

SECTION SIX

AVOIDED COSTS FROM SUBSTANCE ABUSE TREATMENT IN KENTUCKY

6.1 COST OF SUBSTANCE ABUSE TREATMENT

It is increasingly important to obtain accurate estimates of the costs of substance abuse treatment and the cost savings that result from treatment (Blenko, Patapis, & French, 2005). However, substance abuse treatment cost savings can be difficult to estimate because of the numerous economic factors associated with crime reduction, changes in overall health status, employment, and other social services utilization. Belenko, Patapis, & French (2005) surveyed 109 economic evaluations of substance abuse treatment published between 1990 and 2004 and found considerable variation in methodology and net savings attributable to treatment. State governments, as well as federal agencies, have conducted cost-benefit studies of treatment and other drug abuse interventions such as Drug Courts (French, 1995; French & Martin, 1996; French, Mauskopf, Teague, & Roland, 1996; French, Zarkin, Hubbard, & Rachal, 1991; Logan et al., 2004; Zarkin, French, Anderson, & Bradley, 1994). Although these studies vary in methodologies and assumptions about societal costs associated with substance abuse, they provide support for the idea that substance abuse treatment results in cost savings to society and to taxpayers. Generally, these studies have examined changes in rates of substance use, criminal behavior, and employment *after* treatment compared to the same factors *before* treatment. These studies discuss the estimated costs associated with the post-treatment reduction in criminal behavior and unemployment compared to pre-treatment rates of criminal behavior and unemployment. The objective of these studies is to conduct a cost benefit analysis that divides the total benefits by the total costs to arrive at a benefit cost ratio (BCR) (Belenko, Patapis, & French, 2005).

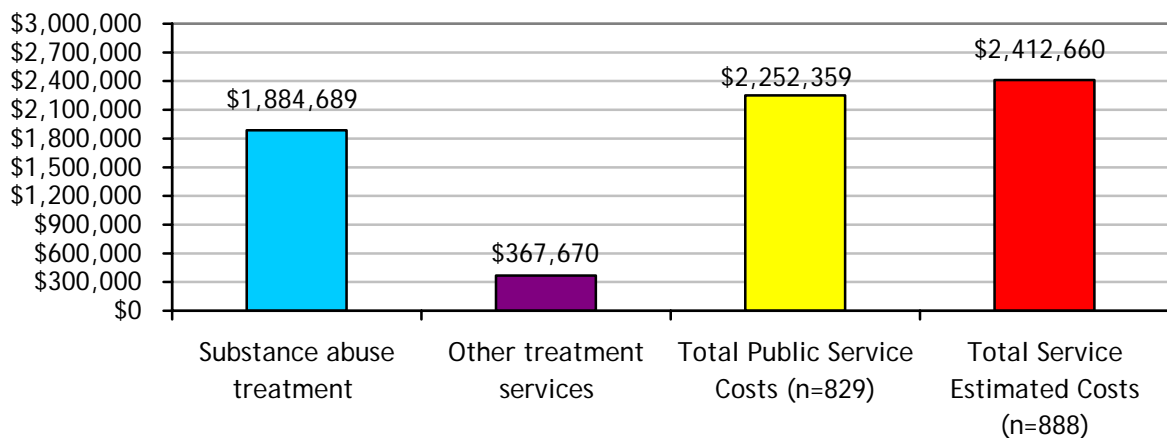
Benefit cost ratios vary from study to study. For example, Flynn, Kristiansen, Porto & Hubbard (1999) reported a range of BCRs from 1.68 to 2.73 with differences that are explained by different assumptions about treatment outcomes for cocaine abuse and crime. At the higher end, some studies have reported a BCR of 5.19 (French, McCollister, Sacks, McKendrick, & De Leon, 2002) and others have reported a lower ratio at 1.49 (Salomé, French, Miller, & McLellan, 2004). It is difficult to compare the cost saving findings from nationally recognized studies to Kentucky. Most of the nationally recognized outcome studies focus on treatment modalities such as long-term residential treatment (Hubbard, et al., 1989), which are not used in Kentucky. These studies, which include the Treatment Outcome Prospective Study (TOPS) (French et al., 1991), the Drug Abuse Treatment Outcome Study (DATOS) (Hubbard et al., 1997), and the California Drug and Alcohol Treatment Assessment (CALDATA) (Gerstein, Johnson, Harwood, Fountain, Suter, & Malloy, 1994) included long-term therapeutic community services which are not included in the panel of state-funded treatment services in Kentucky. However, some clients received long residential stays in halfway house treatment settings.

For this analysis of avoided costs in Kentucky, client-level data on clinical services were examined for 888 clients in the follow-up sample who received services funded by the Kentucky Division of Substance Abuse and for whom complete service data were available. The method for calculating services and costs associated with services included counting all services received by the follow-up sample for 12 months following their KTOS baseline intake date. This method does not examine discrete treatment episodes, but uses the total costs of state-funded services for 12 months.

Overall, the follow-up clients received 24,512 state-funded services including medical and non-medical detoxification, outpatient counseling, intensive outpatient, case management, crisis stabilization, therapeutic rehabilitation, and supported employment. This study examines the cost of state funded treatment and does not include private payer sources such as employee assistance programs, other contracts and private insurance. These payer sources represent a small percentage of the total clients served in this sample of follow-up clients. The cost of all treatment services for the 829 clients whose services were state funded (including Medicaid) was developed using Cost Report rates from the Kentucky Department of Mental Health. The total treatment cost for the clients whose services were state funded was \$2,252,359 or \$2,717 per client. The cost of services for the 829 clients included both specific substance abuse treatment (\$1,884,689) and mental health treatment (\$367,670). If substance abuse treatment alone is considered, the per client services cost for the 829 clients was \$2,273.45 and the mental health treatment cost was \$443.51 per client. The overall per client treatment cost was multiplied by the total sample size (n=888) to arrive at a generalized total cost of treatment for the entire sample which was \$2,412,660.

Flynn et al., (1999) using NDATUS data on 300 clients from 10 national sites, reported treatment costs for cocaine users at \$8,920 (in 1998 dollars) per residential episode and \$2,908 per outpatient episode. It should be noted that the total cost of \$2,385 per client per year for FY 2004 in Kentucky includes all state or SAPT Block Grant and state general fund services, including residential, outpatient, intensive outpatient, case management, psychiatric assessment and treatment, and therapeutic rehabilitation services for 12 months post KTOS intake.

Figure 6.1 Total Cost of Publicly-funded Treatment Services and Total Cost of All Treatment



To estimate the potential benefit cost ratio for Kentucky, this study compared inferred costs relating to the follow-up sample *before* treatment with the same inferred cost factors *after* treatment. Costs related to changes in arrests, costs of jail time, and employment provide useful indicators of overall savings to society and taxpayers. One of the major justifications for substance abuse treatment is the reduction in crime related to positive treatment outcomes (Hubbard, et al., 1989). Violent crime cost data are from the SAMHSA report *Costs of Alcohol-Connected Violent Crime* (Miller, Galbraith, & Levy, 1996) and property crime and driving under the influence (DUI) cost estimates are from Miller, Cohen, and Wiersema (1996). Drug crime cost data are from Finigan's (1999) article assessing cost off-

sets resulting from drug court services. These studies include victims' treatment costs in the crime cost estimates. All dollar amounts from Miller, Cohen, and Wiersema and the SAMHSA report were adjusted to 2004 dollars for comparability using the Federal Reserve Bank CPI indexing system values which can be located at the following web address: <http://minneapolisfed.org/Research/data/us/calc/index.cfm>.

6.2 CRIME REDUCTIONS

Since the current study includes self-report information, actual crime data could not be used and self-reported arrests are used as proxies for crime. Data on self-reported arrests were collected using the CSAT GPRA measure for arrests in the past 30 days and were asked in the same format for arrests in the past 12 months.

To estimate the costs of crimes, the total arrests for the past 12 months were analyzed using the distribution of types of crimes from Kentucky State Police and applying the percent of type of crime to the general arrest data reported measured by the GPRA item. The number of arrests was broken down into the categories used in earlier KTOS reports, which include violent crimes, property crimes, drug trafficking and possession, and DUI. The distribution of the 140,268 arrests in Kentucky in 2004 for these four categories was: (1) Drug Trafficking and Possession – 40,793 (29.1%); (2) Property – 52,933 (37.7%); (3) Violence – 23,098 (16.5%); and (4) DUI – 23,444 (16.7%). These percentages were applied to the total self-reported arrests in the KTOS follow-up sample.

Table 6.2a presents changes in self-reported arrests at intake, the victim costs of crime and the reduction in self-reported arrests at follow-up as well as crime costs for those self-reported crimes. **Table 6.2a** shows the amount of avoided victim costs from crime after substance abuse treatment and includes arrests during treatment as well as after treatment. These data suggest a substantial difference in costs to society from arrests that are reported at follow-up. It should be noted that data for DUI arrests do not reflect whether clients reporting DUI arrests also had accidents with resulting injury or deaths. A single DUI offense with loss of life is estimated to cost society \$4,049,273 (2004 dollars) and one DUI offense resulting in disability is estimated to cost \$90,408 (Miller, Cohen, & Wiersema, 1996).

Table 6.2a. Past 12-month Arrest at Baseline and Follow-up and Estimated Victim Costs of Crime (n = 888)

Arrests by type of crime	Estimated cost per arrest	Past 12 month arrests at intake	Cost of crimes at intake	Past 12 month arrests at follow-up	Cost of crimes at follow-up	Reduction in cost
Drug	\$3,580	291	\$1,041,780	98	\$350,840	\$690,940
Property	\$15,418	377	\$5,812,586	127	\$1,958,086	\$3,854,500
Violence	\$35,745	166	\$5,933,670	56	\$2,001,720	\$3,931,950
DUI	\$25,225	167	\$4,212,575	56	\$1,412,600	\$2,799,975
Total		1001	\$17,000,611	337	\$5,723,246	\$11,277,365

Table 6.2b presents changes in costs associated with jail time from intake to follow-up for the entire sample. At intake, clients reported 32,723 nights in jail in the past 12 months. At follow-up clients reported 9,410 nights in jail in the past 12 months which is a 71.2%

AVOIDED COSTS FROM SUBSTANCE ABUSE TREATMENT IN KENTUCKY

reduction in the number of nights in jail. Using Kentucky jail costs developed by the Kentucky Department of Corrections at \$27.23 per night, the total costs of jail time for the 12 months before intake was \$891,047 (Kentucky Jailers Association, 2004). At follow-up, the nights in jail in the past 12 months is estimated to cost \$256,234, for a \$634,813 (28.8%) reduction in costs. Adding the reductions in jail costs to the avoided victim costs of crime, suggests that the total avoided costs of crime at \$11,912,178 for a savings that can be expressed as \$4.93 for every \$1.00 spent on treatment.

Table 6.2b. Reduction in Nights in Jail and Related Costs (n = 888)

Jail time and costs	At intake	At follow-up	Reduction
Overall number of nights spend in jail in the past 12 months	32,723	9,410	23,313 (71.2%)
Annualized total estimated cost of jail stays at \$38.03 per night	\$891,047	\$256,234	\$634,813 (28.8%)

6.3 CHANGES IN EMPLOYMENT

Table 6.3 presents increases in employment and estimated changes in employment earnings. Using an estimated labor value of \$7.00 per hour, employment earnings increased from intake to follow-up by 50.2% for an estimated increase of \$2,351,328 in employment earnings for the entire sample 12 months after intake. With state tax on these employment earnings estimated at \$141,080 (6.0%), there are additional offsets to the treatment costs for this sample of clients. Adding these estimated tax revenues to the avoided costs of crime results in a savings that can be expressed as \$5.00 for every dollar spent on treatment.

Table 6.3. Increased Employment and Earnings (n=888)

Employment variable	Baseline	Follow-up	Increase
Number of clients working full or part-time	356	485	129
Annualized – days worked in the past 30 days for follow-up sample	83,508	125,496	41,988
Total annualized hours of paid work	668,064	1,003,968	335,904
Annualized total estimated labor value at \$7.00 per hour times total hours	\$4,676,448	\$7,027,776	\$2,351,328
Estimated tax value (@6%) of labor income	\$280,586	\$421,667	\$141,080

6.4 SUMMARY OF COST BENEFIT RATIO

Using client self-report data on arrests and estimated costs per crime, an estimate of the total crime costs can be made for the follow-up sample before and after treatment. In addition, treatment event data and cost report information from the Kentucky Department of Mental Health was used for specific treatment costs for the follow-up sample.

The reductions in self-reported arrests for Kentucky clients, combined with cost estimates for their crimes and increased earnings and tax revenues, suggest a cost benefit for Kentucky

AVOIDED COSTS FROM SUBSTANCE ABUSE TREATMENT IN KENTUCKY

taxpayers estimated at a ratio of 5.00 to 1. In other words, Kentucky saved \$5.00 for every dollar spent on treatment during fiscal year 2004. These avoided costs are important for policy development in Kentucky and suggest important issues for treatment planning both on a client level and at the program level as discussed in the next section.