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An economic analysis of the in-prison therapeutic community model on prison management costs

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ABSTRACT

This study estimated the impact of an in-prison, therapeutic community (TC) substance abuse treatment program on management costs in a California prison. A deconstruction method was developed to estimate the opportunity cost of staff time and other resources involved in various prison administrative tasks. Compared to "non-treatment" yards within the facility, the TC environment generated lower administrative costs for disciplinary actions, inmate grievances, and major disruptive incidents resulting in lockdowns. These findings suggest that, in addition to their intended rehabilitative outcomes, prison-based TCs may foster institutional environments that help to control prison management costs.

Introduction

Most evaluation studies on substance abuse treatment in correctional settings attempt to discern how various program-client interactions can produce desired outcomes (e.g., Lipsey, 2001; Palmer, 1995; Zhang, Roberts, & Callanan, 2006a). This line of inquiry has provided researchers and policymakers with improved knowledge of the relative efficaciousness of different treatment methods for specific groups, and has fueled a resurgence of rehabilitation programs in prisons and community reentry settings (Cullen, 2007; Lipsey & Cullen, 2007). Less is known about differences in the potential social and economic costs and benefits of the most popular treatment regimes. As a result, stakeholders often lack sufficient information to decide how best to allocate scarce resources for rehabilitation efforts. This has led to increased interest in benefit-cost assessment of treatment programs (McCollister, French, Prendergast, Hall, & Sacks, 2004).

Recent research has explored several potential economic benefits of investing in substance abuse treatment for offenders (Longshore, Hawkin, Urada, & Anglin, 2006; Pearson & Lipton, 1999; Zhang, Roberts, & Callanan, 2006a, 2006b). Significant economic payoffs may accrue when a treatment program helps an offender escape the cycle of substance abuse, crime and re-incarceration, for life as a productive member of the community (French, McCollister, Alexandre, Chitwood, & McCoy, 2004). Such successful reintegration leads to decreased public costs for law enforcement, corrections and rehabilitation, health, and welfare. The key question has been whether these potential cost savings are enough to offset expenditures on treatment. Research findings suggest that treatment effectiveness, and potential economic benefits, vary by the type of program, the type of substance primarily abused, the match between client needs and program services, the integration of support services before and after incarceration, and coordination within the service provider, law enforcement, and probation/parole complex (McCollister, French, Inciardi, et al., 2003; Zhang et al., 2006b).

As studies of the societal cost/benefit calculus of in-prison substance abuse treatment have grown, one area for potential cost savings has remained relatively unexplored: the impact of therapeutic environments on prisoner behavior and resulting prison management costs. There have been many studies that examined how prison operations (such as security levels and staff-inmate relations) and prison environments (such as overcrowding or presence of prison gangs) were related to inmate misconduct. These studies focused on both individual level as well as contextual level variables. For instance, Gaes, Wallace, Gilman, Klein-Saffran, and Suppa (2002) found that membership in prison gangs increased almost all forms of prison misconduct (including both rule infractions and actual crimes), even when demographic profiles and previous history of violence were controlled. Through a meta-analysis of various conflicting research findings, Franklin, Franklin, and Pratt (2006) suggested that prison overcrowding had little substantive impact on prison misconduct. In their multilevel analysis of 120,000 federal prisoners incarcerated in 2001, Camp, Gaes, Langan, and Saylor (2003) found the prison operations and social organizations were just as important as individual level variables (e.g., prior misconduct history and demographic profiles) in understanding the probability of prison misconduct.

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In a meta-analysis, Gendreau, Goggin, and Law (1997) found numerous significant correlations between personal and situational factors and prison misconduct behavior. For instance, abrupt changes in inmate turnover and the presence of youthful and highly impulsive offenders tended to provoke misconducts and violent behaviors. Furthermore, measures that predicted post-release recidivism were also effective indicators of prison misconducts. Therefore inmates could be assessed on their propensity towards prison misconduct using established instruments and directed to early interventions (e.g., anger management) for improved adjustment to prison life (Gendreau & Keyes, 2001).

The presence of treatment activities and treatment staff inevitably affect inmate behaviors and prison operations, which in turn bear fiscal consequences on prison management. Effective therapeutic environments may promote pro-social behavior among inmates, therefore reducing costs associated with disciplinary actions, conflict management, and extraordinary security measures. Substance abuse treatment models that stress building and nurturing strong communication, coping, and relational skills among participants are likely to reduce prison management costs (Prendergast, Farabee, & Cartier, 2001). The purpose of this study was to test the hypothesis of its potential economic impact on management costs in a prison-based substance abuse program in California.

Therapeutic community

Treatment strategies for offenders with substance use disorders include various modalities such as individual counseling, group therapy, methadone maintenance, sober living, shock incarceration (or boot camp), substance abuse education, twelve-step programs, and cognitive behavioral therapy. One of the most widely applied treatment models is the therapeutic community (TC). Therapeutic communities, some of which began more than fifty years ago (Lees, Manning, & Rawlings, 2004), are typically drug-free residential settings that rely heavily on peer influence and mentoring activities. Treatment activities follow a progressive model wherein treatment staff members (or mentors) help residents to value honesty, accountability, a strong work ethic, and communal responsibility (National Institute on Drug Abuse, 2002; Pearson & Lipton, 1999). Through structured activities such as group sessions with peers, confrontation, role-playing, individual and group therapy, residents learn to plan, set, and achieve goals and be accountable. These activities are designed to heighten the awareness of pro-social attitudes or behaviors that will eventually help the resident transition back into the society.

The informal measures of social control, as promoted through the group processes and peer-to-peer confrontation, are believed to promote pro-social attitudes and behavior (De Leon, 2000). De Leon posited that the essential element of the TC model is its holistic treatment and recovery process (i.e., treating the whole person). The therapeutic community is the context as well as the vehicle (i.e., "community as method") in which the individual achieves the desired change. Through "self-help" and "mutual self-help" (i.e., assuming partial responsibility for the recovery of peers), the participant strives to progress through stages of treatment, each involving increasingly important roles coupled with greater privileges and responsibilities.

Many studies long attested to the effectiveness of prison-based TC programs in reducing recidivism and drug use among participants (Pearson & Lipton, 1999). In a more recent meta-analysis of sixty-six published and unpublished evaluations of various incarceration-based drug treatment programs, Mitchell, Wilson, and MacKenzie (2007) found consistent support for the effectiveness of TC programs in reducing post-release offending and drug use. Although many static as well as dynamic factors contribute to the success of prison-based TC programs, Welsh and McGrain (2008) found that key factors to program success were inmate motivation (measured as treatment readiness), and programmatic characteristics of TC (such as counselor competence, counselor rapport, and peer support).

In recent years, researchers have begun to assess the economic benefits of TCs for correctional populations (e.g., Aos, Phipps, Barnoski, & Lieb, 2001; French, McCollister, Sacks, McKendrik, & De Leon, 2002; Logan et al., 2004; McCollister & French, 2002, 2003; McCollister et al., 2004). A meta-analysis by Lipton (1998) reported that TCs could produce enough savings from reduced drug use and crime to offset the cost of the treatment over a period of two to three years. He also found that increasing TC treatment for more severe drug-involved inmates produced greater cost savings. He argued that with appropriate intervention applied for a sufficient duration, three out of four offenders could reintegrate successfully back into the community. Based on three-year data from 394 parolees, Griffith, Matthew, Knight, and Simpson (1999) found that when the entire continuum of in-prison therapeutic community and aftercare was completed, the treatment model was cost-effective compared with incarceration without treatment. In their nuanced analysis, Griffith et al. (1999) found that the largest economic benefit was accrued among high-risk parolees. The same treatment services, when provided to low-risk parolees, were not a particularly good investment of public monies, especially when they failed to complete treatment.

Similarly, McCollister, French, Inciardi, et al. (2003), McCollister et al. (2004) found that offenders who participated in prison-based TC treatment followed by community aftercare had fewer days of reincarceration than offenders who received no treatment in prison or offenders that received prison-based treatment alone. The savings associated with the lower reincarceration rate in the treatment group that received both in-prison TC treatment and aftercare offset the cost of treatment.

This study sought to contribute to the emerging understanding of the economic benefits of in-prison TC programs by evaluating their impact on disruptive prisoner behavior and prisoner-staff conflict and resulting prison management costs in a California prison. Rates of inmate infractions, grievances, and major incidents were observed among inmates housed in TC treatment yards and a comparison group of similar inmates housed in a non-TC yard. Incremental costs of providing TC treatment were then compared to the difference in prison management costs related to the rates of infractions, grievances, and major incidents in the treatment and comparison yards.

The California's Substance Abuse Treatment Facility (SATF)

In 1997, California opened a 280-acre prison known as the Substance Abuse Treatment Facility (SATF). Encouraged by positive evaluations of TC-influenced programs such as *Stay'n Out* in New York, *Key-CREST* in Delaware, and the *Amity* in California (Anglin, Prendergast, Farabee, & Cartier, 2002; Burdon, Farabee, Prendergast, Messina, & Cartier, 2002), administrators established TC as the cornerstone treatment model for the SATF. The SATF program followed the traditional TC model with progressive, hierarchical treatment stages designed to increase and reward participants' levels of personal and social responsibility. It also relied heavily on peer influence and group dynamics to encourage participants to develop more adaptive social skills.

At the time of this study, SATF housed 7,628 convicted felons (more than twice the designed capacity), nearly 2,000 of whom were housed in two TC treatment yards. The TC prison yards were completely self-contained and separated from the general prison population. All TC inmates were classified as "Level II" by the California Department of Corrections and Rehabilitation (CDCR), which was responsible for the custodial and physical operations of the prison facility.[1] Treatment services were provided by two California-based contractors: Walden House and Phoenix House. Both substance abuse program treatment contractors employed the same basic TC philosophy and structure as

described above but operated in separate yards, each of which consisted of three housing units.

Participation in the substance abuse program was mandatory for inmates with a documented history of substance use or abuse (based on a review of inmate files) and who did not meet exclusionary criteria such as in-prison gang affiliations, a history of assault, or Immigration and Naturalization Service holds (Burdon et al., 2002). Treatment lasts up to eighteen months in prison and involved three phases: orientation, primary treatment, and pre-release transitioning. The treatment program included a minimum of twenty hours per week of substance abuse treatment activities, and ten or more hours of structured optional activities. Upon release, TC participants were encouraged to enroll in community aftercare services.

Method

Two types of costs were considered in this study: (1) administrative costs associated with inmate or non-treatment staff activities, and (2) the cost of providing TC substance abuse treatment. The cost of providing the SATF TC program was estimated using the Drug Abuse Treatment Cost Analysis Program (DATCAP).[2] This cost evaluation guide, developed by French and colleagues (French, 2001a, 2001b; French, Dunlap, Zarkin, McGeary, & McLellan, 1997), has been widely adopted by researchers to estimate program costs of drug abuse treatment in various modalities, including prison-based and post-release programs for criminal offenders (French et al., 2008; Knealing, Roebuck, Wong, & Silverman, 2008; Kunz, French, & Bazargan-Hejazi, 2004; McCollister, French, Inciardi, et al., 2003; McCollister, French, Prendergast, et al., 2003; Mundt, French, Roebuck, Manwell, & Barry, 2005; Zavala et al., 2005). The DATCAP estimates the total economic costs (or opportunity costs) of treatment, including personnel, program supplies and materials, contracted services, buildings and facilities, and any resources either free of charge or partially subsidized by private or public entities.[3] TC programmatic costs incurred by the two service providers (Phoenix House and Walden House) were estimated using cost data collected during a 2000 evaluation. Results of the cost analysis are presented below as total annual program cost, average weekly/daily cost, and cost per treatment episode.

This analysis of prison management costs focused on the institutional costs of disruptive inmate behavior. As found by Prendergast et al. (2001), the TC environment was thought to promote better staff-inmate relationships and fewer inmate disciplinary problems, potentially generating savings in staff time necessary to process and implement disciplinary actions and to investigate/resolve inmate grievances. This study also expected potential savings related to mandatory staff holdovers and overtime payments, because inmate misconduct often leads to major incidents (such as riots or assaults) in which facilities must be locked down.

Observation period and comparison yard selection

Data collection for this study spanned two calendar years, 2003 and 2004. The substance abuse treatment programs in the two TC yards ("F" Yard and "G" Yard) adopted the same curriculum and therefore were combined as the treatment group.[4] For comparison, a prison yard ("B" Yard) that did not have a substance abuse treatment program but housed inmates of the same classification as that of the TC inmates was selected (i.e., Level II inmates).

Compensating for nonrandom assignment to treatment and comparison groups

Although inmates in the TC and comparison yards held the same CDCR classification level, the possibility existed that these two groups differed meaningfully on characteristics associated with disruptive behaviors. For instance, as shown in Table 1, the demographic profiles of the two groups of inmates were similar, but also with some noticeable differences. More inmates in the comparison yard had violent offenses than the TC yards, while the TC inmates were slightly more likely to have property and drug offenses. In such cases, differences in management costs might not be due to the TC environment, but to differences in the two subsets of inmates, reflecting selection bias, or some other nonrandom process that influenced whether they were assigned to the TC or comparison yard (Rubin, 1991). As Gendreau et al. (1997) found in their meta-analysis, inmate profiles such as age and prior offense histories were significantly correlated with prison misconduct.

Table 1
Demographic profile of TC and comparison inmates (in percent)

	Comparison yard	TC yard
Race/ethnicity		
African American	26.6	32.1
Latino	9.6	10.0
Mexican	33.2	18.8
Pacific Asian	0.7	0.3
White	26.1	35.8
Other	3.8	3.0
Principal commitment offense		
Violent	41.6	29.4
Property	22.3	26.0
Drugs	26.1	32.7
Other	10.1	12.0
Number of prior prison incarcerations	2.2	2.5
Age	37.8	38.1
Recidivism risk score	17.0	18.4
Total (N)	(4,504)	(6,773)

Propensity scoring techniques were used to compensate for the lack of a true experimental design (involving random assignment), affording control over several nonrandom factors that may have affected yard assignment. Following methods described by Rosenbaum and Rubin (1984), a two-stage statistical process was applied to identify and control for nonrandom differences in the likelihood of being assigned to the TC yard. The first stage was a logistic regression of yard membership (TC versus comparison) on several inmate characteristics, including age, race/ethnicity, prior prison incarcerations, the type of crime (violent, property, drugs, other) for which he was incarcerated, and a measure of post-release recidivism risk. The resulting parameter estimates were used to calculate a predicted probability of being assigned to the TC yard (propensity score), based on each inmate's background characteristic profile. The second stage involved adding each inmate's propensity score as a control variable in tests of group differences in misconduct and related estimates of administrative cost differences for the TC and comparison groups.

Management cost elements

Three major data elements were sought from SATF prison records for this analysis—(1) inmate disciplinary actions, (2) inmate grievance appeals, and (3) major incident reports.[5] These three data elements are described in detail below.

Inmate infractions

All records of infractions or disciplinary actions were gathered from TC participants and comparison inmates at SATF for the study period. Inmates in violation of prison rules and regulations receive a citation. Both prison guards and substance abuse treatment staff in the TC yards can issue citations if they observe any violations, compared to only guards in the non-TC yards. Violations of prison rules fall into six general categories:

- Violence or the threat of violence
- Failure to participate in assigned programs

- Personal grooming (including tattooing) and smoking regulations
- Nonviolent disruptive behavior
- Possession or use of controlled substances or possession of other contraband
- Other (violations that do not readily fall into one of the above categories, such as theft of state food and untidy living quarters)

Additionally, these violations are classified as either "serious" or "administrative." Serious violations imply actions that usually require immediate attention and response (e.g., acts of violence, disruption of facility operation, or possession of controlled substances). A serious violation can result in loss of good time credit for the inmate, as well as addition of points to the inmate's custody classification score (higher points increase the likelihood of stricter prison environment). Inmates with multiple serious rule violations may result in termination from TC treatment and/or being reclassified to a higher custody level. Administrative violations, on the other hand, are actions that do not involve violence or threat to facility security (e.g., theft, damage of personal or state property valued at $50 or less, misuse of food, and use of vulgar language). Administrative violations can result in loss of privileges or assignment of additional work duty.

The process of filing and implementing disciplinary citations and associated costs was deconstructed in detailed steps with the help of CDCR officials. A five-page instrument was developed to account for staff hours required to accomplish various tasks; and their associated salary figures were used to estimate how much each stage of the review process may cost. Cost of staff time was based on established salary schedules (including fringe benefits) only. The authors were unable to obtain such accounting figures as yearly bonuses, longevity pay, and remote location incentives that correctional officers receive in most state prisons. Therefore the actual costs of staff time were most likely underestimated in this study. The costs of processing administrative and serious citations were estimated to be $534 and $776, respectively.[6]

Inmate grievances

An inmate may file a formal complaint about an action taken by any staff member inside the prison or any prison policy or procedure perceived to have adverse consequences on the prisoner. Inmate grievances can involve several levels escalating review and possible redress. An inmate must go through all review levels before he or she can file a state or federal lawsuit over prison conditions. In a typical grievance appeal, an inmate cites specific facts that he or she perceives as unfair or in violation of his or her rights or privileges and requests a remedy to correct the situation. The process typically begins with seeking information and perhaps an informal resolution of the problem, and if unsuccessful, may continue through three formal levels or review facilitated by a prison appeals coordinator. California inmates may file no more than one grievance per week.

At the *information level*, appeals are given to the prison staff directly involved in the situation that gave rise to the grievance. If the response is not satisfactory to the inmate, he or she may then write to the institution's appeals coordinator for the *first level* review. Inmates often bypass the *informal level* and appeal directly to the *first level* review, such as on issues involving classification committee actions, serious disciplinary actions, and prison staff misconduct. The appeal is sent to the prison's appeals coordinator, who will request a review by the supervisor of the staff person(s) who was/were subject(s) of the initial grievance. If the problem is not resolved at the *first level*, an inmate may send the appeal back to the appeals coordinator for a *second level* review. In some cases, for instance, an appeal about a release date or time credits, inmates may skip the *first level* review, going directly from the *informational* to the *second levels*. Prison officials may also decide to bypass the *first level* review when a case involves employee misconduct. If the *second level* review does not resolve the grievance, an inmate may move to the *third level* review, which takes place at the CDCR headquarters in Sacramento, California. The *third level* review marks the end of administrative procedures for resolving inmate grievances. Beyond this point, a lawsuit may be filed in a state or federal court.

A six-page instrument was developed to calculate costs associated with each level of the grievance review. This study included only those costs directly associated with the three formal levels of reviews: Level I ($178 per case review), Level II ($150 per case review), and Level III ($264 per case review), because grievance reviews at the informal level involved minimal staff time from the appeals coordinator and a correctional sergeant.

Major incidents

Significant institutional costs result when inmate misbehavior results in widespread lockdowns of facilities and/or searches for weapons/contraband or escaped inmates. Such "major" incidents may include yard melees, assault and battery, possession of weapons, suicide and attempted suicide, controlled substances use and/or possession, escapes, and the "other" category, which includes incidents such as cell extractions, deaths, resisting staff, threatening letters, conspiracy, destruction of state property, and inmate gatherings without destruction of state property.[7]

The breadth of events that qualify as "major" incidents included a wide range of potential costs. Costs resulting from some major incidents, like escapes and riots, may include such elements as staff overtime, medical services, temporary housing for correctional officers held overnight, food services, and other emergency auxiliary support. Other events may result in increased administrative time in paperwork processing. Due to the complexity and diversity of prison incidents and required staffing responses, accounting managers at SATF and CDCR headquarters thought it was prohibitively expensive to separate costs associated with individual events that occurred during the study period from other prison operation expenses. This study was only able to analyze differences between the TC and comparison housing facilities in the distribution of major incidents, due to the lack of accounting and payroll records for specific major incidents.

Analysis and findings

It was hypothesized that the TC environment would lead to lower administrative costs related to disciplinary actions, inmate grievances, and major incidents. The analysis was carried out in three steps. First, this study estimated the incremental costs of providing TC treatment at SATF. Second, this study estimated rates, and where possible, the cost of infractions, inmate grievances, and major incidents in each yard.[8] Finally, this study estimated the marginal costs and/or savings (overall and relative to TC expenditures) in these administrative categories attributable to the TC environment.

Therapeutic community programming costs

Estimates were obtained with the Drug Abuse Treatment Cost Analysis Program (DATCAP) applied to data collected in 2000. Estimates reported in Table 2 were adjusted to reflect costs in 2005 dollars, based on changes in the consumer price index (CPI). The two TC treatment contractors had nearly identical costs. The incremental

Table 2
Economic cost analysis of SATF SAPs (2005 dollars)

Cost measure	Phoenix House	Walden House	TC average
Average daily census	715	734	725
Total annual economic cost	$2,014,335.00	$2,128,527.00	$2,071,431.00
Annual cost per SAP inmate	$ 2,817.00	$ 2,900.00	$ 2,857.00
Weekly cost per SAP inmate	$ 54.00	$ 56.00	$ 55.00
Daily cost per SAP inmate	$ 7.71	$ 8.00	$ 7.86

cost of TC treatment over standard incarceration costs per inmate was $7.86 per day (averaged across providers). This study then sought to determine how much of the TC related costs were offset through savings in prison management costs.

Costs associated with infractions

Prison staffing levels in California were based on standard formulas that took into consideration classifications as well as inmate population sizes. All Level II prison yards had the same staff-to-inmate ratio across the state. What was different about staffing in TC yards was the presence of treatment counselors, who were also authorized to issue citations and impose disciplinary actions on prison misconduct. In other words, chances for inmates in TC yards to be cited for behavioral problems were far greater than those of the non-TC yard, because of the increased monitoring by both correctional officers and treatment counselors.

As shown in Table 3, the percentage of inmates with disciplinary infractions was lower in the TC yards (18.8 percent) than the comparison yard (20.1 percent). The percentage of all infractions recorded as "serious" was higher among TC inmates (89.0 percent) compared to 83.3 percent of those among the comparison inmates. It was unclear as to why TC participants had a lower rate of infractions overall, but greater proportions of them were serious. One possible explanation was that minor infractions in the TC yards were processed through group responses or resolved by the treatment staff. As a result, any infractions worth recording were likely the serious ones. Another possible explanation was the greater emphasis on proper conduct and increased expectations by treatment staff as part of the TC treatment protocol and regimen of structured activities that might have magnified any slightest behavioral problems. The fact that treatment counselors were authorized to issue citations might very well have multiplied the number of "serious" infractions in the two TC yards. Unfortunately, the prison where this study was conducted did not release the names or classifications of the personnel who issued the citations, thus effectively preventing the authors from identifying which citations were issued by the treatment staff or correctional officers.

Further research (particularly of qualitative nature) would be needed to explore the dynamics between staff-inmate relations in the TC yard and their impact on inmate misconduct. To tease out whether these observed differences in prison infractions were due to increased staff surveillance or the TC treatment effects would require true experimental designs with random assignment to different treatment conditions.

Table 4 presents the costs incurred in reviewing and processing administrative and serious infractions during the two-year study period. In order to correct for the effects of different population sizes on the total costs, a per capita cost was calculated for each type of disciplinary action. These figures revealed that the per-inmate costs associated with administrative infractions were less in the two TC yards than in the comparison facility. The per capita costs of administrative infractions were $12.69 lower in the TC yards, a 37 percent savings. By contrast, per capita costs of serious infractions were slightly higher ($6.04, or 3.5 percent) in the TC yards. The difference in per capita costs between TC and comparison yards was then applied to the TC population to estimate a cost basis if the TC inmates had infraction patterns similar to the comparison inmates. This method produced estimated cost savings of $45,694 ($6.65 per capita cost savings x 6,773 inmates).

Table 3
Breakdown of inmate infractions by type and facility for 2003/2004

Facility type	Total inmates	Number of administrative infractions	Number of serious infractions	Percent of inmates with infraction	Percent of infractions that were serious
Comparison yard	4,504	290	1,007	20.1	83.3
TC yard	6,773	275	1,567	18.8	89.0

Table 4
Costs of inmate infractions by type of disciplinary action and facility*

Facility	Type of disciplinary action					
	Administrative		Serious			
	Cost of all events	Per capita cost	Cost of all events	Per capita cost	Total combined costs	Per capita total cost
Comparison yard (N=4,504)	$154,749	$34.36	$ 781,845	$173.59	$ 936,595	$207.95
TC yard (N=6,773)	$146,745	$21.67	$1,216,634	$179.63	$1,363,380	$201.30
Per capita savings		$12.69		$(6.04)		$ 6.65

*Note: Unadjusted for yard assignment propensity and inmate characteristics; dollar figures are rounded for total costs and total savings.

These estimates of cost savings assumed that the difference in disciplinary actions was completely due to the effects of the TC environment. Some or all of the difference, however, could be due to other factors, including yard assignment selection bias. As discussed in the method section, a two-stage propensity scoring approach was employed to compensate for some nonrandom differences in an inmate's likelihood of being assigned to the TC yard. After calculating a TC yard assignment propensity score for each inmate in the first stage logistic regression, general linear modeling techniques were used to test for group differences within each type of infraction (administrative and serious), after controlling for yard assignment propensity, age, race/ethnicity, prior incarcerations, principal commitment offense, and recidivism risk.[9] Least squares estimates of the average per capita infractions committed in each yard were then used to estimate the overall numbers of infractions expected in each yard after controlling for group differences in yard assignment propensity and the inmate background characteristics for which measures were available.

Table 5 presents the expected levels of infractions and associated costs after controlling for yard assignment propensity and inmates' background characteristics. As shown in the table, the estimated cost savings associated with the TC environment were higher after accounting for differences in yard assignment propensity and inmate characteristics. For example, the adjusted per capita administrative infraction cost savings associated with TC yard membership was $13.83, versus an unadjusted $12.69 savings shown in Table 4. The adjusted TC yard benefit was much larger for serious infractions, with the TC yard resulting in a per capita cost saving of $2.85 versus the unadjusted cost *increase* of $6.04 as shown in Table 4. Overall, the TC yard produced an adjusted cost savings of $112,990 over the two-year period ($93,670 + $19,320).

Table 5
Propensity-adjusted estimates of infraction frequency and costs

Facility type	Total inmates	Type of disciplinary action			
		Administrative		Serious	
		Risk-adjusted number of infractions	Risk-adjusted per capita cost	Risk-adjusted number of infractions	Risk-adjusted per capita cost
Comparison yard	4,504	291	$ 34.44	986	$ 170.15
TC yard	6,773	262	$ 20.61	1,459	$ 167.29
Risk-adjusted TC per capita cost savings:			$ 13.83		$ 2.85
Risk-adjusted TC total cost savings:			$93,670.00		$19,320.00

Note: Dollar figures are rounded for total costs and total savings.

Table 6
Inmate appeals (CDC 602s) costs by levels of review

Facility type	Total inmates	Total appeals	Rate per 100 inmates	Total costs	Per capita costs
Non-SAP yard	4,504	1,975	43.8	$351,898	$78.13
SAP yards	6,773	1,769	26.1	$311,716	$46.02
Facility type	Total inmates	Level I review	Rate per 100 inmates	Total costs	Per capita cost
Non-SAP yard	4,504	1,249	27.7	$222,122	$49.32
SAP yards	6,773	1,224	18.1	$217,676	$32.14
Facility type	Total inmates	Level II review	Rate per 100 inmates	Total costs	Per capita cost
Non-SAP yard	4,504	540	12.0	$ 80,735	$17.93
SAP yards	6,773	435	6.4	$ 65,037	$ 9.60
Facility type	Total inmates	Level III review	Rate per 100 inmates	Total costs	Per capita cost
Non-SAP yard	4,504	186	4.1	$ 49,041	$10.89
SAP yards	6,773	110	1.6	$ 29,003	$ 4.28

Note: Dollar figures are rounded for total costs and total savings.

Costs associated with inmate appeals

TC inmates were less likely to file for grievances against prison officials than the comparison group, and this pattern was consistent across all levels of appeals, as shown in Table 6. TC participants were about 40 percent less likely to file a grievance (26.1 percent) than inmates in the comparison yard (43.8 percent). As the level of grievance review increased, the differences between the two groups widened. For example, TC inmates were about 47 percent and 61 percent less likely than comparison yard inmates to file for Level II and Level III reviews, respectively.

It was interesting to note that the highly confrontational nature of the group processes and "mutual self-help" aspects of the TC treatment did not produce increased levels of grievances among its participants. Quite contrary, TC residents were less likely than their counterparts in the non-TC yard to complain about their prison conditions. The fact that the patterned differences were consistent in all three levels of grievances appeared to suggest that the TC environment was effective in promoting social cohesion and collective group identity.

Table 7 summarizes the cost savings resulting from both inmate appeals and infractions among TC and comparison inmates. The per capita cost of a TC participant was $46.02 for all levels of appeals, compared to $78.13 for the comparison facility, a savings of $32.11 (or a 41 percent reduction in costs), which would translate into a total saving of $217,481. Much of the savings resulted from reductions in Level I reviews, but were augmented by savings accruing up the review chain. The savings from infractions were mostly due to the rate of administrative citations in favor of the TC participants. Inmates in non-TC yard produced fewer serious infractions. Although TC participants were still ahead of their comparison overall, the total savings were only estimated at $45,694 over the two-year observation period.

Table 7
Summary costs and savings from infractions and grievances

Facility type	Total inmates	Total events	Total cost	Per capita cost	Per capita savings	Total savings
(1) Grievances:						
Non-SAP yard	4,554	1,975	$ 351,898	$ 78.13		
SAP yards	6,773	1,769	$ 311,716	$ 46.02	$32.11	$217,481
(2) Infractions:						
Comparison yard	4,504	1,297	$ 936,595	$207.95		
TC yard	6,773	1,842	$1,363,380	$201.30	$ 6.65	$ 45,694

Note: Dollar figures are rounded for total costs and total savings.

Major incidents

As shown in Table 8, residents in the TC yards caused far fewer "major" incidents (e.g., inmate-on-inmate assaults, inmate-on-staff assaults, riots, possession of weapons and/or controlled substances) than their counterparts in the comparison yard. There were a total of 167 major incidents reported in the TC yards (or 2.4 per one hundred inmates), compared to 408 in the comparison yard (or 9.4 per one hundred inmates). The rate of major incidents was nearly four times lower in the TC yards as it was in the comparison yard (2.4 versus 9.4 events) for the two-year period. The sizeable differences in the number of major incidents between the TC and non-TC yards were most likely to have produced significant fiscal impact on prison operations. These perceived savings or costs, however, could not be captured in this study, because the prison management could not provide accounting figures associated with these events (mainly cost of overtime and emergency services).

Summary and discussion

This study evaluated potential prison management cost savings from investments in a prison-based therapeutic community in California. This study found that TC yards in general had fewer infractions, grievances, and major incidents than those of a non-TC yard which housed similar inmates (all level II inmates based on prison classification). Although TC participants had fewer disciplinary problems overall, they had greater proportions of serious infractions than their comparison. One possible explanation to this finding was that minor infractions in the TC yards were dealt with in group processes as part of the treatment activities. As a result, infractions worth recording were likely the serious ones. Another more plausible

Table 8
Distribution of major crime/incident reports (CDC 837s)

Incident type	Non-SAP yard			SAP yard		
	N	Percent of incidents	Percent of inmates	N	Percent of incidents	Percent of inmates
Assault on staff	29	7.1	0.7	14	8.4	0.2
Assault on inmate	321	78.7	7.4	134	80.2	2.0
Possession of weapon	2	0.5	0.0	4	2.4	0.1
Possession of controlled substance	7	1.7	0.2	2	1.2	0.0
Suicide or attempted suicide	0	0.0	0.0	1	0.6	0.0
Other	49	12.0	1.1	12	7.2	0.2
Total	408	100.0	9.4	167	100.0	2.4

explanation was the fact that greater emphasis on proper conduct and increased expectations by treatment staff as part of the TC treatment protocol and regimen of structured activities might have magnified any slightest behavioral problems. The highly confrontational nature of peer dynamics commonly found in many TCs probably increased the gravity of any misconduct that might have been viewed as administrative infractions in a non-TC yard. The emphasis of "self-help" and "mutual self-help" likely intensified the self-policing aspect of the program dynamics, therefore bringing into close scrutiny of any behaviors deemed nonconducive to recovery goals or development of pro-social identity.

The fact that treatment counselors were authorized to issue citations may also have multiplied the number of "serious" infractions in the two TC yards. In a regular prison yard, only the correctional officers were allowed to issue citations. In other words, the TC yard received an extra surveillance. Unfortunately the prison where this study was conducted did not release the names or classifications of the personnel who issued the citations, thus making it impossible to identify which citations were issued by the treatment staff and which by correctional officers. The ability to separate citations issued by treatment staff from those from prison guards would allow more nuanced analysis of the TC environment may or may not have contributed to the increased levels of serious infractions.

Further research (particularly of qualitative nature) would be needed to explore the dynamics between staff-inmate relations in the TC yard and their impact on inmate misconduct. On the other hand, to tease out whether the observed differences in prison infractions were due to increased staff surveillance or the TC effects would require true experimental designs with random assignment to different treatment conditions.

It was interesting to note that the highly confrontational nature of the group processes in the TC model did not increase the levels of grievances among its participants. One might expect that the regimen of structured activities and "mutual self-help" may cause greater numbers of inmates to complain about their prison conditions relative to those living in non-TC yards. Quite the contrary, TC residents were less likely than their counterparts in the non-TC yard to file grievances. TC participants consistently filed fewer complaints than their comparison at each of the three levels of grievance review process. The TC environment, as examined here, appeared to be effective in promoting social cohesion and collective group identity.

In addition to fewer infractions and grievances, TC participants also caused far fewer "major" incidents (e.g., inmate-on-inmate assaults, inmate-on-staff assaults, riots, possession of weapons and/or controlled substances) than their counterparts in the comparison yard. The rate of major incidents was nearly four times lower in the TC yards as it was in the comparison yard over the two-year observation period. Such sizeable differences were most likely to have produced significant fiscal impact on prison operations. This study, however, was unable to estimate any such perceived savings or costs, because the prison management could not provide accounting figures associated with these events.

To be sure, the cost savings found in this study were relatively small compared to the costs of providing the in-prison program. It cost more than four million dollars annually to operate the two prison-based TC yards, as shown in Table 2. The savings identified in this study only amounted to $263,175. Needless to say, the savings generated from any reduction in infractions and grievances alone were negligible to the cost of providing the program. Despite the small financial benefits, findings in this study suggest that TC treatment activities or the existence of the TC environment may help to reduce or control prison management costs.

Cost-benefit analysis of any prison-based treatment programs poses many challenges. Many aspects of the prison operations are difficult to quantify. There were other aspects of prison management that could have reacted to the presence of the TC environment but were inaccessible to the present study. For example, financial records were not available in a few key areas of prison personnel costs such as disability claims (workers compensation due to work related injuries or stress), health services utilization, overtime payment, costs associated with staff turnover and training of new recruits, and sick leave records. Institutional estimates of the costs associated with major prison incidents were also not available. These additional expenditures would have added greater clarity to the fiscal impact of the TC in a prison environment.

As part of this study, a deconstruction accounting scheme was developed to capture detailed accounts of staff time and associated costs in common tasks. Two instruments were developed in this study, which can be easily adopted or modified by interested agencies to assess the financial impact of any prison-based interventions on two most common prison administrative tasks—(1) dealing with inmate disciplinary problems and (2) resolving inmate grievances. This study made a rare empirical effort to disentangle the complex cost components of staff time and institutional resources on these two routine tasks. This study used official salary figures in its estimates of staffing costs. Other significant personnel cost figures were not made available to this study. These costs included annual bonuses, overtime pay, remote work location incentives, longevity payments, and other miscellaneous financial incentives.

California Department of Corrections and Rehabilitation for many years was singled out as one of the few state agencies with chronic budget shortfalls. The excessive use of staff overtime and sick leave was cited as the primary cause of over expenditure (Bureau of State Audits, 2001). A state audit report also cited the department for its excessive workers' compensation costs, another significant contributor to the department's budget problems. Other budgetary problems stemmed from medical expenses in the California prison system. Medical care unavailable within the walls of a prison was commonly provided by a public or private hospital on either an inpatient or outpatient basis. A recent report by the California State Auditor found that during a four-year period, while the total inmate population remained relatively constant, payments to hospitals rose from $53.2 million to $112.6 million, averaging a 21 percent rate of growth per year (Bureau of State Audits, 2004).

Although many factors contribute to medical expenses in a prison, one important one was inmate-on-inmate violence. The majority of major incidents reported in California prisons involved mutual combats and assaults between inmates and assaults on prison staff. These violent incidents often led to injuries that would require expensive care. If outside medical service is procured, injured inmates must be transported to a hospital where a single-patient room must be used with around-the-clock security for the inmate's entire hospital stay. Needless to say, costs associated with prison violent incidents can escalate quickly. This study found that violence between inmates was significantly lower in the TC yard.

Prendergast et al. (2001) and field observations conducted by this study appeared to support the claim that correctional officers in TC yards considered their work environment more favorable than officers working in non-TC yards. The general atmosphere in the TC yards appeared to be more relaxed than that of non-TC yards. Interactions between staff and inmates in the TC yards appeared to be far less control-oriented than those found in non-TC yards, where guards must constantly remain vigilant and spring into action at the slightest threat of violence or inmate misconduct. Prison guards and treatment counselors reported greater job satisfaction when working in TC yards. Prison guards in non-TC yards were reportedly eager to apply for transfers whenever there were vacancies in TC yards.

The number of prison-based TC programs increased significantly in recent years in the California state prison system, from three programs totaling 500 beds in 1996 to the current thirty-nine programs totaling 9,358 beds. As correctional agencies across the nation are rediscovering the importance of prison-based intervention programs, cost-benefit and cost-effectiveness analyses will undoubtedly become a routine component in all evaluation studies.

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Notes

1. In California prisons, inmates are classified and assigned to housing units of different levels of movement control, with Level I being the least restrictive and Level IV the most restrictive.

2. Detailed description and instruction of this instrument can be found at www.datcap.com.

3. Opportunity costs here refer to the full value of all resources (or total economic costs) utilized by a treatment program regardless of whether a direct expenditure is made. Such costs include actual program expenditures (as budgeted) and any in-kind contributions free of charge or subsidized by any public or private entities. Prison-based TC programs often utilize institutional resources (such as facilities, utilities, and security) because of their locations.

4. Equivalence tests showed that there were no known systematic differences between inmates assigned to the two TC yards.

5. Due to obstacles in logistics and confidentiality, this study was unable to obtain other cost related records, such as those pertaining to work related injuries, workers compensation claims, and absences.

6. The deconstruction instruments used in this study for calculating staff time and associated costs are available to readers once the article is published. Due to the length of these instruments (eleven pages in total length), they were omitted in this article. Salary figures were based on 2005 payroll records.

7. Power outages are also considered reportable major incidents, but were excluded from this study.

8. The differences in subsequent cost analyses between the two TC treatment providers were negligible. As result, the authors combined both yards into one "TC" yard to perform the comparison to simplify the presentations.

9. After controlling for yard assignment propensity, an inmate's age, race/ethnicity, number of prior incarcerations, and recidivism risk were significant predictors of incurring a reported infraction. This finding was in line with the predictors of prison misconduct identified by Gendreau et al. (1997).

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