Does Release Planning for Serious and Persistent Mental Illness (SPMI) Offenders Reduce Recidivism? Results from an Outcome Evaluation

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Research Summary

Since 2002, the Minnesota Department of Corrections has provided release planning services to serious and persistent mentally ill (SPMI) offenders. This study assesses the effectiveness of SPMI release planning by examining recidivism outcomes among 796 offenders released from Minnesota prisons between 2004 and 2011. Propensity score matching was used to individually match 398 SPMI offenders who received release planning with a comparison group of 398 SPMI offenders who did not receive these services. The results from the Cox regression analyses showed that SPMI release planning did not have a significant impact on any of the four recidivism measures that were analyzed. Release planning's failure to reduce recidivism may be due to the fact that these services were designed to treat mental illness rather than address the criminogenic needs of offenders.

Introduction

Offenders in state and federal prisons and local county jails have relatively high rates of mental illness. Compared to the general population, prisoners are 2-4 times more likely to have psychotic and major depressive disorders (Fazel & Danesh, 2002). In their study that reported the results of interviews with more than 20,000 offenders across the United States, James and Glaze (2006) found that nearly two-thirds of jail inmates and more than half of state and federal prisoners reported having a mental health problem. James and Glaze (2006) also indicated that mentally ill offenders—who were more likely to be female, white and young—revealed having higher rates of institutional misconduct, homelessness, substance abuse, and prior physical and/or sexual abuse.

In addition to demonstrating that individuals with major mental disorders have an elevated risk for violence, especially if they misuse substances (Silver, 2006), existing research has shown that mental illness is associated with higher recidivism rates for offenders released from prison. In their study of California prisoners, Messina, Burdon, Hagopian, and Prendergast (2004) found that offenders with co-occurring substance abuse and psychiatric disorders were significantly more likely to be reincarcerated than their counterparts without psychiatric disorders. Examining Canadian offenders, Porporino and Motiuk (1995) reported that offenders with mental disorders had a higher rate of return to correctional custody, primarily for technical violations, than offenders without disorders. Similarly, Eno Louden and Skeem (2011) showed that California parolees with mental disorders were more likely than those without mental disorders to return to prison, particularly for technical violations.

While Andrews, Bonta, and Wormith (2006) acknowledge major mental illness is a risk factor for recidivism, they emphasize it has only a modest, indirect impact on

reoffending. In their risk-needs-responsivity model, which is the prevailing paradigm within American corrections today, Andrews et al. (2006) identify eight central risk/need factors for recidivism. Of the eight, four (the “big four”) are considered especially influential for reoffending—antisocial history, antisocial personality, antisocial cognition, and antisocial associates. Whatever effect mental illness has on recidivism, Andrews et al. (2006) argue, likely reflects the impact of substance abuse (one of the “central eight” risk factors) along with antisocial cognition and antisocial personality pattern (two of the “big four”). Several recent studies have not only confirmed that mental illness is a weak predictor of recidivism, but also that the same risk factors (i.e., the “central eight”) apply to all offenders regardless of whether they have a mental disorder (Bonta, Blais, and Wilson, 2014; Hall, Miraglia, Lee, Chard-Wierschem & Sawyer, 2012).

The notion that mental illness does not have either a direct or substantial impact on reoffending is borne out, to a large degree, by the evidence that has accumulated on the efficacy of interventions that have been used with mentally ill offenders. Over the last several decades, the trend towards the deinstitutionalization of mentally ill individuals with histories of violence, combined with the meteoric rise in the use of incarceration, has resulted in growing numbers of mentally disordered offenders serving time in American jails and prisons (Silver, 2006). Therefore, as Wilson and Draine (2006) found in their study, the criminal justice system has assumed increasingly greater responsibility for the treatment of those with mental illness within the system. Nevertheless, according to Skeem, Manchak, and Peterson (2011), mental health interventions that have proven successful in improving clinical outcomes like reduced hospitalizations have not been especially effective in lowering recidivism when they have been adapted to correctional populations. Indeed, existing

evidence indicates that programs focused on linking offenders to mental health services have not yielded positive recidivism outcomes overall, primarily because these interventions assume reoffending is caused by untreated mental illness (Barrenger & Draine, 2012; Lurigio, 2011). Similar to Andrews et al. (2006), Skeem and colleagues (2011) suggest that mentally ill offenders tend to have a greater recidivism risk largely because they disproportionately experience risk factors that have been shown to increase reoffending (e.g., living in disadvantaged neighborhoods, unemployment, greater history of victimization, lengthy substance abuse histories, and associating with criminal peers).

Despite the relative lack of success mental health interventions in general have had in reducing recidivism, there are some correctional programs that have yielded positive outcomes. Most notably, results from a recent meta-analysis show that mental health courts are not only generally successful in reducing recidivism, but are also cost-effective (Aos & Drake, 2013). But given that mental health courts are used to divert offenders from jail or prison, this type of program was not designed for offenders serving time in prison. One program, however, that has yielded positive recidivism outcomes with mentally disordered prisoners is the modified therapeutic community (MTC) program. In their evaluation of a MTC program, Sacks, Sacks, McKendrick, Banks and Stommel (2004) compared offenders released from prison with co-occurring substance abuse and mental disorders who participated in a MTC program versus participants from a traditional mental health program. Sacks et al. (2004) not only found that MTC participants had significantly lower reincarceration rates, but also that the best outcomes were observed for completers of the in-prison MTC program who participated in the community-based aftercare portion of the program following their release from prison. As Skeem et al. (2011) pointed out in their

study, the MTC program evaluated by Sacks et al. (2004) was the only one they reviewed that targeted criminal thinking in addition to symptoms of mental illness.

Much like the MTC program evaluated by Sacks et al. (2004), Washington State's Dangerous Mentally Ill Offender (DMIO) program, now called the Offender Reentry Community Safety Program, has focused on providing mentally disordered offenders with a continuum of care from the institution to the community. The legislatively-mandated program provides interagency collaboration and state-funded mental health and substance abuse treatment, housing and other support services. Following designation as a DMIO, which typically occurs six months prior to release, an offender is immediately assigned a treatment provider by the Department of Social and Health Services. In the final 90-120 days prior to release, DMIO participants receive pre-engagement services and special treatment and transition planning. For up to five years after their release from prison, DMIO participants receive services based on their assessed needs that may include mental health and substance abuse treatment, housing and medical assistance, training and other support services (Lovell, Gagliardi & Phipps, 2005).

In the initial evaluation of the program, Lovell et al. (2005) found that program participants were more likely to receive pre-release community mental health services, obtain steady service the first year after release, and to be served more rapidly and in higher proportions than the comparison group. Similar to the recidivism results reported by Lovell et al. (2005), a more recent evaluation of the program found that it reduced felony recidivism by 42 percent and violent felony recidivism by 36 percent (Mayfield, 2009). Further, results from a cost-benefit analysis indicate the benefit per participant is nearly $25,000 and that it generates $1.75 in benefits for every dollar spent on the program (Aos & Drake, 2013).

Present Study

In 2002, the Minnesota Department of Corrections (MnDOC) began providing extensive release planning for serious and persistent mentally ill (SPMI) offenders. SPMI release planning is a pre-release transitions service that attempts to connect offenders with needed services in the community following release. This study assesses the effectiveness of the SPMI release planning that has been provided by comparing recidivism outcomes among 796 offenders released from Minnesota prisons between 2004 and 2011. If the release planning services were effective, then the results will show that the SPMI had significantly better recidivism outcomes than the comparison group.

In the next section, the report briefly describes SPMI release planning provided by the MnDOC. After discussing the data and methods that were used, the study presents the results from the statistical analyses. The report concludes by discussing the implications of the findings for correctional policy and practice.

SPMI Release Planning in Minnesota

Offenders in Minnesota's prison system must meet at least one of six criteria in order to be designated as SPMI. First, the offender has experienced two or more episodes for mental illness inpatient care within the last 24 months. Second, the offender has experienced a continuous psychiatric hospitalization lasting more than six months within the last 12 months. Third, the offender has been treated by a crisis team two or more times in last 24 months. Fourth, the offender has a "big four" diagnosis (bipolar, schizophrenia, borderline, or major depression) that has caused a significant impairment in functioning and has a written opinion from a mental health professional in the last 3 years stating that the individual will likely have future episodes if left untreated. Fifth, the offender has been

committed by a court as mentally ill or had the commitment stayed or continued. Finally, for those who do not meet the time requirements outlined under the first five criteria, offenders may still qualify as SPMI if they have a written opinion from a mental health professional in the last three years stating that they will likely have future episodes if left untreated.

Recognizing that SPMI offenders often face a host of challenges in successfully transitioning from prison to the community, the MnDOC began delivering release planning services to these offenders in 2002. The services, which are voluntary, address offenders' vocational, housing, chemical dependency, psychiatric, disability, medical, medication, and transportation needs. Without such services, offenders leaving on medications will have a supply and a prescription, but are unlikely to receive specialized housing assistance, get connected to vocational or work readiness programs, pursue sources of disability/income support, or have psychiatric appointments arranged prior to release. In the absence of specialized release planning, these responsibilities often fall to prison case managers and offenders, neither of whom possess any special knowledge of the system or how to maneuver through it.

When the MnDOC began providing release planning services for SPMI offenders, two release planners were responsible for delivering these services at several facilities—namely, the Minnesota Correctional Facility (MCF)-Lino Lakes and the MCF-Shakopee. Since 2002, however, the number of SPMI release planners has increased from two to six. The growth in the number of SPMI release planners led to greater coverage in SPMI release planning services across facilities as well as to an increase in the volume of offenders served.

Despite the increases in SPMI release planners and the number of offenders served, there have been offenders who have met the SPMI criteria but did not receive release

planning due to the lack of available resources. This evaluation capitalizes on these resource limitations by comparing recidivism outcomes among SPMI offenders who received release planning services with SPMI offenders who would have received these services had they been more widely available. Although this evaluation assesses the impact of SPMI release planning on recidivism, it is important to emphasize that it will not examine the effects of release planning on other relevant outcomes such as participation in community-based treatment, compliance in taking prescribed medication, or success in obtaining disability/income support.

It is also worth noting that the SPMI release planning services, which are delivered during the last few months prior to release, are similar to the pre-release transition planning offered by Washington's DMIO program. Unlike the DMIO program, however, release planning services are provided only within the institution and, thus, do not deliver a continuum of care. Moreover, in contrast to the MTC program, release planning was not designed to address a known criminogenic need. Lastly, given that SPMI offenders typically meet several times with release planners over the last few months of their incarceration, the release planning services constitute a low dosage, less intensive intervention compared to Washington's DMIO program or mental health courts.

Data and Methodology

It was not possible to conduct a prospective evaluation in which eligible participants were randomly assigned to either an experimental or control group. As a result, a retrospective quasi-experimental design was used to determine whether SPMI release planning had an impact on recidivism. To assemble the sample for this study, data from the Correctional Operations Management System (COMS), the database maintained by the

MnDOC, were used to identify the offenders who received a “Big Four” diagnosis. Offenders who received a release planning offer, based on data maintained by the release planners, were excluded from the pool of offenders in the comparison group. A base file review was then conducted by Health Services staff to determine which offenders met the SPMI criteria. The review identified 1,323 Minnesota prisoners released between 2004 and 2011 who met the SPMI criteria. Of these offenders, 785 received SPMI release planning services while the remaining 538 did not. As discussed later, propensity score matching (PSM) was used to individually match SPMI release planning participants with a comparison group of SPMI offenders who did not receive these services.

Dependent Variable

In this study, recidivism was defined as a 1) rearrest, 2) reconviction, 3) reincarceration for a new sentence, or 4) revocation for a technical violation. Multiple measures were used because there is no single best measure of recidivism. It is worth emphasizing, however, that the first three recidivism variables strictly measure new criminal offenses. Among these, rearrest provides the most sensitive measure of reoffending since not all rearrests result in a reconviction. New offense reincarceration, on the other hand, offers the most conservative reoffending measure given that offenders who are rearrested and reconvicted for a new offense may receive a probation sentence, for example, rather than a prison sentence. Compared to the three reoffense measures, 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.

Recidivism data were collected on offenders through June 30, 2013. Because the offenders in this study were released between January 2004 and December 2011, the follow-up time ranged from 1.5 years to 9.5 years with an average of a little more than 5 years. Data on arrests and convictions were obtained electronically from the Minnesota Bureau of Criminal Apprehension. Reincarceration and revocation data were derived from COMS. The main limitation with using these data is they measure only arrests, convictions or incarcerations that took place in Minnesota. As a result, the findings presented later likely underestimate the true recidivism rates for the offenders examined.

To accurately measure the total amount of time offenders were actually at risk to reoffend (i.e., "street time"), it was necessary to account for supervised release revocations in the recidivism analyses. More specifically, for the three recidivism variables that strictly measure new criminal offenses (rearrest, reconviction, and new offense reincarceration), it was necessary to deduct the amount of time they spent in prison for technical violation revocations from their total at-risk period. Failure to deduct time spent in prison as a supervised release violator would artificially increase the length of the at-risk periods for these offenders. Therefore, to achieve a more accurate measure of "street time", the time that an offender spent in prison as a supervised release violator was subtracted from his at-risk period, but only if it preceded a reoffense or if the offender did not recidivate prior to July 1, 2013.

Independent Variables

The main objective of this study is to evaluate the relationship between SPMI release planning and recidivism. The inmates who received SPMI release planning services were assigned a value of “1”, whereas the offenders in the comparison group were given a value of “0”. The independent, or control, variables included in the statistical models were those that were not only available in the COMS database but also might have an impact on recidivism and SPMI release planning selection (see Table 1). Most notably, four covariates were included that measured whether offenders have received a diagnosis pertaining to one or more of the “big four” disorders—bipolar, borderline, schizophrenia, and major depression.

The analyses also contain several measures commonly associated with recidivism risk, including the offender’s race, age, number of prior supervision failures, number of prior convictions, and institutional misconduct. Previous research on Minnesota prisoners has shown that suicidal history and an active security threat (STG) (i.e., gang) affiliation increase an offender’s risk for recidivism (Duwe, 2013a). Prior studies have also indicated that admission type (new commit), offense type, commitment county (metro), and length of stay are significant predictors of recidivism for Minnesota prisoners (Duwe, 2010; Duwe & Clark, 2013), which is why they were included in this study.

In addition to including factors that increase the likelihood of recidivism, the evaluation accounted for factors that have been shown to lower recidivism risk, such as participation in chemical dependency treatment (Duwe, 2010), sex offender treatment (Duwe & Goldman, 2009), prison visits (Duwe & Clark, 2013), and the Challenge Incarceration Program (CIP)—a correctional boot camp program (Duwe & Kerschner, 2008). Collectively, the covariates used tap into a number of risk factors such as antisocial history (prior supervision failures, prior convictions, prison misconduct), antisocial associates (STG

affiliation and prison visits), antisocial cognition (sex offender treatment, chemical dependency treatment and CIP are delivered within a cognitive-behavioral framework), school/work (secondary degree and participation in work release), and substance abuse (chemical dependency treatment).

Propensity Score Matching

PSM is a method that estimates the conditional probability of selection to a particular treatment or group given a vector of observed covariates (Rosenbaum & Rubin, 1985). The predicted probability of selection, or propensity score, is typically generated by estimating a logistic regression model in which selection (0 = no selection; 1 = selection) is the dependent variable while the predictor variables consist of those that theoretically have an impact on the selection process. Once estimated, the propensity scores are then used to match individuals who entered treatment with those who did not. Thus, an advantage with using PSM is that it can simultaneously "balance" multiple covariates on the basis of a single composite score.

In matching offenders who received SPMI release planning with those who did not on the conditional probability of receiving these services, PSM reduces selection bias by creating a counterfactual estimate of what would have happened to the offenders in the SMPI release planning group had they not received these services. PSM has several limitations, however, that are worth noting. First, and foremost, because propensity scores are based on observed covariates, PSM is not robust against "hidden bias" from unmeasured variables that are associated with both the assignment to treatment and the outcome variable. Second, there must be substantial overlap among propensity scores between the two groups in order for PSM to be effective (Shadish, Cook & Campbell, 2002); otherwise, the matching process

will yield incomplete or inexact matches. Finally, as Rubin (1997) points out, PSM tends to work best with large samples.

Although somewhat limited by the data available, an attempt was made to address potential concerns over unobserved bias by including as many theoretically-relevant covariates (29) as possible in the propensity score model. In addition, this study later demonstrates there was sufficient overlap in propensity scores between the treated and untreated offenders. Further, the sample size limitation was addressed by assembling a reasonably large number of cases (N = 1,323) for the propensity score analyses.

Matching for SPMI Release Planning Selection

Propensity scores were calculated for the 785 SPMI release planning participants and the 538 non-participants in the comparison group pool by estimating a logistic regression model in which the dependent variable was receiving SPMI release planning. Table 1 describes the independent variables used in this study and presents the results from the logistic regression model. The results show a number of factors that predicted whether offenders received SPMI release planning.

In Table 1, the results reveal that the odds of receiving SPMI release planning were significantly greater for males, offenders committed to prison from the Twin Cities' Metro area, offenders diagnosed with bipolar, offenders diagnosed with borderline, offenders diagnosed with schizophrenia, offenders with suicidal tendencies, offenders who participated in CD treatment, and those released more recently from prison. They were less likely to receive SPMI release planning services, however, if they were in prison for a sex offense, had a shorter length of stay in prison, participated in work release, and participated in CIP. Visits in prison were also negatively associated with participating in SPMI release planning.

Table 1. Logistic Regression Model for SPMI Release Planning Selection

Predictors	*Predictor Description*	*Coefficient*	*SE*
Male	Male = 1; Female = 0	0.345*	0.172
Minority	Minority = 1; White = 0	0.006	0.148
Age at Release (years)	Offender age in years at time of release from prison	0.001	0.007
Prior Supervision Failures	Number of prior revocations while under correctional supervision	0.097	0.068
Prior Convictions	Number of prior felonies, excluding index conviction(s)	-0.007	0.009
New Commitment	New court commitment = 0; probation and release violators = 0	-0.177	0.147
Metro Commit	Twin Cities metropolitan area = 1; Greater Minnesota = 0	0.483**	0.136
Bipolar	Bipolar diagnosis = 1; No bipolar diagnosis = 0	0.682**	0.173
Borderline	Borderline diagnosis = 1; No borderline diagnosis = 0	0.455**	0.166
Depression	Depression diagnosis = 1; no depression diagnosis = 0	-0.067	0.167
Schizophrenia	Schizophrenia diagnosis = 1; no schizophrenia diagnosis = 0	0.999**	0.178
Suicidal Tendencies	Suicidal tendencies = 1; None = 0	0.657**	0.133
STG	Active security threat group (STG) member = 1; none = 0	-0.028	0.243
Offense Type	Person offense serves as the reference		
Property	Property offense = 1; non-property offense = 0	-0.279	0.205
Drugs	Drug offense = 1; non-drug offense = 0	-0.363	0.220
Crim. Sexual Conduct	Sex offense = 1; non-sex offense = 0	-0.664**	0.247
Felony DWI	Felony DWI offense = 1; non-Felony DWI offense = 0	-0.763*	0.319
Other	Other offense = 1; non-other offense = 0	-0.578*	0.229
Length of Stay (months)	Number of months between prison admission and release dates	-0.011**	0.003
Institutional Discipline	Number of discipline convictions in prison during current term	0.008	0.005
Secondary Degree	Secondary degree or higher at time of release	0.075	0.147
Chemical dependency TX	Entered chemical dependency treatment in prison = 1; other = 0	0.452**	0.159
Sex Offender Treatment	Entered sex offender treatment in prison = 1; other = 0	0.033	0.338
Prison Visit	Any visit in prison = 1; none = 0	-0.293*	0.142
Supervision Type	Supervised release serves as the reference		
Work Release	Work Release = 1; non-Work Release = 0	-1.583**	0.332
CIP	Challenge Incarceration Program (CIP) = 1; non-CIP = 0	-2.19**	0.647
ISR	Intensive supervised release (ISR) = 1; non-ISR = 0	0.154	0.175
Discharge	Discharge = 1; released to correctional supervision = 0	0.041	0.288
Release Year	Year in which first released from prison for instant offense	0.189**	0.030
Constant		-380.152**	60.708
N		1,323	
Log-likelihood		1476.077	
Nagelkerke R^2		0.283	

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

As shown in Table 2, the difference in mean propensity score between SPMI release planning and comparison group offenders was statistically significant at the .01 level. Still, there was a sufficient amount of overlap in propensity scores. For example, most offenders in both groups (97 percent for SPMI release planning and 79 percent for the comparison group) had propensity scores greater than 0.25.

Table 2. Propensity Score Matching and Covariate Balance for SPMI Selection

Variable	*Sample*	*SPMI*	*Comparison*	*Bias*	*Reduction*	*t test*
Propensity Score	Total	68.25%	46.33%	89.86		0.00
	Matched	57.14%	56.10%	4.77	-94.69%	0.42
Male	Total	80.89%	70.45%	20.49		0.00
	Matched	77.39%	76.63%	1.48	-92.80%	0.80
Minority	Total	43.06%	34.39%	14.49		0.00
	Matched	40.70%	38.19%	4.18	-71.15%	0.47
Age at Release (Years)	Total	36.56	37.42	7.06		0.13
	Matched	37.33	36.67	5.44	-22.96%	0.34
Prior Supervision Failures	Total	0.66	0.42	16.70		0.00
	Matched	0.53	0.55	0.93	-94.45%	0.87
Prior Convictions	Total	10.52	9.23	12.36		0.01
	Matched	9.82	10.30	4.49	-63.64%	0.44
New Court Commitment	Total	49.68%	56.13%	10.55		0.02
	Matched	52.01%	50.25%	2.87	-72.79%	0.62
Metro	Total	54.65%	42.57%	19.85		0.04
	Matched	49.25%	48.24%	1.65	-91.70%	0.78
Bipolar	Total	26.24%	16.17%	19.67		0.00
	Matched	16.58%	18.59%	4.33	-77.97%	0.46
Borderline	Total	26.37%	18.59%	15.69		0.00
	Matched	19.35%	21.86%	5.11	-67.44%	0.38
Depression	Total	66.50%	79.55%	23.65		0.00
	Matched	74.62%	75.63%	1.90	-91.96%	0.74
Schizophrenia	Total	34.65%	14.68%	37.08		0.00
	Matched	23.62%	19.60%	7.88	-78.74%	0.17
Suicidal Tendencies	Total	59.11%	37.17%	36.62		0.01
	Matched	46.23%	46.48%	0.41	-98.88%	0.94
STG	Total	9.17%	7.81%	3.94		0.39
	Matched	8.04%	8.79%	2.22	-43.66%	0.70
Property	Total	23.44%	21.93%	2.93		0.20
	Matched	23.37%	23.37%	0.00	-100.00%	1.00
Drugs	Total	15.41%	22.86%	15.90		0.00
	Matched	16.83%	17.84%	2.19	-86.25%	0.71
Criminal Sexual Conduct	Total	13.89%	16.17%	5.26		0.02
	Matched	14.57%	16.08%	3.44	-34.55%	0.56
Felony DWI	Total	4.59%	7.43%	10.14		0.00
	Matched	6.53%	6.03%	1.67	-83.51%	0.77
Other Offense	Total	12.61%	11.90%	1.76		0.44
	Matched	14.57%	13.32%	2.92	65.90%	0.61
Length of Stay (Months)	Total	21.52	25.56	12.51		0.00
	Matched	23.86	22.83	3.18	-74.61%	0.58
Institutional Discipline	Total	7.44	6.60	3.76		0.04
	Matched	7.37	7.12	1.31	-65.05%	0.82
Secondary Degree	Total	68.66%	72.86%	7.50		0.00
	Matched	71.36%	71.86%	0.90	-87.95%	0.88
Chemical Dependency Treatment	Total	26.75%	31.41%	8.45		0.00
	Matched	28.64%	27.89%	1.36	-83.96%	0.81
Sex Offender Treatment	Total	4.84%	6.13%	4.71		0.04
	Matched	5.28%	4.77%	1.89	-59.93%	0.75
Prison Visit	Total	49.94%	62.83%	21.28		0.00
	Matched	57.79%	56.78%	1.66	-92.18%	0.78
Work Release	Total	1.91%	10.97%	34.74		0.00
	Matched	3.52%	4.52%	4.24	-87.78%	0.47
CIP	Total	0.38%	5.39%	29.17		0.00
	Matched	0.75%	0.75%	0.00	-100.00%	1.00
ISR	Total	31.21%	23.23%	14.46		0.00
	Matched	26.63%	27.14%	0.94	-93.51%	0.87
Discharge	Total	7.90%	5.58%	7.35		0.00
	Matched	6.78%	5.78%	3.32	-54.80%	0.56
Release Year	Total	2008.21	2007.43	27.59		0.00
	Matched	2007.72	2007.66	2.13	-92.28%	0.67

Total SPMI = 785; Total Comparison Group Pool = 538; Matched SPMI = 398; Matched Comparison = 398

After obtaining propensity scores for the 1,323 offenders, a “greedy” matching procedure that utilized a without replacement method was used to match the offenders who received SPMI release planning services with those who did not. SPMI release planning offenders were matched to comparison group offenders who had the closest propensity score (i.e., “nearest neighbor”) within a caliper (i.e., range of propensity scores) of 0.05. A total of 398 matches were obtained, resulting in a total sample size of 796. As such, matches were made for 51 percent of the offenders who received SPMI release planning and for 74 percent of the offenders in the comparison group pool.

Table 2 presents the covariate and propensity score means for both groups prior to matching (“total”) and after matching (“matched”). In addition to tests of statistical significance (“t test p value”), Table 2 provides a measure (“Bias”) developed by Rosenbaum and Rubin (1985) that quantifies the amount of bias between the treatment and comparison samples (i.e., standardized mean difference between samples), where

$$\text{Bias} = \frac{100(\overline{X}_t - \overline{X}_c)}{\sqrt{\frac{(S_t^2 + S_c^2)}{2}}}$$

$\overline{X}_t$ and S_t^2 represent the sample mean and variance for the treated offenders and $\overline{X}_c$ and S_c^2 represent the sample mean and variance for the untreated offenders. If the bias value exceeds 20, the covariate is considered to be unbalanced (Rosenbaum & Rubin, 1985).

As shown in Table 2, the matching procedure reduced the bias in propensity scores between the SPMI and comparison group offenders by 95 percent. Whereas the p value was 0.00 in the unmatched sample, it was 0.42 in the matched sample. In the unmatched sample, there were seven covariates that were significantly imbalanced (i.e., the bias values exceeded

20). But in the matched sample, covariate balance was achieved given that no covariates had bias values greater than 20.

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 regression model, which uses both "time" and "status" variables in estimating the impact of the independent variables on recidivism. For the analyses presented here, the "time" variable measures the amount of time from the date of release until the date of first rearrest, reconviction, reincarceration, technical violation revocation, or June 30, 2013, for those who did not recidivate. The "status" variable, meanwhile, measures whether an offender recidivated (rearrest, reconviction, reincarceration for a new crime, and technical violation revocation) during the period in which he was at risk to recidivate. In the analyses presented below, Cox regression models were estimated for each of the four recidivism measures.

Results

The results reveal modest differences between the two groups of offenders. The SPMI release planning group had slightly lower rates of rearrest (66%) and reincarceration for new offense (28%) than the comparison group (67% for rearrest and 29% for new offense reincarceration). Conversely, the comparison group offenders had slightly lower rates of reconviction (53%) and revocation for technical violations (40%) than the SPMI group (54% for reconviction and 43% for technical violation revocation).

These findings provide little support for the notion that SPMI release planning reduced recidivism. Still, these descriptive results do not account for other factors that may

have an impact on recidivism outcomes such as time at risk. To better isolate the effects of SPMI release planning, Cox regression models were estimated for each of the four measures of recidivism.

The Impact of SPMI Release Planning on Recidivism

The results in Table 3 indicate that, controlling for the effects of the other independent variables in the statistical model, SPMI release planning did not have a statistically significant effect on any of the four recidivism measures. The results for technical violation revocations, however, nearly attained statistical significance ($p = .06$). While the hazard ratio was in the negative direction for rearrest, it was in the positive direction for the other three recidivism measures.

The results also showed the hazard ratio was significantly greater for males (three measures), younger offenders (all four measures), prior supervision failures (all four measures), prior convictions (all four measures), offenders committed from the Twin Cities' metro area (three measures), offenders who received a borderline diagnosis (rearrest), offenders with suicidal tendencies (all four measures), felony DWI offenders (revocations), shorter lengths of stay in prison (two measures), offenders released to work release and intensive supervision (technical violation revocations), and inmates who were released to no supervision (three measures). The risk (hazard) of recidivism was significantly lower, however, for offenders admitted as new court commitments (two measures), offenders who received a diagnosis of schizophrenia (reconviction), sex offenders (three measures), and offenders recently released from prison (two measures).

Table 3. Cox Regression: Impact of SPMI Release Planning on the Hazard of Recidivism

	Rearrest		*Reconviction*		*Reincarceration*		*Revocation*	
	Hazard Ratio	SE	Hazard Ratio	SE	Hazard Ratio	SE	Hazard Ratio	SE
SPMI Release Planning	0.975	0.089	1.037	0.099	1.016	0.138	1.242	0.115
Male	1.399**	0.123	1.647**	0.141	1.967**	0.204	1.149	0.160
Minority	1.111	0.101	1.011	0.115	1.117	0.156	1.069	0.132
Age at Release (years)	0.973**	0.005	0.972**	0.006	0.968**	0.009	0.970**	0.007
Prior Supervision Failures	1.090*	0.042	1.156**	0.044	1.271**	0.057	1.130*	0.053
Prior Convictions	1.045**	0.005	1.043**	0.005	1.056**	0.006	1.019**	0.007
New Court Commitment	0.870	0.101	0.790*	0.114	0.953	0.157	0.742*	0.129
Metro	1.493**	0.096	1.354**	0.107	1.457*	0.150	1.237	0.122
Bipolar	1.112	0.128	1.017	0.139	1.088	0.186	1.149	0.165
Borderline	1.313*	0.115	1.172	0.126	1.260	0.170	0.887	0.155
Depression	1.173	0.123	0.935	0.137	1.076	0.192	1.180	0.159
Schizophrenia	0.984	0.126	0.724*	0.143	0.932	0.183	1.089	0.163
Suicidal	1.212*	0.093	1.423**	0.106	1.939**	0.151	1.395**	0.118
Active STG	0.944	0.166	1.151	0.177	1.274	0.216	1.278	0.196
Offense Type								
Property	1.175	0.141	1.152	0.151	1.045	0.203	0.981	0.186
Drug	1.056	0.156	1.060	0.173	0.926	0.244	0.739	0.226
Criminal Sexual Conduct	0.442**	0.196	0.354**	0.227	0.335**	0.334	1.246	0.214
Felony DWI	0.768	0.231	0.705	0.270	0.542	0.429	2.184**	0.259
Other	1.092	0.155	1.028	0.171	0.780	0.236	0.772	0.213
Length of Stay	0.991**	0.003	0.989**	0.004	0.992	0.006	0.997	0.004
Institutional Discipline	0.999	0.004	0.999	0.005	1.000	0.007	0.999	0.005
Secondary Degree	1.109	0.105	1.032	0.117	1.140	0.157	0.956	0.134
Chemical Dependency Treatment	1.163	0.115	1.221	0.127	1.005	0.179	1.038	0.146
Sex Offender Treatment	1.270	0.290	1.588	0.336	0.263	1.061	1.422	0.308
Prison Visit	0.832	0.099	0.850	0.112	0.779	0.152	0.891	0.128
Supervision Type								
Work Release	0.902	0.223	0.712	0.251	0.994	0.314	1.830*	0.246
CIP	0.947	0.521	1.375	0.527	1.242	1.028	0.000	148.544
ISR	1.011	0.129	0.990	0.145	0.908	0.206	1.946**	0.156
Discharge	1.558*	0.200	1.555*	0.212	1.703*	0.261		
Release Year	0.976	0.023	0.944*	0.027	0.884**	0.037	0.917**	0.029
N	798		798		798		746	

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

Conclusion

This evaluation assessed the effectiveness of SPMI release planning by comparing recidivism outcomes between 398 SPMI offenders who received release planning services and a carefully matched comparison group of 398 SPMI counterparts who did not. Recidivism rates were very similar for the SPMI offenders in the release planning and comparison groups. The results from the Cox regression analyses showed that providing SPMI offenders with release planning did not significantly reduce recidivism.

This study contains several limitations that are worth highlighting. First, the use of propensity score matching often presents a trade-off between inexact and incomplete matching. In this study, incomplete matching was a problem given that matches were not obtained for relatively high percentages of offenders in the SPMI (49 percent) and comparison (26 percent) group pools. Moreover, while propensity score matching helped minimize observable selection bias in this study by producing two groups that were balanced on a large number of covariates, it still could not control for any potential effects that volunteering for release planning services might have had on recidivism.

Second, this study did not examine whether the release planning provided in the institution produced positive intermediate outcomes in the community such as participating in mental health treatment or taking prescribed medications. As a result, it is unclear not only whether the institutional release planning was effective in connecting SPMI offenders with needed services, but also whether increased access to these services reduced recidivism.

Even if the release planning provided had increased the extent to which SPMI offenders were able to obtain income support or receive psychiatric treatment, there is reason to suspect, based on prior research, that greater access to these services would not significantly improve recidivism outcomes. Mental health interventions considered evidence-based because they improve clinical outcomes have, for the most part, not been very successful in reducing recidivism (Skeem et al., 2011). Thus, while greater access to mental health programming in the community would presumably lead to more favorable clinical outcomes such as fewer hospitalizations, it would not necessarily lower recidivism for SMPI offenders because untreated mental illness is not—according to the empirical evidence—a

strong predictor of future criminal behavior (Bonta et al., 2014). In other words, because mental illness is not a criminogenic need, treating its symptoms will not reduce recidivism.

This is not to say that improving offender access to needed mental health services in the community is unimportant. On the contrary, connecting offenders to these services helps facilitate transitions from the institution to the community and SPMI release planning may yield benefits aside from reduced recidivism. If recidivism reduction is a primary goal, however, then the programming provided should target one or more criminogenic needs areas (e.g., anti-social cognition, anti-social peers, etc.) that are more directly linked to reoffending. For example, one reason why the MTC program evaluated by Sacks et al. (2004) produced positive recidivism outcomes may be due to the fact that it targeted criminal thinking along with mental health symptoms.

In addition to targeting criminogenic needs, the evidence on what works with offenders suggests that programs tend to produce better recidivism outcomes when they provide a continuum of care from the institution to the community (Duwe, 2013b). The SPMI release planning examined here was delivered exclusively within the institution. Yet, a common thread running through some of the effective programs discussed earlier—namely, the MTC program evaluated by Sacks et al. (2004) as well as the State of Washington's DMIO program—is that they begin working with offenders in the institution and then continue to provide them with services in the community following their release from prison. Moreover, prior research has shown that a continuum of care, or service delivery, is a feature common to effective correctional programs (Duwe, 2013b).

The principles of effective correctional intervention imply that programs are most successful when they are calibrated to offender risk and needs (Andrews et al., 2006).

Accordingly, high risk and need offenders may require interventions that involve a higher dosage or intensity of services. Indeed, the success experienced by the State of Washington's DMIO program may reflect, in part, the concentration of resources on the most dangerous offenders. Therefore, one strategy to improve recidivism outcomes for SPMI offenders could entail allocating greater programming resources for the offenders with the greatest risk and needs. Pre-release planning services could still be provided to lower risk and need offenders. For the high risk and need offenders, however, programming would focus not only on improving access to needed community services, but would also deliver services in both the institution and community that appropriately target their criminogenic need areas.

In general, much remains to be learned about what is most effective for offenders who suffer from major mental illness. Knowing what interventions are successful with mentally disordered offenders is critical, for the evidence not only shows that prisoners are more likely to suffer from mental illness than the general population, but also that mentally disordered offenders tend to have higher rates of recidivism, substance abuse, homelessness and unemployment than non-disordered offenders. To advance our understanding of what works with this offender population, more evaluations of programs targeted towards mentally disordered offenders are needed to identify which interventions help reduce the use of expensive social resources, not least prison. And these evaluations should include cost-benefit analyses, which will help determine which interventions deliver the best return on investment.

References

Andrews, D.A., Bonta, J., & Wormith, S.J. (2006). The recent past and near future of risk and/or need assessment. *Crime & Delinquency*, 52, 7-27.

Aos, S. & Drake, E. (2013). *Prison, Police and Programs: Evidence-based Options that Reduce Crime and Save Money* (Doc. No. 13-11-1901). Olympia, WA: Washington State Institute for Public Policy.

Barrenger, S.L. & Draine, J. (2012). "You don't get no help": The role of community context in effectiveness of evidence-based treatments for people with mental illness leaving prison for high risk environments. *American Journal of Psychiatric Rehabilitation*, 16, 154-178.

Bonta, J., Blais, J., & Wilson, H.A. (2014). A theoretically informed meta-analysis of the risk for general and violent recidivism for mentally disordered offenders. *Aggression and Violent Behavior*, 19, 278-287.

Duwe, G. (2010). Prison-based chemical dependency treatment in Minnesota: An outcome evaluation. *The Journal of Experimental Criminology*, 6: 57-81.

Duwe, G. (2013a). The development, validity, and reliability of the Minnesota Screening Tool Assessing Recidivism Risk (MnSTARR). *Criminal Justice Policy Review*. doi:10.1177/0887403413478821.

Duwe, G. (2013b). *What Works with Minnesota Prisoners: A Summary of the Effects of Correctional Programming on Recidivism, Employment and Cost Avoidance.* Minnesota Department of Corrections: St. Paul, MN.

Duwe, G., & Clark, V. (2013). Blessed be the social tie that binds: The effects of prison visitation on offender recidivism. *Criminal Justice Policy Review*, 24, 271-296.

Duwe, G., & Goldman, R. (2009). The impact of prison-based treatment on sex offender recidivism: Evidence from Minnesota. *Sexual Abuse: A Journal of Research and Treatment*, 21, 279-307.

Duwe, G. & Kerschner, D. (2008). Removing a nail from the boot camp coffin: An outcome evaluation of Minnesota's Challenge Incarceration Program. *Crime & Delinquency*, 54, 614-643.

Eno Louden, J. & Skeem, J. (2011). Parolees with mental disorder: Toward evidence-based practice. *Bulletin of the Center for Evidence-Based Corrections*, 7, 1-9.

Fazel, S. & Danesh, J. (2002). Serious mental disorder in 23,000 prisoners: A systematic review of 62 surveys. *Lancet*, 359, 545-550.

Hall, D.L., Miraglia, R.P., Lee, L.W.G., Chard-Wierschem, D., & Sawyer, D. (2012). Predictors of general and violent recidivism among SMI prisoners returning to community in New York State. *Journal of the American Academy of Psychiatry and the Law*, 40, 221-231.

James, D.J. & Glaze, L.E. (2006). *Bureau of Justice Statistics Special Report: Mental Health Problems of Prison and Jail Inmates*. Washington, DC: U.S. Department of Justice, Office of Justice Programs.

Lovell, D., Gagliardi, G.J., Phipps, P. (2005). *Washington's Dangerous Mentally Ill Offender Law: Was Community Safety Increased?* Olympia, WA: Washington State Institute for Public Policy.

Lurigio, A.J. (2011). People with serious mental illness in the criminal justice system: Causes, consequences, and correctives. *The Prison Journal*, 91, 66S-86S.

Mayfield, J. (2009). *The Dangerous Mentally Ill Offender Program: Four-Year Felony Recidivism and Cost Effectiveness* (Doc. No. 09-02-1901). Olympia, WA: Washington State Institute for Public Policy.

Messina, N., Burdon, W., Hagopian, G., & Prendergast, M. (2004). One year return to custody rates among co-disordered offenders. *Behavioral Sciences and the Law*, 22, 503-518.

Porporino, F. & Motiuk, L. (1995). The prison careers of mentally disordered offenders. *International Journal of Law and Psychiatry*, 18, 29-44.

Rosenbaum, P.R., & Rubin, D.B. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *The American Statistician*, 39, 33-38.

Rubin, D.B. (1997). Estimating causal effects from large data sets using propensity scores. *Annals of Internal Medicine*, 127, 757-763.

Sacks, S., Sacks, J., McKendrick, K., Banks, S., & Stommel, J. (2004). Modified therapeutic community for MICA offenders: Crime outcomes. *Behavioral Sciences and the Law*, 22, 477-501.

Shadish, W.R., Cook, T.D., & Campbell, D.T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin.

Silver, E. (2006). Understanding the relationship between mental disorder and violence: The need for a criminological perspective. *Law and Human Behavior*, 30, 685-706.

Skeem, J., Manchak, S., & Peterson, J.K. (2011). Correctional policy for offenders with mental illness: Creating a new paradigm for recidivism reduction. *Law and Human Behavior*, 35, 110-126.

Wilson, A.B. & Draine, J. (2006). Collaborations between criminal justice and mental health systems for prisoner reentry. *Psychiatric Services*, 57, 875-878.