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Can circles of support and accountability (CoSA) significantly reduce sexual recidivism? Results from a randomized controlled trial in Minnesota

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Abstract

Objectives This study evaluates the effectiveness of Minnesota Circles of Support and Accountability (MnCOSA), a sex offender reentry program implemented by the Minnesota Department of Corrections in 2008.

Methods Using a randomized controlled trial, this study compares recidivism and cost–benefit outcomes among sex offenders in the MnCOSA ($N = 50$) and control groups ($N = 50$).

Results The results suggest MnCOSA significantly reduced sexual recidivism, lowering the risk of rearrest for a new sex offense by 88%. In addition, MnCOSA significantly decreased all four measures of general recidivism, with reductions ranging in size from 49 to 57%. As a result of the reduction in recidivism, findings from the cost–benefit analysis reveal the program has generated an estimated $2 million in costs avoided to the state, resulting in a benefit of $40,923 per participant. For every dollar spent on MnCOSA, the program has yielded an estimated benefit of $3.73.

Conclusions Although difficult to implement, the CoSA model is a cost-effective intervention for sex offenders that could also be applied to other correctional populations with a high risk of violent recidivism.

Keywords Sex offender · Recidivism · Social support · Cost–benefit · Restorative justice

Introduction

The prevailing framework for the delivery of correctional programming is the risk–needs–responsivity (RNR) model, which holds that interventions should be matched to

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an offender's recidivism, criminogenic needs, and responsivity issues (Gendreau et al. 2004). Whereas the risk principle dictates that programming resources should be concentrated among higher-risk offenders, the needs principle maintains that interventions should address an individual's criminogenic needs, or dynamic risk factors. Although criminal history is the strongest predictor of future criminal behavior (Caudy et al. 2013; Duwe 2014a), it is a static factor that cannot be changed through interventions. Dynamic risk factors, on the other hand, can be targeted through interventions because changes can ostensibly be made in these factors (Gendreau et al. 1996). Prior research has further categorized recidivism risk factors as major, moderate and minor (Andrews et al. 2006). Among the four major risk factors (i.e., the "Big Four"), anti-social behavior (i.e., criminal history) is a static factor, while the remaining three—anti-social personality pattern, criminal thinking, and anti-social peers—are dynamic factors.

Although interventions such as cognitive-behavioral therapy can be used to target criminal thinking (Landenberger and Lipsey 2005), there is a virtual absence of programming specifically designed to address antisocial peers. Nevertheless, there are correctional interventions that provide offenders with prosocial support. For example, even though it is seldom regarded as a type of correctional programming, prison visitation presumably addresses antisocial peers by helping offenders develop and maintain prosocial ties with family members, friends, and community volunteers. The findings from a recent meta-analysis (Mitchell et al. 2016) as well as from studies on prisoners from Florida (Bales and Mears 2008; Cochran 2014; Mears et al. 2011), Minnesota (Duwe and Clark 2013; Duwe and Johnson 2016), and Canada (Derkzen et al. 2009) suggest that offenders who are visited more often in prison are less likely to recidivate. Another correctional intervention that likely offers prosocial support is faith-based programming, which often relies heavily on community volunteers (Duwe and King 2013). Research on faith-based correctional programming suggests it significantly improves prison misconduct (Camp et al. 2008; Duwe et al. 2015), while the effects on recidivism have been more mixed (Duwe and King 2013; Johnson and Larson 2003).

Circles of Support and Accountability (CoSA) is a correctional program that, as its name implies, provides offenders with pro-social support. Although CoSA is not a faith-based program, it is an intervention rooted in the restorative justice (RJ) philosophy. In contrast to the retributive justice model, which considers crime as an offense against the state, the RJ approach views crime as a harm committed against both the victim and the community. Consistent with this perspective, the RJ philosophy insists that offenders accept responsibility for their actions. Like other RJ interventions, CoSA emphasizes offender accountability and community participation. But unlike most RJ interventions, which promote restoration by involving all three parties (offenders, victims, and community members), the victims of the offenders participating in CoSA are not participants in the Circle process.

CoSA traces its modern origins to a small Mennonite community in Ontario, Canada, where a Mennonite pastor and several members of his congregation formed a Circle in 1994 to help a high-risk sex offender transition from prison to the community amid a great deal of attention and concern. Due to the success of this Circle, the Mennonite Central Committee of Ontario later formed a partnership with the Correctional Service of Canada (CSC) to implement CoSA more broadly within Canada. Since 1994, more than 350 Canadian

sex offenders have participated in Circles (R.J. Wilson, Personal e-mail communication. August 11th, 2017).

Based on the idea that "no one is disposable," CoSA offers sex offenders sources of prosocial support in order to facilitate a successful return to the community. Yet, there is also an emphasis placed on the accountability of the sex offenders who participate in the Circles, which is reflected in the goal of "no more victims" (Hannem and Petrunik 2007). Each Circle contains one primary volunteer and three to five additional community volunteers who meet with the offender (i.e., Core Member) on a weekly basis. The primary volunteer meets with the Core Member (CM) more frequently during the first 2 to 3 months following release. In addition to this "inner Circle," there is an "outer Circle" consisting of community-based professionals (psychologists, law enforcement officers, supervision agents, social service workers, etc.) who volunteer their time to provide support to the inner Circle. While the length of each Circle varies, they generally last between 6 and 12 months.

As discussed in the following sections, existing research suggests CoSA is an effective correctional intervention. Findings indicate CoSA significantly reduces general recidivism (Duwe 2013; Wilson et al. 2009) and yields cost-avoidance benefits (Duwe 2013). The evidence for whether it reduces sexual recidivism has not been as clear-cut. Studies using quasi-experimental designs have reported reductions in sexual recidivism for Circles in Canada (Wilson et al. 2009; Wilson et al. 2005) and the UK (Bates et al. 2014). But in the only randomized controlled trial (RCT), Duwe (2013) found the Minnesota CoSA (MnCOSA) did not significantly lower sexual reoffending. To be fair, however, there was very little sexual recidivism (only one had been rearrested for a new sex offense) among the 62 sex offenders included in the MnCOSA evaluation.

This study updates the preliminary evaluation by Duwe (2013) by comparing recidivism outcomes among 100 moderate-risk sex offenders who were randomly assigned to either the MnCOSA group or the control group during the 2008–2016 period. In addition to including the 62 offenders in the original MnCOSA evaluation, this study contains 38 additional offenders (19 apiece in the MnCOSA and control groups). Moreover, it tracks recidivism outcomes for the 62 offenders in the original evaluation over a longer period of time. Therefore, in using a RCT on a larger sample over a longer follow-up period, this study presents more definitive evidence on whether CoSA has a significant effect on sexual recidivism. It also analyzes whether MnCOSA has decreased costs to the state by carrying out a cost–benefit analysis.

Previous research on CoSA

The academic literature on CoSA remains relatively small, but the number of studies has grown steadily since the initial evaluation by Wilson et al. (2005). Existing studies have examined Circles in Canada (Wilson et al. 2009; Wilson et al. 2005), the UK (Bates et al. 2012; Bates et al. 2007; Bates et al. 2014; Kerr et al. 2017), the Netherlands (Hoing et al. 2017), and the USA (Duwe 2013; Fox 2013; Northcutt Bohmert et al. 2016). In addition to examining Circle volunteers (Kerr et al. 2017), these studies have generally focused on describing CMs and the impact that Circles have had on their attitudes and perceptions (Bates et al. 2012; Hoing et al. 2017). To date, there have been only four outcome evaluations of Circles in Canada (Wilson et al. 2009; Wilson et al.

2005), the UK (Bates et al. 2014) and, as discussed later in more detail, Minnesota (Duwe 2013).

In the first CoSA evaluation, Wilson et al. (2005) compared 60 CMs and 60 sex offenders who did not participate in Circles after matching the two groups according to recidivism risk, participation in sex offender treatment, supervision status, and length of time at risk. Wilson et al. (2005) found that CoSA significantly reduced all three measures of recidivism—sexual, violent, and general. In a follow-up evaluation that examined the impact of Circles that had been formed across Canada, Wilson et al. (2009) compared matched groups of 44 participants and 44 non-participants. Like the results from the pilot project evaluation, Wilson et al. (2009) reported that participation in CoSA significantly decreased sexual, violent, and general recidivism.

In the most recent outcome evaluation, Bates et al. (2014) examined Circles in the UK during the 2002–2012 period. Bates et al. (2014) matched 71 CMs with 71 sex offenders referred, but not selected, for Circles on the basis of their scores on the RM-2000, a risk assessment instrument. None of the CMs had reoffended with a violent contact offense versus 10 (3 of which were for sex offenses) for the comparison group, a difference that Bates et al. (2014) reported was statistically significant.

The findings from these outcome evaluations suggest that CoSA is successful in decreasing recidivism, which Wilson et al. (2009) explain by pointing out that the program is consistent with the principles of effective interventions. CoSA not only diminishes the effects of rejection, loneliness, and social isolation by providing the CM with prosocial sources of support, but it also fosters balanced lifestyles, addresses criminal thinking, and stresses compliance with correctional supervision by focusing on accountability. Moreover, by helping CMs obtain human goods that cultivate personal efficacy, well-being, and a reduced risk of recidivism, Wilson et al. (2009) further claim that CoSA is consistent with the Good Lives Model (Ward 2002).

Minnesota Circles of Support and Accountability (MnCOSA)

As Duwe (2013) explains, there were two main reasons why the Minnesota Department of Corrections (MnDOC) implemented a version of the CoSA model in early 2008. First, the MnDOC was aware of the promising results reported by Wilson et al. (2005) in the initial evaluation of the CoSA program. Second, in a study that evaluated the effects of broad community notification on reoffending, the results showed that Level 2 (i.e., moderate risk) sex offenders had the highest sexual recidivism rates (Duwe and Donnay 2008). In this study, Duwe and Donnay (2008) "suggested the CoSA model may be a cost-effective risk management strategy to consider in decreasing sexual recidivism among the Level 2 offenders" (Duwe 2013, p. 47).

In Minnesota, sex offenders who enter the prison system are assigned risk levels before their release from prison by an End of Confinement Review Committee (ECRC), which considers the results from actuarial risk assessment tools and other factors that ostensibly affect the likelihood of reoffending. The risk levels given to sex offenders help determine the degree to which the communities where they will be released will be notified. For individuals who receive a Level 1 assignment ("low public risk"), notification "includes victims, witnesses to the crime, law enforcement agencies, and anyone else identified by the prosecutor" (Duwe 2013, p. 146). For those given a Level 2 assignment ("moderate public risk"), notification consists of "those in

the Level 1 information release plus schools and daycare centers" (Duwe 2013, p. 146). For individuals assigned a Level 3 ("high public risk"), broad public notification is required in which "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" (Duwe 2013, p. 146).

In their study, Duwe and Donnay (2008) found that broad community notification significantly lowered sexual recidivism for the Level 3 offenders, although the findings were mixed for non-sexual reoffending. As noted above, the findings also showed the highest sexual recidivism rates for Level 2 offenders, nearly doubling the rates observed for Level 3 offenders. Because MnCOSA was implemented to mitigate sexual recidivism risk among Level 2 sex offenders, the program has focused on Level 2 offenders released from prison who were returning to Hennepin, Ramsey, Dodge, Fillmore, and Olmsted counties. The Hennepin (Minneapolis) and Ramsey (St. Paul) sites were selected because, as the two most populous counties in the state, they offer the extensive volunteer resources required for MnCOSA and are home to nearly half of the sex offenders released from Minnesota prisons. Due to its prior experience in operating Circles with female offenders, the Rochester area (Dodge, Filmore, and Olmsted Counties) was included as a third site.

In the initial evaluation of MnCOSA, Duwe (2013) identified a number of similarities and differences between the design and operation of MnCOSA and the COSA model that originated in Canada. The Canadian CoSA and MnCOSA programs are similar in that each one (1) contains a CM (the sex offender) and at least four to six volunteers from the community; (2) uses a covenant, which outlines the responsibilities for CMs and Circle volunteers; (3) provides volunteers with training after a selection and screening process; (4) has Circles that last up to 12 months after a CM has been released from prison; and (5) uses Outer Circles to help support Inner Circles in their work.

But the Minnesota and Canadian CoSAs have also been different in the following ways: (1) CoSA began within the community (a small Mennonite community), whereas MnCOSA originated with the MnDOC (a government agency); (2) MnCOSA was developed systematically in comparison to CoSA, which grew organically; (3) CoSA relied mostly on faith communities for volunteers while MnCOSA has relied heavily on local college students; (4) CoSA focused on working with prisoners released after their sentence ended while MnCOSA has typically been applied to those released from prison to correctional supervision; (5) the Circle process usually begins earlier (4 weeks prior to release) in Minnesota than in Canada; and (6) Circles meet in individual's homes in the Canadian CoSA model but only in secure public venues in MnCOSA (Duwe 2013).

Previous evaluation of MnCOSA

After MnCOSA had been operating for 4 years (2008–2011), Duwe (2013) reported findings from a preliminary evaluation based on the first 31 Circles. Using a RCT in which the 31 CMs were compared against 31 offenders in the control group, Duwe (2013) found that MnCOSA significantly reduced three of the five recidivism measures examined. MnCOSA did not have a significant effect on sexual recidivism. None of the CMs had been rearrested for a new sex offense by the end of 2011 compared to one

offender in the control group. Still, as a result of less recidivism for the CMs, the cost–benefit analysis indicated that MnCOSA generated an estimated $363,211 in costs avoided to the state, which amounted to a benefit of $11,716 per participant. For every dollar spent on MnCOSA, the program yielded an estimated benefit of $1.82 (an 82% return on investment) (Duwe 2013).

In a more recent study, Northcutt Bohmert et al. (2016) conducted a qualitative evaluation of MnCOSA based on in-depth interviews with CMs and Circle Volunteers. In their interviews with 10 CMs and 33 Circle Volunteers, Northcutt Bohmert et al. (2016) examined expressive (i.e., e.g., providing advice, friendship, special outing, or helping with drug abuse) and instrumental (i.e., finding housing, searching for jobs, providing money, material goods, or transportation) social support. While most of the CMs reported receiving some instrumental support, all indicated receiving expressive support. The most common type of expressive support was receiving moral or emotional support, followed by friendship and advice. Meanwhile, employment assistance was the most common form of instrumental support. Overall, CMs expressed great satisfaction with the social support they were provided, but they also reported gains especially in the areas of moral and emotional support, friendship, help with employment, and advice (Northcutt Bohmert et al. 2016).

In evaluating MnCOSA, this study attempts to answer three main questions. First, does the program still significantly reduce general recidivism? Second, does it have a significant impact on sexual reoffending? Third, does the program continue to deliver a positive return on investment (ROI)? Based on the results from prior research, it is hypothesized that MnCOSA will yield cost-avoidance benefits by significantly reducing both general and sexual recidivism.

Data and method

A RCT has been used to evaluate MnCOSA since the program began in 2008. The MnCOSA evaluation has thus been, by conventional standards for correctional research, a relatively long-running RCT. Although the random assignment process has not been compromised since the inception of the program evaluation in 2008, there have been, at various times, threats to the RCT as well as the research design in general. For example, MnDOC staff occasionally question when the evaluation and, in particular, the RCT will end. Moreover, during the first few years of the program, community-based stakeholders expressed the belief that MnCOSA should be used for Level 3 sex offenders, primarily as a way to help assuage the public's fear and anxiety at community notification meetings for these offenders. At other times, treatment professionals have wanted to use MnCOSA for those who have completed sex offender treatment in prison. As discussed later in this study, applying MnCOSA to either Level 3 sex offenders or those who completed sex offender treatment would be a misuse of MnCOSA, which is an effective but scarce resource.

The program selection process involved the following four steps: (1) amassing enough community volunteers to form a Circle, (2) identifying eligible CMs, (3) interviewing potential CMs, and (4) randomly assigning willing participants to either the MnCOSA or control groups. The random assignment process was initiated when MnCOSA staff were able to recruit, screen, and train at least four to six volunteers from the community to form a Circle around a Level 2 sex offender with an impending

release from prison. Following the formation of a Circle, the MnCOSA project director notified the author, who then queried the MnDOC's database, the Correctional Operations Management System (COMS), to identify individuals confined in a Minnesota prison facility who met the eligibility criteria for MnCOSA. Prisoners were eligible for MnCOSA if they met all of the following three criteria: (1) a Level 2 risk level assignment; (2) a commitment from Hennepin (Minneapolis), Ramsey (St. Paul), Dodge (Rochester), Fillmore (Rochester), or Olmsted (Rochester) counties; and (3) a release from prison within 60–120 days after the formation of a Circle.

After identifying eligible prisoners, the author then sent a list to the MnCOSA staff, who met with the individuals on the list to determine whether they were interested in participating as a CM. When MnCOSA staff met with eligible participants, they advised each prisoner that their participation in MnCOSA was subject to a random assignment process. MnCOSA staff then returned a list indicating whether prisoners were interested in participating to the author, who then randomly assigned the interested participants to either the treatment (participate in MnCOSA) or control (nonparticipant) groups. In doing so, the MnCOSA research design has controlled for whatever effects volunteerism and motivation may have on recidivism outcomes.

As noted in the initial evaluation of the MnCOSA (Duwe 2013), the study proposal was reviewed by an institutional review board within the MnDOC and the research design was approved by the Commissioner of Corrections. While the use of RCTs on correctional populations sometimes raises ethical concerns, randomly assigning interested participants to either the MnCOSA or control group has not prevented any of these individuals from participating as a CM. Rather, due to the significant challenge of recruiting, screening, and training volunteers from the community, the number of interested and eligible prisoners has been much greater than the number who could participate in a Circle. If anything, random assignment has provided a fairer, more objective process by which to make CM selections.

After willing and eligible prisoners were randomly selected as CMs, they met with the volunteers in their Circle several times within the 45–60 days prior to their release from prison. It was at these initial, pre-release meetings that CMs and Circle volunteers developed an agreement that would determine how the Circle would operate in the community following the CMs release from prison. From January 2008 to June 2016, a total of 50 Circles were formed in which CMs were released from prison to the community. During the first 6–12 months the CM was in the community, CMs and Circle volunteers usually met on a weekly basis. In addition, the 50 Circles were generally supported by an Outer Circle of treatment, law enforcement, and corrections professionals.

Recidivism measures

The primary outcome used to evaluate MnCOSA is recidivism, which was measured as (1) rearrest, (2) reconviction, (3) resentenced to prison for a new felony conviction, and (4) reimprisonment for a technical violation revocation. The first three recidivism measures pertain only to new criminal offending. The fourth outcome variable, technical violation revocations, is a broader measure of rule-breaking behavior. When prisoners are released from prison to correctional supervision, they must abide by the

conditions of their supervised release. Failure to follow these conditions is a violation that can result in a revocation and return to prison. "Technical violations" can include lower-level criminal offenses (e.g., misdemeanor or gross misdemeanor) as well as behavior that may not necessarily be criminal such as using alcohol or failing to maintain agent contact.

Data on rearrests and reconvictions were obtained from the Minnesota Bureau of Criminal Apprehension. Data on returns to prison, either for a new felony conviction or a technical violation revocation, were collected from MnDOC's COMS database. Data on the three reoffending measures were disaggregated by type of offense. In addition to examining whether the 100 sex offenders included in this study recidivated with a new sex offense, this evaluation identified the type of reoffense committed in order to accurately estimate the costs associated with reoffending for the cost–benefit analysis.

Recidivism data were collected on the 100 offenders in this study through June 30, 2017. With release dates between February 2008 and June 2016, the follow-up periods for the 100 offenders ranged from 12 to 113 months. The average follow-up time for both the CMs and the offenders in the control group was 73 months (a little more than 6 years). Because the recidivism data measure only arrests, convictions, or incarcerations that took place in the State of Minnesota, this study is unable to account for recidivism events that occurred outside Minnesota. In addition, as with any official measure of criminal history, the recidivism data likely underestimate the true recidivism rates for the sex offenders examined in this study.

Independent variables

The main variable of interest in this evaluation was participation in MnCOSA, which was dichotomized as "1" for the CMs and "0" for those in the control group. Even though random assignment increases the likelihood that individuals in the treatment and control groups will be equivalent except for participation in the intervention, equivalence is not guaranteed. To this end, data were collected on additional measures, which are described in Table 1.

The control variables listed in Table 1 are measures that have been shown to have an impact on recidivism, especially for Minnesota sex offenders. In addition to demographic measures such as age and race/ethnicity, the control variables include type of admission to prison, county of commitment, length of stay in prison, whether individuals were serving time in prison for a sex offense or a non-sex offense, and post-release supervision. In addition, based on the recent development of the MnSOST-4, which found a "stake in conformity" index to be a significant predictor of sexual recidivism (Duwe 2017), measures for marital status and post-secondary degree were included.

To control for both general and sexual recidivism risk, scores from the Level of Service (LS) and Minnesota Sex Offender Screening Tool (MnSOST) series of assessments were included. The MnDOC used the Level of Service Inventory-Revised (LSI-R) during the first 5 years of the evaluation period (2008–2012), but has used the Level of Service/Case Management Inventory (LS/CMI) since the beginning of 2013. Similarly, the MnDOC used the Minnesota Sex Offender Screening Tool-Revised (MnSOST-R) through the end of 2011, but began using the Minnesota Sex Offender Screening Tool-3 (MnSOST-3) in 2012. Both the LSI-R and LS/CMI scores as well as

Table 1 Description of control and outcome variables

Measures	Description
Control variables	
Race/ethnicity	Dichotomized as non-white (1) or non-Hispanic white (0)
Age at release (years)	Age of offender in years at the time of release
Admission type	Dichotomized as release violator (1) or new court commitment/probation violator (0)
County	Dichotomized as Hennepin (1) or Ramsey or Dodge/Filmore/Olmsted (0)
Index sex offense	Dichotomized as serving a sentence for a sex offense (1) or a non-sex offense (0)
Length of stay (LOS)	Number of days between an offender's most recent prison admission and release dates
Suicidal tendencies	A history of suicidal tendencies (1) versus no suicidal tendencies (0)
Marital status	Dichotomized as married (1) or unmarried (0)
Post-secondary degree	Dichotomized as having a post-secondary degree/certificate (1) or having less than a post-secondary degree/certificate (0)
Post-release supervision	Dichotomized as intensive supervised release (ISR) at the time of release from prison (1) or discharge (0) wherein the offender was given unsupervised release due to expiration of sentence
Standardized LSI-R or LS/CMI Score	Standardized values of most recent LSI-R or LS/CMI score prior to release from prison
Standardized MnSOST-R or MnSOST-3 Score	Standardized values of most recent MnSOST-R or MnSOST-3 score prior to release from prison
Outcome measures	
Rearrest	Rearrested for a new offense—misdemeanor, gross misdemeanor, or felony—after release from prison
Sex offense rearrest	Rearrested for a new "hands-on" sex offense—gross misdemeanor or felony—after release from prison
Reconviction	Reconvicted—misdemeanor, gross misdemeanor, or felony—after release from prison
Sex offense reconviction	Reconvicted for a new "hands-on" sex offense—gross misdemeanor or felony—after release from prison
Resentenced	Resentenced to prison for a new felony reconviction after release from prison
Technical violation revocation	Returned to prison after having supervised release (i.e., parole) revoked for violating the conditions of supervision

those from the MnSOST-R and MnSOST-3 were standardized to create common risk assessment metrics for all 100 offenders.

Recidivism analysis

Cox regression was used to analyze the effects of MnCOSA on recidivism. Each of the recidivism measures contained information on the date when the recidivism event occurred, which enabled a determination of the number of days from release to the time of recidivism or the end of the follow-up period for those who desisted. A Cox

regression model uses both "time" and "status" variables to estimate the impact of the independent variables on recidivism. The "time" variable measures the amount of time from the date of release until the date of first rearrest, reconviction, resentencing, reimprisonment, or the end of the follow-up period for those who desisted. The "status" variable, on the other hand, measures whether individuals recidivated (rearrest, reconviction, resentenced, and reimprisonment) during the period in which they were at risk to recidivate.

As a result of the small sample used ($N = 100$) in this evaluation, the number of predictors in the model is an important consideration for the Cox regression analyses. Prior research suggests that logistic regression models can yield biased estimates, unreliable confidence interval coverage, and convergence problems when the number of predictors in the model begins to approach the number of events measured by the dependent variable (Penduzzi et al. 1996). That is, as the events per variable (EPV) value decreases, the problems noted above tend to get worse. In their study, Vittinghoff and McCulloch (2007) found that most of the models with EPV values less than five were not affected by these problems. Still, they recommend using a threshold of five events per variable (Vittinghoff and McCulloch 2007).

This evaluation used 12 predictors—MnCOSA participation and the 11 control variables (see Table 1). Due to the recidivism rates shown in Table 2, the EPV values for a 12-predictor model are 3.25 for resentenced (e.g., 39 resentenced/12 predictors), 4.50 for revocation (54 revoked/12 predictors), 4.92 for reconviction (59 reconvicted/12 predictors), and 5.83 for rearrest (70 rearrested/12 predictors). Regarding sexual recidivism, only 8 of the 100 offenders were rearrested for a new sex offense and just 4 were reconvicted and resentenced for new sex offenses. As a result, the Cox regression models for sexual recidivism contained fewer predictors. In addition to MnCOSA participation, the Cox regression models analyzing sex offense rearrest included standardized MnSOST score (to control for sexual recidivism) and ISR (since it had a significant effect on sexual recidivism).

For each recidivism measure analyzed, the proportionality assumption was tested by estimating time-dependent covariate models. None of the time-dependent covariates were statistically significant, which indicates the hazard functions were proportional over time. In addition, a penalized Cox regression model was used to estimate the effects of MnCOSA on sex offense reconviction. For this recidivism measure, there was complete separation between the MnCOSA (zero sex offense reconvictions) and control (four sex offense reconvictions) groups, resulting in non-convergence of the likelihood function for the Cox regression model. The convergence problem for the sex offense reconviction analyses was addressed by implementing Firth's penalized maximum likelihood bias reduction method for Cox regression (Firth 1993).

Cost–benefit analysis

The cost–benefit analysis for MnCOSA began with an identification of the costs and benefits. The costs for MnCOSA have consisted of the funding that has been necessary for the MnDOC to operate the program. Given the reliance on volunteers from the community, program operating costs have been allocated largely toward project staff salaries and volunteer training and recruitment efforts. The main potential benefit for

Table 2 Covariate and recidivism comparison between MnCOSA and control groups

Measures	MnCOSA	Control	t test/χ^2
Non-white	82.0%	80.0%	0.801
Age at release (years)	38.5	37.8	0.738
Admission type			
New Commit	36.0%	34.0%	0.836
Probation violator	2.0%	6.0%	0.312
Release violator	62.0%	60.0%	0.840
County			
Hennepin	46.0%	52.0%	0.553
Ramsey	52.0%	44.0%	0.428
DFO	2.0%	4.0%	0.563
Index sex offense	64.0%	62.0%	0.838
Length of stay (months)	17.8	18.7	0.834
Suicidal tendencies	30.0%	32.0%	0.831
Married	16.0%	8.0%	0.223
Post-secondary degree	8.0%	18.0%	0.140
Intensive supervised release	92.0%	86.0%	0.343
LSI-R and LS/CMI	− 0.01	0.05	0.784
MnSOST-R and MnSOST-3	− 0.21	0.14	0.072
Recidivism			
Rearrest	60.0%	80.0%	0.029*
Sex offense rearrest	2.0%	14.0%	0.027*
Reconviction	50.0%	68.0%	0.043*
Sex offense reconviction	0.0%	8.0%	0.042*
Resentence	30.0%	48.0%	0.066
Revocation[a]	56.0%	66.0%	0.310
N	50	50	100

MnCOSA Minnesota Circles of Support and Accountability; *DFO* Dodge, Filmore, Olmsted; *LSI-R* Level of Service Inventory-Revised; *LS/CMI* Level of Service/Case Management Inventory; *MnSOST* Minnesota Sex Offender Screening Tool

*$p < 0.05$

[a] $N = 46$ for MnCOSA; $N = 43$ for control

MnCOSA is a decrease in recidivism, which results in fewer costs associated with crime.

The study compared the number of offenses committed by CMs and offenders in the control group to determine whether MnCOSA has produced a recidivism-reduction benefit. The costs for specific offenses were monetized on the basis of cost of crime estimates developed by Cohen and Piquero (2009), DeLisi et al. (2010), and McCollister et al. (2010). These studies estimated the costs of specific types of crime to society based on victim costs, criminal justice costs (police, courts, and prisons), and lost productivity of incarcerated offenders. Moreover, the crime cost estimates in these

studies were based on a willingness-to-pay approach that captures public concern about crime and, in particular, its willingness to assist in crime prevention.

The cost estimates from these studies for specific offenses were adjusted for inflation to 2017 dollars, and the average cost for offenses was used where more than one estimate has been developed. For example, all three studies developed estimates for murder, rape/sex offenses, aggravated assault, armed robbery, and burglary. The Cohen and Piquero (2009) and McCollister et al. (2010) studies each developed estimates for simple robbery, arson, motor vehicle theft, fraud, and theft. For offenses, however, where only one estimate has been reported, the cost information from a single study was used. For example, for cost estimates associated with stolen property, embezzlement, and forgery, this study relied on the estimates developed by McCollister et al. (2010). Similarly, for "other" offenses, such as drugs, which do not fall into any of these categories, the estimate reported by Cohen and Piquero (2009) was used. To determine both the type and number of reoffenses committed by offenders in the MnCOSA and control groups, this study used reconvictions as the recidivism measure.

Because the cost-of-crime studies do not estimate reimprisonment costs for parole revocations, this evaluation examines the costs resulting from technical violation revocations. Based on data obtained from the MnDOC's COMS database, CMs were compared with offenders in the control group based on how many days they were reimprisoned for technical violation revocations. As with the initial MnCOSA evaluation, the overall difference in the number of days between the two groups was "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 2013, p. 154).

Results

The comparison between the offenders in the MnCOSA and control groups presented in Table 2 indicates the randomized assignment process produced two groups that are relatively balanced. The only covariate that approached statistical significance was the standardized MnSOST score ($p = 0.072$), wherein MnCOSA participants had a lower score than those in the control group.

Overall, most offenders in both groups have been non-white, mostly African American. Unlike the Canadian version of COSA, which has focused on sex offenders whose sentences had expired, a majority of the offenders in both groups have been released from prison to intensive supervision. Most have been split between Hennepin and Ramsey counties, and a majority has been admitted to prison as release violators. Likewise, close to two thirds were committed to prison for criminal sexual conduct, and the average length of stay was about 18 months. Nearly one third had suicidal tendencies, 12% were married, and 13% had a post-secondary degree or certificate.

CMs had lower rates of recidivism for all six measures in comparison to the offenders in the control group. Indeed, 80% of the control group offenders had been rearrested for a new offense compared to 60% of the MnCOSA participants. More than

two thirds (68%) of the control group had been reconvicted compared to half of the MnCOSA participants. Likewise, nearly half of the control group (48%) had been resentenced to prison for a new felony offense compared to 30% of MnCOSA participants. Of the 46 MnCOSA offenders released to intensive supervision, 56% returned to prison for a technical violation revocation versus 66% of the 43 control group offenders placed on intensive supervised release.

The results for sexual recidivism reveal significant differences between the MnCOSA and control groups. By the end of June 2017, only one MnCOSA participant (2% of the total) had been rearrested for a new sex offense compared to seven in the control group (14% of the total). The MnCOSA participant rearrested for a sex crime had not been convicted for that offense, whereas four of the seven control group offenders had been reconvicted, resulting in a rate of 8% (4 of the 50 control group offenders). All four were resentenced to prison, so the resentence results are the same as those for sex offense reconviction.

These findings suggest MnCOSA may have a significant impact on recidivism. Still, it may be that the differences in observed recidivism between CMs and offenders in the control group are affected by other factors such as time at risk or MnSOST score. To statistically control for the effects of these other factors on reoffending, Cox regression models were estimated for all six recidivism measures.

The impact of MnCOSA on recidivism

The results from the Cox regression models presented in Table 3 indicate that MnCOSA significantly reduced the hazard ratio for five recidivism measures. Controlling for the effects of the other independent variables, participation in MnCOSA decreased the hazard by 57% for rearrests ($p = 0.001$; lower CI $= 0.259$; upper CI $= 0.718$), 55% for reconvictions ($p = 0.012$; lower CI $= 0.250$; upper CI $= 0.810$), 51% for resentences ($p = 0.043$; lower CI $= 0.251$; upper CI $= 0.977$), and 49% for revocations ($p = 0.016$; lower CI $= 0.298$; upper CI $= 0.880$).

The results also show that MnCOSA significantly lowered the risk of sex offense rearrest by 88% ($p = 0.049$; lower CI $= 0.014$; upper CI $= 0.994$). In the penalized Cox regression model for sex offense reconviction, the direction (negative) and magnitude (0.12) of the hazard ratio was similar but not statistically significant ($p = 0.18$). The risk of sexual recidivism, for both rearrest and reconviction, was significantly lower for individuals who were released to intensive supervision. The standardized MnSOST score, on the other hand, did not have a significant effect on either sexual recidivism measure.

Cost–benefit analysis

The cost–benefit analysis compared MnCOSA's operating costs, which are presented later in Table 6, with the benefits gained from a decrease in recidivism. The recidivism-reduction benefits were estimated by examining the costs associated with reoffending as well as those resulting from returns to prison for technical violation revocations. As shown in Table 4, reoffense costs were estimated by examining reconvictions by CMs and offenders in the control group.

Table 3 Cox regression models: impact of MnCOSA on time to first recidivism event

	Sex rearrest		Rearrest		Sex reconviction		Reconviction		Resentenced		Revocation	
	HR	SE	HR	SE	HR	SE	HR	SE	HR	SE	HR	SE
MnCOSA	0.119*	1.085	0.431**	0.261	0.120	1.672	0.450**	0.300	0.495*	0.347	0.512**	0.277
Non-white			2.738*	0.410			2.448	0.462	1.892	0.585	1.353	0.372
Age at release (years)			0.969*	0.015			0.985	0.017	0.944*	0.023	0.978	0.015
Release violator			1.395	0.321			1.458	0.393	2.465	0.464	0.645	0.397
Hennepin			1.287	0.260			1.075	0.295	1.530	0.356	0.423**	0.289
Index sex offense			0.516*	0.288			0.531	0.331	0.315**	0.391	0.433*	0.323
Length of stay (months)			0.994	0.008			0.995	0.008	1.016	0.010	0.985	0.010
Suicidal tendencies			0.770	0.284			1.099	0.321	0.950	0.377	0.740	0.302
Married			0.607	0.415			0.698	0.442	0.966	0.482	2.161	0.770
Post-secondary degree			1.522	0.359			0.849	0.441	1.303	0.481	2.771*	0.419
Intensive supervised release	0.161*	0.769	0.161**	0.419	−0.129*	1.036	0.478	0.498	0.930	0.541		
LSI-R and LS/CMI			1.030	0.154			0.772	0.188	1.239	0.215	1.182	0.154
MnSOST-R and MnSOST-3	0.689	0.401			0.860	0.565						
N	100		100		100		100		100		89	

HR hazard ratio; *SE* standard error; *MnCOSA* Minnesota Circles of Support and Accountability; *LSI-R* Level of Service Inventory-Revised; *LS/CMI* Level of Service/Case Management Inventory; *MnSOST* Minnesota Sex Offender Screening Tool

*p < 0.05, **p < 0.01

Table 4 Estimated reoffense cost comparison between MnCOSA and control groups

Rearrest offenses	Estimated cost per offense[a]	MnCOSA	Control
		Reconvictions (total cost)	Reconvictions (total cost)
Attempted murder	$384,007	0 ($0)	1 (384,007)
Criminal sexual conduct	$383,625	0 ($0)	4 ($1,534,500)
Aggravated assault	$131,923	0 ($0)	2 ($263,846)
Simple robbery	$48,148	1 ($48,148)	1 ($48,148)
Burglary	$32,589	3 ($97,767)	5 ($162,945)
Simple assault	$22,993	6 ($137,958)	12 ($275,916)
Fraud/forgery	$6179	0 ($0)	4 ($24,716)
Theft/larceny	$4470	4 ($17,880)	4 ($17,880)
Failure to register	$1210	11 ($13,310)	26 ($31,460)
Driving after cancelation	$1210	0 ($0)	10 ($12,100)
Driving while intoxicated	$1210	1 ($1210)	7 ($8470)
Drug offense	$1210	3 ($3630)	3 ($3630)
Escape/fleeing police	$1210	1 ($1210)	1 ($1210)
Obstruct legal process	$1210	2 ($2420)	0 ($0)
Disorderly conduct	$1210	4 ($4840)	4 ($4840)
Weapon possession	$1210	1 ($1210)	2 ($2420)
Total		37 ($329,583)	86 ($2,776,088)
Reoffense costs avoided		−49 (−$2,446,505)	

[a] Sources: Cohen and Piquero (2009); DeLisi et al. (2010); McCollister et al. (2010)

CMs were reconvicted for 37 offenses in comparison to 86 for the control group. The estimated costs for the 37 CM reconvictions totaled $329,583, while the 86 reconvictions for those in the control group offenders added up to $2,776,088. The difference in estimated reoffending costs between the two groups was $2,446,505. Reoffending costs were therefore nearly $50,000 lower, on average, per MnCOSA participant (Table 5).

While the size of the costs avoided from the recidivism reduction is impressive, it is worth noting that the total reoffending costs for the control group is likely an underestimate. One of the members of the control group was convicted for attempted murder, as indicated in Table 4, in which he stabbed an adult female victim multiple times. After awaking from a medically induced coma following surgery, the victim identified the control group offender as her assailant and he was later given an 18-year prison sentence.

The three cost-of-crime studies noted earlier have developed estimates for murder, which range (in 2017 dollars) from $10 to $20 million per offense. Given that the victim in this case was seriously wounded, albeit not fatally, using even the minimum estimate of $10 million (which is more than three times higher than the total for the other 122 convictions combined) for this offense would almost assuredly result in overestimated reoffense costs for the control group. On the other hand, the estimate for

Table 5 Revocation cost comparison between MnCOSA and control groups

Revocation	MnCOSA	Control
Total revocation days	12,280	18,098
Average days per offender	245.6	362.0
Total revocation costs (marginal per diem = $57)	$736,800	$1,085,880
Summary		
Total revocation days avoided	5818	
Average revocation days avoided per participant	116.4	
Total revocation costs avoided	$349,080	
Average revocation costs avoided per participant	$6982	

a similar offense such as aggravated assault ($131,923) is substantially less than the costs to imprison and supervise the individual over the 18-year period ($384,007). As a result, this study uses the $384,007 as the cost for this offense, but it is worth noting the cost estimate for this offense does not account for victim costs or lost productivity costs.

To estimate the costs associated with reimprisonment resulting from technical violation revocations, CMs were compared with those in the control group on the basis of how many days they were reimprisoned for a technical violation revocation during the follow-up period. Whereas the control group returned to prison for a total of 18,098 days, CMs spent 12,280 days in prison. MnCOSA participants thus spent 5818 fewer days in prison than the control group for technical violation revocations. On average, CMs spent 116 fewer days in prison for technical violation revocations after their release than offenders in the control group. With an average marginal per diem of $60 over the 2008–2016 period, MnCOSA produced a total reimprisonment cost avoidance of $349,080, resulting in $6982 per participant.

Combining the estimated reoffense ($2,446,505) and reimprisonment ($349,080) costs yields a total cost avoidance of $2,795,585 (see Table 6). During the 2008–2016 period, it cost a total of $749,422 to operate MnCOSA. After deducting the operating costs, the findings indicate MnCOSA has produced an estimated benefit of $2,046,163, resulting in $40,923 per participant. The cost–benefit ratio indicates that for every dollar spent on MnCOSA, the program has generated an estimated benefit of $3.73, a 273% return on investment (ROI).

The prior evaluation of MnCOSA (Duwe 2013) and the research conducted by Aos and Drake (2013) on the cost-effectiveness of adult correctional programs provide a broader context in which to place these findings. The cost–benefit estimates from this study are larger than those found in the initial evaluation (Duwe 2013), which reported an ROI of $1.82, a benefit minus cost estimate of $11,716 per participant, and a total cost avoidance of a little more than $363,000. The marked improvement in MnCOSA's cost-effectiveness is due primarily to the difference in sexual recidivism results between the two evaluations. In particular, the results suggest MnCOSA produced an estimated $1.5 million in costs avoided for sexual recidivism (see Table 4), which accounts for nearly two thirds of the overall costs avoided for reoffending. Of the 24 cost-effective interventions for adult offenders identified by Aos and Drake (2013), the ROI ranged

Table 6 MnCOSA cost-benefit results

Program operating costs	
2008	$104,800
2009	$144,050
2010	$112,456
2011	$81,455
2012	$63,738
2013	$69,171
2014	$43,412
2015	$38,587
2016	$91,752
Total costs	$749,422
Costs avoided	
Estimated reoffense costs avoided	$2,446,505
Revocation costs avoided	$349,080
Total costs avoided	$2,795,585
Total benefits minus costs	$2,046,163
Benefit-cost per participant	$40,923
Cost–benefit ratio	$3.73
Return on investment (ROI) percentage	273%

from $0.84 to as much as $43.26. By comparison, MnCOSA's ROI of $3.73 is not especially high. But with a benefit minus cost estimate of $40,923 per participant, MnCOSA is 65% higher than the largest estimate reported by Aos and Drake (2013), whose estimates ranged from $1115 to $24,840 per participant.

Conclusion

This evaluation used a small sample size ($N = 100$), but the follow-up period for recidivism (average of 6 years) was relatively lengthy. More important, this study used a RCT, which is widely regarded as the "gold standard" for evaluation research. The results showed that MnCOSA significantly reduced both general and sexual recidivism. Further, the magnitude of this reduction was relatively large, for MnCOSA decreased the risk of rearrest for a new sex offense by 88% and the risk of general recidivism by 49–57%. Due in no small part to these large effect sizes for recidivism, MnCOSA has generated a ROI of $3.73 and produced more than $2 million in cost-avoidance benefits, which amounts to a little more than $40,000 per participant.

As promising as these results are, two main caveats are worth discussing. First, the CoSA model appears to be a program that is difficult to implement, especially on a broader scale. CoSA has been a low-volume program in the places where it has been implemented. For example, programs in Canada and the UK have averaged between 10 and 15 Circles per year (Bates et al. 2014; R.J. Wilson, Personal e-mail communication. August 11th, 2017), while the annual average has been closer to six for MnCOSA. Moreover, there are instances in

which some jurisdictions in the USA have tried, but ultimately failed, to implement a CoSA program. These failed CoSA start-ups include efforts that never got off the ground (e.g., Idaho, Illinois, Nebraska, New Mexico, and Washington) to programs that folded after a brief period of time (e.g., Oregon and Pennsylvania) (R.J. Wilson, Personal e-mail communication. August 11th, 2017). Implementing and sustaining a CoSA program is challenging not only because it relies heavily on community involvement but also because it advocates an approach—"no one is disposable"—that can be at odds with the public's perception of sex offenders. Reducing the number of volunteers per Circle is one strategy that has been proposed to help alleviate these challenges (Duwe 2013; Fox 2013), but it is worth remembering that cutting corners or delivering the "light" version of an intervention can compromise its effectiveness (Duwe and Clark 2015). At a minimum, future research should begin exploring failed CoSA start-ups to determine whether this intervention can be implemented more effectively.

Second, as noted earlier, one of the main tenets of the CoSA model is "no more victims," which refers primarily to victims of sexual assaults. Due to the low volume of CM enrollment in MnCOSA (50 CMs from 2008 to 2016) combined with the relatively low sexual recidivism base rates that have recently been observed for US sex offenders (a range between 2 and 5%) (Duwe 2014b, 2017), it took nearly a decade since the start of the program to achieve significant results for sexual reoffending. Currently, it is unclear whether the findings for MnCOSA are unique or whether they are generalizable to other jurisdictions in the USA that have been able to implement a CoSA program (e.g., California, Colorado, North Carolina, and Vermont) (R.J. Wilson, Personal e-mail communication. August 11th, 2017). If Minnesota is a best-case scenario in terms of the impact on sexual recidivism, then the wait could be even longer than that observed here (e.g., 15 years before significant results are obtained, if at all). As long as the figures for sexual recidivism and CM enrollment remain relatively low, lengthy periods of time will be needed to adequately determine whether CoSA programs in other jurisdictions are effective in reducing sexual reoffending.

The CoSA model has been difficult to implement in the USA and, even when it has been, a great deal of patience is likely needed to see whether its impact on sexual recidivism ever comes to fruition. Still, there are a number of important lessons we can learn from this evaluation that apply more broadly to correctional research, policy, and practice. First, to a large extent, MnCOSA has delivered on the promise of "no more victims." The results presented here offer the strongest evidence to date the CoSA model can be effective in reducing sexual recidivism. Even if these results are overly optimistic and eventually taper off over time, the effect size would likely still be larger compared to effective interventions such as sex offender treatment (Schmucker and Lösel 2015). Other interventions like broad community notification (Duwe and Donnay 2008) and involuntary civil commitment (Duwe 2014a, b) have shown they can also reduce sexual recidivism, but they may also yield negligible ROIs due to high operational costs (Duwe 2015). The evidence presented here suggests MnCOSA is not only effective in reducing sexual recidivism but it may also be more cost-effective than other interventions such as sex offender treatment.

Second, the findings from this study and the initial evaluation of MnCOSA (Duwe 2013) indicate that low-volume interventions can be cost-effective. In order to do so, however, such interventions need to produce large reductions in recidivism, be effective in reducing violent recidivism, or both. Even though MnCOSA relies heavily on

community volunteers, the program is still relatively costly to operate (nearly $15,000 per participant). MnCOSA's high operational costs reflect not only the economy of scale of correctional programming (i.e., as program enrollment goes up, per participant costs generally go down) but also the fact that recruiting suitable and willing volunteers from the community is challenging and time-intensive. Nevertheless, MnCOSA has been cost-effective because it has produced large reductions in recidivism. But the program's cost-avoidance benefits were much larger in this study than in the initial evaluation (Duwe 2013), due primarily to MnCOSA's impact on sexual offending—the second-costliest type of crime to society.

Third, the improvement in sexual recidivism results from the initial evaluation to this study underscores the importance of applying CoSA to a high-risk population. As the Minnesota experience with CoSA illustrates, however, "high risk" does not automatically entail a focus on the sex offenders assigned the highest risk level. Consistent with the risk principle, Level 3 sex offenders in Minnesota are more likely to receive interventions, such as sex offender treatment and broad community notification, which have been shown to reduce sexual recidivism. Because the concentration of effective interventions among Level 3 offenders has helped suppress their risk, the sexual recidivism rates for these offenders have been roughly half those for the Level 2 offenders (Duwe and Donnay 2008).

If MnCOSA had been applied to Level 3 offenders or those who had completed prison-based sex offender treatment, as some stakeholders have argued since the inception of the program, it is fair to suspect this evaluation would not have found significant results for sexual recidivism. Rather than having seven recidivists rearrested for a new sex offense, a control group consisting of treatment completers or Level 3 offenders may have had only three or four sex offense recidivists. Given that the findings for sex offense rearrest were barely significant at the 0.05 level in the Cox regression model, it is unlikely that a control group with half as many recidivists would achieve statistical significance. Applying CoSA to a high-risk population thus helps highlight its ability to reduce recidivism.

Fourth, the results illustrate the effectiveness of interventions that target antisocial peers by providing prisoners with prosocial support. Much of this support comes from family and friends, who often provide released prisoners with housing, employment opportunities, and financial assistance (Berg and Huebner 2010). But social support may be especially influential if it comes from individuals an offender did not know prior to entering prison. For example, prior research has shown that prison visits and mentoring from community volunteers are particularly effective in reducing recidivism (Duwe and Johnson 2016; Duwe and King 2013). Moreover, as suggested by Northcutt Bohmert et al. (2016) in their qualitative evaluation of MnCOSA, social support from "strangers" can have a powerful impact. Indeed, when one of the CMs interviewed by Northcutt Bohmert et al. (2016) was contemplating suicide, he turned to one of his Circle volunteers for support. While one of the interviewed CMs indicated his friendships with the volunteers in his Circle gave him hope, another reported that his Circle looked at him as an equal, not as a sex offender (Northcutt Bohmert et al. 2016).

Fifth, even though the CoSA model has been developed largely as an intervention for sex offenders, it is reasonable to suggest that a modified version would likely be effective, too, for those without a history of sexual offending. A lack of prosocial support is common to many prisoners, which helps explain why antisocial peers are a

major criminogenic need (Andrews et al. 2006). To be sure, the results in this study suggest MnCOSA had a greater impact on sex offense rearrest than it did on the four measures of general recidivism. Still, the size of MnCOSA's impact on general recidivism was substantial (i.e., effect sizes ranged between 49 and 57%), which implies that CoSA would likely be effective for individuals who have not been convicted of a sex offense.

Finally, should the CoSA model expand to other offender populations, it should continue to target individuals with a high risk for violent crime. Even without the sex offender stigma, the CoSA model would likely continue to be a low-volume program if it were expanded to other offender populations because it relies so heavily on community volunteers. As noted above, low-enrollment programs are generally more costly to operate on a per participant basis, which is why the return (i.e., the cost-avoidance benefit) should be substantial. Because violent crimes are the most costly to society, preventing their occurrence optimizes the potential size of the cost-avoidance benefit.

Targeting individuals with a higher risk for violent crime implies, of course, the use of risk assessment instruments that can accurately predict violent recidivism. In general, the more serious the crime, the rarer it is. Accurately predicting rare events can be challenging, but previous research has demonstrated success in assessing the risk of violent offenses that have lower base rates than sexual recidivism. For example, Berk et al. (2009) developed an instrument to assess the risk of homicide among Philadelphia probationers, whereas Duwe (2012) created an assessment to predict first-time sexual offending among Minnesota prisoners without a prior sexual offending history. In their study, Berk et al. (2009) reported that probationers with the highest risk of recidivating with a murder would be given a "light" intervention. Yet, the RNR model maintains that higher-risk offenders should receive more intensive interventions. CoSA may thus be an appropriate intervention to use in reducing recidivism among those with an elevated risk for violent reoffending.

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