



Program design for incentivizing ignition interlock installation for alcohol-impaired drivers: The Ontario approach



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ABSTRACT

Introduction: Drinking and driving is a major risk factor for traffic injuries. Although ignition interlocks reduce drinking and driving while installed, several issues undermine their implementation including delayed eligibility for installation, low installation once eligible, and a return to previous risk levels after de-installation. The Canadian province of Ontario introduced a “Reduced Suspension with Ignition Interlock Conduct Review” Program, significantly changing pre-existing interlock policy. The Program incentivizes interlock installation and an “early” guilty plea. It also attempts to reduce long-term recidivism through behavioural feedback and compliance-based removal. This evaluation is the first in assessing Program impact.

Methods: Ontario drivers with a first time alcohol-impaired driving conviction between July 1, 2005 and November 25, 2014 comprised the study cohort. Longitudinal analyses, using interrupted time series and Cox regression, were conducted in which exposure was the Program and the outcomes were ignition interlock installation ($N = 30,200$), pre-trial elapsed time ($N = 30,200$), and post-interlock recidivism ($N = 9326$).

Results: After Program implementation, installation rates increased by 54% and pre-trial elapsed time decreased by 146 days. Results suggest no effect on post-interlock recidivism.

Conclusions: Through an incentive-based design, this Program was effective at addressing two commonly cited barriers to interlock implementation- delayed eligibility for installation and low installation once eligible. Results reveal that installation rates are responsive not only to incentivization but also to other external factors, thus presenting an opportunity for policy makers to find unique ways to influence interlock uptake, and thereby, to extend their deterrent effects to a larger subset of the population. This study is one of the few that do not rely on proxy measures of installation rate.

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1. Introduction

Drinking and driving is a major risk factor for road traffic injuries globally (Connor and Casswell, 2009). It remains a critical road safety challenge in the Canadian province of Ontario. In 2013, drinking and driving claimed 110 lives, i.e., nearly one-quarter of all road fatalities in the province (Ontario Ministry of Transportation, 2016). Substantial evidence has shown that ignition interlocks, which prevent drivers from starting or continuing to drive if their breath alcohol concentration (BAC) exceeds a pre-set limit, reduce drink-

ing and driving while installed (Coben and Larkin, 1999; Beirness and Marques, 2004; Willis et al., 2009).

However, several issues have been noted in interlock program implementation across North America. First, their uptake is low in many jurisdictions, with installation rates varying from approximately 10–60% (Voas et al., 2013; Beirness et al., 2003). In Ontario, more than half of drivers convicted of alcohol-impaired driving between 2005 and 2010 decided against installing an interlock and instead chose to wait out the duration during which a condition mandating its use is applied to their licence. (see Section 3). These drivers recidivated at a rate that is 60% higher during their interlock condition period than their counterparts who installed a device, even though the non-installers should not have been driving at all (Ma et al., 2015a). Increasing installation rates is, therefore, an important first step for drinking and driving deterrence.

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Secondly, pre-trial elapsed time and conviction avoidance constitutes a barrier to program implementation. Individuals with drinking and driving charges are known to prolong court proceedings to avoid treatment, postpone licence suspension, or circumvent the costs of increased insurance (Jacobs, 1988). One study found that 83% of drivers who plead not guilty to impaired driving charges were later convicted and that their trials were 50% longer than defendants who plead guilty (Jonah, et al., 1999). Similarly, from 1999 to 2010, Ontario's adult criminal courts were faced with longer impaired driving trials than that for any other criminal code or traffic violations (Statistics Canada, 2015a). Over 40% of impaired driving trials took more than 241 days to complete, whereas the average for all charges was 137 days (Statistics Canada, 2015b). A lengthy pre-trial elapsed time undermines the effectiveness of interlock programs by removing the swiftness of this deterrence measure, as interlocks can only be applied after conviction at trial. Reducing the pre-trial elapsed time effectively reduces the amount of time a potentially dangerous driver could continue to pose a risk to other road users before intervention or remediation. Lastly, evidence suggests no enduring benefit of interlocks after de-installation (Coben and Larkin, 1999; Beirness and Marques, 2004; Willis et al., 2009). Therefore, decreasing post-interlock recidivism must be accomplished via other means, whether these means are entirely different in nature (e.g., treatment programs) or are variations of traditional interlock policy.

In order to address the above limitations, the Government of Ontario introduced a "Reduced Suspension with Ignition Interlock Conduct Review Program" (hereafter, referred to as the RSCR program) on August 3, 2010. The primary goal of the RSCR program was to increase the interlock installation rate. The RSCR brought about a significant shift in pre-existing interlock policy, which previously sanctioned a driver criminally convicted of alcohol-impaired driving to a minimum 12-month licence suspension followed by a 12-month interlock condition, during which the driver had a choice between either driving with an installed interlock or not driving at all. In contrast, the RSCR program incentivizes interlock installation by reducing the duration of the licence suspension, to three ("Stream A") or six ("Stream B") months, for those who commit to installing an interlock. A driver in Stream A (B) of the RSCR program will subsequently receive a nine- (twelve-) month interlock condition, during which time the device must be installed. Drivers who wish not to install an interlock device cannot receive a reduced licence suspension.

As a second goal, the RSCR program was designed to reduce the pre-trial elapsed time and the occurrence of conviction avoidance by requiring a guilty plea within 90 days after the offence date. Previous work has shown that pre-trial elapsed time can be good proxy of court costs as both are directly proportional (Butts et al., 2009). An "early" guilty plea, as such, is a requirement for entry into Stream A. Those not pleading guilty within 90 days are allowed to enter Stream B if all other eligibility criteria are met. A final goal of the RSCR program was to induce long-term (i.e., after de-installation) reductions in drinking and driving through behavioural feedback and compliance-based removal – a "Conduct Review". In the final three months of device installation, drivers who attempt to start their vehicle with a BAC > 0.02%, or registers a BAC > 0.02% during a rolling re-test, will have their interlock conditions automatically extended by three months. An indefinite number of extensions is possible until drivers learn to separate drinking from driving.

The RSCR program is applicable for first time offenders only, i.e., the 80% of all drivers convicted for alcohol-impaired driving.¹ Since implementation of the RSCR program, the pre-existing interlock

program (informally called "Stream C") became the default program for convicted offenders who do not meet eligibility criteria for the RSCR program. Taken together, the RSCR program not only incentivizes drivers to install an interlock and plead guilty earlier, but it also attempts to create positive changes in drinking and driving behaviour. In what follows, we assessed whether the program met its intended goals.

2. Methods

2.1. Study design and population

Longitudinal analyses were conducted in which exposure was the RSCR program and the outcomes were ignition interlock installation (installations per eligible driver), pre-trial elapsed time (days), and post-interlock recidivism. The study cohort consisted of Ontario drivers who received a first time conviction under the Criminal Code of Canada (CCC) s.253 or s.254 for alcohol-impaired driving between July 1, 2005 and November 25, 2014.

2.2. Participants and data

Study eligibility was determined from driver records of the Ontario Ministry of Transportation (MTO) Licensing Control System (LCS). For drivers meeting the eligibility criteria (see Section 2.1), their lifetime offence, conviction, and suspension records (beginning in 1988) were extracted along with all of their Highway Traffic Act (HTA) or CCC conviction offence codes, offence dates, conviction dates, suspension start and end dates, interlock condition start and end dates, and RSCR eligibility codes. The RSCR eligibility code specifies whether drivers received an invitation letter to participate in Stream A or Stream B. Missing information for this variable indicated that the driver was ineligible for participation in the RSCR program. LCS data were extracted on November 27, 2014, and included data up to two days prior. LCS data were linked to ignition interlock service provider data using the driver licence numbers of all drivers in the study cohort. This step allowed verification that a given driver actually installed an interlock device for the required time periods appropriate to their RSCR participation. Driver data were also linked to the 2011 Statistics Canada's National Household Survey.

2.3. Outcome measures

Interlock installation was defined as a rate with the number of drivers who received an interlock condition on their licence as a result of a first-time alcohol-impaired driving conviction as the denominator and the number of said drivers who subsequently installed an interlock as the numerator. Drivers were noted to have installed an interlock if they did so within the three-months before or six-months after the interlock condition was placed on their licence. Drivers contributing to this measure were restricted to those who received an interlock condition within two years of conviction. Pre-trial elapsed time was measured as the mean number of days between the drinking and driving offence and the corresponding conviction (for those who were convicted). Post-interlock recidivism was defined as the time between interlock condition removal for program completers and a subsequent recidivism event (i.e., survival time). Recidivism events included the 90-day administrative licence suspension for BAC > 0.08% or refusal to submit to screening and the 3- (first time), 7- (second time), or 30-day (subsequent time) administrative licence suspension for 0.05% < BAC < 0.08%.

¹ Unpublished raw data from the Ministry of Transportation.

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