of an interlock.
 - There is some evidence that laws requiring an interlock before reinstating an offender's licence are more effective than less stringent or voluntary interlock programmes.
- There is some evidence for a positive post-intervention effect when alcohol interlock programmes are combined with alcohol and other drug (AOD) treatment.

EVIDENCE BRIEF SUMMARY

Evidence rating:	Promising (while installed) Inconclusive (after removal)
Unit cost:	<u>Licensing</u> : One-off cost of \$266. Additional \$8 per month for insurance. <u>Device</u> : One-off cost of \$150-\$175. Additional \$150-\$175 per month rental. Removal fee \$100-\$135.
Effect size (number needed to treat):	For every 3 – 8 interlocks installed one less person will reoffend
Current spend:	\$1.1m since 2015.
Unmet demand:	High (estimate)

DO ALCOHOL IGNITION INTERLOCKS REDUCE OFFENDING?

Interlocks prevent a vehicle from being started or continuing to operate if the driver has consumed alcohol. They typically require a breath sample before enabling a vehicle's ignition and, for some models, further samples while the vehicle is operating; operation is only enabled if the alcohol content of the sample is below a certain threshold. In New Zealand the threshold is set at zero.

Research on interlocks has predominantly taken place within the United States, likely a result of interlock programmes being introduced earlier in North America when compared to Europe or Australia.ⁱ

Interlocks have been a sentencing option in New Zealand since 2012. However, as of 2014, only 2% of eligible offenders had received such a sentence, and only half of these were actually issued with licenses to drive with an interlock installed. As a result, research on the effectiveness of interlocks within New Zealand is limited.

International evidence

A 2009 Cochrane Library review found that an interlock “reduces recidivism while installed in a vehicle” but “has no long term effects for reducing recidivism.”ⁱⁱ This finding was based on one randomised controlled trial and 10 controlled trials.

The randomised controlled trial covered in the Cochrane Library review studied alcohol offenders who had requested and been granted licence reinstatement. The offenders were randomly assigned to interlock and control groups; 17 out of 698 in the interlock group reoffended, while 46 out of 689 in the control group reoffended. That is, being in the interlock

programme reduced the driver's risk of committing a violation by 64%.ⁱⁱⁱ

A 2011 Community Guide Systematic Review, focussing on alcohol-related crashes rather than recidivism, also found that interlocks are effective while installed but that this effect does not continue after they are removed. The authors write that “interlock programmes are able to reduce recidivism dramatically while the interlock is in place. However, the evidence indicates that it is unrealistic to expect that the device will have persistent effects after removal.”^{iv}

On the other hand, two recent studies have found some evidence for the efficacy of interlocks after they have been removed.^v

The first study was a randomised controlled trial in Maryland (United States), involving 1,927 offenders with two or more alcohol-related traffic violations in their lifetimes. The 944 offenders assigned to the interlock programme were approved for relicensing contingent upon enrolment in an interlock programme, and the 983 assigned to the control group were approved for relicensing contingent upon enrolment in a non-interlock monitoring programme; both groups were prohibited from legally driving with any amount of alcohol in their system. A statistically significant reduction in offending among the interlock group was reported in the 2-year post-intervention period.^{vi}

The second recent study evaluated an interlock programme in Nova Scotia (Canada), and also found that interlocks reduced reoffending both while installed and after removal. This programme involved 929 offenders with interlocks installed (some voluntary and some mandatory) and a control group of 326 without interlocks (all of whom had declined voluntary interlocks). The authors mention that the continued effect may be due to the incorporation of a mandatory treatment component (i.e.,

ongoing alcohol rehabilitation counselling) within the interlock programme.^{vii}

New Zealand evidence

Alcohol interlock programmes have been a sentencing option in New Zealand since 2012 but, partly because of low uptake, there has been limited research to date on the effectiveness of interlocks within the New Zealand context.

A 2014 analysis showed that out of 11,692 eligible offenders in New Zealand over a one year period, only 228 (or 2%) received an alcohol interlock sentence. At the time of the analysis, only one interlock participant had been reconvicted of an alcohol/drug driving offence since their interlock was installed. Furthermore, based on logs from the interlock devices, these interlocks prevented 989 attempts to drink drive. The author of this analysis recommended that interlock programmes be made mandatory, in order to improve their effectiveness in New Zealand.^{viii}

An October 2015 (updated in August 2016) cost benefit analysis by the Ministry of Transport on the use of interlocks included extensive analysis of policy, financial and public safety implications, and further options to increase their uptake. Options included increasing incentives for offenders to voluntarily use interlocks, subsidising costs that are otherwise charged to offenders, and making interlock periods a requirement for licence reinstatement for some drink driving offenders (or for all eligible convicted drink drivers). Over the 20 years from 2017, the analysis suggested potential costs of between \$7.5 million and \$239 million, and resulting benefits of between \$14.4 million and \$789 million; the potential return on investment was between \$7 million and \$620.1 million, with the more stringent options plus subsidies generating the highest value.^{ix}

WHEN ARE ALCOHOL IGNITION INTERLOCKS MOST EFFECTIVE?

Uptake and compliance

Interlocks necessarily rely on an element of voluntary compliance to increase uptake. A fully mandatory scheme would require that offenders be forced to produce a vehicle and have an interlock installed, and would then have to completely prevent them from bypassing or tampering with the interlock, or from driving in any other vehicle. A mandatory scheme of that nature is neither realistic nor enforceable.

When interlock schemes are described as mandatory, this typically means that they form part of a sentence or are required before the reinstatement of a disqualified driver's standard licence. Three US studies have shown that the latter can reduce post-interlock offending among offenders who have had interlocks installed,^x but in either case an offender can avoid the interlock by claiming to not have access to a vehicle.^{xi} Offenders may also prefer to have their licence fully disqualified and then drive unlicensed, as this has a low probability of detection.^{xii}

As of 2010 in the United States, uptake of interlocks has rarely been above 20% of drink driving offenders.^{xiii}

Uptake is higher when alternatives are more burdensome than licence disqualification. For example, uptake has been shown to increase (and claims of non-access to vehicles decrease) when the alternative to an interlock is home confinement.^{xiv}

The financial cost of installing interlocks is often charged to offenders. It stands to reason that this would be a barrier to uptake in some cases, and that government funding for installing interlocks could address this. However, this proposition does not appear to have been

addressed in research (although subsidies were considered to have a positive effect in the Ministry of Transport's cost benefit analysis).

Effect of interlocks after removal

As noted above, it is unclear whether the effect of interlocks continues after the devices are removed. The 2009 Cochrane Library review^{xv} and the 2011 Community Guide Systematic Review^{xvi} reported little or no evidence for an effect that continues post-removal. However, the 2011 randomised controlled Maryland study found a notable reduction in offending two years after the intervention period.^{xvii} Given the conflicting nature of this evidence, the effectiveness of interlocks after removal remains speculative.

Interlocks and AOD treatment

AOD treatment is often provided along with interlocks. In cases where offenders receive both interventions, any effects may come from the treatment programmes as much as from the interlocks.

A 2016 study^{xviii} provides evidence that the inclusion of AOD treatment in interlock programmes is effective at reducing the incidence of recidivism for repeat offenders. Specifically, the study looked at a programme in Florida whereby AOD treatment was required if an offender accumulated 3 violations (defined as 2 "lockouts" within 4 hours; a lockout occurs when the device prevents a drinking driver from starting the vehicle).

The group who received AOD treatment experienced rates of recidivism 32% lower than those of the non-treatment group. This supports the idea that the incorporation of "swift and certain" sanctions (including accountability measures such as AOD treatment or reporting requirements) improves the long-term efficacy of alcohol interlock programmes.

WHAT OTHER BENEFITS DO ALCOHOL IGNITION INTERLOCKS HAVE?

Health and behavioural outcomes

Alcohol interlocks do not appear to impact on wider health or behavioural outcomes. Although offenders' drinking behaviour may change while an interlock is installed, the actual amount of drinking appears to stay the same, as does the amount of driving – the behavioural change is that these take place at different times.^{xix} As noted previously, evidence is mixed on whether behavioural change continues after an interlock is removed.

CURRENT INVESTMENT IN NEW ZEALAND

New Zealand Transport Agency and the Department of Corrections

Interlock licenses are provided through the NZTA and have been available since 2012. The license and the interlock are typically paid for by the offender. Interlock programmes make use of the NZTA interlock licenses, and include funding for interlocks for certain offenders.

An interlock programme is delivered in New Zealand by the Department of Corrections. The "first phase" started September 2015, and involved funding for 175 interlocks: it was initially allocated funding of \$451,136.

From January 2017, an additional \$639,760 has been allocated for the second phase of the interlock programme, for an additional 240 participants. The second phase utilises a similar approach to the programme in Florida^{xx} discussed above and, in comparison to the first phase, is considered more likely to achieve long-term behavioural change.

Legislative change

Recent amendments to the *Land Transport Act 1998* have made interlock periods a requirement for some offenders to regain their standard licence. The requirement for an interlock period applies to offenders who have been convicted of another drink driving offence within the previous five years or who have alcohol in their system that exceeds a certain threshold (800 micrograms per litre of breath or 160 milligrams per 100 millilitres of blood). Offenders subject to interlocks must also have a vehicle, address and licence status that make the installation and maintenance of an interlock practically feasible.^{xxi}

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 <i>or</i> local evidence that intervention tends to reduce crime
Strong	Robust international <i>and</i> local evidence that intervention tends to reduce crime

According to the standard criteria for all Evidence Briefs¹, the appropriate evidence rating for Alcohol Ignition Interlocks is Promising (while installed) and Inconclusive (after removal).

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

As per the standard definitions of evidence strength outlined in our methodology, the interpretation of the evidence rating (while installed) is that:

- Robust international or local evidence that interventions tend to reduce crime.
- Investment may well generate a return if implemented well.
- Further evaluation desirable to confirm intervention is delivering a positive return and to support fine-tuning of the intervention design.

The interpretation of the evidence rating (after removal) is that:

- Conflicting evidence that interventions can reduce crime.
- Highly uncertain whether investment will generate return even if implemented well.

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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

Willis, C., Lybrand, S., & Bellamy, N. (2004). Alcohol ignition interlock programmes for reducing drink driving recidivism. *The Cochrane Library*.

Elder, R. W., Voas, R., Beirness, D., Shults, R. A., Sleet, D. A., Nichols, J. L., ... & Task Force on Community Preventive Services. (2011). Effectiveness of ignition interlocks for preventing alcohol-impaired driving and alcohol-related crashes: A Community Guide systematic review. *American Journal of Preventive Medicine*, 40, 362-376.

ⁱ Clayton & Beirness, (2008).

ⁱⁱ Willis et al, (2004).

ⁱⁱⁱ Willis et al, (2004).

^{iv} Elder et al, (2011).

^v Rauch et al (2011), Vanlarr et. al (2017)

^{vi} Rauch et al (2011).

^{vii} Vanlarr et al (2017).

^{viii} Waters (2014).

^{ix} Leung & Huang, (2016).

^x Kaufman & Wiebe (2016), McCartt et. al (2013), McGinty et al (2017).

Rauch, W. J., Ahlin, E. M., Zador, P. L., Howard, J. M., & Duncan, G. D. (2011). Effects of administrative ignition interlock license restrictions on drivers with multiple alcohol offenses. *Journal of Experimental Criminology*, 7, 127-148.

Citations

^{xi} Voas et al, (2010).

^{xii} Marques & Voas, (2013).

^{xiii} Voas et al, (2010).

^{xiv} Marques & Voas, (2013).

^{xv} Willis et al, (2004).

^{xvi} Elder et al, (2011).

^{xvii} Rauch et al (2011).

^{xviii} Voas et al (2016).

^{xix} Marques & Voas, (2013).

^{xx} Voas et al (2016).

^{xxi} *Land Transport Amendment Act 2017*, Section 65AB.

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SUMMARY OF EFFECT SIZES FROM RANDOMISED CONTROLLED TRIALS

RCT	Treatment type/population	Outcome measure	Reported average effect size	Percentage point reduction in offending (assuming 50% untreated recidivism)	Number needed to treat (assuming 50% untreated recidivism)
Beck et al (1999)	Offenders approved by Medical Advisory Board/ installed interlocks	Recidivism	RR=0.36* (while installed)	.32	3
Rauch et al (2011).	Offenders approved by Medical Advisory Board	Recidivism during intervention (2 Years)	RR=0.64*	.18	6
Rauch et al (2011).	Offenders approved by Medical Advisory Board	Recidivism after the intervention (2 Years)	RR=.74*	.13	8
Rauch et al (2011).	Offender approved by Medical Advisory Board	Recidivism after the intervention (4 Years)	RR=.68*	.16	6

* Statistically significant at a 95% threshold

RR: Risk Ratio