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Social impact investment and recidivism: A field experiment with high-risk parolees

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AIM

To assess the effectiveness of the On TRACC program in reducing recidivism compared to existing services provided to high-risk parolees.

METHOD

High-risk offenders scheduled for release on parole between September 2016 to September 2018 were referred to the NSW Bureau of Crime Statistics and Research (BOCSAR) to be randomly allocated to either the On TRACC or a comparison group. Offenders assigned to the On TRACC program would receive On TRACC services in addition to existing supervision services provided by NSW Community Corrections (NSWCC). In contrast, offenders assigned to the comparison group received regular services provided by NSWCC. We find that the observable characteristics of the On TRACC and comparison groups are equivalent, on average, which suggests successful randomisation to groups.

RESULTS

We study four measures of recidivism. We examine the probability of return to custody, reconviction, reimprisonment, and committing a personal, property, or serious drug offence within 12 months of release from prison. In the full sample (*N* = 1,879), offenders assigned to On TRACC had very similar rates of recidivism compared with the comparison group and the differences are not statistically significant across each measure of recidivism. Further examination of outcomes for various offender sub-groups found only one statistically significant result; non-Aboriginal offenders assigned to On TRACC were 5 percentage points less likely to commit a personal, property, or serious drug offence. However, this finding should be interpreted cautiously.

CONCLUSION

We do not find evidence that the On TRACC program led to a statistically significant reduction in recidivism in comparison with existing services provided by NSWCC. While there were a number of lessons learned for the development of future social impact investments (SII) in criminal justice, the On TRACC program demonstrates that it is possible for different sectors to collaborate to inform evidence-based policy.

KEYWORDS

social impact investment | recidivism | field experiment | randomised controlled trial | parole

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INTRODUCTION

Social impact investment (SII) is an innovative model that combines capital and expertise across public, private, and not-for-profit sectors to achieve a social objective. Typically, in a SII, capital is raised from the private sector and is used to initially finance non-government organisations (NGOs) to deliver social services. Unlike other traditional financial agreements where government pays a service provider to deliver a service or input, outcome payments in a SII are based on successfully achieving a particular social outcome (for example, reducing recidivism). The potential savings generated from achieving better outcomes enables government to repay the upfront investment and provide a return. These agreements are typically referred to as 'payment by results' (PbR) contracts.

There are a number of distinctive features of SIIs that distinguishes them from traditional financial agreements. Within the criminal justice context, these are:

- Innovation: Encouraging NGOs and service providers to deliver services with a focus on outcomes will generate greater innovation and introduce new solutions to the criminal justice sector.
- Achieve financial savings via a reduction in recidivism: Government can achieve savings by using private investment to fund the provision of services. In the longer term, savings are generated from a reduction in recidivism and incarceration, and a corresponding decrease in public spending. A reduction in recidivism can also lead to a reduction in demand for other government services.
- Outcomes: SII incentivises organisations by structuring payments to be conditional on achieving targeted outcomes.
- Redistribute risk: SII facilitates a redistribution of risks and benefits across the government and non-government sectors.

Social impact investments in criminal justice

Social impact investments are an increasingly popular approach used by governments in the United Kingdom (UK), United States (US), and Australia to pilot innovative programs to tackle complex social issues. However, despite the purported benefits of SIIs, there is mixed evidence of their efficacy in achieving reductions in recidivism, partly due to the fact that there have been relatively few SIIs in criminal justice.[1] A common example of SII is a 'social impact bond' (SIB), which is a specific type of PbR. The world's first SIB was conducted in the UK at Her Majesty's Prison (HMP) Peterborough. Beginning in September 2010, the Peterborough SIB targeted male offenders with prison sentences of 12 months or less who were released from HMP Peterborough. Eligible offenders were offered the 'One Service' program, which provided different support services to offenders depending on their particular needs upon release from prison for a period of 12 months. Some examples include housing, employment, or mental health and addiction support. Participation in One Service was voluntary. The outcome of interest in the One Service SIB was the number of reconvictions 12 months post-release. Reconvictions for One Service participants were compared with a control group matched via propensity score matching (PSM) techniques. The control group were similar in observed attributes with offenders in the One Service program. Anders and Dorsett (2017) report a nine per cent reduction in the mean number of reconvictions among those offered One Service compared to the matched comparison group. As the required reduction in reconvictions to trigger payment was seven per cent, the Peterborough SIB was deemed a success.[2]

Another prominent SIB, and the first SIB to be undertaken in the US, was the Adolescent Behavioural Learning Experience (ABLE) program launched in 2012 (Parsons, Weiss, & Wei, 2016). The program aimed to reduce recidivism of young offenders by 10 per cent. The ABLE SII targeted 16 to 18-year old offenders detained in Rikers Island prison in New York from January to December 2013 who were released from

1 The Impact Bond Global Database website lists SIIs conducted worldwide: https://sibdatabase.socialfinance.org.uk/ [accessed: 27 July 2020].
2 In 2014, the Peterborough SIB was concluded early due to limited funding.

custody before March 31, 2014. To fund the ABLE program, a SIB was created by the City of New York together with private investment provided by the Urban Investment Group of Goldman Sachs and Bloomberg Philanthropies. The ABLE program was designed to improve individuals' decision-making skills and was based on Moral Reconation Therapy (MRT), which is a form of cognitive behavioural therapy (CBT) (Little & Robinson, 1988). The outcome of interest, 'recidivism bed days', was defined as the number of days in prison for a new offence within 12 months post-release. To assess the impact of the ABLE SII, the outcome was compared between the juvenile offenders who received ABLE and a historical comparison group matched via PSM.

When compared to the matched comparison group, those who participated in the ABLE program had a 5.1 per cent increase in recidivism bed days post-release, but the increase was not statistically significant. As a consequence of not meeting the program's social objective of a 10 per cent decrease, the ABLE SII was discontinued on August 31, 2015.

The On TRACC program

The NSW government first announced an interest in SII initiatives in February 2015, which was accompanied by a Statement of Opportunities (2015) released by the NSW Office of Social Impact Investment (OSII). One of the priority areas identified by the NSW government was the formation of a SII to fund and provide additional support services to high-risk parolees in order to improve community safety and achieve savings in the criminal justice system. Offenders serving a parole supervision order were highlighted as a potential cohort of interest because, "a challenge for Corrective Services NSW is the provision of sufficiently high levels of intervention to meet the needs of higher risk offenders... this gap in service provision provides an opportunity for the proponent to deliver programs/interventions targeting factors related to the offence" (NSW OSII, 2015). Subsequently, this led to the formation of Australia's first criminal justice SII announced by the then NSW State Treasurer Gladys Berejiklian MP on July 2016:

> *"Together with the Minister for Corrections, I announced an Australian first: a social impact investment bond in recidivism. Last month a contract was signed to work with two not-for-profit organisations with the aim of reducing parolee re-offending and re-incarceration."*[3]

The NSW government partnered with two NGOs to establish the SII known as the On TRACC (Transition, Reintegration, and Community Connection) program. Originally conceived to operate for five years, On TRACC was designed to supplement existing supervision services delivered by NSW Community Corrections to high-risk offenders serving a parole supervision order. Ultimately, the aim of the On TRACC program was to reduce recidivism. Table 1 lists the stakeholders involved in the On TRACC SII.[4]

Table 1. Stakeholders of the On TRACC social impact investment

Organisation	Role
Australian Community Support Organisation (ACSO)	Service delivery provider and private investor
Alcohol Related Brain Injury Association (Arbias)	Service delivery sub-contracted provider
National Australia Bank (NAB)	Private investor
NSW Bureau of Crime Statistics and Research (BOCSAR)	Outcome evaluator and data analysis
NSW Community Corrections (NSWCC)	Coordinates and delivers supervision services in NSW
NSW Office of Social Impact Investment (OSII)	Facilitates and coordinates social impact investments in NSW

Source: NSW Office of Social Impact Investment website [https://www.osii.nsw.gov.au/assets/office-of-social-impact-investment/OnTracc-Factsheet-FINAL.pdf. Accessed 26 February 2020].

3 For the full transcript, please refer to: https://www.parliament.nsw.gov.au/Hansard/Pages/HansardResult.aspx#/docid/HANSARD-1323879322-91852 [accessed: 26 February 2020].

4 For more information about the On TRACC SII, please see the NSW Office of Social Impact Investment website: https://www.osii.nsw.gov.au/initiatives/sii/on-tracc-investment/ [accessed 26 February 2020].

The service providers were contracted to deliver enhanced post-release support services to eligible high-risk offenders on parole with the goal of assisting them with their needs while transitioning into the community. On TRACC was a PbR; the NSW government would pay investors a return only if recidivism targets were met.[5] To be eligible for On TRACC, offenders were required to fulfil the following eligibility criteria:

- Serve a parole supervision order upon release from prison,
- Be 18 years or older at release,
- Be supervised in the Sydney metropolitan area, and;
- Have a Level of Service Inventory-Revised (LSI-R) score of Medium, Medium-High, or High risk.[6]

The service providers were given a broad remit to deliver services to offenders with minimal intervention from NSWCC. Broadly speaking, the On TRACC service delivery model featured three stages of support that was delivered to offenders over 12 months post-release. These stages were:

1. Intake: Case workers engaged with offenders who were scheduled to be released on parole prior to release from prison. During this stage, each offender's unique risks of re-offending and needs were identified.
2. Post-release support: This stage was characterised by the provision of intensive support services over four months. The type of support delivered to offenders depended on need and varied from securing housing, seeking employment, legal support, and strengthening community networks.
3. Aftercare: The final stage was a less intensive support model that lasted for eight months.

In general, offenders who participated in On TRACC were provided with supplementary support by the On TRACC case worker(s) in addition to the supervision services provided by the NSW Community Corrections Officer (CCO). On TRACC case workers assisted offenders with a variety of additional needs to help them reintegrate into the community. An On TRACC case worker supplemented an offender's supervision by making appointments and/or arranging transportation to rehabilitation programs and services that the CCO had arranged for the offender, and occasionally, attended supervision contacts with the CCO and the offender. On TRACC case workers also assisted offenders with their daily living needs, such as finding and organising accommodation, providing household items, and organising communications (for example, obtaining a mobile phone on behalf of the offender). Other assistance provided by On TRACC case workers included finding employment services, assisting with legal matters, Centrelink appointments, and facilitating contact between the offender and their family members.[7]

Current study

In this study, our aim is to assess the effectiveness of the On TRACC program on parolee recidivism in comparison with existing supervision services provided by Community Corrections NSW. Furthermore, we will discuss a number of potential improvements to the design and management of the On TRACC SII identified by stakeholders, and how these 'lessons learned' are relevant for the evaluation of future SIIs, particularly within criminal justice.

5 The financial details of the On TRACC SII, such as the amount invested, the reduction in recidivism required for payment to be triggered, and the amount to be paid, are commercial in confidence.

6 The LSI-R is a predictive tool used by NSWCC to assess an offender's risk of recidivism and identify the offender's criminogenic needs. Offenders are given a score between 0 and 54, with higher scores indicating a greater likelihood of recidivism. To determine 'risk-level', the LSI-R score is categorised as follows: Low (0-13), Low/Medium (14-23), Medium (24-33), Medium/High (34-40), and High (41-54). Offenders with an LSI-R of Medium or above are generally considered to be high-risk.

7 Triggering payment in the first year of the On TRACC SII required a reduction in the re-incarceration rate of offenders released from prison between September 2016 and September 2017 (the reduction in re-incarceration required to trigger payment remains confidential). In brief, the difference in re-incarceration rates was negligible and not statistically significant between the On TRACC and comparison groups. These interim findings spurred a discussion among the On TRACC stakeholders, which ultimately led to a mutual agreement to conclude the SII in January 2019.

METHOD

To assess the impact of participating in the On TRACC program, we conducted a field experiment with random assignment. Eligible prisoners were referred to BOCSAR to be randomly assigned to either the On TRACC or comparison group. Those assigned to the comparison group were to receive existing parole supervision services delivered by NSWCC.[8] Offenders assigned to the On TRACC group would participate in the On TRACC program and also receive regular supervision.[9]

Randomly assigning offenders to either On TRACC or the comparison group ensures that, on average, the group characteristics are observably similar aside from participation in On TRACC. Subsequently, we assume that the On TRACC and comparison groups are also comparable in unobserved traits and attribute any difference in recidivism outcomes solely to participation in the On TRACC program.

Offenders were randomly assigned as follows. NSWCC periodically provided BOCSAR with a list of eligible offenders scheduled to be released on parole between September 2016 and September 2018. BOCSAR subsequently assigned offenders to either the On TRACC program or the comparison group using a randomly generated number. After offenders were allocated to the On TRACC or comparison group, BOCSAR informed NSWCC and the service providers of those who had been assigned to the On TRACC program.[10]

We study four binary re-offending outcomes. For each outcome, we measure recidivism within 12 months of release from prison. The outcomes are:

1. Probability of returning to custody: a binary variable equal to 1 if the offender returns to custody and 0 otherwise,[11]
2. Probability of 'reconviction': a binary variable equal to 1 if the offender commits a new and proven offence and 0 otherwise,[12]
3. Probability of 'reimprisonment': a binary variable equal to 1 if the offender is sentenced to prison for a new and proven offence and 0 otherwise, and;
4. Probability of committing a personal, property, or serious drug offence: a binary variable equal to 1 if the offender commits a new and proven personal, property, or serious drug offence and 0 otherwise.[13]

We compare each recidivism outcome between the On TRACC and comparison group using Probit regression. The marginal effect of interest is the difference in the probability of re-offending between offenders assigned to the On TRACC or comparison group, which is captured by a binary variable equal to 1 for offenders assigned to the On TRACC program, and 0 for the comparison group. We also estimate the marginal effect of On TRACC separately by LSI-R score category (High and Medium-High, and Medium) and Aboriginality.

8 During the study period, a major component of existing parole supervision services in NSW centred on the Practice Guide for Intervention (PGI), which is a rehabilitative tool based on the Risk-Need-Responsivity (RNR) model (Bonta & Andrews, 2007). The PGI is composed of a series of exercises based on cognitive behavioural therapy (CBT) techniques. Put simply, these exercises are designed to address criminogenic factors that are directly related to offending behaviour. Exercises are delivered by a CCO with an offender on parole during a supervision contact. Thus, offenders assigned to either the On TRACC or comparison group would receive PGI during supervision. For more information about the impact of PGI on parolee recidivism, please see Ooi (2020).

9 Offenders randomly assigned to the On TRACC group were contacted by a case worker during the Intake phase of the program. Ultimately, participation in the On TRACC program was voluntary. We do not exclude any offenders who did not participate from the analysis.

10 BOCSAR exclusively retained the list of offenders that were assigned to the comparison group.

11 New custodial episodes that are less than one day in duration are not included in the data.

12 When measuring reconviction, we do not include breach offences.

13 In June 2019, the NSW government announced a target to reduce adult recidivism following release from prison by five per cent for new and proven personal, property, or serious drug offences. This target was announced as a 'Premier's Priority'. In addition to being a NSW government target, these offences are typically considered to be relatively more serious offences. For more information, please see: https://www.nsw.gov.au/improving-nsw/premiers-priorities/reducing-recidivism-in-the-prison-population/ [accessed: 26 February 2020].

The Probit regression includes controls for offender demographics, such as gender, Aboriginality, and age at release. We also include prior offending history, which is measured by the number of prior finalised criminal court appearances and prior prison sentences, an indicator variable for whether the offender was a juvenile at their first contact with the NSW criminal justice system, and indicator variables for committing violent, property, or domestic violence offences in the five years prior to release.

Data were provided by NSWCC for eligible offenders, including the start date of the prison sentence, the offender's scheduled and actual release date from prison, and their LSI-R score at the time of referral. Offenders assigned to both the On TRACC and comparison groups were matched with BOCSAR's Re-offending Database (ROD) to obtain data on their demographics and contacts with the criminal justice system. To measure recidivism within 12 months of release from prison, details of any new offences committed after each offender was released from prison were extracted from ROD, including the date of the new offence and the type of offence committed. The dataset includes all new offences finalised in NSW criminal courts until September 2019.

RESULTS

Descriptive statistics

Table 2 includes the descriptive statistics for the study sample. Columns 1 and 2 include the means and the standard errors for each characteristic for those assigned to the On TRACC or the comparison group, and Column 3 calculates the difference between columns 1 and 2.

Starting with offenders assigned to On TRACC in Column 1, approximately 29 per cent were Aboriginal and 12 per cent were female. On average, On TRACC offenders were approximately 35 years old at the time of their release from prison. Over one-third of offenders assigned to On TRACC were either Medium-High or High LSI-R. On average, On TRACC offenders spent 541 days in prison prior to being released to parole, and roughly a quarter were in prison for two or more years.

In general, offenders assigned to the On TRACC group possess extensive criminal histories. On average, they have approximately five prior prison sentences, and 13 prior finalised criminal court appearances. Slightly more than half were under the age of 18 at their first contact with the NSW criminal justice system. Roughly two-thirds of On TRACC offenders had a prior violent or property offence and 38 per cent had a prior domestic violence (DV) offence in the previous five years.[14] Furthermore, 60 per cent had a prior non-custodial court order in the past five years, while 45.6 per cent had a prior supervised non-custodial order.

Column 2 displays the descriptive statistics for the offenders assigned to the comparison group. In general, offenders in the comparison group were also high-risk. We also find that their characteristics were very similar to On TRACC offenders. The difference in observed characteristics between the On TRACC and comparison group (Column 3) are all small and not statistically significant. This indicates that the randomisation successfully balanced the two groups on observable characteristics.[15]

14 A violent offence includes the following ANZSOC offence types: Homicide and related offences, Acts intended to cause injury, Sexual assault and related offences, and Robbery, extortion and related offences. A property offence includes the following ANZSOC offence types: Unlawful entry with intent/burglary, break and enter, Theft and related offences, and Fraud, deception, and related offences. A domestic violence offence includes those offences defined under the *Crimes (Domestic and Personal Violence) Act 2007 (NSW)*.

15 As indicated in Table 2, approximately 39 per cent of the study sample was assigned to the comparison group. To fulfill the terms of the On TRACC SII, roughly 60 per cent of the eligible referrals in each period were randomly assigned to the On TRACC group.

Table 2. Descriptive statistics: Parolees assigned to the On TRACC or comparison group

	On TRACC (1)	Comparison (2)	Difference (3)
Aboriginal	0.287	0.260	0.027
	(0.013)	(0.016)	
Female	0.118	0.090	0.028
	(0.009)	(0.011)	
Age at release	34.948	35.070	-0.122
	(0.288)	(0.358)	
LSI-R High	0.069	0.064	0.005
	(0.007)	(0.009)	
LSI-R Medium-High	0.302	0.291	0.011
	(0.013)	(0.017)	
Number of days in prison	540.956	540.097	0.859
	(15.499)	(20.912)	
Two or more years in prison	0.238	0.221	0.017
	(0.013)	(0.015)	
Number of prior prison sentences	4.680	4.708	-0.028
	(0.131)	(0.166)	
Number of prior criminal court appearances	13.280	13.316	-0.036
	(0.243)	(0.310)	
Juvenile at first contact	0.506	0.478	0.028
	(0.015)	(0.018)	
Prior violent offence past 5 years	0.629	0.589	0.040
	(0.014)	(0.018)	
Prior property offence past 5 years	0.657	0.683	-0.026
	(0.014)	(0.017)	
Prior domestic violence offence past 5 years	0.377	0.374	0.003
	(0.014)	(0.018)	
Prior non-Custodial order 5 years	0.604	0.595	0.009
	(0.014)	(0.018)	
Prior supervised non-custodial order 5 years	0.456	0.441	0.015
	(0.014)	(0.018)	
N	1,147	732	

Standard errors presented in parentheses.
** $p < .01$, * $p < .05$

Recidivism results

In this section, we present the results for each recidivism outcome for both On TRACC and comparison parolees. We begin with the entire sample and then present the recidivism results separately by Aboriginality and LSI-R score category. We first report the average recidivism rates followed by the marginal effects of the impact of On TRACC participation from the Probit regression.[16]

Mean comparison of recidivism outcomes

Table 3 presents the results from a mean comparison between the On TRACC and comparison group for each recidivism outcome within 12 months of release from prison. Columns 1 and 2 present the mean recidivism rate for offenders assigned to either On TRACC or the comparison group. Column 3 includes the difference between On TRACC and the comparison group for each recidivism outcome.

Panel A of Table 3 presents the mean recidivism rates for the entire sample. Within 12 months of release from prison, approximately 45 per cent of On TRACC offenders returned to custody, 38 per cent were reconvicted, 17 per cent were reimprisoned, and 32 per cent committed a new and proven personal, property, or serious drug offence. If we compare offenders assigned to On TRACC with the comparison group, we find that the rates for each recidivism outcome are very similar and the differences are not statistically significant.

Panels B and C in Table 3 separate the sample by Aboriginality. We find that, on average, the recidivism rate for Aboriginal offenders is higher than for non-Aboriginal offenders. Furthermore, the results in Column 3 indicate that in general, among both Aboriginal and non-Aboriginal offenders, the mean difference between the On TRACC and comparison group is small and not statistically significant. The exception is we find that non-Aboriginal offenders assigned to On TRACC are 5.1 percentage points less likely to commit a personal, property, or serious drug offence; this difference is statistically significant.

Panels D and E contain the mean recidivism rates for offenders with LSI-R score category of High and Medium-High, or Medium. Offenders with a Medium LSI-R score are less likely to re-offend, on average. In both panels, we do not find a statistically significant difference in recidivism between the On TRACC and comparison group.

16 In addition to marginal effects from a Probit regression, we also report estimates from OLS and Logit regression specifications in the appendix. Overall, we find that the estimates from the OLS and Logit regression are very similar to the Probit results reported here.

Table 3. Mean recidivism outcomes for the On TRACC and comparison groups

	On TRACC (1)	Comparison (2)	Difference (3)
Panel A. Full sample			
Return to custody	0.455	0.442	0.013
	(0.014)	(0.018)	
Reconviction	0.379	0.359	0.020
	(0.014)	(0.018)	
Reimprisonment	0.172	0.158	0.014
	(0.011)	(0.013)	
Personal, property, or serious drug offence	0.325	0.343	-0.018
	(0.013)	(0.017)	
N	1,147	732	
Panel B. Aboriginal offenders			
Return to custody	0.576	0.563	0.013
	(0.027)	(0.036)	
Reconviction	0.488	0.458	0.030
	(0.027)	(0.036)	
Reimprisonment	0.227	0.221	0.006
	(0.023)	(0.030)	
Personal, property, or serious drug offence	0.454	0.394	0.060
	(0.027)	(0.035)	
N	330	190	
Panel C. Non-Aboriginal offenders			
Return to custody	0.406	0.400	0.006
	(0.017)	(0.021)	
Reconviction	0.335	0.324	0.011
	(0.016)	(0.020)	
Reimprisonment	0.150	0.136	0.014
	(0.012)	(0.014)	
Personal, property, or serious drug offence	0.273	0.324	-0.051*
	(0.016)	(0.020)	
N	817	542	
Panel D. LSI-R High and Medium-High offenders			
Return to custody	0.576	0.576	0.000
	(0.024)	(0.030)	
Reconviction	0.494	0.465	0.029
	(0.024)	(0.030)	
Reimprisonment	0.223	0.223	0.000
	(0.020)	(0.025)	
Personal, property, or serious drug offence	0.452	0.450	0.002
	(0.024)	(0.030)	
N	425	260	
Panel E. LSI-R Medium offenders			
Return to custody	0.384	0.368	0.016
	(0.018)	(0.022)	
Reconviction	0.311	0.300	0.011
	(0.017)	(0.021)	
Reimprisonment	0.143	0.123	0.020
	(0.013)	(0.015)	
Personal, property, or serious drug offence	0.251	0.284	-0.033
	(0.016)	(0.020)	
N	722	472	

Standard errors presented in parentheses.

Panels A to E report the results from a test on the equality of proportions.

** $p < .01$, * $p < .05$

Marginal effects of recidivism outcomes

Recidivism in the full sample and by Aboriginality

Table 4 contains the marginal effects from the Probit regression specification for the full sample (Column 1) and separately for Aboriginal and non-Aboriginal offenders (Columns 2 and 3). The marginal effect is the difference in the probability of re-offending between the On TRACC and comparison group. Panel A includes the results for return to custody, Panel B includes reconviction, Panel C includes reimprisonment, and Panel D includes personal, property, or serious drug offences. A positive (negative) marginal effect indicates that On TRACC offenders are more (less) likely to re-offend relative to the comparison group. The estimates in each column include controls for offender demographics and prior offending history. As both groups appear observably similar, on average, we can more confidently attribute any difference in recidivism outcomes to assignment to the On TRACC program.

Table 4. Probit regression marginal effects: Comparing recidivism between On TRACC and comparison groups in the full sample and by Aboriginality

	Full sample (1)	Aboriginal (2)	Non-Aboriginal (3)
Panel A. Return to custody			
On TRACC vs comparison	0.009	0.009	0.011
	(0.021)	(0.041)	(0.024)
Panel B. Reconviction			
On TRACC vs comparison	0.016	0.028	0.012
	(0.021)	(0.043)	(0.024)
Panel C. Reimprisonment			
On TRACC vs comparison	0.011	0.004	0.012
	(0.016)	(0.035)	(0.018)
Panel D. Personal, property, or serious drug offence			
On TRACC vs comparison	-0.022	0.058	-0.050*
	(0.020)	(0.040)	(0.022)
N	1,879	520	1,359

Clustered standard errors presented in parentheses.
Probit marginal effects are presented in panels A to D.
** $p < .01$, * $p < .05$

Beginning with the full sample (Column 1), the marginal effect in Panel A indicates that offenders assigned to On TRACC are 0.9 percentage points more likely to return to custody within 12 months of release relative to those in the comparison group, but this difference is not statistically significant. In Panel B, we find that On TRACC offenders are 1.6 percentage points more likely to be reconvicted, but again, the difference is not statistically significant. Panel C displays the marginal effects for reimprisonment. We find that On TRACC offenders are slightly more likely to be reimprisoned, but the difference is small and not statistically significant. Panel D contains the results for new and proven personal, property, or serious drug offences. Once more, we find that the difference is small and not statistically significant. Consequently, across the full sample, we do not find evidence that high-risk offenders serving parole who are assigned to On TRACC are less likely to re-offend relative to those in the comparison group.

Columns 2 and 3 of Table 4 separate the results for Aboriginal and non-Aboriginal offenders assigned to either On TRACC or the comparison group, respectively. In Column 2, across the four measures of recidivism, we find that Aboriginal On TRACC offenders are more likely to re-offend within 12 months of release, but the differences are small and not statistically significant. Column 3 includes the results for non-Aboriginal offenders. In panels A to C, we find that non-Aboriginal offenders assigned to the On

TRACC program are slightly more likely to return to custody, be reconvicted, and be reimprisoned within 12 months of release, but the differences are not statistically significant. However, in Panel D, we find that non-Aboriginal offenders in the On TRACC group are approximately five percentage points less likely to commit a personal, property, or serious drug offence relative to the comparison group. This reduction is statistically significant at five per cent.

Recidivism by LSI-R score category

In this section, we discuss the results separately for different LSI-R risk categories. Table 5 presents the recidivism findings for those with High and Medium-High LSI-R scores (Column 1) or Medium LSI-R scores (Column 2). We group the High and Medium-High categories together because of the low number of offenders in each group. Among High and Medium-High LSI-R offenders (Column 1), the difference between On TRACC and comparison offenders is small and not statistically significant for all four recidivism outcomes.

Column 2 presents the findings for those with an LSI-R score of Medium. Medium risk offenders assigned to On TRACC are slightly more likely to return to custody, be reconvicted, and be reimprisoned within 12 months of release, but the size of the increase is small and not statistically significant. Conversely, On TRACC offenders with an LSI-R score of Medium are 3.2 percentage points less likely to commit a personal, property, or serious drug offence, but once more, the difference is not statistically significant.[17]

Table 5. Probit regression marginal effects: Comparing recidivism between On TRACC and comparison by LSI-R category

	High and Medium-High (1)	Medium (2)
Panel A. Return to custody		
On TRACC vs comparison	0.002	0.017
	(0.036)	(0.026)
Panel B. Reconviction		
On TRACC vs comparison	0.026	0.013
	(0.038)	(0.025)
Panel C. Reincarceration		
On TRACC vs comparison	0.002	0.018
	(0.031)	(0.019)
Panel D. Personal, property, or serious drug offence		
On TRACC vs comparison	-0.001	-0.032
	(0.036)	(0.023)
N	685	1,194

Clustered standard errors presented in parentheses.
Probit marginal effects are presented in panels A to D.
** $p < .01$, * $p < .05$

17 The appendix contains the results of two additional analyses. In the first analysis, we compare the percentage change in re-offending days between the On TRACC and comparison groups. We calculate estimates for the full sample and by Aboriginality and LSI-R score category. In brief, the pattern of findings is similar to those reported in the main results.
In the second analysis, we plot the time until re-offence for each of the recidivism outcomes within 12 months post-release. For each outcome, we find that the time until re-offence between the On TRACC and comparison groups is very similar over time.

DISCUSSION

The aim of this study was to assess the effectiveness of the On TRACC program (the first criminal justice SII in Australia) in reducing recidivism among high-risk parolees. To measure the impact, 1,879 offenders scheduled to be released from prison on parole between September 2016 and September 2018 were randomly allocated to either the On TRACC program or a comparison group. Critically, we find that the characteristics of the On TRACC and comparison groups are indistinguishable, which suggests that the randomisation process successfully balanced both groups and the marginal effects can be interpreted as causal.

The offenders that feature in the study have a high rate of recidivism. On average, we find that roughly 45 per cent of the parolees return to custody, 38 per cent are reconvicted, 17 per cent are reimprisoned, and 33 per cent commit a personal, property, or serious drug offence within 12 months of release from prison. Overall, we do not find evidence of a statistically significant reduction in recidivism among parolees assigned to On TRACC when compared to offenders who receive existing supervision services only. We also separate the results by Aboriginality and LSI-R score, but again, we do not find a statistically significant difference for most measures of recidivism. The exception is that non-Aboriginal On TRACC parolees are five percentage points less likely to commit a personal, property, or serious drug offence compared to the comparison group. However, this positive result should be interpreted with caution because: (1) it is the only statistically significant reduction across several outcomes and different regression specification, and (2) there does not appear to be any underlying factor (for example, the service providers specialising in the rehabilitation of non-Aboriginal offenders) that could account for this finding.

The study findings demonstrate that reducing recidivism of high-risk parolees with extensive criminal histories is challenging. While we know that supervision has an impact on re-offending rates, particularly where supervision contacts focus on rehabilitation rather than compliance (e.g. Wan, Poynton, van Doorn, & Weatherburn, 2014), questions remain about the most effective approach to enhance existing supervision practices used by correctional agencies. One relatively recent approach toward offender rehabilitation is to supplement existing offender supervision with 'wrap-around' services immediately after release from custody (a period typically considered high risk for re-offending). These programs share a number of similarities with the On TRACC program; in brief, offenders assigned to wrap-around programs are typically assigned a 'case manager' who identifies their range of needs post-release and links the offender with relevant service(s). However, consistent with the findings reported in this study, there is very little experimental evidence that wrap-around programs reduce recidivism (Doleac, 2019), and in some instances, offenders assigned to wrap-around programs were actually found to be more likely to re-offend (Grommon, Davidson, & Bynum, 2013). Doleac (2019) suggests two possible explanations for these unexpected results: (1) that these services are too comprehensive and wide-ranging, and consequently, are impractical to deliver to offenders with a high-level of quality, and (2) by attempting to provide a service for every identifiable need, wrap around programs may overwhelm offenders (particularly those with more complex needs), and discourage them from living independently in the community.

On TRACC SII was a large-scale pilot and a pioneering approach to offender rehabilitation. Following the conclusion of the On TRACC SII, stakeholders were given an opportunity to identify 'key learnings' and during these consultations, highlighted practical issues that may have impeded implementation of the program. These observations, which are discussed in more detail below, are relevant to both the interpretation of the current results and the development and operation of future SIIs in criminal justice.

Several unanticipated issues which affected the level of On TRACC service delivery were identified by stakeholders. For example, On TRACC case workers had limited access to prisoners at the pre-release stage, which resulted in a significant change to the program model from offering in-person support to providing this support via a telephone service. While a relatively minor change, this early face-to-face engagement was considered valuable in developing strong rapport with the client and ensure ongoing engagement in the program. There were also other changes to the commissioning landscape co-occurring with the roll out of On TRACC (e.g. National Disability Insurance Scheme), which may have interrupted referral pathways.

Stakeholders also reflected on the use of reincarceration within 12 months as the key outcome selected to measure success of the SII. The use of court data to measure re-offending introduced a lag of three to four months in reporting outcomes because sufficient time was needed for new offences to be finalised in court and the court data to be processed. This prevented program managers from accessing 'real-time' data which may have assisted in refining the program at the early stages of implementation. Stakeholders also questioned the use of only one binary outcome to measure performance. A single binary measure is less sensitive to small changes in behaviour and may not capture other social and economic benefits of the intervention. On the other hand, a binary measure of 'success' is simple to define, easy to interpret, and can be reliably measured. Stakeholders in support of additional key performance indicators (KPIs) and outcomes argued that these would capture different aspects of program 'success' beyond reincarceration, given the typically complex needs of high-risk parolees. Adopting numerous KPIs would, however, introduce further complexity into the structure of the investment and the contract. Any additional KPIs or outcomes would also need to be carefully selected to ensure that they are objective and reliably measured for both the On TRACC and comparison groups.

A purported benefit of SIIs is that unlike traditional fee-for-service contracts, government does not impose strict input and output controls over the design and monitoring of service delivery and in so doing, allows NGOs the flexibility to trial innovative services that can evolve and improve over time. However, a limitation of this approach in the case of On TRACC is that information on the content of the service delivery model, the extent to which the model was successfully implemented in practice in accordance with the stated aims, and how the service interacted with existing government services was not routinely collected. Without this information, it is difficult to gauge whether the service delivery model itself was ineffective, the program was not delivered as intended, or business as usual services were modified in some way for On TRACC participants. A process evaluation undertaken concurrently with outcome measurements or regular provision of monitoring data would have provided greater insight and potential solutions for any issues identified. This information would be especially critical in assessing the feasibility of expanding the On TRACC program, which stakeholders considered a necessary condition for criminal justice SIIs to be considered a long-term investment strategy.

More broadly, the On TRACC SII reinforces the importance of allowing sufficient time for informed decision making at every stage of the investment (for example, scenario planning during the development phase). This is especially relevant for NGOs new to, or unfamiliar with, the SII process on issues such as: (1) the range of potential transaction costs associated with the SII (for instance, legal costs), (2) the scheduling of the release of KPIs and other key milestones (such as Annual Performance Reviews) when there is a lag in the availability of data (for example, the criminal justice system), and (3) the consequences of early termination and design of appropriate exit strategies.

Despite these limitations, there are a number of positive lessons learned from the On TRACC SII. Open communication and a shared commitment to the program's success resulted in strong working relationships between all stakeholders. The On TRACC SII demonstrates that it is possible for different sectors to collaborate and robustly test the efficacy of interventions in complex areas of social policy. Randomised studies are essential to establishing causal relationships but are rarely undertaken within the criminal justice system because there are often practical and ethical considerations which cannot be overcome. However, the commitment displayed by the On TRACC stakeholders to implement an experimental research design is a positive step toward more informed and sophisticated evidence-based decision making in NSW. Furthermore, the decision to exit early from the investment based on the objective outcome measures was consistent with the principles of SII and is a distinguishing feature of this approach to funding government services. In this regard, the transitioning-out process in the On TRACC SII was considered by all stakeholders to be the 'gold standard' for contract closures and should be considered a model for future SIIs.

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APPENDIX

Additional recidivism results

Here, we replicate the main results by estimating OLS and Logit regression specifications that include the full set of controls (demographics and prior offending history). Once more, we are interested in estimating the marginal effect of being assigned to the On TRACC program on recidivism relative to the comparison group. These findings are displayed in Tables A1 and A2. Overall, the marginal effects from both the OLS and Logit specifications are almost identical with the Probit estimates presented in the main study. That is, we do not find statistically significant marginal effects among the different measures of recidivism.

OLS regression estimates

Table A1 presents the OLS estimates for the impact of On TRACC on recidivism between offenders assigned to either the On TRACC or comparison group with the complete set of controls. Column 1 includes the estimates for the full sample, columns 2 and 3 include Aboriginal and non-Aboriginal offenders only, and columns 4 and 5 include offenders with High and Medium-High or Medium LSI-R only. Overall, the estimates presented in each panel throughout Table A1 are very similar with those from the Probit regression presented in the main results; the coefficients in each panel are small and not statistically significant. As with the Probit estimates, the exception is a statistically significant reduction in the probability of committing a new and proven personal, property, or serious drug offence among non-Aboriginal offenders assigned to On TRACC.

Logit regression estimates

Logit marginal effects of the impact of On TRACC on recidivism outcomes are displayed in Table A2. In general, we find that the marginal effects from the Logit regression specification are very similar to the Probit estimates presented in the main results. Across Table A2, we find that the marginal effect of participating in On TRACC on recidivism is negligible and not statistically significant. Consistent with the Probit estimates, we do find a statistically significant reduction in committing a personal, property, or serious drug offence among non-Aboriginal offenders assigned to On TRACC.

Table A1. OLS regression estimates: Comparing recidivism between On TRACC and comparison groups

	Full Sample (1)	Aboriginal (2)	Non-Aboriginal (3)	High and Medium-High (4)	Medium (5)
Panel A. Return to custody					
On TRACC vs comparison	0.012	0.016	0.011	0.006	0.020
	(0.021)	(0.042)	(0.025)	(0.037)	(0.026)
Panel B. Reconviction					
On TRACC vs comparison	0.016	0.026	0.012	0.024	0.013
	(0.021)	(0.044)	(0.024)	(0.038)	(0.026)
Panel C. Reimprisonment					
On TRACC vs comparison	0.011	0.007	0.014	0.0008	0.021
	(0.016)	(0.037)	(0.018)	(0.031)	(0.019)
Panel D. Personal, property, or serious drug offence					
On TRACC vs comparison	-0.019	0.062	-0.051*	0.0003	-0.028
	(0.020)	(0.041)	(0.023)	(0.037)	(0.024)
N	1,879	520	1,359	685	1,194

Clustered standard errors presented in parentheses.
** $p < .01$, * $p < .05$

Table A2. Logit regression marginal effects: Comparing recidivism between On TRACC and comparison groups

	Full Sample (1)	Aboriginal (2)	Non-Aboriginal (3)	High and Medium-High (4)	Medium (5)
Panel A. Return to custody					
On TRACC vs comparison	0.010	0.015	0.010	0.003	0.017
	(0.021)	(0.041)	(0.024)	(0.037)	(0.026)
Panel B. Reconviction					
On TRACC vs comparison	0.014	0.026	0.009	0.024	0.010
	(0.021)	(0.043)	(0.024)	(0.038)	(0.026)
Panel C. Reimprisonment					
On TRACC vs comparison	0.011	0.006	0.011	0.001	0.017
	(0.017)	(0.036)	(0.018)	(0.031)	(0.019)
Panel D. Personal, property, or serious drug offence					
On TRACC vs comparison	-0.022	0.060	-0.052*	-0.001	-0.033
	(0.020)	(0.041)	(0.023)	(0.036)	(0.024)
N	1,879	520	1,359	685	1,194

Clustered standard errors presented in parentheses.
** $p < .01$, * $p < .05$

Re-offending days

Table A3 presents OLS regression estimates where the outcome of interest is the percentage change in re-offending days within 12 months of release from prison. Each regression includes the full set of controls. Panels A and B present the results for the log of the number of re-offending days or the log of the number of re-offending days for personal, property, or serious drug offences.[18]

Beginning with Panel A, there was an 8.7 per cent reduction in re-offending days in the full sample (Column 1), but the coefficient is not statistically significant.[19] Columns 2 and 3 separate the sample by Aboriginality. We find an increase (decrease) in re-offending days among Aboriginal (non-Aboriginal) offenders assigned to On TRACC, but the coefficients are not statistically significant. Columns 4 and 5 display the coefficients by LSI-R score category, but we do not find a statistically significant change in re-offending days.

Panel B reports the results for the log of the number of re-offending days for personal, property, or serious drug offences. Once more, the majority of the coefficients in Panel B are not statistically significant. However, among non-Aboriginal offenders assigned to On TRACC (Column 3), we find a statistically significant reduction of roughly 21 per cent.[20] This drop is consistent with the statistically significant reduction in the probability of committing a personal, property, or serious drug offence reported in the main results for non-Aboriginal offenders. However, as discussed in the study, it appears likely that this reduction is due to chance, rather than participation in the On TRACC program.

Table A3. OLS regression estimates: Comparing offending days between On TRACC and comparison groups

	Full Sample (1)	Aboriginal (2)	Non-Aboriginal (3)	High and Medium-High (4)	Medium (5)
Panel A. Log(Number of re-offending days)					
On TRACC vs comparison	-0.091	0.255	-0.218	0.123	-0.200
	(0.114)	(0.220)	(0.132)	(0.199)	(0.139)
Panel B. Log(Number of re-offending days for personal, property, or serious drug offences)					
On TRACC vs comparison	-0.074	0.344	-0.233*	0.026	-0.119
	(0.102)	(0.209)	(0.117)	(0.190)	(0.121)
N	1,879	520	1,359	685	1,194

Clustered standard errors presented in parentheses.
** $p < .01$, * $p < .05$

18 As some offenders have zero re-offending days, we add a small positive amount to calculate the log.
19 $100 \times (e^{0.091} - 1) = -8.698$.
20 $100 \times (e^{0.233} - 1) = -20.784$.

Time until re-offence

In this section, we present Kaplan-Meier estimates comparing the time until re-offence between the On TRACC and comparison groups. Each figure displays the time until re-offence for each recidivism outcome within 12 months of release from prison for the full sample. The vertical lines represent 6 and 12 months post-release. Overall, the time until re-offence between the On TRACC and comparison groups are very similar for each outcome; across each of the figures, the probability of recidivism after 6 or 12 months post-release is almost indistinguishable between the two groups.

Figure A1. Time until return to custody within 12 months of release

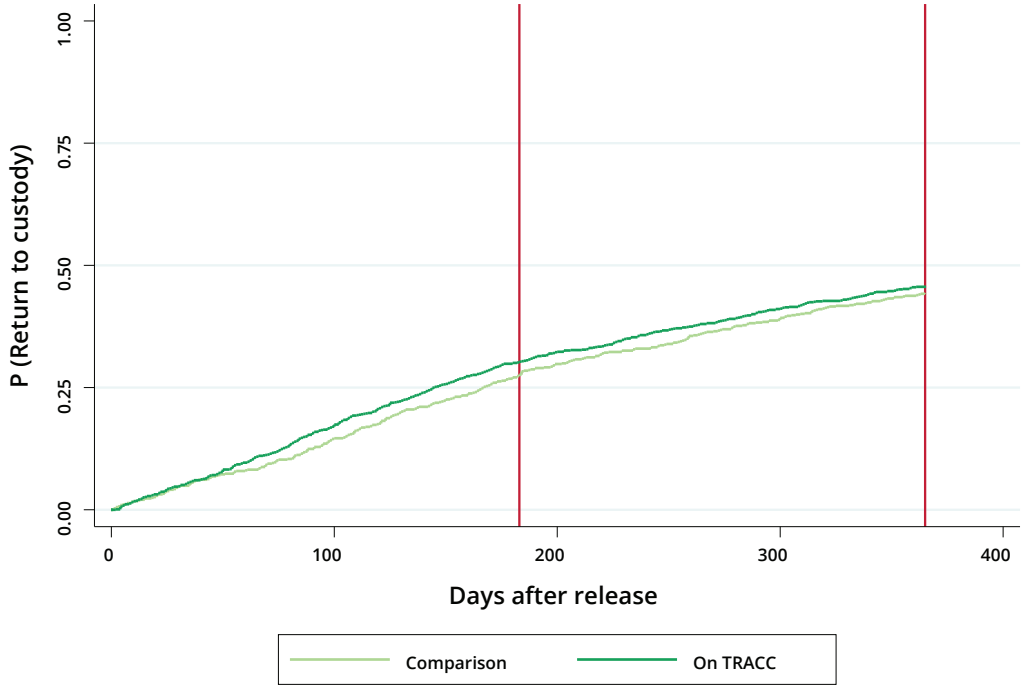


Figure A2. Time until reconviction within 12 months of release

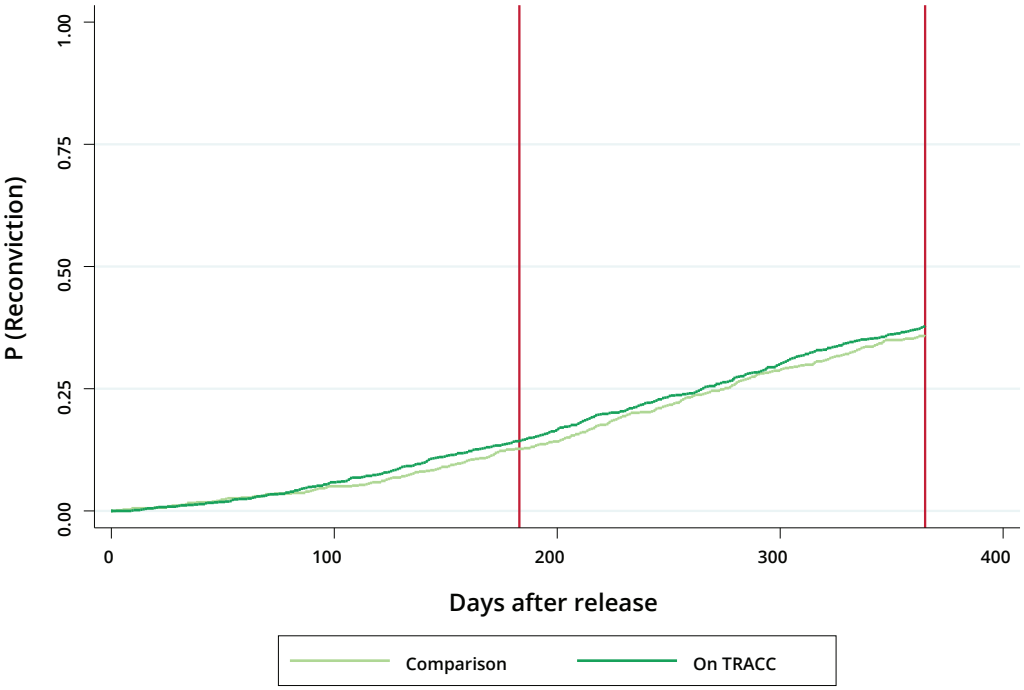


Figure A3. Time until reimprisonment within 12 months of release

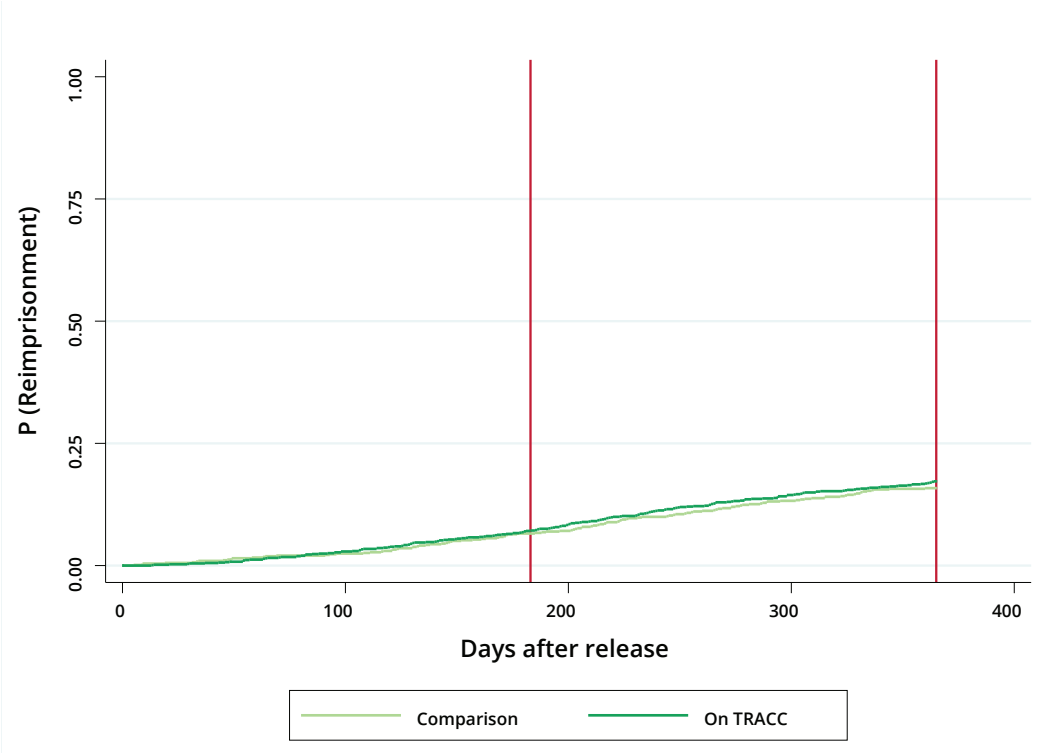
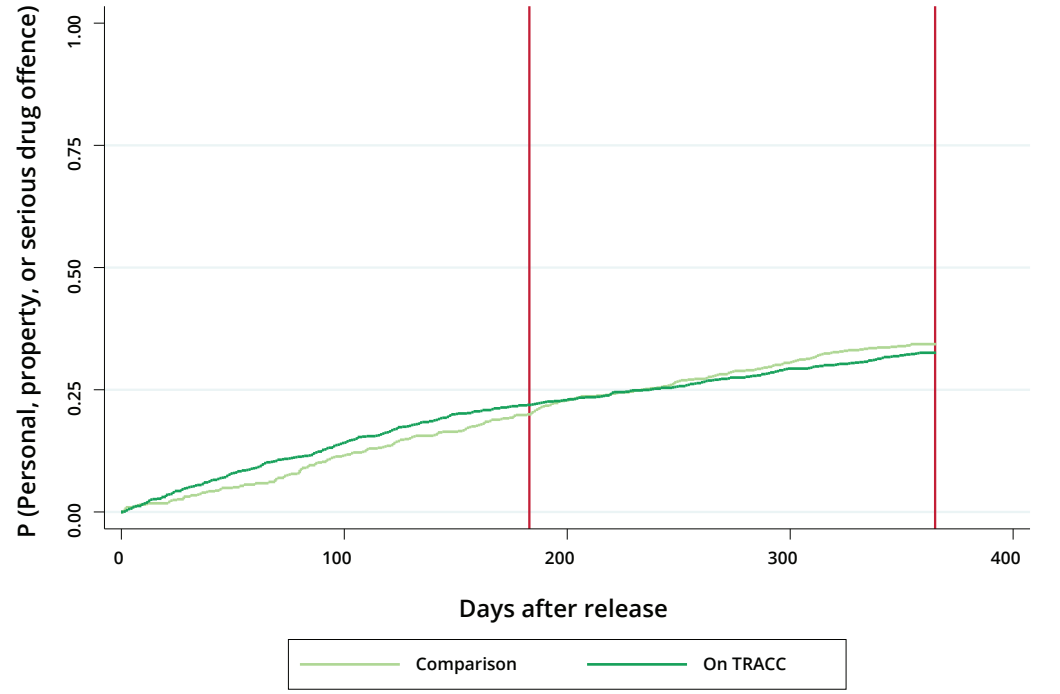


Figure A4. Time until a personal, property, or serious drug re-offence within 12 months of release



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