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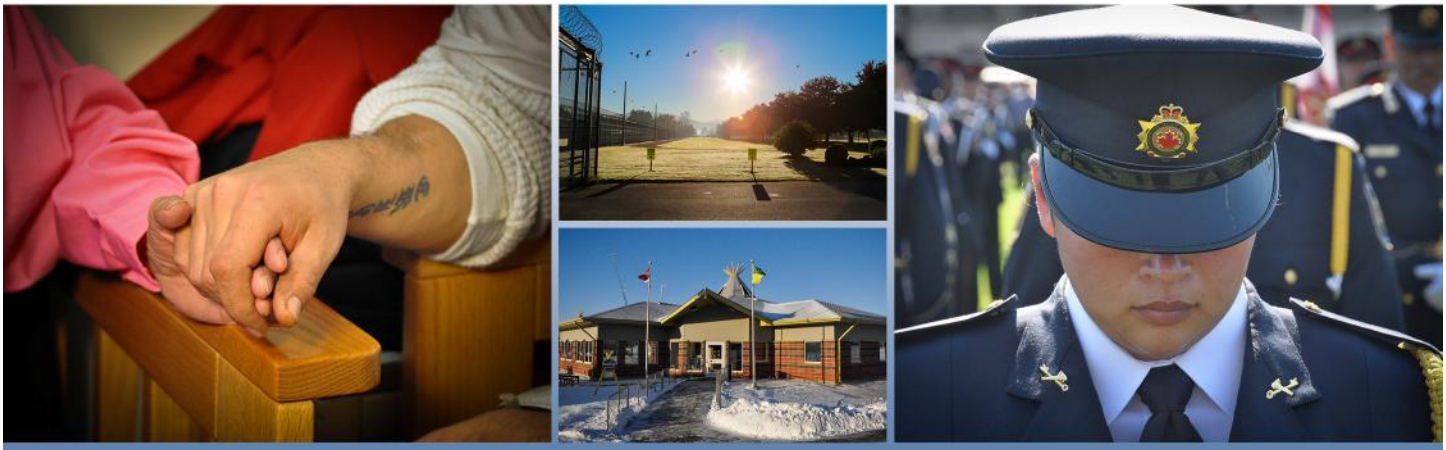

RESEARCH REPORT

The Relationship between the Timing of Completion of Correctional Programs and Recidivism Outcomes

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The Relationship between the Timing of Completion of Correctional Programs and Recidivism Outcomes

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Correctional Service of Canada

2022

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Executive Summary

Key words: *correctional programs, program timing, reintegration, recidivism.*

In recent years, the Office of the Auditor General (OAG) has identified concerns with timely access to, and the completion of, correctional programs for federal offenders (OAG, 2015; 2016; 2017). A recent evaluation completed by the Correctional Service of Canada (CSC) has explored this issue further (CSC, 2020). They noted that the concept of timely access to correctional programs has not been defined in CSC policy, and thus, there is no specification for when in their sentences offenders should participate in programs. Further, there has been very few empirical studies assessing whether it is preferable to focus rehabilitative efforts at the beginning of offenders' custodial sentence or closer to their estimated release from prison.

In response to a recommendation included in the recent evaluation report on CSC's correctional reintegration programs (CSC, 2020), the purpose of the current research study is to examine the relationship between the timing of completion of programs and recidivism outcomes to determine the optimal timing of program delivery throughout an offender's sentence.

A cohort of offenders with determinate sentences released on their first term from federal custody between April 1, 2010 and March 31, 2020 who completed a main ICPM or WOCP program were included in this study. Offenders were excluded from the final sample if they had a program non-completion on file, as this would affect the timing of their first main program completion. This resulted in a final sample of 7,367 men and 1,266 women (20.2% and 31.0% Indigenous, respectively).

The findings showed there was often a significant relationship between the timing of first main program completion and recidivism outcomes. In particular, while the association between the timing of first main program completion was either not associated or weakly associated with returning to custody for any reason, the relationship was more pronounced with returning with a new offence. For all programs examined, for every 1% increase in the proportion of the sentence completed at the time of program completion there was between a 3% and 6% reduction in the likelihood of returning to custody with a new offence. Notably, reductions in recidivism rates appeared to largely plateau after offenders' day parole eligibility date. Mediation results showed that while completing an institutional maintenance program sometimes mitigated the effect of earlier main program completion, this did not completely negate the benefits of completing a main program later in one's sentence.

The current findings represent an important contribution to our understanding of how to optimize the efficacy of correctional programs. Offenders who complete correctional programs closer to release likely benefit from the recency of the experience and are better able to apply the skills learned to challenging situations faced in the community. Optimal program completion appears to be just prior to day parole eligibility as this balances the need to prepare offenders for their earliest possible release and positive recidivism outcomes.

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Introduction

While, historically, there was the belief that few correctional programs had a rehabilitative affect on offenders (Lipton, Martinson, & Wilks, 1975; Martinson, 1974; 1976), considerable empirical research in recent decades have established that *some* correctional interventions do work in reducing the risk of recidivism (Andrews & Bonta, 2010; Dowden & Andrews, 2000; Hanson, Bourgon, Helmus, & Hodgson, 2009; Gobeil, Blanchette, & Stewart, 2016). In particular, correctional interventions that abide by the Risk-Need-Responsivity (RNR) principles have shown to reduce offenders' risk of reoffending by between 17% and 35% (Bonta & Andrews, 2007). According to the RNR principles, to reduce the risk of recidivism, correctional interventions should be more intensive for higher risk offenders (risk principle); should target needs related to criminal behaviour (need principle); and should match the offenders' learning style, abilities and motivation level (responsivity principle) (Andrews, Bonta, & Hoge, 1990). With this in mind, scholars and correctional agencies are exploring how else to optimize the efficacy of correctional interventions, including what the current research seeks to examine, the optimal timing of correctional interventions in the offenders' sentence.

There is ongoing scholarly debate on whether it is preferable to focus rehabilitative efforts at the beginning of offenders' custodial sentence or closer to their estimated release from prison (Day, Ross, Casey, Vess, Johns, & Hobbs, 2019; Duwe, 2018; 2019; Papp, Wooldredge, & Pompoco, 2019; Scaggs, Bales, Clark, Ensley, Coltharp, & Blomberg, 2016). On the one hand, some believe that efforts to prepare offenders for community re-entry should occur as soon as possible after criminal conviction (Duwe, 2012, La Vigne, Davies, Palmer, & Halberstadt, 2008), which would necessitate early participation in correctional interventions. Beyond providing offenders the opportunity to practice the learned skills within a controlled environment, some scholars postulate that providing correctional interventions early can minimize any possible deleterious affects of incarceration (Papp et al., 2019). On the other side of the debate, there are those who highlight the potential benefits of later correctional intervention participation, as newly released offenders may struggle to retain the lessons learned from interventions completed years prior (Papp et al., 2019; Scaggs et al., 2016).

There have been very few empirical examinations on the affect of treatment timing on recidivism and results are not conclusive (Duwe, 2018; Papp et al., 2019; Scaggs et al., 2016;

Wexler, Falkin, & Lipton, 1990). For example, Papp and colleagues (2019) explored how the timing of a variety of treatment programs (e.g., education programs, cognitive-behavioural programs, recovery services, and vocational programs) relative to offenders' release from prison moderated the affect of program participation on the odds of returning to prison within three years in the state of Ohio. Results showed that earlier involvement in some, but not all, interventions was associated with a decrease in the odds of returning to prison. More specifically, for each additional six months that offenders completed educational/vocational programs before being released into the community, there was a reduction in prison returns by up to 23% for men and 27% for women. The authors hypothesized that earlier involvement in interventions assisted offenders in skills development that were deemed necessary to lessen the criminogenic affect of imprisonment.

That said, not all empirical studies have found support of earlier intervention reducing recidivism. Duwe (2018) examined how intervention timing and duration may affect recidivism outcomes in the state of Minnesota. While starting the program earlier did not directly affect recidivism outcomes, larger program dosages (i.e., programs of longer length) and exiting programs closer to offenders' release date were significantly associated with lower recidivism rates. For example, for every one-unit increase in the percentage of imprisonment that offenders had remaining by the time they exited their program (e.g., moving from 45% to 46% of time remaining between program exit and community release), there was an associated 31% increase in the hazard of being re-incarcerated. It is unclear; however, whether this trend would be as strong if program dosage was concurrently considered in the model. Given the disparate findings of the small number of research studies examining the timing of correctional interventions, it is clear that more empirical examination is necessary.

The Federal Canadian Correctional Program Model

Commencing in 2010, the Correctional Service of Canada (CSC) began transforming its correctional model from a multi-program, need-specific approach to a single, integrated, multi-target program model for both men and women. The need-specific correctional model consisted of distinct program streams targeted to specific offence histories and criminogenic needs (e.g., violence prevention programs, substance abuse programs). The integrated model is formulated to target multiple need areas relevant to the specific offender participants within the same program. The objective of taking an integrative approach is to increase efficiencies to improve access to,

and the timely completion of, correctional programs, and to better meet the needs of offenders with multiple risk factors, all while maintaining the positive outcomes observed from the need-specific program model.

The correctional program model for men, termed the Integrated Correctional Program Model (ICPM), has several different program streams:

- Integrated Correctional Program Model Multi-Target (ICPM-MT);
- Indigenous Integrated Correctional Program Model Multi-Target (IICPM-MT);[1]
- Integrated Correctional Program Model Sex Offender (ICPM-SO); and
- Indigenous Integrated Correctional Program Model Sex Offender (IICPM-SO);[2]

The ICPM-MT stream offers mainstream programs that does not include any culture-or sex offender-specific components. The IICPM-MT stream provides culture-specific programs that addresses both criminogenic factors and issues related to Indigenous social history. This stream also includes the assistance of Indigenous Elders in a minimum of 50% of the sessions. The ICPM-SO stream encompasses all components of the ICPM-MT stream, but also addresses risk factors associated with sexual offending. The IICPM-SO stream addresses the same components of the ICPM-SO stream, but does so using a culture-specific lens. For offenders with significant learning and functioning challenges such as intellectual disabilities, learning disabilities, Fetal Alcohol Spectrum Disorder, Acquired Brain Injury, or other mental disorders, there are adapted programs of the ICPM-MT and ICPM-SO moderate intensity streams where the content and delivery is modified and delivered at a slower pace to be responsive to these needs. More recently, in 2017, CSC implemented the IICP for men, which can be comprised of MT and SO components, while acknowledging the unique experiences of Inuit men offenders.

The correctional model for women, called the Women Offender Correctional Program (WOCP) model, has three main program streams:

- Women Offender Correctional Program (WOCP);
- Indigenous Women Offender Correctional Program (IWOCP);[3] and
- Women's Sex Offender Program (WSOP).

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[1] Previously termed the Aboriginal Integrated Correctional Program Model Multi-Target (AICPM-MT).
[2] Previously termed the Aboriginal Integrated Correctional Program Model Sex Offender (AICPM-SO).
[3] Previously termed the Aboriginal Women Offender Correctional Program (AWOCP).

All women offender program streams take a gender-responsive and holistic approach to treating women's criminogenic factors. This ensures that women's social realities and the context of their lived experiences are recognized. These programs focus on helping women understand the impact of their behaviour in different situations and relationships with the goal of helping women prepare for and build a balanced and crime-free lifestyle upon release. The IWOCP stream goes a step further in that it responds to Indigenous women's unique, culturally-related needs. As with ICPM, culturally-relevant teaching and ceremonies, often provided by an Indigenous Elder, are incorporated. The WSOP was developed to meet the needs of women sex offenders.

Additionally, women housed in secure units have the Women's Modular Intervention available to them. This program consists of 15 modules, five of which are tailored specifically for Indigenous women. The goal of this program is for women to develop behaviours that lead to prosocial outcomes.

While the program models are different for men, women, and Indigenous offenders, they all follow a similar program pathway, which is termed the *program continuum*. The stages of the program continuum use consistent concepts and skills-building objectives to link the programs participated throughout one's sentence. The program continuum has three groupings:

- *Readiness Programs* are labelled as *primer* programs for men and *engagement* programs for women. Readiness programs prepare and motivate offenders to address risk factors related to offending. These are completed by offenders prior to beginning a main program.
- *Main Programs* are the correctional programs that specifically address risk factors related to offending at intensity levels that are consistent with offenders' risk.[4]
- *Maintenance Programs* for men and *self-management* programs for women support offenders continuing to make behavioural changes and maintain skills learned through their participation in correctional programs. These programs can be delivered in both the institution and community settings.

Further, there are a number of additional program options for men. Hybrid programs

[4] See CSC (2018) for program referral guidelines.

combine the primer and the moderate intensity main programs so that there is no break between the two program components. The ICPM Community Program is available to offenders who did not complete their main correctional program despite having a program need (CSC, 2018a). Finally, motivational modules are offered to moderate and high-risk men who refuse to participate, who drop out, or who need extra support to succeed in correctional programs. There are three types of motivational modules: a refuser version, a drop out version, and a support version. The refuser and drop out versions consist of a structured one-on-one intervention lasting up to four hours. The support version is provided in a maximum of four sessions and provides additional time and help to men who have certain learning impediments such as literacy or cognitive functioning challenges. Men may be re-referred to the motivational modules based on continued need (CSC, 2019).

In recent years, the Office of the Auditor General (OAG) has identified concerns with timely access to, and the completion of, correctional programs for federal offenders (OAG, 2015; 2016; 2017). A recent evaluation completed by CSC (CSC, 2020) has comprehensively explored this issue further. They noted that the concept of timely access to correctional programs has not yet been defined in CSC policy, and thus, there is no specification for when in their sentence an offender should participate in programs. When asked to define 'timely access' to correctional programs, approximately half (55%) of staff specified that this was the participation in, or completion of, programs prior to parole eligibility. Additionally, around one-third (36%) of staff defined timely access in relation to an offender's level of need and sentence length, and fewer (23%) described timely access as delivering the program as early as possible in an offender's sentence.

In looking at when offenders complete a main program during their custodial sentence, only 24% and 57% of offenders with enrollments had completed the program before their day parole and full parole eligibility dates, respectively. This differed considerably by gender, with 72% and 94% of women completing their main program before day and full parole eligibility dates, respectively, compared to 16% and 52% of men. Further, a higher proportion of offenders completed their main program before day and full parole eligibility when they had longer sentences[5] (44% and 75%, respectively) than shorter sentences (20% and 55%, respectively).There were no differences between Indigenous and non-Indigenous offenders

[5] Defined as sentences of more than four years (CSC, 2020).

(CSC, 2020).

This evaluation by CSC also explored the barriers to timely program completion[6] identified by correctional staff and offenders (CSC, 2020). According to staff, common barriers to program access involved a lack of resources, especially human resources. Both staff and offenders cited issues with program availability, delayed program starts, and operational and population management constraints (e.g., lockdowns, placement in segregation, managing incompatible populations). Further, approximately half of staff referenced that offender-related circumstances interfered with offenders' completion of their main program before reaching their parole eligibility date. While this was most frequently in reference to short sentences that rendered it difficult for the offender to complete their main program, other offender-related factors included offender illness, responsivity needs, and offender behaviour.

Current Study

In response to a recommendation included in the recent evaluation report on CSC's correctional reintegration programs (CSC, 2020), the purpose of the current research study is to examine the relationship between timely access to programs and post-release outcomes for both men and women to determine the optimal timing of program delivery throughout an offender's sentence. The research questions are as follows:

1. Is there variation in the proportion of time between main program completion and day parole eligibility date, relative to sentence length?
2. Is there an association between the timing of main program completion and recidivism outcomes?
    a. Does institutional maintenance program completion mediate the association between the timing of main program completion and recidivism outcomes?

[6] For the purposes of this evaluation, timely program completion was defined as completing the main program before the earliest parole eligibility date (CSC, 2020).

Method

Participants

A cohort of offenders with determinate sentences[7] released on their first term from federal custody between April 1, 2010 and March 31, 2020 who completed[8] a main ICPM or WOCP program (e.g., this was not the primer or engagement program) while incarcerated were included in this study.[9] Offenders were excluded from the final study sample if they had a program non-completion (i.e., program dropout, non-completion due to administrative reasons, and non-completion due to population management reasons) on file, as this would affect the timing of their first main program completion.[10] This resulted in a final sample of 7,367 men and 1,266 women (see Table 1 for detailed sample profile information). The majority of men included in this study were non-Indigenous, medium or high risk and need, incarcerated for a schedule 1 or homicide offence, and released onto day parole. Women offenders, on the other hand, were more likely to be Indigenous, lower risk and need, and incarcerated for a non-violent offence.

[7] Offenders serving indeterminate sentences were excluded from this study as it was not possible to calculate the proportion of time between first main program completion and day parole eligibility date, relative to sentence length.
[8] Program completion was defined as a program status of "attended all sessions" or "successful completion."
[9] Please note that ICPM adapted programs, the Inuit Integrated Moderate Intensity Sex Offender Program, and the Women's Modular Intervention were excluded from examination as program lengths differed considerably from other programs examined (e.g., the Women's Modular Intervention is 75 hours shorter than the WOCP moderate intensity program) and/or there was an insufficient number of participants to allow for meaningful trends.
[10] The study sample was compared to those excluded from the study due to a history of program non-completions and results showed that a higher proportion of the study sample were men, non-Indigenous, lower risk and need, and received discretionary release (see Table A1 in Appendix A).

Table 1

Sample profile information

	Men (*N* = 7,367)	Women (*N* = 1,266)
	% (*n*)	% (*n*)
Indigenous	20.2 (1,486)	31.0 (393)
Static Factors Assessment at release		
Low	4.8 (353)	33.6 (425)
Medium	47.0 (3,465)	51.7 (655)
High	48.2 (3,548)	14.7 (186)
Dynamic Factors Identification and Analysis-Revised at release		
Low	2.7 (196)	5.7 (72)
Medium	43.8 (3,225)	60.0 (759)
High	53.7 (3,945)	34.4 (435)
Offence		
Schedule 1 or homicide	58.6 (4,320)	39.4 (499)
Other	41.4 (3,047)	60.6 (767)
Release type		
Day parole	55.0 (4,055)	74.6 (944)
Full parole	2.3 (171)	2.7 (34)
Statutory release	42.6 (3,141)	22.8 (288)
	M (SD)	M (SD)
Age at release	37.5 (11.7)	35.1 (10.1)
Criminal Risk Index at intake	14.1 (6.7)	11.2 (6.7)
Sentence length (years)	3.5 (1.8)	3.0 (1.6)

Table 2 displays participants' first main program completion while incarcerated.[11] While

[11] It should be acknowledged that, as this study was focused on the timing of first main program completion, the

some programs had very high numbers of participants (e.g., ICPM-MT), there were others with fewer participants. Therefore, the decision was made to combine the following programs to allow for greater confidence in statistical findings:[12]

- IICPM-MT program and Inuit Integrated moderate intensity (non-sex offender (non-SO)) programs
- Moderate intensity ICPM-MT hybrid program and IICPM-MT hybrid program
- Moderate intensity ICPM-SO program and IICPM-SO program
- All high intensity ICPM programs were combined.

Data and Measures

All data for the analysis was extracted from the Offender Management System (OMS).

Independent variable

The independent variable of interest pertained to the timing of first main program completion. This was assessed by calculating the proportion of time between first main program completion and day parole eligibility date, relative to sentence length.

$$Timing\ of\ first\ main\ program\ completion = \left(\frac{(date\ of\ program\ end - day\ parole\ eligibility\ date)}{aggregate\ sentence\ length}\right) * 100$$

A value of 0 indicates that the offender completed their first main program on the same date as they were eligible for day parole. Offenders with negative values on the independent variable completed their first main program before they reached day parole eligibility (e.g., a score of -8% indicates that the offender completed their program and had 8% of their sentence remaining before their day parole eligibility date). Comparatively, offenders with positive values on the independent variable completed their first main program after they reached day parole eligibility (e.g., a score of +10% means that the offender reached their day parole eligibility and then another 10% of their sentence passed before they completed their first main program).

timing of women's high intensity programs were outside of the purview of this study as women who meet the eligibility requirements for high intensity programs must first complete the moderate intensity program (CSC, 2018a). The results of this research will be somewhat limited, however, as some women in the study sample go on to participate in a high intensity program and the impact of this subsequent program participation is not accounted for in the statistical models.

[12] It is important to acknowledge that, in circumstances where program streams were combined, the trends will be driven by the largest groups (e.g., the trends for the IICPM-MT and Inuit Integrated (non-SO) programs will be overwhelmingly driven by IICPM-MT).

Table 2

Frequency of first main program completion

	N
Men's programs	
Moderate intensity programs	
ICPM-MT program	3,035
ICPM-MT hybrid program	653
IICPM-MT hybrid program	138
IICPM-MT program	576
Inuit integrated program (non-SO)	18
ICPM-SO program	1,199
IICPM-SO program	81
High intensity programs	
ICPM-MT	1,321
IICPM-MT	147
ICPM-SO	189
IICPM-SO	9
Women's programs	
Moderate intensity programs	
WOCP	895
IWOCP	372

Dependent variables

The effect of the timing of main program completion on recidivism outcomes on offenders' first release were examined in two ways: (1) the effect on any revocation and (2) the effect on any revocation with a new offence.

Control variables

As there are well established correlates of recidivism, these were necessary to statistically control. These included:

Offender Intake Assessment

A variety of risk and need assessments are completed upon admission to federal custody through the Offender Intake Assessment (OIA) process (Commissioner's Directive 705; CSC, 2014), an assessment process that has a long history within CSC (e.g., Brown & Motiuk, 2005; Motiuk, 1997; 1998; Stewart et al., 2017). The current research uses several of these assessments, including the Dynamic Factors Identification and Analysis-Revised (DFIA-R) tool, which evaluates offenders' level of criminogenic need in seven domains: employment/education, marital/family, associates, substance abuse, community functioning, personal/emotional orientation, and attitudes. These domains are assessed through the completion of 100 dichotomous indicators rated as "present" or "absent." Parole officers then use their professional judgement to determine offenders' level of need at the domain level (asset to community adjustment, no need, low need, moderate need, or high need) and the overall level (low need, medium need, or high need). DFIA-R domain and overall ratings can be reassessed over the offenders' sentence. For the purposes of the current research, dynamic need is controlled for using the DFIA-R overall rating that occurred most recently prior to community release.

Static risk was assessed through a number of OIA measures, including the Static Factors Assessment (SFA) and the Criminal Risk Index (CRI; Motiuk & Vuong, 2018). The SFA examines the offenders' criminal history record, offence severity record, and sex offence history through a series of individual indicators scored as "present" or "absent." Parole officers then use their professional judgement to determine offenders' overall level of static risk (low, medium, or high). The CRI focuses specifically on the criminal history record and can produce a total risk score by summing the number of indicators endorsed and, depending on the sum of the indicators, categorizes offenders into five risk level groupings: low, low-moderate, moderate, moderate-high, or high static risk.

To determine which static risk assessment would be most appropriate to include as a control variable, the predictive accuracy and amount of missing data for the current study sample was explored. As shown in Table 3, while both static risk assessments were predictive of any revocation, the CRI was a significantly better predictor than the SFA. The amount of missing data, however, was quite high for women, likely due to a high proportion of them having a compressed OIA. Given these results, it was decided that the CRI total score[13] would be the

[13] Notably, while the CRI was only implemented in 2018, static risk scores can be calculated for earlier admissions based on the criminal history record of the SFA.

measure of static risk that was controlled for in models pertaining to men's programs, while the SFA closest to release would be the control variable for women.

Table 3

Comparison of the amount of missing data and the ability of the SFA and CRI in predicting any return to custody

	SFA		CRI SUM		
	AUC (95% CI)	% missing	AUC (95% CI)	% missing	ROC contrast χ^2 (df)
Non-Indigenous men	0.55 (0.53 – 0.56)	0%	0.65 (0.64 – 0.67)	3.8%	147.6 (1)***
Indigenous men	0.54 (0.51 – 0.56)	0.1%	0.60 (0.57 – 0.64)	1.8%	35.4 (1)***
Non-Indigenous women	0.59 (0.55 – 0.63)	0%	0.67 (0.62 – 0.72)	28.3%	12.4 (1)***
Indigenous women	0.57 (0.51 – 0.63)	0%	0.60 (0.54 – 0.66)	16.0%	0.7 (1)^{ns}

Note. AUC values of .56, .64, and .71 are considered small, moderate, and large effects, respectively.
^{ns} non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$; 95% CI denotes 95% confidence intervals.

Release type

The type of release experienced by the offender was categorized to be either discretionary (i.e., day or full parole) or non-discretionary (i.e., statutory release).

Age at release

This variable indicates the age of the offender at the time of their release in years.

Community maintenance program completion

This variable indicates whether or not the offender had any community maintenance program completion during their first release.

Motivational module referral

This variable indicates whether or not the offender had any referral to a motivational module while incarcerated. While not an established risk-relevant variable, operational staff raised the possibility of its importance in the association between timing of first main program completion and recidivism outcomes.

Mediator variable

Completion of an institutional maintenance or self-management program on offenders' first term of incarceration was considered as a possible variable which mediates the relationship between the timing of first main program completion and recidivism outcomes.

Procedure/Analytic Approach

It was first necessary to confirm that there was sufficient variability in the timing of first main program completion across offenders before examining whether the timing of first main program completion was associated with recidivism outcomes. As such, descriptive statistics (e.g., mean, median, standard deviation, minimum and maximum values) were used to examine the data for each program category of interest. As well, a histogram was produced to visually examine the data.

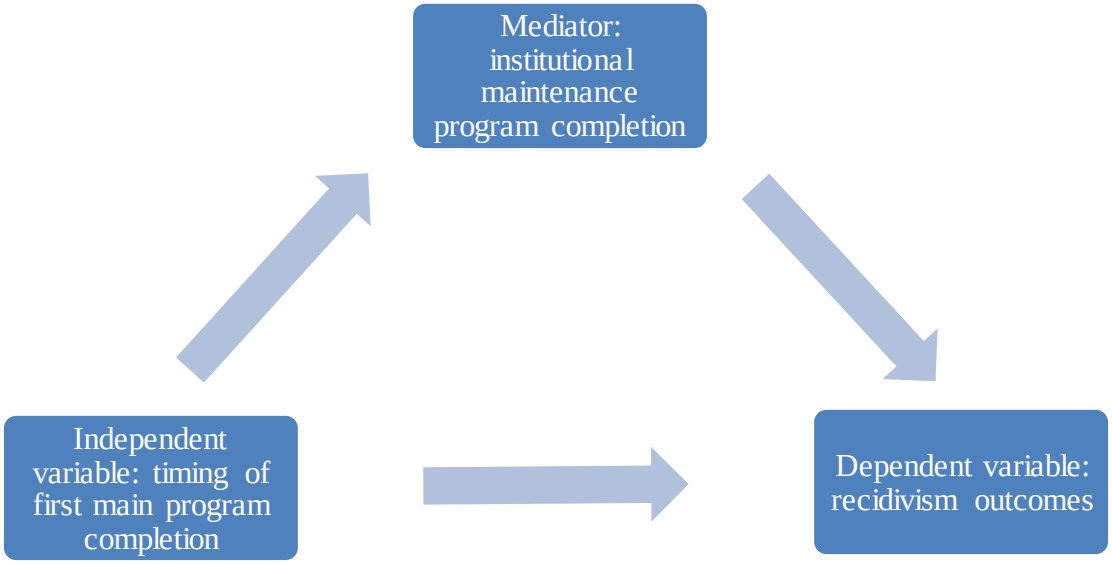
With confirmation of an appropriate amount of variation in the timing of program completion, Cox regression was applied to assess the relationship between the timing of program completion and recidivism outcomes, specifically, any revocation or any revocation with a new offence. Cox regression is particularly useful when predicting recidivism outcomes as it allows for sample censoring (i.e., when offenders have varying lengths of community supervision and may not have reached warrant expiry at the time of data collection). Hierarchical Cox regression models were used to assess the association between the timing of program completion and recidivism outcomes, statistically controlling for the control variables listed previously.

Cox regression models produce a useful effect size, termed the hazard ratio. In the current research study, a hazard ratio of 1.0 would indicate that the likelihood of recidivism outcomes does not change depending on when one completes their first main correctional program. A hazard ratio of greater than one would mean that earlier program completion is predictive of lower rates of revocations, and a hazard ratio of less than one would mean that later program completion is preferable. For example, a significant hazard ratio of 1.05 would indicate that for every 1% later in an offenders' sentence the program is completed, the likelihood of the offender experiencing a revocation outcome increases by 5%. Comparatively, a significant hazard ratio of 0.96 would indicate that for every 1% later in the offenders' sentence the program is completed, the likelihood of the offender experiencing a recidivism outcome decreases by 4% (1/0.96 = 1.04).

Mediation analysis is useful when a relationship between two variables may be explained

by a third variable. In the present study we hypothesized that earlier program completions may be beneficial because they allow offenders to also complete institutional maintenance programs. Figure 1 represents how the direct relationship between the time of program completion and recidivism outcomes could be explained by participation in institutional maintenance programs. One may conclude the presence of a meditation relationship if this direct relationship becomes non-significant when the institutional maintenance variable is included in the model, provided that the relationship between the timing of the first main program completion and institutional maintenance completion, and between the institutional maintenance completion and recidivism outcomes are both statistically significant.

Figure 1. Mediation process



Results

Timing of Main Program Completion

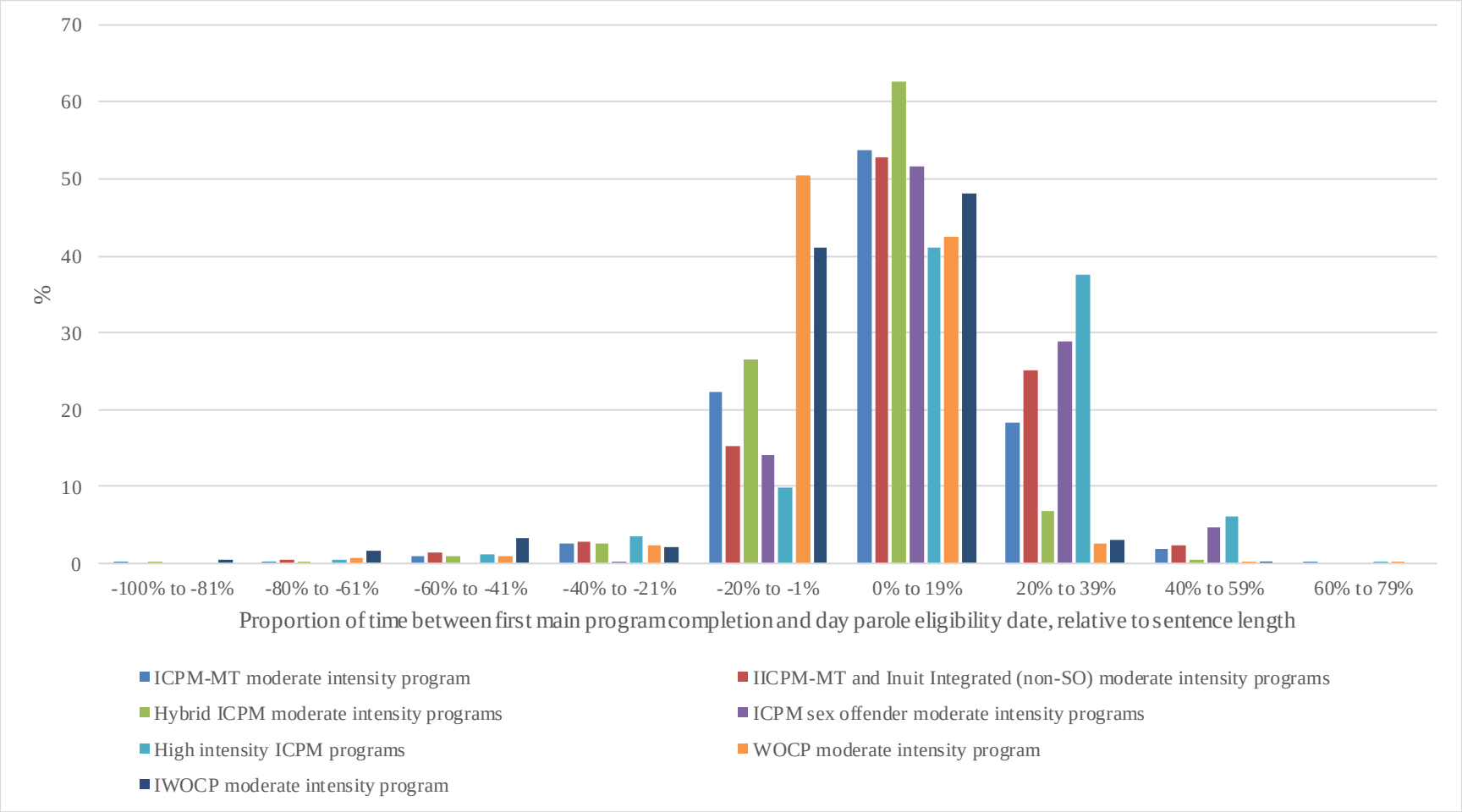
Table 4 illustrates the variation in the timing of first main program completion and day parole eligibility date, relative to sentence length. The results show that there is timing variation both within each program category and between program categories. For example, offenders who completed ICPM-MT, on average, reached day parole eligibility and then another 7.66% of their sentence passed before they completed the program, although some offenders completed the program much earlier (e.g., at the earliest with 84% of their sentence left to serve before day parole eligibility) or much later (e.g., at the latest with 79% of the sentence passed after day parole eligibility and completing the program). Notably, hybrid programs and women offender programs were completed much earlier in an offenders' sentence than other programs examined. Figure 2 illustrates these results by grouping program completion timing variation into 20% categories. Most program completions occurred around DPED. With the exception of WOCP, program completions tended to occur between DPED and 20% of the sentence following DPED.

Table 4

Descriptive statistics regarding the proportion of time between first main program completion and day parole eligibility date, relative to sentence length

Program	M (SD)	Median	Minimum	Maximum
Men's programs				
Moderate intensity programs				
ICPM-MT program	7.66 (15.99)	7	-84	79
IICPM-MT and Inuit Integrated (non-SO) programs	10.08 (17.14)	11	-70	51
Hybrid programs	3.04 (12.60)	3	-97	43
Sex offender programs	14.03 (14.31)	13	-53	51
High intensity programs	15.17 (18.66)	17	-72	62
Women's programs				
Moderate intensity programs				
WOCP	-1.69 (12.24)	-1	-78	76
IWOCP	-2.62 (16.95)	0	-89	46

Figure 2. Proportion of time between first main program completion and day parole eligibility date, relative to sentence length



Note. A value of 0% on the x-axis represents an offender completing their first main program on their day parole eligibility date. Negative values represent program completions that occurred before day parole eligibility and positive values represent program completions that occurred after parole eligibility.

Association of Timing of Main Program Completion with Recidivism Outcomes

As shown below in Table 5, there often was a significant relationship between the timing of main program completion and recidivism outcomes. In particular, while the association between the timing of first main program completion was either not associated or only weakly associated with returning to custody for any reason, the relationship was more pronounced with returning with a new offence. Later completions of programs were associated with reduced likelihoods of revocations and revocations with a new offence. For all programs examined, for every 1% increase in the proportion of the sentence completed at the time of program completion there was between a 3% and 6% reduction in the likelihood of returning to custody with a new offence.

Table 5

Overview of the association between timing of main program completion and recidivism outcomes

	For every 1% increase in the proportion of the sentence passed at the time of program completion:	
	Change in hazard of any revocation	Change in hazard of any new offence
Men's programs		
Moderate intensity programs		
ICPM-MT program	▼1%	▼6%
IICPM-MT and Inuit Integrated (non-SO) programs	≅	▼3%
Hybrid programs	≅	▼4%
Sex offender programs	▼1%	▼6%
High intensity programs	▼1%	▼5%
Women's programs		
Moderate intensity programs		
WOCP	▼1%	▼6%
IWOCP	≅	▼3%

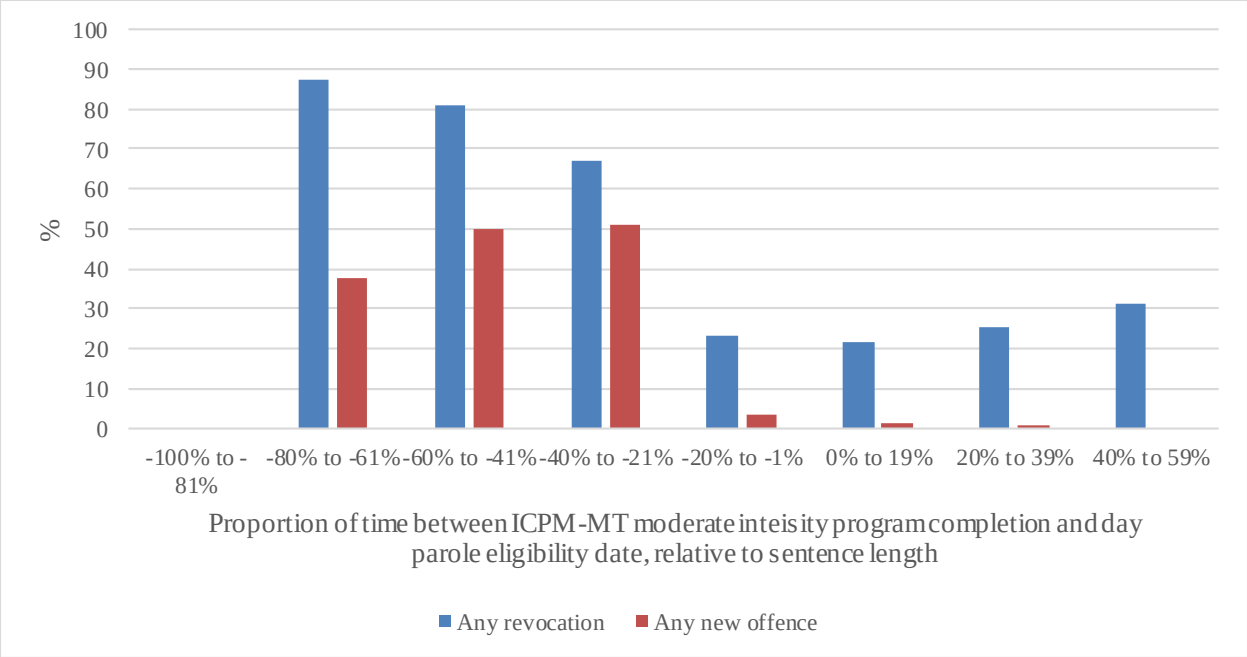
Note. ▲ and ▼ indicate that the likelihood of experiencing a recidivism outcome increased or decreased, respectively, depending on the timing of program completion. ≅ denotes that there was no statistically significant change in the likelihood of recidivism outcomes depending on the timing of program completion. Analyses controlled for risk, need, release type, age at release, community maintenance program completion, and motivational module referral for men. Analyses controlled for risk, need, age at release, and community maintenance program completion for women.

Detailed results for each program category will now be described.

ICPM-MT moderate intensity program

The timing of ICPM-MT moderate intensity program completion was associated with a change in the likelihood of experiencing both any revocation and any revocation with a new offence (detailed tabular results can be found in Tables A2 and A3 in Appendix A). Specifically, for every 1% increase in the proportion of the sentence that passed by program completion, there was an associated 1% decrease in the likelihood that the offender would experience a revocation for any reason and an associated 6% decrease in the likelihood that the offender be revoked for a new offence. Looking at Figure 3, it appears as though recidivism rates drop considerably for those who complete the ICPM-MT moderate intensity program just prior to day parole eligibility (e.g., the "-20% to -1%" group) and remain relatively low thereafter.

Figure 3. Prevalence of recidivism outcomes across timing of program completion groups for the ICPM-MT moderate intensity program



Note. Very few offenders are contained in the extreme ends of the x-axis (i.e., those who completed ICPM-MT very early or very late in their sentence.).

Mediation analysis showed that completing an institutional maintenance program did not mediate the relationship between the timing of ICPM-MT moderate intensity program completion and the likelihood of any return to custody,[14] but partially mediated the relationship

[14] In step 1 of the mediation model, the regression of the timing of ICPM-MT moderate intensity program completion on the likelihood of experiencing any return to custody, ignoring the mediator, was significant, χ^2 (1) =

with any new offence.[15] While later program completion was still preferable to earlier program completion with regard to new criminal behaviour, the relationship was weaker when one accounts for the effect of institutional maintenance program completion.

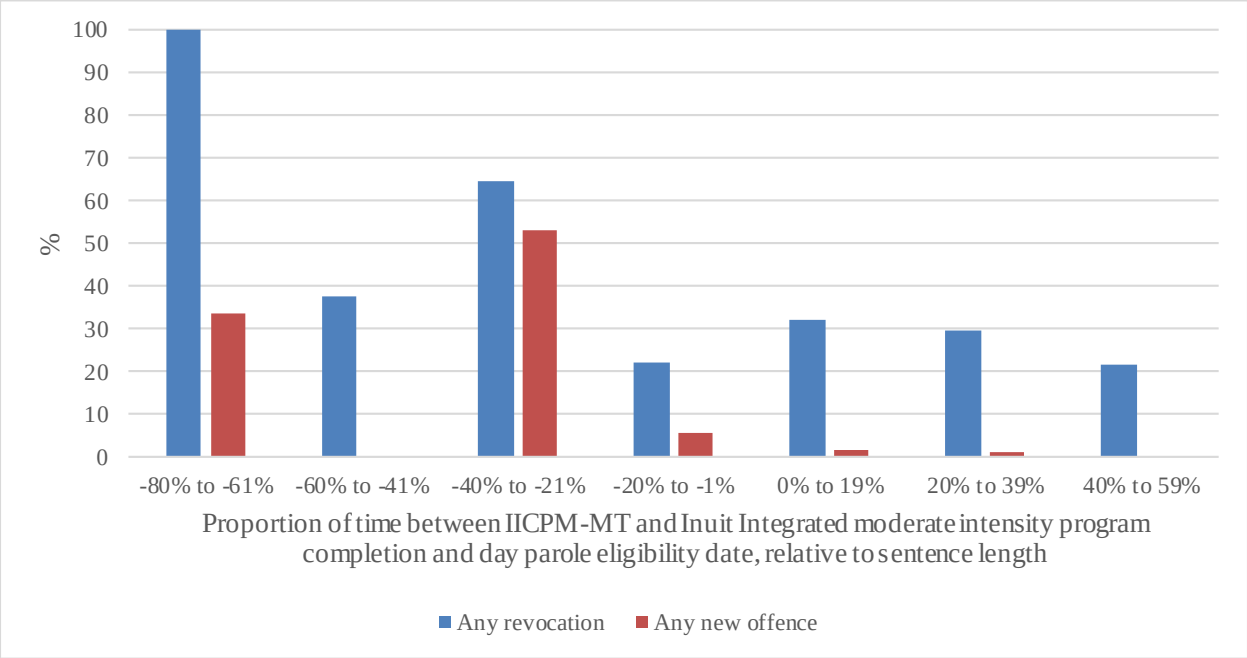
IICPM-MT and Inuit Integrated (non-SO) moderate intensity programs

While the timing of IICPM-MT and Inuit Integrated (non-SO) moderate intensity programs were not associated with a change in the likelihood of experiencing any revocation, there was a significant change in the likelihood of being revoked with a new offence (see Tables A4 and A5 in Appendix A for detailed tabular results). For every 1% increase in the proportion of the sentence that has passed by the time of program completion there is an associated 3% decrease in the likelihood that the offender experienced new criminal behaviour. Figure 4 shows that reoffence rates became lower for individuals who completed the IICPM-MT and Inuit Integrated (non-SO) moderate intensity programs relatively recently before day parole eligibility (e.g., the "-20% to -1%" group) and rates remained very low thereafter.

24.84, HR = 0.99, $p < .001$. Step 2 showed that the regression of the timing of ICPM-MT moderate intensity program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 174.31, Odds ratio (OR) = 1.05, $p < .001$. Step 3 of the mediation process showed that the mediator, controlling for the timing of ICPM-MT moderate intensity program completion, was not a significant predictor of any revocation, χ^2 (1) = 2.15, HR = 0.86, $p = .143$.

[15] In step 1 of the mediation model, the regression of the timing of ICPM-MT moderate intensity program completion on the likelihood of experiencing any new offence, ignoring the mediator, was significant, χ^2 (1) = 211.76, HR = 0.94, $p < .001$. Step 2 showed that the regression of the timing of ICPM-MT moderate intensity program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 174.31, OR = 1.05, $p < .001$. Step 3 of the mediation process showed that the mediator, controlling for the timing of ICPM-MT moderate intensity program completion, was a significant predictor of any new offence, χ^2 (1) = 4.14, HR = 0.58, $p = .042$. Step 4 of the analyses revealed that, controlling for the mediator, timing of ICPM-MT moderate intensity program completion continued to be a significant predictor of any new offence, χ^2 (1) = 214.42, HR = 0.94, $p < .001$.

Figure 4. Prevalence of recidivism outcomes across timing of program completion groups for the IICPM-MT and Inuit Integrated (non-SO) moderate intensity programs



Note. It is important to acknowledge that, while it looks like there is a very pronounced relationship between the timing of IICPM-MT and Inuit Integrated (non-SO) moderate intensity program completion and any revocation, this was not a statistically significant relationship. The "-80% to -61%" group is comprised of only three offenders, all of whom happened to have a return to custody.

Mediation analysis showed that completing an institutional maintenance program did not mediate the relationship between the timing of IICPM-MT and Inuit Integrated (non-SO) moderate intensity program completion and any new offence.[16] This means that even after accounting for the effect of institutional maintenance program completion, later main program completion as still preferable to earlier main program completion.

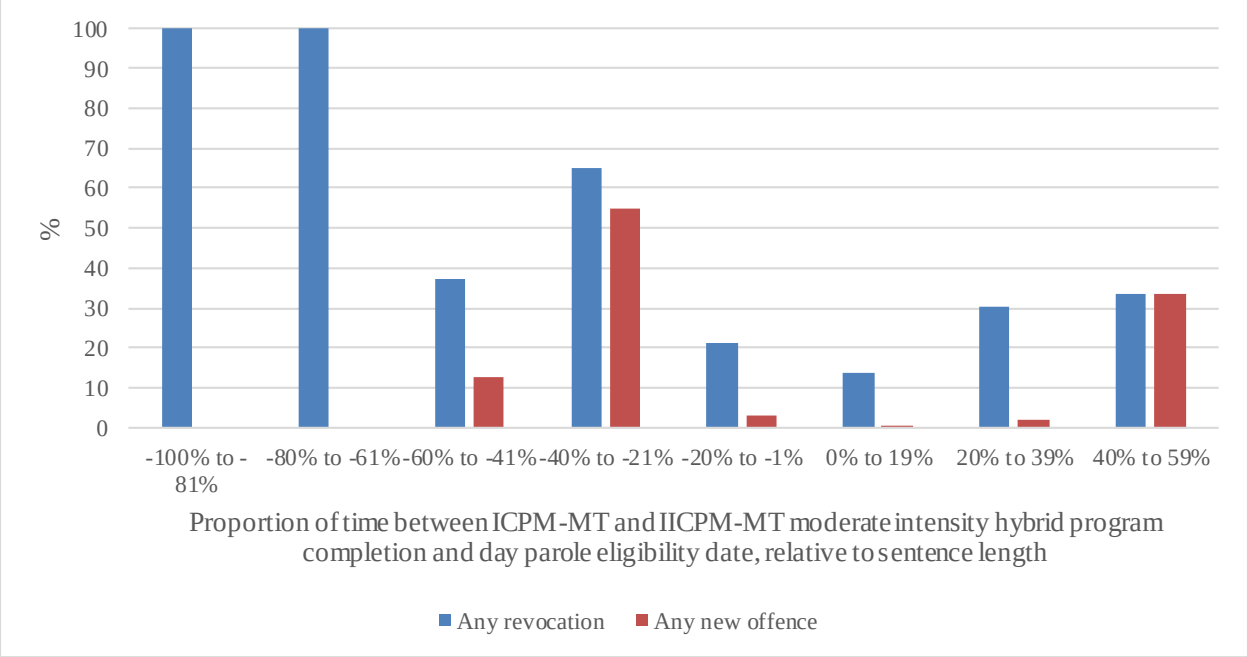
ICPM moderate intensity hybrid programs

While the timing of the hybrid programs was not associated with a change in the

[16] In step 1 of the mediation model, the regression of the timing of IICPM-MT and Inuit Integrated (non-SO) moderate intensity program completion on the likelihood of experiencing any new offence, ignoring the mediator, was significant, χ^2 (1) = 20.35, HR = 0.97, $p < .001$. Step 2 showed that the regression of the timing of IICPM-MT and Inuit Integrated (non-SO) moderate intensity program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 36.29, OR = 1.04, $p < .001$. Step 3 of the mediation process showed that the mediator, controlling for the timing of the IICPM-MT and Inuit Integrated (non-SO) moderate intensity program completion, was not a significant predictor of any new offence, χ^2 (1) = 0.0002 $p = .989$.

likelihood of experiencing any revocation, there was a significant change in the likelihood of returning with a new offence (see Tables A6 and A7 in Appendix A for detailed tabular results). In particular, for every 1% increase in the proportion of the sentence that passed, there was an associated 4% decrease in the likelihood of the offender returning for a new criminal offence. Similar to previous program groups, Figure 5 shows that reoffence rates greatly decrease for individuals who completed one of the ICPM hybrid programs recently before day parole eligibility and remain relatively low thereafter (notably, the apparent increase in reoffences for individuals in the "40% to 59% is based on one reoffence among three offenders).

Figure 5. Prevalence of recidivism outcomes across timing of program completion groups for the ICPM and IICPM hybrid programs



Note. It is important to acknowledge that, while there is an apparent relationship between the timing of ICPM moderate intensity hybrid program completion and any revocation, this was not a statistically significant relationship. The "-80% to -61%" group is comprised of only three offenders, all of whom happened to have a return to custody. Within each of the "-100% to -81%" and "-80% to -60%" groups there was only one offender, both of whom were revoked without a new offence.

Mediation analysis showed that completing an institutional maintenance program did not mediate the relationship between the timing of moderate intensity hybrid program completion and any new offence.[17] Completing an institutional maintenance program did not mitigate the

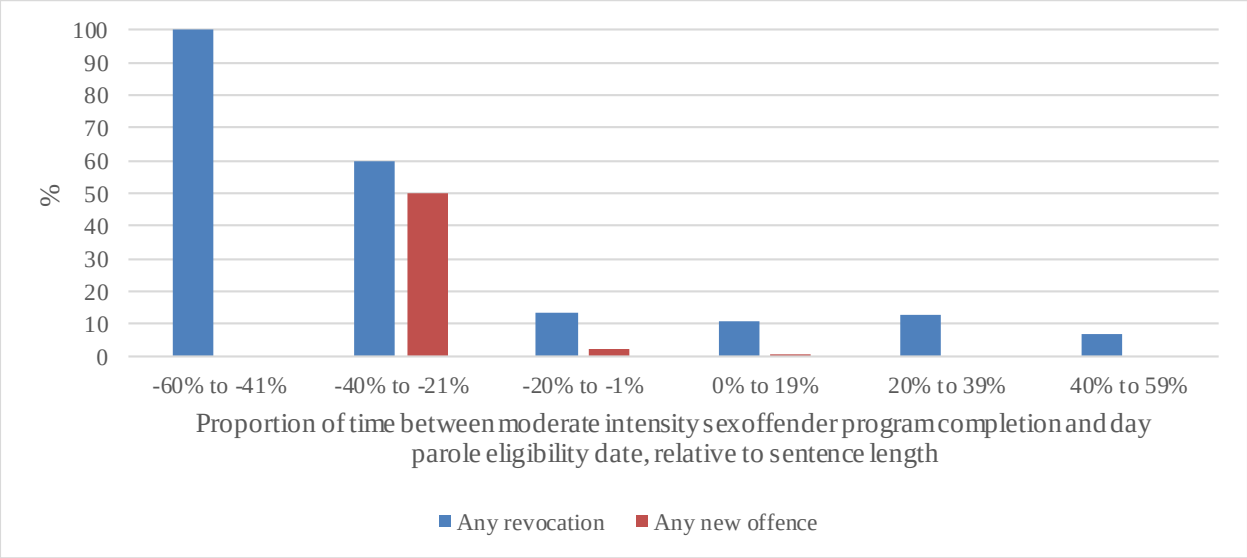
[17] In step 1 of the mediation model, the regression of the timing of hybrid program completion on the likelihood of

relationship of earlier program completion being associated with higher reoffence rates.

ICPM and IICPM moderate intensity sex offender programs

The timing of ICPM moderate intensity sex offender program completion was associated with a change in the likelihood of offenders experiencing both any return to custody and returning for a new offence (detailed tabular results can be found in Tables A8 and A9 in Appendix A). Specifically, for every 1% increase in the proportion of the sentence that has passed there is an associated 1% and 6% decrease in the offender returning for any reason and returning for a new offence, respectively. As shown in Figure 6, recidivism rates drop markedly for those offenders who complete a moderate intensity sex offender program with between 20% and 1% of their sentence remaining before reaching their day parole eligibility date and remain quite low thereafter.

Figure 6. Prevalence of recidivism outcomes across timing of program completion groups for the ICPM and IICPM moderate intensity sex offender programs



Mediation analysis showed that completing an institutional maintenance program did not mediate the relationship between the timing of moderate intensity hybrid program completion

experiencing a revocation with a new offence, ignoring the mediator, was significant, χ^2 (1) = 17.52, HR = 0.96, p < .001. Step 2 showed that the regression of the timing of hybrid program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 5.09, OR = 1.02, p = .024. Step 3 of the mediation process showed that the mediator, controlling for the timing of hybrid program completion, was not a significant predictor of any new offence, χ^2 (1) = 0.025, HR = 0.68, p = .619.

and any revocation[18] or any revocation with a new offence.[19] This means that even after accounting for the effect of institutional maintenance program completion, later hybrid program completion was still preferable to earlier hybrid program completion.

ICPM high intensity programs

The timing of ICPM high intensity program completion was associated with a change in the likelihood of experiencing both any return to custody and returning to custody with a new offence (detailed tabular results can be found in Tables A10 and A11 in Appendix A). In particular, for every 1% increase in the proportion of the sentence that has passed there is an associated 1% decrease in the likelihood of the offender experiencing any return to custody and an associated 5% decrease in the likelihood that the offender will return with a new offence. Similar to moderate intensity sex offender programs, recidivism rates drop markedly for those offenders who complete a high intensity ICPM program with between 20% and 1% of their sentence remaining before reaching their day parole eligibility date and remain relatively low thereafter.

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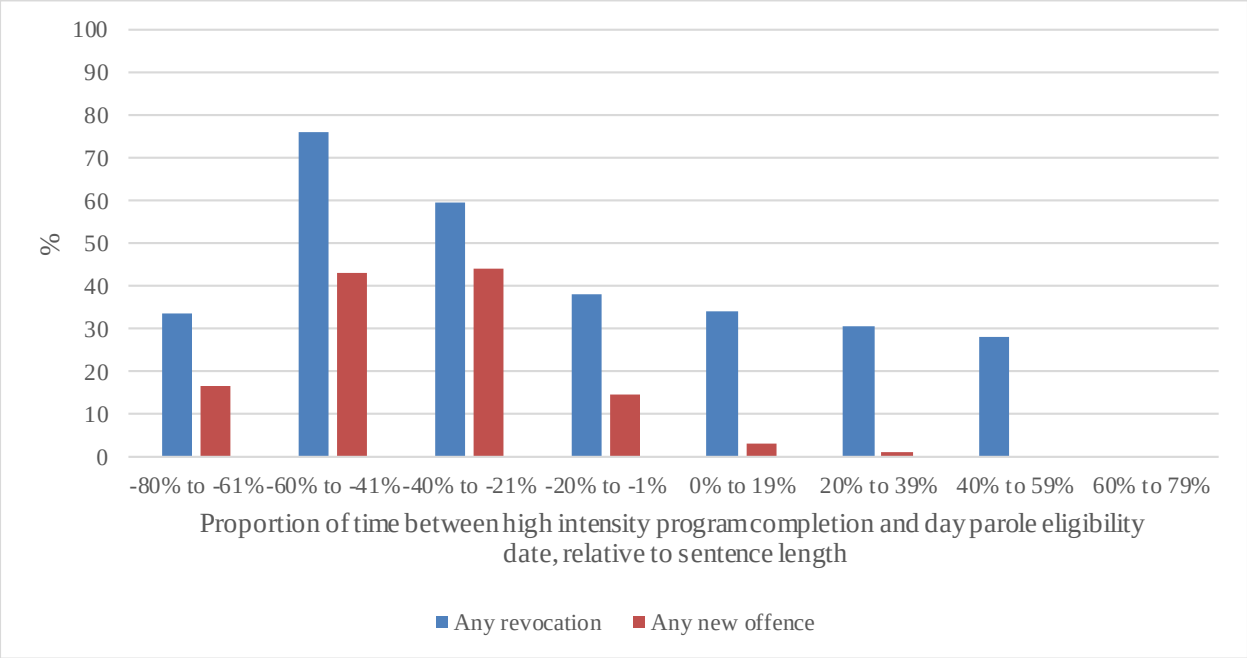
[18] In step 1 of the mediation model, the regression of the timing of moderate intensity sex offender program completion on the likelihood of experiencing any revocation, ignoring the mediator, was significant, χ^2 (1) = 8.47, HR = 0.99, $p < .001$. Step 2 showed that the regression of the timing of moderate intensity sex offender program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 155.60, OR = 1.10, $p = .024$. Step 3 of the mediation process showed that the mediator, controlling for the timing of moderate intensity sex offender program completion, was not a significant predictor of any revocation, χ^2 (1) = 0.60, HR = 1.18, $p = .440$.

[19] In step 1 of the mediation model, the regression of the timing of moderate intensity sex offender program completion on the likelihood of experiencing a revocation with a new offence, ignoring the mediator, was significant, χ^2 (1) = 21.99, HR = 0.94, $p < .001$. Step 2 showed that the regression of the timing of moderate intensity sex offender program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 155.60, OR = 1.10, $p < .001$. Step 3 of the mediation process showed that the mediator, controlling for the timing of moderate intensity sex offender program completion, was not a significant predictor of revocations with a new offence, χ^2 (1) = 0.39, 0.59, $p = .534$.

Figure 7. Prevalence of recidivism outcomes across timing of program completion groups for the ICPM high intensity programs



Mediation analysis showed that completing an institutional maintenance program partially mediated the relationship between the timing of high intensity ICPM program completion and both any revocation[20] and any revocation with a new offence.[21] This means that while later program completion was still preferable to earlier program completion with regard to new criminal behaviour, the relationship was weaker when one accounts for the effect of

[20] In step 1 of the mediation model, the regression of the timing of high intensity ICPM program completion on the likelihood of experiencing any revocation, ignoring the mediator, was significant, χ^2 (1) = 12.86, HR = 0.99, p < .001. Step 2 showed that the regression of the timing of high intensity ICPM program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 142.22, OR = 1.04, p < .001. Step 3 of the mediation process showed that the mediator, controlling for the timing of high intensity ICPM program completion, was a significant predictor of any revocation, χ^2 (1) = 4.60, HR = 0.80, p = .032. Step 4 of the analyses revealed that, controlling for the mediator, timing of high intensity ICPM program completion continued to be a significant predictor of any revocation, χ^2 (1) = 16.91, HR = 0.99, p < .001.

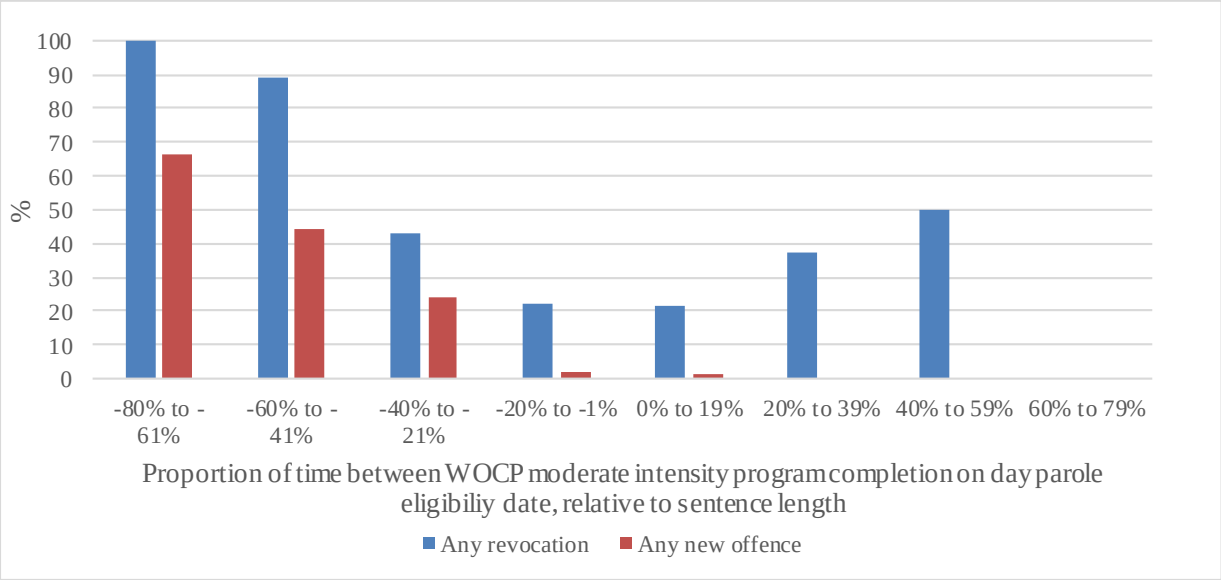
[21] In step 1 of the mediation model, the regression of the timing of high intensity ICPM program completion on the likelihood of experiencing any revocation with a new offence, ignoring the mediator, was significant, χ^2 (1) = 145.29, HR = 0.95, p < .001. Step 2 showed that the regression of the timing of high intensity ICPM program completion on the mediator, completing an institutional maintenance program, was also significant, χ^2 (1) = 142.22, OR = 1.04, p < .001. Step 3 of the mediation process showed that the mediator, controlling for the timing of high intensity ICPM program completion, was a significant predictor of any revocation with a new offence, χ^2 (1) = 11.24, HR = 0.40, p = .001. Step 4 of the analyses revealed that, controlling for the mediator, timing of high intensity ICPM program completion continued to be a significant predictor of any revocation with a new offence, χ^2 (1) = 156.65, HR = 0.95, p < .001.

institutional maintenance program completion.

WOCP

The timing of WOCP moderate intensity program completion was associated with a change in the likelihood of experiencing any revocation and returning to custody with a new offence (detailed tabular results can be found in Tables A12 and A13 in Appendix A). Specifically, for every 1% increase in the proportion of the sentence that has passed at program completion, there was an associated 1% decrease in the likelihood that the offender would experience a return for any reason and an associated 6% decrease in the likelihood that the offender will return with a new offence. As can be seen in Figure 8, reoffence rates greatly decrease for individuals who completed the WOCP recently before day parole eligibility (e.g., the "-20% to 1%" group) and remain low.

Figure 8. Prevalence of recidivism outcomes across timing of program completion groups for the WOCP moderate intensity program



Note. It is important to acknowledge that there are very few women who fall at the extreme ends of the x-axis (i.e., those who completed WOCP very early or very late in their sentence). While it appears the rate of any revocation begins to rise for those who complete their program later in their sentence, this does not reflect a statistically significant trend (e.g., only two women fall within the "40% to 59%" category, one of whom to return to custody).

Mediation analyses showed that completing an institutional self-management program partially mediated the relationship between the timing of WOCP moderate intensity program

completion and the likelihood of any return to custody[22] and any revocation with a new offence.[23] This means that while later program completion was still preferable to earlier program completion with regard to any return to custody, the relationship was weaker when taking into account the completion of an institutional self-management program.

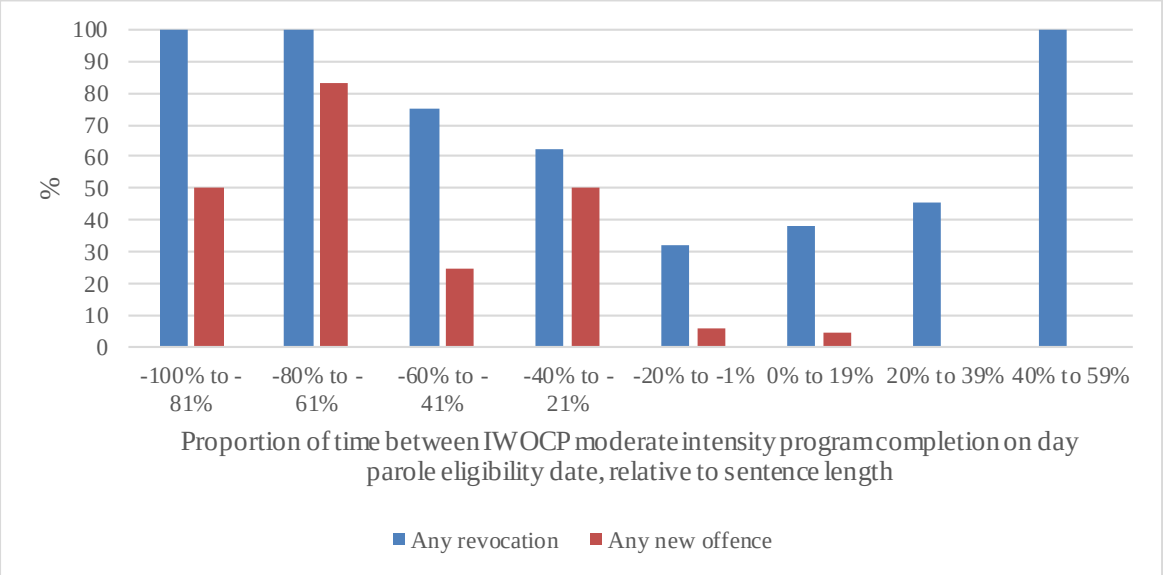
IWOCP

The timing of IWOCP moderate intensity program completion was not associated with a change in the likelihood of experiencing any revocation (detailed tabular results can be found in table A14 in Appendix A). This means that the timing of program completion was not related to returning to custody for any reason. However, the timing of IWOCP moderate intensity program completion was associated with a change in the likelihood of returning with a new offence (detailed tabular results can be found in table A15 in Appendix A). Specifically, for every 1% increase in the in the proportion of the sentence that had passed at program completion, there was a 3% decrease in the likelihood that the offender would return with a new offence. Figure 9 shows that reoffence rates decrease for individuals who completed the IWOCP moderate intensity programs relatively recently before day parole eligibility (e.g., the "-20% to -1%" group).

[22] In Step 1 of the mediation model, the regression of the timing of WOCP moderate intensity program completion on the likelihood of experiencing any return to custody, ignoring the mediator, was significant, χ^2 (1) =4.67, HR = 0.99, p = .03. Step 2 showed that the regression of the timing of WOCP moderate intensity program completion on the mediator, completing an institutional self-management program, was also significant, χ^2 (1) = 21.68, OR = 1.03, p < .001. Step 3 of the mediation process showed that the mediator, controlling for the timing of WOCP moderate intensity program completion, was a significant predictor of any revocation, χ^2 (1) = 8.69, HR = 0.64, p = .003. Step 4 of the analyses revealed that, controlling for the mediator, timing of WOCP moderate intensity program completion continued to be a significant predictor of any revocation, χ^2 (1) = 7.15, HR = 0.99, p = .008.

[23] In Step 1 of the mediation model, the regression of the timing of WOCP moderate intensity program completion on the likelihood of returning with a new offence, ignoring the mediator, was significant, χ^2 (1) =58.75, HR = 0.94, p < .001. Step 2 showed that the regression of the timing of WOCP moderate intensity program completion, on the mediator, completing an institutional self-management program, was also significant, χ^2 (1) =21.23, OR = 1.03, p < .001. Step 3 of the mediation process showed that the mediator, controlling for the timing of WOCP moderate intensity program completion, was a significant predictor of any revocation with a new offence, χ^2 (1) = 4.86, HR = 0.36, p = .028. Step 4 of the analyses revealed that, controlling for the mediator, timing of WOCP moderate intensity program completion continued to be a significant predictor of any revocation with a new offence, χ^2 (1) = 66.62, HR = 0.94, p < .001.

Figure 9. Prevalence of recidivism outcomes across timing of program completion groups for the IWOCP moderate intensity program



Note. It is important to acknowledge that there are very few women who fall at the extreme ends of the x-axis (i.e., those who completed IWOCP very early or very late in their sentence).

Mediation analyses were completed to determine whether completion of an institutional self-management program mediated the relationship between timing of IWOCP program completion and experiencing a return to custody with a new offence. Mediation analyses showed that completing an institutional self-management program did not mediate the relationship between the timing of IWOCP program completion and experiencing a revocation with a new offence.[24]

[24] Step 1 of the mediation model, the regression of the timing of IWOCP moderate intensity program completion on the likelihood of returning with a new offence, ignoring the moderator, was significant, χ^2 (1) =22.22, HR = 0.97, p < .001. Step 2 showed that the regression of the timing of IWOCP moderate intensity program completion on the mediator, completing an institutional self-management program, was also significant, χ^2 (1) =8.47, OR = 1.02, p = 0.004. Step 3 of the mediation process showed that the mediator, controlling for the timing of IWOCP moderate intensity program completion, was not a significant predictor of any revocation with a new offence, χ^2 (1) = 1.26, HR = 0.62, p = 0.261.

Discussion

The purpose of the current study was to examine the relationship between timing of first main correctional program completion and recidivism outcomes, to inform the optimal timing of program delivery throughout an offender's sentence. The findings showed that, for most programs, later completion was associated with decreased recidivism rates, particularly reoffence rates, with reductions in recidivism plateauing after offenders' day parole eligibility date.[25] This aligns with similar research by Duwe (2018) and Scaggs et al. (2016) that found later program completion was related to more positive recidivism outcomes. Mediation results showed that while completing an institutional maintenance program sometimes mitigated the negative effect of earlier main program completion, this did not completely negate the benefits of completing a main program later in one's sentence.

It is somewhat surprising that the relationship between the timing of first main program completion and recidivism was more pronounced for revocations with an offence compared to any revocation. Generally, statistical models with a higher base rate would have greater statistical power to detect statistically significant relationships. It possible, however, that there is more variability in how offenders get revoked for any reason (e.g., parole officer discretion as well as offender behavior) compared to when they get revoked for a new offence that results in increased statistical error variability in the statistical models. It also may simply be the case that the timing of main program completion has a greater impact of offending behaviour, rather than the broad range of behaviour that can result in a revocation without a new offence.

Given how little research has examined the timing of program participation, these findings represent an important contribution to our understanding of how to optimize the efficacy of correctional programs. In contrast to the work of Papp and colleagues (2019), the current research found that some of the highest recidivism rates were found for offenders who completed their first main correctional program early in their sentence. The notion that earlier program completion can provide offenders the opportunity to practice learned skills within the controlled prison environment, leading to sustained behavioural change upon release, does not seem to hold

[25] This result is based solely on the figures showing the prevalence of recidivism outcomes for each 20% category of program completion timing variation. This does not account for the control variables or variations in community supervision time available. This result could not be confirmed using Cox regression as this statistical approach focuses on the linear effect of program timing on recidivism outcomes.

within the federal Canadian context. Completing correctional programs earlier in offenders' sentence may decrease their ability to not only retain program knowledge and skills, but also to transform learned program skills into prolonged behavioural change upon release. Whereas, it appears that offenders who complete a main program later in their sentence benefit from the recency of the experience and are better able to apply the skills learned to challenging situations faced in the community.

It is important to acknowledge that there seems to be minimal further benefit in completing a main correctional program after one reaches their day parole eligibility date, beyond what is already gained by completing the program just prior to day parole eligibility. Notably, current results are not likely to be an effect of high risk offenders being expected to be released on statutory release, thus being referred to programs later in their sentence, as statistical models controlled for risk, need, and for men, release type. In a practical sense, there are meaningful benefits to the offender to complete their program in advance of day parole eligibility, as participation in correctional interventions, and associated treatment gains from participation, is a specific indicator of offender change assessed by the Parole Board of Canada when making discretionary release decisions (Parole Board of Canada, 2020). Correspondingly, previous research has confirmed that completing a correctional program makes offenders more likely to be granted discretionary release (CSC, 2020). Therefore, ensuring that offenders complete their main correctional programs prior to day parole eligibility assists not only with improving recidivism outcomes, but also offenders putting forth a good parole application that has a higher likelihood of success.

The current research study took a different approach to examine the timing of correctional programs, by examining the timing of program completion within offenders' sentence rather than its proximity to release, as was done by Duwe (2018) and Scaggs et al. (2016). In isolation, the present results cannot conclude that completing a main program closer to release results in better recidivism outcomes; however, when considering the current results in combination with extant research (Duwe, 2018; Scaggs et al., 2016), it seems likely that this may be the case. It seems prudent to have offenders complete their required main programs in time for their earliest possible release.

Unfortunately, the current results show that many offenders are not completing their first main correctional program before day parole eligibility, consistent with recent evaluation (CSC,

2020). There have been many reasons suggested by staff and offenders for this delay in completion, including a lack of resources, program availability, delays in program starts, and population management challenges (CSC, 2020). Program delays can further affect offenders' correctional experience. Research has shown that some of the most common reasons that low risk offenders delay or cancel parole applications are to avoid a negative decision or due to program non-completion (Farrell MacDonald, 2017). While this research indicated that a delay or cancellation did not go on to negatively affect the likelihood of future release decisions, it delayed the timing of reintegration. An area for future consideration is to explore how to optimize service delivery procedures to ensure offenders are completing required correctional programs prior to, but as close in time to day parole eligibility as possible.

Notably, there are other considerations, beyond recidivism, that may result in correctional agencies striving to have offenders' complete correctional programs earlier in their sentence. Successful completion of a main program often triggers a security reclassification review (CSC, 2018b), providing an opportunity for offenders to cascade down to a lower security level before release. Correctional program participation may also have a positive impact on institutional adjustment. Given the opportunity to demonstrate treatment gains both during the program (as described in the final program report) and post-program (as evidenced in improved institutional behavior) provides important information considered by the Parole Board of Canada when making release decisions (Parole Board of Canada, 2020). Completing correctional programs so closely to one's earliest discretionary release date may mean this information is not sufficiently considered by parole board members.

Limitations and Future Directions

It is important to note several limitations associated with the current methodology. As offenders who had a program non-completion were removed from the study sample, given that non-completions would affect the timing of first main program completion, it is unclear how the current results generalize to the federal offender population as a whole. Comparisons with those who were excluded from the study found that those included in the current study were lower risk and need and were more likely to receive discretionary release. Future analysis could assess whether the timing of first main program completion for those with a history of program non-completion aligns with the current findings. Offenders with indeterminate or life sentences were also excluded from the current study as it was not possible to calculate proportion of time

between first main program completion and day parole eligibility date, relative to sentence length. Given nearly a quarter of federal offenders are serving indeterminate sentences (Public Safety, 2020), future research could examine whether the number of days between program completion and release into the community is associated with recidivism outcomes.

As well, there were several programs that were either excluded from the current study because too few offenders enrolled and completed the program (e.g., Inuit Integrated Sex Offender Program) or, as was the case for the Women's Modular Intervention, the length of the program was too dissimilar to combine the sample with another program. In other instances, distinct program streams were combined to create program categories that had sufficient sample sizes so that the statistical modelling would produce reliable results (e.g., IICPM-MT and Inuit Integrated moderate intensity programs were grouped together, all ICPM high intensity programs were grouped together). The limitation of this approach is that trends were driven by the program with the highest number of completions and may mask divergent trends in less prominent programs. As more time passes and there have subsequently been more completions in programs such as the Inuit Integrated moderate intensity program, additional analysis should occur to ensure that the results still apply.

It is important to acknowledge that, for many of the statistical models, the proportional hazards assumption of Cox regression was violated. This indicates that the effect of the timing of first main program completion on revocation outcomes varies depending on how long the offender has been on community supervision. It is likely that the lessons learnt during the correctional program have the greatest impact earlier in the community supervision period, but as time passes, other factors play a greater role in offender success. Future research could partition the follow-up time to assess whether the proportional hazards assumption holds for a shorter period of time.

Finally, it is important to note that the mediation analysis examining whether institutional maintenance program completion mediates the association between the timing of first main program completion and recidivism was not limited to only those referred to maintenance programs. There is a possibility that including individuals not referred to institutional maintenance programs has reduced our ability to assess the effect of maintenance programs.

Conclusions

The current study represents an important step in determining the optimal timing of

program completion in an offender's sentence. The findings suggest that the recency of program participation affects recidivism, with later program completion being associated with reduced recidivism rates compared with earlier program completion. There appears to be minimal further benefit to completing a main program after one reaches day parole eligibility, beyond the benefits achieved by completing the program just prior to day parole eligibility; therefore, optimal program completion is just prior to reaching day parole eligibility. Continued efforts to optimize the program delivery in advance of earliest possible release is needed.

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Appendix A: Supplementary Results

Table A1

Comparing those who did or did not have program non-completions

	Study group (*N* = 8,633)	Those with program non-completions (*N* = 1,148)
	% (*n*)	% (*n*)
Gender		
Men	85.3 (7,367)	71.8 (824)
Women	14.7 (1,266)	28.2 (324)
Indigenous	21.8 (1,879)	28.8 (331)
SFA at release		
Low	9.0 (778)	8.3 (95)
Medium	47.7 (4,120)	43.0 (494)
High	43.3 (3,734)	48.7 (559)
DFIA-R at release		
Low	3.1 (268)	1.66 (19)
Medium	46.2 (3,984)	34.7 (410)
High	50.7 (4,380)	62.6 (719)
Offence		
Violent [a]	55.8 (4,819)	59.2 (679)
Non-violent	44.2 (3,814)	40.9 (469)
Release type		
Day parole	57.9 (4,999)	33.5 (385)
Full parole	2.4 (205)	0.9 (10)
Statutory release	39.7 (3,429)	65.6 (753)
	M (SD)	M (SD)
Age at release	37.0 (11.5)	35.0 (11.1)
CRI at intake	13.7 (6.8)	15.4 (7.0)
Sentence length (years)	3.4 (1.8)	3.6 (1.9)

[a] Violent offences included schedule 1 or homicide offences

Table A2

Association between the timing of ICPM-MT moderate intensity program completion and any revocation

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	37.62***	1.04	1.03	1.06
Dynamic need [b]	46.31***	1.74	1.48	2.04
Release type [c]	1.87[ns]	1.12	0.95	1.32
Age at release	38.07***	0.98	0.97	0.98
Community maintenance program completion	379.01***	0.21	0.18	0.24
Motivational module referral	4.72*	1.20	1.02	1.42
Model fit				
Wald χ^2 (df)	570.82 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	38.25***	1.04	1.03	1.06
Dynamic need [b]	45.30***	1.73	1.48	2.03
Release type [c]	4.79*	1.20	1.02	1.41
Age at release	32.23***	0.98	0.97	0.99
Community maintenance program completion	381.29***	0.21	0.18	0.24
Motivational module referral	5.70*	1.22	1.04	1.44
Proportion of time variable	24.84***	0.99	0.99	0.99
Model fit				
Wald χ^2 (df)	601.06 (7)***			
Δ Wald χ^2 (Δdf)	30.24 (1)***			

Note. The assumption of proportional hazards was violated in the above model (Wald χ^2 (1, N = 3,035) = 11.35, p <.001. The hazard ratio associated with the proportion of time variable changes at different points of follow-up time.
[ns] non-significant, * p < .05, ** p < .01, *** p < .001
[a] Static risk was assessed using the CRI.
[b] A rating of "Low" or "Medium" was the reference category.
[c] Discretionary release was the reference category

Table A3

Association between the timing of ICPM-MT moderate intensity program completion and any new offence

			95% CI	
	Wald χ^2	Hazard Ratio	Lower	Upper
Block 1: Control variables				
Static risk [a]	15.78***	1.07	1.04	1.11
Dynamic need [b]	2.64[ns]	1.41	0.93	2.13
Release type [c]	7.50**	1.81	1.18	2.76
Age at release	14.55***	0.96	0.94	0.98
Community maintenance program completion	50.80***	0.22	0.15	0.33
Motivational module referral	0.21[ns]	0.90	0.56	1.43
Model fit				
Wald χ^2 (df)	107.81 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	20.98***	1.08	1.05	1.12
Dynamic need [b]	0.27[ns]	1.12	0.73	1.71
Release type [c]	3.43[ns]	1.51	0.98	0.96
Age at release	2.71[ns]	0.98	0.96	1.00
Community maintenance program completion	50.10***	0.21	0.14	0.33
Motivational module referral	0.29[ns]	1.14	0.71	1.83
Proportion of time variable	211.76***	0.94	0.94	0.95
Model fit				
Wald χ^2 (df)	377.84 (7)***			
Δ Wald χ^2 (Δdf)	270.03 (1)***			

Note. The assumption of proportional hazards was violated in the above model (Wald χ^2 (1, N = 3,035) = 10.65, p =.001. The hazard ratio associated with the proportion of time variable changes at different points of follow-up time.
[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$
[a] Static risk was assessed using the CRI.
[b] A rating of "Low" or "Medium" was the reference category.
[c] Discretionary release was the reference category

Table A4

Association between the timing of IICPM-MT and Inuit Integrated (non-SO) moderate intensity program completion and any revocation

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	17.53***	1.05	1.03	1.07
Dynamic need [b]	1.94[ns]	1.25	0.91	1.72
Release type [c]	0.91[ns]	1.18	0.84	1.64
Age at release	7.79**	0.98	0.96	0.99
Community maintenance program completion	80.45***	0.22	0.16	0.30
Motivational module referral	0.22[ns]	0.92	0.64	1.31
Model fit				
Wald χ^2 (df)	126.21 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	17.11***	1.05	1.03	1.07
Dynamic need [b]	1.70[ns]	1.24	0.90	1.70
Release type [c]	1.68[ns]	1.26	0.90	1.78
Age at release	7.15**	0.98	0.96	0.99
Community maintenance program completion	78.26***	0.22	0.16	0.31
Motivational module referral	0.18[ns]	0.93	0.65	1.32
Proportion of time variable	1.80[ns]	1.00	0.99	1.00
Model fit				
Wald χ^2 (df)	129.96 (7)			
Δ Wald χ^2 (Δdf)	3.75 (1)			

Note. The assumption of proportional hazards was violated in the above model (Wald χ^2 (1, N = 594) = 5.76, p = .016. The hazard ratio associated with the proportion of time variable changes at different points of follow-up time.
[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$
[a] Static risk was assessed using the CRI.
[b] A rating of "Low" or "Medium" was the reference category.
[c] Discretionary release was the reference category

Table A5

Association between the timing of IICPM-MT and Inuit Integrated (non-SO) moderate intensity program completion and any new offence

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	4.04*	1.07	1.00	1.14
Dynamic need [b]	0.14[ns]	1.19	0.47	3.01
Release type [c]	0.12[ns]	1.18	0.45	3.09
Age at release	2.24[ns]	0.96	0.91	1.01
Community maintenance program completion	16.74***	0.11	0.04	0.32
Motivational module referral	1.25[ns]	0.50	0.15	1.69
Model fit				
Wald χ^2 (df)	26.92 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	3.14[ns]	1.06	0.99	1.13
Dynamic need [b]	0.02[ns]	0.93	0.35	2.46
Release type [c]	2.88[ns]	2.43	0.87	6.79
Age at release	1.29[ns]	0.97	0.92	1.02
Community maintenance program completion	10.13**	0.17	0.06	0.51
Motivational module referral	0.52[ns]	0.63	0.18	2.20
Proportion of time variable	20.35***	0.97	0.95	0.98
Model fit				
Wald χ^2 (df)	54.28 (7)***			
Δ Wald χ^2 (Δdf)	27.36 (1)***			

Note. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N = 594) = 1.75, p = .186.

[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$

[a] Static risk was assessed using the CRI.

[b] A rating of "Low" or "Medium" was the reference category.

[c] Discretionary release was the reference category

Table A6

Association between the timing of ICPM-MT and IICPM-MT hybrid program completion and any revocation

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	7.10**	1.04	1.01	1.08
Dynamic need [b]	5.92*	1.54	1.09	2.19
Release type [c]	3.57[ns]	1.49	0.99	2.26
Age at release	10.63**	0.97	0.95	0.99
Community maintenance program completion	70.30***	0.16	0.10	0.25
Motivational module referral	0.57[ns]	1.16	0.79	1.69
Model fit				
Wald χ^2 (df)	118.17 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	7.22**	1.04	1.01	1.08
Dynamic need [b]	5.27*	1.51	1.06	2.15
Release type [c]	4.01*	1.55	1.01	2.37
Age at release	10.59**	0.97	0.95	0.99
Community maintenance program completion	68.77***	0.16	0.11	0.25
Motivational module referral	0.40[ns]	1.13	0.77	1.67
Proportion of time variable	0.53[ns]	1.00	0.99	1.01
Model fit				
Wald χ^2 (df)	119.26 (7)***			
Δ Wald χ^2 (Δdf)	1,09 (1)[ns]			

Note. The assumption of proportional hazards was violated in the above model (Wald χ^2 (1, N = 791) = 8.04, p = .005. The hazard ratio associated with the proportion of time variable changes at different points of follow-up time.
[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$
[a] Static risk was assessed using the CRI.
[b] A rating of "Low" or "Medium" was the reference category.
[c] Discretionary release was the reference category

Table A7

Association between the timing of ICPM-MT and IICPM-MT hybrid program completion and any new offence

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	2.35[ns]	1.06	0.98	1.15
Dynamic need [b]	0.04[ns]	1.10	0.44	2.78
Release type [c]	5.19*	3.34	1.18	9.41
Age at release	3.48[ns]	0.95	0.90	1.00
Community maintenance program completion	11.09*	0.03	0.00	0.24
Motivational module referral	0.49[ns]	1.42	0.53	3.75
Model fit				
Wald χ^2 (df)	25.17 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	3.31[ns]	1.08	0.99	1.18
Dynamic need [b]	0.94[ns]	0.59	0.20	1.72
Release type [c]	9.06**	5.58	1.82	17.05
Age at release	3.79[ns]	0.94	0.88	1.00
Community maintenance program completion	9.03**	0.04	0.01	0.33
Motivational module referral	0.21[ns]	0.76	0.24	2.43
Proportion of time variable	17.52***	0.96	0.95	0.98
Model fit				
Wald χ^2 (df)	42.96 (7)***			
Δ Wald χ^2 (Δdf)	17.79 (1)***			

Note. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N = 791) = 0.52, p = .470.

[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$

[a] Static risk was assessed using the CRI.

[b] A rating of "Low" or "Medium" was the reference category.

[c] Discretionary release was the reference category

Table A8

Association between the timing of ICPM and IICPM moderate intensity sex offender program completion and any revocation

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	23.45***	1.07	1.04	1.11
Dynamic need [b]	2.66[ns]	1.37	0.94	2.01
Release type [c]	0.68[ns]	1.17	0.91	1.68
Age at release	32.36***	0.96	0.95	0.97
Community maintenance program completion	98.94***	0.16	0.11	0.23
Motivational module referral	5.17*	1.48	1.06	2.08
Model fit				
Wald χ^2 (df)	225.01 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	23.78***	1.07	1.04	1.11
Dynamic need [b]	2.93[ns]	1.39	0.95	2.04
Release type [c]	2.11[ns]	1.32	0.91	1.91
Age at release	31.88***	0.96	0.95	0.98
Community maintenance program completion	98.48***	0.16	0.11	0.23
Motivational module referral	4.78*	1.46	1.04	2.05
Proportion of time variable	8.47**	0.99	0.98	0.99
Model fit				
Wald χ^2 (df)	235.81 (7)***			
Δ Wald χ^2 (Δdf)	10.80 (1)***			

Note. The sample combines completion of ICPM-SO and IICPM-SO programs. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N = 1,280) = 1.60, p = .205.
[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$
[a] Static risk was assessed using the CRI.
[b] A rating of "Low" or "Medium" was the reference category.
[c] Discretionary release was the reference category

Table A9

Association between the timing of ICPM and IICPM sex offender program completion and any new offence

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	4.91*	1.12	1.01	1.25
Dynamic need [b]	0.51[ns]	1.73	0.38	7.85
Release type [c]	0.38[ns]	1.54	0.39	6.12
Age at release	4.45*	0.95	0.90	0.99
Community maintenance program completion	3.28[ns]	0.30	0.08	1.10
Motivational module referral	4.37*	3.76	1.08	12.99
Model fit				
Wald χ^2 (df)	31.95 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	5.28*	1.13	1.02	1.25
Dynamic need [b]	0.52[ns]	1.76	0.38	8.21
Release type [c]	0.82[ns]	1.99	0.45	8.85
Age at release	1.85[ns]	0.96	0.91	1.02
Community maintenance program completion	2.20[ns]	0.34	0.08	1.42
Motivational module referral	0.94[ns]	1.99	0.49	8.05
Proportion of time variable	21.99***	0.94	0.91	0.96
Model fit				
Wald χ^2 (df)	72.27 (7)***			
Δ Wald χ^2 (Δdf)	40.32 (1)***			

Note. The sample combines completion of ICPM-SO and IICPM-SO programs. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N = 1,280) = 2.14, p = .144.
[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$
[a] Static risk was assessed using the CRI.
[b] A rating of "Low" or "Medium" was the reference category.
[c] Discretionary release was the reference category

Table A10

Association between the timing of ICPM high intensity completion and any revocation

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	24.40***	1.04	1.02	1.05
Dynamic need [b]	12.24***	1.48	1.19	1.85
Release type [c]	9.91**	1.35	1.12	1.63
Age at release	20.00***	0.98	0.97	0.99
Community maintenance program completion	281.38***	0.20	0.16	0.24
Motivational module referral	1.52[ns]	1.11	0.94	1.32
Model fit				
Wald χ^2 (df)	390.96 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	19.17***	1.03	1..02	1.05
Dynamic need [b]	12.38***	1.49	1.19	1.85
Release type [c]	13.82***	1.43	1.19	1.73
Age at release	20.28***	0.98	0.97	0.99
Community maintenance program completion	276.26***	0.20	0.17	0.24
Motivational module referral	2.11[ns]	1.13	0.96	1.34
Proportion of time variable	12.86***	0.99	0.99	0.99
Model fit				
Wald χ^2 (df)	408.00 (7)***			
Δ Wald χ^2 (Δdf)	17.04 (1)***			

Note. The sample combines the completion of ICPM-MT, IICPM-MT, ICPM-SO and IICPM-SO high intensity programs. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N = 1,666) = 0.35, p = .555.

[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$

[a] Static risk was assessed using the CRI.

[b] A rating of "Low" or "Medium" was the reference category.

[c] Discretionary release was the reference category

Table A11

Association between the timing of ICPM high intensity program completion and any new offence

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a]	2.68[ns]	1.03	0.99	1.07
Dynamic need [b]	2.33[ns]	1.55	0.88	2.74
Release type [c]	2.34[ns]	1.46	0.90	2.36
Age at release	4.40*	0.98	0.95	1.00
Community maintenance program completion	51.46***	0.16	0.10	0.26
Motivational module referral	0.10[ns]	1.07	0.70	1.65
Model fit				
Wald χ^2 (df)	70.58 (6)***			
Block 2: Adding proportion of time variable				
Static risk [a]	0.56[ns]	0.99	0.95	1.02
Dynamic need [b]	0.98[ns]	1.33	0.76	2.33
Release type [c]	11.63***	2.35	1.44	3.83
Age at release	3.43[ns]	0.98	0.96	1.00
Community maintenance program completion	36.78***	0.20	0.12	0.33
Motivational module referral	2.47[ns]	1.43	0.92	2.30
Proportion of time variable	145.29***	0.95	0.95	0.96
Model fit				
Wald χ^2 (df)	235.00 (7)***			
Δ Wald χ^2 (Δdf)	164.42(1)***			

Note. The sample combines the completion of ICPM-MT, IICPM-MT, ICPM-SO and IICPM-SO high intensity programs. The assumption of proportional hazards was violated in the above model (Wald χ^2 (1, N = 1,666) = 7.09, p = .008. The hazard ratio associated with the proportion of time variable changes at different points of follow-up.
[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$
[a] Static risk was assessed using the CRI.
[b] A rating of "Low" or "Medium" was the reference category.
[c] Discretionary release was the reference category

Table A12

Association between the timing of WOCP moderate intensity program completion and any revocation

	Wald χ^2	Hazard Ratio	95% CI Lower	95% CI Upper
Block 1: Control variables				
Static risk [a b]	6.01*	1.57	1.09	2.24
Dynamic need [b]	33.62***	2.30	1.73	3.04
Age at release	14.02***	0.97	0.96	0.99
Community self-management program completion	42.52***	0.40	0.31	0.53
Model fit				
Wald χ^2 (df)	90.61 (4)***			
Block 2: Adding proportion of time variable				
Static risk [a b]	5.03*	1.51	1.05	2.17
Dynamic need [b]	34.62***	2.33	1.76	3.09
Age at release	13.01***	0.97	0.96	0.99
Community self-management program completion	41.31***	0.41	0.31	0.54
Proportion of time variable	4.67*	0.99	0.98	1.00
Model fit				
Wald χ^2 (df)	96.11(5)***			
Δ Wald χ^2 (Δdf)	5.5(1)*			

Note. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N =895) = 0.04, p = .846.

[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$

[a] Static risk was assessed using the SFA.

[b] A rating of "Low" or "Medium" was the reference category.

Table A13

Association between the timing of WOCP moderate intensity program completion and any new offence

			95% CI	
	Wald χ^2	Hazard Ratio	Lower	Upper
Block 1: Control variables				
Static risk [a b]	4.41*	2.45	1.06	5.64
Dynamic need [b]	11.48***	3.82	1.76	8.31
Age at release	2.55[ns]	0.97	0.93	1.01
Community self-management program completion	4.90*	0.43	0.20	0.91
Model fit				
Wald χ^2 (df)	24.16(4)***			
Block 2: Adding proportion of time variable				
Static risk [a b]	2.15[ns]	1.94	0.80	4.68
Dynamic need [b]	13.79***	4.71	2.08	10.68
Age at release	1.02[ns]	0.98	0.94	1.02
Community self-management program completion	2.13[ns]	0.56	0.26	1.22
Proportion of time variable	58.75***	0.94	0.92	0.95
Model fit				
Wald χ^2 (df)	82.19(5)***			
Δ Wald χ^2 (Δdf)	58.03(1)***			

Note. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N =895) = 0.60, p = .437.

[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$

[a] Static risk was assessed using the SFA.

[b] A rating of "Low" or "Medium" was the reference category.

Table A14

Association between the timing of IWOCP moderate intensity program completion and any revocation

			95% CI	
	Wald χ^2	Hazard Ratio	Lower	Upper
Block 1: Control variables				
Static risk [a b]	7.97**	1.72	1.18	2.50
Dynamic need [b]	7.58**	1.60	1.14	2.23
Age at release	15.66***	0.96	0.94	0.98
Community self-management program completion	57.51***	0.26	0.19	0.37
Model fit				
Wald χ^2 (df)	91.34(4)***			
Block 2: Adding proportion of time variable				
Static risk [a b]	8.22**	1.73	1.19	2.53
Dynamic need [b]	7.75**	1.61	1.15	2.24
Age at release	15.31***	0.96	0.94	0.98
Community self-management program completion	54.84***	0.27	0.19	0.38
Proportion of time variable	1.34[ns]	1.00	0.99	1.00
Model fit				
Wald χ^2 (df)	93.48(5)***			
Δ Wald χ^2 (Δdf)	2.14[ns]			

Note. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N =372) = 2.29, p = 0.130.

[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$

[a] Static risk was assessed using the SFA.

[b] A rating of "Low" or "Medium" was the reference category.

Table A15

Association between the timing of IWOCP moderate intensity program completion and any new offence

			95% CI	
	Wald χ^2	Hazard Ratio	Lower	Upper
Block 1: Control variables				
Static risk [a b]	0.02[ns]	0.94	0.35	2.51
Dynamic need [b]	2.17[ns]	1.74	0.83	3.61
Age at release	7.91**	0.93	0.88	0.98
Community self-management program completion	18.12***	0.18	0.08	0.40
Model fit				
Wald χ^2 (df)	26.19(4)***			
Block 2: Adding proportion of time variable				
Static risk [a b]	0.00[ns]	1.01	0.36	2.84
Dynamic need [b]	3.55[ns]	2.08	0.97	4.45
Age at release	3.91*	0.95	0.91	1.00
Community self-management program completion	9.68**	0.27	0.12	0.62
Proportion of time variable	22.22***	0.97	0.96	0.98
Model fit				
Wald χ^2 (df)	60.58(5)***			
Δ Wald χ^2 (Δdf)	34.39(1)***			

Note. The assumption of proportional hazards was not violated in the above model (Wald χ^2 (1, N =372) = 3.19, p = 0.074.

[ns] non-significant, * $p < .05$, ** $p < .01$, *** $p < .001$

[a] Static risk was assessed using the SFA.

[b] A rating of "Low" or "Medium" was the reference category.