



Published in final edited form as:

Eval Program Plann. 2012 February ; 35(1): 47–53. doi:10.1016/j.evalprogplan.2011.06.006.

Benefits and Costs Associated with Mutual-Help Community-Based Recovery Homes: The Oxford House Model

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Abstract

We used data from a randomized controlled study of *Oxford House* (OH), a self-run, self-supporting recovery home, to conduct a cost-benefit analysis of the program. Following substance abuse treatment, individuals that were assigned to an OH condition ($n = 68$) were compared to individuals assigned to a usual care condition ($n = 61$). Economic cost measures were derived from length of stay at an Oxford House residence, and derived from self-reported measures of inpatient and outpatient treatment utilization. Economic benefit measures were derived from self-reported information on monthly income, days participating in illegal activities, binary responses of alcohol and drug use, and incarceration. Results suggest that OH compared quite favorably to usual care: the net benefit of an OH stay was estimated to be roughly \$29,000 per person on average. Bootstrapped standard errors suggested that the net benefit was statistically significant. Costs were incrementally higher under OH, but the benefits in terms of reduced illegal activity, incarceration and substance use substantially outweighed the costs. The positive net benefit for Oxford House is primarily driven by a large difference in illegal activity between OH and usual care participants. Using sensitivity analyses, under more conservative assumptions we still arrived at a net benefit favorable to OH of \$17,830 per person.

Keywords

cost-benefit analysis; substance abuse treatment; residential treatment

1. Introduction

Each year, 600,000 inmates are released back into communities, often without receiving substance abuse or mental health treatment during their incarceration (NIDA, 2002). Many ex-offenders are released from prison with ongoing drug addictions, and studies indicate that substance abuse within correctional facilities is at roughly the same rate prior to incarceration, ranging from 74 to 82% (Keene, 1997). While many factors contribute to criminal recidivism (e.g., lack of employment or housing), the strongest predictor of criminal recidivism is substance use (Charles E. Culpeper Foundation, 1998). One of the most effective ways of reducing criminal recidivism is through substance abuse treatment (Broome, et al. 1996), and some intensive prison-based drug treatment programs have contributed to reduced recidivism rates (Wexler, 1994, 1995). Substantial reductions in recidivism rates have documented when in-prison Therapeutic Communities were combined with community transition programs (Wexler et al., 1996).

Researchers have maintained that recovery homes are an essential component of the solution for a wide range of offenders (Steadman et al., 1995). While professional aftercare settings are likely to be effective in creating a stable abstinence support system, enhancing self-efficacy, and helping residents find employment than these types of recovery homes, recovery homes might have advantages compared to more traditional post-incarceration modalities. *Oxford Houses* (OH), self-run, abstinent settings for individuals dealing with

substance abuse problems, qualifies as one type of available recovery home (Jason, Olson, & Foli, 2008). Since its inception in the 1970s, the number of OHs has grown to over 1,400 nationally. Furthermore, some of these homes contain individuals who have been released from jail and are part of an electronic monitoring program. No professional staff is involved with the houses; residents live together in a democratic, moderately-sized, single-sex, single-family home and provide each other with a supportive abstinent social support network. The residents, however, must follow OH guidelines, which include paying rent, abstaining from alcohol and drug use, and avoiding disruptive behavior. Houses do not typically have a formal process for identifying someone who is using substances, but as they are all recovering users they know what to look for; any OH resident found to be using drugs or alcohol is immediately removed from the house. OH residents are free to decide whether to seek psychological or drug treatment by professionals or NA/AA affiliation. OH residents have the freedom to decide whether or not to seek the treatment of their choice while they receive support and guidance from peer residents (see Jason, Ferrari, Davis, & Olson, 2006, for details).

In an era of constrained federal, state and local budgets, policy makers are looking for ways to achieve the greatest return on the scarce dollars available to them. Jason, Davis, Ferrari, and Anderson (2007) examined abstinence-specific social support and successful abstention from substance use in a national sample of approximately 900 OH residents. Results were quite positive; only 18.5% of the participants over the course of the one-year study reported any substance use. Additionally, over the course of the study, increases were found in the percentage of their social networks who were abstainers or in recovery.

Olson et al. (2006) examined economic costs of OH relative to the costs of inpatient treatment and incarceration prior to entering the OHs. Economic estimates were derived for inpatient costs based on the OH sample, estimates from prior research sources (French, Salomé, Sindelar, & McLellan, 2002), and subsequent adjustments for inflation increases. Average yearly approximations of societal costs of inpatient care for this sample ranged from \$3,930 (French, Salomé, & Carney, 2002) to \$16,965 (Schinka, Francis, Hughes, LaLone, & Flynn, 1998). Societal program costs for incarceration were even higher. The annual prison cost estimates per inmate ranged from \$22,344 (Marion, 2002) to \$62,927 (Rosten, 2003). Averaging the jail and prison figures, the annual societal program incarceration cost estimate per participant ranged from \$19,989 to \$40,281. The study found that costs associated with the OH program were relatively low, whereas costs associated with inpatient and incarceration history prior to entering OHs were high. This study however did not compare the costs and benefits of those in OHs to those in a comparison condition.

In another study, Jason, Olson, Ferrari, and Lo Sasso (2006) evaluated the evidence surrounding the costs and benefits of the OH program. In this NIAAA grant-supported study, 150 individuals who completed treatment at alcohol and drug abuse facilities in the Chicago metropolitan area were recruited, with half being randomly assigned to live in an OH, while the other half received community-based aftercare services (usual care). A twenty-four months follow-up found 31.3% of participants assigned to the OH condition reported substance use compared to 64.8% of usual care participants, 76.1% of OH participants were employed versus 48.6% of usual care participants, and days engaged in illegal activities during the 30 days prior to the final assessment was a mean of 0.9 for OH and a mean of 1.8 for usual care participants. OH participants earned roughly \$550 more per month than participants in the usual care group. This study hinted at financial benefits of the OH condition, but an explicit cost-benefit analysis had not been conducted.

The present work builds on the earlier studies by conducting a systematic analysis of the costs and benefits to society of the OH program, relative to usual aftercare following

substance abuse treatment. Our work includes the critical cost drivers of treatment, including opportunity costs, and the primary domains of benefits from treatment. The current work uses data from a randomized study mitigating the potential for bias from selection effects.

2. Methods

2.1. Cost-Benefit Analysis

We use a cost-benefit approach to study the relative effects of OH versus usual care. In this case, usual care represents the lack of the OH program and any number of inpatient or outpatient treatment substance use treatment modalities as well as 12-step peer-assistance programs, which all OH members may use as well. Our analysis takes the societal viewpoint for costs and benefits as is customary in such studies (Gold, et al. 1996). As is common in cost-benefit studies we pay careful attention to testing the sensitivity of our results to alternative assumptions. In addition, we use bootstrap methods to account for uncertainty in the estimation procedures.

2.2. Data and Measures Data

Data for this study were from adults leaving substance abuse treatment, and the study and follow-up assessments occurred between 2002 and 2005. Participants were randomly assigned to either an OH or usual after care condition (i.e., customary after-care services: see Jason, Olson, et al. 2007 for more details). Of those approached to be part of the study, only 4 refused participation. There were no significant differences between OH and usual care conditions on socio-demographic variables. Enrolled participants were interviewed every 6 months for a 24 month period. All individuals assigned to the OH condition gained admission to an OH. Overall, completion rates of participants filling out questionnaires across the 24-month assessment period were comparable for the two conditions (at the 24-month assessment, over 90% of participants filled out the questionnaires). In addition, to increase the validity of abstinence self-report data, a person in each participant's support network listed on the final follow-up assessment was required to confirm the participant's self-reported abstinence at 24-months.

Measures—The primary measures used in this study were self-reported values of treatment enrollment, substance abuse, employment, involvement in illegal activity, and if the respondent was incarcerated at the two year follow-up. For treatment enrollment, each respondent reported the number of 12-step meetings, inpatient/residential treatment programs, and outpatient treatment programs he or she had been enrolled during the 6 months prior to each follow-up. Further, each respondent reported whether or not they had used drugs or alcohol at any time during the last 90 days prior to follow-up.

For employment measures, each respondent reported her employment status (employed or unemployed) at the time of the follow-up, as well as, her net income from legal employment during the last 30 days prior to follow-up. For illegal activity, each respondent reported the number of days engaged in illegal activity during the last 30 days prior to the follow-up. Incarceration rates were measured based on whether or not the respondent was incarcerated at the 24 month follow-up.

When self-reported measures were missing, we imputed values using predictive mean matching methods. Predictive mean matching methods use simulated regression models to impute missing values for non-respondents by selecting observed values of respondents with similar characteristics. First, missing age and education values were matched on Oxford House status, gender, and values for income, employment status, and illegal working days at the baseline. Missing values for income, number of treatment programs, and illegal working

days were imputed at each follow-up by matching on these values separately at earlier follow-ups, and on age, education, and Oxford House status. For example, the number of inpatient treatment programs at the 12 month follow-up was matched on respondents' age, education, Oxford House status, and the number of inpatient treatment programs at the baseline and 6 month follow-up assessment. Missing dichotomous values, such as drug and alcohol abuse, were imputed similarly, however, these missing values were imputed using logistic regressions.

2.3. Treatment Costs

The overall strategy with respect to treatment costs is to measure the incremental societal costs associated with the range of treatment options available to the individuals in the study, including OH. In this case, program costs associated with residency in an OH were derived by multiplying the self-reported number of weeks spent in an OH by the national average weekly cost of residing in an OH, \$99, reported in the OH Annual report (2008). A preferable approach would have been to administer the Drug Abuse Treatment Cost Analysis Program (DATCAP), but at the time of the study the DATCAP was not widely available (see French et al. 1997). This value may be best thought of as the value of the house's next best alternative use (opportunity cost), as represented by the market rent that would be charged should someone else use the house for an alternative purpose. Because time spent residing in an OH was only asked at the two-year follow-up, a onetime total cost was calculated based on the length of time in residence.

For other treatment modalities, we created two-year total program and opportunity cost measures for the following substance abuse programs: inpatient treatment programs, outpatient/residential treatment programs, and 12-step meetings. In general, the program cost measures were created by multiplying approximate time spent in a program by the approximate cost of program enrollment. Similarly, opportunity cost measures of respondents' time were created by multiplying the approximate time spent in a program (hours or days) by the approximate amount of income the respondent would have made if she had spent that time working. Ideally, we would have exact measures on hourly wages and hours spent in treatment. Because we do not have data on hourly wages nor hours spent in treatment to compute total costs, we assume the hourly opportunity cost for each respondent to equal the Illinois minimum wage, \$8.00 (CY2008), and follow French et al. (2002a) by assuming the number of days in inpatient and outpatient treatments were 20 days. Further, we assume that each session lasts a full day so that respondents forfeit the opportunity to earn 8 hours of pay at the minimum wage, or \$64. We will relax this assumption in later sensitivity analyses.

Similarly, it would have been preferable to create program costs using exact costs for each individual. Because these data were not available, and only treatment participation measures were, we used the average total cost of treatment in Illinois for each program. For inpatient treatment, we used the average daily medical expense for inpatient stay in Illinois community hospitals, \$1,799 (Fiscal Year 2008). For outpatient treatment we used the average daily medical expense for outpatient visits to Illinois community hospitals, \$200. Twelve-step meetings were assumed to have individual program costs equal to zero, and hence only opportunity costs were created.

2.4. Benefit Estimation

Study participants reported drug and alcohol use, illegal activity, incarceration, and earnings from work at each follow-up interview. While these items do not represent the full spectrum of potential societal benefits, the available measures capture the major domains of benefits that have been measured in prior studies (e.g., Koenig et al. 2005). Earnings from work were

self-reported by enrollees and did not require estimation, but were multiplied by six (months) to derive average six-month benefits. For illegal activity, respondents reported the number of days engaged in illegal activities. For simplicity, we assume that only one illegal activity took place per day. Illegal activities were converted into monetary units using the conversion factor of \$754.93 using the method suggested by French et al. (2002a) that equates “the weighted average cost of a criminal activity day for drug abusers, where weights are the relative probabilities of committing each type of act.” This value was also reported on the basis of the past 30 days and in turn scaled up to 6 months. Assuming one illegal activity per illegal day is conservative, however. We relax this assumption in sensitivity analyses.

To impute values of monthly alcohol and drug expenditures among users in our sample, we used average monthly expenditure estimates from Sindelar et al. (2004). In their study, which collected data in a large urban setting, average monthly drug expenditures were \$112.07, and alcohol expenditures were \$21.36. Assuming the same means for our sample, six month expenditures on alcohol are estimated to be $[(\$21.36/0.69)*6]=\185.74 per alcohol user. Similarly, six month expenditures on drugs were assumed to be $[(\$112.07/0.91)*6]=\738.92 per drug user. These estimates, while not perfect, provide reasonable approximations based on between study similarities in sample characteristics, sample patient recruitment methods, and similar costs of living between geographical areas. The societal cost of incarceration for individuals was estimated only at the twenty-four month follow-up. The value was assumed to be \$23,812 based on the average cost to treat recovering abusers in Illinois jails (Illinois Attorney General, 2010).

2.5. Computation of Confidence Intervals

Confidence intervals for the total cost and benefit estimates were constructed by resampling (with replacement) 1000 times from each component of the cost and benefit measures. This approach allowed us to incorporate the individual variation in each term of the costs (e.g., inpatient services, outpatient services, 12-step, etc.) and the benefits (e.g., earned income, illegal activity, etc.) in the overall estimated variation in the net benefit figure. The means and standard deviations from the bootstrap samples for total costs, benefits, and the within group difference between total benefits and costs were used to derive the confidence intervals for the sample means presented in our net benefit calculations (Table 5) and our sensitivity analyses (Table 6).

3. Results and Sensitivity Analysis

3.1. Results

Table 1 presents descriptive statistics of the sample of OH enrollees and usual care enrollees at baseline. As noted earlier, the samples do not differ statistically along socioeconomic dimensions. Study participants were in their late 30s and had just under a high school level education on average. Study participants were primarily African American, and over 60% female.

Table 2 presents the means of the underlying reported values on which our cost and benefit estimates are based. The summary statistics indicate each of the means for each 6-month follow-up period (as well as baseline) for each domain of treatment services—the costs in our framework—and each domain of the benefits that we are able to measure. The standard deviations provide a sense of the variability of each mean.

Table 3 displays mean per person estimates of treatment costs across the measured modalities. Given that participants were recruited upon discharge from inpatient drug treatment facilities, baseline inpatient program costs are quite high. Importantly, however,

baseline costs are estimated to be quite similar between groups. Usual care participants tended to use more inpatient treatment services over the 24-month follow-up compared to OH participants. OH participants used less outpatient treatment services, but exhibited greater use of 12-step programs. Average OH program expenditures, which of course are borne by the participant, made up a substantial fraction of the total average treatment costs for the OH group, averaging roughly \$2,000 per each 6-month period.

Table 4 presents benefit estimates for participants. Note that we report negative values for “bads” such as illegal activity, drug use, and incarceration. As the individuals were emerging from inpatient treatment immediate prior to recruitment into the study, income levels prior to the beginning of the study period are quite low, however. After enrollment employment earnings for OH enrollees were consistently roughly twice that of usual care enrollees over the 2-year period. Self-reported illegal activity was considerably higher in the usual care group relative to the OH group. Average spending associated with drug and alcohol use as well as incarceration was higher in the usual care group.

Table 5 summarizes the information in Tables 2 and 3 and provides the net benefit calculation. While treatment costs were roughly \$3,000 higher for the OH group, benefits differed substantially between groups. Relative to usual care, OH enrollees exhibited a mean net benefit of \$29,022 (95% CI: 12,292.19 – 45,751.81) per person. The result suggests that the additional costs associated with OH treatment, roughly \$3,000, are returned nearly tenfold in the form of reduced criminal activity, incarceration, and drug and alcohol use as well as increases in earning from employment.

3.2. Sensitivity analyses

Table 6 presents estimates calculated using various sensitivity tests and are analogous results in Table 5. For comparison, estimates from our main analysis are presented in the first column. To test the extent that differences in incarceration rates were driving net benefits we compute net benefits assuming that incarceration costs are half the amount reported in Illinois Attorney General (2010), which amounts to one half of \$23,384, or about \$11,500. Inclusion of this assumption suggests that our main net benefits estimate overstated Oxford House net benefits by about \$1000, or about 3%.

To test whether net benefits were driven by our original assumption that opportunity costs for inpatient and outpatient treatment sessions amounted to income forgone by working one full 8-hour day, we halved this estimate as well. Net benefit estimates were virtually identical to the original analysis after relaxing the 8-hour day assumption (column 3).

The fourth column in Table 6 shows estimated net benefits when criminal activity costs are assumed to be half of that from the original analysis. Net benefits for Oxford House residents were reduced by roughly \$10,000, or about one-third, implying that our results rely heavily on the assumptions made around criminal activity. The last column in Table 6 presents estimates when incarceration costs, opportunity costs, and criminal activity costs are all halved, and, again, suggest that criminal activity costs drive our results. Nevertheless, even under the most conservative assumption, we find a statistically significant and economically meaningful net benefit to Oxford House of \$17,800 per enrollee (95% CI: 6,533 – 29,128) over two years.

4. Discussion

We used data from a randomized controlled study of OH, a self-run, self-supporting recovery home, to conduct a cost-benefit analysis of the program. The evidence presented here suggests that from a societal net benefit point of view, OH compared quite favorably to

usual care. Costs were incrementally higher under OH, but the benefits in terms of reduced illegal activity, incarceration and substance use substantially outweighed the costs.

The positive net benefit for OH is primarily driven by the striking difference in illegal activity between OH participants and usual care participants. As a sensitivity analysis, if we adopted a more conservative approach and halved the estimated cost to society from reported illegal activity (from \$755 per day to \$377 per day), we would still arrive at a net benefit favorable to OH of \$18,616 per person (95% CI: 7,170 – 30,062).

There are several important limitations of our study. First, the study on which our analysis was based collected little in the way of detailed cost measures, thus it was necessary to estimate a number of important values; in all cases, we drew from the literature and attempted to err on the side of being conservative, but it is possible that our estimated dollar values were imprecise or biased. Second, while the overall response rate to the survey was high, selective non-response presented a problem. We attempted to rectify this by using a sophisticated imputation strategy, but it is still possible that systematic bias entered our estimation if non-response was not random. However, when we simply dropped non-responders, our results changed little [results not tabulated]. Third, it is possible that OH residents might disproportionately wish to mislead surveyors out of concern that they could be evicted from the OH if they revealed potential drug use, despite assurances from the research team that their responses would be held in strict confidence. Such an effect, if present, would lead to an upward bias in the net benefit estimate. Finally, our sample size was small which, despite the compelling randomized design, could lead to questions about the external generalizability.

5. Lessons Learned

The findings of our study have important implications as they point to the potential savings that could be had by supporting self-organized aftercare treatment options. Inpatient substance abuse treatment is known to be highly costly and in a time when many states are looking for ways to reduce spending, programs such as OH could provide an appealing and effective alternative (Jason, Ferrari et al., 2006). In the current cost-conscious environment by local, state, and federal governments, OH represents an important network of recovery homes that promote abstinence for individuals needing ongoing support after an initial episode of substance abuse treatment.

Acknowledgments

The authors appreciate the financial support from the National Institute on Alcohol Abuse and Alcoholism (NIAAA grant numbers AA12218 and AA16973), the National Institute on Drug Abuse (NIDA grant numbers DA13231 and DA19935), and the National Center on Minority Health and Health Disparities (grant MD002748).

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Highlights

- ▶ We used data from a randomized controlled study of *Oxford House* (OH), a self-run, self-supporting recovery home, to conduct a cost-benefit analysis of the program.
- ▶ Economic cost measures were derived from length of stay at an Oxford House residence, and derived from self-reported measures of inpatient and outpatient treatment utilization.
- ▶ Economic benefit measures were derived from self-reported information on monthly income, days participating in illegal activities, binary responses of alcohol and drug use, and incarceration.
- ▶ Results suggest that OH compared quite favorably to usual care: the net benefit of an OH stay was estimated to be roughly \$29,000 per person on average.

Table 1

Sample characteristics at baseline

	Oxford House		Usual Care		t-stat
Age (years)	36.54	(8.24)	37.46	(8.20)	-0.63
18-21 (%)	0.07	(0.26)	0.05	(0.22)	0.57
22-30 (%)	0.10	(0.31)	0.13	(0.34)	-0.50
31-40 (%)	0.49	(0.50)	0.43	(0.50)	0.67
41 and older (%)	0.34	(0.48)	0.39	(0.49)	-0.65
Female (%)	0.62	(0.49)	0.64	(0.48)	-0.25
Education (years)	11.76	(2.38)	11.58	(1.94)	0.46
Less than high school (%)	0.41	(0.50)	0.44	(0.50)	-0.35
High school (%)	0.40	(0.49)	0.33	(0.47)	0.81
Some college (%)	0.15	(0.36)	0.21	(0.41)	-0.97
College (%)	0.04	(0.21)	0.02	(0.13)	0.90
African American (%)	0.74	(0.44)	0.80	(0.40)	-0.91
White (%)	0.16	(0.37)	0.08	(0.28)	1.37
Latino (%)	0.06	(0.24)	0.08	(0.28)	-0.51
Other (%)	0.04	(0.21)	0.03	(0.18)	0.33
Income (6 mo)	1134.18	(3299.70)	1203.25	(2972.20)	-0.12
Observations	68.00		61.00		

Note: Summary statistics are represented as mean (standard deviation)

^aIncome includes legal income only

Table 2

Summary statistics of utilization measures

	Follow-up period				
	Baseline	Months 0-6	Months 7-12	Months 13-18	Months 19-24
# of Inpatient Programs					
Oxford House	0.85 (0.58)	0.15 (0.40)	0.10 (0.31)	0.07 (0.31)	0.10 (0.31)
Usual Care	0.90 (0.44)	0.20 (0.40)	0.10 (0.35)	0.05 (0.22)	0.11 (0.32)
t (difference) ¹	-0.53	-0.71	0.08	0.51	-0.21
# of Outpatient programs					
Oxford House	0.04 (0.21)	0.25 (0.44)	0.13 (0.38)	0.12 (0.32)	0.07 (0.26)
Usual Care	0.08 (0.28)	0.31 (0.53)	0.07 (0.25)	0.07 (0.25)	0.07 (0.25)
t	-0.89	-0.72	1.16	1.01	0.18
# of 12-Step programs					
Oxford House	21.40 (28.55)	59.32 (39.71)	45.91 (38.87)	41.99 (31.44)	39.22 (38.22)
Usual Care	14.79 (20.73)	41.62 (41.81)	37.87 (34.38)	28.30 (34.92)	27.43 (37.13)
t	1.49	2.47	1.24	2.34	1.77
Months in Oxford House					
Oxford House	0		8.03 (7.41)		
Usual Care %Employed	0		0		
Oxford House	0.22 (0.42)	0.68 (0.47)	0.72 (0.45)	0.62 (0.49)	0.66 (0.48)
Usual Care	0.23 (0.42)	0.46 (0.50)	0.46 (0.50)	0.41 (0.50)	0.48 (0.50)
t	-0.12	2.54	3.11	2.39	2.16
# Days Illegal Activity					
Oxford House	7.66 (12.04)	0.12 (0.50)	0.04 (0.27)	0.84 (3.81)	0.90 (4.36)
Usual Care	5.75 (10.90)	1.11 (4.37)	1.15 (4.20)	3.13 (7.95)	1.10 (4.04)
t	0.94	-1.87	-2.16	-2.12	-0.27
Drug or Alcohol use					
Oxford House	0.93 (0.26)	0.34 (0.48)	0.37 (0.49)	0.32 (0.47)	0.29 (0.46)
Usual Care	0.92 (0.28)	0.43 (0.50)	0.44 (0.55)	0.48 (0.50)	0.66 (0.48)
t	0.18	-1.02	-0.86	-1.77	-4.38
Incarceration rate at 24- mnt					
Oxford House	-		0.03 (0.17)		

	Follow-up period				
	Baseline	Months 0-6	Months 7-12	Months 13-18	Months 19-24
Usual Care	-		0.1 (0.3)		
t			1.63		
N (Oxford House)	68	68	68	68	68
N (Usual Care)	61	61	61	61	61

¹t-tests performed on between group differences at the follow-up. Standard deviations in parentheses.

Table 3

Treatment costs at Baseline, 6, 12, 18, 24 months

	Baseline	Follow-up period				Total
		Months 0-6	Months 7-12	Months 13-18	Months 19-24	
Inpatient Programs ^a						
Oxford House	31780.59	5479.41	3835.59	2739.71	3835.59	15890.29
Usual Care	33595.08	7329.84	3664.92	1832.46	4275.74	17102.95
Outpatient Programs ^b						
Oxford House	232.94	1320.00	698.82	621.18	388.24	3028.24
Usual Care	432.79	1644.59	346.23	346.23	346.23	2683.28
12-Step programs ^c						
Oxford House	342.35	949.18	734.59	671.76	627.53	2983.06
Usual Care	236.59	665.97	605.90	452.72	438.82	2163.41
Oxford House ^d						
Oxford House	0.00	1,817.00	2,021.47	2,073.75	1,691.82	7,604.04
Usual Care	0.00	0.00	0.00	0.00	0.00	0.00
N (Oxford House)	68	68	68	68	68	68
N (Usual Care)	61	61	61	61	61	61

^aInpatient programs during the last 6 months prior to follow-up.^bOutpatient programs during the last 6 months prior to follow-up.^c12-step meetings attended during the last 6 months prior to follow-up.^dTotal Oxford House Costs

Table 4

Treatment benefits at Baseline, 6, 12, 18, 24 months

	Baseline	Follow-up period				Total
		Months 0-6	Months 7-12	Months 13-18	Months 19-24	
Earned Income^a						
Oxford House	1,134.18	4,243.24	4,847.03	4,630.06	5,593.59	19,313.91
Usual Care	1,203.25	2,345.31	2,787.15	2,211.25	2,572.52	9,916.23
Illegal Activity^b						
Oxford House	-34,704.58	-532.89	-199.83	-3,796.85	-4,063.30	-8,592.88
Usual Care	-26,063.65	-5,049.37	-5,197.88	-14,182.78	-4,975.11	-29,405.14
Alcohol and Drug use^c						
Oxford House	-804.39	-270.80	-288.78	-217.42	-209.77	-910.33
Usual Care	-796.34	-338.76	-362.95	-391.83	-402.81	-1,313.40
Incarceration^d						
Oxford House	0.00		-688.06			-688.06
Usual Care	0.00		-2,301.05			-2,301.05
N (Oxford House)	68	68	68	68	68	68
N (Usual Care)	61	61	61	61	61	61

Note: Columns represent mean per person benefits valued as positive amounts in the case of “goods” and negative amounts in the case of “bads”.

^aIncome benefits are already in monetary units and is calculated by the change in income earned 30 days prior to follow-up and is multiplied by 6.

^bIllegal activity assumes one illegal activity per day with a conversion factor is \$754.95 per activity.

^cAlcohol and drug use estimates are described in the text.

^dIncarceration costs are assumed to \$23,384 per incident. Incarceration was only assessed at the end of the study so the value reflects the total over the 0-24 month period.

Table 5

Summary of Mean Per-Person Societal Benefits and Costs and Net Benefit for Oxford House

	Oxford House	Usual Care	Difference
24-month total costs	\$25,158.89 19,510.84;30,806.94]	\$21,949.64 [16,149.02;27,750.26]	\$3,209.25 [-4,923.66;11,342.16]
24-month total benefits	9,149.41 [2,695.68;15,603.14]	-23,081.83 [-35,957.62;-10,206.04]	32,231.24 [17,874.94;46,587.54]
Difference	-16,009.47 [-24,678.07;-7,340.87]	-45,031.47 [-59,263.14;-30,799.80]	29,022.00 [12,292.19;45,751.81]

Value in box at lower right represents the net benefit for Oxford House. We assume that inpatient and outpatient treatment sessions last one full workday so that patients forfeit an entire day (8 hours) of work, and that patients attend 20 sessions per program. 95% Confidence intervals from bootstrap estimates are in brackets.

Table 6**Sensitivity Analysis: Mean Per-Person Societal Benefits and Costs under Alternative Assumptions**

	(1)	(2)	(3)	(4)	(5)
24-month total costs (OH - UC)	\$3,209.25 [-4,924;11,342]	\$3,209.25 [-4,924;11,342]	\$3,188.27 [-4,923;11,299]	\$3,209.25 [-4,924;11,342]	\$3,188.27 [-4,923;11,299]
24-month total benefits (OH - UC)	32,231.24 [17,875;46,588]	31,424.75 [17,191;45,657]	32,231.24 [17,875;46,588]	21,825.11 [14,033;29,618]	21,018.62 [13,437;28,600]
Net Benefit for Oxford House	29,022.00 [12,292;45,752]	28,215.50 [11,584;44,846]	29,042.97 [12,325;45,761]	18,615.86 [7,170;30,062]	17,830.35 [6,533;29,128]
Difference from Table 5 Net Benefits		-806.50	20.97	-10,406.14	-11,191.65

Results in column 1 were computed under the same assumptions as Table 5.

Results in column 2 were computed under the assumption that incarceration costs were half of original assumption.

Results in column 3 were computed under the assumption that inpatient and outpatient treatment sessions lasted one half of a workday, or 4 hours.

Results in column 4 were computed under the assumption that criminal activity costs are half of that under the original set of assumptions

Results in column 5 were computed under all assumptions in columns 2 through 4.

95% Confidence intervals from bootstrap estimates are in brackets.