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An evaluation of the NSW Compulsory Drug Treatment Program (CDTP)

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AIM

To examine the relationship between participation in the Compulsory Drug Treatment Program (CDTP) and reoffending outcomes. The CDTP allows the NSW Drug Court to order eligible male, sentenced repeat drug offenders to the Compulsory Drug Treatment Correctional Centre (CDTCC). The CDTCC is an interagency initiative involving Corrective Services NSW, Justice Health, the Forensic Mental Health Network, and the Drug Court of NSW. The program provides intensive drug treatment and rehabilitation, with participants subject to ongoing judicial supervision throughout.

METHOD

Entropy balancing was utilised to match 360 CDTP participants to 1,352 control prisoners who met observable eligibility criteria for CDTP but did not participate in CDTP or any other drug or alcohol program while in custody. Multivariable probit regression was then used to estimate the impact of participating in CDTP on the likelihood of 1) any reoffence; 2) a violent reoffence; 3) a drug reoffence; 4) a property reoffence; 5) a return to custody; and 6) a new sentenced custodial episode, within 12 months of release from custody.

RESULTS

Prisoners who participated in CDTP were 8p.p. less likely to reoffend with a drug offence (reflecting a 40% marginal decrease) but were no less likely to reoffend with any other type of offence, when compared to control prisoners. General reoffending rates were high among both treatment and control groups, with around 60% of prisoners reoffending with any offence within a year. However, our matching approach is unable to control for unobserved variables and/or factors related to participation in CDTP (such as the type and severity of drug dependency or degree of mental health problems) which may be influencing the results.

CONCLUSION

CDTP participation is associated with reduced drug reoffending within 12 months of release but does not affect broader reoffending outcomes. Program refinements to better address a wider range of criminogenic factors may be needed to maximise the benefits of the CDTP.

KEYWORDS

Drug court | Rehabilitation | Prisoner | Reoffending | Evaluation

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INTRODUCTION

A substantial body of research has identified an association between illicit drug use and criminal offending in Australia. For instance, Makkai and Payne (2003a) interviewed 2,135 adult male offenders incarcerated in prisons in four Australian jurisdictions, finding that 18 per cent of offenders attributed their most serious offence to illegal drugs. Similarly, McKetin et al. (2020) analysed Australian longitudinal data on 469 participants dependent on methamphetamine from 2006-2010, finding that methamphetamine use was associated with a large increase in the likelihood of crime beyond any pre-existing risk for criminality (Odds-Ratio = 4.7, p <0.05). Winter et al. (2019) interviewed 561 people who inject drugs before and after release from prison in Queensland, finding that resumption of injecting drug use was associated with a substantially higher risk of reincarceration after release. Finally, Kinner and Campbell (2009) conducted structured interviews with 909 people who inject drugs across Australia, finding that 43% of the sample reported criminal activity in the last month.

To reduce reoffending of men with a history of long-term drug use, the 2006 Compulsory Drug Treatment Program (CDTP) was established to allow the NSW Drug Court to order sentenced, repeat drug offenders to the Compulsory Drug Treatment Correctional Centre (CDTCC) for comprehensive drug treatment and rehabilitation. Governed by Section 106B of the *Crimes (Administration of Sentences) Act 1999* (NSW) and the *Compulsory Drug Treatment Correctional Centre Act 2004* (NSW), the CDTP's objectives are to:

a) provide a comprehensive program of compulsory treatment and rehabilitation under judicial supervision for drug dependent persons who repeatedly resort to criminal activity to support that dependency;

b) effectively treat those persons for drug dependency, eliminating their illicit drug use while in the program and reducing the likelihood of relapse on release;

c) promote the reintegration of those persons into the community;

d) prevent and reduce crime by reducing those persons' need to resort to criminal activity to support their dependency.

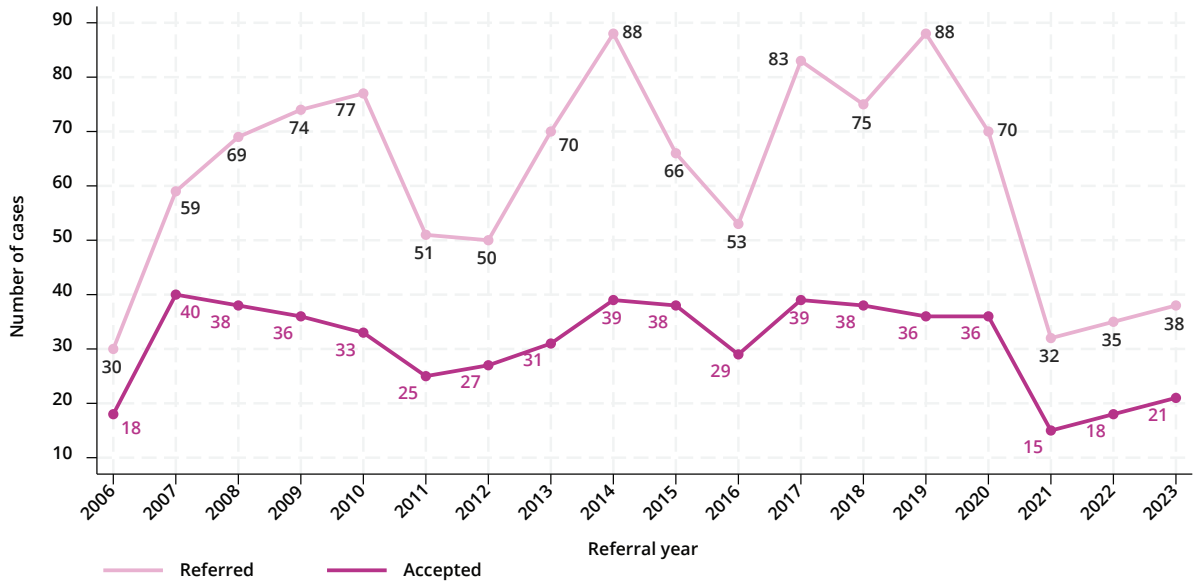
Male prisoners are eligible to be referred to the program if they: 1) have a non-parole period of at least 18 months; 2) have a total sentence of no more than 6 years; 3) appear to have a long-term dependency on the use of prohibited drugs;[1] 4) committed an offence that was related to their long-term drug dependency; 5) reside in metropolitan Sydney; 6) have not been convicted of a number of offences[2]; and 7) do not suffer from a mental health condition that is serious, or leads to them being violent or restricts their active participation in the program. Following referral, eligible offenders must be deemed suitable for participation in the program by CDTCC staff. This involves examining the offender's drug treatment history, history of violent offences in the community and in prison, likelihood of committing a domestic violence offence in the community, the offender's willingness and attitude towards compulsory drug treatment, and whether the offender may damage any other person's participation in the program. Following the eligibility and suitability assessment, the Drug Court may make a Compulsory Drug Treatment Order (CDTO), referring the participant to the CDTCC. When making a CDTO the non-parole period of the sentence set by the court is set aside.[3]

1 This is within the meaning of the *Drug Misuse and Trafficking Act 1985* (NSW).
2 This includes use of a firearm, murder, attempted murder or manslaughter, sexual assault of an adult or child or a sexual offence involving a child, any offence involving the violent use of a firearm, an offence under section 23 (2), 24 (2), 25 (2), 26, 27 or 28 of the Drug Misuse and Trafficking Act 1985 involving a commercial quantity or large commercial quantity of a prohibited plant or prohibited drug within the meaning of that Act, or any offence prescribed by the regulations for the purposes of section 5A of the Drug Court Act 1998.
3 This effectively means that the CDTO obligation ends at the expiration of the sentence or a grant of parole (if the CDTP is completed prior to the expiration of the total term of the sentence).

The design of the CDTP is underpinned by principles of behaviour change and a focus on rehabilitating offenders humanely rather than punitively (Birgden & Grant, 2010). As a theoretical basis, it combines Andrews and Bonta's risk-need-responsivity model (2010) with Ward's Good Lives model (2010) to simultaneously manage criminogenic risk while enhancing offender wellbeing. Once housed in the purpose-built CDTCC located at the Parklea Correctional Complex,[4] a CDTP participant progresses through three stages of treatment that each last at least six months. Stage 1 involves closed detention. While in custody, the participant undergoes medically-assisted abstinence and takes part in interventions addressing dynamic risk factors for drug-related offending, education and work readiness programs, and prosocial living skills syllabuses. In this first stage, treatment is focused on stabilisation, physical and mental health, and maximising participant engagement through a therapeutic prison climate (Birgden & Grant, 2010). Stage 2 involves semi-open detention. The participant is allowed to leave the CDTCC to attend community-based employment, education and vocational training, volunteer work and approved social activities. In this second stage, treatment continues to include prison-based therapeutic programs to maintain positive behaviour change but has a greater focus on improving family and social relationships. Stage 3 involves community custody. The participant resides outside of the CDTCC at court-approved accommodation and under intensive supervision. In this third stage, treatment aims to consolidate gains made in previous stages, to increase access to mainstream community services and to support reintegration. Progression between stages is contingent on satisfactory completion of the preceding stage, and participants may progress or regress depending on their performance. Upon successful completion of the three CDTP treatment stages, the participant is released into the community on parole supervision (given CDTP is completed prior to the expiration of the participant's total sentence term). Importantly, judicial oversight (via the Drug Court) determines a participant's progression, or regression, through the CDTP's treatment stages. The Drug Court judge can also revoke a participant's Compulsory Drug Treatment Order in the event of serious or repeated breaches.

Figure 1 shows the number of offenders referred and accepted into the CDTP each year from January 2006 to December 2023. The program is relatively small when compared to drug treatment programs delivered in mainstream prisons in NSW. As of December 2024, 1,108 prisoners had been referred to CDTP and 557 were accepted. During this period, an average of 62 prisoners were referred, and 31 prisoners were accepted into the program each year. There was, however, substantial variation in the number of referrals over time. For instance, the number of referrals peaked in 2014 and 2019 at 88, but reached lows of 50, 53, and 32 in 2012, 2016 and 2021 respectively.

Figure 1. Number of offenders referred and accepted into the CDTP, by year



4 The CDTCC is operated by Corrective Services NSW and is separate to Parklea Correctional Centre which, at the time of this study, is one of two privately managed correctional centres in NSW.

Evidence concerning the impacts of compulsory drug treatment programs

While the CDTP has been in operation for nearly two decades, no causal research has been conducted to evaluate its effectiveness. An early BOCSAR evaluation by Dekker et al. (2010), involving face-to-face interviews with 95 CDTP participants, found that the health and wellbeing of participants improved over the course of treatment. Dekker et al. also analysed participants' bi-weekly urine samples and found significant improvements in (but not elimination of) drug use in custody, with the majority of tests (96%) detecting no illicit drugs. Other research conducted by Casey and Day (2013) surveyed 21 CDTP participants who completed the program; 21 CDTP participants who were paroled, and 29 CDTP participants who were terminated from the program.[5] Those who completed the program or were released to parole were more likely than those who were terminated to believe that they would not reoffend by the end of the program, and both groups experienced an increase in self-reported health outcomes and other measures of wellbeing.[6] However, since both of these studies lacked a comparison group, it is not possible to draw conclusions regarding the effectiveness of the program. Further research by Casey et al. (2013) compared the outcomes of 159 CDTP participants with 1,899 prisoners who participated in a similar illicit drug intervention administered by Corrective Services NSW (CSNSW) known as the "Getting SMART" program.[7] The authors found that CDTP completers had a lower rate of recidivism one year after release compared with those who participated in Getting SMART. However, this study did not control for differences in offender characteristics, prior offending histories, or willingness of offenders to change their drug use behaviours. Consequently, this finding may reflect differences in the risk profiles of offenders in the CDTP and Getting SMART programs.

A more recent study by Nahleen and Howard (2024) examined whether CDTP participants exhibited changes in risk factors related to their drug use and reoffending. To measure these changes, psychometric assessments were administered at pre-treatment and at the completion of each of the three treatment stages. They found that CDTP participants experienced improvements in criminal attitudes, criminal thinking, impulsivity, social functioning, psychological functioning and overall quality of life over the course of their participation in the program. Although these measures may be associated with reductions in reoffending, the study did not directly measure the impact of CDTP on recidivism. Further, this study did not allow for a causal estimate of the impact of CDTP, as it did not compare outcomes of CDTP participants to outcomes of prisoners who did not receive treatment. The authors also acknowledged the potential biases arising from the use of self-reported measures to assess change.

Mandatory custodial drug treatment is uncommon in Australia, but all jurisdictions offer some form of drug and alcohol rehabilitation for incarcerated offenders (Heseltine et al., 2011; Sentencing Advisory Council Tasmania, 2017). These include harm reduction programs, psycho-educational programs and therapeutic programs (Heseltine et al., 2011). However, as noted by Heseltine et al. (2011), evaluations of such programs are scarce and rarely focus on recidivism outcomes or tend to be statistically underpowered. For example, Halstead and Poynton's (2016) evaluation of the NSW Intensive Drug and Alcohol Treatment Program (IDATP)[8] found lower rates of reoffending at 3-, 6- and 12-month follow-ups in the treatment group (24%, 41% and 60% respectively) versus a matched non-treatment control group (23%, 47% and 62% respectively), but the difference was not statistically significant at the conventional level. The authors suggested that this may have been due to both the small sample size available for the analysis (n=289 referrals at the 3-month follow-up), and the low uptake rate amongst those referred

5 The Drug Court may remove an offender from the CDTP in accordance with s. 106Q Crimes (Administration of Sentences) Act.
6 Wellbeing was measured by the Quality-of-Life Scale (QOLS), a 16-item survey instrument that captures several domains of quality of life including health, goals & values, work, play, learning, creativity, love, family, friends, relatives, home, and community. Both groups of participants experienced improvements across all these domains. For more information, see Burckhardt & Anderson (2003).
7 Getting SMART is a moderate intensity rehabilitation program delivered in mainstream NSW prisons. It has a cognitive behavioural treatment model and is run in a group setting through 12 structured sessions (18-24 hours). Participation is voluntary and targets individuals with drug, alcohol and gambling addictions, and a medium to high reoffending risk. For detail, see Aydin et al. (2013).
8 Like the CDTP, the IDATP is a custodial program with participants housed in a dedicated facility separate to mainstream prison. Treatment occurs over nine months and includes cognitive behavioural interventions targeting criminal thinking and relapse prevention; education and employment support; and adjunct opioid substitution therapy. IDATP was established in 2012 and participation is voluntary. For detail, see Kevin (2015).

to the program. Another example is the Pathways program[9] which is delivered in custodial settings in Western Australia, Tasmania and Queensland. There is some evidence that this program improves participants' understanding of their criminal behaviours and ability to manage cravings, but the longer-term impact on recidivism is unknown (Bartle et al., 2021; Heseltine et al., 2011).

Looking abroad, the CDTP is somewhat comparable to the Dutch *strafrechtelijke opvang verslaafden* (SOV) measure which was in operation from 2001 to 2004. The SOV provided for the compulsory placement of substance dependent male offenders for up to two years in government-designated secure and semi-secure facilities, with the objective of reducing recidivism, reducing addiction and improving social functioning (Koeter & Bakker, 2007; Struijk, 2022). Relative to regular detention, treatment under the SOV was found to reduce participation in crime, with 23% of SOV participants recording no new offences within 2 years of release compared with just 7% of those released from regular detention. However, SOV treatment outcomes were no better than the outcomes achieved by two other voluntary treatment programs for substance-dependent offenders in the Netherlands[10] (Koeter & Bakker, 2007). Another European example of legally coerced drug treatment for offenders was Croatia's Lepoglava, a prison for males serving long-term sentences (Vukadin et al., 2004). The two court-ordered treatment programs, one for alcohol addiction and one for narcotics addiction, were delivered within a modified therapeutic community[11] and were run by certified therapists. However, their effectiveness in reducing recidivism is unknown (Doyle et al., 2019).

Drug treatment in prison also has a history in the United States across various states, but few studies have considered the effectiveness of compulsory programs (Hall & Lucke, 2010, Werb et al., 2016; Zaller et al., 2022). One example is Missouri's Choices program, under which male and female offenders with a substance abuse problem were ordered to participate in a 90day treatment program delivered in St Louis County Jail (Linhorst et al., 2012). Participation involved approximately 25 hours of programming each week, including psychoeducational classes, group and individual counselling, Alcoholics/Narcotics/Cocaine Anonymous groups and presentations by guest speakers such as judges. Examining post-treatment outcomes, Linhorst et al. (2012) found that 29.5% of their sample of 1,151 participants were rearrested within one year of release from prison after successfully completing Choices. However, in the absence of a non-treatment control group, the authors could not draw conclusions regarding the program's effectiveness in reducing recidivism.

Compulsory prison-based drug treatment programs also operate in several Asian countries, including Hong Kong (Tak, 2019), Thailand (Pearshouse, 2009) and Taiwan (Vaughn et al., 2003), but research on the impact of these programs on reoffending is also scant. Taiwan's program, which has been evaluated, consisted of three components including: (1) improving physical strength and selfdetermination; (2) counselling, health education and religious meditation to motivate abstinence; and (3) preparing for reintegration. An evaluation of this program (Vaughn et al., 2003) found that 33% of participants were reincarcerated within a year, compared with only 5% in a matched comparison group. Participants in the program were also significantly more likely those in the matched control group to use amphetamines and heroin after release. This study represents one of the only quasiexperimental evaluations of compulsory drug treatment delivered in prison, but the authors note that the observed differences may reflect selection bias, with higherrisk offenders more likely to be placed into treatment.

In summary, prior research provides limited evidence for the effectiveness of compulsory custodial drug treatment on recidivism. Previous evaluations of the CDTP found that it reduced criminogenic risk factors and improved participant wellbeing and is associated with lower levels of reoffending when compared to alternative drug treatment programs. However, these studies either lacked a comparison group (in

9 Pathways is a commercially available cognitive behavioural therapy program designed to address co-occurring substance abuse and criminal behaviour. It is a stand-alone intervention but is also delivered as a component of larger treatment programs (e.g. the IDATP). For detail, see Bartle et al. (2021) and Kevin (2015).

10 Koeter and Bakker (2007) compared SOV treatment to the FVK, a forensic addiction clinic for criminal addicts, and the Triple-Ex (ex-addict, ex-criminal, ex-unemployed) program which was part of the Parnassia psycho-medical centre in The Hague.

11 A therapeutic community has individuals segregated from mainstream settings into a dedicated residential setting that is intended to be drug-free and focused on behavioural modification; it has the strongest evidence of effectiveness among prison-based drug treatment models (Doyle et al., 2019; Heseltine et al., 2011).

the case of the former) or failed to adequately address selection bias (in the case of the latter). Further, to date no study has estimated the impact of the CDTP on reoffending outcomes when compared to a control group who did not receive any drug/alcohol treatment. Meanwhile, only a small number of compulsory prison-based drug treatment programs in other jurisdictions have been evaluated, and the few studies that do exist are methodologically weak and provide mixed results.

The current study

This study is the first to examine the impact of the CDTP on reoffending relative to a control group of observably similar prisoners who received no drug and alcohol treatment while in custody. We first provide descriptive statistics regarding the characteristics of CDTP participants relative to control prisoners. We then estimate whether participating in the CDTP is associated with a reduction in the probability of reoffending, broken down by offence type. We also examine the impact of the CDTP on the probability that an offender will return to custody and the probability that an offender will receive a new prison sentence.

METHOD

Data

The data used in this study were obtained from three sources:

1. **CDTP participation data:** An extract provided by the Judicial Commission of NSW, which contained details of offenders referred to the CDTP between 01 January 2007 and 31 December 2019. The extract provided information on whether offenders: 1) met the CDTP eligibility criteria[12]; 2) met the CDTP suitability criteria[13]; 3) participated in the program; and 4) completed all three stages of the program. Note that the program data only records whether an offender ultimately completed all three stages or not. It does not capture progression, regression or duration of individual stages for participants who did not complete CDTP.
2. **Corrections data:** An extract prepared by the Corrections Research Evaluation and Statistics (CRES) unit in Corrective Services NSW. This contained information on all custody episodes for male prisoners with a custody start date between 01 January 2007 and 31 December 2019, who met several observed eligibility criteria for CDTP, including the requirements to reside in metropolitan Sydney[14] and have no prior convictions for attempted murder, sexual assault, firearm use, or illicit drug supply/manufacture.
3. **Offending and custodial data:** An extract from BOCSAR's Reoffending Database (ROD). The ROD extract contained records of all court appearances finalised in NSW between January 1994 and July 2025, including the sociodemographic characteristics of defendants, offence characteristics, court outcomes, and episodes in both remanded and sentenced custody.

12 This was provided in binary yes/no fashion, and separately for each criterion
13 This was provided in a binary yes/no fashion.
14 This was measured via a defendant's Statistical Area 4 (SA4) code at court finalisation.

We began by creating our treatment group using the Judicial Commission of NSW program data. This extract provided information relating to 1,074 referrals to the CDTP between 01 January 2007 and 31 December 2019[15] involving 969 unique male prisoners. All these referrals were successfully linked to ROD using individual identifiers.[16] This allowed us to identify each individual's index custody episode closest to their CDTP referral date.[17] Next, we restricted our sample to 960 referrals with a custodial episode end date before 01 July 2024. This custody end date was chosen so that we could track reoffending outcomes for all prisoners for at least one year after the end of their custodial episode. The sample was further restricted to 388 referrals who met all eligibility and suitability criteria for CDTP and participated in the program. We then dropped observations for six prisoners who died while participating in CDTP or within a year of release from custody. Our final treatment group consisted of 382 custody episodes involving 360 unique male prisoners who participated in CDTP.

We constructed a control group by identifying male prisoners who were in custody at a similar time to CDTP participants and who met all the observable eligibility criteria for the CDTP. We first used the CRES data to identify custodial episodes for offenders who: 1) resided in metropolitan Sydney; 2) had not been convicted of attempted murder, sexual assault, use of a firearm, or supply/manufacture offences; 3) had a custody start date between 01 January 2007 and 31 December 2019; and 4) had a custody end date before 01 July 2024. In total, 65,216 custodial episodes, relating to 13,190 unique offenders, met these criteria. All of these prisoners were successfully linked to ROD using individual identifiers. We then dropped any custodial episodes for CDTP participants who appeared in the control group at any point in time during our sampling period, to avoid contamination of the treatment and control groups.[18] Next, we dropped custodial episodes for prisoners who were serving a non-parole period of less than 18 months. We also dropped custodial episodes for any prisoners who reported that they did not currently have and/or never had a drug problem, as measured by items 38 and 40 in the LSI-R.[19] Next, we dropped observations for prisoners who died either during their custodial episode or within a year of release from custody and also removed observations for any prisoners who participated in a CSNSW drug and/or alcohol program during their current custodial episode.[20] Finally, we dropped observations of female prisoners that appeared in the control group. Note that while we proxy drug dependency using the LSI-R, we were not able to directly observe eligibility criteria related to whether a prisoner: 1) appeared to have a long-term dependency on the use of prohibited drugs; 2) committed an offence that was related to their long-term drug dependency or; 3) suffered from a serious mental condition that may have led to violence or restricted their active participation in the program. Additionally, we were unable to observe any suitability criteria for the control group.

Our final analysis dataset contained information on a treatment group of 382 prison episodes for 360 unique male CDTP participants and a control group of 1,442 prison episodes relating to 1,352 unique male prisoners who met the observed eligibility criteria for the CDTP but who did not participate in the CDTP or any other drug or alcohol program while in custody.

15 Although the CDTP commenced in 2006, our sample began in 2007 as data on a key variable used to proxy whether a prisoner had a drug problem - the 'Utility of Level of Service Inventory – Revised' (LSI-R), which was only available after 2007. The LSI-R is a predictive tool that assesses an offender's risk of recidivism and identifies their criminogenic needs via 54 survey items grouped into 10 subscales including Alcohol/Drug, among others. We also removed any prison episodes which began after 2019 to remove any confounders from unobserved differences in the types of prisoners who were referred into CDTP during COVID-19. However, we were unable to drop prisoners who left custody during or after 2020, as this would involve dropping n = 295 CDTP participants. We control for the offending environment upon custodial release by matching on custodial release date.

16 This includes Master Index Number (MIN) where available, Criminal Names Index (CNI) where available, and first name, last name and date of birth otherwise.

17 We could not link on the exact custody episode for prisoners in the treatment group as the program data only provided information on the program referral date, rather than the custody start date. This also required that the closest custody episode to the CDTP referral date had ended *after* the CDTP referral date (and not *before*). There was one referral per unique prisoner for prisoners who only participated in CDTP once. For prisoners who participated in CDTP more than once, each referral was linked to a separate custody episode that was closest to that specific referral date.

18 Contamination can bias the results by causing the reoffending of the control group to be partly influenced by CDTP participation, which makes it more difficult to accurately estimate the true impact of CDTP.

19 The LSI-R is a validated survey designed to assess a prisoner's risk of re-offending and identify their criminogenic needs and is typically delivered within the first 28 days of sentencing. Items 38 and 40 in the LSI-R survey respectively relate to whether an offender has ever had a drug problem or has a current drug problem. While we use these LSI-R items as a proxy for whether an offender in the control group has a drug problem related to their offending behaviour (an eligibility criteria for CDTP), we cannot assess the severity of a drug problem or the type of drugs the offender consumes. For a more comprehensive discussion of risk assessment using the LSI-R, see Andrews and Bonta (1995).

20 Participation was measured by whether a prisoner was referred to a drug or alcohol program delivered in custody and attended at least one session of the program. The most common drug and alcohol programs these prisoners participated in included Getting SMART, Addictions support group, SMART Recovery Maintenance Groups, Alcoholics anonymous, Narcotics Anonymous, IDATP pathways and IDATP RUSH.

Variables

Outcome variables

In line with the aims of CDTP, the following five reoffending outcome variables were considered in this analysis:

1. **Reoffending with any offence:** A variable equal to one if the offender recorded at least one proven offence committed in NSW within 12 months of their release from custody, and zero otherwise.
2. **Reoffending with a violent offence:** A variable equal to one if the offender recorded at least one violent offence (BSOC 2023 codes 20, 21, 22, 23, 25)[21] in NSW within 12 months of their release from custody, and zero otherwise.
3. **Reoffending with a drug offence:** A variable equal to one if the offender recorded at least one drug offence (BSOC 2023 code 29)[22] in NSW within 12 months after release from custody, and zero otherwise.
4. **Return to custody:** A variable equal to one if the offender recorded a new custodial episode in NSW within 12 months of their release from custody, and zero otherwise.
5. **Return to sentenced custody:** A variable equal to one if the offender recorded a new custodial episode in NSW within 12 months of release from custody, where the legal status at discharge was recorded as "sentenced", and zero otherwise.

Considering the high levels of prior property offending in our treatment and control groups, and the relationship between drug use and property offending (see Bradford & Payne, 2012; Makkai & Payne; 2003b; Sutherland et al., 2015), we also examined an additional reoffending outcome:

6. **Reoffending with a property offence:** A variable equal to one if the offender recorded at least one property offence (BSOC 2023 codes 26, 27, 28)[23] in NSW within 12 months of their release from custody, and zero otherwise.

Explanatory variables

We consider several variables that may influence the reoffending behaviour of a prisoner after their release from custody for inclusion in our models. This includes their sociodemographic background, characteristics of their custody episode, and their offending history.

1. Sociodemographic characteristics

- Age: the offender's age at the index custody episode start date (coded as 18-24, 25-34, 35-44, 45-54, and 55+ years).
- Aboriginality: whether an offender was recorded as identifying as an Aboriginal and/or Torres Strait Islander person in at least 20%[24] of their police contacts in ROD, either as a person of interest (POI) or victim, measured from the index custody episode start date (coded as Aboriginal, Non-Aboriginal or Unknown).

21 BSOC is the NSW Bureau of Crime Statistics and Research's (BOCSAR) modified version of the Australian and New Zealand Standard Offence Classification (ANZSOC), 2023. BSOC codes 20, 21, 22, 23 and 25 correspond to homicide, domestic violence related assault, non-domestic violence related assault, sexual offences and robbery, blackmail, and extortion offences, respectively.

22 BSOC code 29 encompasses international drug trafficking, distribute or deal drugs, manufacture drugs, cultivate drugs, unlawful possession or use of drugs or other drug offences.

23 BSOC codes 26, 27 and 28 correspond to burglary/break and enter, theft and fraud/related offences respectively.

24 "Derived Aboriginality" is a methodology implemented by BOCSAR in late 2022 to better identify Aboriginal and Torres Strait Islander people in NSW criminal justice records, specifically to address high rates of "unknown" Aboriginality in police data. The 20% cutoff was chosen to minimise both over- and under-counting and was validated by comparing Aboriginality recorded using this method against alternative administrative datasets, which showed a high degree of consistency.

- Sociodemographic disadvantage: the ABS Socio-Economic Indexes for Areas (SEIFA) Index of Relative Disadvantage (ABS, 2021a) associated with the postcode of a POI's residence at the index custody episode start date, segmented into quartiles (coded as Q1, Q2, Q3, Q4, and unknown).
- Remoteness of residence: the ABS remoteness of area associated with the postcode of an offender's residence at the index custody episode start date (coded as Major cities, Inner regional, Outer regional, Remote or Very remote, and missing), based on the Accessibility and Remoteness Index of Australia (ARIA; ABS, 2016).

2. Characteristics of the index custody episode

- Level of Service Inventory Revised (LSI-R) risk categorisation: the category of general reoffending risk associated with the index custody episode (coded as missing, high, medium-high, medium, medium-low, or low).[25]
- LGA: the local government area code of the offender's residence at the index custody episode start date (see Australian Bureau of Statistics, 2021b).
- Quarter and year of release: Indicator variables representing the quarter and year of the end of an offender's index custodial episode.

3. Prior criminal offending

- Prior court appearances: the number of proven court appearances in the five years prior to the index custody episode start date (coded as 0, 1-2, 3-4 or 5+).
- Prior prison sentences: the number of finalised court appearances in the five years prior to the index custody episode start date where a full-time prison sentence or juvenile control order was imposed (coded as 0[26], 1, 2 or 3+).
- Prior drug offences: the number of proven drug offences[27] in the five years prior to the index custody episode start date (coded as 0, 1-2, 3-4 or 5+).
- Prior violent offences: the number of proven violent offences[28] in the five years prior to the index custody episode start date (coded as 0, 1-2, 3-4 or 5+).
- Prior property offences: the number of proven property[29] offences in the five years prior to the index custody episode start date (coded as 0, 1-2, 3-4 or 5+).
- Prior property damage offences[30]: the number of proven property damage offences in the five years prior to the index custody episode start date (coded as 0, 1-2, 3-4 or 5+).

Empirical Approach

We utilise a matching technique to address possible selection bias when comparing samples of CDTP participants with prisoners who met the observable eligibility criteria for CDTP but who did not participate in CDTP or any other drug or alcohol program while in custody. We then use probit regression analysis on the matched sample of CDTP and non-CDTP offenders to identify the degree to which CDTP is associated with changes in our outcome variables, while controlling for relevant demographic and offending characteristics.

25 Relevant LSI-R scores were available for each parole episode in the community corrections data provided by Corrective Services NSW.
26 Note that this excludes the index court appearance related to incarceration, so can record a value of zero.
27 A drug offence is defined as one of the following offences: international drug trafficking, distribute or deal drugs, manufacture drugs, cultivate drugs, unlawful possession or use of drugs and other drug offences.
28 A violent offence includes one of the following offences: homicide, domestic violence related assault, non-domestic violence related assault, sexual offences and robbery, blackmail and extortion offences.
29 A property offence is defined as one of the following offences: burglary/break and enter, theft and fraud and related offences.
30 A property damage offence includes one of the following offences: arson and damage or destroy property offences. Note that we include both prior property damage offences and prior property offences as the property offences do not include property damage offences in ROD.

Sample selection

We begin with a sample of 382 prison episodes for CDTP participants and 1,442 prison episodes for prisoners who met all observed eligibility criteria for CDTP but who did not participate in CDTP or any other drug or alcohol program during their sentence. We refer to the latter group as the "control group".

A simple comparison of outcomes between CDTP participants and those in the control group would not provide a valid estimate of the causal impact of CDTP if selection bias is present. This occurs if the process of referral and selection into the CDTP causes the treatment and control groups to differ on factors that also influence the outcomes and are not accounted for in the analysis. For example, CDTP may prioritise offenders with more severe substance use or more extensive prior offending histories for participation. As a result, we would expect the CDTP group to include a greater proportion of high-risk individuals compared to the control group. If these individuals are more likely to reoffend regardless of participation in CDTP, a simple comparison of CDTP participants and other prisoners could incorrectly suggest that the program increases reoffending (our estimates of CDTP's impact on reoffending would be biased upwards). On the other hand, CDTP participants are screened for motivation and willingness to engage in treatment. Consequently, participants may be more inclined than other prisoners to change their drug or alcohol use and avoid reoffending, even in the absence of the program. As a result, lower reoffending among CDTP participants could partly reflect differences in motivation and readiness to change, rather than the impact of the program alone (our estimates of CDTP's impact on reoffending would be biased downwards).

To address potential selection bias, we apply entropy balancing to construct a more comparable control group. The simplest form of matching would involve pairing each CDTP participant to a prisoner in the control group with the most similar or "closest" characteristics. However, when using many explanatory variables, the idea of "closeness" of pairs is not well defined. Instead, we use entropy balancing (Hainmueller, 2012), an increasingly popular matching method used in criminology research.[31] This method calibrates a doubly robust[32] set of matching weights that identifies a control group which is nearly identical to the treatment group with respect to observable covariates. Entropy balancing offers several methodological advantages over more commonly used matching approaches, such as propensity score matching and nearest neighbour matching. First, it achieves covariate balance that is at least as good as, and often better than, that achieved by these alternative matching methods (see Hainmueller, 2012; Harvey et al. 2017; Zhao & Percival 2017). Second, it eliminates the need for manual iteration across different propensity score models to achieve acceptable balance, thereby reducing the potential for model specification bias.

However, entropy balancing may not perform well if only a few prisoners in the control group have observable characteristics which are similar to those of CDTP participants. In this case, a small number of control group prisoners may receive disproportionately large matching weights, which could unduly influence our findings. To assess this, we conducted diagnostic checks after computing entropy balancing weights. Specifically, we examined whether the standardised bias, a measure used to quantify the remaining differences in observed characteristics between groups, was acceptably small after weighting. We also reviewed the distribution of entropy balancing weights to identify any extreme outliers.[33]

31 See Macdonald & Donnelly (2019); Johnson & Johnson (2024); Riba et al., (2023) and Lawler et al., (2025).

32 When used in isolation, propensity score models using both linear and logistic specifications are only unbiased if the structure of the statistical models used to estimate the propensity score is correct. Zhao and Percival (2017) demonstrate that entropy balancing simultaneously fits a logistic model for the propensity score and a linear regression model for the outcome. Only one of these two models needs to be correctly specified to obtain an unbiased estimator; a concept known as double robustness.

33 While there is no agreed threshold for determining excessively large weights, Parish et al. (2017) and McMullin and Schonberger (2022) suggest that weights between 20 and 30 are acceptable.

Statistical model

To identify whether CDTP is associated with changes in our reoffending outcomes, we estimated the following probit regression model on the treatment group of CDTP participants and the control group of non-CDTP offenders matched via entropy balancing:

$$Y_i = \Phi\left(\beta_0 + \beta_1 D_i + \sum_{j=1}^{k} \beta_{j+1} X_{ij} + \varepsilon_i\right) \qquad (1)$$

In this model, Y_i is the binary reoffending outcome of interest, equal to 1 if the individual reoffends and 0 otherwise. The function Φ denotes the standard normal cumulative distribution function and D_i is a treatment indicator variable equal to 1 if the individual participated in CDTP and 0 otherwise. The term X_{ij} represents the value of the jth covariate for individual i, up to covariate k, including sociodemographic characteristics, parole episode characteristics, and prior criminal offending variables. The error term is represented by ε_i.

The probit model is preferred to a linear regression model in this context because it ensures that predicted probabilities of reoffending fall between zero and one. Due to the model's non-linear functional form, the marginal effect of CDTP participation on the outcome can differ across individuals depending on their observable characteristics. As a result, we report the average marginal effect of CDTP, which is computed by estimating the marginal effect for each prisoner and then averaging this marginal effect across all prisoners. This provides an estimate of the average change in the probability of reoffending associated with CDTP participation, holding other factors constant.

In the context of our study, the main threat to internal validity is omitted variable bias. While our matching approach reduces any bias due to differences in observed characteristics between CDTP prisoners and prisoners who did not participate in CDTP, it cannot estimate the causal effect of CDTP on reoffending outcomes if there are unobserved differences between our treatment and control groups which influence reoffending (since we are unable to match on these unobserved variables). For example, we cannot observe information on the CDTP eligibility criteria which requires participants to have a long-term dependency on illicit drugs. Although we proxy this with LSI-R items 38 and 40 (relating to whether a prisoner has ever reported having, or currently has a drug dependency), if the LSI-R does not fully capture the degree of drug dependency (or drug type(s) a prisoner is dependent on) or is unrecorded for some prisoners, one group may have a higher propensity to reoffend which has not been controlled for.

We test the robustness of our findings by re-estimating our probit regression model using three alternative combinations of treatment and control groups. The first involves comparing the subset of CDTP participants who completed all three stages of CDTP to prisoners in the original control group. As we would expect completers to be more motivated to change their drug use and offending behaviours than non-completers, this should be considered an upper bound estimate of the recidivism benefits arising from CDTP. It also allows us to assess the extent to which our main result is driven by CDTP completion/non-completion. The second robustness test involves comparing our original treatment group (CDTP participants) to an alternative control group consisting of prisoners who were referred to CDTP but were deemed ineligible due to not meeting the required sentence length or not residing in metropolitan Sydney (where the program operates). Comparing CDTP participants to this group allows us to examine outcomes among individuals who were considered for the program via the same referral pathway, making them more comparable in terms of unobservable characteristics (such as their degree of drug dependency). However, this second robustness test is limited by the relatively small size of this control group, which may reduce statistical power and our ability to detect significant differences in reoffending outcomes (if they exist).

Our final robustness test involves comparing our original treatment group (CDTP participants) to a group of sentenced prisoners who participated in the CSNSW Getting SMART program (and no other drug or alcohol program) and who met all other observable eligibility criteria for CDTP.[34] Getting SMART

34 Of the 1,087 custodial episodes of prisoners who met all observed eligibility for CDTP and participated in at least one session of a drug/alcohol program, 718 episodes (or 66% of episodes) involved participation in Getting SMART, but did not involve participation in any other drug/alcohol program.

(Self-Management and Recovery Training) is a moderate-intensity, psycho-educational program delivered in NSW correctional centres and is the most common drug/alcohol program that prisoners in our sample participated in. It consists of 12 group sessions (18–24 hours) and uses a Cognitive Behavioural Therapy framework to help offenders reduce reoffending risk, address alcohol and drug misuse, and prepare for ongoing participation in SMART Recovery maintenance meetings. The program targets prisoners assessed as medium or high risk of reoffending and those with significant substance use treatment needs. While participation is technically voluntary, it is strongly encouraged as part of progression through the prison system and parole eligibility. The primary aim of the program is to build motivation and skills for behavioural change and relapse prevention, forming part of a broader treatment pathway for offenders with complex needs.[35] Getting SMART is arguably a lower intensity program than the CDTP and aims to address both drug and alcohol misuse, rather than just drug misuse. However, our motivation for using this control group is that we would expect Getting SMART participants to have comparable levels of motivation to change their drug/alcohol behaviours to the CDTP group, which is something we cannot control for in our main analysis. The main limitation of this method is that drug offenders in CDTP may use different types of drugs than those participating in Getting SMART. This is something we are not able to observe in the data and which may be associated with a prisoner's risk of reoffending.

RESULTS

Descriptive statistics

We begin by comparing the characteristics of our treatment group of CDTP participants to our control group of prisoners who met all observable eligibility criteria for CDTP but who did not participate in CDTP or any other drug/alcohol program while in custody (see Table 1). Across our entire analysis sample, close to 20% of prisoners identified as Aboriginal, roughly 56-57% of prisoners resided in major cities, around 31-35% resided in the most socioeconomically disadvantaged areas (SEIFA quartiles 1 and 2),[36] and roughly 73%-75% of prisoners were assessed at medium/medium-high risk of reoffending on the LSI-R. Rates of reoffending within one year of release from custody were relatively high for both groups. However, CDTP participants were more likely to reoffend across most reoffending measures when compared with control prisoners. For instance, 61.8% of CDTP participants and 44.5% of control prisoners recorded a new proven offence of any type (a 17.3p.p. difference) within one year of being released. CDTP participants were also more likely to have: 1) a proven violent reoffence; 2) a proven property reoffence; 3) any new custodial episode; and 4) a new sentenced custodial episode, (by 3.7p.p., 20.8p.p., 18.4p.p., and 12.1 p.p. respectively). CDTP participants were also slightly less likely to reoffend with a drug offence (by 3.0p.p.).

The higher reoffending rates of the CDTP participants does not necessarily imply that participation in the CDTP causes an increase in reoffending. Instead, this could reflect differences in the characteristics of CDTP participants and control prisoners. In particular, relative to control prisoners, CDTP participants were 4.9p.p. less likely to be aged between 18-24 and had more extensive prior offending histories when compared to prisoners in the control group. Specifically, CDTP prisoners were more likely to have one or more prior proven offences, sentenced prison episodes, proven drug offences, proven violent offences, proven property offences and proven property damage offences respectively, within the last 5 years, relative to control prisoners (by 10.5p.p., 15.7p.p., 11.1p.p., 1.2p.p., 29.7p.p., and 7.7p.p respectively). Both groups were similar with respect to Aboriginality, LSI-R risk category, socioeconomic disadvantage and remoteness of residence. In the next section, we present diagnostic tests and results for our matching approach, which involves comparing the outcomes of CDTP participants to control prisoners with very similar observable characteristics.

35 For more details, see Aydin et al., 2013.
36 Note that the fact that the remoteness/socioeconomic disadvantage of the LGA of residence was missing for around 40% of the prisoners in our sample may reflect a high level of homelessness at the time of offence.

Table 1. Unadjusted differences in the criminal justice and sociodemographic characteristics of CDTP participants and control prisoners

Variable	Treatment: CDTP prison episodes (n=382)	Control prison episodes (n=1442)	Difference (Treatment-Control)
Panel A: Reoffending outcomes within 12 months			
Any proven reoffending (%)	61.78	44.52	17.26 ***
Proven drug reoffending (%)	9.95	12.90	-2.95 ***
Proven violent reoffending (%)	16.23	12.55	3.68 *
Proven property reoffending (%)	41.36	20.53	20.83 ***
New custodial episode (%)	60.73	42.37	18.36 ***
New sentenced episode (%)	47.91	35.85	12.05 ***
Panel B: Sociodemographic characteristics and LSI-R risk category			
Age categories (%)			
18-24	20.16	25.05	-4.89 *
25-34	46.60	40.11	6.49 *
35-44	28.01	26.09	1.92 *
45-54	4.45	7.01	-2.56 *
55+	0.79	1.73	-0.95 *
Aboriginality (%)			
Aboriginal	21.47	18.72	2.74 *
Non-Aboriginal	78.53	80.51	-1.98 *
Unknown	0.00	0.73	-0.73 *
Remoteness (%)			
Major cities	56.28	57.07	-0.79 *
Inner regional	1.83	2.43	-0.59 *
Outer regional	0.26	0.35	-0.08 *
Remote/very remote	0.00	0.00	0.00 -
Missing remoteness	41.62	40.15	1.47 *
SEIFA quartile (%)			
Most disadvantaged	22.51	23.99	-1.48 *
More disadvantaged	8.64	11.37	-2.73 *
Less disadvantaged	18.85	16.92	1.93 *
Least disadvantaged	8.38	7.56	0.82 *
Missing	41.62	40.15	1.47 *
LSIR risk cat (%)			
Missing	2.36	0.00	2.36 ***
HIGH	9.42	13.31	-3.89 *
LOW	0.52	1.60	-1.07 *
MED	41.62	36.62	5.01 *
MEDHI	33.51	36.55	-3.04 *
MEDLO	12.57	11.93	0.64 *
Panel C: Offending in previous 5 years			
Proven offences in prior 5 years (%)			
0	3.14	13.66	-10.52 ***
1–2	18.06	28.43	-10.37 ***
3–4	33.25	25.87	7.38 **
5+	45.55	32.04	13.51 ***

Table 1. Unadjusted differences in the criminal justice and sociodemographic characteristics of CDTP participants and control prisoners (....continued)

Variable	Treatment: CDTP prison episodes (n=382)	Control prison episodes (n=1442)	Difference (Treatment-Control)
Sentenced prison episodes in prior 5 years (%)			
0	15.45	31.14	-15.69 ***
1–2	41.88	44.94	-3.05 ***
3–4	28.80	17.61	11.18 ***
5+	13.87	6.31	7.56 ***
Proven drug offence in prior 5 years (%)			
0	51.57	62.62	-11.05 ***
1–2	42.15	32.25	9.90 ***
3–4	4.97	4.72	0.26 ***
5+	1.31	0.42	0.89 ***
Proven violent offence in prior 5 years (%)			
0	54.45	55.62	-1.17 *
1–2	40.84	37.24	3.60 *
3–4	4.19	6.31	-2.12 *
5+	0.52	0.83	-0.31 *
Proven property offence in prior 5 years (%)			
0	14.66	44.31	-29.65 ***
1–2	41.36	39.04	2.32 ***
3–4	29.84	11.86	17.98 ***
5+	14.14	4.79	9.35 ***
Proven property damage offence in prior 5 years (%)			
0	70.94	78.64	-7.70 **
1–2	28.01	19.69	8.32 ***
3–4	0.79	1.60	-0.81 ***
5+	0.26	0.07	0.19 ***

Note: Stars indicate statistical significance at a variety of conventional thresholds of statistical significance: *** p<0.001, ** p<0.01, *p<0.05.

Matching analysis

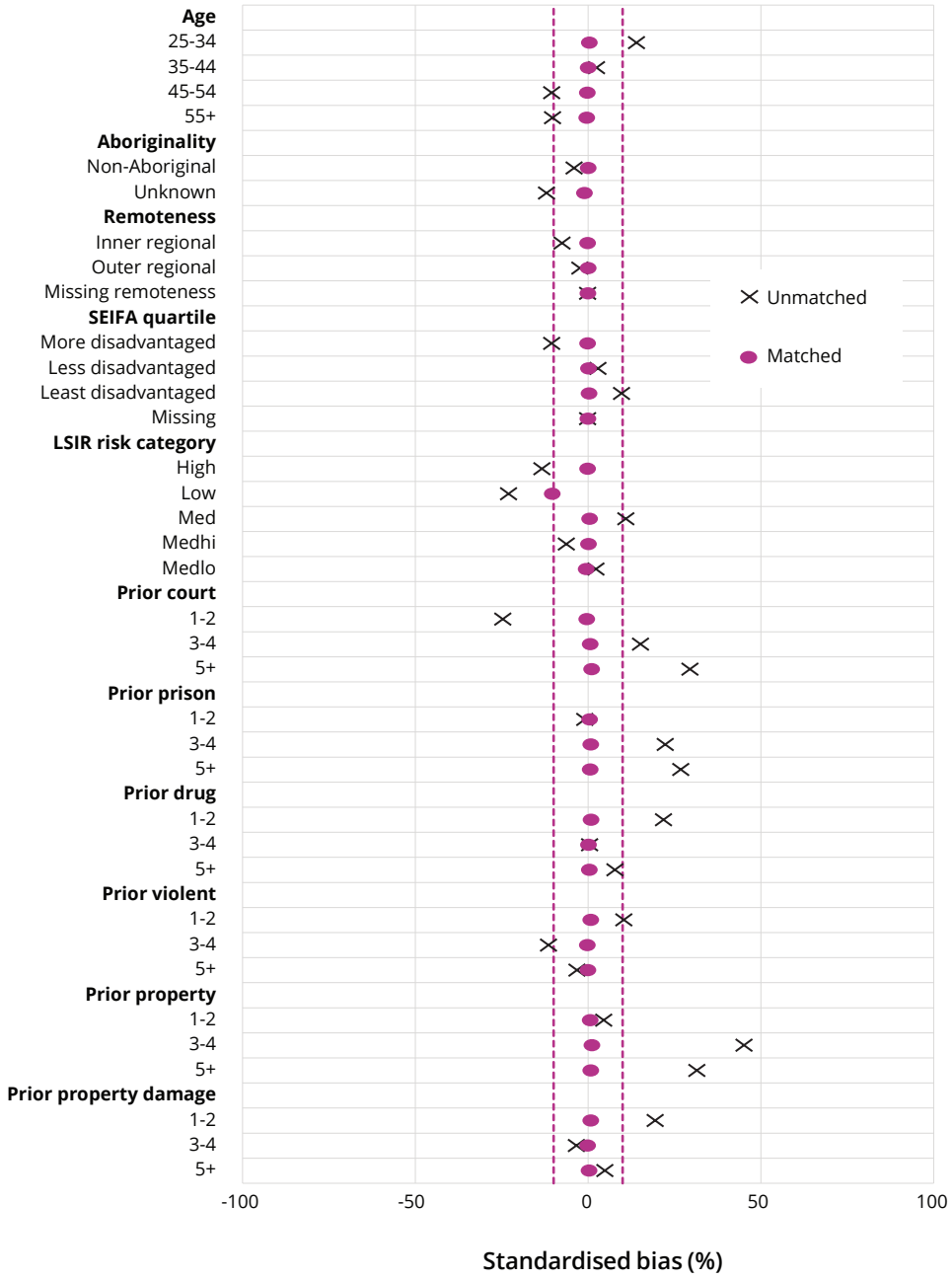
Diagnostic testing

To address potential selection bias, we use entropy balancing (a form of matching) to construct a group of control prisoners that is more comparable to our CDTP treatment group in terms of the covariates available for the analysis. Figure 2 shows the standardised bias before and after matching. This is a measure of the difference between CDTP participants and control prisoners on each measured covariate. A standardised bias of 0% indicates that there is no difference between groups on that individual covariate, while a positive standardised bias indicates that the treatment group has a higher value on that covariate relative to the control group, and a negative standardised bias indicates that the treatment group has a lower value. Covariates are considered to be "adequately balanced" if the standardised bias lies between -10% and +10% (see Austin, 2009; Stuart, 2010). This threshold is indicated in Figure 2 by the two dashed vertical lines.

Before matching, covariates relating to age, Aboriginality, remoteness and socioeconomic disadvantage were close to or within the 10% standardised bias threshold, suggesting that they were well balanced across the treatment and control groups. However, some variables fell outside of the 10% threshold. For instance, relative to the unmatched control group, CDTP participants were less likely to have a low LSI-R, were more likely to have 3-4 or 5+ prior court appearances, and were more likely to have 3-4 or 5+ prior prison sentences. This suggests that prisoners with more extensive prior offending histories were

referred to CDTP. As seen in Figure 2, after applying entropy balancing, most covariates lie inside the 10% standardised bias threshold, suggesting that the CDTP group is very similar in terms of observable characteristics to the matched control group. The only exception is the low LSI-R risk category, which has a standardised bias of 10.4. This is likely because only 0.5% of the treatment group and 1.6% of the control group were classified as low risk, making it difficult to find control prisoners who had similar characteristics to these low-risk CDTP participants. We report the results from additional diagnostic tests in Appendix A.

Figure 2. Standardised bias between CDTP participants and control group before and after matching

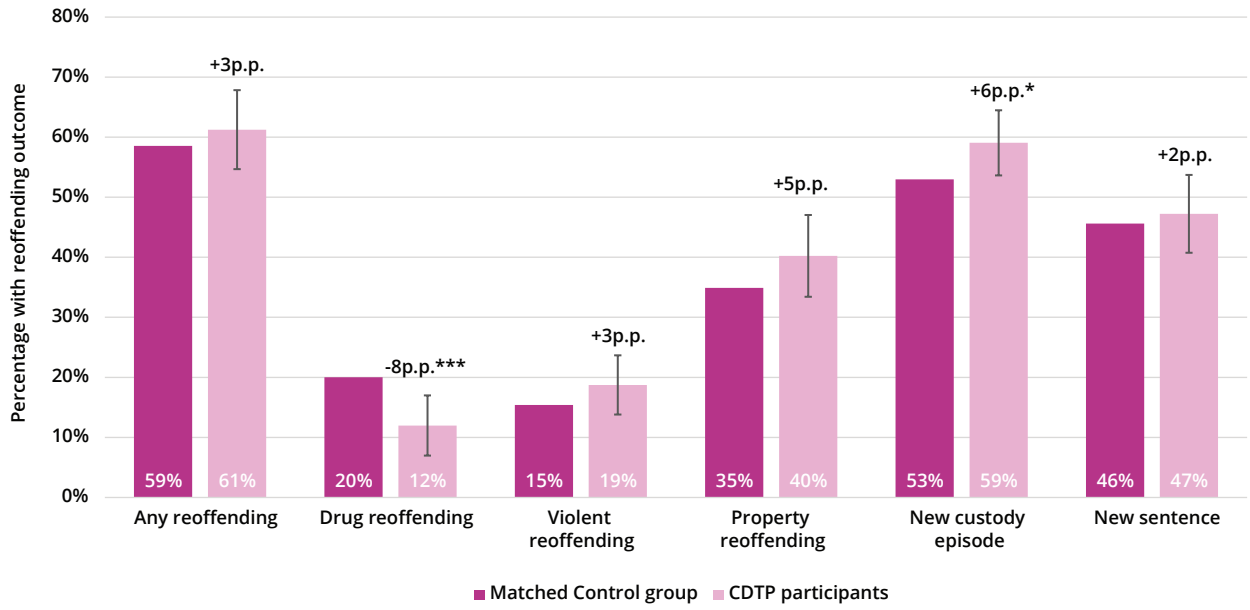


Note: A reference category is missing for each covariate.

Regression results

Figure 3 presents our estimates for the differences in one year reoffending outcomes between CDTP participants (n = 382 prison episodes) and the matched control group of prisoners who met all observable eligibility criteria for CDTP but did not participate in the CDTP or any other drug/alcohol program while in prison (n = 1,442 prison episodes). This analysis controls for all criminal justice and sociodemographic characteristics of prisoners in our sample using probit regression. More detailed regression results are available in Appendix B. We estimate that CDTP participants were 8p.p. less likely to reoffend with a drug offence relative to matched control prisoners (20% vs 12%). This represents a marginal decrease in drug reoffending of roughly 40%. We also find that CDTP participants were slightly more likely to reoffend with any proven offence, a proven violent offence, a proven property offence, a new custodial episode and a new sentenced custodial episode by 3p.p., 3p.p., 5p.p., 6p.p. and 2p.p, respectively. However, these differences were not statistically significant at the 5% level.

Figure 3. Conditional association between CDTP participation and reoffending outcomes, relative to matched control group



Note: error bars refer to the 95% confidence interval associated with the adjusted difference. Stars indicate statistical significance at a variety of conventional thresholds of statistical significance: * 10%, ** 5%, *** 1%.

Robustness checks

In this section, we present three robustness tests where we re-estimate the association between CDTP participation and reoffending using alternative treatment and control groups. The findings of our robustness tests are summarised at the end of this section in Table 3. To begin with, we examine the impact of CDTP on reoffending using a subset of the CDTP treatment group, namely CDTP participants who completed all stages of the program. We do this because a relatively high proportion (60%) of prisoners who were accepted onto the CDTP do not complete the program. This allows us to estimate the treatment effect of program completion (that is, the average treatment effect on the treated), rather than an intention-to-treat estimate based on program commencement. We report the number and proportion of CDTP participants who completed all stages of the program in Table 2. Participants were classified as completers if they were granted parole (n = 132 prison episodes) or their CDTO expired (n = 21 prison episodes). Participants who had their CDTO revoked were classified as non-completers (n = 229 prison episodes). While this additional analysis allows us to estimate the maximum possible treatment effect that the program would be expected to deliver, it is more heavily affected by omitted variable bias. This is because individuals who complete the program are more likely to differ from the control group on unobserved characteristics that we cannot match on which influence both completion and reoffending. This includes factors such as motivation, education, previous participation in drug treatment programs,

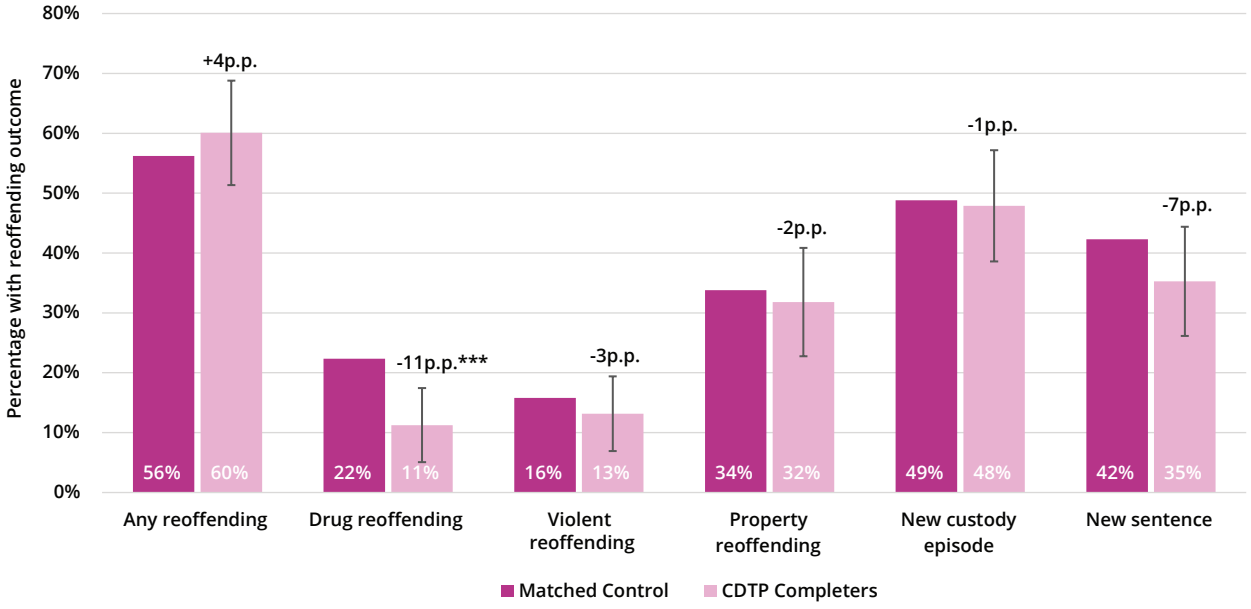
mental health disorders, and severity of drug dependency (see Butzin et al., 2002; Johnson & Tran, 2020; Mutter et al., 2015; Shannon et al., 2015). These results should therefore be interpreted with some caution.

Table 2. CDTP completion status for CDTP participants

	N	%
Completed Stages 1-3	153	40
Did not complete stages 1-3	229	60
Total	382	100

The prison episodes of 153 CDTP participants who completed all stages of the program were matched with the control group from the main analysis (i.e. prisoners who met all observed eligibility criteria for CDTP but did not participate in CDTP or any other drug/treatment program; n = 1,442 prison episodes) using entropy balancing, and outcomes were compared across the two groups. For this analysis, we retain the original entropy balancing weights from the main participation analysis, rather than re-estimating weights for the completer subgroup.[37] Estimates from the probit regression models are reported in Figure 4 and detailed regression results are available in Appendix B. We find that within a year of release from custody, CDTP completers were 13p.p. less likely to reoffend with a drug offence (a 50% marginal decrease). CDTP was not associated with a decrease in any of the remaining reoffending outcomes. When comparing these results to our main analysis, we find that CDTP completers experience greater reductions in drug reoffending than non-completers (with a 11p.p. reduction for completers vs a 8p.p. reduction for non-completers).

Figure 4. Conditional association between CDTP completion and reoffending outcomes, relative to

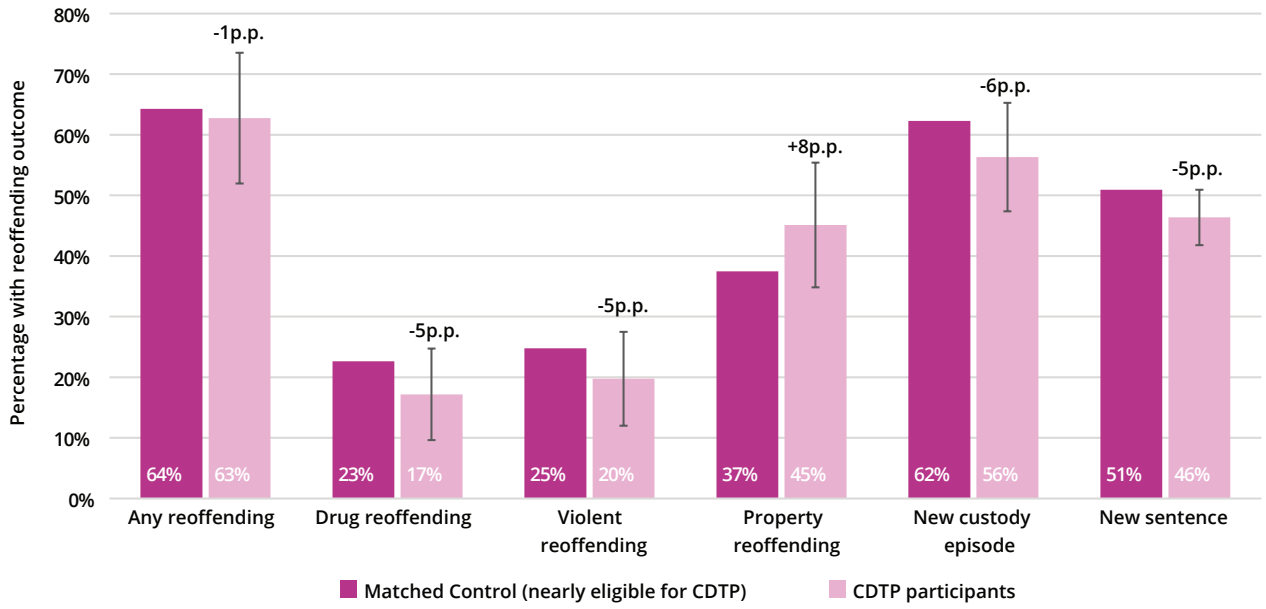


Note: error bars refer to the 95% confidence interval associated with the adjusted difference. Stars indicate statistical significance at a variety of conventional thresholds of statistical significance: * 10%, ** 5%, *** 1%.

37 The relatively low completion rate meant that it was not possible to achieve satisfactory balance across the full set of baseline covariates when re-estimating entropy-balancing weights for completers. We therefore retain the original entropybalanced control group to ensure that outcomes for completers are compared against the same counterfactual benchmark used in the main participation analysis. This approach is analogous to standard practice in experimental evaluations, where analyses restricted to program completers continue to use the original control group even though completion is influenced by unobserved factors arising during program participation (e.g. motivation).

Next, we compared reoffending outcomes using 382 prison episodes of CDTP participants with a matched control group of 101 prison episodes for those who were referred to the CDTP and met all but one of the program's observed eligibility criteria. Specifically, prisoners in this alternative control group met all eligibility criteria for CDTP, but either: 1) did not live in metropolitan Sydney; or 2) had a non-parole period that was slightly longer than six years or shorter than 18 months. Our rationale for this comparison is that these prisoners are likely to be more similar to the CDTP participants on unobserved factors (such as drug dependency) since they were considered for participation in CDTP via the same referral pathway.[38] Note however that they did not proceed to the suitability assessment phase, so may still differ from CDTP participants on some important factors. For this robustness check, CDTP participants were rematched to the alternative "nearly eligible" control group using the same controls and newly estimated entropy-balancing weights.[39] Figure 5 shows the estimates from our probit regression model comparing CDTP participants with this alternative "nearly eligible" matched control group. We find that the direction of impact of CDTP on reoffending outcomes is somewhat similar to our main analysis. For instance, CDTP was associated with 5p.p. decrease in drug reoffending. However, there are no statistically significant differences for any of the reoffending outcomes. This may be because the control group used in this analysis is around 7% of the size of the control group used in our main analysis (n = 101 vs n = 1,442), which reduces the statistical power of the analysis.[40]

Figure 5. Conditional association between CDTP participants and reoffending outcomes, relative to matched control group of nearly eligible prisoners referred to CDTP



Note: error bars refer to the 95% confidence interval associated with the adjusted difference. Stars indicate statistical significance at a variety of conventional thresholds of statistical significance: * 10%, ** 5%, *** 1%.

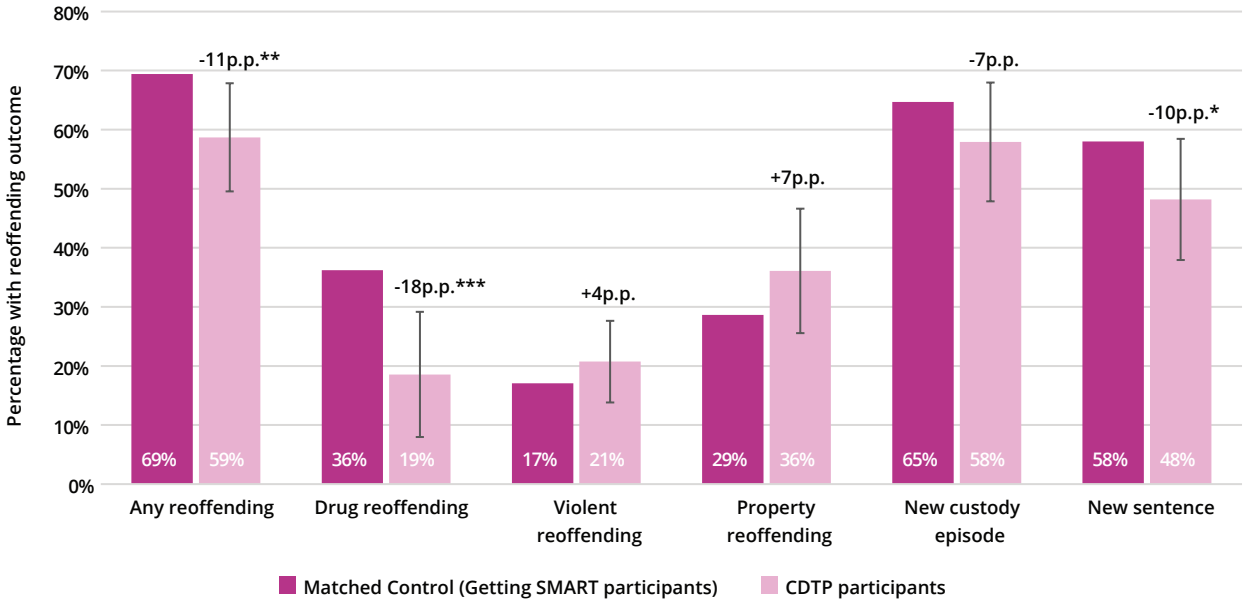
38 While we restrict the control group in our main analysis to prisoners who stated they have ever had/currently have a drug problem (via LSI-R items 38 and 40), this does not provide a proxy for drug type and/or severity of the drug problem. This alternative control group may be more similar to CDTP participants in terms of drug type and/or severity of their drug problem.

39 All covariates achieved standardized mean differences below the 10 per cent threshold after entropy balancing. The maximum entropy-balancing weight was approximately 30, which is expected given the treatment group was larger than the control group.

40 For example, power analysis indicates that this test has approximately 80% power to detect a minimum absolute difference in rates of any reoffending between the treatment and control group of 14.49 percentage points. Therefore, smaller effects (e.g. 5-10 percentage points) may not be statistically detectable in this specification given the available sample size.

Finally, in Figure 6, we present estimates of the impact of participation in the CDTP on reoffending derived from a probit model comparing the CDTP treatment group (of 382 prison episodes) with a group of prisoners who met all observed eligibility criteria for CDTP and who did not participate in CDTP but did participate in Getting SMART while in custody (n = 677 prison episodes). Getting SMART is the most common drug/alcohol program delivered to inmates in CSNSW correctional facilities. The advantage of this comparison is that we would expect prisoners in both the treatment and control groups to be similarly motivated to change their drug/alcohol behaviours given that this is a suitability criterion of both programs. For this robustness check, CDTP participants were rematched to the Getting SMART comparison group using newly estimated entropy-balancing weights.[41] In this analysis, we find that CDTP participation was associated with a 11p.p. decrease in any reoffending and an 18p.p. decrease in drug reoffending. Relative to our main analysis, this comparison yields a larger estimated reduction in drug reoffending (18p.p. compared with 8p.p.).

Figure 6. Conditional association between CDTP participants and reoffending outcomes, relative to matched control group of prisoners who participated in Getting SMART



Note: error bars refer to the 95% confidence interval associated with the adjusted difference. Stars indicate statistical significance at a variety of conventional thresholds of statistical significance: * 10%, ** 5%, *** 1%.

Table 3 summarises the association between CDTP participation and the likelihood of reoffending within one year of release from custody, across all reoffending outcomes and for both our main analysis and robustness checks (as shown in Figures 3 to 6). Note that the treatment and control group sizes vary across specifications, affecting statistical power. In particular, robustness test 2 is underpowered due to small sample sizes, so null findings should not be interpreted as evidence of no effect. The most consistent finding is that CDTP is associated with a reduction in drug reoffending, observed in the main analysis and two robustness checks.

41 All covariates achieved standardized mean differences below the 10 per cent threshold after entropy balancing. The maximum entropy-balancing weight was approximately 30, which is expected given that the treatment group was larger than the control group.

Table 3. Summary of association between CDTP participation and reoffending outcomes across main analysis and robustness tests

Reoffending Outcome	Main Analysis: CDTP participants vs matched control prisoners	Robustness 1: CDTP completers vs matched control prisoners	Robustness 2: CDTP participants vs matched nearly eligible CDTP control	Robustness 3: CDTP participants vs matched Getting SMART participant control
Any offence	No change	No change	No change	▼ 11p.p. decrease
Drug reoffence	▼ 8p.p. decrease	▼ 11p.p. decrease	No change	▼ 18p.p. decrease
Violent reoffence	No change	No change	No change	No change
Property reoffence	No change	No change	No change	No change
New custody episode	No change	No change	No change	No change
New prison sentence	No change	No change	No change	No change

Note: "Decrease" and "Increase" indicate that CDTP participation is associated with a statistically significant decrease or increase, in the given reoffending outcome relative to the matched control group ($p < 0.05$). "No change" indicates that no statistically significant association is observed at the 5% significance level ($p \geq 0.05$).

DISCUSSION

This study aimed to estimate the association between CDTP participation and the likelihood of reoffending within a year of release from custody. To do so, we compared reoffending outcomes for CDTP participants with a matched control group of prisoners who did not participate in CDTP or any other drug/alcohol treatment while in custody. Groups were compared across six different reoffending outcomes: 1) any new offence; 2) a new violent offence; 3) a new drug offence; 4) a new property offence; 5) any new custodial episode; and 6) a new sentenced custodial episode. We found that participating in CDTP was associated with a 8p.p. reduction in reoffending with a drug offence but was not associated with any significant change in the remaining reoffending outcomes, relative to the matched control group. Further, we found that completing CDTP was associated with a larger 11p.p. reduction in drug reoffending, but no change in any other outcomes. This larger effect likely reflects greater treatment dosage, as well as unobserved differences between completers and non-completers, such as motivation, educational attainment, prior engagement with drug treatment, co-occurring mental health disorders, and the severity of drug dependence (see Butzin et al., 2002; Johnson & Tran, 2020; Mutter et al., 2015; Shannon et al., 2015). Notably, reoffending rates were relatively high for prisoners in both the treatment and control groups, with around 60% of all prisoners reoffending within a year of release.

Since participation in the CDTP was not randomly assigned, identifying an appropriate counterfactual was a challenge for this evaluation. Our matching techniques enabled us to compare CDTP participants with a group of prisoners who were observably similar on a wide range of variables. However, it is possible that unobserved differences between the two groups still exist. For this reason, we undertook supplementary analyses comparing CDTP participants to alternative control groups that were plausibly more comparable in terms of referral pathways and motivation for behavioural change. The results from these robustness checks were broadly consistent with the main findings. For instance, we compared CDTP participants' outcomes to observably similar prisoners who participated in Getting SMART, and found that CDTP participation was associated with lower rates of reoffending with any offence (by 11p.p.) and reoffending with a drug offence (by 18p.p.), although it was also associated with higher rates of property reoffending (by 10.p.p.) at the 10% significance level. These differences may reflect the greater intensity and drug-specific focus of CDTP relative to Getting SMART. Taken together, our findings suggest that CDTP is effective in reducing drug-related offending and, possibly, decreasing the likelihood of a new sentenced custodial episode, however it appears to have little impact on general reoffending rates.

Our findings align with the earlier evaluation of CDTP by Casey et al. (2013), who reported lower recidivism among CDTP completers compared with prisoners who participated in Getting SMART. However, our results differ from evaluations of other comparable drug treatment programs for prisoners in NSW. Most notably, Halstead and Poynton's (2016) evaluation of IDAPT reported no measurable impact on drug, violent, or general recidivism at 3, 6 or 12 months post-release, whereas the CDTP was associated with a clear reduction in drug reoffending in our study. One explanation may be statistical power. The IDAPT evaluation used a substantially smaller sample, reducing its ability to detect even modest treatment effects. However, differences in program design and delivery may also explain the divergent findings. IDAPT is shorter in duration, and offers less intensive case management and therapeutic structure than the CDTP. IDAPT is also voluntary, which may lead to greater variability in engagement and treatment dosage, whereas CDTP is compulsory. Differences in eligibility criteria may also contribute to these contrasting results. CDTP targets a narrowly defined group of male offenders with long-term drug dependence who fall within specific sentencing thresholds. In contrast, IDAPT eligibility is based on clinical need and treatment suitability, potentially resulting in a more heterogeneous population with substance use problems that are less directly linked to repeat criminal behaviour.

There are several potential explanations for CDTP's limited impact on general reoffending. First, post-release support may be inadequate, especially when contrasted with programs like the Violent Offender Treatment Program (VOTP) which offers dedicated post-release maintenance services and has been shown to reduce general reoffending (Rahman, Poynton & Wan, 2018). Reintegration activities feature throughout the three stages of the CDTP, however it is unclear whether these activities are meeting the needs of participants and leading to tangible benefits post-release. In Dekker et al.'s (2010) evaluation, the majority of CDTP participants interviewed were satisfied with the opportunities for training, education, work release and community-based living that were offered as part of treatment. Upon completing treatment stage 2, 85% of interviewed participants believed they would "cope well with life in the community". Yet, at the completion of treatment stage 3, one third were very dissatisfied with their housing arrangements and two thirds were jobless. Participants identified both insufficient skills and insufficient supports when searching for jobs as barriers for gaining timely employment. This lack of reintegration supports post-release may be limiting the benefits generated by CDTP, consistent with evidence highlighting the crucial role of sustained post-release support in preventing problematic drug use and reoffending. This includes continued engagement in drug treatment (Bartle et al., 2021) and supports that foster social integration, such as employment (Visher & Travis, 2003; Visher et al., 2011; Winter et al., 2016;), secure housing (Baldry et al., 2004; Evans et al., 2009), and access to healthcare (Luther et al., 2011).

Second, CDTP's intensive drug-focused treatment and close monitoring may impact drug offending without meaningfully shifting broader criminal behaviour(s). Research shows that while drug treatment can reduce recidivism, wider effects occur only when programs address multiple criminogenic needs beyond substance use (Bourgon & Armstrong, 2005). Prison-based drug interventions that incorporate offence-focused cognitive work and continuity of care are especially beneficial in this regard (de Andrade et al., 2018). This pattern is consistent with evidence from incarceration-based drug treatment programs more generally. Metaanalytic findings indicate that while many such programs reduce drug use, their effects on general offending are often mixed or modest unless they deliver intensive, multimodal therapeutic content (Mitchell, Wilson & MacKenzie, 2007). Because CDTP places greater emphasis on structured abstinence support rather than on offence-focused cognitive or behavioural interventions, it may effectively suppress drug-related offending during episodes of incarceration, while leaving other criminogenic pathways largely unchanged.

Finally, the timing of intervention may limit CDTP's broader effects. Our sample of CDTP participants had more extensive prior offending histories than other prisoners with a drug problem, indicating that many participants enter the program only after becoming deeply entrenched in the drug-crime cycle. At such a late stage, rehabilitation requires considerable effort, and behavioural change may be harder to sustain. Earlier intervention, before dependency escalates and offending patterns become chronic, has been shown to improve long-term outcomes and reduce the likelihood of relapse into harmful behaviours

(US Department of Health and Human Services, 2016). This raises the possibility that the CDTP may not be targeting individuals early enough for maximising treatment impact, particularly in relation to general reoffending.

Our evaluation has several strengths and limitations. A key strength is that it is the first study to compare CDTP participants with a control group who met all observed eligibility criteria and plausibly could have been referred to the program. By matching on a rich set of demographic, criminogenic and prior offending characteristics, we ensured that CDTP participants and controls were observably similar across multiple domains relevant to both program participation and reoffending risk. Including such a comparison group substantially strengthens causal inference by reducing bias arising from differences in risk profiles that might otherwise distort estimates of program impact.

Despite these strengths, several methodological limitations remain. As with all observational evaluations, omitted variable bias cannot be ruled out. Unobservable differences between CDTP participants and matched controls may influence reoffending independently of program exposure. For instance, drug dependence is measured through two binary LSI-R items that do not capture dependency level, chronicity, polysubstance use, or specific drug types. These distinctions are important because different substances carry different offending profiles. For example, amphetamine dependence is closely associated with property crime (Goldsmid & Willis, 2016). Similarly, we cannot observe the mental health status of untreated prisoners, which may bias our results, given the established link between mental health problems and drug-related offending (Perry et al., 2019). Next, CDTP's suitability assessment takes prior drug treatment history into account, but this information is unavailable for the control group. This may introduce bias in our estimates, given evidence that having no history of drug treatment is associated with completion (Shannon et al., 2015). Another constraint is our limited visibility of treatment dosage. Although we can identify whether a participant completed all three CDTP stages, we cannot determine which stages were completed by those who exited early. This creates unmeasured heterogeneity in program exposure and prevents detailed sub-group analyses that would clarify which program components influence outcomes. Finally, the follow-up period is restricted to 12 months post-release. Although this timeframe captures the period of highest risk for reoffending, it may not fully reflect longer-term behavioural change. Longer follow-up windows would provide a more robust indication of whether reductions in drug offending are sustained over time and whether general offending declines after a longer period of community adjustment. Extended follow-up would also allow for a more complete assessment of delayed program effects, patterns of desistance, and the influence of post-release circumstances on treatment gains achieved during custody.

In conclusion, our evaluation provides new evidence that CDTP participation is associated with significant reductions in drug reoffending but has no measurable impact on broader recidivism within the first year after release. This suggests that while the program effectively disrupts drug offending, it may not sufficiently address the wider criminogenic factors that drive general offending. Future research with longer follow-up periods and more detailed measures of treatment exposure would confirm whether the program delivers longer-term impacts and the pathways through which CDTP influences reoffending. Refining the program to include earlier referral into treatment, multi-modal therapeutic content, stronger integration of employment and housing supports, strengthened post-release supervision and support, and service linkage may lead to broader benefits. Any future modifications to the CDTP should be accompanied by more granular data collection on program engagement across treatment stages to enable more robust evaluation of dosage, attrition, and mechanisms of impact.

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APPENDIX

Appendix A: Entropy balancing diagnostic tests.

Figure A1 shows the distribution of entropy balancing weights for the control prisoners in our main analysis. Most weights were below 1, with a maximum weight of 4.2. This suggests that our matching procedure has not been unduly influenced by a small number of control prisoners with large matching weights. Note that by construction, the balancing weights of all CDTP participants are equal to one. Figure A2 plots the density of custodial end dates of CDTP participants and matched control prisoners. This shows that CDTP participants and the matched control groups are very similar in terms of custodial release dates, giving us confidence that our results are not influenced by differences in the offending environment of prisoners released at different times. For instance, a similar proportion of treatment and control prisoners are released during COVID-19.

Figure A1. Distribution of entropy balancing weights for control prisoners

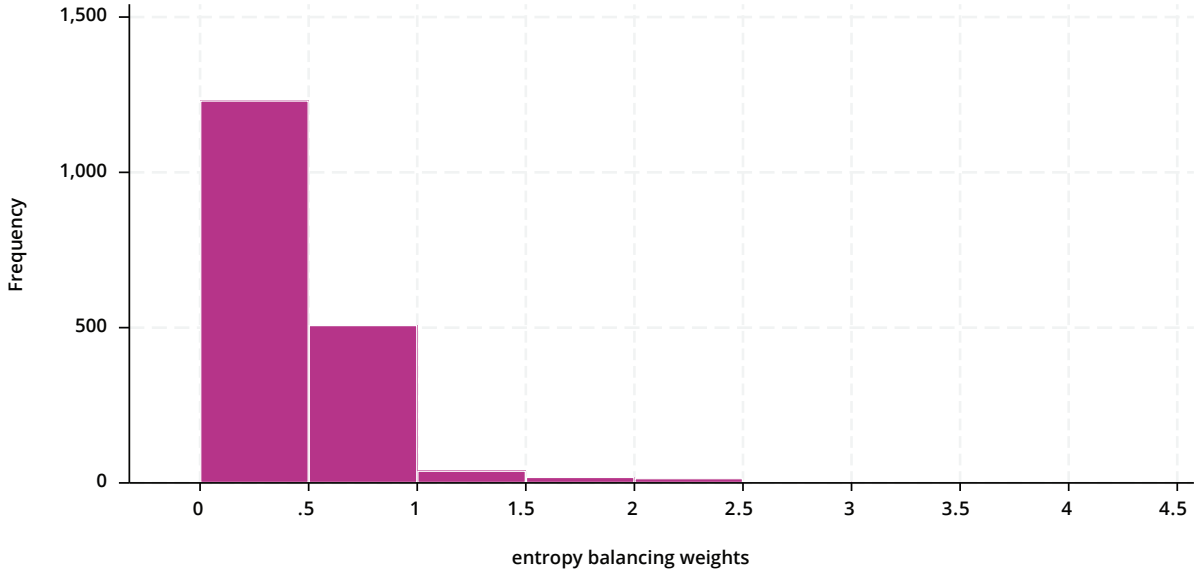
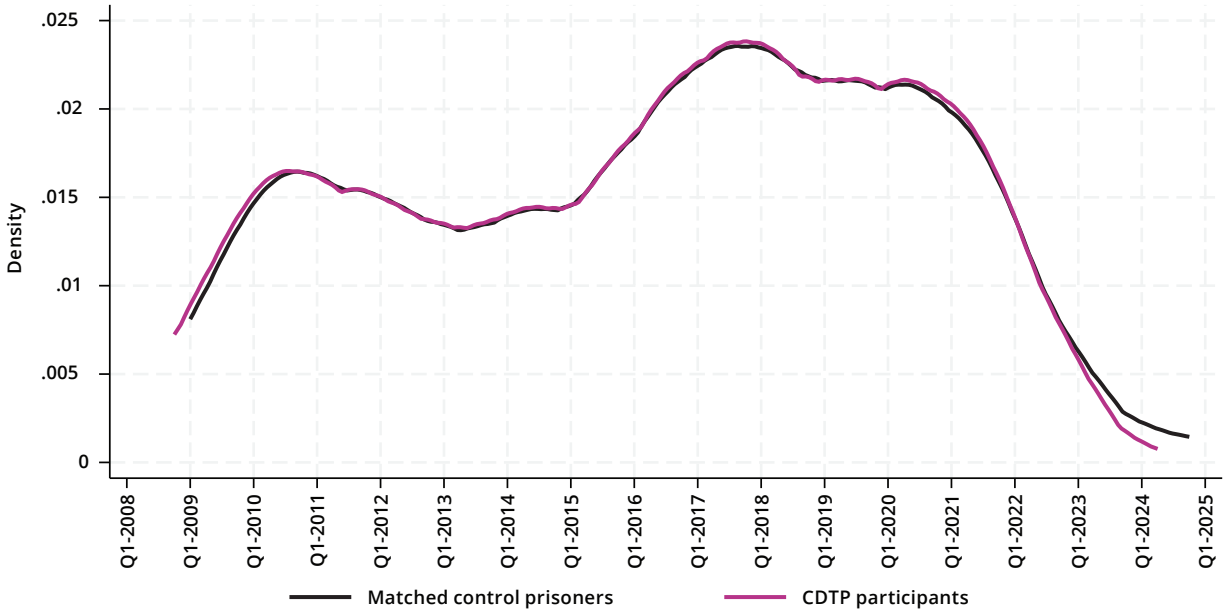


Figure A2. Density of custodial end dates of treatment and matched control prisoners



Appendix B: Detailed regression results

Table B1 reports average marginal effects derived from probit regression for our main analysis and three robustness tests as described in our Results section.

Table B1. Matched probit regression results for main analysis and robustness tests

	Main Analysis: CDTP participants vs matched control prisoners	Robustness 1: CDTP completers vs matched control prisoners	Robustness 2: CDTP participants vs matched nearly eligible CDTP control	Robustness 3: CDTP participants vs matched Getting SMART participant control
N treatment	382	153	382	382
N control	1,442	1,442	101	677
Panel A: Probability of reoffending with any offence				
Estimate	0.03	0.04	-0.02	-0.11
p-value	0.42	0.39	0.78	0.02
Standard error	0.03	0.04	0.06	0.05
Pseudo-R2	0.22	0.29	0.35	0.41
Panel B: Probability of reoffending with a drug reoffence				
Estimate	-0.08	-0.11	-0.05	-0.18
p-value	0.00	0.00	0.15	0.00
Standard error	0.03	0.03	0.04	0.05
Pseudo-R2	0.25	0.31	0.56	0.55
Panel C: Probability of reoffending with a violent reoffence				
Estimate	0.03	-0.03	-0.05	0.04
p-value	0.19	0.41	0.20	0.30
Standard error	0.03	0.03	0.04	0.04
Pseudo-R2	0.26	0.29	0.47	0.47
Panel D: Probability of reoffending with a property reoffence				
Estimate	0.05	-0.02	0.08	0.07
p-value	0.12	0.67	0.15	0.17
Standard error	0.03	0.05	0.05	0.05
Pseudo-R2	0.18	0.24	0.35	0.33
Panel E: Probability of reoffending with a new custody episode				
Estimate	0.06	-0.01	-0.06	-0.07
p-value	0.06	0.84	0.23	0.19
Standard error	0.03	0.05	0.05	0.05
Pseudo-R2	0.25	0.28	0.42	0.40
Panel F: Probability of reoffending with a new prison sentence				
Estimate	0.02	-0.07	-0.05	-0.10
p-value	0.62	0.13	0.38	0.06
Standard error	0.03	0.05	0.05	0.05
Pseudo-R^2	0.24	0.29	0.39	0.41

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