

CORRECTIONAL SERVICE CANADA

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RESEARCH REPORT

The Impact of Electronic Monitoring on Offender Supervision and Correctional Outcomes

2019 N° R-428

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**The Impact of Electronic Monitoring on
Offender Supervision and Correctional Outcomes**

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Executive Summary

Key words: *electronic monitoring, technology, community supervision, community corrections.*

The Correctional Service of Canada conducted a national Electronic Monitoring (EM) Research Pilot to examine its effectiveness in promoting positive community outcomes for federal offenders while maintaining public safety. This report focuses on the community supervision outcomes associated with the use of EM as a supervision tool. The outcomes investigated include impacts on correctional outcomes (e.g., suspensions, revocations), conditional release decision-making, offenders' behaviour in the community, as well as staff and offender experiences with EM.

Data for eligible EM participants were collected between July 27, 2015 and November 26, 2018. The referral criteria for the EM Research Pilot was restricted to medium/high risk offenders. A total of 770 EM participants were compared to a matched control group ($N = 770$) based on demographic characteristics, offence and risk information, as well as release characteristics. Staff with experience with EM (e.g., Community Parole Officers, Parole Officer Supervisors, other CSC staff; $N = 300$), Parole Board of Canada Board Members ($N = 32$) and offenders monitored using EM ($N = 249$) also took the opportunity to provide feedback on their experiences.

Overall, compared to non-EM offenders, EM participants had comparable revocations with or without an offence and, once controlling for other factors (e.g., security level at release, Criminal Risk Index level), had a lower risk of return to custody. EM participants also spent a longer period of time in the community prior to their first suspension or revocation. However, EM participants were more likely to have a suspension, although they were more likely to have those suspensions cancelled, expired, or withdrawn.

As one part of the overall community strategy, EM appeared to contribute to conditional release decision making. EM participants were more likely than the control group to be released by their eligibility date, suggesting that the availability of EM may allow some offenders to be recommended for release when they otherwise would not have been recommended. EM participants also received fewer special conditions, and there were differences between groups in terms of the types of conditions imposed (i.e., beyond geographic, curfew and residency).

For the most part, findings showed that both staff and offenders reported no impacts of EM on the housing, family, or other relationships of EM participants. While CSC staff did not report any impacts of EM on offender employment, offenders viewed EM as having negative effects in this area. However, objective measures indicated that EM participants were in fact more likely to be employed and for longer periods.

Most staff agreed that EM is an efficient tool for monitoring geographic and curfew conditions. If a decision is made to implement EM nationally, enhanced effectiveness may be achieved by reserving its use for offenders with geographic conditions (or in combination with curfew conditions) as these offenders demonstrated more positive community supervision outcomes during the study period.

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Introduction

The use of electronic monitoring (EM) in Canada is expanding and becoming more widespread, though its intended purpose varies across jurisdictions. At the provincial level, EM programs are typically utilized for monitoring offenders serving probation or conditional sentences (Bonta, Wallace-Capretta, & Rooney, 2000a; McDonald, 2015). At the federal level within the Correctional Service of Canada (CSC), its primary purpose is to help manage and supervise medium and high-risk offenders on conditional release after having served a period of incarceration. As an additional supervision tool for Parole Officers (POs) to monitor supervision conditions, EM complements traditional community supervision, rather than serving as an alternative to incarceration.

The current EM research pilot was implemented by CSC in 2015. The purpose of the pilot is to increase the understanding of EM's effects on offenders, staff, and stakeholders, as well as on community supervision practices and overall public safety. As part of this research pilot, CSC has previously examined the implementation of EM, finding that EM appeared to have an impact on the decision-making processes of POs in regards to suspensions, but not on revocations of release or residency duration (Hanby, Nelson, & Farrell-MacDonald, 2018). Overall, this initial study suggested that EM is a beneficial tool for POs to monitor curfew and geographic restriction conditions of offenders.

In order to justify the use of EM as a supervision tool, it is important to evaluate its correctional outcomes, as well as the experiences of both correctional staff and offenders. The present study represents the second report of this research pilot, and aims to expand current understandings around the effectiveness of EM by examining correctional outcomes associated with this technology. Public safety outcomes including recidivism and compliance with conditions will be considered. To assess whether EM provides an added benefit over current practices for effectively supervising offenders on conditional release, other outcomes will be examined, such as its impact on conditional release decision-making, as well as offenders' behaviour in the community.

Technical Violations

An important advantage to EM is the ability to track offenders' movements, and thus enable POs to more accurately identify technical violations of offenders' conditions (Black &

Smith, 2003). Research looking at the impact of EM on offenders' compliance with conditions has mixed results. A few studies have found that offenders monitored using EM technology have more parole violations than those who are not supervised with this technology (Coopridner & Kerby, 1990; Gies et al., 2013). For instance, Gies and colleagues (2013) found that gang offenders released on parole in California and monitored using Global Positioning System (GPS) were significantly more likely to experience parole violations than a control group of offenders. This is perhaps due to the increased ability to detect these violations.

Contrary to these findings, a number of studies have found opposing results. Several studies have reported that the use of EM technology results in reduced technical violations, providing support for the deterrent effect of EM (Bales et al., 2010; Baumer et al., 2008; Padgett, Bales, & Blomberg, 2006; Gies, Gainey, & Healy, 2016; Turner, Chamberlain, Jannetta, & Hess, 2015). For example, in a sample of serious offenders sentenced to home confinement in Florida, EM significantly reduced the likelihood of technical violations compared to a control group of offenders on home confinement without EM (Padgett et al., 2006). This finding was replicated using a group of offenders on parole in Florida who were on EM, matched to a control group of offenders not on EM (Bales et al., 2010). Results of this study showed reductions in technical violations using both GPS and radio frequency (RF) technology. These effects were found for sex, drug, property and other types of offenders, with the impact still present, but to a lesser degree for violent offenders (Bales et al., 2010). Furthermore, research has previously found that sex offenders on parole with EM were more likely to comply with registering their sex offender status than a matched control group on parole (Gies et al., 2016).

Recidivism

As with technical violations, results have been mixed in terms of the impact of EM on rates of recidivism, including those related to revocations of supervision due to a new offence. Select studies have shown that the likelihood of a revocation of supervision due to a new offence is significantly reduced for violent, drug, property, and sex offenders on EM in Florida (Bales et al., 2010; Padgett et al., 2006) and in California (Gies et al., 2013). However, in a study using violent parolee offenders in Georgia, Finn and Muirhead-Steves (2002) compared offenders on EM supervision to a control group of paroled violent offenders not on EM. This study revealed no significant differences between groups for returning to prison or the amount of time before return, with the exception of sex offenders. Sex offenders on EM were less likely to return to

prison and were also likely to have a longer time until return to prison. Similarly, Gies and colleagues (2016) conducted a study on sex offenders on parole in California using a matched GPS EM group and control group. They found that the incorporation of GPS monitoring into traditional parole supervision resulted in significantly fewer arrests and convictions than the control group. These findings support those of a previous study on high risk sex offenders on parole in California, which found that a control group was significantly more likely to be returned to custody for new criminal behaviour compared to a GPS EM group (Turner et al., 2015).

Furthermore, Bales and colleagues (2010) conducted a study in Florida using various types of medium and high risk offenders on EM who were on community supervision. The researchers controlled for numerous covariates and included a control group of offenders on community supervision without EM. They found EM to reduce risk of failure due to revocations of a new offence or absconding by 31% compared to other forms of supervision. These results showed EM to have less of an impact on violent offenders relative to other offenders, although the effect was still significant. Gies and colleagues (2012) conducted a study supporting these results, as high risk sex offenders on traditional parole were 38% more likely to have their parole revoked than similar offenders on parole with EM.

Research on the long-term effects of EM on recidivism are equally inconclusive. Controlling for offender risk, some studies have revealed no differences in recidivism between offenders who were on EM and control groups (Bonta et al., 2000a; Finn & Muirhead-Steves, 2002). Studies looking at the recidivism of offenders on EM home detention programs have either not found differences in recidivism compared to a control group (Dodgson et al., 2001), or found those who completed the EM program were more likely to reoffend than those that did not complete the program (Avdija & Lee, 2014).

However, other results have been more promising in demonstrating the impact of EM on recidivism in the long-term. Gainey, Payne, and O'Toole (2000) followed offenders sentenced for felonies, traffic offences, and misdemeanours in Virginia from 5 to 12 years after being released from sentences of EM (i.e., as an alternative to incarceration). Although there was no comparison group included in the research methodology, the study found that the longer the time offenders were on EM, the less likely they were to reoffend (Gainey et al., 2000). Of those who did reoffend, the longer they spent on EM, the longer it took them to reoffend once outside of the

program, suggesting that longer EM sentences offer benefits beyond the period monitored using EM technology (Gainey et al., 2000). However, an interaction effect was apparent in that time on EM was more influential for unmarried offenders. This is consistent with later findings looking at sex offenders on EM (Finn & Muirhead-Steves, 2002). Additionally, in a sample of high-risk gang offenders in California, Gies and colleagues (2013) found that offenders supervised on EM were significantly less likely to be arrested within the 24-month period following release than a control group, with this effect even more prominent for violent offences. These findings were later replicated for non-violent offenders in Sydney, Australia (Williams & Weatherburn, 2019). Although in this case EM was used as an alternative to incarceration, results showed that reoffending for offenders on EM was reduced by 28% relative to offenders who were imprisoned, with an even larger reduction (67%) in reoffending for offenders under 30 years old.

Behaviour in the Community

A number of recent empirical studies have examined the impact of EM on the behaviour of offenders and their abilities to re-establish well-adjusted lifestyles in the community while select studies have investigated the impact that EM has on offenders' compliance to treatment and programming (Bonta et al., 2000b; Gies et al., 2016; Hucklesby, 2008). Given that the locations of offenders can be tracked with EM, there are potential benefits for programming and treatment conditions (Gies et al., 2012). Bonta and colleagues (2000b) observed the effectiveness of a treatment program in Newfoundland for moderate risk offenders on EM under community supervision compared to a control group of treated probationers without EM. It was found that compliance with a nine hour per week cognitive-behavioural therapy program targeting anger management, criminal thinking, and substance misuse was higher for the EM group (87% completion rate) than the non-EM group (53% completion rate). However, it is important to note that while the EM group could have had their supervision revoked if they did not attend treatment, the control group did not have this same condition. Therefore, although EM may have had an impact on the compliance with this program, it is also likely that the risk of returning to prison played a role for this group.

In order to evaluate offenders' compliance with conditions, Hucklesby (2008) conducted interviews with offenders after they served their sentence in the United Kingdom. The case studies revealed that almost all 78 offenders interviewed felt that being monitored by EM had an impact on their decisions to comply. Furthermore, research on the impact of EM on sex offender

compliance has shown that high risk sex offenders are more likely to comply with registering their sex offender status (Gies et al., 2016), and were less likely to abscond (Turner et al., 2007; Turner et al., 2015). Overall, research focusing on offender compliance with conditions has been limited to date.

Literature focused on the impact of EM on the employment and education circumstances of offenders has mixed findings. Although in some cases, the research has suggested that obtaining employment gave offenders a valid excuse to leave the house (Gibbs & King, 2003); other studies have found that EM may act as a barrier for both obtaining and maintaining employment (Bales et al., 2010). In their study with medium to high-risk offenders, Bales and colleagues (2010) found that 61% of offenders claimed EM had a negative impact on obtaining a job, 22% expressed that they were let go from a job because of EM, while 94% of probation officers felt EM had a negative impact on employment. Many offenders have also stated that they would try to hide their EM device or lie about it because of the difficulty it caused for employment (Vanhaelemeesch & Vander Beken, 2014a). Pearson (2012) found that youth on EM were more likely to be in school but less likely to be employed than a control group of young offenders. Gender differences have been detected, as women were reported as less likely to be employed while on EM due to the added responsibilities of caring for children (Gibbs & King, 2003).

Similar to the emerging findings around the impacts of EM on employment, a frequently reported concern for offenders on EM highlighted in the literature is the impact it has on the offenders' social life, including their relationships with family, significant others, and friends (Church & Dunstan, 1997; Hucklesby, 2008; Payne & Gainey, 1998; Vanhaelemeesch & Vander Beken, 2014a). Specifically, offenders have identified issues arising within these relationships due to increased emphasis on curfews, as well as feelings of embarrassment associated with the device, often resulting in attempts to conceal the device (Vanhaelemeesch & Vander Beken, 2014a). Offering a more detailed account of experiences with EM, Vanhaelemeesch and Vander Beken (2014b) conducted interviews with individuals living with offenders on EM. Their findings indicated that EM has negative effects that appear to extend to the co-residents of EM offenders. With EM, co-residents expressed that they felt they were also more restricted and additionally reported frequent arguments with the offenders because of the device.

EM has also been found to be associated with increased levels of stress (Elliot, Airs,

Easton & Lewis, 2000), shame (Bales et al., 2010), and violence in family homes (John Howard Society, 2000; Muncie, 1990). Moreover, a study on medium- to high-risk offenders in Florida revealed that 43% of offenders felt that EM had a negative impact on their partners, with probation officers interviewed largely confirming these conclusions (Bales et al., 2010). Alternatively, Martinovic and Schluter (2012) used autoethnography to investigate the impacts of EM on a researcher wearing the device for 14 days. More positive social experiences were reported from the researcher; however, there is the notable flaw that the researcher was not actually an offender subject to EM, therefore conversations with others about the device would not yield the same feelings of embarrassment and shame as would for an offender on EM. However, gender also seems to play a role in attitudes towards EM, with females being more compliant and more motivated by its potential stigma (Gibbs & King, 2003).

Despite the negative impacts described above, a number of positive outcomes have also been reported regarding the social lives of offenders on EM. Gibbs and King (2003) emphasize the importance of offenders remaining occupied in order to restrict the negative effect of EM on relationships. Research done by Killias, Gillieron, Kissling and Villettaz (2010) looking at differences between offenders on EM and those on community service found that those on EM were more likely to be married, suggesting that EM could have a positive impact on marital status. Many offenders reported seeing positive changes in themselves with EM, such as adopting positive thinking and self-discipline, as well as creating the opportunity to spend more quality time with their families (Gibbs & King, 2003; Payne & Gainey, 1998). It has been suggested that young offenders in particular could benefit from EM, as it allows parents to have a better idea of the whereabouts of their youth (Elliot et al., 2000). Similar to this, Pearson (2012) found that 60% of youth on EM indicated that they found EM useful in ensuring they comply with conditions so that they may remain in the community.

Staff Experiences

Due to use of EM for federal offenders in Canada as an additional tool to monitor offenders on community supervision, it is essential to explore staff perceptions on its effectiveness and utility. Existing research has shown that staff consider EM to be a useful tool for helping with the supervision of offenders (Bales et al., 2010; Coopridner & Kerby, 1990; Gies et al., 2016; Johnson, Haugen, Maness, & Ross, 1989; Willoughby & Nellis, 2016). For example, Bonta and colleagues (2000a) obtained the opinions of supervising staff (including probation

officers and correctional officers assigned to do community supervision) on the effectiveness of EM in preventing criminal behaviour for provincial offenders on probation in Canada. Opinions varied across provinces and types of supervising staff, with correctional officers in British Columbia feeling that only 27% of offenders were prevented from criminal behaviour, while probation officers in Newfoundland and Saskatchewan felt that EM helped prevent criminal behaviour in approximately half of the offenders. Furthermore, Bales and colleagues (2010) found that 16% of probation officers believed that EM should be used because it is an effective supervision tool, 13% felt that it was useful for dangerous offenders, and 9% believed it to be useful for offenders with unstable lifestyles. Similarly, in a study looking at eligible offenders released early and placed in a Home Detention Curfew program in England, 76% of probation officers reported that they felt using EM helped with the service's work (Dodgson et al., 2001).

In terms of the workload associated with EM, Turner et al. (2007) and Gies et al. (2012) found an increase in work due to the technical requirements associated with EM (i.e., monitoring the equipment, responding to alerts, teaching offenders to use equipment). However, Willoughby and Nellis (2016) found mixed results in a qualitative study of probation officer perceptions. One third of the officers felt it reduced their workload with young offenders, while some feared that it was replacing their work with the youth in the community. The rest of the officers believed that EM increased their workload because of training and paperwork. Moreover, 58% of officers felt that EM had been helpful as a supervision tool, a finding supported by parole agents of sex offenders in California (Gies et al., 2016). One of the main issues that probation officers had with the EM program was stringent violation protocols, which resulted in a limited amount of discretion about how it was used and integrated into case management plans (Willoughby & Nellis, 2016).

Complexity in Measuring the Effectiveness of EM

Existing literature on the outcomes of EM suggest that this technology can serve as a useful tool in the supervision of offenders in the community. Although results from previous research are mixed, it may be that EM is associated with additional technical violations and new offences because the additional tool results in better detection of these occurrences. In turn, this may point to the potential capacity of EM to have deterrent effects on offenders, as there is a greater chance that some violations or offences could be detected. As such, measuring the effectiveness of EM based solely on a reduction in recidivism may overlook other potential

impacts of this supervision tool.

It is difficult to determine the effectiveness of EM given that research and current EM programs involve fundamentally different variables and objectives. It is important to consider the impacts of EM on offender behaviour in the community as well as the potential advantage it may offer for parole staff, as many studies have shown staff to perceive EM as a helpful tool for managing offenders (Bales et al., 2010; Coopriider & Kerby, 1990; Gies, Gainey, & Healy, 2016; Willoughby & Nellis, 2016). In turn, when considering the effectiveness of EM, it is paramount to consider the impact of EM on offender compliance with treatment and other conditions, its effect on employment and housing circumstances, as well as the influence it may have on the social relationships of offenders.

The use of EM as an additional tool for supervision, rather than an alternative to incarceration also makes its purpose in Canada unique from many countries. Thus, inconsistent findings in the current literature surrounding concrete benefits in terms of suspensions, revocations, recidivism, and impacts on offenders' behaviour should not be considered reason to eliminate the use of EM in the Canadian federal correctional system. Provided the unique purpose of EM in this setting, further knowledge is needed about its outcomes, particularly as they relate to public safety. Thus, to comprehensively examine the use of EM in the Canadian federal correctional system, it is important to examine various potential impacts or advantages associated with EM in the context of its use as an additional tool for supervising offenders.

The Current Report

Research on the effectiveness of electronic monitoring in a correctional system has been inconclusive. The purpose of the current study is to evaluate whether there is any added advantage to using EM in conjunction with current practices of supervision of offenders in the community within the Canadian federal correctional system. The goal is not to justify the use of EM as either a replacement to traditional supervision or incarceration, but to examine its effectiveness as an additional tool for POs to manage and supervise offenders in the community. The present study will observe outcomes of EM in order to assess its value in increasing public safety.

The following five main research questions will be addressed:

1. Does EM contribute to improved correctional outcomes?
 - a) Does EM have an impact on suspensions of release or returns to custody?

- b) Does EM influence offenders' behaviour in the community with respect to their compliance with other special conditions?
- 2. Are there certain offenders, characteristics of release, or conditions for which imposition of EM leads to different results (e.g., greater enhancement of positive community supervision outcomes, added value in terms of case management)?
 - a) Are there certain offenders for which imposition of EM leads to more positive results?
 - b) Are there certain characteristics of release and/or conditions for which imposition of EM leads to more positive results?
- 3. Does EM, as one part of the overall community strategy, influence decision making regarding conditional release?
 - a) Can EM, as one part of the overall community strategy, contribute to PBC decisions to grant conditional release earlier in the sentence?
 - b) Can EM, as one part of the overall community strategy, impact the special conditions recommended by CSC and/or imposed by the PBC?
- 4. Does EM influence offenders' behaviour in the community?
 - a) Does EM affect offenders' ability to attain or maintain employment?
 - b) Does EM affect offenders' ability to attain or maintain housing?
 - c) What are the effects of EM on offenders' family and other relationships?
- 5. What are the experiences of correctional staff with respect to EM as a supervision tool? What are the experiences of offenders on EM?

Method

Procedure

EM Research Pilot. The EM Research Pilot was a multi-year, national research pilot conducted by CSC. Based on the parameters of this pilot, EM was considered a tool to monitor supervision conditions for offenders released on parole, as opposed to an alternative to incarceration or a residency condition. The decision to utilize EM was left to the discretion of the PO. Referrals by POs may have occurred at the beginning of the case management process (prior to release) or anytime the PO deemed that EM was necessary (during release). The final decision to utilize EM rested with the current supervising PO. Throughout the process, EM specialists (which in some cases was also the supervising PO) were available to assist with installation and removal of EM equipment as well as addressing any other EM-related issues. Alerts were first received, stored and addressed by CSC's National Monitoring Centre according to standardized monitoring and response protocols, and then transmitted to POs for response when required.

The project was implemented across the CSC regions (Ontario, Pacific, Prairies, Quebec, and Atlantic) in a phased approach by region between July and November 2015. Staff received a blend of training approaches depending on their role in the EM Research Pilot. Community Parole Officers (CPOs) received online training, while EM specialists received skill-based classroom training, and NMC staff received specific training for using the EM software and addressing alerts.

Referral criteria. To be eligible for the EM Research Pilot, an offender must have been considered medium/high risk to re-offend. Offender risk was measured by the offender's Reintegration Potential¹ (RP) rating in the pilot. To be referred to EM, offenders required a low/medium RP level at the time of referral. Offenders with high RP could be eligible for EM if they were men sex offenders with a Static-99R score of four or above, or if they were women sex offenders.

To be assigned to EM, an offender must have had a parole condition that could be monitored using EM technology. There are two main types of conditions that could be applied to

¹ For non-Indigenous men offenders, RP is determined by the scores from the Custody Rating Scale, the Revised Statistical Information on Recidivism and the Static Factor Rating. For women offenders and Indigenous offenders, RP is determined by the scores from the Custody Rating Scale, the Static Factor Rating, and the Dynamic Factor Rating (Correctional Service Canada, 2018a).

offenders on EM: geographic special conditions and curfews. Geographic special conditions usually refer to areas that the offender is restricted from entering. For example, a sex offender may be restricted from entering any parks, recreation centres, schools, and/or any other place where children are expected to congregate. The areas in which offenders are restricted from entering are often referred to as exclusion zones. Offenders may also be restricted from exiting an inclusion zone (e.g., the city where they live) as a geographic condition. In contrast, when a curfew is imposed, an offender is required to stay within a specified location (also referred to as an inclusion zone) for a given period of time. Usually, curfews occur overnight in the offender's residence.

Materials

Data for the analyses came from three types of sources: (a) various CSC databases including the Offender Management System (OMS) and the EM Research Tracking Database, (b) an Offender Questionnaire, and (c) a Staff Questionnaire.

CSC databases. Data for EM participants and control group offenders were extracted from OMS, the automated system used by CSC to store decision-making and offender management data from the beginning of an offender's sentence until the sentence is complete. EM-specific data were stored in the Research Tracking database, which contained all of the EM data regarding participant referrals, activations, and removals.

Offender questionnaire. Offenders supervised with EM were given the opportunity to complete a voluntary questionnaire regarding their experiences. The questionnaire consisted of questions related to compliance with conditions and programming (11 items) and the impact of EM on daily lives and relationships (14 items). Responses were rated on Likert scales (e.g., ranging from "negative impact" to "positive impact," ranging from "strongly disagree" to "strongly agree"). In addition, an open-ended question allowed participants to share any other details regarding their experience with EM. The questionnaire was administered to offenders through their CPO either after six weeks on EM or after device removal, in the event this occurred prior to the six-week mark. For suspended offenders, attempts were made to follow up with their Institutional PO in order to administer the questionnaire. Offenders that were on EM for less than two weeks were not invited to participate. Offenders provided informed consent by agreeing to a statement prior to filling out the questionnaire.

Staff questionnaire. CSC staff and PBC Board Members were given the opportunity to provide feedback on EM by completing an online questionnaire. The questionnaire was composed of 90-items examining staff perceptions of EM in regards to the effectiveness, efficiency, and cost-effectiveness of EM, as well as the impact of EM on staff decision-making and offender's daily lives. The questionnaire consisted of five sections: (a) Background (21 items), (b) EM as a supervision tool (18 items), (c) EM and case management (25 items), (d) Impact of EM on daily lives and relationships (9 items), and (e) Cost-effectiveness of EM (17 items). While some questions were administered to all staff with EM experience, others were targeted based on the respondent's position (e.g., CPO, PO Supervisor, PBC Board Members).

Distribution of the staff questionnaire was staggered across the regions in three phases. The first questionnaire was launched 10 months after the EM implementation date for each region (between May – October 2016). A follow-up questionnaire was then sent six months after the first questionnaire was distributed (between November 2016 – April 2017). A final questionnaire was administered in September 2018 for all regions. The questionnaire was administered using SNAP software and was hosted online through CSC networks. Staff participants provided informed consent by agreeing to a statement prior to filling out the questionnaire.

Participants

EM participants. Data for the eligible EM participants were collected between July 27, 2015 and November 26, 2018, allowing for a full three years of data collection in all regions. During the study period, a total of 770 offenders were monitored using EM. This group represents the experimental group in the study. The majority (96.9%, $n = 746$) of the sample were men and only 3.1% ($n = 24$) were women. Of the offenders that were monitored using EM, 16.4% ($n = 126$) self-identified as Indigenous (120 men and 6 women). Of the 770 EM participants, a total of 247 offenders took the opportunity to share their experiences regarding EM by completing the offender questionnaire.²

Staff. A total of 755 respondents completed the staff questionnaire across three data collection periods. Of the respondents, 332 staff and Board Members had EM experience within

² Two offenders were excluded as their identifying information was kept confidential for security reasons. Of the 247 questionnaires, 173 offenders included responses to an open-ended question regarding their experience on EM, which is subject to qualitative analyses.

the last six months of the questionnaire administration and were retained for analyses. Of the questionnaires that were retained, 55.4% ($n = 184$) of respondents were women, while 39.2% were men ($n = 130$)³. As shown in Table 1, the majority of respondents were CPOs and PO Supervisors. Just over half of the respondents worked in the Quebec and Ontario regions (see Table 2). The average length of experience working for CSC was 16.4 years ($SD = 7.4$). Of the CPOs and PO Supervisors with experience in EM, the majority reported that less than 10% of their caseload was currently being supervised using EM.

Table 1

Current Positions of Respondents with EM Experience

Position ($N = 332$)	%	n
Community Parole Officer	46.4	154
Parole Officer Supervisor	27.1	90
PBC Board Members	9.6	32
Other CSC staff	9.3	31
National Monitoring Centre staff	7.5	25

Note. Other CSC staff includes positions such as Aboriginal Community Liaison Officer, Area Director, District Director, Community Program Manager, Correctional Program Facilitator/Officer, Reintegration Officer and Employment Coordinator. PBC = Parole Board of Canada. CSC = Correctional Service of Canada.

Table 2

Regions of Staff and Board Members with EM Experience

Region	Percentage (n)	
	CSC staff ($n = 300$)	PBC Board Members ($n = 32$)
Atlantic	8.0 (24)	--
Quebec	23.0 (69)	21.9 (7)
Ontario	33.0 (99)	31.2 (10)
Prairie	12.3 (37)	21.9 (7)
Pacific	15.3 (46)	12.5 (4)
National Headquarters	8.3 (25)	12.5 (4)

³ Note that 5.4% of participants ($n = 18$) did not indicate their gender.

Analytical Approach

The study consists of a mixed-method approach of analysis. The quantitative components included descriptive analyses, comparative analyses (e.g., chi-square, analysis of variance), regression analyses (e.g., logistic regression) as well as survival analysis. The analyses of qualitative components consisted of thematic coding. The following sections provide more detailed descriptions of the methods for each section of the report.

Matching. A matched control group of offenders was created to provide a comparison to similar offenders in the community that were not monitored using EM. To be included as part of the control group, non-EM offenders had to meet the eligibility requirements discussed above and had to have been released within the study period. Furthermore, casework records were used to ensure that offenders that had participated in the previous EM Pilot Project⁴ were not included within the control group. The control group was established through Coarsened Exact Matching (CEM)⁵ using Stata software.

To begin the CEM process, EM participants and non-EM offenders were categorized into datasets based on their gender, Indigenous ancestry, and sex offender status.⁶ Within each offender category, EM and non-EM offenders were matched based on the following variables: (a) region of supervision, (b) Reintegration Potential level, (c) residency condition imposed, (d) supervision type, and (e) special conditions imposed (curfew and/or geographic restrictions). The strictest matching method was used to match the majority of EM and non-EM offenders. In this initial stage of matching, 78% of EM participants' profiles were matched to a comparable non-EM offender profile. For the remaining unmatched EM participants, a more generous⁷ matching

⁴ CSC previously implemented a one-year pilot project of EM in 2008, which focused on testing the capacity to manage information received through GPS technology. Participation in the pilot project was voluntary for offenders.

⁵ CEM is described as a "Monotonic imbalance reducing matching method...[that] strictly bounds through ex ante user choice both the degree of model dependence and the average treatment effect estimation error, eliminates the need for a separate procedure to restrict data to a common empirical support, meets the congruence principle, is robust to measurement error, works well with multiple imputation methods for missing data, can be completely automated, and is extremely fast computationally even with very large data sets" (Blackwell et al., 2010, p.1)

⁶ More specifically, offenders were subset into the following datasets: (a) Indigenous men, non-sex offenders, (b) Indigenous men, sex offenders with low/moderate Reintegration Potential, (c) Indigenous men, sex offenders with high Reintegration Potential, (d) Indigenous women, (e) Non-Indigenous men, non-sex offenders, (f) Non-Indigenous men, sex offenders with low/moderate Reintegration Potential, (g) Non-Indigenous men, sex offenders with high Reintegration Potential, (h) Non-Indigenous women.

⁷ In the second round of matching, a match on 'special conditions' imposed was not required, although all offenders in the control group had geographic restrictions and/or curfew conditions. This resulted in a 94% match. For subsequent matching, the matching variables that were excluded depended on the group in order to produce the most

process was used in order to reach a 100% matching rate.

Impact of EM on correctional outcomes. Comparative analyses on post-release outcomes between the EM participants and the non-EM offenders were conducted. This included all suspension warrants and first revocations for EM participants and the control group during the offender's current supervision period. Where analyses required the use of only one outcome measure, the first suspension or revocation of the offender's release was selected. Descriptive analyses were used to examine the frequency of suspensions and revocations amongst EM participants. The groups were compared in the frequency of and reasons for suspension, as well as the outcome of those suspensions. A suspension may occur (a) when a breach of conditions has occurred, (b) to prevent a breach of conditions, or (c) to protect society (i.e., risk is considered unmanageable in the community). Possible outcomes include issued, executed or withdrawn warrants of suspension, as well as cancelled or expired suspensions.

Survival analysis. The impact of EM participation on the length of time in the community prior to suspension or revocation of release was examined using Cox Proportional Hazards model method of survival analysis (Dohoo, Martin, & Stryhn, 2009). Survival analysis is a statistical method that models the time to an event; in this case, the time an offender remains in the community until first suspension or return to custody. This method also allows inclusion of other factors (covariates), other than whether EM was utilized, which may affect outcomes in order to determine the impact that each covariate may have on the outcome of interest. Hazard ratios, the relative risk of experiencing the event of interest at any point in time (e.g., for one treatment group compared with another), are calculated using this method.

The follow-up period for first suspension was calculated from the release date to the earliest date of release suspension in the community, sentence end date (either warrant expiry date or long-term supervision order expiry date), or the end of the data collection period (November 26, 2018). The follow-up period for returns to custody was calculated based on the release date to the earliest date of: first readmission on the release, sentence end date (either warrant expiry date or long-term supervision order expiry date), or the end of the data collection

comparable matches. Note that there were 8 offenders in the non-EM group who matched with multiple EM participants. The vast majority of these offenders were on LTSO releases. This resulted in 20 observations representing 8 offenders. Given that analyses were performed on the full groups (as opposed to any sub-analyses by release type), this method was preferable over using matched offenders that were not similar to the EM participants.

period (November 26, 2018), up to a maximum of two years post-release. The two-year time period was chosen as very few offenders returned to custody after this time, which would have rendered the analysis unstable with so few outliers. Offenders who were deported or who died following release from custody were censored.⁸

For both release suspension and return to custody, potential covariates were tested for unconditional association with the outcome variables. Covariates significant at the $p < .25$ level were entered into the model.⁹ Forward, backward, and stepwise model selection were employed, all of which resulted with the same final model. Covariates were dropped from, or retained in, the model at the $p < .05$ level. Adjusted hazard ratios (i.e., hazard ratios adjusted for the other variables in the model; AHR), confidence intervals, and significance levels were reported for all covariates retained in the final model.

Compliance with special conditions. To examine if EM, as one part of the overall community strategy, influences offender compliance with all other special conditions, the suspension reasons were examined between the two groups. Pearson chi-square analyses were used to compare the proportion of offenders with suspensions associated with different special conditions, including those related to alcohol/drug restrictions, avoid certain/specific people, as well as other special conditions.¹⁰

Case studies. Given the complexity in measuring the impact of EM on correctional outcomes, case studies were conducted to examine how EM is being utilized in various situations. Four cases were randomly selected from the EM Research Tracking Database, with the criteria of including one offender with a long term supervision order (LTSO), one offender with multiple EM periods, one offender placed on EM following statutory release, as well as one offender that had been placed on EM following a suspension cancellation. To formulate case studies for each offender, file reviews consisted of various OMS files, such as correctional plans and decision documents, alongside EM-specific data. Each case was subsequently analyzed to

⁸ Censoring is a common missing data problem in which time to event is not observed for reasons such as termination of study before all participants have shown the event of interest or the participant has left the study prior to experiencing an event (e.g., deportation or death).

⁹ Covariates initially examined for inclusion in the model included: static factor at release, dynamic factor at release, motivation level, accountability level, responsivity, engagement, security level at release, Criminal Risk Index. Also, for returns to custody, suspension was examined for inclusion in the model. Variables used in the matching process were not included in the model (i.e., Indigenous ancestry, gender, residency condition, release type, supervision region, reintegration potential level, and sex offender).

¹⁰ Other special conditions include a range of conditions to manage an offender's risk in the community that do not fit into the remaining categories (financial disclosure, gambling restrictions, computer/internet restrictions).

highlight the applicability of EM and to help inform the circumstances surrounding its use.

Differences in correctional outcomes. To determine whether the imposition of EM leads to different results for certain offenders or under certain characteristics of release, positive community supervision outcomes were examined. Positive community supervision outcomes were defined as the absence of any suspensions or revocations during the study period. These analyses were restricted to EM participants only and were first completed for offender characteristics and then for release characteristics. Pearson chi-square analyses were first performed to compare offenders with positive community supervision outcomes to those who had either suspensions and/or revocations during the study period on a number of variables representing offender characteristics, characteristics of release and conditions of release. Significant predictors were retained for further analyses.

Logistic regression (Hosmer & Lemeshow, 2000) was then used to examine the relationship between positive community supervision outcomes and the significant predictors of success in the community. Logistic regression is a form of regression in which the dichotomous dependent variable (e.g., positive community outcome: successful/not successful) is transformed into log odds. Results are presented in terms of odd ratios, which can be interpreted as the amount by which the odds of the outcome (successful/not successful) changes when the predictor is present and all other predictors are held constant. When interpreting the logistic regression results, an odds ratio greater than 1.0 implies a positive association between the predictor and outcome, while an odds ratio less than 1.0 implies a negative association. Odds ratios close to 1.0 indicate that the predictor does not affect the odds of predicted outcome.

Impact of EM on conditional release decision making. In order to determine the impact of EM on PBC conditional release decisions, comparative analyses examined differences in the timing of conditional release between the EM participants and the control group. These analyses were restricted to offenders on the first release of their sentence (77.1% of EM participants compared to 62.6% of non-EM offenders were on their first release), those not released under a LTSO (who would have completed their sentence), and those who were not serving indeterminate sentences (which would not have an end date to calculate sentence length).

Comparative analyses were used to examine the differences in the length of residency conditions between EM participants and the control group. Given that residency condition was utilized as a matching variable to ensure comparable groups, comparisons on the rates of

imposition of residency condition between groups was not possible. The residency conditions data were extracted from OMS on a bi-weekly basis before being collated into a single database. Length of residency was calculated using the difference in days between a) the condition effective date or study start date (i.e., EM participant start date or non-EM participant release date), whichever came first, and b) the condition end date or study end date (i.e., November 26, 2018), whichever came last.¹¹ Additional sub-analyses were completed to determine if there were differences in residency duration between the EM participants and non-EM offenders with respect to LTSO status (non-LTSOs were compared), Indigenous ancestry, Criminal Risk Index (CRI) level, and final overall release outcome.

Impact of EM on offenders' behaviour in the community. Descriptive analyses of staff and offender questionnaires were conducted to examine the impact of EM on offenders' ability to both attain and maintain employment and housing, as well as on family and other relationships. Objective measures of offender employment were available and allowed for comparative analyses between groups on the proportion of offenders employed and the mean length of employment. Logistic regression was then used to examine the relationship between EM participation, employment needs at release, and community employment. One-factor between-subjects analysis of covariance (ANCOVA) was utilized to determine if EM participants differed from non-EM offenders in the length of community employment. In an effort to isolate the effect of EM participation, employment needs at release was included as a covariate. The amount of variance accounted for by the predictor and covariate was established using partial eta (η^2) squared.

Staff and Offender Experiences. Descriptive analyses were utilized for the quantitative components of the staff and offender questionnaires, while thematic coding techniques were employed for the qualitative components. Results from the staff and offender questionnaires were also weaved into the other sections of the report where relevant.

¹¹ This calculation accounts for the amount of time the condition should have been in place, but limits it to what was reasonable and possible based on the cut-off date. This approach was selected to compensate for the large proportion of offenders serving LTSO's, which would inflate the duration of residency periods (as condition end date may be entered as the last day of the LTSO).

Results

Sample Characteristics

As of November 26, 2018, there were 90 offenders presently active on EM (11.7%), 329 offenders who had successfully completed their EM term (42.7%), and 351 offenders who were removed prior to the end of their term (45.6%).¹² This represents the 770 offenders in the EM participant group, comprising 1024 supervision periods. Of the 351 offenders removed from EM prior to the end of their first EM term, 187 offenders were subsequently referred for at least one additional period of EM (53.3%). The device was worn for a mean of 138.1 days ($SD = 91.2$) with a range from 3 to 786 days for offenders who had successfully completed EM and 66.4 days ($SD = 65.5$) with a range from 1 to 363 days for those who were removed from EM prior to the end of their EM supervision period.

Of the 329 offenders that successfully completed their EM supervision period, 198 offenders (60.2%) had successfully completed their identified EM duration, 87 offenders (26.4%) had finished serving their sentence, and 44 offenders (13.4%) were removed due to a decision from their case management team. Offenders who were removed from EM prior to the end of their EM supervision period were typically suspended ($n = 345$; 98.3%). Other reasons included death, deportation, or resulting from a union dispute ($n = 6$; 1.7%).

Comparison to control group. The sample of 770 offenders in the EM group were matched to 770 offenders in the control group. Due to the matching process, the groups were comparable in terms of gender, Indigenous ancestry, sex offender status, region of supervision, RP level, supervision type, special conditions, and residency condition imposed. Comparisons in relevant risk and need factors indicated no significant differences between the two groups at admission to federal custody or at release (see Table 3). Further, EM participants ($M = 15.3$, $SD = 7.5$) did not differ from the control group ($M = 15.8$, $SD = 7.3$) in criminal risk, as measured by the CRI ($F(1,1467) = 1.06$, $p = .131$). It should be noted that the EM participants group had a significantly higher proportion of offenders serving a LTSO (9.5%, $n = 73$), compared to the control group (4.3%, $n = 33$; $\chi^2(1, N = 1540) = 16.21$, $p < .001$, Cramer's $V = .10$).

¹² There were nine additional offenders who had completed EM terms but were excluded from the study. Five offenders were monitored using EM while on a temporary absence or work release, therefore they were not included in the matched sample as they were not on conditional release. Four offenders were not included in the study as their identifying information was kept confidential for security reasons.

Table 3

Risk and Need Characteristics of EM Participants and Control Group

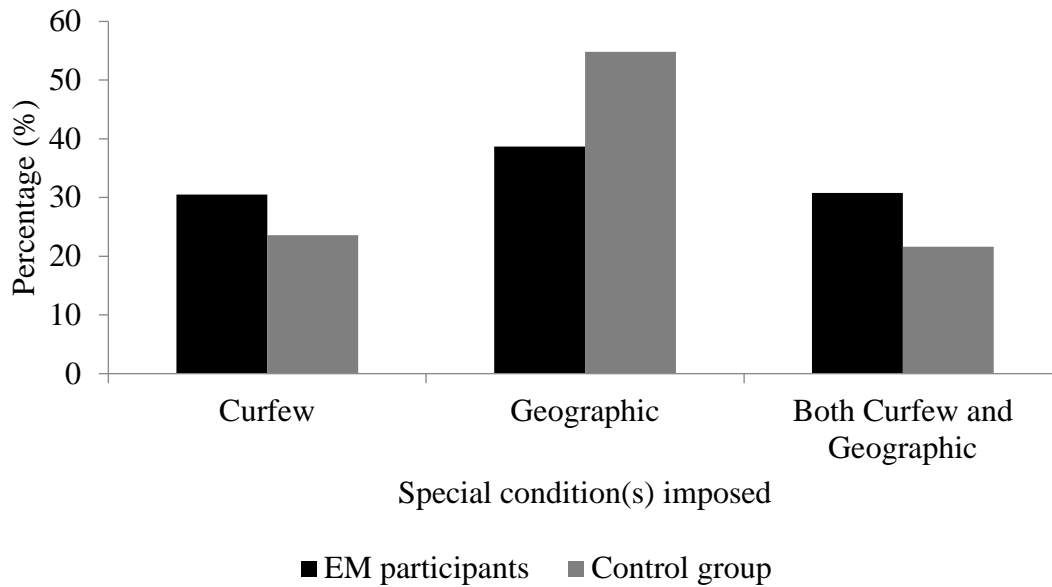
Characteristic	Percentage (<i>n</i>) of offenders	
	EM participants (<i>N</i> = 770) ^a	Control group (<i>N</i> = 770)
Accountability (at intake)		
Low	26.8 (206)	25.5 (196)
Moderate	66.8 (514)	69.9 (538)
High	6.4 (49)	4.7 (36)
Engagement (at intake)		
No	30.6 (236)	29.2 (225)
Yes	69.2 (533)	70.8 (545)
Responsivity (at intake)		
No	81.3 (626)	78.8 (607)
Yes	18.6 (143)	21.2 (163)
Static factor (at release)		
Low	2.3 (18)	1.4 (11)
Moderate	35.2 (271)	35.5 (273)
High	62.3 (480)	63.1 (486)
Dynamic factor (at release)		
Low	1.7 (13)	1.6 (12)
Moderate	29.4 (226)	31.0 (239)
High	68.8 (530)	67.4 (519)
Motivation level (at release)		
Low	26.4 (203)	22.6 (174)
Moderate	60.6 (467)	61.2 (471)
High	12.9 (99)	16.2 (125)

Note. None of the measures of association reached significance at the $p < .05$ level.

^a One offender in the EM Participants group was missing ratings for all of the risk and need measures.

As demonstrated by Figure 1, EM participants had more curfew conditions (30.5%) than the control group (23.6%). Conversely, the control group had more special conditions related to geographic restrictions than the EM participants (54.8% versus 38.7%, respectively). However, considering the number of offenders with both curfew and geographic conditions, more EM participants (30.8%) had this pairing than did offenders in the control group (21.6%).

Figure 1. Comparison of Curfew and/or Geographic Special Conditions between Groups



Comparison within EM participants. For analyses involving community supervision outcomes, it was of interest to examine behaviour in the community both during the offender’s full supervision period as well as restricting to outcomes after EM was started. This approach allows us to consider experiences on community release that may have led to the application of EM, as well as teasing out the potential impacts once the offender was monitored using EM. To ensure that no bias was introduced in this process, comparisons were conducted between groups of offenders with (a) suspensions only prior to EM start ($n = 79$), (b) suspensions both before and after EM start ($n = 93$), and (c) suspensions only after EM start ($n = 328$). There were no significant differences between the EM participants and non-EM offenders in accountability, engagement, or responsivity at intake, nor in static risk, dynamic risk, or motivation at release. However, there was a significant difference between groups in criminal risk ($F(2,477) = 6.50, p = .002$). Post-hoc comparisons using Tukey’s Honestly Significant Test (HST) revealed one significant pairwise comparison. Participants with suspensions only after EM start ($M = 16.9, SD = 7.6$) had significantly higher CRI scores than the participants with suspensions only prior to EM start ($M = 13.6, SD = 7.9$). Given these findings, for research questions that are focused on determining the specific impacts of EM, analyses were first performed on all EM participants and then restricted to EM participants with a suspension that occurred after EM start ($n = 328$).

Impact of EM on Community Supervision Outcomes

In order to determine whether EM contributes to improved community supervision outcomes, the post-release outcomes of EM participants were compared to the control group. Post-release outcomes included success in the community, release suspensions and returns to custody. Given the complexity involved in measuring and interpreting the effectiveness of EM, case studies were conducted to examine how EM is being utilized under various circumstances of community supervision. Staff perceptions regarding the impact of EM on post-release outcomes were also considered.

Table 4

Comparison of Post-Release Outcomes Between Groups

Post-release outcomes	Percentage (<i>n</i>) of offenders	
	EM participants (<i>n</i> = 770)	Control group (<i>n</i> = 770)
Successfully maintained on release/ Completed release ^a	35.1 (270)	48.1 (370)
Suspension of release ^b	64.9 (500)	50.8 (391)
Suspension cancelled/expired/ withdrawn ^c	59.4 (297)	44.8 (175)
Average days to first suspension <i>M</i> (<i>SD</i>) ^d	134.4 (213.7)	94.4 (107.3)
Any returns to custody ^{n.s.}	21.7 (167)	21.3 (164)
Return to custody with a new offence ^{n.s.}	2.2 (17)	2.3 (18)
Average days to any return to custody <i>M</i> (<i>SD</i>) ^e	303.9 (476.8)	204.0 (134.6)

Note. Offenders identified as having successfully maintained/completed release did not have any suspensions or returns to custody. For EM participants, all offenders who returned to custody also had suspensions, while 1.2% (*n* = 9) of control participants had a return to custody without a release suspension.

^aCramer's *V* = .13, *p* < .001.

^bCramer's *V* = .14, *p* < .001.

^cCramer's *V* = .19, *p* < .001.

n.s. = Not significant.

^d*F* (1, 891) = 11.4, *p* < .001.

^e*F* (1, 331) = 6.7, *p* = .01.

Community supervision outcomes. Table 4 presents the post-release outcomes of EM participants compared to the control group. EM participants were less likely than those in the

control group to successfully complete or maintain release in the community (35.1% versus 48.1%, respectively), although they had comparable rates of returns to custody, with or without a new offence (see Table 4). In general, EM participants were more likely to have a release suspension than the control group (64.9% versus 50.8%, respectively) but were more likely to have those suspensions cancelled, expired or withdrawn (59.4% versus 44.8%, respectively).

EM participants had fewer suspensions due to a breach of conditions and more suspensions to protect society and to prevent a breach of conditions than the control group (see Table 5). For the EM participants with a suspension, 65.6% had at least one suspension only after their participation in EM, 18.6% had suspensions both before and after EM participation, and 15.8% had at least one suspension prior to EM only.

Table 5

Comparison of Reasons for Suspension Between Groups

Suspension reason	Percentage (<i>n</i>) of offenders		Cramer's <i>V</i>
	EM participants (<i>n</i> = 500)	Control group (<i>n</i> = 391)	
Breach term	54.6 (273)	61.4 (240)	.15
Prevent breach	10.0 (50)	4.9 (19)	.16
Protect society	35.0 (175)	33.8 (132)	.14
Automatic suspension	0.4 (2)	- -	-

Note. An automatic suspension occurs when an offender who is on parole or statutory release receives an additional sentence other than a conditional or intermittent sentence.

Regardless of the outcome, suspension or return to custody, EM participants spent a greater period of time in the community prior to the event than did offenders in the control group (see Table 4). Over one-third (34.8%, *n* = 268) of EM participants compared to one-quarter (25.1%, *n* = 194) of the control group were still on release at the end of the study period. To control for the potential impact of other factors, including time at risk, Cox Proportional Hazards regression analyses were conducted. Results related to release suspensions are shown in Table 6 while return to custody are presented in Table 7. Offenders in the control group had a 17% lower risk of a release suspension than the EM participants. Restricting analyses to those whose first suspension occurred after EM, there was no significant difference between EM participants and non-EM offenders with respect to release suspensions. With respect to returns to custody, the

control group had a 67% higher risk of a return to custody than the EM participants.

Thus, though EM participants were less likely to successfully complete or maintain release in the community, EM appears to contribute to reducing recidivism given that compared to the control group, EM participants had fewer suspensions due to a breach of conditions, spent longer periods of time in the community, and when controlling for other factors, had lower risk of return to custody.

Table 6

Adjusted Hazard Ratios (HR) from Cox Proportional Hazards Regression for Time to First Release Suspension

Covariate	Hazard ratio	95% CI	<i>p</i>
Study group			
EM participant	(ref)	(ref)	(ref)
Control group	0.83	[0.73, 0.95]	.001
Security level (at release)			
Minimum	(ref)	(ref)	(ref)
Medium	1.81	[1.43, 2.29]	< .001
Maximum	2.56	[1.91, 3.42]	< .001
Criminal Risk Index level			
Low	(ref)	(ref)	(ref)
Moderate	1.53	[1.22, 1.93]	< .001
High	2.27	[1.80, 2.87]	< .001
Dynamic factor rating (at release)			
Low	(ref)	(ref)	(ref)
Moderate	1.84	[0.85, 3.96]	.12
High	2.71	[1.26, 5.84]	.01
Wald chi-square		189.62	
<i>DF</i>		8	
<i>p</i>		< .001	

Note. CI = confidence interval; EM = Electronic Monitoring; DF = degrees of freedom. CRI levels are based on the score cut-offs used for correctional programming referral as outlined in Commissioner's Directives guidelines 726-2.

Table 7

Adjusted Hazard Ratios (HR) from Cox Proportional Hazards Regression for Time to Return to Custody

Covariate	Hazard ratio	95% CI	<i>p</i>
Study group			
EM participant	(ref)	(ref)	(ref)
Control group	1.67	[1.34, 2.08]	< .001
Security level (at release)			< .001
Minimum	(ref)	(ref)	(ref)
Medium	1.38	[0.93, 2.06]	.11
Maximum	2.39	[1.53, 3.74]	< .001
Criminal Risk Index level			< .001
Low	(ref)	(ref)	(ref)
Moderate	1.40	[0.90, 2.18]	.13
High	2.03	[1.31, 3.13]	.002
Previous release suspension			< .001
No	(ref)	(ref)	(ref)
Yes	19.40	[9.94, 37.88]	
Wald chi-square		149.24	
DF		7	
<i>p</i>		< .001	

Note. CI = confidence interval; EM = Electronic Monitoring; DF = degrees of freedom. CRI levels are based on the score cut-offs used for correctional programming referral as outlined in Commissioner's Directives guidelines 726-2.

Compliance with special conditions. In order to capture the impact that EM may have on the compliance of offenders with their special conditions, analyses were performed comparing patterns of suspensions related to their imposed special conditions between the two groups¹³. While EM participants were more likely to have a suspension related to a breach of special conditions ($n = 236, 47.2\%$) than offenders in the control group ($n = 171, 43.7\%$), this

¹³ To further capture the potential impacts of EM on offender compliance to special conditions, sub-analyses were performed that excluded offenders with a suspension prior to EM start. Results were consistent with patterns drawn from the analyses of the full sample.

difference was not significant, $\chi^2 (1, N = 891) = 1.10, p = .578$, Cramer's $V = .04$.

Table 8 presents the proportion of offenders with suspensions related to different special conditions. Considering the compliance of offenders with their alcohol/drug related special conditions, no significant difference was observed between the two groups, $\chi^2 (1, N = 1310) = .32, p = .572$. With regards to the compliance of offenders to their special conditions related to avoid certain/specific persons, significantly more EM participants had suspensions related to these conditions than did offenders in the control group, $\chi^2 (1, N = 1494) = 11.50, p < .001$. However, this difference is less conclusive given the small number of offenders with suspensions related to avoid certain/specific persons. For suspensions related to other special conditions, EM participants had significantly more suspensions than did offenders in the control group, $\chi^2 (1, N = 1315) = 12.3, p < .001$. With only one EM participant with a suspension related to treatment/programming and no offenders in the control group with suspensions related to this, offender compliance to follow treatment/programming was not examined.

Table 8

Comparison of Suspensions Related to Special Conditions

Suspension reason	Percentage (<i>n</i>) of Offenders		Cramer's <i>V</i>
	EM participants	Control group	
Alcohol/drug related	17.2 (107)	16.0 (110)	n.s.
Avoid certain/specific persons	4.0 (30)	1.2 (9)	.09
Other special condition	12.1 (81)	6.5 (42)	.10

Note. Other special conditions include a range of conditions to manage an offender's risk in the community (e.g., financial disclosure, gambling restrictions, computer/internet restrictions). This excludes breaches related to geographic conditions, such as breach of entering a drinking establishment.

While results vary, the overall patterns of suspensions between the two groups suggest that EM, as one part of the overall community strategy, does not appear to influence the compliance of offenders with their imposed special conditions. While EM did not affect the compliance of offenders with alcohol/drug related special conditions, EM participants had more suspensions related to avoid certain/specific persons as well as other special conditions.

In their experience of supervising offenders on EM, CPOs reported that offenders were not any more or less likely to attend educational programs (85.0%), treatment programs (82.4%),

or supervision visits (81.6%). The perceptions of CPOs are in line with the experiences of EM participants expressed in the offender questionnaire. Considering the impact that EM has on their ability to attend educational programs, 81.4% of offenders with this condition indicated that EM has no impact. Similarly, 83.2% of offenders expressed that EM does not impact their ability or their likelihood of attending their treatment programs. When asked what impact EM has on their ability to abide by other imposed conditions, while 64.8% indicated no impact, 28.3% of offenders reported that EM increased their ability to abide by their other conditions. The offenders' responses in this regard are reflective of the analyses presented, which suggest that overall EM does not contribute to offenders' compliance with their other imposed special conditions.

Case studies. An in-depth file review of four offenders reveals both the uses and complexities associated with EM. In particular, each case demonstrates the applicability of EM in varying circumstances and its use as a tool to assist in the monitoring and management of offenders' risk in the community.

Offender 1 was identified as having a dangerous offender designation and LTSO. During his statutory release, the offender was referred to EM as a supervision strategy to monitor his compliance with imposed geographic and curfew conditions. The file review revealed that the offender's history of LTSO breaches and persistent risk management concerns likely substantiated the placement of Offender 1 on EM, alongside an imposed residency condition. After being under EM supervision for 83 days, it was reported that Offender 1 had left the Community Correctional Centre (CCC) while his curfew condition was still in effect. During this time, the NMC reported that the offender had exited the inclusion zone to which he was restricted to under his supervision. Offender 1's breach of his special curfew and geographic conditions, which were confirmed through EM, led to a suspension execution and revocation of the offender's conditional release. This case review illustrates the effective use of EM as a supervision tool for monitoring the compliance of offenders with special conditions. However, beyond this, it also illustrates the capacity of EM to enhance the management of high-risk offenders in the community, even with the presence of an imposed residency condition.

Offender 2 was placed on EM during his statutory release to help monitor his risk in the community. Alongside his geographic condition, the offender had other imposed special conditions, such as abstaining from drugs and alcohol and having no victim contact. After 42

days of being under community supervision with EM, a suspension was issued for Offender 2 that a breach of his no victim contact had occurred. Importantly, the geographic information available on the offender through EM was used to verify that this breach had occurred. A review of the offender's file revealed that the CPO in this instance had requested and used the offender's EM movement report to verify his whereabouts during the time of interest. As such, EM was used to confirm that a breach of a no victim contact had indeed occurred, which in turn resulted in the subsequent revocation of the offender's release. The case review of Offender 2 demonstrates the capacity of EM to be used as a suspension tool. More specially, it characterizes the way in which EM may supplement the monitoring of offenders in the community and their compliance to their imposed conditions—beyond that of curfew and/or geographic restrictions.

Further to the use of EM as a supervision or suspension tool, the case review of Offender 3 highlights how EM may also be applied as an alternative to a suspension execution or revocation. Offender 3 had initially been released on day parole under traditional supervision. However, the offender's behaviour in the community and non-compliance to the special condition of avoid alcohol led to a suspension. A review of the case revealed that this suspension was subsequently cancelled and as an intervention strategy, Offender 3 was released into a Community Residential Facility where he was required to reside for close to five months, until his statutory release date. One month following his statutory release date, Offender 3 was found to have breached his no contact condition and additionally provided a diluted urinalysis sample. In response to the offender's breach of conditions in this instance, an EM referral was processed as an alternative to a revocation. More specifically, given the capacity of EM to monitor if the offender is in or near the residence of the associated individual, decision documents pertaining to the offender's breach highlight EM as an intervention for further enforcing the no contact condition. Thus, the placement of Offender 3 on EM came as a post-suspension decision whereby it served as an additional strategy to monitor the offender's compliance with his PBC imposed conditions. The reference of EM in the offender's post-cancellation release documents sheds light on how EM may be used as an alternative strategy in circumstances where a breach has occurred.

While offenders may be placed on EM for one period during their release, some offenders, such as Offender 4 may have multiple terms of supervision with EM. A file review of Offender 4 demonstrated that EM was used during three of the offender's statutory releases.

These decisions stem from the need to monitor the offender's compliance with curfew conditions, which were deemed necessary for risk management in the community. During Offender 4's first release, the NMC received both a curfew alert and master tamper alert. After having worn the device for 57 days, the offender had cut off his EM device and subsequently remained unlawfully at large (UAL) until his arrest. Given Offender 4's behaviour in the community and the breach of his curfew conditions, his risk was deemed no longer manageable in the community. As such, a suspension warrant was executed and the offender's statutory release was revoked. During the offender's second statutory release following a period of incarceration, additional special conditions were imposed alongside the application of EM. However, similar to his first release, Offender 4's release was revoked after 28 days due to a breach of curfew conditions and tampering of the EM device. The two suspensions and revocations stemming from this file review reveal that although EM may enhance the supervision process, it is not an absolute supervision strategy. That is, although EM allows for the close monitoring of offenders, it does not intrinsically prevent offenders from breaching their conditions. Additionally, these revocations also demonstrate how EM may bring rise to suspensions that would otherwise not occur under traditional supervision. The review of the decision documents for Offender 4 reveal that the deliberate nature of the circumstances leading to the suspension, particularly the unauthorized removal of the EM device, substantiated the warrant executions and revocations. Given Offender 4's history of non-compliance with the conditions of his release combined with the accumulation of UALs, EM was successively utilized for the offender's third statutory release.

Viewed collectively, the case studies of the four offenders unravel the nuances of how EM may be used in different circumstances to manage risk and impact overall correctional outcomes. Thus, while EM is generally applied as a supervision tool, it may also be used as a suspension tool, an alternative to a revocation, or even a means to substantiate a breach.

Staff perceptions. As a part of the staff questionnaire, staff shared their perceptions regarding the extent to which they think EM contributes to improved correctional outcomes. Of the various staff with EM experience, the majority viewed EM as improving public safety. In particular, most CPOs viewed EM as improving public safety (77.7%). Similarly, the majority of PO Supervisors also agreed or strongly agreed that the availability of EM improves public safety (87.7%). NMC staff (84.0%) and other CSC staff (80.6%) expressed comparable responses.

Respondents also shared whether they regarded EM as being effective in assisting offenders to engage in their correctional plans. Of the CPOs with EM experience, 40.9% agreed that EM is effective in this regard while an additional 13.6% strongly agreed. This perception was common among the respondent groups, with 52.0% of NMC staff, 53.2% of PBC Board Members, 58.0% of POSs, and 67.7% of other staff agreeing or strongly agreeing that EM is effective in engaging offenders in their correctional. Importantly, across the various staff, the majority of respondents who did not agree with this statement indicated that they were undecided on how EM is effective in assisting offenders to engage in their correctional plans, rather than having disagreed.

Considering the offenders they have managed in the community, CPOs were asked to further share their perceptions in order to comprehensively capture their views around correctional outcomes associated with EM. Of the CPOs with EM experience, 83.1% agreed or strongly agreed that the availability of the technology allows for better management of an offender's risk in the community. In particular, when questioned on the impact EM has on the ability to detect breaches, three-quarters of the CPOs with EM experience (75.0%) viewed EM as increasing the ability to detect breaches to conditions, compared to 16.4% who indicated no change and 8.6% who were undecided. While CPOs perceive EM as enhancing the overall management of an offender's risk in the community and the ability to detect breaches, EM did not appear to change their confidence in their ability to prevent reoffending or detect when an offender's risk increased.

Offender perceptions. To further examine community supervision outcomes associated with EM, offenders were asked to self-report on how EM may have influenced their overall behaviour in the community. While throughout the responses the majority of offenders indicated that EM has no impact on their behaviour in the community, many alluded to the positive impacts associated with EM. With respect to the impact EM has on their ability to avoid committing a new offence, 64.5% of offenders reported that EM has no impact, while 20.4% of offenders reported that it increased their avoidance of committing a new offence. Similarly, 30.9% of offenders reported that EM increased their ability to accept responsibility for their actions while 30.1% indicated that EM increased their ability to show commitment to their relapse prevention. Considering their compliance with geographic and/or curfew conditions, 32.5% of offenders reported that EM increased their ability to abide to these conditions, while

58.4% who expressed no impact.

As indicated through the participants' responses, the behaviour that EM appears to have the most positive affect on is the offenders' correctional plan goals. Interestingly, close to half of the respondents indicated that EM increased their ability to show willingness to meet the goals of their correctional plan (44.9%). In contrast to this, the behaviour that EM appears to have interceded with the least is the respect for persons or property, and the attending of meetings with their parole officers. Of the responses, 73.2% of offenders reported that EM has no impact on their ability to show respect for persons or property while 79.6% of offenders indicated that EM has no impact on their ability to attend meetings with their parole officers. Notably however, throughout the responses to the various questions, few to no offenders indicated that EM decreased or otherwise negatively affected any of these behaviours.

Differences in Community Supervision Outcomes

To determine whether the imposition of EM leads to different results for certain offenders or under certain characteristics of release, the following section shifts to an examination of positive community supervision outcomes. These analyses were restricted to EM participants only and focused on success in the community as measured by an absence of suspensions or revocations during the study period.

Types of offenders. The characteristics of EM participants were examined to determine if there are certain offenders for which the imposition of EM leads to more positive community supervision outcomes.¹⁴ These analyses were also completed separately for suspensions and revocations as outcome variables and are available in Appendix A. Chi-square analyses were first performed to determine differences between EM participants with positive community supervision outcomes in comparison to EM participants with suspensions or revocations during the study period. Results demonstrated significant differences between groups on CRI scores, age at release¹⁵, RP level, index offence, Indigenous ancestry, dynamic factor ratings at release

¹⁴ Sub-analyses were performed that excluded offenders with a suspension prior to their EM start. Overall, results were consistent with patterns drawn from the analyses of the full EM sample.

¹⁵ Because CRI scores and age at release are both continuous variables, separate logistic regression analyses were performed to assess their independent effect on the outcome variable.

CRI: $b = -.04$, $SE = .01$, odds ratio = .96, Wald's $\chi^2(1) = 16.54$, $p < .001$, (95% CI [.94, .98]);

Age at release : $b = .03$, $SE = .01$, odds ratio = 1.03, Wald's $\chi^2(1) = 23.29$, $p < .001$, (95% CI [1.02, 1.04]);

and sentence length (see Table 9).¹⁶ These significant predictors were retained and included in a logistic regression to determine if they predicted success in the community.

Table 9

Comparisons of Positive Community Outcomes Based on Offender Characteristics among EM Participants

Characteristics	Percentage (n) of EM offenders		Cramer's V
	Success (n = 270)	Failure (n = 500)	
Reintegration Potential (at release)			.20
Low	29.6 (80)	46.6 (233)	
Moderate	66.3 (179)	53.0 (265)	
High	4.1 (11)	0.4 (2)	
Dynamic factor (at release)			.15
Low	2.6 (7)	1.2 (6)	
Moderate	37.8 (102)	24.8 (124)	
High	59.6 (161)	74.0 (370)	
Sentence length			.14
Less than 3 years	31.5 (85)	41.8 (209)	
3 years to less than 6	43.3 (117)	43.4 (217)	
More than 6 years ^a	25.2 (68)	14.8 (74)	
Indigenous status/ancestry			.11
Indigenous	10.7 (29)	19.4 (97)	
Non- Indigenous	89.3 (241)	80.6 (403)	
Index offence			.23
Homicide-related	5.9 (16)	3.4 (17)	
Sex-related	23.7 (64)	17.8 (89)	
Robbery	10.0 (27)	16.6 (83)	
Drug-related	24.4 (66)	13.8 (69)	
Assault	9.3 (25)	18.2 (91)	
Other violent	12.2 (33)	9.6 (48)	
Property	6.7 (18)	13.8 (69)	
Other non-violent	7.8 (21)	6.8 (34)	

^a Includes indeterminate sentences.

¹⁶ Other variables examined include: static factor rating (release), sex offender status, accountability, motivation, responsiveness, engagement, gender, and region of supervision.

Controlling for all other variables, only offender age and RP level at release emerged as significant predictors (see Table 10). In particular, the odds ratio indicates that the probability of success increased by 3.1% for each one-unit increase in age. In addition, offenders with a low RP at release were 90% less likely to be successful in the community compared to offenders with a high RP level. Offenders with a medium RP level were 87% less likely to be successful in the community compared to those with a high RP level. These results should be interpreted with caution as there were only 13 offenders in the high RP group. Taken together, these results suggest that there are characteristics of offenders which may lead to differential results while utilizing EM. In particular, the imposition of EM resulted in more positive community outcomes for offenders with high RP and with increased age.

Table 10

Effect of Age and Reintegration Potential on Positive Community Supervision Outcomes in EM Participants

Predictor	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald	<i>p</i>
Age	.03	.01	1.03	[1.02,1.05]	15.70	< .001
Reintegration Potential						
High	(ref)	(ref)	(ref)	(ref)	8.83	.01
Moderate	-2.04	.89	.13	[.02, .74]	5.33	.02
Low	-2.41	.90	.09	[.02, .53]	7.14	.01

Note. OR = odds ratio; CI = confidence interval. RP was measured at release.

Offender perceptions. To examine if there are certain offenders for which the imposition of EM leads to different results, offender questionnaire responses were compared based on their RP levels.¹⁷ Throughout the responses, offenders with low RP levels were more likely to indicate that EM increased their behaviour/compliance than did offenders with medium to high RP. In particular, 21.3% of offenders with a low RP level expressed that EM increased their ability to avoid committing a new offence than did offenders with medium to high RP (19.6%). Similarly, more offenders with an identified RP level of low indicated that EM increased their ability to show respect for persons or property (19.1%), than did those offenders with a medium to high

¹⁷ Other comparisons by gender and Indigenous ancestry were not possible due to small sample sizes.

RP (11.7%). Further to these responses, more offenders with low levels of RP indicated that EM increased their ability to both accept responsibility for their actions (33.7%) and commit to their relapse prevention (34.8%) than their counterparts (28.6%; 27.3%). Though not significant, these patterns of responses are suggestive of the role that EM may play in the reintegration process of offenders—particularly the viability of it as a supervision strategy for offenders with low RP. Imperatively, the overall offender responses partly speak to the relevance of EM in enhancing community supervision outcomes for offenders.

Characteristics of release. Supervision outcomes of EM participants were further examined to determine if there are certain characteristics or conditions of release for which the imposition of EM leads to more positive community supervision outcomes.¹⁸ These analyses were also completed separately for suspensions and revocations as outcome variables and are available in Appendix B. Chi-square analyses were first performed to determine differences between EM participants with positive community supervision outcomes in comparison to EM participants with suspensions or revocations during the study period. Results demonstrated significant differences between groups on conditional release type, supervision level, special conditions related to curfew and/or geographic restrictions, special conditions related to alcohol/drugs, and residency conditions (see Table 11).¹⁹ These significant predictors were retained and included in a logistic regression to determine if they predicted success in the community.

¹⁸ Sub-analyses were performed that excluded offenders with a suspension prior to their EM start. Overall, results were consistent with patterns drawn from the analyses of the full EM sample.

¹⁹ Other variables examined include: special conditions related to avoid people, attend treatment, and participate in programming.

Table 11

Comparisons of Positive Community Outcomes Based on Release Characteristics among EM Participants

Characteristic	Percentage (<i>n</i>) of EM participants		Cramer's <i>V</i>
	Success (<i>n</i> = 270)	Failure (<i>n</i> = 500)	
Conditional release type			.19
Day parole	7.8 (21)	3.0 (15)	
Full parole	2.6 (7)	2.8 (14)	
Statutory release	87.4 (236)	82.4 (412)	
LTSO	2.2 (6)	11.8 (59)	
Supervision level			.16
ISP/Level A residency	24.4 (66)	39.4 (197)	
Level A/Level B residency	55.2 (149)	45.6 (228)	
Level B/Level C residency	20.0 (54)	14.2 (71)	
Level C	0.4 (1)	0.8 (4)	
Special conditions			.13
Curfew	22.6 (61)	34.8 (174)	
Geographic restriction	45.2 (122)	35.2 (176)	
Both	32.2 (87)	30.0 (150)	
Other special conditions			.08
Alcohol/drugs	76.7 (207)	83.2 (416)	
No alcohol/drugs	23.3 (63)	16.8 (84)	
Residency condition			.09
Residency condition	23.3 (63)	31.4 (157)	
No residency	76.7 (207)	68.6 (343)	

Note. LTSO = long term supervision order. Supervision level refers to the required number of face-to-face contacts an offender must have with their CPO, with ISP/Level A residency representing the most intensive level of supervision. This varies depending on the assessment of an offender's level of intervention on both static and dynamic factors, as well as if the offender has a residency condition. The levels associated with frequency of contact are outlined in Commissioner's Directive 715-1.

Controlling for all other variables, conditional release types, special conditions related to curfew and/or geographic restrictions, and special conditions related to alcohol/drugs emerged as significant predictors (see Table 12). In particular, LTSO offenders were 90% less likely to be successful in the community compared to offenders released on day parole. However, offenders released on full parole or statutory release did not demonstrate significant differences in positive

community outcomes compared to those released on day parole. These results should be interpreted with caution, as there were small sample sizes in the day parole, full parole and LTSO conditional release type categories. Offenders with a geographic restriction were 139% more likely to be successful in the community compared to those with a curfew only condition. In addition, offenders with both a geographic and curfew condition were 72% more likely to be successful in the community compared to those with a curfew only condition. Lastly, offenders with a special condition related to alcohol and drugs were 34% less likely to be successful in the community compared to those that did not have this condition. Overall, these results indicate that there are characteristics and conditions of release that may lead to differential results while utilizing EM. In particular, the imposition of EM resulted in more positive community outcomes for those offenders on day parole, with geographic restrictors (including in combination with curfew conditions), and without alcohol/drug related conditions.

Table 12

Effect of Characteristics and Conditions of Release on Positive Supervision Outcomes in EM Participants

Predictor	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald	<i>p</i>
Special conditions						
Curfew	(ref)	(ref)	(ref)	(ref)	16.85	< .001
Geographic restriction	.87	.21	2.39	[1.57, 3.64]	16.56	< .001
Both	.54	.21	1.72	[1.15, 2.57]	7.00	< .001
Other special conditions						
Alcohol/drugs	-.42	.21	.66	[.44, .98]	4.26	.04
Supervision type						
Day parole	(ref)	(ref)	(ref)	(ref)	17.92	< .001
Full parole ^{n.s.}	-.91	.59	.40	[.13, .1.29]	2.34	.13
Statutory release ^{n.s.}	-.51	.37	.60	[.29, 1.23]	1.95	.16
LTSO	-2.34	.59	.10	[.03, .31]	15.58	< .001

Note. OR = odds ratio; CI = confidence interval; LTSO = long term supervision order.

Impact of EM on Conditional Release Decision Making

Beyond the impact of EM on community supervision outcomes, it is of value to examine whether the availability of this supervision tool influences conditional release decision making. In particular, does the addition of EM influence decisions regarding conditional release being granted, or when release is granted? This line of research examines decision making as measured by the proportion of time served before conditional release is granted, as well as the conditions that are imposed upon release. Staff perceptions regarding conditional release decision making are also presented.

PBC decision making. The first set of analyses focused on differences in the timing of conditional release between the EM participants and non-EM offenders for the 972 eligible offenders retained for these analyses (i.e., on first release of their sentence, serving a determinate sentence, and not under a LTSO). Results comparing the proportion of time served between the EM participant and non-EM offenders indicated that the majority of offenders in both groups (~93%) served between one- and two-thirds of their sentence prior to their first release date (see Table 13). On average, EM participants served slightly longer than non-EM offenders, serving 66.4% compared to 62.4% of their sentence.

Of the 972 non-LTSO offenders examined on their first release serving determinate sentences, 86% ($n = 841$) were released on statutory release, 11% ($n = 109$) on day parole and 2% ($n = 22$) on full parole. Comparisons of the difference between their release date and their eligibility dates demonstrated that 87.3% of EM participants and 79.8% of non-EM offenders were released by their eligibility date for each release type (Cramer's $V = -0.10$, $p < 0.01$.)

Of the 1,258 referrals to EM during the study period, 53% were made while the offender was still in federal custody while the remaining 47% were made during release. CPOs and PBC Board Members were questioned regarding whether EM, as one part of the overall community strategy, influences PBC decisions. Half of the CPOs with EM experience (50.0%) agreed or strongly agreed that the availability of EM allows some offenders to be recommended for conditional release when they would not have been otherwise recommended. In comparison, 20.4% were undecided while only 29.6% disagreed and strongly disagreed. This is consistent with the finding that more EM participants are being released by their eligibility dates, compared to non-EM offenders. While many CPOs feel that the availability of EM has influenced these recommendations, it does not appear to result in offenders being recommended for conditional

release earlier in their sentence. Only 24.7% agreed that EM allows offenders to be recommended for conditional release earlier in their sentence, while 43.3% disagreed and 32.0% were undecided. The perceptions of the CPOs regarding this are in line with that of the PBC Board Members whereby 58.1% indicated that the availability of EM did not influence their decision to grant an offender release. This is consistent with the findings of EM participants and the control group serving similar proportions of their sentence prior to release.

Table 13

Comparison of Proportion of Sentence Served Between Groups

Proportion Served Variables	Percentage (<i>n</i>) of offenders	
	EM participants (<i>n</i> = 527)	Control group (<i>n</i> = 445)
Proportion of sentence served		
One-third or less served	1.0 (5)	4.5 (20)
Between one-third and two-thirds served	92.8 (489)	92.6 (412)
Over two-thirds served ^a	6.3 (33)	2.9 (13)
Average proportion of sentence served <i>M</i> (<i>SD</i>) ^b	66.4 (9.1)	62.4 (11.2)
Median proportion of sentence served (range)	67.0 (27-100)	66.0 (14-100)

Note. Offenders who were released on LTSOs (i.e., served 100% of their sentence), offenders on their second or subsequent sentence, and offenders serving indeterminate sentences were excluded from this analysis (36.9%, *n* = 568).

^a Cramer's *V* = .13, *p* < .001.

^b *F* (1, 972) = 37.57, *p* < .001.

Conditions of release. EM participants and non-EM offenders were compared to determine whether EM, as one part of the overall community strategy, impacts the special conditions imposed by the PBC. Considering the overall number of special conditions imposed²⁰, EM participants had significantly fewer special conditions than the control group, *F*(1,1538) = 63.45, *p* < .001. While the average number of special conditions for EM participants was 5.5 (*SD* = 1.98) with a range of 0 to 12, offenders in the control group had an average of 6.5 imposed

²⁰ Excluding conditions related to curfew, geographic restrictions, and residency as these conditions were utilized as matching variables.

special conditions ($SD = 2.88$), ranging from 1 to 19.

To capture specific differences between EM participants and the control group, further analyses were conducted comparing the groups on the types of imposed special conditions. Table 14 presents a comparison of the types of special conditions between offenders in the EM group and those in the control group. Considering alcohol and drug related special conditions, a significantly greater proportion of offenders in the control group had these conditions than EM participants, $\chi^2(1, N = 1540) = 20.94, p < .001$. Additionally, significantly more offenders in the control group also had special conditions related to following treatment and/or programming than EM participants, $\chi^2(1, N = 1540) = 6.50, p = .01$. However, there were no significant differences between the two groups in special conditions pertaining to avoiding certain/specific persons, $\chi^2(1, N = 1540) = .36, p = .549$. No significant differences emerged in other special conditions imposed, $\chi^2(1, N = 1540) = 2.30, p = .13$. Other imposed special conditions are those that the PBC deems reasonable or otherwise necessary for managing an offender’s risk in the community. For example, other special conditions may relate to employment, such as financial disclosure, or alternatively relate to the offenders’ emotional dynamic needs, such as gambling restrictions.

Table 14

Comparison of Special Conditions Imposed Between the Groups

Condition	Percentage (<i>n</i>) of offenders		Cramer’s <i>V</i>
	EM participants	Control group	
Alcohol/drug related	80.9 (623)	89.2 (687)	.12
Follow treatment or programming	47.7 (367)	54.2 (417)	.07
Avoid certain/specific persons	97.3 (749)	96.8 (745)	n.s.
Other	86.8 (668)	84.0 (647)	n.s.

Note. Other special conditions include a range of conditions to manage an offender’s risk in the community (e.g., financial disclosure, gambling restrictions, computer/internet restrictions).

Overall, the patterns of conditions between the two groups suggest that EM, as one part of the overall community strategy, may impact the number of special conditions imposed as well as the types of conditions imposed. In particular, EM had an impact on the imposition of special conditions related to alcohol/drug restrictions as well as those that relate to following

treatment/programming. However, the analyses are not suggestive of EM influencing the imposition or recommendation of special conditions pertaining to avoiding persons and other special conditions.

Residency is another area in which EM, as one part of the community strategy, may have an influence. The mean duration of residency was slightly lower for the EM participants ($M = 292.4$, $SD = 251.6$), when compared to the control group ($M = 306.7$, $SD = 252.8$),²¹ however this difference did not reach significance ($F(1,440) = .35$, $p > .05$). This demonstrates that the use of EM does not affect the length of residency periods.

Additional sub-analyses were completed to determine if there were differences between the EM participants and non-EM offenders with respect to LTSO, Indigenous ancestry, CRI level, and final overall release outcome. The only differences identified in residency duration between the two groups was for those offenders who had one suspension that was subsequently cancelled and those that had multiple suspensions but no revocations. EM participants ($M = 262.4$, $SD = 263.2$) with one cancelled suspension had, on average, shorter periods of residency than those in the control group ($M = 440.9$, $SD = 344.4$; $F(1,49) = 4.18$, $p = .047$). For those with multiple suspensions that did not result in a revocation of their release, the same pattern was evident, EM participants ($M = 316.1$, $SD = 294.4$) had shorter residency periods, on average, than the control group ($M = 513.2$, $SD = 317.8$; $F(1,76) = 6.69$, $p = .012$).

Staff perceptions. Questionnaires also examined staff perceptions regarding the influence of EM on the special conditions being recommended or imposed for offenders. While 41.4% of CPOs agreed that EM changes the types of special conditions they may recommend for an offender at release, close to half were undecided (46.5%) while only 12.1% disagreed. In particular, of those who indicated a change to the recommendations of special conditions, the CPOs repeatedly stated that they were more likely to recommend geographic and curfew conditions. Several CPOs emphasized that prior to the EM research pilot, rather than recommending these conditions, they would have instead been incorporated as a part of an offender's supervision strategy or correctional plan. Interestingly, CPOs and PBC Board Members held slightly differing views regarding the influence of EM on the special conditions

²¹ The calculation for residency duration differed from the initial EM report (Hanby, Nelson, & Farrell MacDonald, 2018), as the end of the study period had to be considered to ensure that the number of days in residency imposed by the PBC did not skew the results inappropriately.

being recommended and/or imposed for offenders. Unlike CPOs, the majority of PBC Board Members (74.2%) stated that the availability of EM did not change the number of special conditions they may impose on an offender at release. Additionally, only a portion (29.0%) of PBC Board Members perceived EM as influencing their decision to impose a geographic condition. The data does suggest otherwise; that EM participants are receiving significantly fewer conditions overall, and different types of other special conditions.

In terms of residency, 80.0% of CPOs and 85.6% of PO Supervisorss agreed or strongly agreed that EM allows for an alternative means of supervising offenders who would otherwise require a residency condition. However, staff responses also suggest that EM does not appear to influence the imposition or recommendation of residency conditions. In particular, 69.3% of CPOs reported that EM had no impact on the number of times they recommended modifications to an offender's residency period. Similarly, 71.0% of PBC Board Members indicated that EM has not influenced their decision to impose a residency condition.

Impact of EM on Offenders' Behaviour in the Community

Beyond correctional outcomes, it was of interest to determine whether EM influences offenders' behaviour in the community. This analysis examines whether EM affects offenders' ability to attain or maintain employment and housing, as well as their relationships with family and others.

Employment. Based on their experience of working with offenders under EM supervision, CPOs provided their input around the impact that EM may have on the employment of offenders. Concerning the ability of offenders to find employment, 72.4% of CPOs indicated that EM has no impact. Similarly, when asked about the ability of offenders to maintain employment, 77.6% of CPOs reported that EM has no impact on this. The majority of CPOs (78.3%) also perceived EM as having no impact on the quality of work offenders are able to obtain. Overall, the responses appear to indicate that CPOs perceive EM to neither positively or negatively affect the employment circumstances of offenders.

While staff overall appear to perceive EM as having no impact on the circumstances surrounding employment, the experiences of offenders are slightly different. As a part of the offender questionnaire, offenders were able to share their experiences around employment in relation to being on supervision with EM. While many offenders indicated that EM had no

impact on their ability to find a job (45.0%), their ability to keep a job (48.9%) and the quality of job they are able to obtain (44.6%), a notable portion of respondents reported negative impacts. In particular, 30.0% of offenders indicated that EM had a negative impact on their ability to find a job, while 22.4% of offenders indicated that EM has a negative impact on their ability to keep a job. Comparably, with regards to the quality of job they can obtain, 31.0% of offenders reported EM as having a negative impact. In this regard, the offenders' written responses help contextualize some of these adverse experiences. Many of the offenders described the difficulty they encounter from having to wear an EM device for their work location or alongside their mandatory work gear. Notably, offenders often indicated that they are unable to carry out their job due to the lack of coverage in certain work locations while others expressed that the EM device interferes with safety boots that they are required to wear. These experiences are reflective of the offenders rated responses whereby 50.8% indicated that they agree or strongly agree that EM physically interferes with their job tasks, compared to 25.2% who disagreed or strongly disagreed with this. Additionally, several offenders expressed that employers often viewed them unfavourably because of their EM device, which in turn also negatively impacted their employment experience.

In order to consider whether the type of special condition may have had an effect in shaping employment experiences alongside EM, questionnaire responses were further examined based on the type of special conditions imposed on offenders. Interestingly, slightly more offenders with curfew conditions reported that EM negatively impacted their ability to find a job (33.8%) and keep a job (23.9%) than did offenders with only geographic conditions (26.9%; 20.2%). Though not statistically significant, this pattern may reveal how the employment challenges experienced by offenders while on EM may partly be attributed to the curfew restrictions that often come alongside this method of supervision.

To obtain an objective measure of the impact of EM on employment, EM participants were first compared to non-EM offenders on employment criminogenic needs at release to determine whether there were any pre-existing differences between groups that may account for differences in community employment. Utilizing the *Dynamic Factor Identification Assessment – Revised (DFIA-R)*, there were significantly more non-EM offenders ($n = 466$) with either a moderate or high employment need for improvement, as compared to the EM participants ($n = 422$; $\chi^2(1, N = 1540) = 5.15$ $p = .023$, Cramer's $V = 0.06$). This suggests that more EM

participants demonstrated no or low needs in the employment domain or that this domain was considered an asset, as opposed to a criminogenic need.

Table 15

Comparison of Community Employment between Groups

Community employment indicator	Percentage (<i>n</i>) of offenders	
	EM participants (<i>n</i> = 770)	Control group (<i>n</i> = 770)
Offender is employed	60.0 (462)	51.9 (400)
Full-time employment ^a	54.4 (419)	44.5 (343)
Part-time employment ^{n.s.}	18.2 (140)	16.6 (128)
Average number of days employed <i>M (SD)</i> ^b	260.2 (329.3)	204.0 (206.4)
Average number of days employed full-time <i>M (SD)</i> ^c	201.2 (281.4)	161.5 (185.6)
Average number of days employed part-time <i>M (SD)</i> ^{n.s.}	59.0 (153.1)	42.5 (117.6)

^a Cramer's *V* = .10, *p* < .001.

^b *F* (1,860) = 8.70, *p* = .003

^c *F* (1, 860) = 5.76, *p* = .017.

n.s. = Not significant.

Comparisons on community employment demonstrated that a greater proportion of EM participants were employed ($\chi^2(1, N = 1540) = 10.13, p = .001$, Cramer's *V* = 0.08), and in particular in full-time work (see Table 15). A logistic regression was performed in order to determine if EM participation relates to community employment. Given the differences between EM participants and non-EM offenders in employment needs, the DFIA-R employment domain at release was entered as a control variable. Table 16 summarizes the combined effect of EM participation and employment needs at release on community employment. Both EM Participation and Employment Needs at release significantly influenced community employment. Controlling for EM participation, the odds ratio indicates that offenders with no or low employment needs are 44% more likely to be employed in the community. Controlling for employment needs at release, the odds ratio indicates that EM participants are 36% more likely to be employed in the community. Controlling for EM participation, those with a moderate or

high employment need are 31% less likely to be employed.

Table 16

Effect of Employment Needs and EM Participation on Community Employment

Predictor	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald	<i>p</i>
Employment needs	-.37	.11	.69	[.57, .8]	12.04	.001*
EM participation	.31	.10	1.36	[1.11, 1.67]	8.92	.003*

Note. CI = confidence interval; OR = odds ratio. Employment needs was measured by the DFIA-R at release.

EM participants had significantly longer periods of employments as compared to their control group counterparts (see Table 15). A one-factor between-subjects ANCOVA was performed to examine whether EM participants and non-EM offenders differed in their length of community employment, while controlling for employment needs at release. The covariate, employment needs at release, was significantly related to length of employment; $F(1, 859) = 32.04, p < .001$. There was also a significant effect of EM participation on length of employment, after controlling for employment needs at release; $F(2, 859) = 20.52, p < .001$. However, study group only accounted for 4.6% of the variance in employment length, partial $n^2 = .05$. These results suggest that longer employment periods are associated with EM participation, but there are other factors contributing to the number of days employed in the community.

Thus, though EM participants may personally perceive difficulty with employment, analyses suggest that EM is in fact associated with greater likelihood of employment as well as longer employment periods. In turn, regardless of employment criminogenic needs at release, EM appears to affect offenders' ability to both attain and maintain employment in the community

Housing. As a part of the staff questionnaire, CPOs provided their input regarding the impact EM may have on the housing circumstances of offenders. The responses from the questionnaire revealed that based on their experience of working with EM, the majority of CPOs perceived the technology as having no impact on housing. In particular, 80.8% of CPOs reported that EM has no impact on the ability of offenders to find housing or the ability of the offenders' to maintain stable housing. Most CPOs (80.3%) viewed the quality of housing offenders are able to obtain as not impacted by whether or not an offender is on EM supervision.

Similar to the perceptions of the staff, the majority of responses obtained from the offender questionnaire revealed that EM supervision does not negatively impact the offenders' housing experiences or circumstances. Only 10.7% of offenders indicated that EM negatively impacted their ability to find housing, while only 4.9% indicated that EM negatively affected their ability to keep housing. Responses with regards to the impact EM has on the quality of housing that offenders are able to obtain are similar, with only 7.1% expressing a negative impact. Though a very small portion of offenders reported overall negative impacts associated between EM and housing, more offenders from the Ontario (14.9%) and Pacific (15.8%) regions expressed these adverse experiences than did offenders from the Atlantic (0%), Prairies (0%), or Quebec (5.7%) regions. This may be attributed to reasons related to service coverage. Though not significant, when overall responses are compared based on special conditions, more offenders without a geographic condition reported that EM has no impact on their ability to find housing (59.4%) than did offenders with an imposed geographic restriction (42.4%).

Family and other relationships. Considering the familial relationships of offenders, the majority of CPOs with EM experience reported that EM has no impact on the offenders' relationships with their spouse or partner (63.8%). Concerning the offenders' relationship with their children, 64.9% of CPOs indicated that EM has no impact. For both the relationship of offenders' with their spouse and children, only 8.6% of the CPOs perceived EM as having a negative impact.

To further capture how EM may impact the offenders' familial and social relationships, EM participants were asked to report on this in the offender questionnaire. In this regard, the experiences the offenders shared were reflective of the staff perceptions. Of the offenders with a spouse ($n = 180$), 52.2% reported that EM has no impact on their relationship, while 38.9% expressed EM as having a negative impact. In line with this distribution of responses, offenders reported similar views and experiences around the impact of EM on their relationship with their children. While most of the offenders who are parents ($n = 155$) indicated that EM has no impact on their relationship with their children (58.1%), a portion of these offenders reported negative impacts in this regard (31.6%). Shedding further light to these experiences is the written responses of the offenders. Notably, offenders expressed how EM often impeded on their ability to engage in certain activities with their children given the discomfort and restrictions associated with the device.

Extending beyond their relationship with their spouse and children, offenders were also asked about the impact EM may have on their relationship with other family members and friends. Only 25.2% of respondents indicated a negative impact on their relationship with their other family members while 27.3% indicated this negative effect on their relationship with friends. It can be assumed that fewer offenders indicated negative impacts associated with EM on these relationships given that they are generally less direct and proximal to the offender.

Experiences of EM

One of the unique aspects of this research pilot is that both correctional staff and offenders were questioned about their experiences with EM. While some of these findings have been intertwined within the relevant sections, the following sections provide further details of staff experiences with respect to EM as a supervision tool and offenders experiences with being monitored using EM.

Correctional staff. The questionnaire provided an opportunity for CSC staff to share their perceptions regarding the effectiveness and efficiency of EM. Almost all of the staff with EM experience viewed EM as being an effective tool for monitoring geographic conditions. In particular, 94.8% of CPOs and 93.4% of PO Supervisors reported that they agree or strongly agree that EM is an effective tool for monitoring geographic conditions. Similarly, 80.0% of NMC staff agreed or strongly agreed to this while 90.4% of other CSC staff agreed or strongly agreed. Parallel to these responses, when asked to comment on the benefits associated with EM, the most prominent emerging theme across the various staff pertained to the use of EM as an additional tool for monitoring special conditions. When questioned on the efficiency of EM for monitoring geographic conditions, staff reported further favourable responses. More specifically, 89.6% of CPOs, 91.9% of PO Supervisors and 80.0% of other CSC staff agreed or strongly agreed that EM is an efficient tool for monitoring geographic conditions. Interestingly, while almost all of the various CSC staff perceived EM as being efficient for monitoring geographic conditions, of the NMC staff, only 64.0% indicated that they agree or strongly agree that EM is efficient in this regard. This finding may speak to the role of NMC staff in processing and responding to all alerts generated by EM, while parole staff only act on those alerts that require follow-up or serve as potential breaches of conditions.

While the majority of staff perceived EM as being both an effective and efficient tool for

monitoring geographic conditions, staff also provided general recommendations for approaches or practices that may help increase the effectiveness and efficiency of EM. Concerning the effectiveness of EM, the most prominent theme emerging from the staff recommendations related to the broadening of the EM referral criteria so that it is less specific. In this regard, many staff suggested that EM would be more effective if it were to expand beyond only those offenders with geographic and curfew conditions, and instead serve as a supervision strategy for any offender who is deemed high risk. A further theme that emerged from the staff responses for increasing the effectiveness of EM was that EM specialists and supervising CPOs should be able to access the movement of offenders on EM independently from the NMC. In their responses, CPOs often mentioned that they do not have easy access to information related to the map and movement of offenders and that having fixed access can help enhance the overall effectiveness of EM supervision. To increase the efficacy of EM, the most commonly reported recommendation by staff related to technical improvement to the EM technology. Numerous staff suggested that improvements related to GPS drift and battery life can help enhance the effectiveness of EM. Further to this, another common theme that emerged from the staff responses is the need for ongoing staff refresher training pertaining to EM. More specifically, CPOs often indicated that such training could help increase efficiency while enhancing understandings of both the procedures associated with EM as well as the overall capabilities of the device.

Offenders. Encompassed within the offender questionnaire, EM participants were given the opportunity to share their experience of being under this supervision strategy. The majority of constructive or critical feedback from offenders related to the technical aspects of the EM device, rather than the supervision process itself. A major theme that emerged from the responses of the offenders related to the size of the device. Specifically, many respondents referred to the physical pain and discomfort they experienced of having the device fixated to their ankle. These responses appear to be a shared experience amongst the EM participants as 81.4% of offenders either agreed or strongly agreed that the EM device was physically uncomfortable. This aligns with the perceptions of the offenders regarding the interference of EM with daily tasks. Over half of the offenders indicated that they agree or strongly agree that the EM device physically gets in the way of their regular day-to-day tasks (62.2%). In response to this, offenders repeatedly recommended the use of smaller or more comfortable devices. Issues related to the charging of

the EM device emerged as a further concern expressed by the offenders. Several offenders conveyed their frustration with the length of time it took to fully charge the EM device, the charging cord being too short, as well as the unsustainability of the battery life.

Extending beyond technical aspects, the accuracy of the device was another prominent issue that was emphasized in the offenders' responses. Offenders reported occurrences of what they believed were false alerts (as a result of the EM device beeping or vibrating despite them not being in a restricted area or time). Additionally, a number of respondents alluded to the psychological impacts associated with EM. Given the size and visibility of the device, many offenders associated feelings of judgement, embarrassment, and stress with being under supervision with EM. However, despite some of the difficulties offenders expressed in relation to EM, a number of offenders identified positive aspects and experiences with this method of supervision. A theme that emerged from the responses of these offenders was that EM provides an opportunity for them to demonstrate that they may be trusted in the community and potentially be protected from false accusations regarding their behaviour. From this perspective, some respondents reported that EM helped with their reintegration into the community while also serving as a reminder to stay on track.

Discussion

The focus of this report was on examining the impact of EM on offender supervision and correctional outcomes. Following a three-year national research pilot of EM, the primary objective of this study was to determine whether EM contributes to improved community supervision outcomes, and if so, in what ways. These post-release outcomes included suspensions of release and returns to custody. Overall, compared to non-EM offenders, EM participants had equal revocations with or without an offence and, once controlling for other factors (e.g., security level at release, Criminal Risk Index level), had a lower risk of return to custody. EM participants spent a longer period of time in the community prior to their first suspension or revocation. However, EM participants were more likely to have a suspension, although they were more likely to have those suspensions cancelled, expired, or withdrawn.

Additional analyses found that overall, the use of EM did not increase offenders' compliance with other imposed special conditions. Given the nuances surrounding how EM is being utilized and how to define effectiveness, case studies were conducted and helped reveal certain circumstances under which the tool added value in the monitoring and management of offenders' risk in the community. For instance, one case study demonstrated how EM was used to supplement the monitoring of an offender in the community and their compliance to their conditions—beyond that of the geographic and curfew conditions being monitored by EM.

The complexities of EM and its impact on correctional outcomes is clearly multi-layered. While stringent referral criteria were established for offenders to be considered for EM, it was of interest to determine whether more positive results would be observed in certain offenders or characteristics/conditions of release. In fact, the imposition of EM resulted in more positive community outcomes for offenders with high RP and with increased age. Conditional release type and special condition types also predicted success in the community during the study period. Of note, EM participants with geographic conditions or with both a geographic and curfew condition were more likely to be successful than those with a curfew condition only.

One of the objectives of this study was to determine whether EM, as one part of the overall community strategy, influences decision making regarding conditional release. Although approximately half of referrals to EM occurred while the offender was still incarcerated, the availability of EM did not result in the PBC granting conditional release earlier in the offender's

sentence. In fact, EM participants served a slightly longer proportion of their sentence compared to the control group. However, significantly more EM participants were released by their eligibility date, which may suggest that the availability of EM allows some offenders to be recommended for conditional release when they would not have been otherwise recommended. EM participants also received significantly fewer conditions than non-EM offenders, and there were differences in the types of other special conditions (beyond geographic, curfew, and residency) imposed. EM participants were less likely to receive alcohol/drug-related conditions as well as conditions related to following a treatment plan or participating in programming. This is inconsistent with the view offered by the majority of PBC Board Members that EM has not influenced their decision making in regards to the number of type of special conditions being imposed. In terms of residency conditions, overall EM does not appear to impact on the duration of residency periods. However, in certain circumstances, EM participants had shorter residency durations than the non-EM offenders.

Beyond the traditional correctional outcomes examined (i.e., failure on conditional release), this study examined how EM influences offenders' behaviour in the community. For the most part, results regarding offender employment, housing, and relationships were based on staff and offender perspectives. Staff and offenders mostly agreed that EM did not affect the availability of housing or on family and other relationships. A disconnect was apparent, in that staff typically viewed EM as having no impact on the ability to attain or maintain employment while offenders reported more negative impacts in these areas. Interestingly, the data available on community employment portrays a different outcome – that EM participants are more likely to be employed and for longer periods than their non-EM offender counterparts.

The final area of focus of this study involved exploring the experiences of correctional staff with respect to EM as a supervision tool, as well as the experiences of offenders who were monitored using EM. Almost all of the staff with EM experience viewed EM as being an effective and efficient tool for monitoring geographic and curfew conditions. The majority of EM participants reported physical discomfort with the EM device, and over half of the sample believed that it interfered with their daily life (e.g., working, exercising, sleeping). Feedback from offenders to improve the EM experience included smaller devices and improved battery/charging capabilities. Some offenders did report positive experiences on EM and appreciated the opportunity to demonstrate compliance with their conditions.

Conclusions

Within the context of the Canadian federal correctional system, this report examined the impacts of EM on community supervision practices, correctional outcomes, and by extension, public safety. Taken together, the findings of the study suggest that the use of EM may contribute to reducing recidivism. Adjusting for time at risk and other relevant covariates, the control group was 67% more likely to return to custody than the EM participants. The results of this study also suggest that EM has made an impact on community supervision practices. For instance, EM participants are more likely to be suspended to prevent a breach or to protect society, while non-EM offenders are suspended more often due to breach conditions. From a public safety perspective, this may indicate that EM enhances safety as it provides additional information that results in an offender's release being suspended prior to an actual breach occurring.

CSC's contribution to public safety is paramount, but there are limits to measuring the effectiveness of EM solely on reductions in recidivism. While some might expect lower rates of suspensions and revocations under the assumption that EM performs a deterrent effect, it is also possible that the additional monitoring results in breaches or otherwise higher risk behaviour being detected. Previous research has revealed that the imposition of special conditions on federal offenders has increased over time, and some of the conditions that have increased the most are historically difficult to monitor (e.g., avoid certain people, avoid certain places; Ritchie, Saddleback, & Gobeil, 2014). During the same period, the pattern of suspensions and revocations decreased slightly. It is possible that the availability of EM has provided a tool to more accurately monitor these conditions, which in turn, results in a higher rate of suspensions amongst EM participants.

It has been argued that the effectiveness of EM needs to be measured not only in terms of recidivism. For instance, the use of EM as one part of the community strategy may contribute to the cognitive transformations that occur in the desistance process (DeMichele, 2014). Given that many EM programs may have multiple objectives, an EM program should not necessarily be discontinued solely on the basis of it not having a desirable effect on recidivism (Avdija & Lee, 2014). DeMichele (2014) posits that EM is only a tool that is dependent on humans and the supporting infrastructure, and as such, it is illogical to ask the question "does electronic monitoring work?" That is not to say that EM cannot improve supervision, but that it is a tactic

that provides additional information about where offenders were at certain times and whether they were home when they were supposed to be.

Distinguishing between EM as a correctional technology rather than an EM program (Pattavina, 2009) allows for the consideration of EM as a complementary tool to existing community supervision practices. The findings of this study suggest that there are added benefits of EM over traditional supervision in effectively supervising offenders who are conditionally released. Consistent with some of the research that has utilized employment as an outcome measure (e.g., Anderson & Anderson, 2014; Gibbs & King, 2003), EM demonstrated positive impacts on community employment. In some cases, the use of EM was associated with shorter residency periods. The qualitative findings highlight instances where EM was used as an alternative to suspension, when appropriate for particular cases. These impacts collectively highlight the value that may be derived from EM beyond that of recidivism.

Feedback received from the majority of staff indicates that EM is viewed as a valuable supervision tool that facilitates the safe reintegration of eligible offenders into the community. Both Parole Officers and offenders monitored using this technology agreed that EM provides the opportunity to enhance offender accountability and demonstrate compliance with conditions. Given that the technology generates alerts regarding potential breaches of conditions, interaction between Parole Officers and offenders is promoted, particularly in periods where public safety may be a concern. Additional contacts with the National Monitoring Centre may also influence offender behaviour as it is a different practice than traditional supervision. These increased contacts and Parole Officer engagement may contribute to a gradual, structured and monitored release.

Results related to offender experiences are consistent with other research that has questioned offenders about their perceptions of EM (e.g., Bales et al., 2010). It would be beneficial to assess ways that can reduce the unintended consequences of EM on offenders in terms of the physical discomfort of the device, as well as the perceived impact on relationships, employment and housing. It is important to recognize the subjectivity apparent in obtaining personal perceptions regarding an experience, and the importance of multi-method research designs in an effort to triangulate an accurate portrayal. Offender employment was an area with a lack of concordance between staff perceptions, offender perceptions and administrative data.

To determine the most effective use of EM with respect to conditional release, further

lines of inquiry examined the different circumstances and conditions under which EM is most effective. While many of these results are not surprising because they are also predictors of successful community reintegration, one interesting finding emerged. Given that the imposition of EM resulted in outcomes that are more positive for those with geographic conditions (compared to curfew conditions), the effectiveness of EM may be enhanced by reserving it for offenders with a geographic condition that would benefit from EM monitoring. These findings are consistent with the research by Bales and colleagues (2010) that demonstrated that GPS technology (i.e., to monitor geographic conditions) was more effective at controlling offender behaviour than RF (i.e., to monitor curfew conditions).

Although the three-year pilot is extensive from a research perspective, the use of EM is still somewhat in its infancy in federal corrections, and may not have yet resulted in a complete shift in perceptions or practice. The use of EM is also not widespread – at any given time there are more than 8,000 offenders on community supervision (Public Safety Canada, 2017), but only approximately 100 being monitored using EM (Hanby et al., 2018). A national implementation and a more extensive population monitored using EM may produce alternative outcomes. The EM experience, both from the perspective of offenders and staff, may change with more integration of EM (Graham & McIvor, 2017).

Over the course of the pilot, improvements were made in user training, response protocols and technical support. If a decision is made to implement EM nationally, further education and information sharing on what EM is and is not capable of doing may be beneficial. When providing suggestions on how EM could be improved, some staff made suggestions beyond the capability of the technology. For instance, one recurring suggestion was to use EM to monitor conditions related to avoiding certain persons (e.g., victims), but this is not possible with the technology. Information sharing of the operational benefits and evidence-based advantages of EM may also encourage a greater uptake of EM.

The strength of this research is that it is prospective in nature and involves multiple methods of data collection. However, it is not without its limitations. The matched control group was created to provide a comparison to similar offenders in the community that were not monitored using EM. Although a strict matching method was utilized for the vast majority of the sample, a more generous matching process was used in order to reach a 100% matching rate. In addition, the sample of EM participants contained a small percentage of Indigenous offenders

and women offenders, thus preventing any disaggregation of results by gender or Indigenous ancestry. Lastly, the use of EM as a discretionary tool by POs is reflected in the quasi-experimental design of the study. It was not possible to control for PO characteristics, which may have influenced their decision to utilize EM for eligible offenders.

This report represents the second study in a set of three examining EM's possible effects on offenders, staff, and stakeholders, as well as on community supervision practices and public safety. The final study will examine the cost-effectiveness of electronic monitoring in the correctional setting. The results of these studies should ultimately inform the national implementation of an EM program as well as the parameters of such a program (e.g., eligibility, selection criteria).

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Appendix A: Impact of Offender Characteristics on Suspensions and Revocations for EM Participants

The characteristics of EM participants were examined to determine if there were differences between EM participants that were suspended and not suspended. Results from the chi-square analyses demonstrated significant differences on CRI scores, age at release²², RP level, index offence, Indigenous ancestry, dynamic factor ratings at release, sentence length, motivation level at release, and sex offender status.²³

Table A1

Comparisons of Suspensions Based on Offender Characteristics among EM Participants

Characteristics	Percentage (n) of EM offenders		Cramer's V
	No suspension (n = 270)	Suspension (n = 328)	
Reintegration level (at release)			.24
Low	29.6 (80)	50.3 (165)	
Moderate	66.3 (179)	49.4 (162)	
High	4.1 (11)	0.3 (1)	
Dynamic factor (at release)			.17
Low	2.6 (7)	1.5 (5)	
Moderate	37.8 (102)	23.2 (76)	
High	59.6 (161)	75.3 (247)	
Motivation level (at release)			.12
Low	26.7 (72)	27.1 (89)	
Moderate	56.7 (153)	63.7 (209)	
High	16.7 (45)	9.1 (30)	
Sentence Length			.14
Less than 3 years	31.5 (85)	39.6 (130)	
3 years to less than 6	43.3 (117)	46.6 (153)	
More than 6 years ^a	25.2 (68)	13.7 (45)	
Indigenous status/ancestry			.11
Indigenous	10.7 (29)	18.9 (62)	
Non- Indigenous	89.3 (241)	81.1 (266)	

²² Because CRI scores and age at release are both continuous variables, separate logistic regression analyses were performed to assess their independent effect on the outcome variable.

CRI: $b = .06$, $SE = .01$, odds ratio = 1.06, Wald's $\chi^2(1) = 24.62$, $p < .001$, (95% CI [1.04, 1.09]);

Age at release : $b = -.04$, $SE = .01$, odds ratio = .97, Wald's $\chi^2(1) = 24.94$, $p < .001$, (95% CI [.95, .98]);

²³ Other variables examined include: Static factor rating (release), accountability, responsivity, engagement, gender, and region of supervision.

Sex offender			
Yes	28.1 (76)	19.5 (64)	.10
No	71.9 (194)	80.5 (264)	
Index Offence			.30
Homicide-related	5.9 (16)	3.0 (10)	
Sex-related	23.7 (64)	13.7 (45)	
Robbery	10.0 (27)	16.2 (53)	
Drug-related	24.4 (66)	12.8 (42)	
Assault	9.3 (25)	20.4 (67)	
Other violent	12.2 (33)	9.5 (31)	
Property	6.7 (18)	17.1 (56)	
Other non-violent	7.8 (21)	7.3 (24)	

^a Includes indeterminate sentences.

The characteristics of EM participants were examined to determine if there were differences between EM participants that were revoked and not revoked. Results from the chi-square analyses demonstrated significant differences on CRI scores, age at release²⁴, RP level, index offence, dynamic factor ratings at release, responsivity and region of supervision.²⁵

²⁴ Because CRI scores and age at release are both continuous variables, separate logistic regression analyses were performed to assess their independent effect on the outcome variable.

CRI: $b = .04$, $SE = .01$, odds ratio = 1.04, Wald's $\chi^2(1) = 10.12$, $p < .001$, (95% CI [1.02, 1.06]);

Age at release : $b = -.02$, $SE = .01$, odds ratio = .98, Wald's $\chi^2(1) = 8.87$, $p = .003$, (95% CI [.96, .99]);

²⁵ Other variables examined include: static factor rating (release), accountability, responsivity, engagement, gender, and region of supervision.

Table A2

Comparisons of Revocations Based on Offender Characteristics among EM Participants

Characteristics	Percentage (<i>n</i>) of EM offenders		Cramer's <i>V</i>
	No revocation (<i>n</i> = 603)	Revocation (<i>n</i> = 167)	
Reintegration level (at release)			.12
Low	27.6 (227)	51.5 (86)	
Moderate	60.4 (364)	47.9 (80)	
High	2.0 (12)	0.6 (1)	
Dynamic factor (at release)			.10
Low	1.8 (11)	1.2 (2)	
Moderate	31.7 (191)	21.0 (35)	
High	66.5 (401)	77.8 (130)	
Responsivity			.10
Yes	16.9 (102)	25.1 (42)	
No	83.1 (501)	74.9 (125)	
Index Offence			.17
Homicide-related	4.8 (29)	2.4 (4)	
Sex-related	20.9 (126)	16.2 (27)	
Robbery	13.6 (82)	16.8 (28)	
Drug-related	19.6 (118)	10.2 (17)	
Assault	13.4 (81)	21.0 (35)	
Other violent	10.3 (62)	11.4 (19)	
Property	9.8 (59)	16.8 (28)	
Other non-violent	7.6 (46)	5.4 (9)	
Region of supervision			.16
Atlantic	4.0 (24)	7.2 (12)	
Quebec	26.7 (155)	18.0 (30)	
Ontario	46.8 (282)	44.9 (75)	
Prairie	6.0 (36)	14.4 (24)	
Pacific	17.6 (106)	15.6 (26)	

**Appendix B: Impact of Supervision Characteristics on Suspensions and Revocations for
EM Participants**

Appendix B

Release characteristics and conditions of release for EM participants were examined to determine if there were differences between EM participants that were suspended and not suspended. Results from the chi-square analyses demonstrated significant differences on conditional release type, supervision level, special conditions related to curfew and/or geographic restrictions, and special conditions related to alcohol and drugs.²⁶

Table B1

Comparisons of Suspensions Based on Release Characteristics among EM Participants

Characteristic	Percentage (n) of EM offenders		Cramer's V
	No suspension (n = 270)	Suspension (n = 328)	
Conditional Release Type			.16
Day Parole	7.8 (21)	2.4 (8)	
Full Parole	2.6 (7)	0.6 (2)	
Statutory Release	87.4 (236)	93.0 (305)	
LTSO	2.2 (6)	4.0 (13)	
Supervision Level			.21
ISP/Level A Res.	24.4 (66)	43.3 (141)	
Level A/Level B Res.	55.2 (149)	43.3 (142)	
Level B/Level C Res.	20.0 (54)	12.5 (41)	
Level C	0.4 (1)	1.2 (4)	
Special Conditions			.17
Curfew	22.6 (61)	36.9 (121)	
Geographic Restriction	45.2 (122)	30.8 (101)	
Both	32.2 (87)	32.3 (106)	
Other Special Conditions			.10
Alcohol/Drugs	76.7 (207)	84.8 (278)	
No Alcohol/Drugs	23.3 (63)	15.2 (50)	

²⁶ Other variables examined include: residency condition, special conditions related to avoid people, attend treatment, and participate in programming.

Release characteristics and conditions of release for EM participants were examined to determine if there were differences between EM participants that were revoked and not revoked. Results from the chi-square analyses demonstrated significant differences on special conditions related to curfew and/or geographic restrictions, and special conditions related to alcohol and drugs²⁷

Table B2

Comparisons of Revocations Based on Release Characteristics among EM Participants

Characteristic	Percentage (n) of EM offenders		Cramer's V
	No revocation (n = 603)	Revocation (n = 167)	
Special Conditions			.17
Curfew	27.9 (168)	40.1 (67)	
Geographic Restriction	40.1 (242)	33.5 (56)	
Both	32.0 (193)	26.3 (44)	
Other Special Conditions			.09
Alcohol/Drugs	79.1 (477)	87.4 (146)	
No Alcohol/Drugs	20.9 (126)	12.6 (21)	

²⁷ Other variables examined include: conditional release type, supervision level, residency condition, special conditions related to avoid people, attend treatment, and participate in programming.