

**Chemical Dependency
Program Evaluation
March 2008**



1450 Energy Park Drive, Suite 200
St. Paul, Minnesota 55108-5219
651/361-7200
TTY 800/627-3529
www.doc.state.mn.us
March 2008

This information will be made available in alternative format upon request.
Printed on recycled paper with at least 10 percent post-consumer waste.

Table of Contents

EXECUTIVE SUMMARY	1
INTRODUCTION	4
Present Study	5
LITERATURE REVIEW	7
DATA AND METHODS	9
Dependent Variable	9
Treatment Variables.....	10
Independent Variables	11
Comparison Groups	12
RESULTS	15
Predictors of a Successful CD Treatment Outcome	16
Recidivism Rates by CD Outcome and Program Duration	18
Impact of CD Program Participation on Recidivism	20
Impact of Medium- and Long-Term CD Treatment on Recidivism.....	22
CONCLUSION.....	26
REFERENCES	27

TABLES

Table 1. Comparison of CD Treatment and Comparison Group Offenders.....	15
Table 2. CD Treatment Program Successful Participation/Completion Rates	17
Table 3. Predictors of CD Program Completion.....	18
Table 4. Recidivism Rates by CD Assessment and Program Characteristics.....	19
Table 5. Risk of Time to Recidivism by CD Program Entry	20
Table 6. Risk of Time to Recidivism by CD Program Outcome	21
Table 7. Comparison of Medium- and Long-Term CD Treatment and Comparison Group Offenders.....	22
Table 8. Risk of Time to Recidivism by Medium- and Long-Term CD Program Entry..	23
Table 9. Risk of Time to Recidivism by Medium- and Long-Term CD Program Outcome	24

EXECUTIVE SUMMARY

Substance use figures prominently not only in criminal offending but has also been implicated in the rise of the prison population since the 1980s. From 2002-2007, drug and felony driving while intoxicated (DWI) offenders accounted for 53 percent of the prison population growth within Minnesota. As the volume of drug and DWI offenders entering prison has increased, so, too, has the number of inmates diagnosed as chemically dependent and/or abusive who are in need of chemical dependency (CD) treatment.

Using a retrospective quasi-experimental design, this report evaluates the efficacy of CD treatment in Minnesota Department of Corrections (MNDOC) facilities by comparing recidivism rates between offenders who participated in treatment (treatment group) with those who did not (comparison group). Both the treatment and comparison groups contained offenders who were admitted to prison after 2001, directed to CD treatment, and released during 2005. The comparison group consists of 1,096 offenders who were closely matched to the 1,164 offenders in the treatment group on the characteristics used in the statistical analyses. Of the 1,164 offenders in the treatment group, most (N = 671) participated in short-term (i.e., 90 days) treatment programs. Because short-term programs were discontinued by the MNDOC in 2006, this study also assesses the efficacy of medium- and long-term CD programming by comparing reoffense rates between the 493 medium- and long-term treatment participants with a carefully matched comparison group of 493 non-participants. Recidivism—the outcome measure in this study—was quantified as both a felony reconviction and as a reincarceration for a new offense.

Results

- Of the 1,164 offenders who participated in CD treatment (i.e., the treatment group), 72 percent completed treatment or successfully participated until release.
 - Results showed that the odds of completing treatment were significantly lower for offenders with discipline convictions, but were significantly higher for female offenders, offenders with longer lengths of stay, and offenders who participated in short-term treatment programs.

- At the end of the follow-up period, offenders who participated in CD treatment had significantly lower rates of felony reconviction (15%) and reincarceration (8%) than the comparison group, whose rates were 19 percent for reconvictions and 12 percent for reincarcerations for a new offense.
 - Regarding treatment outcome, the lowest recidivism rates were found for offenders who successfully participated until release, followed by those who completed treatment. Offenders who quit treatment had the highest recidivism rates.
 - Regarding program duration, offenders who participated in medium-term programs had the lowest recidivism rates, whereas the highest rates were found for those who entered short-term programs.

- Results from the multivariate statistical analyses showed that participation in CD treatment significantly decreased the risk of time to reoffense, reducing it by 23 percent for reconvictions and 31 percent for reincarcerations.

- A successful treatment outcome significantly reduced the risk of time to reoffense, decreasing it by 26 percent for reconvictions and 36 percent for reincarcerations.

- Similar results were found for the analyses that examined the impact of medium- and long-term CD treatment on recidivism.
 - Participation in a medium- or long-term CD treatment program reduced the risk of time to reoffense by 30 percent for reconvictions and 42 percent for reincarcerations.
 - A successful outcome in a medium- or long-term treatment program decreased the risk of time to reoffense by 46 percent for reconvictions and 49 percent for reincarcerations.

The results presented in this study suggest that the risk of recidivism is reduced significantly for offenders who participate in prison-based CD treatment, particularly among those with a successful treatment outcome. There are a few limitations with this study, however, that bear consideration. First, in focusing exclusively on recidivism, this evaluation did not include substance abstinence as an outcome measure and, thus, may not have fully captured the full effects of CD programming. Second, given the importance of providing a continuum of care from the institution to the community, aftercare programming is considered to be an essential component of effective CD treatment. But due to the absence of post-release treatment data, it is unclear as to whether variations in the extent to which offenders participated in aftercare may have affected the findings presented here. By collecting data on substance use and aftercare programming in the community, research currently being conducted by the MNDOC may eventually shed light on these issues.

INTRODUCTION

The impact of substance use on the criminal justice system is substantial. Research has shown, for example, that alcohol and/or illicit drugs figure prominently in criminal offending. In Marvin Wolfgang's landmark study on homicide in Philadelphia during the 1950s, he found that alcohol was consumed by either the victim or the offender in approximately two-thirds of the cases (Wolfgang, 1958). Examining sexual assaults in Canada, Johnson and colleagues (1978) reported that 72 percent of rapes involved alcohol consumption by offenders and/or victims. And in a recent study of 224 Minnesota sex offenders who recidivated with a sex crime, either the victim or the offender had used alcohol and/or drugs at the time of the offense in at least 31 percent of the assaults (Minnesota Department of Corrections, 2007).

Among state and federal prisoners incarcerated in 2004, Mumola and Karberg (2006) reported that 32 percent committed their offenses under the influence of drugs, and 56 percent had used drugs in the month preceding the offense. The highest percentages of drug use were found for drug offenders, followed closely by those incarcerated for property offenses. For example, 44 percent of drug offenders and 39 percent of property offenders indicated using drugs at the time of the offense. Moreover, the rate of drug use in the month prior to the offense was 72 percent for drug offenders and 64 percent for property offenders.

The use and abuse of substances is linked not only to involvement in criminal activity but also to the growth of the prison population, particularly over the last 20 years. Since the 1980s, Minnesota's criminal code has been expanded considerably through the creation of new crime categories and reclassification of others into higher legal categories requiring more severe penalties. Some of the more notable enhancements include a substantial increase in recommended sentence lengths for all serious and controlled substance crimes in 1989 as well as the creation of the felony driving while intoxicated (DWI) law in 2002 (Minnesota Department of Corrections, 2006a).

The increased penalties have led to a growing influx of drug and felony DWI offenders, who have, in turn, helped fuel the expansion of Minnesota's prison population. For example, on July 1, 1989, there were 173 inmates in Minnesota state correctional facilities whose governing offense involved the sale, manufacturing, possession, or possession with intent to distribute drugs. The 173 drug offenders constituted six percent of the overall prison population. Eighteen years later, however, drug offenders accounted for 21 percent of Minnesota's inmates on July 1, 2007. Overall, drug offenders were responsible for 28 percent of the growth in the prison population from FY 1989-2007.

During the five years since the enactment of the felony DWI law on August 1, 2002, the prison population has grown by 2,157 offenders. Felony DWI offenders have accounted for 29 percent of this growth, as 618 were incarcerated in Minnesota correctional facilities on July 1, 2007. Combined, DWI and drug offenders were responsible for 53 percent of the prison population increase from July 2002-July 2007.

Due to the growing volume of drug and felony DWI offenders entering prison, the number of inmates in need of chemical dependency (CD) treatment has likely increased. Recent evidence suggests that of the offenders entering Minnesota prisons in 2006, approximately 85 percent were determined to be chemically abusive or dependent. However, in Minnesota, as in other states, the number of offenders in need of CD treatment exceeds the number of treatment beds available. During FY 2006, for example, 2,935 offenders were directed to treatment, while there were 1,888 offenders who entered treatment.

Present Study

In 2005, the Minnesota Department of Corrections (MNDOC) initiated a study to examine the efficacy of prison-based CD treatment. Using an experimental research design, the study will track offenders who participate in CD treatment through the end of 2009. However, because data collection will continue over the next several years, the results from this evaluation are not yet available.

In an effort to provide a more immediate response regarding the efficacy of prison-based CD treatment, this study compares outcomes between offenders released in 2005 who participated in CD treatment with those who did not. In measuring the efficacy of CD treatment, the two most common outcome measures are substance abstinence and criminal recidivism. Although abstinence is an important measure as to whether CD treatment is effective, data on post-release substance use are not available for this study. Instead, recidivism will be the main outcome measure used to evaluate the efficacy of prison-based CD programming. Examining 2,260 offenders directed to complete CD treatment who were released from Minnesota correctional facilities during 2005, this study uses a retrospective quasi-experimental design to compare recidivism outcomes between 1,164 offenders who entered CD treatment and 1,096 offenders who were directed to CD treatment but did not participate for various reasons.

Of the 1,164 offenders in the treatment group, most (N = 671) entered a short-term treatment program; i.e., a 90-day program. The MNDOC disbanded its short-term programs in 2006, due in part to evidence that seemed to suggest that short-term programs are not as effective as ones that are longer in duration (Minnesota Office of the Legislative Auditor, 2006). Given that most of the offenders in the treatment group participated in a treatment program no longer provided by the MNDOC, this study also compares recidivism outcomes between 493 offenders who participated in medium- or long-term treatment programs and a carefully matched comparison group of 493 non-participants who were directed to CD treatment.

The following section briefly reviews the research literature on prison-based CD treatment. Next, the data and methods used in this study are discussed, followed by a presentation of the results. The final section concludes by discussing the implications of the findings.

LITERATURE REVIEW

Research on the efficacy of prison-based CD treatment has focused mainly on programming based on the therapeutic community (TC) model. Originating in England during the late 1940s, the TC model regards chemical dependency as a symptom of an individual's problems rather than the problem itself (Patenaude and Laufersweiller-Dwyer, 2002). Viewing substance abuse as a disorder that affects the whole person, the TC model attempts to promote comprehensive pro-social changes by encouraging participants to contribute to their own therapy, as well as that of others, through activities such as therapy, work, education classes, and recreation (Klebe and O'Keefe, 2004). Individual and group counseling, encounter groups, peer pressure, role models, and a system of incentives and sanctions often comprise the core of treatment interventions within a TC program (Welsh, 2002). Moreover, to foster a greater sense of community, participants within a prison setting are housed separately from the rest of the prison population.

Existing research on prison-based TC has, with a few exceptions (Field, 1985; Pelissier et al., 2001), consisted of program evaluations in four states: Delaware, Texas, New York, and California (Inciardi et al., 1997; Knight, Simpson, and Hiller, 1999; Wexler, Falkin, and Lipton, 1990; Wexler, Melnick, Lowe, and Peters, 1999). In general, the findings from these studies suggest that prison-based treatment can be effective in reducing recidivism and relapse. Several evaluations reported that effectiveness is related to the length of time an individual remains in treatment; that is, the longer offenders stay in treatment, the less likely they are to either relapse or reoffend. Further, the most promising outcome results have been found for offenders who complete prison-based TC programs, especially those who participate in aftercare.

Despite the positive findings from prior outcome evaluations, most of these studies have been limited in one or more ways. Welsh (2002) notes, for example, that previous studies have had small sample sizes, have had faulty research designs, and have devoted too little attention to interactions between inmate characteristics, treatment processes, and treatment outcomes. Perhaps the most significant shortcoming of prior studies on prison-

based CD treatment concerns the issue of selection bias. As stated by Pelissier and colleagues (2001), “Selection bias results from processes that change the composition of the two groups in such a way that we are unable to make a clear inference as to whether the effects we observe are due to the treatment or to the different group compositions.” In other words, although previous evaluations have found that recidivism rates are generally lower for offenders who participate in treatment, this difference may not necessarily be due to the treatment itself, but rather to other differences between the treatment (i.e., offenders who receive treatment) and comparison (i.e., offenders who do not receive treatment) groups. However, as one of the few evaluations that adequately addressed the issue of selection bias, Pelissier et al. (2001) still found that offenders who participated in prison-based treatment were significantly less likely to reoffend or use drugs after release.

In examining recidivism outcomes for 2,260 offenders, the sample size used in this study is relatively large in comparison to existing prison-based treatment evaluations. Moreover, as noted in the following section, the offenders in the comparison groups were carefully matched to the treatment groups in an effort to minimize the threat of selection bias. Nevertheless, it is worth noting several limitations with this study. First, as mentioned earlier, abstention is not included here as an outcome measure. Therefore, in focusing exclusively on recidivism, this study may not fully capture whether CD programming is effective. Second, although the analyses presented later are based on the assumption that the TC model is applied fairly consistently across CD programs, there are no data available to substantiate whether this is, in fact, the case. Finally, in providing a continuum of care from the institution to the community, aftercare programming is considered a critical component to effective CD treatment. Data on aftercare programming, however, were not available on the offenders examined here. As a result, the differences observed between the treatment and comparison groups (or lack thereof) may be attributable, in part, to differences in the extent to which offenders participated in aftercare programming.

DATA AND METHODS

To address the issue of whether CD programming has an impact on recidivism, this study uses a retrospective quasi-experimental design. The population for the present study consists of offenders released in 2005 who were directed to CD treatment. In addition, because valid and reliable CD data are not available prior to 2002, the population from which the treatment and comparison groups were drawn includes only offenders who were admitted to prison after December 31, 2001. Overall, there were 3,499 offenders directed to CD treatment who were admitted to prison after 2001 and released during 2005. Of these 3,499 offenders, there were 1,164 who participated in CD treatment during their most recent admission to prison. These 1,164 offenders comprise the treatment group. Of the remaining 2,335 offenders, there were 35 who refused to enter CD treatment. These offenders were removed from the study so as not to bias the results from the statistical analyses. Therefore, the pool from which the comparison groups were drawn consisted of 2,300 offenders who were directed to CD programming but did not participate, often due to a lack of available treatment beds. The procedures used for selecting the comparison groups are discussed later in this section.

Dependent Variable

Recidivism, which is the dependent variable in this study, was defined as either 1) a felony reconviction or 2) a reincarceration for a new sentence. Felony reconviction and reincarceration data were collected on offenders through December 31, 2006.

Considering that offenders from both the treatment and comparison groups were released during 2005, the follow-up time for the offenders examined in this study ranged from 12-24 months. Data on felony convictions were obtained electronically from the Minnesota Bureau of Criminal Apprehension (BCA). Reincarceration data were derived from the Correctional Operations Management System (COMS) database maintained by the MNDOC. The main limitation with using these data is that they measure only convictions or incarcerations that took place in Minnesota. Because neither source includes convictions or incarcerations occurring in other states, the findings presented later likely underestimate the true felony reconviction and reincarceration rates for the offenders examined here.

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 by deducting the amount of time they spent in prison from their total at-risk period, or “street time.” 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 (Bales et al., 2005). Therefore, the time that an offender spent in prison as a supervised release violator was subtracted from his/her “street” time (i.e., at-risk period), but only if it preceded a felony reconviction, reincarceration for a new offense, or if the offender did not recidivate.

Treatment Variables

In the statistical analyses presented later, recidivism is the dependent variable. Given that the central purpose of this study is to determine whether CD programming has an impact on recidivism, CD treatment is the principal variable of interest. In an effort to acquire a more refined understanding of the impact on CD treatment on recidivism, two different measures of CD treatment are used in this study.

The first CD treatment variable compares offenders who entered CD treatment with a comparison group of similar offenders who did not. As such, CD treatment was measured as “1” for offenders who participated in treatment between the time of admission (after 2001) and release (2005) from prison. Offenders who did not participate in CD treatment (the comparison group) were given a value of “0.”

The second CD treatment variable measures the impact of treatment outcome on reoffending. In particular, four dichotomous dummy variables were created: completion/successfully participated until the time of release (1 = completion/successful participation, 0 = treatment dropout or non-participants); treatment terminations (1 = treatment terminations, 0 = other); treatment quits (1 = quit treatment, 0 = other); and non-participants (1 = comparison group, 0 = treatment participants).

Independent Variables

The independent variables included in the statistical models were those that were not only available in the COMS database but also might theoretically have an impact on whether an offender recidivates. The independent variables included in the statistical models cover the salient factors that are either known or hypothesized to have an impact on recidivism. The following lists these variables and describes how they were created:

Offender Sex: dichotomized as male (1) or female (0).

Offender Race: dichotomized as minority (1) or white (0).

Age at Release: the age of the offender in years at the time of release based on the date of birth and release date.

Prior Felony Convictions: the number of prior felony convictions, excluding the conviction(s) that resulted in the offender's incarceration.

Metro Area: a rough proxy of urban and rural Minnesota, this variable measures an offender's county of commitment, dichotomizing it into either metro area (1) or Greater Minnesota (0). The seven counties in the Minneapolis/St. Paul metropolitan area include Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington. The remaining 80 counties were coded as non-metro area or Greater Minnesota counties.

Offense Type: five dichotomous dummy variables were created to quantify offense type; i.e., the governing offense at the time of release. The five variables were person offense (1 = person offense, 0 = non-person offense); property offense (1 = property offense, 0 = non-property offense); drug offense (1 = drug offense, 0 = non-drug offense); felony driving while intoxicated (DWI) offense (1 = DWI offense, 0 = non-DWI offense); and other offense (1 = other offense, 0 = non-other offense). The other offense variable serves as the reference in the statistical analyses.

Length of Stay (LOS): the number of months between prison admission and release dates.

Institutional Discipline: the number of discipline convictions received during the term of imprisonment for which the offender was released.

Dependency Assessment: dichotomized as either (1) chemically dependent or (0) chemically abusive for offenders who received positive chemical dependency assessments at intake.

Length of Post-Release Supervision: the number of months between an offender's first release date and the end of post-release supervision; i.e., the sentence expiration or conditional release date, the greater of the two.

Type of Post-Release Supervision: four dichotomous dummy variables were initially created to measure the level of post-release supervision to which offenders were released. The four variables were intensive supervised release (ISR) (1 = ISR, 0 = non-ISR); supervised release (SR) (1 = SR, 0 = non-SR); work release (1 = work release, 0 = non-work release); and discharge (1 = discharge or no supervision, 0 = released to supervision). Discharge is the variable that serves as the reference in the statistical analyses.

Supervised Release Revocations (SRRs): the number of times during an offender's sentence that s/he returned to prison as a supervised release violator.

Comparison Groups

To produce a comparison group as similar as possible to the treatment group, a propensity score matching (PSM) method was used. PSM matches individual cases from a pool of eligible comparison group members with individual cases from the treatment group on the basis of a propensity score, which is the predicted probability of group

membership (e.g., treatment group or comparison group) based on observed predictors. Propensity scores were computed for both the 1,164 treatment group offenders and the 2,300 eligible comparison group offenders by estimating a logistic regression model in which the dependent variable was participation in CD treatment (i.e., the 1,164 CD group offenders were assigned a value of 1, while the 2,300 offenders in the comparison group pool received a value of 0). The predictors were the 17 control variables used in the statistical analyses. After obtaining propensity scores for the 3,464 offenders, a caliper matching method was then used to match offenders from the comparison group sample (N = 2,300) with the 1,164 offenders from the CD treatment group. The caliper approach produced 1,096 matches by randomly sorting offenders from both groups and then selecting the closest match on the basis of propensity score, but only if the comparison group offender's score was within a narrowly defined distance (i.e., caliper) of the CD treatment group offender's score. As shown later in Table 1, the PSM approach was successful in producing a relatively large comparison group (N = 1,096) similar to the CD treatment group given that there were only two significant differences (the percentage of DWI offenders and the percentage of offenders discharged) between the two groups.

This same process was repeated for the analyses that focused on offenders who participated in medium- and long-term CD treatment. Of the 1,164 CD treatment group offenders, 493 participated in either medium- or long-term programs. PSM was used to match 493 offenders from the total comparison group pool (N = 2,300) with the 493 medium- and long-term CD treatment participants. Again, the percentage of DWI offenders and the percentage of offenders discharged were the only two significant differences between the two groups.

In analyzing recidivism, survival analysis models are preferable in that they utilize time-dependent data, which are important in determining not only whether offenders recidivate but also when they recidivate. As a result, this study uses a Cox proportional hazards model, which 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 reconviction,

reincarceration, or December 31, 2005, for those who did not recidivate. The “status” variable, meanwhile, measures whether an offender reoffended (reconviction or reincarceration for a new crime) during the period in which s/he was at risk to recidivate.

RESULTS

The findings in Table 1 reveal only a few statistically significant differences between the treatment and comparison groups among the variables used in the statistical analyses. Of the offenders who entered CD treatment, 90 percent were male, 59 percent were white, and 34 was the average age at release. Half of the offenders had a metro-area county of commitment. With an average age of 27 at the time of their first felony conviction, these offenders had, on average, more than two felony convictions before they were admitted to prison for the present offense. Regarding offense type, the results show that offenders were fairly evenly split among person, property, and drug offenses. The CD group, however, did have a significantly higher percentage of DWI offenders (5%) than the comparison group (2%).

Table 1. Comparison of CD Treatment and Comparison Group Offenders

<i>Characteristics</i>	<i>Comparison Group</i>	<i>CD Group</i>	<i>t test p Value</i>
Male	89.5%	89.6%	0.940
White	58.8%	59.2%	0.869
Age at Release (years)	33.6	33.6	0.843
Prior Felonies	2.6	2.4	0.403
Metro	49.9%	49.7%	0.994
Offense Type			
Person	28.1%	27.4%	0.712
Property	25.3%	24.7%	0.735
Drug	32.9%	30.4%	0.214
DWI	1.9%	5.2%	0.000
Other	11.9%	12.3%	0.757
Length of Stay (months)	16.7	17.5	0.134
Institutional Discipline	2.4	2.4	0.659
Dependency Assessment	60.7%	63.7%	0.156
Length of Supervision (months)	19.2	18.9	0.773
Supervision Type			
Supervised Release (SR)	62.2%	64.9%	0.179
Work Release	13.5%	14.9%	0.355
Intensive Supervised Release	18.4%	18.3%	0.936
Discharge	5.9%	1.9%	0.000
SR Revocations	0.4	0.4	0.875
Outcome Measures			
Felony Reconviction	18.9%	14.8%	0.005
Reincarceration for New Offense	11.8%	7.8%	0.001
N	1,096	1,164	

The average length of stay for these offenders was nearly a year and a half. When offenders were assessed at intake, nearly two-thirds were determined to be chemically dependent, whereas the remaining one-third was chemically abusive. While incarcerated, these offenders had, on average, two and a half discipline convictions. When these offenders were released from prison, the average length of their post-release supervision was nearly 20 months. All but 2 percent of the offenders were released to supervision, as 65 percent were placed on supervised release, 18 percent on intensive supervised release, and 15 percent on work release. A significantly higher percentage of comparison group offenders (6%) were discharged from prison in comparison to the treatment group (2%). Following their release from prison, 39 percent returned for a supervised release revocation. The average number of revocations was 0.4 for all offenders.

Predictors of a Successful CD Treatment Outcome

Table 2 displays CD program completion rates by a number of characteristics. For the 1,164 offenders who entered treatment, the overall successful participation/completion rate was 72 percent. Females were more likely to have a successful treatment outcome than males. Whites were more likely to have a successful treatment outcome than minority offenders. Drug offenders had the highest completion rate (81%), whereas DWI offenders had the lowest (61%). Offenders diagnosed as chemically dependent were more likely to have a successful treatment outcome than those diagnosed as chemically abusive. Offenders without an institutional discipline conviction were much more likely to have a successful treatment outcome than those with at least one conviction. Offenders participating in short-term treatment programs were more likely to complete treatment than medium-term offenders, who were, in turn, more likely to have a successful treatment outcome than long-term offenders.

Table 3 presents the results from a multivariate logistic regression analysis that examined the factors that predict whether offenders are successful in completing CD treatment. As such, the analyses in this table are confined only to the 1,164 offenders who entered CD treatment. The results show that female offenders are significantly more likely to complete CD treatment. Compared to males, females are 77 percent more likely to have

Table 2. CD Treatment Program Successful Participation/Completion Rates

	<i>Completion Rate (Percent)</i>	<i>N</i>
Gender		
Male	71.8	1,043
Female	77.7	121
Race		
White	76.5	689
Minority	66.5	475
Age at Release		
Younger than 30	71.2	496
30 and older	73.4	668
Criminal History		
No Prior Felony	74.8	381
Prior Felony	71.3	783
Offense Type		
Person	65.5	319
Property	71.4	287
Drug	81.1	354
DWI	60.7	61
Other	73.4	143
County of Commitment		
Metro	71.7	579
Greater Minnesota	73.2	585
Length of Stay		
Less than 18 months	73.1	668
18 months or more	71.6	496
Diagnoses		
Chemically Dependent	74.4	741
Chemically Abusive	69.0	423
Discipline		
No discipline convictions	96.1	432
At least one discipline conviction	58.5	732
Program Duration		
Short Term	77.2	671
Medium Term	70.5	393
Long Term	48.0	100
Total	72.4	1,164

a successful treatment outcome, controlling for the effects of the other independent variables. Length of stay also had a statistically significant impact on successful treatment outcome; a one-month increase in length of stay was associated with a three-percent increase in the chances of completing treatment. Offenders diagnosed as chemically dependent were 48 percent more likely to have a successful treatment outcome than chemically abusive offenders. Institutional disciplinary convictions

Table 3. Predictors of CD Program Completion

<i>Predictors</i>	<u>Odds Ratio</u>	<u>SE</u>	<u>p Value</u>
Male	0.227	0.339	0.000
Minority	0.867	0.164	0.384
Age at Release	0.992	0.015	0.600
Prior Felonies	0.982	0.030	0.547
Offense Type			
Person	1.002	0.261	0.994
Property	0.800	0.268	0.405
Drug	1.250	0.264	0.399
DWI	0.789	0.377	0.530
Metro	1.194	0.160	0.268
Length of Stay	1.030	0.010	0.002
Chemically Dependent	1.482	0.158	0.013
Discipline	0.714	0.030	0.000
Medium Term	0.542	0.186	0.001
Long Term	0.148	0.303	0.000
Constant	4.549	0.521	0.004

significantly reduced the likelihood of achieving a successful treatment outcome. More specifically, a discipline conviction reduced the chances of completing treatment by 29 percent. Not surprisingly, program duration was a strong predictor of whether offenders completed treatment. Compared to offenders who entered a short-term program, the odds of completing treatment were 46 percent less for medium-term program offenders and 85 percent less for long-term program offenders.

Recidivism Rates by CD Outcome and Program Duration

As shown in Table 4, which displays recidivism rates by CD assessment and program duration, the total reconviction and reincarceration rates for all offenders who entered CD treatment were significantly lower in comparison to the comparison group. For example, by the end of the follow-up period, which averaged 18 months for all 2,260 offenders, 19 percent of the comparison group had been reconvicted of a felony compared to 15 percent of the CD treatment group. Similarly, 12 percent of the comparison group offenders were reincarcerated for a new offense at the end of the follow-up period compared to 8 percent of the CD treatment group.

Table 4. Recidivism Rates by CD Assessment and Program Characteristics

	<i>Reconviction 6 Months</i>	<i>Reconviction 12 Months</i>	<i>Reconviction Total*</i>	<i>Reincarceration 6 Months</i>	<i>Reincarceration 12 Months</i>	<i>Reincarceration Total*</i>
Comparison Group (N=1,096)	8.4	15.0	18.9	2.6	7.5	11.8
<u>Treatment Outcome</u>						
Completer (N = 771)	5.6	10.6	14.1	1.9	4.4	7.1
Participated Until Release (N = 72)	1.4	4.2	6.9	1.4	2.8	4.2
Successful Outcome (N = 843)	5.2	10.1	13.5	1.9	4.3	6.9
Terminated (N = 251)	5.6	9.6	16.3	1.6	4.0	9.2
Quit (N = 70)	10.0	17.1	24.3	5.7	8.6	14.3
All TX Failures (N = 321)	6.5	11.2	18.1	2.5	5.0	10.3
All TX Outcomes (N = 1,164)	5.6	10.4	14.8	2.1	4.5	7.8
<u>Program Duration</u>						
Short-Term (N = 671)	6.9	12.4	16.7	2.4	5.2	8.6
Medium-Term (N = 393)	2.8	6.6	11.2	1.3	3.1	6.1
Long-Term (N = 100)	8.0	12.0	16.0	3.0	5.0	9.0
<u>Assessment</u>						
Abusive (N = 857)	6.2	11.8	15.6	1.9	4.9	8.8
Dependent (N = 1,412)	7.3	13.0	17.5	2.3	6.4	10.3
Total (N = 2,260)	6.9	12.6	16.8	2.2	5.8	9.7

* The average total follow-up time for all offenders was 18 months, with a minimum of 12 months and a maximum of 24 months.

There were variations in the recidivism rate by treatment outcome. Offenders who did not complete treatment, but who successfully participated until release, had the lowest reconviction and reincarceration rates. Treatment completers, meanwhile, had the next lowest reconviction and reincarceration rates over the entire follow-up period. Of the four different treatment outcomes, offenders who quit treatment had the highest recidivism rates.

Regarding program duration, the best recidivism outcomes were found among offenders who participated in medium-term programs. Similarly, offenders assessed as chemically abusive had slightly lower recidivism rates than those who were assessed as chemically dependent.

Impact of CD Program Participation on Recidivism

To determine whether CD programming in general has an impact on recidivism, a series of Cox regression models was estimated. Controlling for the effects of the other independent variables in the statistical model, the results in Table 5 indicate that participation in a CD treatment program significantly reduced the risk of reoffending for both recidivism measures (felony reconviction and reincarceration for a new offense). In particular, CD treatment decreased the risk of time to a reoffense by 23 percent for a

Table 5. Risk of Time to Recidivism by CD Program Entry

<i>Predictors</i>	<i>Reconviction</i>			<i>Reincarceration</i>		
	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>
CD Treatment	0.766	0.105	0.011	0.686	0.140	0.007
Male	1.343	0.194	0.128	1.472	0.261	0.139
Minority	1.288	0.110	0.022	1.131	0.143	0.390
Age at Release	0.982	0.007	0.005	0.991	0.008	0.302
Prior Felonies	1.110	0.010	0.000	1.111	0.013	0.000
Offense Type						
Person	0.909	0.173	0.581	0.812	0.235	0.375
Property	1.072	0.164	0.672	1.233	0.214	0.329
Drug	0.711	0.180	0.058	0.754	0.239	0.238
DWI	1.785	0.391	0.138	1.345	0.446	0.507
Metro	1.402	0.112	0.003	1.488	0.147	0.007
Length of Stay	0.984	0.006	0.005	0.987	0.007	0.065
Chemically Dependent	1.145	0.110	0.217	1.132	0.146	0.395
Discipline	1.036	0.013	0.005	1.041	0.017	0.020
Supervision Length	0.990	0.005	0.042	1.004	0.005	0.459
Intensive Supervised						
Release	0.333	0.275	0.000	0.165	0.362	0.000
Supervised Release (SR)	0.556	0.198	0.003	0.359	0.221	0.000
Work Release	0.431	0.265	0.001	0.203	0.331	0.000
SR Revocations	1.247	0.081	0.006	1.067	0.114	0.567

felony reconviction and 31 percent for a reincarceration for a new crime.¹ The results also showed that the risk of time to a reoffense was significantly greater for minority

¹ The recidivism analyses were performed with a Cox proportional hazards model, which measures not only whether offenders recidivate but also how long it takes them to reoffend or how long they are at risk in the community without committing a new crime. Because this model analyzes both whether and when offenders recidivate, the results are expressed in terms of “risk of time to reoffense.” Therefore, a variable that causes offenders to reoffend sooner and/or more often increases the risk of time to reoffense. In contrast, a variable that causes offenders to recidivate later and/or less often decreases the risk of time to reoffense.

offenders (reconviction), younger offenders (reconviction), and offenders with prior felony convictions (reconviction and reincarceration), discipline convictions (reconviction and reincarceration), a metro-area county of commitment (reconviction and reincarceration), and a supervised release revocation (reconviction). The risk of timing to reoffense was significantly less, however, for offenders with longer lengths of stay (reconviction), offenders released to some form of supervision (reconviction and reincarceration), and offenders with longer post-release supervision periods (reconviction).

Table 6. Risk of Time to Recidivism by CD Program Outcome

<i>Predictors</i>	<i>Reconviction</i>			<i>Reincarceration</i>		
	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>
Complete/Successfully Participate CD TX	0.737	0.120	0.011	0.635	0.163	0.005
Terminate CD TX	0.754	0.176	0.108	0.737	0.231	0.187
Quit CD TX	1.119	0.257	0.661	0.963	0.335	0.909
Male	1.324	0.194	0.148	1.450	0.262	0.156
Minority	1.288	0.110	0.021	1.133	0.143	0.385
Age at Release	0.981	0.007	0.004	0.991	0.008	0.263
Prior Felonies	1.110	0.010	0.000	1.111	0.013	0.000
Offense Type						
Person	0.910	0.173	0.587	0.813	0.235	0.378
Property	1.068	0.164	0.689	1.225	0.214	0.345
Drug	0.713	0.180	0.060	0.755	0.239	0.240
DWI	1.732	0.392	0.162	1.302	0.448	0.555
Metro	1.404	0.112	0.003	1.482	0.147	0.008
Length of Stay	0.984	0.006	0.005	0.987	0.007	0.072
Chemically Dependent	1.144	0.110	0.222	1.137	0.146	0.380
Discipline	1.034	0.013	0.010	1.037	0.018	0.041
Supervision Length	0.990	0.005	0.042	1.004	0.005	0.449
Intensive Supervised Release	0.332	0.275	0.000	0.165	0.361	0.000
Supervised Release (SR)	0.553	0.198	0.003	0.361	0.222	0.000
Work Release	0.435	0.266	0.002	0.210	0.334	0.000
SR Revocations	1.251	0.081	0.006	1.065	0.114	0.582

Table 6 shows the results analyzing the impact of treatment outcome on time to recidivism. A successful CD treatment outcome had a significant impact for both recidivism measures, reducing the risk of time to reoffense by 26 percent for reconviction and 36 percent for reincarceration. CD treatment terminations or quits neither significantly increased nor decreased the risk of recidivism. The risk of time to reoffense

was significantly greater, however, for minority offenders (reconviction), younger offenders (reconviction), and offenders with prior felonies (reconviction and reincarceration), discipline convictions (reconviction and reincarceration), a metro-area county of commitment (reconviction and reincarceration), and a supervised release revocation (reconviction). It was significantly less for offenders with longer lengths of stay (reconviction), offenders released to supervision (reconviction and reincarceration), and offenders with longer post-release supervision periods (reconviction).

Impact of Medium- and Long-Term CD Treatment on Recidivism

As discussed earlier, 493 treatment non-participants were carefully matched to the 493 offenders who participated in medium- and long-term treatment to evaluate the impact of

Table 7. Comparison of Medium- and Long-Term CD Treatment and Comparison Group Offenders

<i>Characteristics</i>	<i>Comparison Group</i>	<i>CD Group</i>	<i>t test p Value</i>
Male	90.5%	91.7%	0.503
White	61.3%	61.1%	0.948
Age at Release (years)	33.4	33.6	0.800
Prior Felonies	2.5	2.3	0.491
Metro	47.7%	49.1%	0.656
Offense Type			
Person	33.0%	29.6%	0.244
Property	14.6%	13.6%	0.648
Drug	35.9%	32.7%	0.284
DWI	4.1%	10.1%	0.000
Other	12.4%	14.0%	0.452
Length of Stay (months)	22.6	22.5	0.932
Institutional Discipline	2.9	2.5	0.157
Dependency Assessment	67.5%	65.7%	0.544
Length of Supervision (months)	25.6	27.0	0.433
Supervision Type			
Supervised Release (SR)	47.9%	50.7%	0.373
Work Release	17.2%	21.1%	0.124
Intensive Supervised Release	27.4%	26.6%	0.774
Discharge	7.5%	1.6%	0.000
SR Revocations	0.42	0.42	0.999
Outcome Measures			
Felony Reconviction	17.6%	12.2%	0.016
Reincarceration for New Offense	12.6%	6.7%	0.002
N	493	493	

medium- and long-term programming on recidivism. As shown in Table 7, which provides a comparison between the treatment (medium- and long-term treatment participants) and comparison (non-participants) groups, there were only two significant differences between the two groups. The CD group had a significantly higher percentage of DWI offenders and a significantly lower percentage of discharged offenders.

In Table 8, the findings from the Cox regression analyses are presented on the impact of medium- and long-term CD program participation on recidivism. Controlling for the effects of the other independent variables in the statistical model, the results indicate that participation in a medium- or long-term CD treatment program significantly reduced the risk of reoffending for both recidivism measures (felony reconviction and reincarceration for a new offense). That is, medium- and long-term CD treatment decreased the risk of time to a reoffense by 30 percent for a felony reconviction and 42 percent for a reincarceration for a new crime.

Table 8. Risk of Time to Recidivism by Medium- and Long-Term CD Program Entry

<i>Predictors</i>	<i>Reconviction</i>			<i>Reincarceration</i>		
	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>
CD Treatment	0.698	0.176	0.041	0.580	0.232	0.019
Male	1.705	0.357	0.135	1.585	0.438	0.294
Minority	1.470	0.189	0.042	1.825	0.240	0.012
Age at Release	0.979	0.011	0.051	0.994	0.013	0.667
Prior Felonies	1.147	0.021	0.000	1.168	0.024	0.000
Offense Type						
Person	0.719	0.286	0.249	0.507	0.383	0.076
Property	1.804	0.276	0.033	1.674	0.337	0.127
Drug	1.150	0.292	0.633	1.215	0.352	0.579
DWI	1.149	0.508	0.784	0.469	0.592	0.200
Metro	1.335	0.189	0.126	1.276	0.240	0.310
Length of Stay	0.970	0.008	0.000	0.959	0.010	0.000
Chemically Dependent	1.397	0.190	0.079	1.577	0.247	0.065
Discipline	1.038	0.018	0.035	1.054	0.022	0.019
Supervision Length	0.996	0.007	0.514	1.018	0.007	0.019
Intensive Supervised Release	0.256	0.393	0.001	0.088	0.591	0.000
Supervised Release (SR)	0.584	0.299	0.072	0.670	0.333	0.229
Work Release	0.174	0.404	0.000	0.123	0.528	0.000
SR Revocations	1.374	0.122	0.009	1.000	0.176	0.998

The results also showed that the risk of time to a reoffense was significantly greater for minority offenders (reconviction and reincarceration), property offenders (reconviction), and offenders with prior felony convictions (reconviction and reincarceration), disciplinary convictions (reconviction and reincarceration), longer lengths of post-release supervision (reincarceration), and supervised release revocations (reconviction). The risk of time to reoffense was significantly less, however, for person offenders (reconviction and reincarceration), offenders with longer lengths of stay (reconviction and reincarceration), offenders released to intensive supervision (reconviction and reincarceration), and offenders placed on work release (reconviction and reincarceration).

Table 9. Risk of Time to Recidivism by Medium- and Long-Term CD Program Outcome

<i>Predictors</i>	<i>Reconviction</i>			<i>Reincarceration</i>		
	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>	<u>Hazard Ratio</u>	<u>SE</u>	<u>p Value</u>
Complete/Successfully Participate CD TX	0.539	0.221	0.005	0.508	0.287	0.018
Terminate CD TX	0.731	0.254	0.216	0.550	0.356	0.093
Quit CD TX	1.278	0.354	0.489	0.773	0.455	0.571
Male	1.655	0.359	0.161	1.511	0.442	0.350
Minority	1.505	0.190	0.031	1.856	0.241	0.010
Age at Release	0.979	0.011	0.057	0.995	0.013	0.677
Prior Felonies	1.139	0.022	0.000	1.164	0.025	0.000
Offense Type						
Person	0.737	0.286	0.285	0.526	0.383	0.094
Property	1.878	0.276	0.023	1.709	0.338	0.113
Drug	1.186	0.292	0.560	1.233	0.353	0.552
DWI	1.054	0.516	0.919	0.473	0.597	0.210
Metro	1.350	0.189	0.113	1.276	0.241	0.311
Length of Stay	0.970	0.008	0.000	0.959	0.010	0.000
Chemically Dependent	1.395	0.191	0.082	1.593	0.248	0.060
Discipline	1.032	0.019	0.092	1.051	0.023	0.029
Supervision Length	0.996	0.007	0.545	1.017	0.007	0.022
Intensive Supervised Release	0.255	0.391	0.000	0.087	0.588	0.000
Supervised Release (SR)	0.588	0.299	0.075	0.654	0.334	0.204
Work Release	0.180	0.406	0.000	0.123	0.531	0.000
SR Revocations	1.382	0.122	0.008	0.992	0.175	0.966

The results analyzing the impact of treatment outcome on time to recidivism are shown in Table 9. A successful CD treatment outcome had a significant impact on both measures of recidivism, reducing the risk of time to reoffense by 46 percent for reconviction and 49

percent for reincarceration. Neither treatment terminations nor quits had an impact on the risk of recidivism. The risk of time to reoffense was significantly greater, however, for minority offenders (reconviction and reincarceration), offenders with prior felonies (reconviction and reincarceration), property offenders (reconviction), offenders with institutional discipline convictions (reincarceration), offenders with longer lengths of post-release supervision (reincarceration), and offenders with supervised release revocations (reconviction). The risk of recidivism was significantly less for offenders with longer lengths of stay (reconviction and reincarceration), offenders released to intensive supervision (reconviction), and offenders placed on work release (reconviction and reincarceration).

CONCLUSION

The results from this evaluation suggest that participation in MNDOC's CD programming significantly reduces the risk of recidivism. The risk is even less, however, for offenders who complete CD treatment or successfully participate until release. Further, the findings indicate that participation in medium- and long-term CD treatment—the programming currently offered by the MNDOC—significantly lowers offenders' recidivism risk, especially among those with a successful treatment outcome.

There are a few limitations with this study, however, that are worth noting. First, previous research suggests that the effectiveness of CD treatment is based, to a large extent, on providing a continuum of care from the institution to the community. As such, aftercare programming figures prominently in helping preserve any positive effects produced by prison-based CD treatment. Yet data on the extent to which offenders participated in post-release aftercare programming were unavailable. Consequently, it is unknown whether the results obtained in this evaluation were due, in part, to variations in aftercare participation among offenders and the prison-based CD programs in which they participated.

Second, although recidivism is an important measure by which to gauge the effectiveness of a CD treatment program, it is not the only measure. Indeed, substance abstinence provides what is arguably a more sensitive measure regarding the efficacy of a CD treatment program. As noted earlier, however, data on post-release substance use were also unavailable for this study.

Nevertheless, research currently being conducted by the MNDOC may eventually shed light on these issues. More specifically, the MNDOC has been tracking offenders who participate in CD treatment since 2005. Post-release substance use and aftercare programming are two of the areas on which data are being collected on these offenders. However, given that data collection will continue through the end of 2009, the results from this evaluation will not be available for several years.

REFERENCES

- Bales, W.D., Bedard, L. E., Quinn, S. T., Ensley, D. T., & Holley, G. P. (2005). Recidivism of public and private state prison inmates in Florida. *Criminology and Public Policy* 4: 57-82.
- DeLeon, G. (1994). The therapeutic community for substance abuse: Perspective and approach. In G. DeLeon and J. Ziegenfuss (Eds.), *Therapeutic Community: Advances in Research and Application*. Rockville, MD: National Institute on Drug Abuse.
- Field, G. (1984). The Cornerstone program: A client outcome study. *Federal Probation* 48: 50-55.
- Inciardi, J.A., Martin, S.S., Butzin, C.A., Hooper, R.M. & Harrison, L.D. (1997). An effective model of prison-based treatment for drug-involved offenders. *Journal of Drug Issues* 27: 261-278.
- Johnson, S.D., Gibson, L. & Linden, R. (1978). Alcohol and rape in Winnipeg, 1966-1975. *Journal of Studies of Alcohol* 39: 1,887-94.
- Klebe, K. and O'Keefe, M. (2004). *Outcome Evaluation of the Crossroads to Freedom and Peer I Therapeutic Communities*. Washington, DC: National Institute of Justice.
- Knight, K., Simpson, D. & Hiller, M. (1999). Three-year reincarceration outcomes in prison therapeutic community treatment in Texas. *The Prison Journal* 79: 337-51.
- Minnesota Department of Corrections (2006a). *Minnesota Prison Population Projections—Fiscal Year 2006 Report*. St. Paul, MN.
- Minnesota Department of Corrections (2006b). *An Outcome Evaluation of the Challenge Incarceration Program*. St. Paul, MN.
- Minnesota Department of Corrections (2007). *Residential Proximity and Sex Offense Recidivism in Minnesota*. St. Paul, MN.
- Minnesota Office of the Legislative Auditor (2006). *Substance Abuse Treatment*. St. Paul, MN.

- Mumola, C.J. & Karberg, J.C. (2006). *Drug use and dependence, State and Federal prisoners, 2004*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.
- Patenaude, A.L., and Laufersweiller-Dwyer, D.L. (2002). *Arkansas Comprehensive Substance Abuse Treatment Program: Process Evaluation of the Modified Therapeutic Community (Tucker Unit)*. Washington, DC: National Institute of Justice.
- Pellisier, B., Rhodes, W., Saylor, W., Gaes, G., Camp, S.D., Vanyur, S.D. & Wallace, S. (2001). *TRIAD drug treatment evaluation project final report of three-year outcomes*. Washington, DC: Federal Bureau of Prisons, Office of Evaluation and Research.
- Welsh, W. (2002). *Evaluation of Prison Based Drug Treatment in Pennsylvania: A Research Collaboration between the Pennsylvania Department of Corrections and the Center for Public Policy at Temple University, Final Report*. Washington, DC: National Institute of Justice.
- Wexler, H.K., Falkin, G.P., and Lipton, D.S. (1990). Outcome evaluation of a prison therapeutic community for substance abuse treatment. *Criminal Justice and Behavior* 17: 71-92.
- Wexler, H., Melnick, G., Lowe, L. & Peters, J. (1999). Three-year reincarceration outcomes for Amity in-prison therapeutic community and aftercare in California. *The Prison Journal* 79: 321-36.
- Wolfgang, M. (1958). *The Patterns of Criminal Homicide*. Philadelphia, PA: University of Pennsylvania.