

Predictors of commencement and completion of the NSW Mandatory Alcohol Interlock Program

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AIM

To identify factors which predict commencement and completion of the Mandatory Alcohol Interlock Program (MAIP).

METHOD

We use a dataset from Transport for NSW after comprising 10,209 Mandatory Alcohol Interlock Orders (MAIOs) with an initial disqualification period ending before 20 April 2019. We also examine a subsample of 2,860 MAIOs (with an expiry date prior to 20 April 2019) where a person commenced MAIP. These records were linked to the NSW Bureau of Crime Statistics and Research's Re-offending Database and MAIP operational data. Logistic regression models were used to identify factors predicting commencement and completion of the program. To assess model performance, we report the Area Under the Curve (AUC) and the percentage correctly predicted.

RESULTS

Offenders had a decreased likelihood of commencing the program if they were: a) already disqualified at the time of the offence (15 percentage points less likely to start); b) aged 55 years and above (20 percentage points less likely to start the program than 18-24 year olds); c) Aboriginal (12 percentage points less likely than non-Aboriginal offenders and 15 percentage points compared to those with unknown Aboriginality); or d) sentenced to imprisonment at the index contact (15 percentage points less likely to start). Our model has moderate predictive power (AUC=0.68). While the majority of starters completed the program, having an existing disqualification or suspension, a longer interlock period, and having an order extended were all associated with non-completion. Demographic factors, particularly age and Aboriginality, were also significant independent predictors in our model predicting completion, which has acceptable predictive accuracy (AUC=0.70).

CONCLUSION

Interlock installation can be predicted moderately well by licensing, operational, demographic, and criminal justice information. However, we lack information on other potentially important factors such as risk preferences and the availability of alternative transport. Most of those who commence the interlock program complete it and thus, improving commencement should be a greater priority for policymakers.

KEYWORDS

logistic regression

alcohol

interlock program

driving offences

INTRODUCTION

Interlock devices have been used internationally to reduce drink driving among high-risk repeat offenders. The device, which attaches to a nominated vehicle, requires the driver to record a breath test under a pre-determined limit to start the engine, and then submit to further random tests periodically while driving. Modern interlock devices also contain several features which reduce the possibility of tampering, such as cameras.

While the effectiveness of interlock devices in reducing drink driving and alcohol-related road crashes has been documented by several high-quality systematic studies (Blais et al., 2013; Kaufman & Wiebe, 2016; Teoh et al., 2018; Willis et al., 2004), high rates of non-participation limit the benefits of these programs. In 2014, the National Highway Traffic Safety Administration in the United States (U.S.) indicated that between 15% and 20% of all offenders who are eligible for an interlock program in the U.S. agree to have an interlock device installed (U.S. Government Accountability Office, 2014). More recent estimates from a survey of interlock program managers in all 50 U.S. states and Washington D.C. suggest that participation rates in U.S. interlock programs are improving, with 47%, 57%, and 42% of eligible offenders installing interlocks in 2016, 2018, and 2019, respectively (Robertson et al., 2022).

The available literature focuses heavily on identifying barriers to interlock installation and suggests that interlock programs have low rates of participation because: 1) judicial officers do not always impose an order for an interlock when eligibility criteria are met; 2) programs are voluntary and offenders do not always agree to participate; 3) participants are deterred by the substantial private cost of the device and its maintenance; 4) potential participants consider their likelihood of being detected driving while disqualified sufficiently low and therefore decide to 'wait out' the default disqualification in lieu of taking up an interlock; and 5) some offenders can access alternative transport (such as public transport or being driven by a family member or friend) at a cheaper cost than the interlock (Chester & Roberts, 2017; DeYoung et al., 2004; Romosz et al., 2021; U.S. Government Accountability Office, 2014; Voas & Marques, 2003).¹ There are no published studies specifically examining the characteristics and predictors of completion of interlock programs. Instead, researchers commonly examine correlates of 'successful' interlock participation (Beck et al., 2020; Zador et al., 2011).

Australian interlock programs have not been immune to low uptake rates. An initial trial of interlock devices in Queensland only garnered 15 participants from 225 referrals after 2 years (Freeman et al., 2003), with 29 participants installing an interlock device by the end of the study several years later. The cost of the device was identified as the main barrier to participation, followed by not owning a vehicle. NSW's previous voluntary interlock program, which was available to high-range and repeat PCA offenders, also had low participation levels. Between 2012 and 2014, only 828 people voluntarily installed interlock devices in NSW.²

The Mandatory Alcohol Interlock Program

In 2015, the Mandatory Alcohol Interlock Program was introduced in NSW through enactment of the *Road Transport Amendment (Mandatory Alcohol Interlock Program) Act 2014 (NSW)*. This scheme expanded upon the previous voluntary alcohol interlock program by making interlock orders a mandatory penalty for offenders convicted of:

- a) a high-range exceed the prescribed concentration of alcohol (PCA) offence;
- b) a refuse to submit to a breath analysis offence; and
- c) repeat PCA offences, including novice, low, medium, or high-range offences, within a 5-year period.

¹ Not having access to a vehicle is another commonly cited reason (Beirness et al., 1998; Sheehan et al., 2006) for non-participation but this is not relevant to NSW as offenders can be exempted from the Mandatory Alcohol Interlock Program for not having access to a vehicle.

² Data from Transport for NSW (REQ0624).

We refer to this as Phase 1 of MAIP. The program was expanded to first-time mid-range PCA, and drive under the influence of alcohol offenders (in December 2018, i.e., Phase 2 of MAIP), and subsequently, to combined drink and drug driving offences (in June 2021, i.e., Phase 3 of MAIP). This paper only examines Phase 1 of MAIP.

The interlock order is an additional penalty to any other penalties that a person receives for a proven offence(s). Offenders who were already disqualified at the time of the offence must serve the longer disqualification period (i.e. either their existing disqualification or the disqualification imposed as part of their interlock order) before starting the MAIP interlock period. Following this period, offenders are required to visit a general practitioner³, have an interlock device installed and apply for an interlock licence. Offenders can be exempted from installing an interlock device if they do not have access to a vehicle or have a medical diagnosis that prevents them from providing a sufficient breath sample to operate the interlock device. Otherwise, failure to install the interlock results in an automatic 5-year disqualification period.

Interlock licence holders may only drive a vehicle with an interlock device installed and are subject to strict interlock program requirements, including a zero alcohol limit. Interlock periods increase with the severity of the drink-driving offence. Minimum interlock periods prescribed in the legislation range from 12 months for low-range and novice-range repeat PCA offences to 48 months for serious repeat high-range PCA offences.⁴

The cost of participating in the program is an estimated \$2,000 to \$2,500 per year, which includes the cost of installing, leasing, servicing, and removing the interlock device. There is an additional administration fee of \$167 for an interlock licence.⁵ Offenders are responsible for all costs associated with participation in the interlock program, although some concession card holders are eligible to apply for a 35% discount on the cost of the interlock device. Further, a scheme exists to provide short-term assistance (referred to as 'Severe Financial Hardship' assistance) to participants who are experiencing severe financial hardship, which may range from partial to full coverage of the interlock service provider costs. This assistance is provided 3 months at a time, with participants needing to re-apply upon expiry.

Program participants are required to service their interlock devices every 2 months, or 3 months for those living in remote areas. Interlock devices are programmed to display a countdown to the next service date. If the device is not serviced within 7 days of its due date, the device enters a permanent lockout. The lockout can be lifted by service providers, at an additional cost to the participant. Figure 1 presents a map showing the distribution of interlock service centres in NSW.⁶ Unsurprisingly, the greatest concentration of interlock centres is in the Sydney metro area, with very few service centres located in Western NSW.

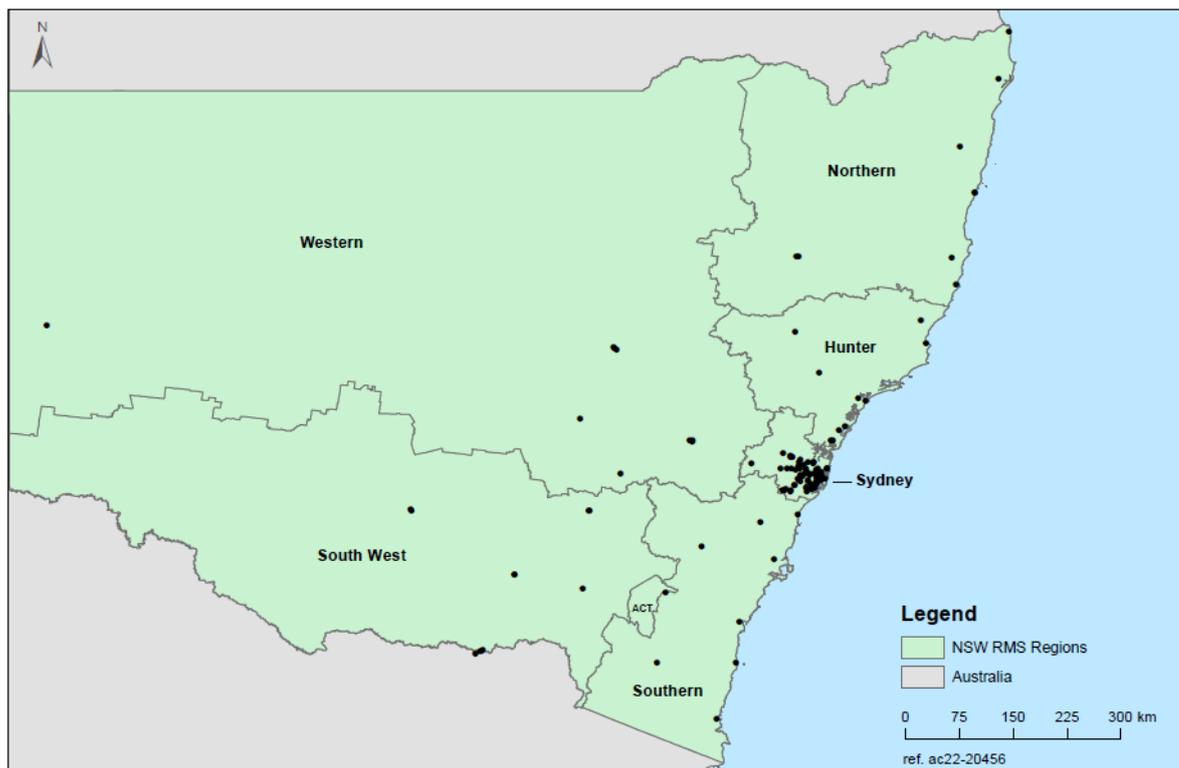
³ At this meeting, the offender must discuss their alcohol consumption and drink driving with their general practitioner and may be referred to obtain further treatment. A medical consultation certificate is also completed, which is needed to apply for an interlock driver licence.

⁴ Information about disqualification and interlock periods is available on: <https://www.nsw.gov.au/driving-boating-and-transport/demerits-penalties-and-offences/offences/alcohol-and-drug-offences/alcohol-interlock-program#toc-interlock-offences-disqualifications-and-interlock-periods>

⁵ Information about the cost of interlock devices is available at: <https://www.nsw.gov.au/topics/demerits-penalties-and-offences/offences/alcohol-and-drug-offences/alcohol-interlock-program#:~:text=There%20are%20costs%20involved%20with,interlock%20device%20installation>

⁶ Two Victorian service providers close to the NSW border are also displayed.

Figure 1. Map of interlock service centres in NSW, by former Roads and Maritime Services (RMS) region⁷



Once the device is installed, offenders must undertake breath tests every time they drive their vehicle, and are randomly prompted to engage in retests while they are driving. Repeatedly failing breath tests may result in additional program conditions being imposed, even if the reading is within a low range. Participants may need to undergo a Fitness to Drive examination before being able to complete the program. Repeated attempts to drink and drive may cause a participant's interlock order to be extended for six months, after which they will need to undertake another examination before completing the program. After successfully completing the program, offenders must visit a Service NSW centre to obtain a driver licence that does not carry the interlock condition and organise for the removal of the interlock from their vehicle.

MAIP has considerably better participation rates than international programs and early Australian programs. A process evaluation of MAIP (Centre for Road Safety, 2019) identified that, as at September 2017, 54% of those who had completed their initial⁸ disqualification periods had started the program. Only around 5% of eligible offenders received exemptions. While fewer than 10% of the 341 interlock participants surveyed had accessed hardship provisions, many participants expressed concern about the cost of the program. The evaluation did not provide details regarding the number of applications for hardship provisions which were unsuccessful and could not examine reasons for non-participation because only offenders who had commenced the program were surveyed. However, when interviewed, stakeholders identified several potential barriers to uptake, specifically: a) offenders' willingness to risk detection for driving while disqualified; b) the cost of the program; and c) the possibility that some offenders are willing to wait out the 5-year automatic disqualification period to regain their licence.

⁷ The former Roads and Maritime Services (RMS) previously administered MAIP, and from 20 November 2019 became part of Transport for NSW. These regions reflect administrative areas during the study period which have since been replaced by Transport for NSW regions.

⁸ This refers to the short period of disqualification that must be completed before an offender is allowed to install an interlock device.

Aim

Currently, there is little information on the reasons why a substantial proportion of people referred to the MAIP program do not install interlock devices. Even less is known about the factors influencing completion. This brief aims to address these gaps by answering two research questions:

1. What factors predict commencement of MAIP among eligible NSW offenders?
2. What factors predict the completion of MAIP?

METHOD

Data

We use a dataset from Transport for NSW which includes data on all Mandatory Alcohol Interlock Orders (MAIOs) issued between 1 February 2015 and 2 December 2018 (i.e., Phase 1 of MAIP). This data contains information on commencement and completion up to 20 April 2020. We use an extract consisting of 10,209 MAIOs with an initial disqualification period ending before 20 April 2019 (i.e., where all offenders have at least one year of follow up to start the program). We linked this data to the following datasets:

- the NSW Bureau of Crime Statistics and Research Re-offending Database (ROD), using the JusticeLink case number;
- MAIP operational datasets from Transport for NSW, using a deidentified customer number and offence date. This dataset contains:
 - interlock device service records, which included the provider and date of service;
 - any severe financial hardship approvals received by individuals; and
 - interlock breath test data.

Our first outcome variable is **commencement**, defined as installation of an interlock device following completion of the initial disqualification period. This is denoted in the Transport for NSW data by the date of device installation. The second outcome variable, **completion**, is defined as a record of program completion before 20 April 2020. For this outcome measure, we include 2,860 offenders who had at least a year to complete the program. Specifically, only offenders with an interlock period ending before 20 April 2019 are included.

We use the following demographic variables as potential predictors in our models of commencement and completion: age at court finalisation⁹ (18-24, 25-34, 35-44, 45-54, 55 years and older); gender (female or male); Aboriginality (Aboriginal, non-Aboriginal, unknown) ever recorded (from ROD); former Roads and Maritime Services (RMS) region associated with their postcode at finalisation (Sydney, Hunter, Northern, South West, South, Western); Australian Bureau of Statistics (ABS) Socioeconomic Indexes for Areas (SEIFA; ABS, 2018) associated with the postcode of the offender's residence (in quartiles from most disadvantaged through to least disadvantaged); and the Australian Statistical Geography Standards (ASGS; Australian Bureau of Statistics, 2016) remoteness area of their residence (major cities, inner regional, outer regional, remote or very remote).

We consider the following index offence and criminal history factors:¹⁰ the most serious MAIP-eligible offence (high range PCA, refuse breath test, mid-range PCA, or low range PCA); whether they had a concurrent offence; whether they had a concurrent offence at their index finalisation; whether they were sentenced to imprisonment at their index finalisation; and the person's number of prior court appearances (ever) with a proven offence (0, 1, 2-4, and 5 or more).

⁹ There may be further differences within particular categories, such as the 18-24 years old and the 55 years and older categories. However, these groups are small relative to the others, particularly in the completion sample which limits our ability to break these down further.

¹⁰ We consider all types of offending, not just driving offences.

The licensing and road safety variables we consider are: the offender's licence status at the time of the offence (disqualified vs. active); any prior licence disqualifications; the number of prior traffic infringements¹¹ recorded in the 24 months prior to finalisation (0, 1-5, and 6 or more); and driving experience (coded as less than a year, 1-3 years, 4-10 years, and 11 years or more).

We also consider MAIP operational variables: the year the initial disqualification period ended; the interlock period recorded by Transport for NSW (12 months, 24 months, 48 months or other) and; whether a person had previously completed either the MAIP or the voluntary interlock program. In predicting completion, we consider two additional operational variables: whether a person received severe financial hardship assistance and; whether a person's interlock period was extended by Transport for NSW. These two variables are only observable once a person commences the program, with extensions more likely to be recorded towards the end of the interlock period.

Analysis

We estimate the probability of starting MAIP and the probability of completing MAIP using logistic regression. We employ a forward selection approach (given the relatively small set of candidate predictors), where the covariates described above are iteratively added to the model. Covariates that are statistically significant and improve the predictive ability of the model are retained. We present marginal effects, in other words, the average change in the likelihood of commencing or completing MAIP associated with each variable. Our primary measure of the predictive performance of the model is the Area Under the Curve (AUC), which measures the ability of a model to discriminate between those who do take up, or complete, the program and those who do not (Hosmer & Lemeshow, 2004). An AUC value of 0.6 or higher is considered moderate, 0.7 or higher is considered acceptable, 0.8 or higher is considered excellent, and 0.9 or higher is considered outstanding.

RESULTS

Descriptive statistics

Overall, 69% of those who were eligible had an interlock device installed (i.e. commenced/started), and 91% of those who had an interlock device installed completed MAIP. In Table 1 we descriptively analyse commencement and completion rates across a range of covariates. First, we examine demographics (panel A). Those aged 18-24 years were more likely to start MAIP (75.6%) compared to older offenders, with the probability of commencement decreasing successively with older cohorts (60.6% of those aged 55 and above started MAIP). Completion rates were relatively stable across age groups. Commencement rates did not differ by gender, but males were more likely to complete the program (92.0% vs. 88.8% of females). Aboriginal offenders were less likely to both commence (53.6%) and complete (78.8%) the program compared to non-Aboriginal offenders (whose commencement and completion rates were 69.2% and 91.3% respectively). However, Aboriginality was unknown for 16.2% of the commencement sample and 20.3% of the completion sample. Region of residence seems more closely associated with commencement rather than completion. Upwards of 70% of offenders residing in the Hunter, South-West, and Southern regions started MAIP, all greater than the proportions who started in the Sydney, Western, and Northern regions. Unsurprisingly, commencement rates decreased with increasing socioeconomic disadvantage, but there was no relationship between this variable and completion. Most strikingly, those residing in the most disadvantaged postcodes were 10 percentage points less likely to start MAIP compared with those residing in the least disadvantaged postcodes. Non-commencement was higher among offenders in outer regional (33.5%) and remote or very remote (44.6%) areas of residence compared with those residing in inner regional areas (29.8%). While this was not the case for completion, it should be noted that very few offenders in our completion sample resided in remote areas.

¹¹ These are traffic violations which are not proceeded against such as speeding and parking infringements.

Panel B presents commencement and completion rates against various criminal justice characteristics. First, we examine offenders' most serious MAIP offence. High range PCA offenders were most likely to commence the program (70.6%) and also had higher rates of completion (92.2%). Mid-range offenders were the least likely to both commence (65.0%) and complete (88.2%) the program. Those having a concurrent offence were approximately 20 p.p. less likely to start and 7 p.p. less likely to complete MAIP compared with those who had a singular (MAIP-eligible) offence. Only 34.8% of those who received a prison sentence at the index finalisation started MAIP. Commencement and completion rates were also lower among those with a more extensive criminal history; 57.0% of those with five or more prior proven court appearances started MAIP, versus 77.1% of first-time offenders. Repeat offenders were also 6 p.p. less likely to complete than first-time offenders.

Table 1. MAIP commencement and completion rates by demographic, licensing, criminal history, and operational characteristics

Variable	Commencement sample (n=10,209)		Completion sample (n=2,860)	
	N	Started MAIP (%)	N	Completed MAIP (%)
All offenders	10,209	68.74 (0.46)	2,860	91.40 (0.53)
Panel A. Demographic characteristics				
Age categories				
18-24	1,486	75.64 (1.11)	437	91.08 (1.36)
25-34	3,014	70.54 (0.83)	844	89.22 (1.07)
35-44	2,666	68.27 (0.90)	730	90.68 (1.08)
45-54	1,968	65.90 (1.07)	561	94.30 (0.98)
55+	1,075	60.56 (1.49)	288	94.10 (1.39)
Gender				
Female	1,949	67.83 (1.06)	535	88.79 (1.36)
Male	8,260	68.96 (0.51)	2,325	91.96 (0.56)
Aboriginality - ever recorded				
Aboriginal	1,059	53.64 (1.53)	184	78.80 (3.01)
Non-Aboriginal	7,498	69.15 (0.53)	2,094	91.26 (0.62)
Unknown	1,652	76.57 (1.04)	582	95.70 (0.84)

Table 1. MAIP commencement and completion rates by demographic, licensing, criminal history, and operational characteristics (continued)

Variable	Commencement sample (n=10,209)		Completion sample (n=2,860)	
	N	Started MAIP (%)	N	Completed MAIP (%)
RMS Region^a				
Hunter	1,941	70.84 (1.03)	516	93.02 (1.12)
Northern	1,384	65.82 (1.27)	343	89.21 (1.68)
South-West	614	71.82 (1.82)	185	86.49 (2.51)
Southern	1,085	73.46 (1.34)	325	89.54 (1.70)
Sydney	4,451	67.76 (0.70)	1,303	92.56 (0.73)
Western	730	65.07 (1.76)	188	90.43 (2.15)
SEIFA quartile of residential postcode				
Most disadvantaged	2,444	63.54 (0.97)	640	92.50 (1.04)
More disadvantaged	3,119	68.52 (0.83)	854	90.40 (1.01)
Less disadvantaged	2,621	70.01 (0.90)	721	90.71 (1.08)
Least disadvantaged	2,025	73.73 (0.98)	645	92.25 (1.05)
Remoteness area of residential postcode				
Major cities	6,431	68.61 (0.58)	1,837	92.49 (0.61)
Inner regional	2,839	70.17 (0.86)	763	89.78 (1.10)
Outer regional	847	66.47 (1.62)	239	87.45 (2.14)
Remote/very remote	92	55.43 (5.18)	21	95.24 (4.65)
Panel B. Index offence and criminal history characteristics				
Most serious MAIP offence				
High range PCA	6,402	70.56 (0.57)	1,573	92.24 (0.67)
Refuse breath test	483	65.63 (2.16)	116	92.24 (2.48)
Mid-range PCA	1,779	65.04 (1.13)	461	88.29 (1.50)
Low range PCA	1,545	66.47 (1.20)	710	91.27 (1.06)
Had a concurrent offence				
No	7,676	73.88 (0.50)	2,455	92.38 (0.54)
Yes	2,533	53.18 (0.99)	405	85.19 (1.77)

Table 1. MAIP commencement and completion rates by demographic, licensing, criminal history, and operational characteristics (*continued*)

Variable	Commencement sample (n=10,209)		Completion sample (n=2,860)	
	N	Started MAIP (%)	N	Completed MAIP (%)
Sentenced to imprisonment				
No	10,054	69.27 (0.46)	2,855	91.35 (0.53)
Yes	155	34.84 (3.83)	5	100.00 n.e.
Number of finalised court appearances prior to finalisation				
0	2,550	77.06 (0.83)	854	93.91 (0.82)
1	2,317	71.77 (0.94)	720	92.22 (1.00)
2-4	3,346	67.27 (0.81)	913	90.03 (0.99)
5 or more	1,996	57.06 (1.11)	373	87.13 (1.73)
Panel C. Licensing characteristics				
Driving experience at MAIP offence				
None	371	67.39 (2.43)	90	77.78 (4.38)
1-3 years	895	60.00 (1.64)	195	89.23 (2.22)
4-10 years	2,902	69.06 (0.86)	805	89.69 (1.07)
11+ years	6,041	69.97 (0.59)	1,770	93.05 (0.60)
Existing disqualification at offence				
No	5,765	72.33 (0.59)	1,671	92.46 (0.65)
Yes	4,444	64.09 (0.72)	1,189	89.82 (0.88)
Prior infringements				
0	1,907	71.53 (1.03)	465	89.68 (1.41)
1-5	8,188	68.17 (0.51)	2,370	91.77 (0.56)
6 or more	114	63.16 (4.52)	25	84.00 (7.33)
Previously received a licence disqualification				
No	5,765	72.33 (0.59)	1,671	92.46 (0.65)
Yes	4,444	64.09 (0.72)	1,189	89.82 (0.88)

Table 1. MAIP commencement and completion rates by demographic, licensing, criminal history, and operational characteristics (*continued*)

Variable	Commencement sample (n=10,209)		Completion sample (n=2,860)	
	N	Started MAIP (%)	N	Completed MAIP (%)
Panel D. Operational characteristics				
Year of end of initial disqualification period				
2015	879	76.11 (1.44)	582	92.78 (1.07)
2016	2,891	71.91 (0.84)	1,644	91.67 (0.68)
2017	2,735	68.04 (0.89)	566	88.87 (1.32)
2018	2,773	64.12 (0.91)	68	92.65 (3.17)
2019	931	67.78 (1.53)		
Interlock period				
12 months	1,513	66.75 (1.21)	708	91.53 (1.05)
24 months	7,431	70.65 (0.53)	2,152	91.31 (0.61)
48 months	1,144	59.44 (1.45)		
Other	121	64.46 (4.35)		
Previously participated in NSW Interlock Program				
No	10,051	68.60 (0.46)	2,831	91.42 (0.53)
Yes	158	77.85 (3.30)	29	86.21 (6.40)
Received severe financial hardship assistance				
No			2,724	91.56 (0.53)
Yes			136	87.50 (2.84)
Extended interlock order				
No			2,762	91.71 (0.52)
Yes			98	81.63 (3.91)

Standard errors in parentheses

n.e. = not estimated

^a Missing for n = 4 orders in the commencement sample

Next, we examine licensing characteristics (see panel C). Having more driving experience was associated with a greater likelihood of completing MAIP, with nine out of 10 offenders with 11 years or more of driving experience completing the program compared with only three out of four drivers with less than a year of driving experience. Those with an existing disqualification had lower rates of commencement and completion of MAIP (64.1% and 89.8% compared with 72.3% and 92.5%, respectively for those who were not disqualified). Those with more prior traffic infringements in the two years preceding finalisation were less likely to commence and complete MAIP than those who had no prior infringements. Similarly, those with previous licence disqualifications were less likely to start (64.1% vs. 72.3%) and complete (89.8% and 92.5%) MAIP than offenders without prior disqualifications.

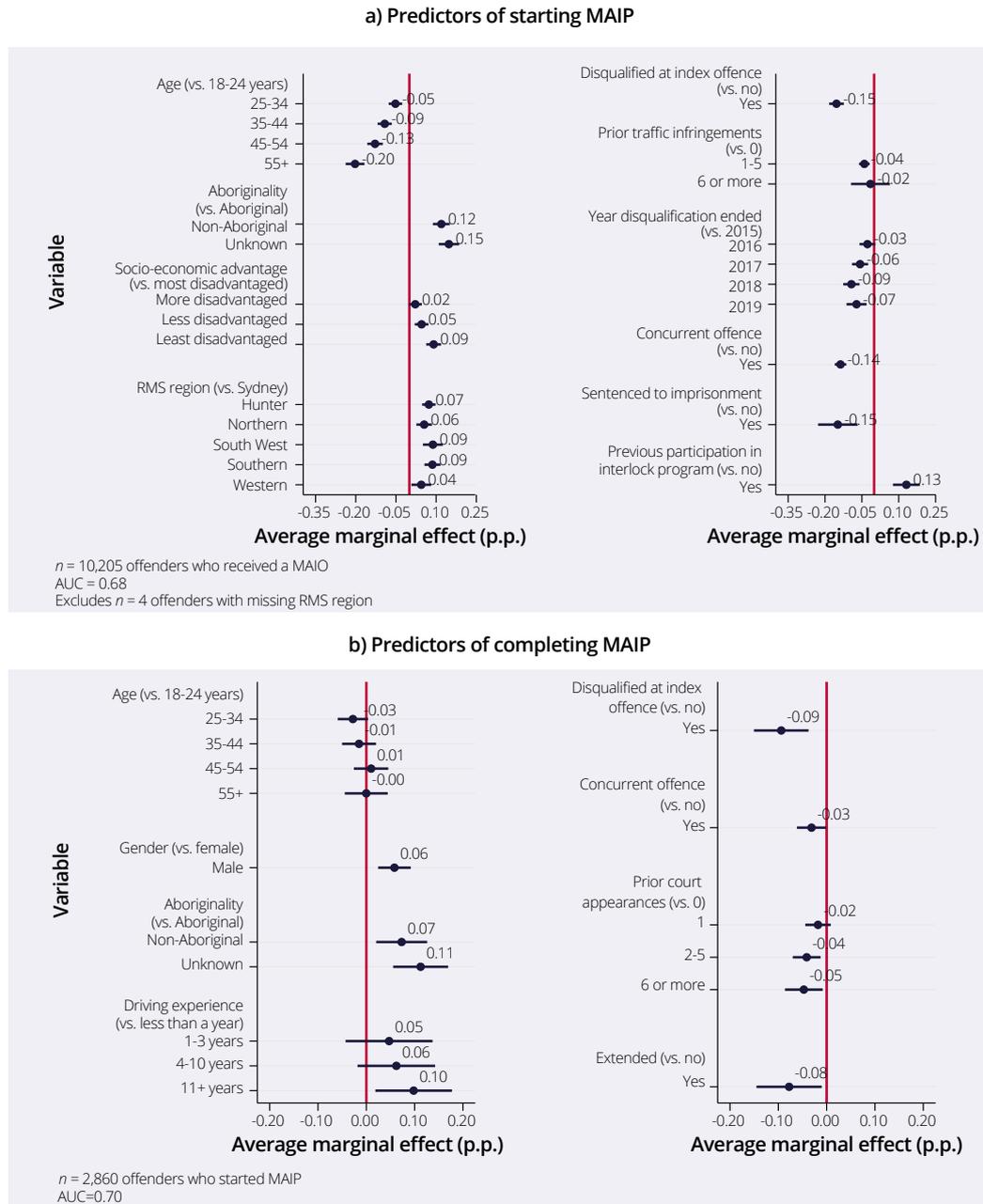
Last, we examine operational characteristics (Panel D). Those whose initial disqualification periods ended in 2015 had higher rates of commencement, and those whose initial disqualifications ended in 2018 were less likely to start the program. Completion appears unrelated to the year of the expiry of the initial disqualification period. Those with interlock periods of 24 months or less were more likely to start the program (with commencement rates greater than 65%) than those with a 48-month interlock period (59.4% of whom started MAIP). A small group of offenders had previously participated in MAIP, and this was associated with a greater likelihood of commencement (but not completion). Those who received severe financial hardship assistance were less likely to complete the program than those who did not. Unsurprisingly, the small group of offenders who were given an extension were less likely to have completed the program (81.6% vs. 91.7%) than those who were not.

The bivariate analysis presented above identifies several factors that could be related to commencing and completing MAIP. However, it does not consider each variable's association with starting and completing the program, independent of other factors. In the next section we present results from logistic regression models which aim to identify the best set of factors predicting commencement and completion of MAIP.

Figure 2 shows the marginal effects (i.e., average increase or decrease in probability) associated with each predictor in our final (best) models predicting commencement and completion of MAIP. Effects are statistically significant if the confidence intervals do not overlap with the zero line. We first examine Figure 1(a) which shows factors which predict starting MAIP. The following factors are associated with the greatest reductions in the likelihood of starting MAIP: a person being already disqualified at the index offence (15 p.p.) less likely to start a person being older (with those aged 55 years and above 20 p.p. less likely to start and those aged between 45 and 54 years being 13 p.p. less likely to start than those 18 to 24 years old); being Aboriginal (both non-Aboriginal offenders and those of unknown status are 12 p.p. and 15 p.p. more likely to start MAIP respectively) and; whether a person was sentenced to imprisonment at their index court appearance (15 p.p. less likely to start than those not sentenced to imprisonment). Overall, the model only has moderate predictive power, with an AUC of 0.68.

Logistic regression

Figure 2. Predictors of commencement and completion of MAIP



The estimates from the final logistic regression model predicting completion of MAIP, following device installation, are shown in Figure 1(b). On average, male offenders were 6 p.p. more likely to complete the program than females. More experienced drivers were also more likely to complete the program, on average, with those with 11 or more years of driving experience being 10 p.p. more likely to complete than those with less than a year of driving experience. Offenders with more prior proven court appearances were less likely to complete MAIP than those with no priors, potentially a consequence of being more likely to commit further offences. Factors affecting an offender's program length, including whether a person was already disqualified at the time of their index offence (9 p.p. less likely to start the program) and whether their interlock period was extended (8 p.p. less likely to complete the program), were significantly associated with non-completion, although the length of the interlock order was not a significant factor, and dropped from the model. The AUC is 0.70, indicating that the model has acceptable predictive power.

CONCLUSION

This brief considered which demographic, criminal justice, licensing, and operational factors predict starting and completing the NSW Mandatory Alcohol Interlock Program (MAIP). Increasing participation and completion of MAIP is highly desirable given that previous research has shown the program is effective in reducing drink driving reoffending, particularly during the interlock period (Rahman, 2022). The analysis found that the most important factors associated with commencement of MAIP are: (1) having an existing disqualification at the offence (15 p.p. less likely to start); age (with those aged 55 years and above 20 p.p. less likely to start and those 45 to 54 years 13 p.p. less likely to start than their 18 to 24 year old counterparts); Aboriginality (both non-Aboriginal offenders and those of unknown status are 12 and 15 p.p. more likely to start than Aboriginal offenders) and; imprisonment at index court finalisation (15 p.p. less likely to start). Over 90% of those who started the program completed the program within our observation period. Male offenders, non-Aboriginal offenders and those with more driving experience were more likely to complete the program. Meanwhile, those who were disqualified at the time of the initial offence, those with concurrent offences, and those with prior proven court appearances were less likely to complete MAIP. These findings suggest that given sufficient time, offenders are likely to complete the program, and thus, policymakers should focus their efforts on boosting commencement, rather than completion rates. The marginally poorer performance of our models predicting commencement also suggest that more could be done to understand the reasons for non-commencement in order to boost uptake.

Some of these findings are somewhat counterintuitive. Remoteness of residence, historically a variable associated with low rates of compliance with driving sanctions (Fitts et al., 2003; Siskind, 2012), was not found to be independently related to program commencement or completion. This may be a product of two opposing forces. While generally further away from interlock service centres, people residing in remote areas are more dependent on their vehicles for work and other activities (Audit Office of New South Wales, 2013) and therefore may be more likely to take up the device in order to continue driving. Conversely, in major cities, while interlock service centres are more abundant, these areas also have alternative transport options, reducing the need for offenders to install an interlock device to undertake daily activities. The effect of age on commencement and completion rates is somewhat surprising given that those aged 60 years and above are eligible for concessions to reduce the cost of interlock installation and maintenance. However, it is possible that older people are less likely to need to drive for employment purposes and/or more likely to rely on partners or family members for transportation. Existing disqualifications asserted a strong influence even though offenders referred to MAIP can serve outstanding disqualification periods concurrently, prior to installing the interlock. Some of these disqualification periods may be longer than the initial disqualification imposed as part of the MAIO (and thus delay their ability to install an interlock). An existing disqualification may also be correlated with offenders' willingness to drive while disqualified.

Notably, receipt of severe financial hardship assistance was not a significant predictor of completion and was therefore not included in the final model. This does not necessarily mean that the assistance is ineffective. People who may need this assistance may also face other challenges that make it difficult to sustain participation in the program. However, very few individuals in the sample received this assistance. It is unclear whether this is because few offenders need or request financial assistance, or whether the design of the assistance scheme (such as the amount provided, or the process of separate applications for every three months of seeking assistance) is a barrier to its use.

Ultimately, the moderate performance of our best models (particularly for commencement) suggest that our variables only partly explain participation and completion of MAIP. We lack specific data on at least two major explanations for failing to install interlocks (as suggested by the literature): (1) offenders' preferences to risk detection for driving while disqualified; and, (2) the availability of other modes of transportation. While cost is commonly cited as a significant barrier, our socioeconomic data only relates to an offender's area of residence. Individual-level data on income, alcohol dependence, and

employment could be more predictive of commencement and completion. Qualitative research among non-participants and non-completers could identify other barriers to participation and completion which could help to inform improvements to the program. Monitoring the success of other jurisdictions' efforts to increase interlock participation (Chester & Roberts, 2017) may also be instructive in boosting uptake of MAIP in NSW.

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APPENDIX

Table A1. Final logistic regression model for the likelihood of commencing MAIP

Variable	Odds ratio	Marginal effects	p-value
Age (vs. 18-24)			
25-34	0.74 (0.06)	-0.05 (0.01)	***
35-44	0.60 (0.05)	-0.09 (0.01)	***
45-54	0.50 (0.04)	-0.13 (0.01)	***
55+	0.36 (0.03)	-0.20 (0.02)	***
Aboriginality (vs. Aboriginal)			
Non-Aboriginal	1.76 (0.13)	0.12 (0.02)	***
Unknown	2.04 (0.19)	0.15 (0.02)	***
SEIFA quartile (vs. most disadvantaged)			
More disadvantaged	1.11 (0.07)	0.02 (0.01)	
Less disadvantaged	1.26 (0.08)	0.05 (0.01)	***
Least disadvantaged	1.60 (0.12)	0.09 (0.01)	***
RMS Region (vs. Sydney)			
Hunter	1.45 (0.10)	0.07 (0.01)	***
Northern	1.32 (0.10)	0.06 (0.01)	***
South West	1.58 (0.16)	0.09 (0.02)	***
Southern	1.56 (0.13)	0.09 (0.02)	***
Western	1.25 (0.12)	0.04 (0.02)	*
Disqualified at index offence	0.49 (0.03)	-0.15 (0.02)	
Prior court appearances with a proven offence (vs. 0)			
1 to 5	0.81 (0.05)	-0.040 (0.01)	***
6 or more	0.92 (0.20)	-0.015 (0.04)	
Year of offence (vs. 2015)			
2016	0.86 (0.08)	-0.03 (0.02)	
2017	0.74 (0.07)	-0.06 (0.02)	***
2018	0.62 (0.06)	-0.09 (0.02)	***
2019	0.68 (0.08)	-0.07 (0.02)	***
Concurrent offence	0.521 (0.03)	-0.14 (0.01)	***
Sentenced to imprisonment	0.500 (0.09)	-0.15 (0.04)	***
Prior driving offence	0.724 (0.03)	-0.06 (0.01)	***
Prior participation in interlock program	2.19 (0.44)	0.13 (0.03)	***

Marginal effects presented are the average reduction in predicted probability associated with each variable

Standard errors in parentheses

* $p < .05$ ** $p < .01$ *** $p < .001$

Table A2. Final logistic regression for the likelihood of completing MAIP

Variable	Odds ratio	Marginal effect	p-value
Age (vs. 18-24)			
25-34	0.70 (0.16)	-0.03 (0.02)	
35-44	0.81 (0.21)	-0.01 (0.02)	
45-54	1.17 (0.34)	0.01 (0.02)	
55+	1.00 (0.34)	0.00 (0.02)	
Gender (vs. female)			
Male	1.95 (0.34)	0.06 (0.02)	***
Aboriginality (vs. Aboriginal)			
Non-Aboriginal	0.46 (4.01)	0.07 (0.03)	**
Unknown	1.28 (1.28)	0.11 (0.03)	***
Disqualified at index offence	0.39 (0.09)	-0.09 (0.03)	**
Driving experience (vs. less than a year)			
1-3 years	1.51 (0.58)	0.05 (0.05)	
4-10 years	1.77 (0.58)	0.06 (0.04)	
11+ years	2.85 (0.93)	0.10 (0.04)	*
Concurrent offence at index	0.68 (0.12)	-0.03 (0.02)	*
Prior court appearances with a proven offence (vs. 0)			
1	0.75 (0.16)	-0.02 (0.01)	
2 to 5	0.56 (0.12)	-0.04 (0.01)	**
6 or more	0.52 (0.14)	-0.05 (0.02)	*
Interlock period (vs. 12 months)			
Extended	0.45 (0.13)	-0.08 (0.03)	*

Marginal effects presented are the average reduction in predicted probability associated with each variable

Standard errors in parentheses

* $p < .05$ ** $p < .01$ *** $p < .001$