



## Response | **Alternative Cost Offset Models**

Number 11.125fs | **Chemical Dependency Treatment for Disabled, Blind and Aged Clients**

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### **Chemical Dependency Treatment for Disabled, Blind and Aged Clients: Alternative Health and Nursing Home Cost Offset Models**

#### **Context**

DSHS researchers have spent the past fifteen years researching the “natural experiment” created by the state policy to limit substance abuse treatment at a level such that only one in four people who need it in a given year can receive it. This research (much of it federally funded, often through competitive grants) has taken two directions. Selected DSHS studies can be seen in the attached references. They are of two types:

1. Studies of the outcomes and cost offsets of treatment, generally using administrative data linking and matching; and
2. Studies of the need for treatment among various segments of the population, generally using survey methods (people stratified by income, ethnicity, age, and gender; booked arrestees; adolescents in households and foster care), but sometimes focusing on client record reviews.

#### **What does this research show?**

Alcohol and other drug use problems pervade the human service and criminal justice systems. For example:

- 70 percent of the booked arrestees in Washington State have alcohol or other drug problems (Kabel et al 1996).
- 75 percent of the parents of children in therapeutic foster care, and 66 percent of the parents of children in group care, had substance abuse problems in their DCFS service records (OCAR 1993).
- 45 percent of the out-of-home placements for children under two years of age occurred among the eight percent of infants born to mothers using alcohol or other drugs during their pregnancy (Cawthon and Schrage 1995).

Federally funded household surveys conducted by the Washington State Social and Economic Research Center for RDA show that the prevalence of alcohol and other drug abuse has increased by 26 percent among the low-income population in our state. (In 1993-94, 10.8 percent of the state’s low-income population met clinical definitions of needing alcohol or other drug treatment. The 2003-2004 survey shows that rate of need has risen to 13.6 percent).

National studies show that Washington has high rates of unmet treatment need. The National Survey on Drug Use and Health estimates released last month show Washington State as being among the four states with the highest rate of unmet alcohol treatment need (Wright and Sathé 2004).

## Would Increasing Treatment Penetration Improve Outcomes and Save Money?

Given the ongoing budgetary problems Washington State is experiencing, RDA researchers have been working for some time to identify possible outcome changes leading to cost offsets that could be used to fund increased alcohol/drug treatment. Alcohol/drug treatment expansion would improve self-sufficiency and life chances for DSHS clients, increasing employment, improving school functioning and improving family functioning. However, it would take more than two years to realize any savings from those efforts.

Crime rates definitely decrease after treatment.

- SSI clients who had previously been arrested showed a 16 percent reduction in arrests and 35 percent reduction in felony convictions following the initiation of AOD treatment. (Estee and Nordlund, 2003).
- An earlier study found a 21 percent decline in arrests and a 33 percent decline in felony arrests among clients beginning AOD treatment, comparing the year before and after treatment (Luchansky et al 2002a).

But, criminal justice costs are distributed across state and local communities, and only juvenile justice is within the DSHS budget.

Early on, RDA researchers began looking at the disabled and aged population, for several reasons.

- Since they are covered through fee-for-service medical care, any savings in medical costs accrue immediately to the state.
- Since they are physically unwell, they use a lot of medical care.
- Alcohol and drug use increases the need for medical treatment (through increasing the rates of accidents, trauma and disease, and decreased compliance with medical regimes).
- Alcohol and drug use increases the cost of medical treatment (through increasing the length of time spent in emergency rooms, hospitals and on medication).
- Alcohol and drug use increases inappropriate use of medical treatment (through prescription drug abuse and overuse of emergency rooms).

Four years ago RDA took preliminary findings on possible savings to the Medical Assistance Administration. MAA agreed to fund an expansion of treatment to the SSI population, if RDA would evaluate that treatment expansion to see if 1) it really occurred and 2) the cost offsets did in fact continue. That was the SSI Cost Offset Pilot. Several reports from that evaluation have been published, and it is continuing today.

Results from these ongoing areas of research were incorporated into the Locke budget proposal. Whenever possible, we used the published reports because they had been reviewed and accepted internally. We added information from the latest household survey (reports now in press). This fall, we also published a series of short fact sheets, which add detail and hopefully increase understanding of how untreated alcohol and other drug abuse impacts emergency room use, hospitalizations and medical procedures associated with those hospitalizations, prescription drug costs and premature mortality.

## Purpose of This Report: Answering Questions

Once the published materials were introduced into the Locke budget, they began to receive additional scrutiny. JLARC raised questions about the nature of the study on which the estimates were based. Legislative staff asked questions about the timing and riskiness of the cost offset model, many of which are also summarized in the JLARC letter.

To address these questions, RDA researchers have run a series of new cost offset models, to answer some of the methodological questions asked by legislative and JLARC staff. We tried in that process to improve and update the methods we used to develop the cost offset model used in the Bridging the Treatment Gap Initiative proposed as part of the Locke Budget.

In running these models, we have used information that was not available when the SSI study (on which the Locke model was based) was written in 2003. Specifically, we have:

- Expanded the analysis to include the entire group of aged, blind and disabled clients proposed to be included in this initiative (rather than using only the SSI clients).
- Added another 18 months of cost data through FY2003.
- Added an established actuarial risk adjustment measure, called Medicaid Rx, which uses groupings of prescriptions in the “pre” period to predict the costs of medical care in the post period. We considered using the diagnosis-based CDPS risk-adjustment model, but found that more than one-quarter of the clients in the study population are Medicare-Medicaid dual eligibles for whom complete diagnosis information is not available. Since Medicaid pays for the prescriptions of dual eligibles, the Medicaid Rx model was the more appropriate risk-adjustment measure for this group of clients.
- Run each model for four different follow-up periods – for 6, 12, 18 and 24 months – to show when these cost offsets happen.

We were also asked to make two changes that we have not incorporated into the models presented here.

- We were asked to run propensity score adjustments. We worked on those, but concluded they were inappropriate in this context. Propensity score matching would disproportionately remove older clients from the analysis because treatment penetration rates are currently lowest for older clients. Because older clients experience greater cost offsets than younger clients, propensity score matching leads to significant downward bias in the estimated impact of treatment on Medicaid costs. We will be happy to discuss those models with anyone who wishes, to demonstrate why they are inappropriate in this context.
- We were asked to remove those who died during the post period from both the treatment and comparison groups – because many of the medical costs incurred happened around deaths. However, premature mortality is one of the clearest consequences of untreated substance abuse, particularly among disabled, blind and aged populations. We cannot in good conscience remove the costs of those deaths and treat them as if they did not happen.

In the process of running these new models, we have uncovered once again the knowledge that there is no single answer and no single “best” model that can be used to explain the cost offsets that occurred in the past and will occur with this treatment expansion. For reasons that we hope will become clear as we go forward, this fact would be true even if we had the “perfect” research design to measure the independent additive effect of the AOD treatment of the past (that is, the effect of AOD treatment on the clients we are currently treating).

So we present a small family of cost-offset models here. Which model is closest to what will actually happen if this initiative goes forward depends on how this treatment expansion actually works on the ground. ***Most explicitly, it depends on who in this group gets AOD treatment and when in their life history and “addiction career” they get that treatment.***

Why is that the case? Because chemical dependency is a progressive disorder. Untreated, it tends to get worse. And in these clients it coexists with (or causes) other disorders and health conditions which also tend to progress. And it can interact with those other disorders – making it harder for the person to manage them without periodic crises.

In evaluating these models, it is important to remember what the research literature and clinical experience tell us about how, and when, people with substance abuse problems agree that they need treatment, and then move to get treatment. It is generally a series of “pushes” from events and other people that prod the person towards treatment. (That is why court-ordered treatment works as well as seemingly voluntary treatment). In that process, delays are fatal to the patient’s resolve to enter treatment.

## Unadjusted Findings: Treatment and Non-Treatment Clients

The group of disabled, blind and aged clients who got AOD treatment in our analyses were different from those who did not. In particular, on average the treated clients were:

- More than four years younger
- Healthier, as measured by their baseline Medicaid-Rx risk adjustment score
- Less costly in the “pre” period, in terms of their medical and nursing home expenditures

Table 1 shows these baseline differences between treatment and non-treatment clients. Attachment A shows the detailed types of prescriptions used by the treatment and non-treatment clients.

**Table 1. Comparison of Treatment and Non-Treatment Clients**

		Excludes "Index Event" Costs		Includes "Index Event" Costs	
		Untreated	Treated	Untreated	Treated
Pre-period:	MAA Per Member Per Month (pmpm)	\$693	\$505	\$692	\$575
Post-period:	6-Month MAA pmpm	\$1,026	\$604	\$1,600	\$604
	12-Month MAA pmpm	\$1,001	\$603	\$1,405	\$601
	18-Month MAA pmpm	\$1,002	\$599	\$1,357	\$599
	24-Month MAA pmpm	\$1,001	\$601	\$1,337	\$601
Pre-period:	NH pmpm	\$63	\$22	\$63	\$21
Post-period:	6-Month NH pmpm	\$130	\$17	\$125	\$17
	12-Month NH pmpm	\$126	\$21	\$122	\$21
	18-Month NH pmpm	\$125	\$22	\$122	\$21
	24-Month NH pmpm	\$126	\$23	\$123	\$23
Client Age		44.7	40.0		
Baseline Medicaid-Rx Score		1.12	0.76		
Number of Clients		13,056	9,828		

The research design used here compares adjusted costs pre and post AOD treatment (for those treated) with costs pre and post the date when the need for treatment is first recorded in the client’s administrative records (for those who are not treated). The question is, how to best adjust those costs.

Table 1 also shows what those average medical and nursing home costs look like in the pre and post periods, both when the medical “cost spike” occurring in the index month is excluded from the cost calculation, and when it is included in the calculation.

That spike for the untreated client – and for some of the treated clients – is a medical emergency. Often it is a hospitalization. In the ensuing flurry of diagnostic and treatment procedures, some harried physician notes a drug or alcohol related diagnoses – and we record that person as “needing treatment.”

In the “pre” period, the treated group is less expensive, and while some of them also have a medical emergency in the month they get treatment, their “spike” is much less pronounced – which suggests that many of them got treatment without a medical emergency as a driver.

## Cost Offset Models

We present three models, each based on a different set of adjustments. Which set of models you choose depends mostly on what you think will actually happen on the ground as Washington State moves from treatment lidded at 24 percent of need to treatment at 60 percent of need. It also depends on how much risk you are willing to take that your assumptions are wrong.

The models are arranged in the order of how much change they expect – from highest change to lowest change. We will be happy to discuss the detailed regression results with anyone who wishes. Note: we run medical costs and nursing home cost models separately and add them together, so each model here has two regression equations.

- **Model 1:** Adjusts for age, gender, race, pre-costs, post-months in each medical assistance status, and the Medicaid Rx risk adjuster. It leaves in the costs associated with the index event. It assumes that, as we move from 24 percent treated to 60 percent treated, we catch the newly treated people earlier in their addiction career – and we reduce that “spike” in medical costs to be comparable to the spike experienced by the clients we currently treat. This model represents a best case scenario and assumes the most change. It overstates the amount of savings that are possible. However, if some of these savings can be achieved by treating people earlier in their addiction career, then the estimates provided by Model 3 are too low.
- **Model 2:** Adjusts for age, gender, race, pre-costs and post months in each medical assistance status. It removes the costs associated with the index event. This model assumes that even with treatment saturation, we do not treat people earlier in their “addiction career” on average than we did before – so we cannot reduce that spike, we can only move untreated people from the “post” untreated cost towards the “post” treated cost. This was essentially the model we used in the SSI study, so it is the one included in the current Locke proposal.
- **Model 3:** Adjusts for age, gender, race, precosts, post months in each medical assistance status, and the Medicaid Rx risk adjuster. This model assumes the least change – that we catch people at exactly the same point as before, that their other health conditions have progressed to the same point, and that their treatment outcomes are the same. In our opinion, this approach is likely to underestimate the savings that would ensue with 60 percent AOD treatment penetration.

The table below shows the cost offsets associated with each model – the treatment effect from the regression models. In all these models, the \$160 pmpm cost of the AOD treatment is more than offset by the medical and nursing home savings that begin to happen as soon as AOD treatment begins.

**Table 2. AOD Treatment Cost Offset Estimates**

	MAA Offset pmpm			Nursing Home Offset pmpm			Total Offset pmpm		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Follow-up									
6 months	-693	-328	-202	-50	-61	-55	-743	-389	-257
12 months	-520	-299	-179	-43	-52	-47	-563	-351	-226
18 months	-473	-298	-181	-42	-51	-46	-515	-349	-227
<i>24 months</i>	<i>-449</i>	<i>-292</i>	<i>-175</i>	<i>-41</i>	<i>-49</i>	<i>-45</i>	<i>-490</i>	<i>-341</i>	<i>-220</i>

The Locke budget proposal uses the excess savings to expand access to AOD treatment for Medicaid adults who are not aged, blind, or disabled. Although no cost offsets are estimated for expanding AOD treatment for these clients, we would expect longer term benefits from reduced child abuse and neglect, reduced criminal activity, increased employment, and reduced dependence on public assistance.

## How Will We Know How Well This Works on the Ground?

RDA staff are already tasked with monitoring and evaluating this treatment expansion. As part of that effort, we could produce reports every six months examining the following questions:

- Which subsets of clients are getting treatment? (searches for selection bias in age, pre-conditions, etc.)
- Have the treatment completion rates changed? (searches for selection bias)
- Is need for treatment being adequately screened and identified by agency case managers? (monitors process changes, by comparing what we find administratively from what is recorded in the case management systems)
- How are the cost offsets proceeding? Are the predicted models changing?

## Other Questions

JLARC and legislative staff also raised questions about the timing of savings, timing of costs, and the impact of clients who experience multiple treatment episodes on the cost estimates, as follows.

“The research includes some clients who received multiple sessions of substance abuse treatment. Estimated savings may be overstated if clients with multiple treatments had better outcomes than clients with single treatments.” (JLARC memo, page 1)

The treatment group used to estimate cost offsets includes all clients who received at least one day of AOD treatment in the study period. The treatment group includes some clients who had multiple treatment episodes. The cost offset estimates reflect an average treatment effect, averaging across clients who received varying amounts of treatment in varying numbers of treatment episodes. The fact that some clients experience multiple treatment episodes does not affect the validity of applying the cost offset estimates to predict savings from AOD treatment.

“Timing of savings: The budget proposal assumes Medical Assistance and other savings from expanded treatment start on the first day of each fiscal year, although they would actually occur over time. On the other hand, savings in the second year of the biennium that would be expected based on DSHS research are not included.” (JLARC memo, page 2)

The budget proposal used simplifying calculations that produce almost identical savings estimates to models based on a ramp-up of enrollment. We have provided JLARC and legislative staff with spreadsheets to show how the original estimates are comparable to calculations based on a ramp-up of treatment in the biennium.

“Timing of costs: The DSHS research used as the basis for the budget proposal calculates monthly treatment costs as the average of all treatment expenditures divided by the number of months in the post-treatment evaluation period. Because this post-treatment period averages 27 months, these monthly treatment costs can not be used for budget purposes as they do not reflect total treatment costs at the time they occur.” (JLARC memo, page 2)

The budget proposal used simplifying calculations based on observed per member per month treatment expenditures for clients who begin new AOD treatment episodes. The budget proposal accurately represents the expected cost of treating new clients in each fiscal year. DSHS staff will provide legislative staff with a spreadsheet showing the monthly ramp-up of treatment costs in the biennium.

## References

### **Selected DSHS research findings on the cost of not treating alcohol and other drug abuse.**

- 1991 Longhi et al. *The ADATSA Program: Clients, Services and Treatment Outcomes*.
- 1994 Longhi, Brown & Comtois. *ADATSA Treatment Outcomes: Employment and Cost Avoidance*.
- 1995 Cawthon M L and L Schrage. *Substance Abuse, Treatment and Birth Outcomes for Pregnant and Post-Partum Women in Washington State*.
- 1997 Luchansky & Longhi. *Chemical Dependency Treatment and Cost Savings Estimates in Washington*. <http://www1.dshs.wa.gov/rda/research/4/28.shi>.
- 1997 Luchansky & Longhi. *Cost Savings in Medicaid Medical Expenses: An Outcome of Publicly Funded Chemical Dependency Treatment in Washington State* <http://www1.dshs.wa.gov/rda/research/4/30.sht>.
- 1997 Brown, Longhi, & Luchansky. *Employment Outcomes of Chemical Dependency Treatment and Additional Vocational Services Publicly Funded by Washington State*. <http://www1.dshs.wa.gov/rda/research/4/29.shtm>.
- 2001 Estee & Nordlund. *Washington State Supplemental Security Income (SSI) Cost Offset Pilot Project*. <http://www1.dshs.wa.gov/rda/research/11/101.shtm>.
- 2002a Luchansky, He & Longhi. *Substance Abuse Treatment and Arrests*. <http://www1.dshs.wa.gov/rda/research/4/42.shtm>.
- 2002b Luchansky, He & Longhi. *Substance Abuse Treatment and Hospital Admissions*. <http://www1.dshs.wa.gov/rda/research/4/46.shtm>.
- 2003 Estee & Nordlund. *Washington State Supplemental Security Income (SSI) Cost Offset Pilot Project: 2002 Progress Report* <http://www1.dshs.wa.gov/rda/research/11/109.shtm>.
- 2004a Mancuso, Nordlund & Felver. *Reducing Emergency Room Visits Through Chemical Dependency Treatment: Focus on Frequent Emergency Room Visitors* <http://www1.dshs.wa.gov/rda/research/11/121.shtm>.
- 2004b Mancuso Nordlund & Felver. *Frequent Emergency Room Visits Signal Substance Abuse and Mental Illness, Washington State's Aged, Blind, and Disabled Clients* <http://www1.dshs.wa.gov/rda/research/11/119.shtm>
- 2004 Nordlund, Mancuso & Felver. *Chemical Dependency Treatment Reduces Emergency Room Costs And Visits* <http://www1.dshs.wa.gov/rda/research/11/120.shtm>
- 2004a Nordlund Estee Mancuso & Felver. *Methadone Treatment For Opiate Addiction Lowers Health Care Costs And Reduces Arrest And Convictions* <http://www1.dshs.wa.gov/rda/research/4/49.shtm>.
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- 2004 Felver and Mancuso. *Drugs, Crime and Dollars*. <http://www1.dshs.wa.gov/pdf/ms/rda/research/policy/Nov2004.pdf>

### **Selected DSHS Research on the need for alcohol/drug treatment**

- 1996 Kabel, Kohlenberg, Shaklee & Clarkson. *Substance Use Disorders, and Need for Treatment among Washington State Adults*. <http://www1.dshs.wa.gov/rda/research/4/25/40.shtm>.
- 1997 Ryan, Rinaldi, McGee, Kabel & Williams. *The Arrestee Estimates of Substance Abuse Treatment Need (ARREST) Study* <http://www1.dshs.wa.gov/rda/research/4/22.shtm>.
- 2002 Kohlenberg et al. *Alcohol and Substance Use Among Adolescents in Foster Care in Washington State. Results From the 1998-1999 Adolescent Foster Care Survey* <http://www1.dshs.wa.gov/rda/research/4/38.shtm>.
- 2002 Kohlenberg et al. *Alcohol and Substance Use Among Adolescents in Washington State. Results From the 1998-1999 Adolescent Household Survey* <http://www1.dshs.wa.gov/rda/research/4/35/default.shtm>.
- Office of Children's Administration Research 1992. *Group Care/Therapeutic Foster Care, Part III: A comparison of children currently placed in group care versus those in therapeutic foster care*.
- RDA has just completed final reviews of the county and state reports on the 2003 household survey. Those reports will be on the web sometime in the next month.

### **Non-DSHS References**

- Wright D and N Sathe 2004. *State Estimates of Substance Use from the 2002–2003 National Surveys on Drug Use and Health*. (<http://oas.samhsa.gov/2K3State/toc.htm>).

## Attachment A

### Comparison of Treated and Untreated Clients with AOD disorders Pharmacy Claims -- Medicaid Rx Prescription Categories Indicated in Year Prior to Index Event

Prescriptions	Summary Drug Descriptions	Untreated	Treated
Alcoholism	Disulfiram	1%	1%
Alzheimers	Tacrine	0%	0%
Anti-coagulants	Heparins	4%	1%
Asthma/COPD	Inhaled glucocorticoids, bronchodilators	23%	15%
Attention Deficit	Methylphenidate, CNS stimulants	1%	1%
Burns	Silver Sulfadiazine	1%	1%
Cardiac	Ace inhibitors, beta blockers, nitrates, digitalis, vasodilators	35%	21%
Cystic Fibrosis	Pancrelipase	1%	0%
Depression / Anxiety	Antidepressants, antianxiety	52%	42%
Diabetes	Insulin, sulfonylureas	8%	4%
EENT	Anti-infectives for EENT related conditions	18%	11%
ESRD / Renal	Erythropoietin, Calcitriol	1%	0%
Folate Deficiency	Folic acid	2%	1%
Gallstones	Ursodiol	0%	0%
Gastric Acid Disorder	Cimetidine	26%	15%
Glaucoma	Carbonic anhydrase inhibitors	1%	1%
Gout	Colchicine, Allopurinol	1%	0%
Growth Hormone	Growth hormones	0%	0%
Hemophilia/von Willebrands	Factor IX concentrates	0%	0%
Hepatitis	Interferon beta	0%	0%
Herpes	Acyclovir	2%	2%
HIV	Antiretrovirals	2%	2%
Hyperlipidemia	Antihyperlipidemics	6%	3%
Infections, high	Aminoglycosides	1%	0%
Infections, medium	Vancomycin, Fluoroquinolones	14%	7%
Infections, low	Cephalosporins, Erythromycins	49%	38%
Inflammatory /Autoimmune	Glucocorticosteroids	15%	8%
Insomnia	Sedatives, Hypnotics	9%	6%
Iron Deficiency	Iron	3%	2%
Irrigating solution	Sodium chloride	1%	0%
Liver Disease	Lactulose	2%	0%
Malignancies	Antineoplastics	2%	1%
Multiple Sclerosis / Paralysis	Baclofen	3%	1%
Nausea	Antiemetics	18%	11%
Neurogenic bladder	Oxybutin	1%	1%
Osteoporosis / Pagets	Etidronate/calcium regulators	2%	1%
Pain	Narcotics	50%	36%
Parkinsons / Tremor	Benzotropine, Trihexyphenidyl	6%	5%
PCP Pneumonia	Pentamidine, Atovaquone	0%	0%
Psychotic Illness / Bipolar	Antipsychotics, lithium	20%	20%
Replacement solution	Potassium chloride	9%	3%
Siezure disorders	Anticonvulsants	21%	15%
Thyroid Disorder	Thyroid hormones	6%	3%
Transplant	Immunosuppressive agents	1%	0%
Tuberculosis	Rifampin	0%	0%
Mean Medicaid-Rx score		1.122	0.761
Number of clients		13,056	9,828



## Attachment B

### 1998 Literature Review on Drug/Alcohol Treatment Outcomes & Cost Offsets

Introduction and Purpose: Whether treatment for chemical dependency can improve the lives of those treated, and in the process reduce their costs to the public, has been the topic of many research studies. Most studies find evidence of reduced costs after treatment. These studies look for cost-offsets: whether, or to what degree, the cost of treatment is offset by the savings it produces in other areas. Those other areas typically include Medicaid costs and costs associated with the criminal justice system.

This review presents only selected studies from the large literature on treatment and public goods. Studies are grouped into three areas: medical cost-offsets, criminal justice cost-offsets, and employment outcomes. The more recent work is emphasized, because in most cases it is methodologically stronger than what preceded it. The review highlights the methods used, the size of the offset, and the caveats necessary when using the results as a defense for policy initiatives.

Before presenting the studies individually, it is important to consider several methodological issues that apply to this line of research. The offsets associated with treatment can be calculated in several ways, and the calculation always involves comparing the costs of either one group of people, before and after treatment (pre-post comparisons), or comparing the costs of two groups of people, after only one of them has been treated (control-group comparisons). How the offset is calculated is important, because the type of comparison employed can influence the size of the offset.

**Pre-Post Comparisons:** This design compares treated clients before and after treatment. One confounding factor in these types of comparisons is that the trend in pre-treatment costs can significantly influence the results of a pre-post comparison. For example, some studies have shown a ‘ramp effect’ in pre-treatment medical costs: in the six months prior to treatment costs rise dramatically. A decline in costs following treatment might be a treatment effect, or it might be regression to the mean from an unusually high pre-treatment level. If a ramp effect is evident, conclusions about the effect of treatment must be drawn carefully.

**Control Group Comparisons:** These studies employ quasi-experimental designs, following naturally occurring, as opposed to randomly assigned, treatment and non-treatment groups. Offsets are calculated by subtracting the costs of the treated group after treatment, from the costs of the comparison group. The key assumption in this design is this: the treated group would have experienced the same costs as the comparison group, had they not received treatment. This assumption makes the choice of comparison group the most important part of this research design.

The design presents the possible problem that the groups being compared might not be equivalent for two reasons. First, the clients might differ in measurable ways: the average age or level of education might be higher in one group than in another. Second, clients select treatment and treatment providers may select clients. Both of these differences can be controlled statistically, although self-selection is more difficult to manage than adjusting for group differences.

#### STUDIES REVIEWED

Brown M, Longhi D and Luchansky B 1997. "Employment Outcomes of Chemical Dependency Treatment and Additional Vocational Services." Olympia, WA: Washington State Department of Social and Health Services.

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- "The National Treatment Improvement Evaluation Study: Preliminary Report." Washington,D.C: U.S. Dept. Of Health and Human Services.

## SUBSTANCE ABUSE TREATMENT AND MEDICAL COSTS

Study	Sample	Comparison	Findings	Limitations
Luchansky B, and Longhi D. 1997.	555 publicly funded clients participating in the ADATSA program (1989-90). All data came from administrative databases.	Treatment/ Comparison group, after treatment, for a 5 year follow-up. This study controlled for a variety of pre-treatment characteristics, including Medicaid costs prior to treatment.	Treated clients cost, on average, \$900 a year less the comparison group over a 5 year follow-up period. The costs of treated-group clients remained nearly the same pre-post, untreated group costs rose dramatically.	Somewhat small sample.
Finigin, M. 1996.	1125 publicly funded clients who entered treatment in Oregon in the 1991-92 fiscal year. All data came from administrative databases	1), pre-post within groups and 2), treatment v. Comparison group, after treatment. No controls.	After treatment, the treated group cost \$151 less than the comparison group.	Lack of statistical controls for client differences.
Luxenberg MG, Christenson M, Betzner AE, and Rainey, J. 1996.	11,143 publicly funded clients receiving treatment in Minnesota in 1991-92. All data was self-reported.	Pre-post, 6 months before v. 6 months after.	Study compared the number of days in the hospital, pre and post treatment, and found a reduction of 273 hospital-days per 1000 patients.	The follow-up period is very short and the response rate was only 23 percent.
Gerstein DR, Harwood HJ, Suter N and Malloy K. 1994.	1821 publicly funded clients who agreed to participate, and were discharged after completing treatment in California during 1991-92. Self-report. 50 percent response rate.	Pre-post for clients completing treatment.	Clients total health care costs were \$758 lower the year after treatment than before.	Costs do not come from health care records, but rather from estimates made from self-reported use. And, the self-reports attempt to recall utilization up to 3 years in the past.
Holder, HD and Blose JO. 1992.	2 samples of private pay clients 1) 601 treated & 154 untreated who had 4 years of data on both pre and post medical costs. 2) 612 treated & 211 untreated who had 14 years of continuous data on medical costs. Data from insurance company claims records.	Pre-post using time series techniques and treatment/comparison group using analysis of variance.	The time series data show the costs of the treatment group decline dramatically after treatment, following a sharp pre-treatment rise. Eventually, costs fall to the lowest pre-treatment levels, but not below. The analysis of variance shows the costs of the treatment group are 24 percent lower than the untreated group, which is a savings of \$468 per year.	In the analysis of variance model, the effect of gender is not controlled for, and the untreated group has far more women, who typically have higher medical costs.
Holder HD and Blose JO. 1986	1697 treated private pay clients who were members of the Federal Employees Health Benefit Program. Data came from insurance company claims records.	3 years pre compared with 3 years post.	Health care costs were less than highest pre-treatment, but not less than lowest pre levels. Clients less than 44 years of age had best results, and their post-treatment costs were less than lowest pre-treatment levels.	
Holder HD and Hallan JB. 1986.	90 private-pay clients treated for alcoholism, as well as 151 family members of that client. 291 members of families with no alcoholic members were included for comparison purposes. Data came from insurance company claims records.	Pre-post, 1 year before and 5 years after.	Average costs declined \$565 in the first year after treatment. Costs for family members declined as well, falling \$156. Both the client receiving treatment, and the client's family had costs in the post-period comparable to the matched comparison group.	A very small sample limits ability to generalize.

**SUBSTANCE ABUSE TREATMENT AND CRIMINAL JUSTICE COSTS**

Study	Sample	Comparison	Findings	Limitations
Finigin, M. 1996.	1125 public funded clients who entered treatment in Oregon in the 1991-92 fiscal year. All data came from administrative databases	1), pre-post within groups and 2), treatment v. Comparison group, after treatment. No mention of controlling for pre-existing differences.	Treated clients had 10 fewer arrests per every 100 clients per year. They also had 787 fewer incarceration days per 100 clients per year. Incarceration included only state prisons, not local jails.	Aggregate figure of cost-offsets from criminal justice savings (including costs of arrests, adjudication and incarceration), but tells little about how it was calculated.
Luxenberg MG, Christenson M, Betzner AE, and Rainey, J. 1996.	11,143 public funded clients receiving treatment in Minnesota in 1991-92. All data was self-reported.	Pre-post, 6 months before v. 6 months after.	Treatment completers had 226 fewer DUI arrests per 1000 clients in the 6 months after treatment, when compared to the 6 months before. Reduction estimated to save the state \$226,000. Treatment completers also had 236 fewer other arrests after treatment, saving the state \$177,000.	The authors estimate the cost of a DUI arrest at \$1000 and other arrests at \$750, but offer no justification for these estimates.
Gerstein DR, Harwood HJ, Suter N and Malloy K. 1994.	1821 public funded clients agreed to participate, & were discharged after completing treatment in California during 1991-92. Self-reported data. 50 percent response rate.	Pre-post for clients completing treatment.	33 percent of clients reported being arrested prior to treatment, while 13 percent were arrested after, a decline of over 60 percent.	Self-reported data based on recall of events that happened as much as 3 years in the past.
The National Treatment Improvement Evaluation Study: Preliminary Report. Washington, D.C: U.S. Dept. Of Health and Human Services.	4,411 public funded clients from treatment programs supported by a CSAT demonstration grant.	Pre-post.  All data were self-reported.	The percentage of clients being arrested declined from 48 percent before treatment to 17 percent after, a decline of 64 percent.	No discussion of how clients were recruited for this study, or whether they were representative of the population from which they were drawn.

**SUBSTANCE ABUSE TREATMENT AND EMPLOYMENT OUTCOMES**

Study	Sample	Comparison	Findings	Limitations
Brown M, Longhi D and Luchansky B 1997.	1215 public funded clients participating in the ADATSA program (1989-90). All data came from administrative databases.	Treatment/ Comparison group, after treatment, for a 5 year follow-up. Controlled for pre-treatment characteristics, including prior earnings.	Over the 5 year follow-up, treated clients earned \$1740 more per person per year than untreated clients, while those receiving additional vocational services earned \$2820 more than untreated clients.	No pre-post comparison.
Finigin, M. 1996.	1125 public funded clients who entered treatment in Oregon in the 1991-92 fiscal year. All data came from administrative databases	1), pre-post within groups and 2), treatment v. Comparison group, after treatment, but no mention is made of controlling for pre-existing differences.	Treated clients earned \$2213 more on average per person per year than members of the comparison group.	The lack of statistical controls for client differences.
Gerstein DR, Harwood HJ, Suter N and Malloy K. 1994.	1821 public-funded clients agreed to participate, and were discharged after completing treatment in California during 1991-92. Self-reported. 50 percent response rate.	Pre-post for clients completing treatment.	Earnings declined 29 percent in the year following treatment, when compared to the year before.	Self-Reported data that asked subjects to recall earnings over 2 and a half years in the past.
The National Treatment Improvement Evaluation Study: Preliminary Report.	4,411 public funded clients from treatment programs supported by a CSAT demonstration grant.	Pre-post.  All data were self-reported.	60 percent of clients had job income in year following treatment, as opposed to 50 percent with income prior to treatment. Clients who worked both before and after treatment earned \$240 more post-treatment year than before.	No discussion of how clients were recruited for this study, or whether they were representative of the population from which they were drawn

Additional copies of this fact sheet may be obtained from the following websites:

<http://www1.dshs.wa.gov/RDA/> or <http://www1.dshs.wa.gov/dasa/>

or through the Washington State Alcohol/Drug Clearinghouse by calling 1-800-662-9111 or 206-725-9696 (within Seattle or outside Washington State), by e-mailing [clearinghouse@adhl.org](mailto:clearinghouse@adhl.org), or by writing to 6535 Fifth Place South, Seattle, Washington 98108-0243.



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Research and Data Analysis Division