AN OUTCOME EVALUATION OF MINNESOTA CIRCLES OF SUPPORT AND ACCOUNTABILITY (MnCoSA): PRELIMINARY RESULTS FROM A RANDOMIZED EXPERIMENT

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Research Summary

In 2008, the Minnesota Department of Corrections implemented Minnesota Circles of Support and Accountability (MnCoSA), a sex offender reentry program based on the COSA model developed in Canada during the 1990s. Using a randomized experimental design, this study evaluates the effectiveness of MnCoSA by conducting a cost-benefit analysis and comparing recidivism outcomes in the MnCoSA (N = 31) and control groups (N = 31). Despite the small total sample size (N = 62), the results from Cox regression models suggest that MnCoSA significantly reduced three of the five recidivism measures examined. By the end of 2011, none of the MnCoSA offenders had been rearrested for a new sex offense compared to one offender in the control group. Due to less recidivism observed among MnCoSA participants, the results from the cost-benefit analysis show the program has produced an estimated $363,211 in costs avoided to the state, resulting in a benefit of $11,716 per participant. For every dollar spent on MnCoSA, the program has generated an estimated benefit of $1.82 (an 82 percent return on investment).

Introduction

Over the last several decades, lawmakers have responded to high-profile sex crimes by implementing a variety of policies designed to reduce sexual recidivism. During the late 1980s, states began resurrecting civil commitment statutes ratified in the 1930s to incapacitate dangerous and psychopathic sex offenders. In 1990, Washington became the first state to implement a community notification act requiring law enforcement agencies to inform residents living near a high-risk sex offender. Four years later, Congress passed the Jacob Wetterling Act, which called for all 50 states to develop sex offender registries. "Megan's Law" was added to the Wetterling Act in 1996, authorizing each state to develop procedures to inform communities where sex offenders will be living. And, in addition to enactment of the Adam Walsh Act in 2006, a number of local and state governments have passed residency restriction legislation that prohibits convicted sex offenders from living near child congregation locations such as schools, parks, and daycare centers.

At around the same time the United States was implementing increasingly more punitive measures to deal with sex offenders, an alternative approach—Circles of Support and Accountability (COSA)—was being developed in Canada. In 1994, a high-risk sex offender was released to the community in Ontario, Canada, amid much publicity and concern. In response to the public outcry, a local Mennonite pastor asked several members of his congregation to assist this offender in his return to society. After closely following the developments of this Circle, a community chaplain from the Correctional Service of Canada helped form another Circle later that same year when a high-risk sex offender was released in nearby Toronto. Not long after, the Mennonite Central Committee of Ontario accepted a contract from the Correctional Service of Canada to determine whether the approach

developed with these two offenders could be implemented more broadly. In addition, a research protocol was established to determine whether COSA has an impact on sex offender recidivism (Wilson, Picheca, and Prinzo, 2005).

Since 1994, more than 200 Canadian sex offenders have participated in Circles. Grounded in the tenets of the restorative justice philosophy, the COSA model attempts to help sex offenders successfully reenter the community and, thus, increase public safety, by providing them with social support as they try to meet their employment, housing, treatment, and other social needs. Each COSA consists of anywhere between four and six community volunteers, one of whom is a primary volunteer, who meet with the offender on a regular basis. More specifically, the primary volunteer meets with the offender on a daily basis, especially during the first 60-90 days after release, while the other community volunteers meet with the offender on a weekly basis. In addition to this "inner Circle", there is also an "outer Circle" comprised of community-based professionals (psychologists, law enforcement officers, supervision agents, social service workers, etc.) who volunteer their time to support the inner Circle in its work. Although the duration of a Circle varies, they generally last at least 12 months.

Previous Research on COSA

Given the relatively recent emergence of COSA, there have been only a few outcome evaluations thus far that have examined the impact of the program. In 2005, Wilson, Picheca, and Prinzo completed process and outcome evaluations of the pilot project that originated in South-Central Ontario in 1994. In a follow up to this study, Wilson, Cortoni, and McWhinnie (2009) conducted a national outcome evaluation of Circles that had been formed across Canada.

The results from these evaluations suggest that COSA significantly reduces sex offender recidivism. In the pilot project study, Wilson, Picheca, and Prinzo (2005) used a retrospective quasi-experimental design to compare recidivism outcomes between 60 offender participants and 60 non-participants. To better ensure equivalence between the two groups, the authors matched offenders on the basis of supervision status, recidivism risk, length of time at risk, and participation in sex offender treatment. Wilson and colleagues found that COSA participants had significantly lower rates of sexual, violent, and general recidivism than the comparison group. More specifically, participation in COSA reduced sexual recidivism by 70 percent, violent reoffending by 57 percent, and general recidivism by 35 percent.

In the national outcome evaluation, Wilson, Cortoni, and McWhinnie (2009) compared recidivism outcomes between 44 participants and 44 non-participants who were matched on the basis of risk, length of time in the community, release date and location, and prior involvement in sex offender treatment. Similar to the results from the pilot project evaluation, they found that COSA participation significantly reduced sexual recidivism by 83 percent, violent recidivism by 73 percent, and general recidivism by 72 percent.

COSA is effective in reducing recidivism, Wilson and colleagues (2009) argued, because the program provides offenders with pro-social sources of support, which helps mitigate the adverse effects of rejection, loneliness, and social isolation. Moreover, by focusing on offender accountability, COSA promotes balanced, self-determined lifestyles, targets criminal thinking patterns, and emphasizes compliance with supervision. In doing so, Wilson et al. (2009) conclude that COSA dovetails not only with the risk and need elements found in the principles of effective interventions (Andrews and Bonta, 2007), but also with

the tenets of the Good Lives Model (GLM) (Ward, 2002). More specifically, Wilson et al. (2009) suggest that COSA aligns with GLM by providing offenders with assistance in attaining human goods that foster personal efficacy, well-being, and a reduced likelihood of reoffending.

In addition to the research by Wilson and colleagues, a few studies have been published on the COSA program established in the United Kingdom (UK) in 2002 (Bates, Saunders, and Wilson, 2007; Bates, Macrae, Williams, and Webb, 2011). Given the absence of a comparison group, these studies do not indicate whether the COSA implemented in the UK has been effective in reducing recidivism. Still, in the most recent study, Bates et al. (2011) provided important descriptive information on the 60 Circles they examined that had been formed by 2009. Most notably, Bates and colleagues (2011) reported that involvement in the Circles improved emotional well-being for most of the Core Members, three-fourths of the 60 Circles had been considered successful, and only one Core Member had been reconvicted for a sex-related crime (a non-contact internet offense).

Circles of Support and Accountability in Minnesota

In 2008, the Minnesota Department of Corrections (MnDOC) implemented Minnesota Circles of Support and Accountability (MnCoSA), a sex offender reentry program based on the Canadian COSA model. The impetus for starting MnCoSA was rooted not only in the promising results reported in the initial evaluation completed by Wilson and colleagues (2005), but also in the findings from a study conducted by the MnDOC that examined the impact of broad community notification on sex offender recidivism (Duwe and Donnay, 2008).

Prior to their release from prison, sex offenders in Minnesota are assigned risk levels, which, in turn, determine the extent to which the community will be notified. In Minnesota, offenders subject to predatory offender registration are assigned a risk level prior to their release from prison by an End of Confinement Review Committee (ECRC), which is comprised of the prison warden or treatment facility head where the offender is confined, a law enforcement officer, a sex offender treatment professional, a caseworker experienced in supervising sex offenders, and a victim services professional. In assigning risk levels, the ECRC considers scores from actuarial risk assessment tools as well as additional factors that may either increase or decrease the risk of reoffense (e.g., an offender's stated intention to reoffend following release or a debilitating illness or physical condition that mitigates the risk of reoffense).

For offenders receiving a Level 1 assignment ("low public risk"), notification includes victims, witnesses to the crime, law enforcement agencies, and anyone else identified by the prosecutor. For offenders given a Level 2 assignment ("moderate public risk"), notification includes those in the Level 1 information release plus schools, daycare centers, and other organizations where individuals who may become victims of the offender are regularly found. For offenders assigned a Level 3 ("high public risk"), broad public notification is required. More specifically, law enforcement is responsible for notifying the community where the Level 3 offender will be residing, generally by holding a public meeting in addition to distributing information through the media. Furthermore, following release from prison, the residential vicinities of Level 3 offenders are published on the MnDOC website.

Using a retrospective quasi-experimental design, Duwe and Donnay (2008) examined whether broad community notification has had a deterrent effect on recidivism. They compared the recidivism rates of 155 Level 3 ("high public risk") sex offenders released from Minnesota prisons between 1997 and 2002 who were subject to broad notification with two separate comparison groups who were not. The first comparison group (the pre-notification group) contained 125 sex offenders released between 1990 and 1996 (the seven years preceding the implementation of the Community Notification Act) who, after a detailed file review, were considered "high risk" offenders that likely would have been subjected to broad community notification had the law been in effect at the time of their release. The second comparison group (the limited notification group) was comprised of 155 offenders (37 Level 1 and 118 Level 2) released between 1997 and 2002 who, despite receiving a lower risk level classification, were carefully matched to the notification group on the basis of a propensity score that measured the probability of receiving a Level 3 assignment. The results from the Cox regression models revealed that, compared to both comparison groups, broad community notification significantly reduced the risk of sexual recidivism (rearrest, reconviction, and reincarceration). The findings were mixed, however, for both non-sex and general reoffending. Whereas broad community notification significantly reduced the risk of non-sex and general recidivism compared to the pre-notification group, no such effects were found in the limited notification group analyses.

Although the methodology used by Duwe and Donnay (2008) and the findings they reported have been widely misinterpreted in subsequent studies (Freeman, 2009; Kernsmith, Comartin, Craun, and Kernsmith, 2009; Tewksbury and Jennings, 2010; Zgoba and Tewksbury, 2010; Zgoba, Veysey, and Dalessandro, 2010), the results indicate there are

conditions under which community notification can produce public safety benefits. In reducing sexual recidivism, Minnesota's tiered risk management system adheres to the risk principle by concentrating notification resources on the highest-risk offenders. Yet, as noted in the above discussion, there is minimal difference between Level 1 and 2 offenders in terms of community notification. As a result, the findings from the Duwe and Donnay (2008) study showed that Level 2 offenders have had the highest sexual recidivism rates since the enactment of the Community Notification Act in 1997. In fact, of the sex offenders released between 1997 and 2002, Level 2 offenders had a sexual recidivism rate almost twice that of those assigned to Level 3.

Despite these findings, Duwe and Donnay (2008) argued against an expansion of broad community notification to Level 2 offenders, citing its cost, lack of a clear impact on non-sexual recidivism, potential for producing diminishing returns during a time of low sexual recidivism rates, and track record of creating collateral consequences for offenders. Instead, Duwe and Donnay (2008) suggested the COSA model may be a cost-effective risk management strategy to consider in reducing sexual recidivism among Level 2 offenders. To that end, the MnDOC implemented a MnCoSA pilot project in early 2008 that focused on Level 2 sex offenders returning to Hennepin, Ramsey, Dodge, Fillmore, and Olmsted counties.

Description of MnCoSA

In early 2007, the MnDOC initiated efforts to implement a version of the COSA model in Minnesota. At approximately the same time, Amicus (a non-profit organization in Minneapolis that works with offenders) obtained state funding to pilot a small-scale application of the COSA model in Minnesota. Later that year, the MnDOC secured

additional state funding to implement the pilot project on a much broader scale. Together, the MnDOC and Amicus began operating MnCoSA in early 2008. Through a contract with the MnDOC, Amicus was responsible for recruiting and training Circle volunteers, while the MnDOC was responsible for overseeing the operation of the program. Over time, however, the MnDOC assumed responsibility for operating all components of the MnCoSA program.

When MnCoSA began in early 2008, it initially targeted Level 2 sex offenders released from prison who returned to Hennepin (Minneapolis) and Ramsey (St. Paul) counties. The Hennepin and Ramsey sites were selected because approximately half of the sex offenders released from Minnesota prisons are placed in these two counties. Moreover, as the two most populous counties in the state, these counties are better able to provide the extensive volunteer resources required for this project. The Rochester area (Dodge, Filmore, and Olmsted Counties) was later added as a third site, primarily due its previous experience in running Circles with female offenders. In addition, from an evaluation perspective, the Dodge, Filmore, and Olmsted (DFO) counties may provide an important comparison with the two Twin Cities metro-area counties.

The design and operation of MnCoSA has been similar, in many ways, to the COSA model that originated in Canada. First, the Circle consists of a Core Member (the sex offender) and anywhere between four and six volunteers from the community. Second, the Circle uses a covenant, which delineates the responsibilities to which both the Core Member and Circle volunteers agree. Third, volunteers receive training following a selection and screening process. Fourth, the goal for each Circle is to provide the Core Member with support during the first 12 months he is in the community. Fifth, in Minnesota, efforts have been made to establish Outer Circles that help support Inner Circles in their work.

Despite these similarities, however, there have been several notable differences between MnCoSA and the Canadian COSA. First, COSA was very much a grass roots effort insofar as it originated within the community (a small Mennonite community) and later gained government support and involvement. In contrast, with MnCoSA, it has been the MnDOC (a government agency) that implemented the program and undertaken outreach efforts to attract community interest and participation. Second, due perhaps to the different origins, COSA grew organically over time, whereas MnCoSA has been developed more systematically, which is likely a consequence of the emphasis placed on evaluating the program since its inception. Third, in what is likely another consequence of the different origins for each program, COSA volunteers were mainly recruited from faith communities while MnCoSA has experienced very little success in recruiting volunteers from local churches. Instead, in an effort to recruit more widely, the MnDOC has developed a webpage (http://www.doc.state.mn.us/volunteer/MnCoSA/htm) where individuals can learn more about the program and submit a volunteer application. In addition, MnCoSA has relied on students from local colleges and universities as a primary source of volunteers. Fourth, whereas COSA focused on working with offenders released at the expiration of their sentence, MnCoSA has not used the absence of post-release supervision as a selection criterion for Core Members. Rather, as shown later, most of the participants have been placed on intensive supervised release (ISR) at the time of their release from prison. Fifth, while the Circle process in the Canadian COSA often begins prior to the offender's release from prison, in Minnesota it consistently begins in prison at least four weeks prior to release. Finally, under the Canadian COSA model, Circles usually meet in individual's homes. With MnCoSA, however, Circles meet in secure public venues.

Present Evaluation

During the 2008-2011 period, 31 sex offenders participated in MnCoSA and were released from prison. Using a randomized experimental design, this study evaluates whether MnCoSA has decreased recidivism by comparing outcomes among 62 Level 2 sex offenders who were randomly assigned to either the MnCoSA group or the control group. This study also examines whether MnCoSA has reduced costs to the state by conducting a cost-benefit analysis.

In evaluating MnCoSA, this study contributes to the literature in several ways. First, because evaluations of COSA have been limited to programs implemented in Canada and the UK, this study helps shed light on whether the COSA model can be applied effectively within the United States. Second, due to differences between MnCoSA and the Canadian model, this evaluation will help determine whether COSA is a flexible program. Third, this evaluation adds to the small number of studies within the sex offender literature that have used a randomized experimental design. Finally, along the same lines, this study is one of the first within the extant literature to conduct a cost-benefit analysis of sex offender programming.

In the following section, this study describes the data and methodology used to evaluate MnCoSA. Next, the results from the recidivism and cost-benefit analyses are presented. The study concludes by discussing the implications of the findings for sex offender policy and practice.

Data and Methodology

To evaluate whether MnCoSA has an impact on recidivism, this study used a randomized controlled trial (RCT). Prior to randomly assigning eligible offenders to either

the experimental (MnCoSA) or control groups, MnCoSA staff recruited volunteers from the community to form a Circle around a soon-to-be released sex offender. After a sufficient number of volunteers had been screened and trained for a Circle, the MnCoSA project director notified MnDOC research staff, who then queried the Correctional Operations Management System (COMS), the database maintained by the MnDOC, to identify eligible participants incarcerated within Minnesota prison facilities.

As noted above, the MnCoSA population consists of Level 2 sex offenders returning to one of five counties: Hennepin (Minneapolis), Ramsey (St. Paul), Dodge (Rochester), Fillmore (Rochester), and Olmsted (Rochester). Because the exact location where an offender will be placed is seldom known until days before, or even the day of, release, an offender's county of commitment is typically the best predictor of release location given that approximately 70 percent of Minnesota offenders return to the county from which they were committed. Moreover, because Circle volunteers met with Core Members several times prior to release, it was necessary to identify Level 2 sex offenders from the five pilot counties who had a scheduled release date at least 60 days in the future. Yet, to prevent much delay between the end of volunteer training and the beginning of the Circle, it was necessary to exclude offenders with a scheduled release date that was more than four months away. Therefore, to prospectively identify eligible offenders, three selection criteria were used: county of commitment, risk level assignment, and scheduled date of release from prison. More specifically, MnDOC research staff identified the population of eligible participants by selecting Level 2 offenders with commitments from one of the five pilot counties anywhere from 60-120 days prior to their release from prison.

After receiving a list of the offenders who met the eligibility criteria, MnCoSA staff met with the selected offenders while they were incarcerated to determine whether they were interested in participating in the project. During these meetings, MnCoSA staff advised eligible offenders that their selection to the program was contingent on a random assignment process. Offenders who expressed interest in participating were then randomly assigned by MnDOC research staff to either the experimental (participate in MnCoSA) or control (non-participant) groups. By using random assignment only among offenders willing to participate, the research design helps control for offender motivation.

Following their assignment to MnCoSA, participants met with the volunteers in their Circle several times during the period preceding their release from prison. During these pre-release meetings, the Core Member and Circle volunteers established a covenant that governed the operation of the Circle following the Core Member's release from prison. Supported by an Outer Circle of supervision agents, law enforcement personnel, and treatment professionals, Core Members and Circle volunteers typically met on a weekly basis during the first 6-12 months the Core Member was in the community.

Although RCT's sometimes raise ethical concerns, especially when applied to a prisoner population, it is worth noting that these concerns do not apply to this study. Most notably, the use of the random assignment process did not result in withholding the intervention (MnCoSA) from any offender simply to preserve the research design. On the contrary, because the COSA model requires at least four volunteers per offender, one of the more significant challenges involves identifying enough capable volunteers from the community who are willing to spend their free time with a convicted sex offender. As such, the number of willing and eligible offender participants exceeded the number who could

actually participate in a Circle by a fairly wide margin. In addition, prior to implementing MnCoSA, the evaluation proposal was vetted by an institutional review board within the MnDOC and was approved by the commissioner of corrections.

Measures

Dependent Variable: Recidivism

The main outcome measure in this study is recidivism, which was operationalized as a 1) rearrest, 2) reconviction, 3) reincarceration in prison for a new offense, 4) reincarceration for a technical violation revocation, and 5) reincarceration for either a new offense and/or a technical violation revocation. It is important to emphasize that the first three recidivism variables strictly measure new criminal offenses. In contrast, technical violation revocations (the fourth measure) represent a broader measure of rule-breaking behavior. Offenders can have their supervision revoked for violating the conditions of their supervised release. Because these violations can include activity that may not be criminal in nature (e.g., use of alcohol, failing a community-based treatment program, failure to maintain agent contact, failure to follow curfew, etc.), technical violation revocations do not necessarily measure reoffending.

Given the emphasis often placed on controlling sexual recidivism, it is important to know whether sex offenders recidivate with a sex offense. Moreover, to accurately estimate the costs associated with reoffending for the cost-benefit analysis, it is necessary to identify the type of reoffense committed. For example, a murder is much more costly to society than, say, a drug offense. As a result, this study also disaggregates the recidivism data by type of offense.

Data on arrests (misdemeanor, gross misdemeanor, and felony) and convictions (misdemeanor, gross misdemeanor, and felony) were obtained electronically from the Minnesota Bureau of Criminal Apprehension (BCA), whereas incarceration data were derived from the MnDOC's COMS database. Consequently, a limitation with these data is that they measure only arrests, convictions or incarcerations that took place in the State of Minnesota. Moreover, as with any recidivism study, official criminal history data likely underestimate the actual extent to which the sex offenders examined here recidivated.

Recidivism data were collected on the 62 offenders in this study through December 31, 2011. Because these offenders were released between February 2008 and October 2011, the follow-up periods ranged from 3 to 47 months. The average follow-up time for the 62 offenders was two years, which was the same for offenders in the MnCoSA and control groups.

Independent Variables

Given that the central purpose of this study is to determine the impact MnCoSA has on recidivism, MnCoSA participation is the main variable of interest in the statistical analyses. MnCoSA was measured as "1" for the offenders who participated and as "0" for those assigned to the control group.

Although random assignment increases the chances that the experimental and control groups will be equivalent, it does not guarantee equivalence. Therefore, to control for potential observed differences between the two groups, data were collected on additional independent variables that were not only available in the COMS database, but also might theoretically have an impact on recidivism. As shown in Table 1, the control measures

Table 1. Description of Control Variables

Control Variable	*Description*
Race	Dichotomized as minority (1) or white (0)
Age at Release	Age of offender in years at the time of release
Admission Type	Dichotomized as new commitment (1) or probation/supervised release violator (0)
County	Dichotomized as Hennepin (1) or Ramsey or Dodge/Filmore/Olmsted (0)
Prior Felonies	Number of prior felony convictions, including the conviction(s) resulting in incarceration
Multiple Prior Sex Crime Convictions	More than one sex offense conviction, including the conviction(s) resulting in incarceration
MnSOST-R Score	Most recent Minnesota Sex Offender Screening Tool-Revised (MnSOST-R) score prior to release from prison
LSI-R Score	Most recent Level of Service Inventory-Revised (LSI-R) score prior to release from prison
Length of Stay (LOS)	Number of days between an offender's most recent prison admission and release dates
Sex Offender Treatment	Entered sex offender treatment in prison during most recent confinement period
Post-Release Supervision	Dichotomized as intensive supervised release (ISR) at the time of release from prison (1) or discharge (0) wherein the offender was unsupervised upon release due to expiration of sentence

include the Minnesota Sex Offender Screening Tool-Revised (MnSOST-R) score to control for sexual recidivism risk and the Level of Service Inventory-Revised (LSI-R) score to control for general recidivism risk. Other measures were also included such as offender race, age at release, county of commitment, prior criminal history, length of stay in prison, participation in sex offender treatment, and post-release supervision.

Recidivism Analysis

In analyzing recidivism, survival analysis models are preferable in that they utilize time-dependent data, which are important in determining not only whether offenders recidivate, but also when they recidivate. As a result, this study uses a Cox proportional hazards model, which employs both "status" and "time" variables in estimating the impact of the independent variables on recidivism. For the analyses in this study, the "status" variable is one of the five recidivism variables mentioned above. The "time" variable, on the other

hand, measures the amount of time (in days) from the date of release until the date of the first recidivism event or the end of the follow-up period for those who did not recidivate.

In the statistical analyses, Cox regression models were estimated separately for each of the five measures of recidivism. Moreover, to determine whether potential effects of MnCoSA are dependent on any of the control variables included within each statistical model, interaction models were estimated for each measure of recidivism. Analogous to stepwise regression, all first-order interactions with MnCoSA participation were examined and non-significant terms were removed until only the significant interactions remained in the model.

Cost-Benefit Analysis

COSA was not necessarily designed to reduce costs to the criminal justice system. If, however, MnCoSA decreases recidivism, then it may produce a benefit by reducing costs to the state. As with any cost-benefit analysis, identifying the costs and benefits is paramount. Because MnCoSA relies heavily on volunteers, the costs to operate the program are confined mainly to project staff salaries and volunteer training and recruitment efforts. The potential benefits, however, may include a reduction in recidivism, which translates to fewer costs associated with crime. In their study on the cost of crime, Cohen and Piquero (2009) estimated costs of individual offenses to society based on victim costs, criminal justice costs (including police, courts, and prisons), and lost productivity of incarcerated offenders.

This study analyzed the costs and benefits of MnCoSA by comparing the costs to operate the program with the costs resulting from recidivism. To determine whether MnCoSA has produced a benefit resulting from reduced recidivism, the study compared the number of offenses committed by offenders in the MnCoSA and control groups. The costs of

these offenses were then monetized based on the cost of crime estimates developed by Cohen and Piquero (2009) in their study.

Rearrest was the measure used to determine reoffenses committed by offenders in the MnCoSA and control groups. Among the three main measures of reoffending (rearrest, reconviction, and reincarceration for a new offense), rearrest is the most sensitive measure since it may include instances where the offender was not convicted because charges were dropped due to insufficient or exculpatory evidence. Although this problem does not apply to reconviction, the main disadvantage in using a more conservative measure like reconviction involves the length of time it can take for an arrest to result in a disposition, especially for more serious crimes such as sex offenses. This disadvantage is especially relevant for the present study due to the relatively brief average follow-up period of two years. As a result, it was anticipated that, despite the greater potential for including offenses not actually committed by offenders, rearrest will provide a more accurate estimate of reoffending for the cost-benefit analysis than either reconviction or new offense reincarceration.

Although the Cohen and Piquero (2009) study provides important information on the costs of individual offenses, it does not estimate costs for reincarcerations resulting from technical violation revocations. Using data obtained from the MnDOC's COMS database, MnCoSA participants were compared with offenders in the control group on the basis of how many days they were incarcerated following their release from prison. The overall difference (in days) between the two groups was then monetized based on the MnDOC's marginal per diem. Due to the small size of the program, the number of bed days saved from a reincarceration reduction would not likely be large enough to prevent the construction of a new correctional facility. As such, marginal costs, which include only the costs to clothe and

feed offenders, will be used rather than fixed costs, which also include the cost of new prison construction (Duwe and Kerschner, 2008).

As noted above, Cohen and Piquero (2009) included the impact of imprisonment in their cost estimates. Yet, because data were available on the length and cost of confinement in Minnesota prisons, this study also used these data to determine the reincarceration costs for offenders sentenced to prison for new felony-level offenses. To avoid double counting and, thus, inflating the recidivism costs, rearrests that resulted in imprisonment were excluded from the cost-benefit analyses that examined rearrest data.

Results

The findings presented in Table 2 compare offenders in the MnCoSA and control groups among the covariate and recidivism outcome measures used in this study. In general, the results show the vast majority of offenders in both groups are minorities, mostly African American. Unlike the COSA experience in Canada, which has targeted sex offenders released to no correctional supervision, most of the offenders in both groups were, as noted previously, released from prison to intensive supervised release (ISR). The highest level of community supervision in Minnesota, ISR is a four-phase process that usually lasts one year, although offenders can remain on ISR until the end of their sentence if they do not make satisfactory progress during the first four phases. Sex offenders placed on ISR are supervised by a small team of supervision agents, required to participate in sex offender programming, and subject to curfews, electronic monitoring, and frequent alcohol/drug testing.

Aside from prior sex crime convictions, however, there were no statistically significant differences between the two groups, which is not too surprising given the small sample size. MnCoSA participants were, compared to offenders in the control group,

significantly more likely to have more prior sex offense convictions. Nearly one-third (32 percent) of the MnCoSA participants had more than one prior sex crime conviction compared to 10 percent in the control group. Overall, however, the randomized assignment process produced two groups that are relatively balanced on the covariates used in this study. In particular, there was minimal difference between the two groups regarding sexual recidivism risk (MnSOST-R score) and general recidivism risk (LSI-R score).

Table 2. Covariate and Recidivism Comparison Between MnCoSA and Control Groups

Measures	*MnCoSA*	*Control*	*t test/X^2*
Minority	87.1%	80.6%	.490
Age at Release (Years)	38.2	36.8	.544
New Commit	32.3%	41.9%	.430
County			
Hennepin	51.6%	51.6%	1.000
Ramsey	45.2%	41.9%	.798
DFO	3.2%	6.5%	.554
Prior Felonies	3.3	3.5	.800
Multiple Prior Sex Offenses	32.3%	9.7%	.029*
MnSOST-R	3.7	4.3	.650
LSI-R	29.0	29.1	.946
Length of Stay (months)	21.7	18.8	.606
Sex Offender Treatment	16.1%	25.8%	.349
ISR	87.1%	80.6%	.490
Recidivism			
Rearrest	38.7%	64.5%	.043*
Sex Offense Rearrest	0.0%	3.2%	.321
Reconviction	25.8%	45.2%	.115
Resentence	9.7%	25.8%	.100
Revocation[a]	48.1%	68.0%	.154
Any Reincarceration	48.4%	61.3%	.315
N	31	31	62

** $p < .01$
* $p < .05$
[a] N = 27 for MnCoSA; N = 25 for Control

Compared to offenders in the control group, MnCoSA participants had lower rates of recidivism for all five measures examined. For example, by the end of 2011, 65 percent of

the control group offenders had been rearrested for a new offense compared to 39 percent of the MnCoSA participants. The reconviction rate for MnCoSA offenders (26%) was nearly half that of those in the control group (45%), whereas the resentenced to prison rate for MnCoSA participants (10%) was roughly one-third of that for the control group offenders (26%). Of the 27 MnCoSA offenders released to intensive supervision, 48 percent returned to prison for a technical violation revocation compared to 68 percent of the 25 control group offenders placed on ISR. Among all offenders in both groups, 48 percent of the MnCoSA participants returned to prison (for either a new felony offense or a technical violation revocation) compared to 61 percent of those in the control group.

Only the difference for rearrest, however, was statistically significant at the .05 level. Of the 62 offenders in the MnCoSA and control groups, only one (an offender in the control group) had been rearrested for a new sex offense by the end of 2011. Due to the near absence of officially recorded sexual recidivism in the two groups, the recidivism analyses will focus only on the five measures of general recidivism. The study accounts for the sex offense rearrest, however, in the cost-benefit analyses presented later.

These findings suggest that participation in MnCoSA may have an impact on recidivism, at least for rearrest. It is possible, however, that the observed recidivism differences between offenders in the MnCoSA and control groups are influenced by other factors such as time at risk or prior sex offense convictions. To statistically control for the impact of these other factors on reoffending, Cox regression models were estimated for each of the five recidivism measures.

The Impact of MnCoSA on Recidivism

Due to the small sample size (N =62) in this study, an important issue for the Cox regression analyses involves the number of predictors in the model. To avoid biased

estimates, unreliable confidence interval coverage, and convergence problems in logistic regression models, Penduzzi and colleagues (1996) recommended a rule of thumb of ten events per variable (EPV) based on the simulation results from their study. Yet, in causal research that relies on observational data, adequately controlling for confounding factors often requires more covariates than the Penduzzi et al. (1996) rule of thumb allows. In a more recent simulation study by Vittinghoff and McCulloch (2007), they report that the EPV standard could likely be cut in half to five predictors per event. Still, Vittinghoff and McCulloch (2007, p. 717) concede there is not a "well-defined bright line" for EPV. Rather, as the EPV value decreases, the problems associated with bias, confidence intervals, and convergence tend to increase. It is important to emphasize, however, that even in models that had EPV values less than five, Vittinghoff and McCulloch (2007) found that most were not unduly affected by these problems.

As shown earlier in Table 1, this study contains 12 predictors (MnCoSA participation and 11 control variables). Given the recidivism rates presented in Table 2, the EPV values for a 12- predictor model are 2.8 for any reincarceration (e.g., 34 recidivism events/12 predictors), 2.5 for rearrest and revocation, 1.8 for reconviction, and 0.9 for new offense reincarceration. Post hoc Cox regression power analyses showed that reconviction (power = 0.55) was the only measure that did not have sufficient statistical power, i.e., power = 0.80 or higher. Lack of convergence was a problem, however, for the new offense reincarceration model. More specifically, there were several covariates that had either complete (sex offender treatment) or quasi-complete (minority and ISR) separation with new offense reincarceration, resulting in the failure of the likelihood maximization algorithm to converge. For example, of the 11 offenders who entered sex offender treatment, none had been

Table 3. Cox Regression Models: Impact of MnCoSA on Time to First Recidivism Event

	Rearrest		*Reconviction*		*Resentenced*		*Revocation*		*Any Reincarceration*	
	Hazard Ratio	SE	Hazard Ratio	SE	Hazard Ratio	SE	Hazard Ratio	SE	Hazard Ratio	SE
MnCoSA	0.376*	0.432	0.415	0.539	0.308	0.944	0.284*	0.508	0.160**	0.513
Minority	2.359	0.703	3.541	0.817	9.819	6.602	1.471	0.601	1.872	0.604
Age at Release (years)	0.962	0.027	0.993	0.031	0.946	0.056	0.981	0.032	0.989	0.030
New Commit	0.527	0.669	0.276	0.796	1.900	1.413	0.597	0.620	0.187**	0.611
Hennepin	0.510	0.399	0.785	0.473	3.817	0.900	0.414	0.467	0.533	0.437
Prior Felonies	1.262*	0.095	1.157	1.402	1.318	0.221	1.276*	0.107	1.475**	0.109
Multiple Prior Sex Offenses	0.795	0.660	0.830	0.773	0.002	3.077	0.386	0.779	0.290	0.740
MnSOST-R Score	0.976	0.051	0.949	0.064	1.299	0.167	1.052	0.062	1.085	0.059
LSI-R Score	0.994	0.036	0.980	0.043	1.030	0.068	0.975	0.033	0.965	0.033
Length of Stay (months)	1.002	0.013	1.018	0.014	1.120**	0.042	0.995	0.017	1.025	0.013
Sex Offender Treatment	0.716	0.493	0.282	0.754	0.001*	3.753	1.037	0.521	0.652	0.502
ISR	0.308*	0.493	0.996	0.674	8.142	2.444			227.969**	1.372
N	62		62		62		52		62	

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

reincarcerated for a new felony-level offense by the end of the follow-up period. To address the convergence problem, a penalized likelihood Cox regression model was estimated for new offense reincarceration (Firth, 1993).

The results from the Cox regression analyses are presented in Table 3, although these findings, especially those for reconviction and new offense reincarceration, should be interpreted with caution due to the EPV issues discussed above. The results suggest that participation in MnCoSA significantly reduced the hazard ratio for three of the five recidivism measures net of the effects of the other independent variables in the statistical model. More specifically, participation in MnCoSA decreased the hazard by 62 percent for rearrests, 72 percent for technical violation revocations, and 84 percent for any reincarcerations. Similarly large reductions in the hazard ratio were observed for reconvictions (59 percent) and new offense reincarcerations (69 percent). Although the p values for reconviction ($p = .10$) and new offense reincarceration ($p = .14$) approached statistical significance, they did not meet the conventional alpha of .05.

None of the covariates consistently achieved statistical significance in the models estimated. To determine whether the effects of MnCoSA were dependent on the covariates examined, interaction models were estimated. None of the interaction terms, however, were statistically significant at the .05 level for any of the recidivism measures.

Cost-Benefit Analysis

The results presented in Tables 2 and 3 indicate lower rates of recidivism among MnCoSA participants in comparison to the control group. It is unclear, however, whether this recidivism reduction translates to a benefit that exceeds the costs to operate the program. To

address this issue, the cost-benefit analysis examined the costs of operating MnCoSA versus benefits produced by a reduction in recidivism.

Table 4. Estimated Reoffense Cost Comparison Between MnCoSA and Control Groups**

Rearrest Offenses	*Estimated Cost Per Offense**	*MnCoSA*	*Control*
		Rearrests (Total Cost)	Rearrests (Total Cost)
Criminal Sexual Conduct	$290,000	0 ($0)	1 ($290,000)
False Imprisonment	$290,000	0 ($0)	1 ($290,000)
Aggravated Assault	$85,000	1 ($85,000)	1 ($85,000)
Burglary	$35,000	1 ($35,000)	2 ($70,000)
Simple Assault	$19,000	4 ($76,000)	4 ($76,000)
Fraud/Forgery	$5,500	2 ($11,000)	1 ($5,500)
Theft/Larceny	$4,000	4 ($16,000)	2 ($8,000)
Failure to Register	$1,000	7 ($7,000)	18 ($18,000)
Driving without license	$1,000	0 ($0)	6 ($6,000)
Driving while intoxicated	$1,000	0 ($0)	4 ($4,000)
Drug offense	$1,000	0 ($0)	2 ($2,000)
Interfere with Emergency Communications	$1,000	0 ($0)	2 ($2,000)
Fleeing Police	$1,000	1 ($1,000)	2 ($2,000)
Obstruct Legal Process	$1,000	2 ($2,000)	1 ($1,000)
Disorderly Conduct	$1,000	1 ($1,000)	0 ($0)
False Information to Police	$1,000	0 ($0)	1 ($1,000)
Driving without insurance	$1,000	0 ($0)	2 ($2,000)
Weapon Possession	$1,000	0 ($0)	1 ($1,000)
Total		23 ($244,000)	51 ($873,500)
Reoffense Costs Avoided		-28 (-$629,500)	

* Source: Cohen and Piquero (2009)

** The measure used in this table is the total number of arrests for offenders in both groups; some offenders had multiple rearrests during the follow-up period

While the program operating costs are presented later in Table 6, the benefits derived from a recidivism reduction were estimated by examining the costs associated with reoffending as well as those resulting from reincarceration. Reoffense cost estimates were developed by looking at the rearrest offenses committed by MnCoSA participants and offenders in the control group (see Table 4). The following offenses, however, were not included in the Cohen and Piquero (2009) study: false imprisonment, failure to register as a predatory offender, driving without a license, driving while intoxicated, drug offense,

interfering with emergency communications, fleeing police, obstruct legal process, disorderly conduct, driving without insurance, and weapon possession. Like criminal sexual conduct (CSC), false imprisonment is an offense that triggers predatory offender registration in Minnesota. The cost estimate used for false imprisonment, then, was the same as that for CSC. Because the other offenses not included in the Cohen and Piquero (2009) study are relatively lower-level crimes, the minimum cost estimate ($1,000) was used for these offenses.

Table 5. Reincarceration Cost Comparison Between MnCoSA and Control Groups

Reincarceration	*MnCoSA*	*Control*
Total Reincarceration Days	3,611	6,707
Average Days Per Offender	116.5	216.4
Total Reincarceration Costs (marginal per diem = $57)	$205,827	$382,299
Summary		
Total Reincarceration Days Avoided	3,096	
Average Reincarceration Days Avoided Per Participant	99.9	
Total Reincarceration Costs Avoided	$176,472	
Average Reincarceration Costs Avoided Per Participant	$5,693	

MnCoSA participants were rearrested for 26 total offenses compared to 59 for the control group. Yet, because 11 rearrests resulted in imprisonment (3 for MnCoSA participants and 8 for the control group), the results in Table 4 show 23 total arrests for MnCoSA participants and 51 for control group offenders. In addition to the total number of rearrests, there were two other notable differences between the two groups. First, none of the Core Members were rearrested for predatory offenses compared to two offenders in the control group (criminal sexual conduct and false imprisonment). Second, compared to MnCoSA participants, offenders in the control group had more than twice as many rearrests for failure to register as a predatory offender.

The estimated costs resulting from the 23 rearrests among MnCoSA participants added up to $244,000, whereas the 51 rearrests for the control group offenders totaled $873,500. The difference in estimated reoffending costs, then, was $629,500. On average, reoffending costs were roughly $20,000 lower per MnCoSA participant.

To estimate reincarceration costs, this study measured the number of days offenders spent in prison (for a technical violation revocation and/or a new felony sentence) between the time of their release from prison and the end of the follow-up period (December 31, 2011). The results show that MnCoSA participants returned to prison for a total of 3,611 days during the follow-up period (see Table 5). In comparison, the control group spent 6,707 days in prison. The difference between the two groups, then, is 3,096 days. On average, MnCoSA participants spent 100 fewer days in prison after their release than offenders in the control group. Given an average marginal per diem of $57 over the 2008-2011 period, MnCoSA produced a total reincarceration cost avoidance of $176,472, which amounts to $5,693 per participant.

Table 6. MnCoSA Cost-Benefit Results

Program Operating Costs	
2008	$104,800
2009	$144,050
2010	$112,456
2011	$81,455
Total Costs	**$442,761**
Costs Avoided	
Estimated Reoffense Costs Avoided	$629,500
Reincarceration Costs Avoided	$176,472
Total Costs Avoided	**$805,972**
Total Benefits	**$363,211**
Benefit Per Participant	$11,716.48
Cost-Benefit Ratio	$1.82
Return on Investment (ROI) Percentage	82%

As shown in Table 6, combining the estimated reoffense ($629,500) and reincarceration ($176,472) costs produces a total cost avoidance of $805,972. The costs to operate MnCoSA, however, totaled $442,761 during the 2008-2011 period. After subtracting the operating costs, the results show MnCoSA has, within its first four years of operation, produced an estimated benefit of $363,211, which amounts to $11,716 per participant. The cost-benefit ratio indicates that for every dollar spent on MnCoSA, the State of Minnesota has seen an estimated benefit of $1.82, which results in an 82 percent return on investment (ROI).

Conclusion

The sample size for this evaluation was small, and the follow-up period for recidivism was, by conventional standards for sex offender research, very brief. Nevertheless, the study used a rigorous research design and it included a cost-benefit analysis, both of which are seldom found in sex offender program evaluations. On the whole, the preliminary findings suggest MnCoSA is an effective program for sex offenders. It significantly reduced three of the five recidivism measures examined, while the failure to achieve statistical significance for the other two measures is likely a byproduct of the small sample size and short follow-up period. And the costs avoided from reduced recidivism among the 31 MnCoSA offenders led to an estimated benefit of more than $11,700 per participant.

To place the MnCoSA benefit per participant results in a broader context, it is worth considering the study by Aos, Miller and Drake (2006) on the cost effectiveness of correctional programs. In their study, Aos et al. (2006) identified ten programs for adult offenders that produced a monetary benefit, which ranged from $870 to $13,738 per

participant. Thus, with an estimated benefit of $11,716 per participant, MnCoSA ranks near the top for cost effectiveness among adult correctional programs.

The recidivism findings reported here are generally consistent with the positive outcome results reported by Wilson and colleagues in prior COSA evaluations on Canadian offenders. As such, this study not only suggests that COSA can be effective within the United States, but also that it is a relatively flexible model that can withstand adaptation in another milieu. Compared to its Canadian predecessor, the most significant variations with the Minnesota model involve targeting a differently defined sex offender population, relying less on faith-based communities for volunteer recruitment, and initiating the Circle while the offender is incarcerated. To be sure, these variations may be considered a major shift from the original model. It bears emphasizing, however, that both the Canadian and Minnesota models focus on delivering programming—increased social support and accountability—that is most likely responsible for the observed reduction in recidivism.

While the COSA approach is, as Wilson et al. (2009) point out, consistent with GLM and the principles for effective interventions, it is worth noting that COSA also aligns more broadly with evidence on the efficacy of social support in helping offenders in general—not just sex offenders—desist from crime and, more narrowly, recidivism (Shinkfield and Graffam, 2009). Social bonds and social support are common elements in many criminological theories, both as a key to crime prevention and a mechanism for desistance from crime. Social control theory suggests, for example, that an individual's attachment, or bond, to a conventional lifestyle prevents him or her from offending (Hirschi, 1969), whereas general strain theory implies that social support can reduce recidivism by helping ease the stresses related to reentry (Agnew, 1992). Life course theorists, meanwhile, view the release

from prison as a potential turning point in the lives of offenders in which attachment to supportive friends and family members could provide them both the opportunity and incentive to desist from crime (Horney, Osgood, and Marshall, 1995).

While offenders are in prison, visits from family and friends offer a means of establishing, maintaining, or enhancing social support networks. Strengthening social bonds for incarcerated offenders may be important not only because it can help prevent them from assuming a criminal identity (Clark, 2001; Rocque, Bierie, and MacKenzie, 2010), but also because many released prisoners rely on family and friends for employment opportunities, financial assistance, and housing (Berg and Huebner, 2010; Visher et al., 2004). Studies on prison visitation show, for example, that visits reduce recidivism (Bales and Mears, 2008; Derzken, Gobeil, and Gileno, 2009; Duwe and Clark, 2011; Mears, Cochran, Siennick, and Bales, 2011). Research further suggests that correctional programming tends to be more effective when there is a continuum of care, or service delivery, from the institution to the community. Indeed, correctional program evaluations have shown that connecting programming delivered in the community to that provided in prison produces better recidivism outcomes (Inciardi, Martin, and Butzin, 2004). In particular, findings from a recent evaluation of a faith-based program in Minnesota suggest that one of the main reasons why the program was successful in reducing recidivism was because some of the participants received a continuum of mentoring support in both the institution and the community (Duwe and King, 2012).

Consistent with the evidence on the efficacy of providing offenders with a continuum of social support from prison to the community, MnCoSA has been effective in helping sex offenders successfully reenter society. It is too early to tell, however, whether MnCoSA is as

effective as the COSA model in reducing sexual recidivism. The near absence of sexual reoffending observed in this study is likely due not only to the brief follow-up period, but also to low contemporary sexual recidivism rates found among Minnesota sex offenders (Duwe and Freske, 2012). While reducing sexual victimization is clearly important, and should remain a top priority for sex offender programming, the findings from this evaluation, especially those from the cost-benefit analyses, suggest non-sexual recidivism outcomes are important, too. Indeed, of the 85 rearrests among the 62 offenders in this study, only one was for a sex offense. Moreover, the results from the cost-benefit analyses indicate that sex offender programming can still produce substantial benefits by reducing non-sexual recidivism.

Despite the promising findings reported here and in the prior Canadian evaluations, it is worth noting that the COSA model is not a high-volume program. Indeed, MnCoSA has averaged nearly eight Circles per year (31 in the first four years), whereas both Canada and the UK have averaged closer to ten Circles per year. While it is often a challenge finding enough suitable volunteers from the community to help support or mentor offenders in general, it is arguably even more difficult for a COSA-oriented program due to prevailing public perceptions regarding convicted sex offenders. Moreover, the need for at least four volunteers per Circle limits the number of Circles that can be formed. Therefore, although the evidence suggests COSA is effective, it is nevertheless effective only for a relatively small number of offenders. Reducing the number of volunteers per Circle is likely the most expedient way to increase the number of sex offender participants. The main concern with this approach, however, is that it may produce an unintended consequence by diluting the quality of the intervention.

Even if decreasing the minimum Circle size by one volunteer produces no adverse effects on the efficacy of the COSA model, the additional number of Circles that could be formed would still be relatively modest due to challenges in recruiting capable volunteers. Because COSA is a high-impact, low-volume program, it should be reserved only for the highest-risk offenders, which is consistent with its original design and implementation. Although the criteria for determining risk and offender eligibility may vary, as observed here and in the Canadian evaluations, using COSA only on those who are most likely to reoffend sexually will likely help maximize the benefits from the program.

This study represents the initial evaluation of MnCoSA, although efforts are underway to complete a process evaluation of the program. The process evaluation will examine, among other things, whether the implementation of MnCoSA has been consistent with how it was designed, identify what has worked well, and determine ways to improve the operation of the program. Efforts will also be made to conduct a follow-up outcome evaluation of MnCoSA so as to examine a larger sample of offenders with longer at-risk periods. While these evaluations will likely shed additional light on MnCoSA and, more broadly, the COSA model, future research is needed on the application of COSA in other parts of the United States and other countries besides the U.S., Canada, and those in the UK. Results from this research may help address issues such as the extent to which COSA is generalizable, whether reducing the number of volunteers per Circle has an adverse impact on the quality of the programming, and effective strategies for volunteer recruitment.

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