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The NSW Intensive Drug and Alcohol Treatment Program (IDATP) and recidivism: An early look at outcomes for referrals

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Aim: *To investigate whether referral to the Intensive Drug and Alcohol Treatment Program (IDATP) reduces re-offending and/or returns to custody.*

Method: *The study sample included 1,285 offenders who were released from NSW custody on or after 1 January 2013, all of whom satisfied IDATP eligibility criteria. An intention-to-treat (ITT) design was employed to protect against unobservable selection bias in program commencement and completion, with the treatment group comprising the complete sub-sample of 340 offenders who were referred to IDATP (59.4% of whom commenced treatment). Propensity score matching is used to construct matched samples of treated and untreated offenders across a range of observable characteristics related to recidivism risk. Separate matchings were constructed for offenders with follow-up periods of 3, 6, and 12 months. Rates of re-offending and/or return to custody were compared for the matched samples of treated and untreated offenders.*

Results: *IDATP referrals were younger than the similarly eligible offenders in the comparison group, had a more extensive criminal history, and had been classified according to official risk assessment measures as being at higher risk of recidivism including for reasons related to their drug and/or alcohol use. Nonetheless, after matching on the estimated propensity score, the samples of offenders were similar across these and a broader range of observable characteristics. Although rates of re-offending and/or return-to-custody were lower for the matched treatment than matched comparison group at follow-up periods of 6 and 12 months, there was no statistically significant difference in recidivism outcomes.*

Conclusion: *The power of the statistical analyses was severely limited by the small sample of IDATP participants and the ITT research design. The power to detect a treatment impact will improve as more offenders engage with IDATP over time.*

Keywords: *alcohol and other drug treatment, re-offending, propensity score matching, impact evaluation*

INTRODUCTION

There is a large criminological literature demonstrating a strong association between drug use and crime. Offenders report a much higher prevalence of drug use than the general population and a large proportion of these offenders attribute their criminal behaviour to their substance misuse. In Australia, three out of every four offenders detained by police test positive for at least one drug (other than alcohol) and nearly one half report that substance use was a contributing factor to their current detention (Coghlan at el., 2015). Further, arrestees who report regular drug use (particularly of opioids and amphetamines) offend at a much higher rate than other arrestees. Bradford and Payne (2012) found that regular opioid users recorded 57 per cent more property charges at arrest than non-users and regular amphetamine users reported a 53 per cent higher rate of property charges. Similar results were evident in large-scale surveys of drug use amongst arrestees in the USA (see Office of National Drug Control Policy, 2014).

Prisoners also report high levels of drug use. Data from the NSW Inmate Health survey suggests that 84 per cent of inmates have used an illicit drug compared to just over a third of the general community. Nearly half of these prisoners used drugs on a daily basis in the year preceding imprisonment (see Indig et al., 2010). In a more recent survey of NSW prisoners, nearly three-quarters of inmates reported that at least one of their current criminal offences was related to their use of alcohol and/or other drugs. The widespread use of cocaine, heroin and amphetamine by this

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population is of particular concern, with one in two reporting that they had used heroin, amphetamine or cocaine in the 6 months prior to the current imprisonment and around one in three reported that they had injected drugs (Kevin, 2013). Alcohol abuse is also a significant problem for many prisoners. Risky alcohol consumption in the year before prison was reported by nearly two-thirds of NSW male prisoners and 40 per cent of females, with one-third of men and 16 per cent of women drinking at levels suggestive of alcohol dependence (Indig et al., 2010).

The high rates of drug use amongst prisoners means that a large number of inmates have significant health needs during their prison stay. Around one-third of users report drug withdrawal symptoms on reception into prison (Kevin, 2013), 28 per cent of all male prisoners and 45 per cent of all female prisoners test positive for Hepatitis C (Indig et al., 2010) and nearly one-quarter of males and over one-third of females require opioid substitution therapy whilst in custody (Kevin, 2013).

Substance misuse is also of concern because it is an important risk factor for recidivism and return to custody. Both alcohol and illicit drug use are significant independent predictors of self-reported criminal activity and reincarceration of parolees (e.g. Ferguson, 2015; Kinner, 2006; MacKenzie et al., 1999). Substance misuse is particularly problematic in prisoners with a comorbid mental health disorder (Smith & Trimboli, 2010).

There is encouraging evidence that drug addiction treatment can be an effective crime control measure (see for example Lee, Aos & Pennucci, 2015; Lind, Chen, Weatherburn & Mattick, 2004; Weatherburn, Jones, Snowball & Hua, 2008). If effectively delivered within a correctional setting, treatment could reduce the high rate of return to custody. Certain types of prison-based treatments appear to be more effective than others in achieving this goal. Mitchell and colleagues (2007) analysed the results from 66 evaluations of incarceration-based treatment programs for substance abusers. The most effective programs were those that adopted a therapeutic community (TC) approach. Although the specific components of TCs may vary, their defining characteristics are: (1) intentional segregation of participants from the general prison population; (2) involvement of participants in the running of TCs; (3) anti-social behaviours and attitudes are challenged by staff and participants; and (4) the programs are intensive and long in duration (6-12 months).

Mitchell et al. (2007) found that participation in TC drug treatment programs during imprisonment was associated with significant reductions in relapse to drug use and re-offending after release from prison. Group counselling programs (including CBT, life skills training and drug education) delivered in custody were also associated with a significant reduction in recidivism but their impact was less clear on drug use post-release. Importantly, moderator analyses showed that treatment programs that mandated involvement in aftercare services upon release from custody produced the largest effect size of any the treatment programs reviewed.

THE NSW IDATP PROGRAM

In 2011 the NSW government committed to establishing 300 treatment places for NSW inmates with serious substance abuse problems (250 places for males and 50 for females). This new Intensive Drug and Alcohol Treatment Program (IDATP) commenced operation in February 2012 at John Morony Correctional Centre (JMCC – a medium security centre located near Windsor NSW). CSNSW has undertaken a thorough review of the theoretical underpinnings, establishment, design and first stages of implementation of IDATP (Kevin, 2015). Some of the key elements of IDATP documented by this review, are summarised in this section of the bulletin to provide a context for the current outcome evaluation.

At its inception, IDATP targeted medium-to-high risk male offenders with serious substance use problems (both alcohol and illicit drugs). An offender must meet all of the following criteria in order to be eligible for the program:

- Sentenced with no further court matters pending;
- Have at least 12 months to serve before the earliest possible release;
- Medium, medium-high or high risk on LSI-R;
- LSI-R Alcohol & Other Drug domain score of 5+;
- B, E2 or C classification;
- No current protection order (or willing to sign off);
- No prior child sex conviction;
- Not acutely mentally ill; and
- No serious misconduct prior to entry.[1]

Eligible prisoners can be referred to IDATP by a variety of sources that include active recruitment by program staff, the Probation and Parole Service, other CSNSW staff and self-referrals. Recommendations can also be made by the court at the time of sentencing and acted on by corrections staff after imprisonment. In addition to meeting the eligibility criteria set out above, the IDAPT team assess whether a prisoner is suitable for the program. This assessment comprises an interview that considers such things as the prisoner's drug use and offending history, physical and mental health, cognitive functioning, drug treatment history, institutional security or safety alerts and medical needs. Participation in IDATP is voluntary and prisoners can refuse a referral or refuse to be placed on the program. Once a prisoner has commenced the program they can also discharge themselves at any time.

The program comprises an intensive 9-month behaviour-based intervention in three hierarchical stages: Orientation, Treatment and Maintenance. Orientation is a one-month induction that consists of intensive assessment, individual treatment planning, motivational interviewing and development of a therapeutic alliance. The treatment phase of the program lasts 6 months. It involves individualised counselling and therapeutic group work

based on the CBT techniques of skills building and cognitive restructuring. Prisoners also engage in education, vocational training and employment during this phase of the program (as well as during the subsequent maintenance phase). The minimum monthly program 'dose' that prisoners work toward in this stage of IDATP is 70 hours of intervention. This includes 20 hours of group-based CBT, 10 days of employment or education, weekly community meetings, weekly individualised feedback sessions, and monthly multidisciplinary Case Reviews. The maintenance phase post treatment is of 2-months duration. It consolidates and reinforces the skills learnt during the treatment phase via more intensive individualised counselling. Post-treatment aftercare plans are developed during the maintenance phase to support the release of the prisoner back into the community or into the general prison population.

A key element that differentiates IDATP from other prison-based interventions for drug use is that it operates as a modified therapeutic community (MTC). A community living environment is fostered by physically separating program participants from the mainstream prison population and community members (both IDATP staff and program participants) work collaboratively to implement a hierarchical system of rewards and sanctions to promote social responsibility. Weekly community meetings are held to build a therapeutic alliance between staff and participants and to provide an informal forum for participants to raise any concerns about the program. Peer mentors are also nominated to serve as role models and provide further support for program participants.

The implementation of IDATP was undertaken in partnership with Justice Health and Forensic Mental Health (JH&FMH) Service. Staff from JH&FMH were involved in the initial suitability assessment of participants for IDAPT, in the orientation phase of treatment, and in attending to participants' health needs throughout the program. JH&FMH also supports the delivery of Opioid Substitution Therapy which has been offered since July 2013 to IDATP participants as an adjunct to their treatment program if there is a clinical need.

Implementation issues

IDAPT was planned to be rolled out in 3 stages over a 3-year period. In its first stage of implementation, 62 beds for male prisoners were made available at the JMCC and a further 62 beds became available in 2013 during the second stage. In 2014, however, numerous operational disruptions significantly reduced referrals and recruitment into the program. In order to deal with broader operational pressures brought about by an unanticipated spike in the NSW prison population, IDATP was relocated to the Outer Metropolitan Multi-Purpose Correctional Centre (OMMPCC – a minimum security centre located in the same complex) in July 2014. While infrastructure works were undertaken, the program temporarily operated in both the OMMPCC and JMCC. The relocation and consequent infrastructure works, as well as more general pressures from the rising prison population, substantially reduced IDATP's capacity to 50 treatment beds until December 2015. Capacity increased by a further 70 beds from December 2015 and a further 100 bed increase was planned for April 2016. However, IDATP is still unable to accommodate medium security male inmates until security upgrades have been completed at the OMMPCC site. These disruptions restricted the pool of potentially eligible participants for the program and consequently reduced the number of participants who could be followed-up in the outcome evaluation. In August 2015, IDATP was successfully established in a correctional centre for female prisoners (Dillwynia Correctional Centre) but too few women have completed the program to enable this component of IDATP to be part of the current outcome evaluation.

THE PRESENT STUDY

Because of these implementation issues the present study is a preliminary investigation of re-offending outcomes among IDATP referrals. It identified and described characteristics of a sample of inmates referred to IDATP. Recidivism outcomes for this 'treatment group' were compared with a matched sample of offenders who were in custody during the same period, but were not referred to the program—the matched 'comparison group'. Propensity score matching (PSM) was used to construct the matched samples in the treatment and comparison groups that were similar on a wide range of observable characteristics, including age, Indigenous status, prior criminal history, and drug- and alcohol-related risk factors. The difference in recidivism outcomes across the matched samples was attributed to the treatment program on the assumption that the matched samples were sufficiently comparable on relevant unobservable characteristics.

An intention-to-treat (ITT) design—assigning all IDATP referrals to the treatment group—was employed to protect against unobservable selection bias in program commencement and completion that may have affected outcomes. There remains a reasonable probability that unobservable selection effects operated in the current study—that is, that IDATP participants and/or graduates differ in unobservable ways which place them at higher or lower risk of recidivism compared to non-participants and/or people who were discharged from the program. For example, offenders who commit to participate in IDATP, who move into a dedicated treatment facility and commence the program, are on average probably more motivated to change their behaviour than other referrals. Unfortunately, motivation cannot be observed making it difficult to identify a similarly motivated group of untreated inmates in order to estimate how participants would have fared in the absence of the IDATP.

In addition, program participants with less acute addiction problems are probably more likely to graduate from IDATP because offenders who continue to use drugs are discharged. Both of these unobservable selection effects would produce a lower estimate of the 'effect' of the program in the absence of an ITT design. However, unobservable selection effects need not produce bias in this direction. For example, program staff may

prioritise treatment for inmates with greater risks and needs, both of which would be unobservable. This would artificially produce higher recidivism rates for IDATP participants on average. The use of an ITT design circumvents these issues but at the cost of limiting the statistical power of the analyses to identify a treatment effect because any treatment effect would be diluted by the unchanged outcomes in non-participating referrals.

METHOD

DATA SOURCES

Data for this study were extracted from two key sources:

1. Corrective Services NSW Offender Integrated Management System (OIMS) database and the IDATP administrative database. OIMS records a wide range of administrative data on inmates and their custodial episode. The IDATP database is linked to OIMS, and is primarily used to record administrative data on IDATP operations. It records offenders' progress through the referral system: eligibility and suitability assessment, commencements, discharges, and graduations.
2. BOCSAR's Re-Offending Database (ROD), links all finalised criminal court appearances and all movements in and out of custody in NSW for each individual from January 1994 to the present (Hua & Fitzgerald, 2006). ROD data were used in the current study on all court appearances finalised up to 30 September 2015.

OIMS-IDATP database records were linked to ROD records using the offender's name, date of birth and OIMS offender identification number, with the relevant custodial episode identified by the episode start date. The initial sample pool consisted of 6,379 offender custodial episodes that were extracted from the OIMS-IDATP database for this study. Five could not be matched to ROD. An additional 144 observations were dropped because of data inconsistencies in matched records.

DATA VARIABLES

The data available for each offender included the following characteristics:

1. Offender socio-demographic characteristics:
    a. Age in years upon release from custody.
    b. Indigenous status: whether the offender identified as being of Aboriginal or Torres Strait Islander descent at any court appearance recorded in ROD.
    c. Postcode level of disadvantage according to the Australian Bureau of Statistics (2011) Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD).
    d. Postcode level of remoteness according to the Australian Bureau of Statistics (2011) Accessibility/Remoteness Index of Australia (ARIA).
    e. Disability. This variable indicates that the offender was flagged as having a disability in the OIMS-IDATP database.
2. Characteristics relating to the offender's index custodial episode included:
    a. Time in custody (ex-post). This variable captured the time from episode start to end date.
    b. Maximum time in custody (ex-ante). This variable captures the time from episode start date to the sentence expiry date.
    c. Parole supervision (ex-post). This is a categorical variable indicating whether an offender was released onto a period of parole either ordered by the court, or by the State Parole Authority (SPA), or released with no parole supervision (at the sentence expiry).
    d. Parole prospects/SPA pressure (ex-ante). This categorical variable provides a proxy indicator of the ex-ante prospect of parole being decided by the SPA. All offenders ultimately awarded parole by the SPA, and all offenders anticipating a maximum period in custody longer than three years' duration, were categorised as having SPA parole prospects (to reflect the legislation as set out in *Crimes (Sentencing Procedure) Act 1999 (NSW)* and the *Crimes (Administration of Sentences) Act 1999 (NSW)*). Offenders who had a period of court ordered parole despite having an ex-ante maximum period in custody of more than three years were separated from the remaining offenders with ex-ante maximum custodial sentences of less than three years.
    e. Segregation. This variable indicates that the offender was in a period of segregation as at the hypothetical review date (i.e. three months following their last conviction).
    f. Protection. This variable indicated that the offender was under protection as at the hypothetical review date (i.e. three months following their last conviction).
    g. Maximum security classification level. This variable recorded the highest level of security classification assigned to an offender during their current custodial episode (generally this was assigned at the start of the episode[2]).
3. Offenders' criminal history
    a. Age of first contact. This was the age of the offender at the time of first recorded caution or court appearance (including juvenile jurisdiction).

Other data relating to offenders' prior criminal history were based on the count of finalised court appearances (including youth justice conferences) during the index custodial episode or within 5 years prior to index custodial start date in which one or more of a particular type of offence was proven, or a particular type of penalty was imposed.

Observable variables include counts of prior finalised court appearances where there was a proven:

    b. offence of any kind;
    c. a drug offence

d. a drink driving (Prescribed Concentration of Alcohol, PCA) offence
e. a property offence
f. a serious violent offence
g. a non-serious violent offence
h. an indictable offence
i. In addition, a final variable was the count of prior finalised court appearances (during the index current episode or within 5 years prior) in which the offender received a penalty of imprisonment (full-time prison sentence, including juvenile control orders).

4. Official risk-assessment measures

The Level of Service Inventory-Revised (LSI-R) is an official actuarial-based assessment tool used to estimate an individual's risk of recidivism (Andrews & Bonta, 1995).[3] It provides an aggregate risk score based on 54 items (where a higher score indicates a higher level of risk) by combining results over ten domains: criminal history (10 items), education/employment (10 items), financial (2 items), family/marital (4 items), accommodation (3 items), leisure/recreation (2 items), companions (5 items), alcohol/drug problem (9 items), emotional/personal (5 items), and attitudes/orientation (4 items). Overall risk is classified into bands as follows: 'Low' risk is defined by a score of 0-13, 'Medium-Low' risk by a score of 14-23; 'Medium' risk by a score of 24-33; 'Medium-High' risk by a score of 34-40 and 'High' risk by a score of 41 or more.

The LSI-R includes dynamic risk factors that may change over time (e.g. as a result of completing treatment). For the purposes of this study, the most recent LSI-R record collected one year before an offender's release from the index custodial episode was preferred over later records. However, in the absence of an earlier alternative, LSI-R records were also used if collected up to the release date of the index custodial episode.[4]

LSI-R data employed in this study include:

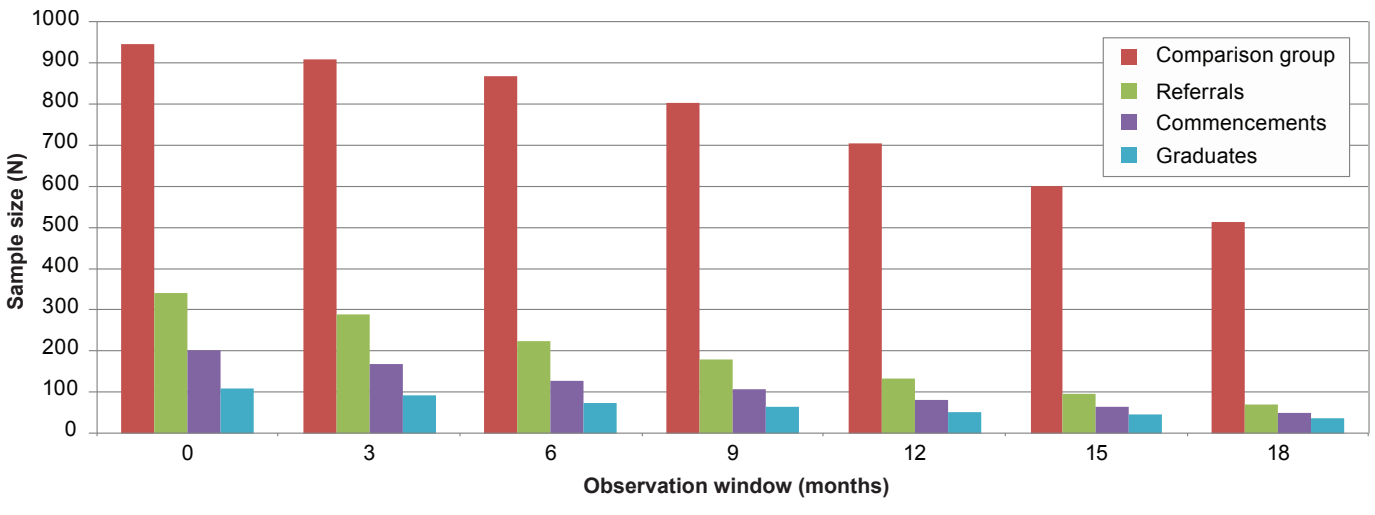
a. LSI-R risk-band category
b. LSI-R alcohol and other drug domain score (domain 8)
c. Responses to individual questions in the alcohol and other drug domain. These specific questions related to whether an individual had ever had an alcohol problem, ever had a drug problem, currently had an alcohol problem, currently had a drug problem, whether drug/alcohol has led to law violations, school/work problems, medical problems, whether their family had complained about their drug/alcohol use, and details on frequency of use, consequences, etc..

SAMPLE

The sample pool comprised males who were in custody in NSW at some point between February 2012 and November 2014. Where individuals entered custody more than once during this time period, one custodial episode was randomly selected for inclusion. The study sample was restricted to custodial episodes ending between 1 January 2013 and 30 September 2015 inclusive (very few IDATP referrals were released in 2012), and to episodes in which the custodial release was classified by Corrective Services as 'parole' or 'sentence expiry' (which excluded cases where the offender was deported or deceased). In addition, the study sample was restricted to offenders satisfying the following explicit IDATP eligibility criteria:

- LSI-R risk-band of medium-risk or higher
- LSI-R alcohol and other drug domain score of 5 or more
- No prior child sex offence
- 'Sufficient' time to serve prior to release (see below)

Figure 1. Sample size by observation window



Individuals referred to IDATP were classified as not having sufficient time to serve prior to release if the OIMS-IDATP database recorded that they were ineligible due to 'insufficient time' or 'release from custody', or if they were referred to IDATP after November 2014. Records for individuals not referred to IDATP were classed as not having sufficient time to serve if three months after the offender's last conviction (their hypothetical review date), the offender had less than 10 months to serve and/or further court movements. A small number of remaining records in which an offender spent fewer than 12 months in custody were also excluded because of data quality concerns.

All offenders referred to IDATP entered custody from the year 2000 onward, and were aged under 55 on release from custody, so the sample was restricted to records that satisfied these criteria.

The final study sample comprised 1,285 unique offenders, 340 (36.0%) of whom were referred to IDATP between February 2012 and November 2014. 202 commenced treatment (59.4% of referrals), and 109 graduated from the program (54.0% of commencements). The size of the samples available for analysing recidivism outcomes over prospective windows of 3, 6, 9, 12, 15, or 18-months duration are illustrated in Figure 1.

OUTCOMES

Three key outcome variables were investigated: whether or not an individual re-offends and/or returns-to-custody within:

i. 3 months
ii. 6 months, or
iii. 12 months

after their release from the index custodial episode. Time to re-offend and/or returns-to-custody (within these time-windows) was also examined.

From a policy perspective, a return-to-custody may not be considered as adverse an outcome as a re-offence. However, it is an outcome of significance in this evaluation. A large proportion of the study sample (roughly one-in-five) returned to custody before committing a newly proven re-offence (in the period after their release from custody up to 30 September 2015). If these individuals were at greater risk of recidivism had they not been returned to custody, then any causal impact of IDATP on re-offending outcomes could be potentially biased. Censoring individuals who returned to custody without a newly proven re-offence would not eradicate this potential bias, and would in any case reduce the already small sample size of the treatment group.

It is possible that a re-offence will subsequently be proven for many of the individuals who returned to custody without a record of re-offending. In particular, around half of the individuals in the study sample who were first returned to custody in 2015 were returned before any new proven re-offence, while only around one-third of those who were returned-to-custody during the years from 2013 and 2014 returned before a new proven re-offence. This may reflect the time-lag between offending and conviction.

Since the IDATP referral rate has increased over time, any fixed duration recidivism window will include more recent months for IDATP referrals than for the comparison group. While analytical measures can control for time-variation in re-offending and returns-to-custody that is unrelated to treatment outcomes, the censoring of returns-to-custody may still bias any comparison of the outcomes for IDATP referrals and other inmates.

ANALYSIS

Propensity score matching (PSM) was used to construct samples of treated and untreated offenders who were comparable on observable characteristics. In order to protect against unobservable selection bias in program commencement and completion (which PSM methods cannot address), an ITT design was employed in which all individuals referred to IDATP were included in the treatment group, irrespective of whether they commenced and/or completed the program.

The first stage of the PSM process involved estimating a probit model to predict the probability that an offender would be referred to IDATP, conditional on his pre-determined observable characteristics.[5] Initially, covariates were selected for inclusion on the basis of their statistical significance and extent to which they add explanatory power to the referral model. The predicted probability derived from this model was referred to as the propensity score. Lower values were attributed to offenders whose characteristics predicted a lower likelihood of being referred to IDATP, and higher values were attributed to offenders with characteristics more commonly associated with IDATP referral.

The second stage of the PSM process involved matching treated offenders and untreated counterparts on their propensity scores. Only those offenders whose PSM scores were in the region where the propensity score distributions overlapped could be matched. Any remaining individuals were excluded from the analysis. To capitalise on the large volume of untreated offenders in the current study sample, kernel matching was employed. That is, instead of identifying a single match for each offender in the treatment group (as in one-to-one matching) or a number of equally weighted matches (as in many-to-one matching), kernel methods construct a synthetic individual from the comparison group for each treated individual, using weights based on differences across respective inmate's propensity scores. The highest weights are assigned to those untreated individuals who have the propensity scores most similar to their treated counterparts.[6] The outcome of the matching process was a sample of offenders in the treatment group, and a weighted matched sample of equal size for the comparison group.

The third stage involved ensuring the matched samples satisfied 'covariate balance'—that is, they looked similar in terms of the observable characteristics. This was assessed in the first instance by examining the standardised bias for each covariate before and after matching, and then by conducting t-tests to determine whether there were any statistically significant differences in observable characteristics across the treated and untreated groups, before and after matching.[7,8]

Lastly, recidivism outcomes across the matched samples were directly compared (with recidivism outcomes for the untreated offenders weighted according to the weights derived to achieve the match) and any differences were tested for statistical significance.

The PSM procedure was first carried out for the sub-sample of offenders whom we were able to observe for 3 months after their release from custody, then for the smaller sub-sample observed for up to 6 months, and lastly for the sub-sample observed for 12 months. The same variables were included in the propensity score model in each of these iterations (although the estimated coefficients changed slightly). Matching on each sub-sample separately ensured that covariate balance was achieved for the sub-samples of offenders we observed over longer follow-up periods.[9]

All analyses were carried out in Stata (version 13.1). PSM was administered using the user-written command 'psmatch2' (version 4.0.11), and analyses of covariate balance were assisted by the supplementary command 'pstest' (version 4.2.1) (Leuven & Sianesi, 2003).

RESULTS

DESCRIPTIVE STATISTICS

Descriptive statistics on offender socio-demographic characteristics, characteristics of the index custodial episode, the offender's criminal history, and official risk assessment measures are presented in Tables 1a-d.

Table 1a. Descriptive statistics: Offender characteristics

	Referral group		Comparison group		Total		Chi-square test
	N	%	N	%	N	%	
Age at time of release							
Aged up to 25	87	25.6	115	12.2	202	15.7	
Aged 25-34	151	44.4	403	42.6	554	43.1	
Aged 35-44	77	22.6	303	32.1	380	29.6	
Aged 45-54	25	7.4	124	13.1	149	11.6	
Total valid values	340	100.0	945	100.0	1285	100.0	43.5 ***
Missing	--	--	--	--	--	--	-- --
ATSI status							
Non-indigenous	207	60.9	569	60.2	776	60.4	
Indigenous	133	39.1	376	39.8	509	39.6	
Total valid values	340	100	945	100	1285	100	0.0
Missing	--	--	--	--	--	--	-- --
Residential area disadvantage (SEIFA) quartile							
1 (most disadvantaged)	109	32.6	300	32.5	409	32.5	
2	115	34.4	289	31.3	404	32.1	
3	78	23.4	227	24.6	305	24.2	
4 (least disadvantaged)	32	9.6	108	11.7	140	11.1	
Total valid values	334	100.0	924	100.0	1258	100.0	1.9
Missing	6	1.8	21	2.2	27	2.1	0.3
Residential area remoteness (ARIA)							
Major cities	215	64.2	596	64.6	811	64.5	
Inner regional	114	34.0	305	33.0	419	33.3	
Outer regional/Remote/Very remote	6	1.8	22	2.4	28	2.2	
Total valid values	335	100.0	923	100.0	1258	100.0	0.5
Missing	5	1.5	22	2.3	27	2.1	0.9
Disability flag							
Yes	46	13.5	74	7.8	120	9.3	
No	294	86.5	871	92.2	1165	90.7	
Total valid values	340	100	945	100	1285	100	9.6 **
Missing	--	--	--	--	--	--	-- --

Notes. * p<.05, ** p<.01, *** p<.001, -- None or not applicable.

Table 1b. Descriptive statistics: Custodial episode characteristics

	Referral group		Comparison group		Total		Chi-square test
	N	%	N	%	N	%	
Months in custody (actual)							
1 to <2 years	115	33.8	349	36.9	464	36.1	
2 to <4 years	159	46.8	369	39.0	528	41.1	
4 to <5 years	27	7.9	101	10.7	128	10.0	
5 plus years	39	11.5	126	13.3	165	12.8	
Total valid values	340	100.0	945	100.0	1285	100.0	6.9
Missing	--	--	--	--	--	--	-- --
Ex-ante minimum months in custody							
<2 years	100	29.4	328	34.7	428	33.3	
2 to <4 years	154	45.3	311	32.9	465	36.2	
4 to <5 years	29	8.5	108	11.4	137	10.7	
5 plus years	57	16.8	198	21.0	255	19.8	
Total valid values	340	100.0	945	100.0	1285	100.0	16.9 ***
Missing	--	--	--	--	--	--	-- --
Ex-ante maximum months in custody							
1 to <2 years	37	10.9	144	15.2	181	14.1	
2 to <4 years	123	36.2	323	34.2	446	34.7	
4 to <5 years	66	19.4	154	16.3	220	17.1	
5 plus years	114	33.5	324	34.3	438	34.1	
Total valid values	340	100.0	945	100.0	1285	100.0	5.1
Missing	--	--	--	--	--	--	-- --
Parole supervision outcome (ex-post)							
SPA	194	58.1	519	56.1	713	56.6	
Court	121	36.2	327	35.4	448	35.6	
Sentence expiry	19	5.7	79	8.5	98	7.8	
Total valid values	334	100.0	925	100.0	1259	100.0	2.8
Missing	6	1.8	20	2.1	26	2.0	0.2
Parole prospects (ex-ante)							
SPA	197	57.9	532	56.3	729	56.7	
Court	54	15.9	120	12.7	174	13.5	
None	89	26.2	293	31.0	382	29.7	
Total valid values	340	100.0	945	100.0	1285	100.0	4.0
Missing	--	--	--	--	--	--	-- --
Segregation flag							
Yes	6	1.8	12	1.3	18	1.4	
No	334	98.2	933	98.7	1267	98.6	
Total valid values	340	100	945	100	1285	100	0.4
Missing	--	--	--	--	--	--	-- --
Protection flag							
Yes	25	7.4	122	12.9	147	11.4	
No	315	92.6	823	87.1	1138	88.6	
Total valid values	340	100	945	100	1285	100	7.6 **
Missing	--	--	--	--	--	--	-- --
Maximum security classification level							
E	44	12.9	104	11.0	148	11.5	
A	50	14.7	103	10.9	153	11.9	
B	141	41.5	315	33.3	456	35.5	
C1	65	19.1	210	22.2	275	21.4	
C2/C3	40	11.8	213	22.5	253	19.7	
Total valid values	340	100.0	945	100.0	1285	100.0	24.4 ***
Missing	--	--	--	--	--	--	-- --

Notes. * p<.05, ** p<.01, *** p<.001, -- None or not applicable.

Table 1c. Descriptive statistics: Prior criminal history

	Referral group		Comparison group		Total		Chi-square
	N	%	N	%	N	%	test
Age at first contact							
Aged up to 15	116	34.1	212	22.4	328	25.5	
Aged 15-19	150	44.1	357	37.8	507	39.5	
Aged 20-24	39	11.5	181	19.2	220	17.1	
Aged 25-34	28	8.2	159	16.8	187	14.6	
Aged 35+	7	2.1	36	3.8	43	3.3	
Total valid values	340	100.0	945	100.0	1285	100.0	39.5 ***
Missing	--	--	--	--	--	--	-- --
Prior proven offence court appearances^							
1	15	4.4	68	7.2	83	6.5	
2-4	93	27.4	365	38.6	458	35.6	
5-9	183	53.8	440	46.6	623	48.5	
10+	49	14.4	72	7.6	121	9.4	
Total valid values	340	100.0	945	100.0	1285	100.0	26.9 ***
Missing	--	--	--	--	--	--	-- --
Prior proven drug offence court appearances^							
0	196	57.6	530	56.1	726	56.5	
1	81	23.8	253	26.8	334	26.0	
2-3	46	13.5	100	10.6	146	11.4	
4+	17	5.0	62	6.6	79	6.1	
Total valid values	340	100.0	945	100.0	1285	100.0	3.8
Missing	--	--	--	--	--	--	-- --
Prior proven drink driving (PCA) offence court appearances^							
0	276	81.2	758	80.2	1034	80.5	
1	54	15.9	148	15.7	202	15.7	
2+	10	2.9	39	4.1	49	3.8	
Total valid values	340	100.0	945	100.0	1285	100.0	1.0
Missing	--	--	--	--	--	--	-- --
Prior proven property offence court appearances^							
0	69	20.3	284	30.1	353	27.5	
1	84	24.7	221	23.4	305	23.7	
2-3	99	29.1	261	27.6	360	28.0	
4+	88	25.9	179	18.9	267	20.8	
Total valid values	340	100.0	945	100.0	1285	100.0	14.8 **
Missing	--	--	--	--	--	--	-- --
Prior proven serious violent offence court appearances^							
0	170	50.0	555	58.7	725	56.4	
1	111	32.6	291	30.8	402	31.3	
2+	59	17.4	99	10.5	158	12.3	
Total valid values	340	100.0	945	100.0	1285	100.0	13.3 **
Missing	--	--	--	--	--	--	-- --
Prior proven non-serious violent offence court appearances^							
0	73	21.5	289	30.6	362	28.2	
1	97	28.5	283	29.9	380	29.6	
2+	170	50.0	373	39.5	543	42.3	
Total valid values	340	100.0	945	100.0	1285	100.0	14.1 ***
Missing	--	--	--	--	--	--	-- --
Prior proven indictable offence court appearances^							
0-2	70	20.6	308	32.6	378	29.4	
3-4	103	30.3	344	36.4	447	34.8	
5-6	97	28.5	182	19.3	279	21.7	
7+	70	20.6	111	11.7	181	14.1	
Total valid values	340	100.0	945	100.0	1285	100.0	38.7 ***
Missing	--	--	--	--	--	--	-- --
Prior court appearances with prison penalty*							
0-1	70	20.6	281	29.7	351	27.3	
2-4	179	52.6	493	52.2	672	52.3	
5+	91	26.8	171	18.1	262	20.4	
Total valid values	340	100.0	945	100.0	1285	100.0	16.9 ***
Missing	--	--	--	--	--	--	-- --

Notes. * p<.05, ** p<.01, *** p<.001, -- None or not applicable.
^ Count of court appearances in five years prior to and including the index custodial episode at which an offence (of type specified) is proven.

Table 1d. Descriptive statistics: Level of Service Inventory-Revised (LSI-R) assessment results

	Referral group		Comparison group		Total		Chi-square
	N	%	N	%	N	%	test
LSI-R riskband							
Medium	118	34.7	437	46.2	555	43.2	
Medium-High	157	46.2	396	41.9	553	43.0	
High	65	19.1	112	11.9	177	13.8	
Total valid values	340	100.0	945	100.0	1285	100.0	18.3 ***
Missing	--	--	--	--	--	--	-- --
LSI-R Alcohol and other drug domain score							
5	50	14.7	214	22.6	264	20.5	
6	78	22.9	238	25.2	316	24.6	
7	121	35.6	278	29.4	399	31.1	
8	74	21.8	147	15.6	221	17.2	
9	17	5.0	68	7.2	85	6.6	
Total valid values	340	100.0	945	100.0	1285	100.0	18.7 ***
Missing	--	--	--	--	--	--	-- --
Q37: "Have you ever had an alcohol problem?..."							
Yes	251	76.8	682	74.9	933	75.4	
No	76	23.2	229	25.1	305	24.6	
Total valid values	327	100	911	100	1238	100	0.5
Missing	13	3.8	34	3.6	47	3.7	0.0
Q38: "Have you ever had a drug problem?..."							
Yes	324	99.1	889	97.5	1213	97.9	
No	3	0.9	23	2.5	26	2.1	
Total valid values	327	100	912	100	1239	100	3.0
Missing	13	3.8	33	3.5	46	3.6	0.1
Q39: "Do you currently have an alcohol problem?..."							
Yes	169	51.7	453	49.7	622	50.2	
No	158	48.3	459	50.3	617	49.8	
Total valid values	327	100	912	100	1239	100	0.4
Missing	13	3.8	33	3.5	46	3.6	0.1
Q40: "Do you currently have a drug problem?..."							
Yes	297	90.8	769	84.5	1066	86.2	
No	30	9.2	141	15.5	171	13.8	
Total valid values	327	100	910	100	1237	100	8.1 **
Missing	13	3.8	35	3.7	48	3.7	0.0
Q41: "Has/could your drug/alcohol use contribute to law violations?..."							
Yes	326	99.7	905	99.2	1231	99.4	
No	1	0.3	7	0.8	8	0.6	
Total valid values	327	100	912	100	1239	100	0.8
Missing	13	3.8	33	3.5	46	3.6	0.1
Q42: "Has your family complained about your drug/alcohol use?..."							
Yes	310	95.1	872	95.7	1182	95.6	
No	16	4.9	39	4.3	55	4.4	
Total valid values	326	100	911	100	1237	100	0.2
Missing	14	4.1	34	3.6	48	3.7	0.2
Q43: "Have you had school/work problems due to your drug/alcohol use?..."							
Yes	277	85.0	721	79.3	998	80.8	
No	49	15.0	188	20.7	237	19.2	
Total valid values	326	100	909	100	1235	100	4.9 *
Missing	14	4.1	36	3.8	50	3.9	0.1
Q44: "Have you had medical problems due to your drug/alcohol use?..."							
Yes	126	39.4	374	41.3	500	40.8	
No	194	60.6	531	58.7	725	59.2	
Total valid values	320	100	905	100	1225	100	0.4
Missing	20	5.9	40	4.2	60	4.7	1.5
Q45: "Details of drug/alcohol use [frequency, consequences, rehab, etc]..."							
Yes	251	76.8	682	74.9	933	75.4	
No	76	23.2	229	25.1	305	24.6	
Total valid values	327	100	911	100	1238	100	0.5
Missing	13	3.8	34	3.6	47	3.7	0.0

Notes. * p<.05, ** p<.01, *** p<.001, -- None or not applicable.

IDATP referrals were younger than the comparison group (just 30% aged 35 and over, compared with 45 per cent in the comparison group), and they were more likely to have a disability recorded in the NSW Corrective Services database (14% versus 8% for the comparison group). There was little difference by ATSI status (the sample overall was 40% Indigenous), residential area disadvantage (SEIFA IRSD) or remoteness (ARIA).

The duration of the offenders' index episode (as well as the ex-ante maximum custodial episode length) was similar in the referral and comparison groups. Referrals also had similar parole outcomes to the comparison group (and ex-ante prospects of SPA parole). For the sample as a whole, 57 per cent were released onto parole by the SPA and 36 per cent had a period of court-ordered parole. IDATP referrals were equally likely to be in segregation three months after their last conviction, but less likely to be under protection (7% versus 13% because in order to be eligible for IDATP an inmate could not be subject to a protection order, or willing to sign off protection).

IDATP referrals had more extensive criminal histories than offenders in the comparison group. Referrals were younger at the time of their first contact with the criminal justice system (78% were aged under 20, compared to just 60% of the comparison group). Referrals also had a greater number of court finalisations with a proven offence during the index custodial episode or in the previous five years (68% recorded five or more such finalisations, versus 54 per cent for the comparison group). Specifically, they were more likely to have a property offence, a serious violent offence, a non-serious violent offence, or an indictable offence proven in the previous 5 years. They also recorded a greater number of prior court finalisations in which a prison penalty was handed down (five or more such finalisations during or in the five years prior to the index custodial episode were recorded by 27% of the referrals, versus 18% for the comparison group). There was little difference between the referral and comparison groups in the number of prior court finalisations with proven drug offences, or the number with a proven drink-driving (PCA) offence during or in the five years before the index custodial episode.

IDATP referrals were at higher risk according to the LSI-R (19% versus 12% are classified as 'High' risk). They were also at higher risk in the alcohol and other drug domain (27% versus 23% with scores of 8 or 9, the maximum). Their answers to specific questions on this domain suggest that IDATP referrals were more likely than the comparison group to have a current drug problem (91% versus 84%), and school or work problems due to drug and/or alcohol use (85% versus 79%). They were equally likely as the comparison group to have had an alcohol (75% overall) or a drug problem (98% overall), to have a current alcohol problem (50% overall), for their drug/alcohol use to have contributed to law violations (99% overall), to have had family member complain about their drug/alcohol use (96% overall), and to have had medical problems related to their drug/alcohol use (41% overall).

PROPENSITY SCORE MATCHING

Table 2 presents the results of the probit model predicting IDATP referral as a function of observable statistics. The three columns from left-to-right present the results for samples with follow-up windows of at least 3, 6 and 12 months, respectively. Each model includes control variables reflecting: age, Indigenous status, LSI-R riskband, LSI-R alcohol and other drug domain score, age of first contact, prior property offences, prior non-serious violent offences, SPA parole prospects, maximum security classification level, disability flag and a protection flag.

Also included are intercept terms that reflect the maximum follow-up period observable for a given offender, or equivalently, and the era during which an offender was released from custody. These variables were included for a number of reasons. First, they significantly predict referral to IDATP given that referral rates have increased considerably over time. Secondly (perhaps most importantly), including these variables in the model (and checking that they were balanced in the matched sample) helped to protect against selection bias from time-varying influences on recidivism rates. Lastly, they absorbed the average difference in referral rates across the sub-samples that was used to estimate the models. This potentially improves the comparability of the coefficient estimates on the other covariates across the three models.

Figure 2 presents the distribution of propensity scores for the treated and comparison groups. The panels from left-to-right illustrate results for the sub-samples with follow-up windows of at least 3, 6 and 12 months, respectively.

The distribution of propensity scores amongst the comparison group is heavily skewed towards lower values. The model predicts a lower probability of referral for individuals with characteristics that were relatively common in the comparison group. The distribution of propensity scores amongst the treatment group was more symmetric. Higher predicted propensity scores became less common as the observation window increased. This is consistent with the fact that referral rates have increased over time because the treated offenders with a follow-up window of 12 months would have been referred to the program well over a year ago.

For all three samples, the region of overlap in the distribution of propensity scores amongst treated and untreated offenders (the common support) was large. This indicated that the vast majority of the treated sample could be matched to counterparts from the comparison group. For the 3, 6, and 12-month samples, the common support covered 96, 97 and 93 per cent of the treated sample, and 100 per cent of the untreated sample, respectively.

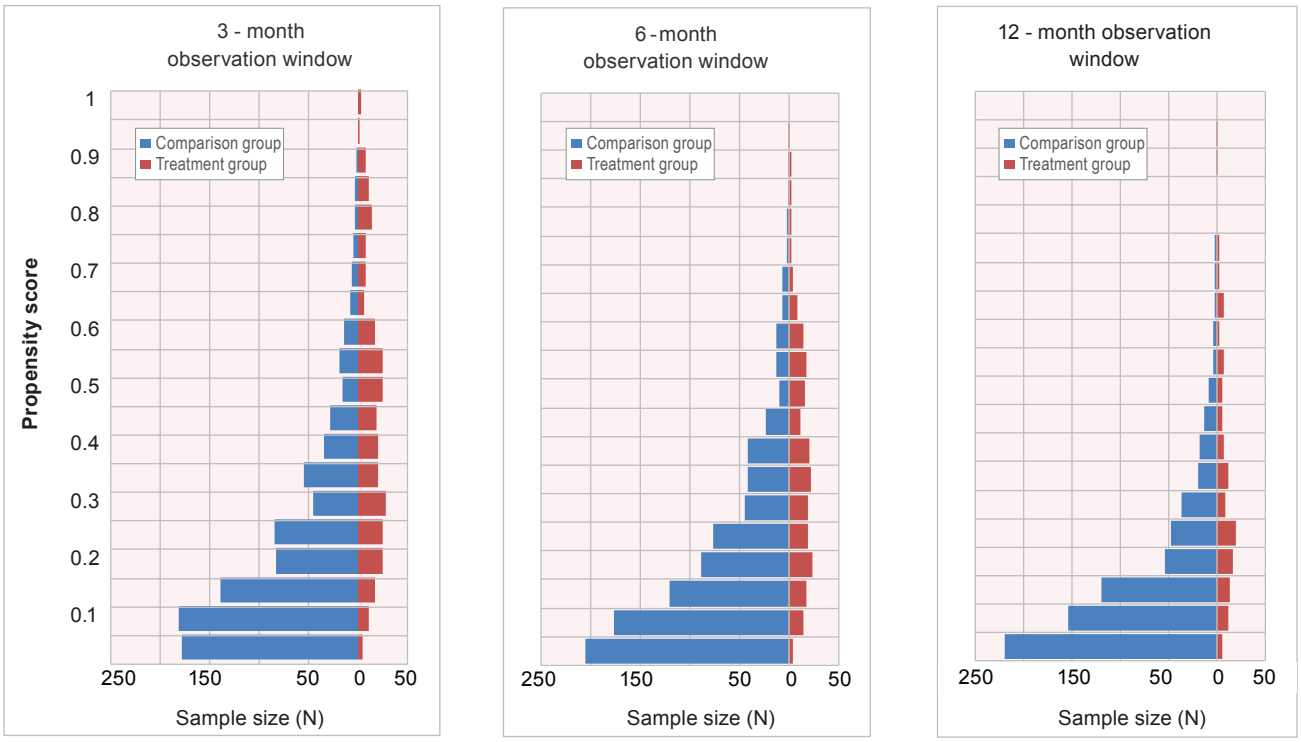
Figure 3 depicts the extent to which the treated and untreated samples differed across the covariates according to the standardised bias, before and after matching. Panels from left-to-right illustrate the results for the sub-samples with follow-up windows of at least 3, 6 and 12 months, respectively. In all three samples, the matching process worked generally to

Table 2. Propensity score model results

	Observation window					
Referred to IDATP	3 months		6 months		12 months	
Independent variables	Coefficient	(st.err.)	Coefficient	(st.err.)	Coefficient	(st.err.)
Age category (on release): *Relative to Aged up to 25*						
Aged 25-34	-0.547 ***	(0.122)	-0.617 ***	(0.129)	-0.742 ***	(0.151)
Aged 35-44	-0.737 ***	(0.155)	-0.816 ***	(0.168)	-1.101 ***	(0.210)
Aged 45-54	-0.747 ***	(0.225)	-0.801 **	(0.245)	-1.018 **	(0.314)
ATSI identified	-0.201 *	(0.096)	-0.214 *	(0.103)	-0.314 *	(0.126)
LSI-R risk-band: *Relative to Medium*						
Medium-High	0.226 *	(0.106)	0.249 *	(0.115)	0.141	(0.141)
High	0.440 **	(0.151)	0.526 **	(0.163)	0.469 *	(0.202)
LSI-R drug and alcohol domain score: *Relative to 5*						
6	0.160	(0.142)	0.230	(0.154)	0.157	(0.195)
7	0.331 *	(0.136)	0.278	(0.147)	0.314	(0.183)
8	0.389 *	(0.155)	0.426 **	(0.165)	0.516 *	(0.206)
9	-0.326	(0.233)	-0.516	(0.264)	-0.547	(0.331)
Age of first contact: *Relative to <20*						
Aged 20+	-0.310 *	(0.141)	-0.330 *	(0.155)	-0.241	(0.197)
Prior proven property offence CAs: *Relative to none*						
1	0.181	(0.127)	0.213	(0.137)	0.376 *	(0.170)
2-3	0.068	(0.126)	0.055	(0.135)	0.315	(0.167)
4+	0.155	(0.136)	0.121	(0.145)	0.204	(0.180)
Prior proven non-serious violence offence CAs: *Relative to none*						
1	0.178	(0.121)	0.153	(0.130)	0.013	(0.159)
2+	0.169	(0.115)	0.198	(0.123)	0.133	(0.150)
Disability flag	0.387 **	(0.148)	0.491 **	(0.157)	0.408 *	(0.183)
Protection flag	-0.400 **	(0.149)	-0.398 *	(0.166)	-0.447 *	(0.218)
Parole prospect/SPA pressure (ex-ante): *Relative to <3 years max in custody*						
SPA parole prospect	0.003	(0.106)	-0.042	(0.112)	-0.028	(0.138)
Court parole (3+ years max in custody)	0.126	(0.147)	0.165	(0.158)	0.102	(0.186)
Max security classification level: *Relative to C2/C3*						
E	0.541 **	(0.176)	0.413 *	(0.187)	0.237	(0.231)
A	0.370 *	(0.173)	0.310	(0.186)	0.063	(0.222)
B	0.289 *	(0.139)	0.229	(0.147)	0.166	(0.174)
C1	0.199	(0.151)	0.084	(0.162)	0.075	(0.193)
Observation window (era of release): *Relative to lower limit*						
6 to <9 months	-0.482 **	(0.183)				
9 to <12 months	-0.749 ***	(0.172)	-0.277	(0.173)		
12 to <15 months	-0.896 ***	(0.177)	-0.432 *	(0.177)		
15 to <18 months	-1.157 ***	(0.191)	-0.701 ***	(0.193)	-0.255	(0.192)
18+ months	-1.610 ***	(0.151)	-1.157 ***	(0.152)	-0.754 ***	(0.148)
Constant	0.166	(0.248)	-0.174	(0.254)	-0.354	(0.286)
N	1198		1091		836	
Chi2-statistic on model	275.7 ***		202.0 ***		131.3 ***	

Notes. st.err. = standard error; CAs=court appearances (in five years prior to and including index custodial episode); LSI-R=Level of Service Inventory-Revised
* p<.05, ** p<.01, *** p<.001.

Figure 2. Distribution of estimated propensity scores



reduce the standardised bias on both the covariates included in the matching model, and other observable variables. The standardised bias remains sizeable for some covariates in the matched samples, but it was smaller than the benchmark maximum of 20 per cent across all the important characteristics.

Table A1 in the appendix presents the standardised bias across the whole suite of observable variables considered for inclusion in the model, for each of the three sub-samples, before and after matching. Results of t-tests of the statistical significance of any difference across the treated and untreated groups are also presented. The most significant differences in the composition of the treated and untreated groups prior to matching have been ameliorated. The matched samples were not identical, but they were comparable. With two exceptions,[10] for all observable variables, in all three models, the standardised bias was less than 20 per cent after matching, and the remaining differences were statistically insignificant.

RECIDIVISM RATES

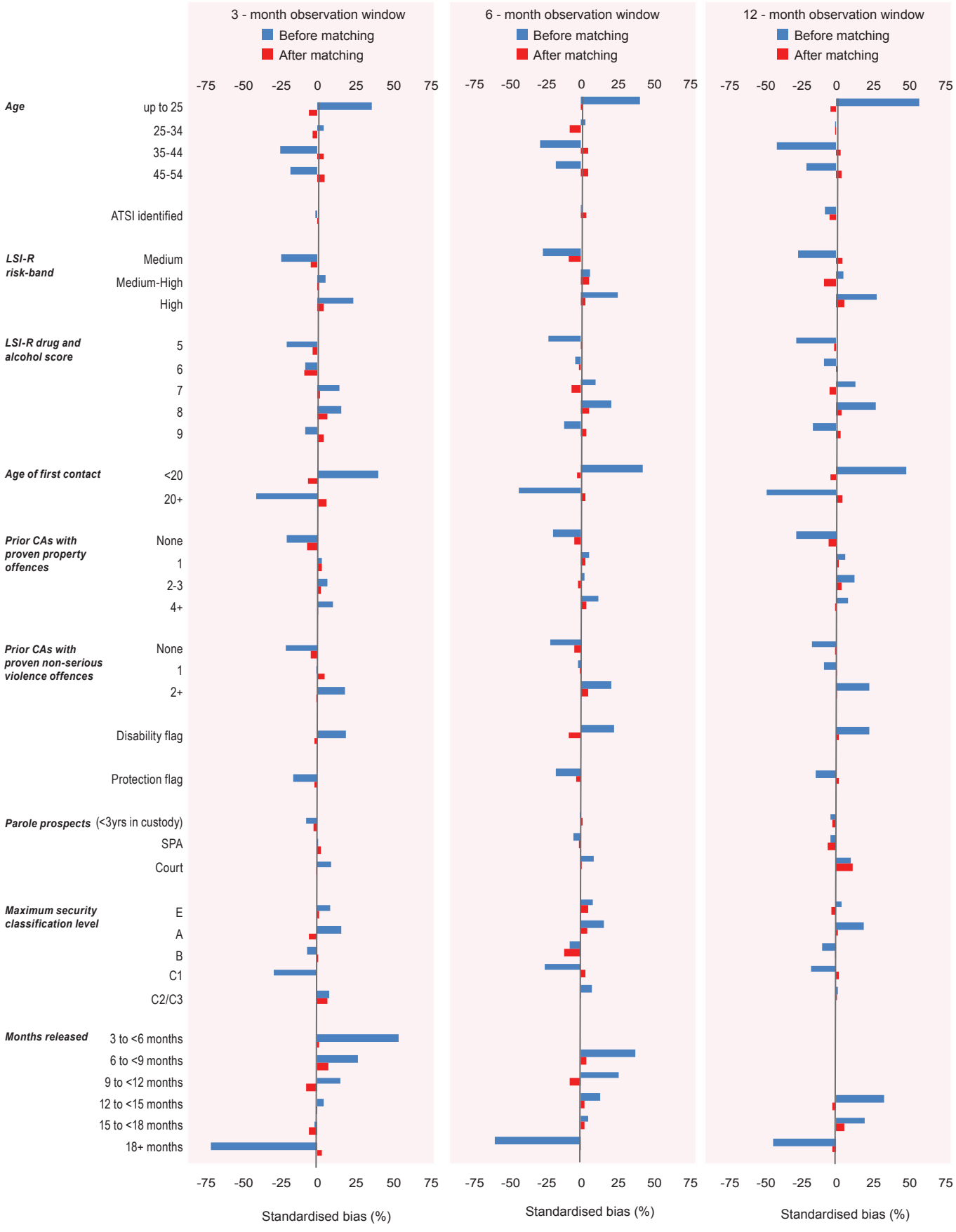
Table 3 reports the rates of re-offending and returns-to-custody for the treated and untreated samples, before and after matching. The recidivism rates at 3, 6 and 12 months were based respectively on the (nested) samples observed for 3, 6 and 12 months. Figure 4 also presents Kaplan-Meier failure curves for the treated and untreated samples after matching. The end-point for each curve corresponded to the recidivism rate presented in the table, while the curve illustrates the cumulative percentage of offenders in each subsample who have re-offended or returned to custody at each point in time.

The IDATP referrals have higher rates of re-offending and return-to-custody than offenders in the unmatched comparison group. After 3, 6 and 12 months, respectively, 24, 41 and 60 per cent of the IDATP referral group had re-offended or been returned to custody. For the unmatched comparison group, the rates were 20, 36 and 53 per cent, respectively. None of these differences was statistically significant.

Table 3. Recidivism rates: Percentage re-offended or returned to custody

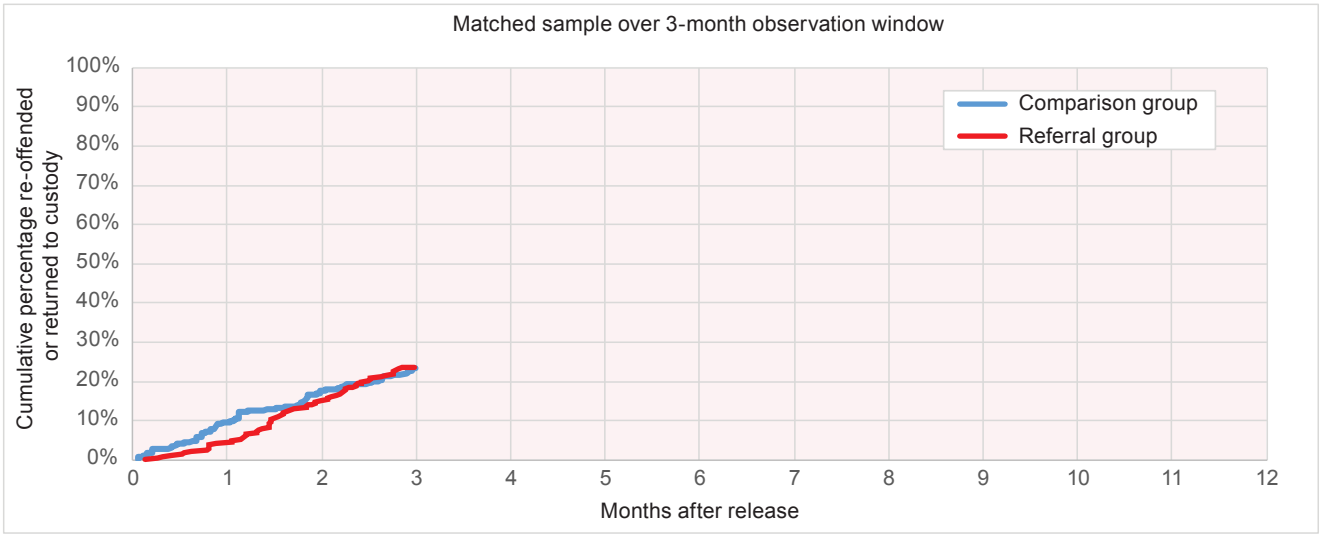
Observation window (months)	Unmatched sample			Matched sample		
	Treatment group	Comparison group	t-statistic	Treatment group	Comparison group	t-statistic
3	24.2	19.8	1.61	23.7	23.4	0.07
6	40.6	36.1	1.25	40.9	47.1	-1.31
12	59.9	53.4	1.36	60.2	62.3	-0.39

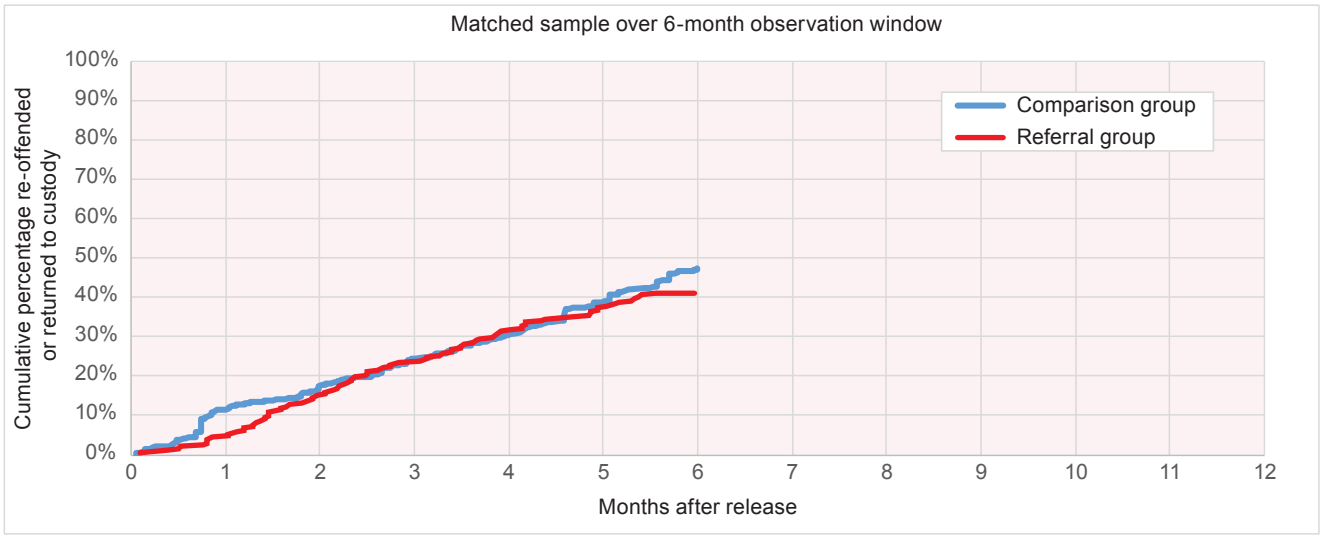
Figure 3. Covariate balance: Before and after matching

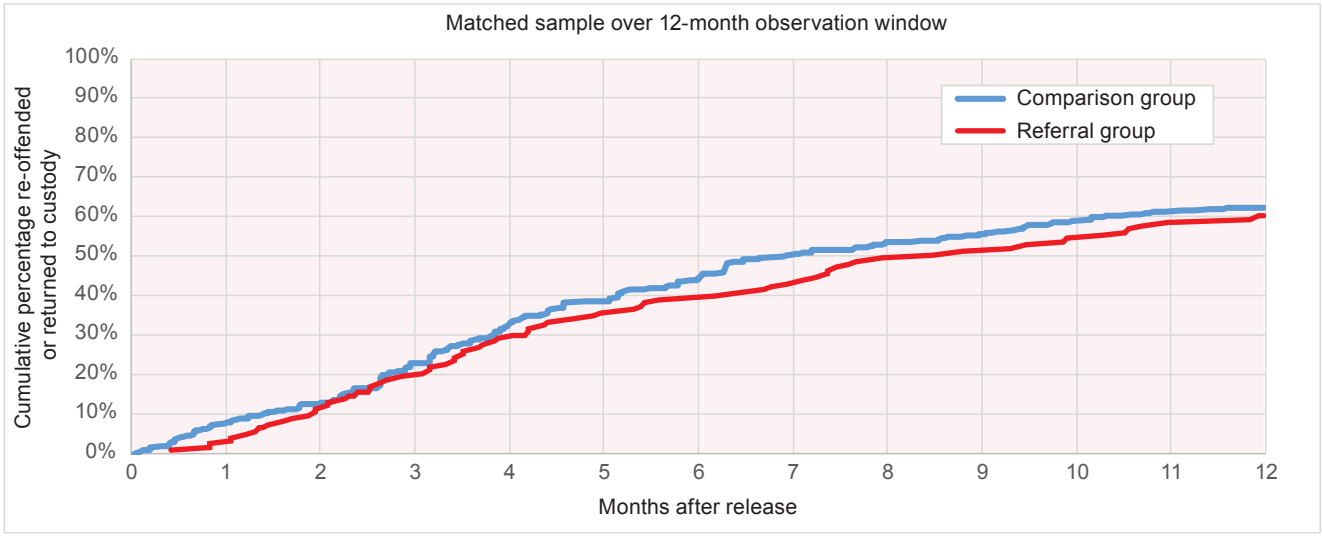


Notes. CA = Court appearances; LSI-R = Level of Service Inventory - Revised.

Figure 4. Time to first re-offence or return-to-custody (Kaplan-Meier failure curve)







This pattern was reversed in the matched samples. These show slightly lower recidivism rates for the treatment than the comparison group, particularly in the sample observed over 6 months. After 3, 6 and 12 months, respectively, 24, 41 and 60 per cent of the matched IDATP referral group had re-offended or been returned to custody and the comparable rates for the matched comparison group were 23, 47 and 62 per cent. Again, however, none of these differences reached statistical significance. The Kaplan-Meier curves presented in Figure 4 also illustrate very similar patterns in the timing of re-offences or returns-to-custody in the matched samples of treated and untreated offenders.

DISCUSSION

This paper compared the rates of reoffending and return-to-custody of prisoners referred to IDATP with a comparable group of prisoners who were eligible for the program but who were not referred. The IDATP referrals were found to be younger, to have more extensive criminal histories, and to be classified at a higher risk of recidivism (including relating to their drug and/or alcohol use) than offenders in the comparison group. After matching on estimated propensity scores reflecting probability of treatment referral, the two offender groups were balanced across a broad range of observable characteristics. A comparison of rates of re-offending and/or return-to-custody in these two matched groups were lower for the treatment group at the 6 and 12-month follow-up points but these differences in recidivism were not statistically significant.

This analysis should be treated as a preliminary evaluation of the effectiveness of IDATP because the power of the statistical analyses was severely limited by: (1) the very small sample of IDATP referrals who had sufficient time in the community for reoffending to be observed; and (2) the fact that just over half of these referrals commenced the program (approximately 59.4%). Power calculations show that for the 3-month sample (with N=289 referrals and N=909 comparison), there was only a one-in-five probability of detecting a 25 per cent reduction in recidivism in the members of the treatment group who actually commenced IDATP. This means that even a potentially large program effect may have gone undetected. This probability rose to about one-in-two for the 6-month and 12-month samples (which were smaller in size, but in which IDATP completion rates amongst referrals, and benchmark recidivism rates, were higher).

As indicated earlier, unanticipated disruptions during the study period had a substantial impact on referral rates and recruitment into IDATP. The power to detect a treatment impact of IDATP (if one exists) will improve as the pool of eligible referrals increases and more offenders successfully engage with the program.[11] The current analysis therefore should be replicated when sufficient numbers of referrals have been achieved and sufficient time has passed for the program to be fully embedded in the CSNSW operational environment.

Future evaluations of IDATP would also benefit from employing more rigorous research designs to assess program effectiveness. While the propensity score techniques used in the current analysis were successful in achieving balance across the treatment and comparison groups on observable characteristics related to recidivism risk (e.g. demographics, prior criminal history), the possibility of unobservable selection bias remains (i.e. that differences between referrals and the comparison group are inadequately controlled for using observable characteristics alone). Ideally, particularly since IDATP places are limited, future studies could adopt a randomised controlled trial (RCT) design in which a large number of inmates who are eligible, suitable and willing to participate are randomly allocated to IDATP or to another treatment condition. This would eliminate the possibility of selection bias and allow researchers to draw stronger causal inferences than permitted by the ITT design used in the current study.

Researchers may also be able to exploit other features of the institutional context in future evaluations, such as the current limitations of IDATP in treating offenders at particular security classification levels. Since IDATP was relocated to a minimum security complex in July 2014, eligible inmates classified at a medium security level have been unable to participate in the program. When infrastructure work is complete, however, these inmates will once again be accommodated. Medium security inmates referred to IDATP during this limited period should, for all purposes, be equivalent to medium security inmates referred at other times, except for the fact that they were not able to participate. Comparing recidivism outcomes over time within this particular security classification would provide a fairer test of the impact of IDATP because the treated and untreated samples would be matched not only on objective eligibility criteria but also subjective suitability criteria which are more difficult to measure after the fact. The Bureau of Crime Statistics and Research is currently exploring this and other evaluation alternatives with IDATP program administrators and CSNSW. It will also explore the potential for future outcome studies to incorporate more sensitive measures of behavioural change such as the results of routine prison drug testing.

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NOTES

1. Recent serious misconduct referred to any segregation placement in the two months preceding program entry.
2. Procedures around the 'progression' of inmates to lower levels of security classification are outlined in the Corrective Services NSW Offender Classification & Case Management Policy & Procedures Manual (2015), Chapter 14.1.
3. See Watkins (2011) on the use of the LSI-R in an Australian context.
4. For each individual, we extracted the most recent LSI-R score collected prior to one year before their release from the index custodial episode from ROD (ROD includes the history of LSI-Rs administered from 2007 onwards). If ROD included no such score, the LSI-R score associated with the OIMS extract was used if available.
5. Many potential control variables relating to the index custodial episode could be affected by participation in IDATP. For example, offenders who complete treatment might subsequently be awarded lower security classification levels, and be more likely to be released early onto parole. As a result, direct measures of characteristics which are likely to be affected by treatment status have been excluded from the suite of potential control variables.
6. The weighting process was dictated by an Epanechnikov kernel with a bandwidth of .01.
7. The impact of the matching process can be assessed in the first instance by examining for each covariate x, the standardised bias evident across the treated and untreated samples pre-match (SB_x) and post-match (SB_x^M). That is:

$$SB_x = \frac{\bar{x}_{T=1} - \bar{x}_{T=0}}{\sqrt{½(\sigma^2_{x,T=1} + \sigma^2_{x,T=0})}} \; ; \; SB_x^M = \frac{\bar{x}^{\,M}_{T=1} - \bar{x}^{\,M}_{T=0}}{\sqrt{½(\sigma^2_{x,T=1} + \sigma^2_{x,T=0})}}$$

   where $\bar{x}_{T=1}$, $\bar{x}_{T=0}$ denote the mean values of covariate x in the treated and untreated samples pre-match, and $\bar{x}^{\,M}_{T=1}$, $\bar{x}^{\,M}_{T=0}$ the analogue in the post-matched samples; and $\sigma^2_{x,T=1}$, $\sigma^2_{x,T=0}$ denote the variance of x in the treated and untreated pre-matched samples (Rosenbaum & Rubin, 1985). A commonly applied rule-of-thumb states that 20% standardised bias on a relevant covariate indicates a poor-quality match (Rosenbaum & Rubin, 1985). A t-test is also administered to test the statistical significance of any difference in observable characteristics across the treated and untreated groups, before and after matching.
8. Rubin's (2001) B and R statistics provide additional summary measures of covariate balance. Both summarise characteristics of the linear (rather than probit) index of the propensity score (a function of the observable variables included in the model). Rubin's B measures the absolute standardised difference of the means of the index across the matched treated and untreated groups, which in a well-balanced sample should be less than 25%; Rubin's R measures the ratio of the variance of the propensity score index across the matched treated and untreated groups, which should lie between 0.5 and 2.0 (Rubin, 2001). The final specifications presented here satisfy these benchmarks for all three observation samples.
9. With a larger sample it may have been possible to construct a single matched sample through stratifying the matching process according to the maximum observation window available for a given offender. That is, matching the sub-sample observable up to 3 months, but not 6; the sub-sample observable up to 6 months, but not 12, and then the sub-sample observable up to 12 months or more. However, in this case the quality of match (the covariate balance) was much improved by allowing greater flexibility in matching for the smaller observation windows (i.e. in potentially matching any treated offender with a minimum 3-month follow-up period to any such offender in the comparison group).
10. The t-test suggests that the treatment group is statistically significantly more likely to have a current alcohol problem than the matched comparison group in the 3-month sample; however, the magnitude of the standardised bias on this variable is smaller than 20%. Meanwhile, the standardised bias on the prevalence of having exactly one prior court appearance with a proven serious violence offence is greater than 20% in magnitude for the 12-month sample, but the t-test suggests this difference is not statistically significant.
11. Note that while a larger sample size will improve our ability to analyse with more confidence it will not necessarily result in the detection of a significant difference between the treatment and control groups in the direction of a positive treatment effect.

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APPENDIX

Table A1. Covariate balance

	3-month window				6-month window				12-month window			
	Before matching		After matching		Before matching		After matching		Before matching		After matching	
	Std bias	t-test	Std bias	t-test	Std bias	t-test	Std bias	t-test	Std bias	t-test	Std bias	t-test
Model covariates												
Aged up to 25	34.1	^ ***	-11.0		38.8	^ ***	-6.3		52.8	^ ***	-4.1	
Aged 25-34	2.2		-0.2		1.3		1.7		-1.2		0.2	
Aged 35-44	-22.1	^ ***	9.3		-26.5	^ ***	0.3		-38.3	^ ***	1.5	
Aged 45-54	-17.0	*	1.5		-16.9	*	5.3		-20.5	^ *	3.5	
ATSI identified	1.2		0.4		3.2		1.3		-4.9		4.1	
LSI-R risk-band: Medium	-23.7	^ ***	-5.1		-25.6	^ ***	-2.7		-24.9	^ **	-0.4	
LSI-R risk-band: Medium-High	8.2		3.7		8.9		2.2		7.1		-3.6	
LSI-R risk-band: High	20.3	^ ***	1.8		21.7	^ **	0.6		23.0	^ **	5.3	
LSI-R drug and alcohol score: 5	-16.5	*	-5.5		-17.9	*	1.7		-21.8	^ *	2.6	
LSI-R drug and alcohol score: 6	-9.0		-3.5		-6.3		-3.3		-10.5		-0.5	
LSI-R drug and alcohol score: 7	17.2	**	7.7		13.7		-3.0		17.9	*	-6.6	
LSI-R drug and alcohol score: 8	9.4		-1.6		13.4		4.8		18.6	*	4.4	
LSI-R drug and alcohol score: 9	-6.9		2.6		-10.1		0.9		-16.1		2.4	
Age of first contact: <20	40.5	^ ***	-2.1		43.2	^ ***	-1.4		49.5	^ ***	-2.1	
Age of first contact: 20+	-40.5	^ ***	2.1		-43.2	^ ***	1.4		-49.5	^ ***	2.1	
Prior proven property offence CAs: None	-18.7	**	-10.3		-17.6	*	-1.8		-25.8	^ **	-16.5	
Prior proven property offence CAs: 1	2.6		5.3		4.8		-0.8		4.8		11.2	
Prior proven property offence CAs: 2-3	6.5		2.0		2.8		3.1		12.2		5.0	
Prior proven property offence CAs: 4+	9.8		3.1		10.6		-0.7		7.8		-0.4	
Prior proven non-serious violence offence CAs: None	-20.5	^ **	-5.4		-20.9	^ **	-5.1		-18.4		-4.1	
Prior proven non-serious violence offence CAs: 1	-1.6		0.9		-3.9		-0.8		-9.2		-1.1	
Prior proven non-serious violence offence CAs: 2+	19.6	**	3.9		22.1	^ **	5.2		24.6	^ **	4.6	
Parole prospects: None	-3.2		-5.1		3.6		1.2		2.9		3.6	
Parole prospects: Court	12.6	*	1.8		13.0		3.3		15.6		6.0	
Parole prospects: State	-5.8		3.4		-12.3		-3.4		-13.9		-7.7	
Max security classification level: E	8.9		-1.5		8.3		0.9		2.8		-0.8	
Max security classification level: A	18.4	**	-3.7		17.8	*	6.6		21.5	^ *	1.4	
Max security classification level: B	-6.7		4.0		-8.1		-2.8		-8.8		6.3	
Max security classification level: C1	-30.5	^ ***	-2.1		-27.4	^ ***	2.3		-20.4	^ *	-2.1	
Max security classification level: C2/C3	7.7		4.3		7.8		-9.5		1.7		-6.7	
Disability flag	15.4	*	1.3		18.9	**	0.8		18.3	*	4.0	
Protection flag	-15.5	*	-4.0		-17.8	*	-2.0		-16.4		-4.2	
Months released: 3 to <6 months	58.8	^ ***	2.1		--		--		--		--	
Months released: 6 to <9 months	36.1	^ ***	1.9		46.7	^ ***	2.0		--		--	
Months released: 9 to <12 months	25.6	^ ***	-3.5		36.1	^ ***	9.0		--		--	
Months released: 12 to <15 months	15.2	*	-2.4		24.2	^ ***	-5.1		46.7	^ ***	-5.7	
Months released: 15 to <18 months	7.9		1.6		15.2	*	-7.2		32.7	^ ***	2.4	
Months released: 18+ months	-99.5	^ ***	0.5		-86.7	^ ***	0.0		-64.5	^ ***	3.0	
Additional observables												
SEIFA index quartile: 1 (most disadvantaged)	-3.1		2.5		-2.3		-6.6		-5.3		-14.5	
SEIFA index quartile: 2	10.5		1.0		10.6		10.0		14.3		18.8	
SEIFA index quartile: 3	-2.7		-2.0		-4.3		-9.6		-10.6		-15.2	
SEIFA index quartile: 4 (least disadvantaged)	-7.6		-3.3		-8.7		3.5		-3.3		11.5	
SEIFA index quartile: Missing	-0.3		1.6		3.0		8.3		7.2		4.0	

Table A1. Covariate balance (continued)

	3-month window				6-month window				12-month window			
	Before matching		After matching		Before matching		After matching		Before matching		After matching	
	Std bias	t-test	Std bias	t-test	Std bias	t-test	Std bias	t-test	Std bias	t-test	Std bias	t-test
ARIA category: Major cities	-1.5		6.5		1.3		4.3		2.9		5.6	
ARIA category: Inner regional	4.3		-2.2		0.5		-1.6		-1.2		-1.0	
ARIA category: Outer regional/Remote/Very remote	-5.9		-13.1		-5.6		-13.5		-8.4		-14.2	
ARIA category: Missing	-3.4		-1.6		-0.4		4.2		2.6		-1.4	
Prior CAs with proven offences: 1	-9.3		-1.8		-11.0		1.6		-15.4		-0.8	
Prior CAs with proven offences: 2-4	-20.1	^ **	-5.0		-17.2	*	-1.9		-10.7		0.1	
Prior CAs with proven offences: 5-9	11.1		2.1		9.1		-5.9		4.8		-3.3	
Prior CAs with proven offences: 10+	19.5	***	5.4		19.7	**	11.1		19.5	*	5.7	
Prior CAs with proven indictable offences: 0-2	-27.8	^ ***	-7.5		-26.1	^ ***	-5.6		-27.8	^ **	-5.8	
Prior CAs with proven indictable offences: 3-4	-6.6		-4.0		-8.6		-9.7		-1.2		2.8	
Prior CAs with proven indictable offences: 5-6	16.7	**	8.9		16.6	*	11.5		10.4		-5.3	
Prior CAs with proven indictable offences: 7+	22.4	^ ***	3.7		23.2	^ ***	5.9		22.8	^ **	9.3	
Prior CAs with prison sentence: 0-1	-13.4	*	-1.3		-14.1		-1.7		-10.1		3.8	
Prior CAs with prison sentence: 2-4	-2.3		-7.1		-1.9		-2.9		-9.0		-13.4	
Prior CAs with prison sentence: 5+	17.1	**	10.0		17.5	*	5.3		21.4	^ *	12.0	
Prior CAs with proven drug offences: 0	8.4		-1.4		7.9		6.8		20.6	^ *	11.6	
Prior CAs with proven drug offences: 1	-11.9		-7.4		-12.3		-9.6		-22.7	^ *	-15.5	
Prior CAs with proven drug offences: 2-3	6.9		9.7		8.3		6.2		6.2		8.4	
Prior CAs with proven drug offences: 4+	-5.3		3.5		-5.3		-5.1		-11.1		-8.0	
Prior CAs with proven drink driving (PCA) offences: 0	-2.6		-6.7		-4.9		-8.8		-7.8		-15.9	
Prior CAs with proven drink driving (PCA) offences: 1	3.3		7.6		6.5		12.2		10.5		18.5	
Prior CAs with proven drink driving (PCA) offences: 2+	-0.8		-0.6		-2.6		-5.8		-4.6		-3.3	
Prior CAs with proven serious violence offences: 0	-17.1	**	-8.2		-19.6	**	-9.9		-9.6		13.0	
Prior CAs with proven serious violence offences: 1	3.5		3.5		4.2		-0.6		-9.6		-24.6	^
Prior CAs with proven serious violence offences: 2+	20.0	***	7.1		22.4	^ ***	14.9		25.9	^ **	13.8	
Maximum time to serve: 1 to 2 years	-8.8		-10.8		-3.6		-7.1		-5.1		-14.2	
Maximum months to serve: 2 to 3 years	11.8		6.7		15.3	*	8.1		21.3	^ *	18.3	
Maximum months to serve: 3 to 4 years	-2.2		-1.9		-7.6		-8.9		-13.2		-16.5	
Maximum months to serve: 5 years +	-4.1		2.2		-7.2		3.7		-8.4		3.9	
Segregation flag	6.3		5.2		6.9		4.8		10.7		10.2	
LSI-R Q37: "Have you ever had an alcohol problem?..."	-2.5		12.7		-0.3		12.8		-5.4		8.8	
LSI-R Q38: "Have you ever had a drug problem?..."	-11.5		-5.8		-9.5		-5.4		-7.2		1.5	
LSI-R Q39: "Do you currently have an alcohol problem?..."	-3.7		17.2	*	-0.9		18.1		-7.2		8.3	
LSI-R Q40: "Do you currently have a drug problem?..."	-14.2	*	-15.0		-12.2		-9.3		-11.7		-10.7	
LSI-R Q41: "Has/could your drug/alcohol use contribute to law violations?."	-0.2		1.4		1.7		2.1		7.0		10.6	
LSI-R Q42: "Has your family complained about your drug/alcohol use?..."	0.6		-1.3		-1.3		2.7		-0.5		4.1	
LSI-R Q43: "Have you had school/work problems due to your drug/alcohol use?..."	-17.1	*	-13.8		-13.8		-4.6		-19.5	*	-1.8	
LSI-R Q44: "Have you had medical problems due to your drug/alcohol use?..."	1.6		-12.4		1.1		-14.7		1.9		-10.3	
LSI-R Q45: "Details of drug/alcohol use [frequency, consequences, rehab, etc]..."	-8.2		-9.0		-10.2		-13.7		-11.6		-9.1	

Notes. ^ = |Std bias| > 20. *** p<.001, ** p<.01, * p<.05. Std = Standardised; CA = Court appearances; LSI-R = Level of Service Inventory - Revised.

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