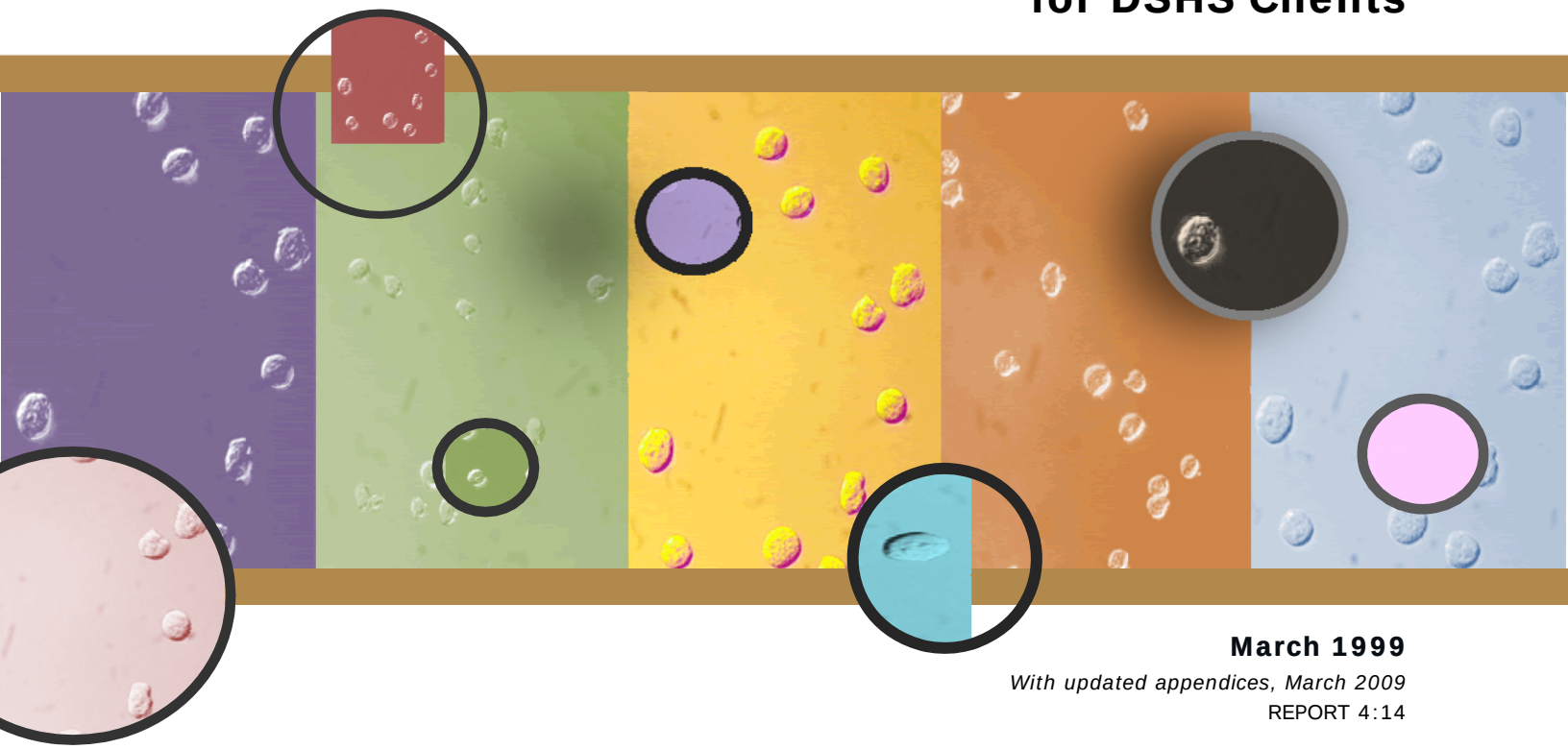
Improve Outcomes and Reduce Government Costs by Increasing Alcohol/Drug Treatment for DSHS Clients



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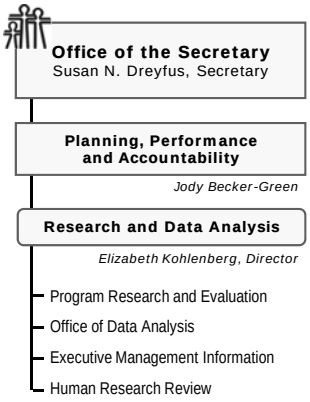

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Abstract: This paper was the first analysis by RDA to examine the costs and benefits of treating alcohol and drug problems for adult DSHS clients. Clients who needed and did not receive treatment were identified using medical diagnoses, arrests, and AOD treatment records. Two areas of potential cost offsets for expanding treatment were examined: physical and behavioral health care costs, and criminal justice costs.

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ABSTRACT

THIS PAPER WAS THE FIRST ANALYSIS produced by RDA to examine the costs and benefits of treating alcohol and drug problems across the entire adult DSHS client population. It includes analysis of the entire cohort of DSHS clients aged 18 to 65 during Fiscal Year 1992. Clients who needed and did not receive treatment were identified using medical diagnoses, arrests, and AOD treatment records. Two areas of potential cost offsets for expanding treatment were examined: physical and behavioral health care costs, and criminal justice costs.

The analyses showed:

Treatment penetration

- About one in two DSHS clients who needed alcohol/drug treatment received at least some treatment during that year.

Criminal justice cost offsets spread across state and local government

- On average over the four years subsequent to treatment, the criminal justice system saved $2.55 for every dollar spent on treatment. However, those savings were spread across the Department of Corrections (60%) and local courts and jails (40%). There is no single funding entity that saves enough in a single year to pay for expanded treatment within that year.

Health care cost offsets for TANF and GA clients did not fully offset treatment costs

- For other groups of clients, savings in medical and mental health expenditures were seen, but they did not fully offset the costs of the first year AOD treatment year.

Health care cost offsets for SSI clients offset treatment costs in less than one year

- For clients on SSI, the aggregate cost of expanding alcohol/drug treatment was much lower than the medical and mental health cost savings achieved within a single fiscal year.

The result of this paper was the SSI Cost Offset Study—a proposal to expand substance abuse treatment for the SSI population, and analyze the results. It was funded.

Chapter 1

Study Questions and Study Populations

Context and Underlying Questions

According to a report prepared for the Alcohol, Drug Abuse, and Mental Health Administration, "Every man, woman and child in America pays nearly $1,000 annually to cover the costs of unnecessary heath care, extra law enforcement, auto accidents, crime and lost productivity resulting from substance abuse."[1]

A University of Washington study estimates that substance abuse cost Washington state citizens nearly $2 billion in 1990: $340 million in criminal justice costs; $215 million in health care costs and the rest in productivity losses, increased illness and early death.[2] A recent update to that study suggests that those costs had increased to $375 billion by 1996.[3]

Despite these costs, the 1993-94 household survey showed that in the low-income population, only 21 percent of those who needed alcohol or other drug (AOD) treatment received it during that year.[4]

Given the staggering costs of untreated substance abuse, and the low AOD treatment rates among low-income populations, the questions underlying this paper are very basic.

- What are the costs to public agencies associated with untreated substance abuse?
- Could any of the public agency costs associated with untreated substance abuse be retrieved and used to offset the cost of getting those people to treatment and treating them?

DSHS Clients and Treatment Cost Offsets

This paper describes three separate analyses based on a single study population. That population is all adults between the ages of 18 and 65 who were DSHS clients during FY92. DSHS clients are not more likely than other Washington residents to abuse drugs or alcohol, so they were not used as a base population for that reason. Instead they were used because:

- They are low-income, so the direct costs of treating their substance abuse, as well as the indirect costs associated with not treating their substance abuse, are likely to be paid by public agencies. Middle and upper income people pay for their own treatment through insurance and pay some of the associated indirect costs as well.
- They are DSHS clients, and can therefore be matched with Medicaid diagnoses accompanying their medical care. This information, along with other public agency records, allowed the researchers to generate a large group of clients with untreated substance abuse who could be compared with those who were treated.

Analysis Method

Each analysis is carried out using public agency records (such as arrests or medical treatment billings) to examine a particular kind of cost associated with untreated substance abuse.[1] The areas of cost are based upon treatment outcomes gleaned from the research literature, previous work in Washington State, and clinical experience. The relevant research literature is cited briefly in each chapter, and summarized in Appendix A.

The method used to analyze these costs is known as cost offset analysis. The goal is to estimate treatment cost offsets: money public agencies would not have paid for these clients if treatment had been provided to them. To make that estimate, comparisons are made between public agency costs for untreated versus treated clients, after AOD treatment has been provided. The

[1] DSHS Clients who need alcohol/drug treatment may or may not get such treatment, depending on access to and desire for treatment. These "quasi-experimental" analyses examine differences between the subsequent outcomes for DSHS clients who needed, and either did or did not receive alcohol/drug treatment. These are "naturally occurring" groups, as opposed to "randomly assigned" groups. Therefore, it is necessary to carefully assess and statistically control for differences between the groups.

cost offset is the difference between those costs for the treated and untreated group. "Net savings" or "Net offsets" refer to the cost offset minus the cost of treatment.

If treated and untreated groups are not randomly chosen, they may differ in many ways that affect the costs in question. In this paper, statistical methods such as regression analysis are used to adjust for differences between treated and untreated groups if those differences might affect costs (such as costs previous to treatment, age, ethnicity, sex or education).

The rest of this chapter explains how treated and untreated groups of DSHS clients were selected for these analyses. Two separate cost offset analyses are described in the following chapters.

- **Chapter 2:** State-paid physical and mental health service cost analysis. The costs covered do not include health care expenditures covered by charity or by the clients themselves.
- **Chapter 3:** Arrest rate for gross misdemeanors and felonies, and associated criminal justice cost analysis. This analysis includes both local police and court costs, and incarceration costs in local jails and state prisons.

Needed Information

The base population was all persons between the ages of 18 and 65 who were DSHS clients during a single fiscal year (the "base year"). For each person, data were needed to answer the following questions.

- **Alcohol or Other Drug (AOD) Treatment Need:** During the base year, did this client need AOD treatment? Sources: AOD treatment, detoxification and assessment records from the Division of Alcohol and Substance Abuse (DASA); medical diagnoses from the Medicaid claims; arrest records for alcohol and drug related crimes.
- **AOD Treatment Use:** During the base year, did this client use any state-funded AOD treatment? When did that treatment begin, and what was its cost during that year? For subsequent years, what were the treatment costs? Source: AOD Treatment records from DSHS-DASA.
- **Use and Cost of Mental and Physical Health Services:** What DSHS-paid mental and physical health services did this client use during the base year, for a year before (for controls) and at least one year after. Source: Medicaid records from the Medical Assistance Administration and Mental Health Division treatment records. Drawn from the DSHS FY90; FY92 and FY94 Needs Assessment Databases.
- **Arrest History and Associated Incarceration Costs:** How many times and for what crime was this client arrested, before, during and after the base year? What were the associated court, police and incarceration costs? Source: Arrest data were drawn from the felony and gross misdemeanor arrests database maintained by the Washington State Patrol. Criminal justice costs were estimated using the Cost-Benefit Model for Crime Prevention and Intervention Programs maintained by the Washington State Institute for Public Policy.
- **Employment History:** Wages and hours worked were needed before, during and after the base year. It was also useful to look at DSHS income assistance and child care costs during those years. Source: Employment data were drawn from the Unemployment Insurance wage and hour database maintained by the Employment Security Department.

How was AOD Treatment Need Estimated?

A client was flagged as needing treatment if any of the following events were recorded in public agency records.

- **AOD Arrests:** A drug or alcohol related arrest in FY91 or FY92 (Source: State Patrol arrests: see Appendix B for the actual arrest codes used).
- **Medical diagnoses** some time during FY92 which indicated that the physician felt the client had a drug or alcohol problem that was contributing to his or her ill health. (Source: MMIS: see Appendix C for list of the ICD-9 diagnostic codes included).

- **AOD Services:** A record of estate-funded detoxification, drug or alcohol assessment or drug or alcohol treatment in FY92 (Source: DSHS Needs Assessment Data Base or NADB).

THE DSHS CLIENT POPULATION

The clients identified by these records were almost certainly a **conservative under-estimate** of those who actually needed treatment. There were DSHS clients in 1992 who in actual fact had substance abuse problems, but had not been arrested for a substance abuse problem in the prior two years; had not been diagnosed by their physician as having a substance abuse problem; and had not been detoxified, assessed or treated by DASA.

Base Year Choice

DSHS already had unduplicated client databases for FY90, FY92 and FY94. The FY92 Needs Assessment Data Base was chosen for the base year cohort for several reasons. First, because managed medical care had not yet been instituted in FY92, the database already contained detailed medical cost information for all DSHS clients receiving medical assistance. Second, the database had already recorded case identifiers from several sources, which could be used to identify children who had lived with an adult substance abuser for all or part of that year. Third, since several analyses involved DSHS costs, the FY94 data base could be used for post-treatment costs, and the FY90 for prior year controls.

How Many DSHS Clients Needed AOD Treatment?

11.5 out of 100 working-age DSHS clients had a public agency record suggesting that they needed alcohol or other drug treatment during FY92. That was 49,253 of the 425,604 DSHS clients between 18 and 65 years of age.

Table 1-1 shows the way 49,253 clients were identified as needing treatment from the various sources of information.

Table 1-1: Sources of information about need for AOD treatment

Data Used to Identify Need for AOD Treatment for FY92 DSHS Clients Aged 18-65	Number Identified This Way	Percent Identified This Way
92 Medical diagnoses only	3,729	7.6%
92 AOD services only	16,525	33.6%
91-92 Arrests only	10,642	21.6%
Total identified through only one source	**30,396**	**62.7%**
92 Medical diagnoses and 92 AOD services	11,534	23.4%
91-92 Arrests and 92 AOD services	3,687	7.5%
92 Medical diagnoses and 92 arrests	381	0.8%
Total identified through two sources	**15,602**	**31.7%**
92 Medical diagnoses and 92 AOD services and 91-92 arrests	2,755	5.6%
Total identified through all three sources	**2,755**	**5.6%**
Total Needing AOD Treatment	**49,253**	**100%**

As expected, the 11.5 percent treatment need rate for DSHS clients defined by public agency records was conservative when compared to the 13.5 percent treatment need rate independently predicted by the 1993-94 Washington State Needs Assessment Household Survey.[2] However, the fact that the two estimates were so close suggests that the public agency records have identified most of those who need treatment.

2 Kabel, 1999, special estimate from the survey data.

How Many DSHS Clients Needed and Did Not Get AOD Treatment?

50 out of 100 of the working-age DSHS clients whose public agency records indicated that they needed treatment did not receive state-subsidized chemical dependency treatment. That was 24,575 persons.[3]

Table 1-2. Differences between treated and untreated clients who needed AOD treatment

Client Characteristics	Treated (n=24,678)	Untreated (n=24,575)
Male	62% (15,239)	69% (16,909)
White	77% (18,912)	74% (18,065)
18-35	66% (16,287)	61% (15,039)
36-50	29% (7,151)	31% (7,716)
51-64	5% (1,240)	7% (1,820)
With any College	18% (4,398)	10% (2,434)
ADATSA Clients	32% (7,826)	18% (4,317)

Table 1-2 shows some key differences between the treated and untreated DSHS clients. The untreated group was more likely to be older and male, and less likely to have post-high school education or received an ADATSA assessment or ADATSA funded treatment. These differences were partly caused by ongoing priority service populations for DASA (youth and women), although they may also reflect lower desire for treatment among less well-educated, older, male clients.

These differences confirm that getting treatment is not a random process. Self-selection, agency policy and bias in the measurement process may all have contributed to these differences. These differences mean that it is necessary to use statistical controls, particularly for age, sex, and prior costs, in the analyses that follow this chapter.

Would the Untreated Clients Accept AOD Treatment?

National research[5,6,7] and clinical experience suggest that clients generally enter substance abuse treatment after some sort of life crisis (either spontaneous or an arranged "intervention") during which the consequences of abuse become (at least momentarily) apparent. If treatment is not almost immediately available, that moment of self-knowledge passes and denial of the extent of the problem emerges.

The untreated clients identified through public agency records are already experiencing "public" difficulties in the form of arrests, detoxifications, health problems and requests for ADATSA services. Therefore, DASA staff and leadership feel strongly that they could "convert" 70 percent to treatment users, if there were increased screening and referral efforts, and adequate treatment available on demand.

DASA has had recent experience with this phenomenon. When the ADATSA program was first implemented, it was assumed that 25 percent of the eligible persons needing treatment (indigent persons, unemployable because of their addiction) would be willing to receive treatment. Instead, initial usage was over 80 percent.

[3] Not all poor people are DSHS clients. Able-bodied men and women without dependents are unlikely to be DSHS clients even if they are poor: Some of these people need AOD treatment also, and without receiving a DASA subsidy (and hence becoming a DSHS client) they are very unlikely to get it. According to the household survey (Kabel, et al., 1996), 106,087 low-income persons needed AOD treatment during 93-94. Overall, 79 percent of those people—83,497—did not receive it.

Chapter 1 Summary

Cost offset studies examine costs to public agencies that could be reduced if clients who needed service received it. This paper analyzes three sets of cost offsets for chemical dependency: treatment - medical and psychiatric costs, criminal justice costs, and employment and earnings increases.

DSHS clients between 18 and 65 were matched with arrest, medical diagnoses and detoxification, AOD assessment and AOD treatment records to identify persons who needed AOD treatment during FY92.

11.5 percent of working-age DSHS clients—49,253 persons—had a public agency record suggesting that they needed alcohol or other drug treatment during FY92. This is a conservative estimate.

Half the DSHS clients (24,678 persons) with a public agency record suggesting they needed treatment received some state-subsidized chemical dependency treatment from DASA. The other half (24,575 persons) did not. Those who did not get treatment were slightly more likely to be older and male and less likely to have any education after high school.

Chapter 2

Does Substance Abuse Treatment Reduce Subsequent DSHS Charges for Physical and Mental Health Treatment?

Introduction and Purpose

Numerous studies suggest that substance abuse treatment reduces both the frequency and intensity of subsequent medical costs.[8-14] The relationship has been shown for private-pay as well as public clients. One study suggests reductions in medical costs for the families of private pay clients.[12]

This chapter describes a policy analysis undertaken to help decision makers within DSHS decide whether to use funds from DSHS physical and mental health treatment programs to subsidize increases in drug and alcohol treatment. The analysis answers the following questions:

- How much does untreated drug and alcohol abuse cost the Medical Assistance Administration (MAA) and the Mental Health Division (MHD) and their contractors and providers?
- What organization directly experiences these increased costs for particular groups of clients: the DSHS programs (MAA and MHD) or the managed care companies with whom they contract?
- Could expansions in Alcohol and Other Drug (AOD) treatment for some groups of clients be funded with "cost offsets" (medical and mental health service costs which decrease after the AOD treatment)?
- Could those treatment expansion costs be offset by decreases in medical and mental health service costs within a single biennium?

Would the Untreated Clients Accept AOD Treatment if it were Available?

Throughout this chapter, it is assumed that 70 percent of the "non-treatment" users could be converted to treatment users if there were increased screening and referral and if treatment capacity was immediately available. This assumption is based on clinical experience which suggests that clients generally enter substance abuse treatment after some sort of life crisis (either spontaneous or an arranged "intervention") during which the consequences of abuse become (at least momentarily) apparent. If treatment is not almost immediately available, that moment of self-knowledge passes and denial of the extent of the problem emerges.

Client Groups

For this analysis, the entire DSHS caseload between 18 and 65 was split into four groups. These groups were designed around three concepts: clear client groups managed care versus fee-for-service medical coverage, and persons likely to have higher medical costs.

- Clear groups are important because DSHS needs to be able to target particular groups of clients for increased screening and referral if 70% treatment rates among untreated clients are to be achieved.
- Managed care is important because it complicates the problem of recovering cost offsets. Any savings which accrue from expanded AOD treatment are not "captured" by the state agency (and therefore cannot be used to offset treatment costs) until the per-person-per-year payment is reduced. These contracts are re-negotiated annually, so savings for managed care clients could not begin until the second year. All MHD clients are now in behavioral managed care, but MAA still has some groups of clients covered under fee-for-service.

Higher medical costs are important because they imply more likelihood of savings to offset the cost of AOD treatment within a short time period.

The client groups are as follows:

- **SSI:** The 48,062 adults with disabilities who received federal SSI grants for all or part of FY92. This group is still receiving fee-for-service medical coverage, and controlling their medical costs while still providing quality treatment is an important part of MAA's Strategic Plan.
- **GAU/X:** The 34,747 adults with disabilities who received State paid General Assistance grants and no SSI grants for all or part of FY92. This group of clients mostly receives fee-for-service medical coverage at present.
- **TANF-like:** The 136,425 adult clients in cases receiving AFDC and GA-S or their Family Independence Plan equivalent grants for all or part of FY92. These people would now be TANF clients. Unless they are pregnant and in First Steps, these sorts of clients are now in managed medical care.
- **Non-Grant:** The rest of the adult DSHS clients—206,370 people—were not receiving a grant but were receiving one or more of the following types of services: food stamps, medical assistance, child care, health and rehabilitation services, long-term care, community services of various types, AOD treatment or child welfare investigations. Most are in managed medical care if DSHS pays for their care.

How Did Client Groups Differ in Treatment Need?

Chapter 1 has already shown that 11.5 percent of working-age DSHS clients (49,253 persons) had a public agency record suggesting that they needed alcohol or other drug treatment during FY92.

Moreover, Table 2-1 below shows that treatment need was not evenly distributed across client groups. The rate of treatment need varied from 8 percent for adults in the TANF-like group (mostly women whose treatment need is half that of men) to 25 percent in the GAU/X group.

2-1: Clients needing AOD Treatment as a percent of their group

SSI (n=48,062)	GAU/X (n=34,747)	TANF-like (n=136,425)	Non-Grant (n=206,370)
9% (4,555)	25% (8,566)	8% (10,684)	12% (25,448)

How Did Client Groups Vary in Not Getting AOD Treatment?

Chapter 1 has already shown that about half of the DSHS clients with public agency records indicating a need for AOD treatment did not receive state-subsidized chemical dependency treatment from DASA. In FY92, that was 24,575 persons.

Table 2-2 below shows that AOD treatment penetration rates varied by client group, from 58 percent for the GAU/X group to 45 percent for the TANF-like clients.

2-2: Clients not getting treatment as percent of those needing treatment

SSI (n=4,555)	GAU/X (n=8,566)	TANF-like (n=10,684)	Non-Grant (n=25,448)
53% (2,420)	58% (5,008)	45% (4,811)	48% (12,336)

Comparing Those Who Did and Did Not Use AOD Treatment

DSHS clients who used AOD treatment in FY92 were somewhat different from those who needed but did not get treatment. The table below shows that for most groups, those who did not get AOD treatment were:

- Somewhat more likely to be older and male.
- Somewhat less likely to have more than twelve years of education.
- Much less likely to be ADATSA clients.

2-3: Client characteristics by group and treatment use

Client Characteristics	SSI (Disabled Adults on Federal Grants)		GAU/X (Disabled Adults on State-funded Grants)		TANF-like (Adults with Children, on AFDC E or R or GA-pregnant)		Non-Grant (All Other DSHS Adult Clients)	
	Treated (n=2,135)	Untreated (n=2,420)	Treated (n=3,558)	Untreated (n=5,008)	Treated (n=5,873)	Untreated (n=4,811)	Treated (n=13,112)	Untreated (n=12,336)
Male	64% (1,365)	64% (1,646)	67% (2,401)	75% (3,756)	25% (1,465)	35% (1,676)	76% (10,008)	80% (9,831)
White	79% (1,676)	76% (1,828)	79% (2,794)	77% (3,858)	77% (4,515)	73% (3,527)	76% (9,927)	72% (8,852)
18-35	41% (868)	39% (933)		51% (2,575)	81% (4,732)	82% (3,962)	67% (8,770)	61% (7,569)
36-50	44% (929)	40% (967)	41% (1,442)	41% (2,032)	19% (1,115)	17% (816)	28% (3,665)	32% (3,901)
With Any College	17% (373)	8% (201)	21% (758)	13% (657)	15% (869)	4% (209)	18% (2,398)	11% (1,367)
ADATSA* Clients	26% (565)	7% (162)	59% (2,096)	40% (1,983)	30% (1,740)	7% (317)	26% (3,425)	15% (1,852)

*The ADATSA program treats clients who are found eligible for AOD treatment because they have requested treatment and are assessed as indigent and unemployable because of their chemical dependency.

FY92 Cost Analysis

There were significant data limitations facing these analyses. There were only three years of unduplicated client data available: FY90, FY92, and FY94. These databases contained annual rather than monthly costs. The best way to carry out cost offset analyses is to measure the outcome of interest (medical and mental health service costs in this case) regularly during the period immediately prior to treatment, and measure it again for several years after treatment. This approach was not possible with these data. Therefore, the analyses involve a series of steps designed to overcome these data problems. The equations and statistical models for each step are reported in Appendix E.

The analysis concentrated only on the three groups who were easily identifiable (SSI, GAU/X, and TANF-like) and whose medical and mental health costs were usually paid through DSHS. The following questions were answered about those groups of clients:

1. Are there some client groups in which the medical and mental health annual per client costs for untreated clients are much higher than for treated clients, even during the treatment year (FY92)? Do those high cost differences persist even when adjustments for demographic (in age, sex, education and ethnicity) and chronic ill health (FY90 medical and mental health costs) differences between treatment and non-treatment groups are added to the analysis?
2. Are there client groups where cost differences between treated and untreated clients are greater than the costs of AOD treatment for those same clients?
3. Do high cost differences between treated and untreated clients persist even with statistical controls for acute health status (measured as FY92 mental and medical health costs during the early part of the year or before treatment) are added? Do they persist when controls for costs before and after treatment are included?

Tables 2-4 and 2-5 below show how average per-client differences in medical and mental health care costs can translate into millions of dollars in "excess" physical and mental health treatment costs to clients with untreated drug and alcohol use. The model uses the adjusted costs described in question 1, and hence controls for demographic and chronic health status differences between AOD treated and untreated clients. Note that the controls are still relatively crude, since they do not include pre-existing differences in acute health status or when in the year the AOD treatment occurred.

2-4: MAA/MHD FY92. costs of not treating alcohol/drug abuse in clients

DSHS Client Group In FY92	MAA TOTAL FY92 COSTS			MHD TOTAL FY92 COSTS			Sum of MAA & MHD Cost Offsets for Untreated Clients
	Treated	Untreated	Offset (assumes 70% treatment)	Treated	Untreated	Offset (assumes 70% treatment)	
SSI (n=4,839)							
# Clients 18-65	2,135	2,419		770	808		
Adj. Per Client	$4,680	$6,836	$2,156	$6,739	$8,343	$1,604	
Adj. Total	$9,992,000	$16,536,000	$3,651,000	$5,189,000	$6,741,000	$907,000	$4,558,000
GAU/GAX (n=8,5656)							
# Clients 18-65	3468	4532		804	938		
Adj. Per Client	$2,486	$2,987	$501	$2,157	$3,318	$1,161	
Adj. Total	$8,621,000	$13,537,000	$1,589,000	$17,34,000	$3,112,000	$762,000	$2,351,000
TANF-LIKE (N=10,684)							
# Clients 18-65	5,873	4,810		614	318		
Adj. Per Client	$2,241	$2,230	(-$11)	$1,903	$2,750	$844	
Adj. Total	$13,161,000	$10,726,000	(-$37,000)	$1,170,000	$875,000	$188,000	$151,000
Totals for Three Groups			**$5,203,000**			**$1,857,000**	**$7,060,000**

2-5. FY92 adjusted DASA treatment costs compared with MHD/MAA cost offsets

DSHS Client Group In FY92	MAA/MHD Cost Offsets for Untreated Clients	DASA ADJUSTED TOTAL FY92 COSTS		Additional DASA Funds to Treat Untreated Clients	Number of DSHS Untreated Clients	Difference Between DASA Treatment Costs and MHD/MAA Cost Offsets
		Treated	Untreated			
SSI (n=4,555)						
# Clients 18-65		2,134	624		2,420	
Adj. Per Client		$1,247	$1,001			
Adj. Total	$4,558,000	$2,661,000	$625,000	$1,675,000		$2,883,000
GAU/GAX (n=8,566)						
# Clients 18-65		3,558	2,524		5,008	
Adj. Per Client		$1,803	$460			
Adj. Total	$2,351,000	$6,415,000	$1,161,000	$5,508,000		(-$3,157,000)
TANF-LIKE (N=10,684)						
# Clients 18-65		5,869	561		4,811	
Adj. Per Client		$1,118	$478			
Adj. Total	$151,000	$6,562,000	$268,000	$3,578,000		(-$3,427,000)

* Calculation: ((# DSHS Untreated Clients * DASA Treatment Cost-per-Client) - (# DASA Untreated Clients * DASA Untreated Cost-per-Client))*.7

Table 2-5 suggests that SSI clients seemed the most likely candidates for finding cost offsets quickly. However, the untreated group could be more acutely ill than the treated group, or increased medical and mental health service costs could have followed the substance abuse treatment. Therefore, the SSI analysis was redone, including constructed variables to measure (1) when in the year the costs occurred and (2) differences in acute health status during the beginning of the year or before treatment began.

Instead of using FY90 data to predict chronic health status, a "monthly baseline program cost variable in FY92" was constructed to reflect both chronic and acute health status through service usage. For AOD treatment clients, that variable was the average monthly FY92 program cost before the AOD treatment began. For non-treatment clients, that variable was the average monthly cost during the first three months of FY92 (because the "before treatment period" averaged three months in length). We used that constructed variable, along with the demographic differences and treatment status, to predict the average monthly program costs for each client during the remaining months of FY92.

NADB does not contain actual monthly expenditures, but it does record the months in which clients received each service, and a total annual cost for that service. To analyze cost differences by month within FY92, it was necessary to distribute the total annual cost equally over the months in which the person received the service. For example, a client who received inpatient hospital service during five months in FY92, and who had a total FY92 inpatient hospital cost of $10,000, received an "assigned" inpatient treatment per month cost of $2,000. Given that the literature suggests AOD treatment reduces not only the amount of health service utilization but also the per-service-event-cost, this represents a conservative approach to cost savings.

Policy Punchline: Table 2-6 below shows that when these more stringent statistical controls are introduced, the per-SSI-client offset dropped from $2,156 to $1,192 for MAA costs and from $1,604 to $1,248 for MHD costs. However, there were still sufficient cost offsets in the SSI population to pay for the AOD treatment: $2,724,000 in FY92 cost offsets compared with $1,675,000 (from Table 2-5) in AOD treatment costs. A little over $1 million dollars in net savings would still have been generated in the first year after treatment (2.7 million savings minus 1.7 million AOD treatment costs).

2-6: Adjusted FY92 costs for SSI Clients, aged 18 through 65

MAA FY92 Costs			MHD FY92 Costs			Sum of MHD and MAA Offsets if 70% Untreated Clients Had Been Treated
Number Untreated Clients	Adjusted Annual Cost-per-Client Offset	Total Offset if 70% Untreated Clients Had Been Treated	Number Untreated Clients	Adjusted Annual Cost-per-Client Offset	Total Offset if 70% Untreated Clients Had Been Treated	
2,419	$1,192	$2,018,000	808	$1,248	$706,000	$2,724,000

FY94 Cost Analysis

There were significant differences between the treated and untreated groups in the FY94 costs of physical health care. However, the size of the physical health care cost offset diminished and the mental health offset became insignificant, and therefore is not included in the totals. Table 2-7 below shows how much MHD and MAA were spending in FY94 on the remaining SSI clients.

2-7: DSHS FY94 costs for not treating drug and alcohol abuse in FY92 adult clients

DSHS SSI Client Group in FY92	MAA Total FY94 Costs			MHD Total FY94 Costs			Sum of MAA/ MHD FY94 Cost Offsets for not Treating Clients in FY92
	Treated	Untreated	Offset if (assumes 70% treatment in FY92	Treated	Untreated	Offset* (assumes 70% treatment in FY92)	
# Clients 18-65	1787	1900		459	472		
Adj. Per Client	$4029	$4863	$834	$9303	$9659	(-$356)	
Adj. Total	$7,200,000	$9,240,000	$1,169,220	$4,270,000	$4,559,000	-$117,622)	$1,169,220

* Not statistically significant at the .05 level.

There are several possible reasons for the lower per-client differences between treated and untreated groups in FY94. First, the effect of AOD treatment on physical health care costs may be lessened after two years. Second, since some who were clients in FY92 are no longer agency clients in FY94 (they have died, moved away, increased their income, or been imprisoned), the remaining clients may be more ill. Third, since the real world does not stand still for research, some clients who did not get AOD treatment in FY92 may have gotten it in FY93 or FY94. If so, the effect of that treatment would be to lower costs for the control group, thus reducing the amount of the offset.

Still, as Table 2-8 below shows, treatment in FY92 appears to have a small net positive cost impact in MAA costs for SSI clients in FY94 even when DASA follow-up costs are estimated for the group and added into the analysis.

2-8: FY94 adjusted costs for DASA treatment compared with MHD/MAA cost offsets

DSHS SSI Client group in FY92	MAA/MHD FY94 Cost Offsets for Clients Not Treated in FY92	DASA ADJUSTED TOTAL FY94 COSTS		Additional DASA Follow-up Funds for 70% Clients now Assumed Treated in FY92*	Number Untreated Who are still DSHS Clients	Difference Between DASA Follow-up Costs Offsets in FY94**
		Treated in FY92	Untreated in FY92			
# Clients 18-65		794	185		1900	
Adj. Per Client		$1,604	$2,116			
Adj. Total	$1,169,220	$1,274,000	$391,000	$673,855		$495,365

* Calculation: ((1900 * .70) * $1604 * (794/1787)) - ((1900*.70) * $2116 * (185/1900)) = $673,855.
** Calculation: $1,169,220-$673,855 = $495,365.

Policy Decision: The SSI Pilot Project

The findings summarized here presented DSHS with two policy options. The agency could continue self-referrals or court referrals for all client groups, which results in about a 50 percent treatment rate, with anticipated increases in future medical and mental health treatment costs.

However, DSHS proposed instead to increase substance abuse screening and referrals among SSI clients, set aside anticipated cost offsets from MHD and MAA, and use them to pay for expanded DASA treatment for SSI clients. The associated cost of monitoring treatment use rates and evaluating was included in the pilot program costs—because the agency wanted to monitor the effectiveness and cost-impacts of the expansion.

The fiscal analysis for the SSI Pilot Project included assumptions about:

- Changes in the SSI population since FY92 (removal of "primary cause substance abuse" and increases in size of SSI population).
- Changes in costs across DASA, MHD and MAA between FY92 and FY99.
- Estimated cost offsets for FY2001, based upon the analyses in this chapter.
- Differences in federal match rates between DASA, MHD and MAA.
- Costs of monitoring these clients and reporting on them regularly.
- Assumed rates of treatment acceptance and utilization.
- Costs of expanded case management for these clients to generate the needed expansions in referral rates.

Chapter 2 Summary

Initial and more refined analyses suggested that for SSI clients, who generally have high medical costs, substance abuse treatment paid for itself and generated a net savings in one year.

Therefore, DSHS decided to set up the SSI Pilot Project, to increase referral rates and treatment utilization among SSI recipients. The detailed fiscal analysis for the pilot showed that some of the net savings in Year 1 were unspent federal money, and the remaining state net savings went towards: (1) evaluation of impacts and (2) the increased case management necessary to generate treatment referrals.

CHAPTER 3

Analysis of Criminal Justice Costs Associated with Untreated Substance Abuse among DSHS Clients

Introduction and Purpose

A number of studies suggest that alcohol and other drug (AOD) treatment reduces subsequent arrests.[8, 9, 11, 15] This chapter describes an analysis of arrests, then estimates the criminal justice costs to state and local governments that are associated with untreated substance abuse among DSHS clients.

The analysis answers the following questions:

- Are DSHS clients with substance abuse problems more likely to be arrested than those DSHS clients without that problem?
- In the four years after treatment, were treated clients less likely to get arrested than untreated clients?
- Were there differences in the probability and number of arrests between treated and untreated clients, and were those differences consistent across different types of crimes?
- Is treatment cost-effective: does the difference in criminal justice costs between treated and untreated clients exceed the cost of treatment?

To answer the last question, Steve Aos of the Washington State Institute for Public Policy agreed to use Research and Data Analysis analyses of arrests and treatment program costs as input to his evolving model for evaluating the expected costs and benefits of choices in the criminal justice sphere.

Methods and Data

Data on arrests came from the Washington State Patrol's Criminal History Database. The State Patrol collects data statewide for those arrested and charged with felonies and gross misdemeanors. Arrest records from FY90 through FY97 were used. This meant arrest records were available for the two years prior to the treatment year (FY92). This history made it possible to statistically adjust for any prior differences in the arrest histories of treated and untreated clients.

Arrest records were matched with DSHS client data from FY92. As in the previous chapters, each client was placed in one of three groups: those who both needed and received substance abuse treatment, those who needed but did not get such treatment, and those who did not need treatment. For the most part, our analyses compared the first two groups of clients.

Because different types of crime cost the criminal justice system different amounts, we categorized crimes as follows:

- **All Crimes:** all offenses collected by the Washington State Patrol, including all gross misdemeanors and all felonies.
- **Violent Felonies:** these include homicide, rape, robbery and aggravated assault.
- **Drug/Property Crimes:** these include felonies that involve the sale, transfer or possession of drugs, along with burglary, auto theft, and larceny.

In the course of this work, a methodological issue arose. Some clients needing treatment were identified solely on a 1992 arrest for a drug-related felony. Including these clients in our analyses might be appropriate. However, it might also be seen as 'stacking the deck' to insure favorable outcome results. Therefore, the 4,277 clients identified solely on a drug-related arrest in 1992 were dropped from the analyses.

An arrest can be associated with more than one type of crime. If the arrest was for both a drug/property crime and a violent felony, it was assigned to the violent felony category, the more expensive of the two. This assignment avoids counting the arrest twice and overstating its cost.

Benefits and Costs

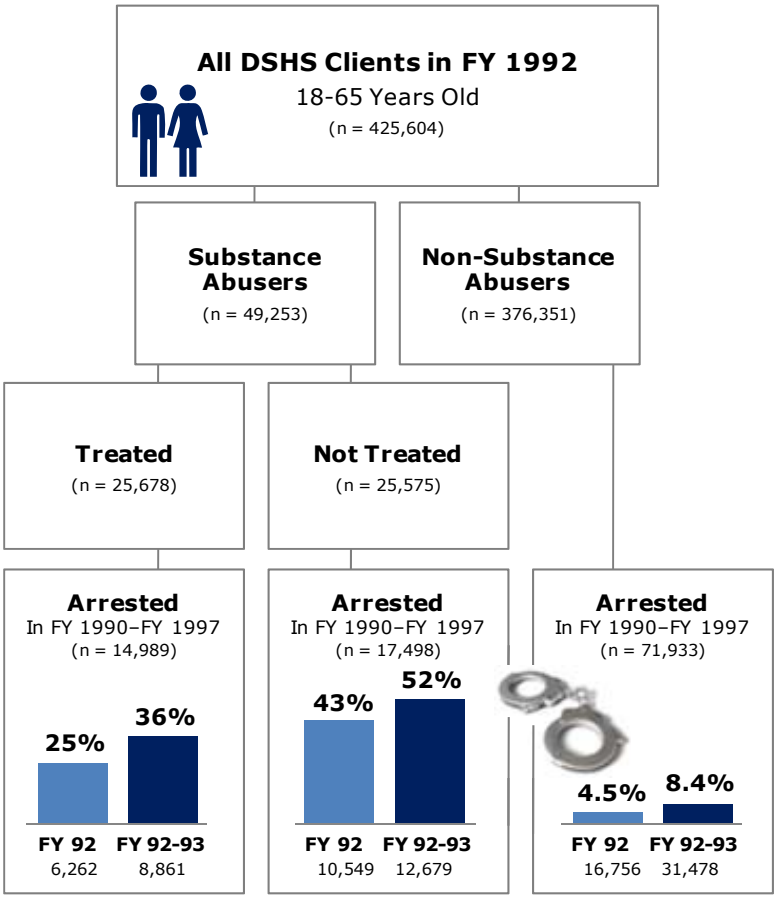
If treatment can be shown to be associated with a reduction in arrests, then criminal justice agencies stand to benefit from it. A benefit, in this case, is synonymous with avoided costs, costs that criminal justice agencies would have had to pay if treatment had not been available. To calculate the fiscal impact of a reduction in arrests, RDA collaborated with the Washington State Institute for Public Policy, which has developed a comprehensive cost-benefit model to assess the value of crime prevention programs. They describe their model as follows:

> The Institute's cost-benefit model organizes information on crime and how existing public policies and programs respond to crime in Washington State. The model uses this information to calculate the economics--that is, the expected costs and benefits--of choices available to policy makers. The goal, or "objective function" of the model is to evaluate and identify cost-effective approaches that can help minimize taxpayer and victim costs of crime.[16]

RDA's role in this process was to supply an estimate of the effectiveness of treatment in reducing arrests, and data on treatment costs. That information was inserted into the Institute's model and became the necessary input used to calculate the fiscal impact of treatment on criminal justice costs. What the Institute's model does is to estimate the fiscal effect of reducing crime by one unit or one criminal act. To do so, they have collected fiscal data on courts, jails, local police departments, and the Department of Corrections. The model is broad in scope, yet captures information on each element of the criminal justice system.

Are Arrests More Common Among Substance-Abusing DSHS Clients?

The following graph shows all DSHS clients in 1992, along with their substance abuse and treatment status. Clearly, drug and alcohol abuse is a "risk factor" for arrests: clients who were not identified as substance abusers were far less likely to be arrested than those who were, both in 1992, the year in which we have data on DSHS services, and in 1993.



Is AOD Treatment Associated with Fewer Subsequent Arrests?

Table 3-1 below summarizes the associations between substance abuse treatment and arrest risk. These averages are adjusted for differences in race/ethnicity, sex, gender, and average arrests during 1990-91.

3-1: Adjusted average mean arrests per client, FY93-FY96

All Kinds of Crimes		Violent Felonies		Drug/Property Crimes	
Treated (n=24,678)	Untreated (n=20,298)	Treated (n=24,678)	Untreated (n=20,298)	Treated (n=24,678)	Untreated (n=20,298)
1.427	2.134	0.057	0.079	0.316	0.572

* These averages are adjusted for differences in race/ethnicity, sex, gender and average arrests during 1990-91.

Table 3-1 above shows that, during the four year follow-up period, clients who needed and received substance abuse treatment in FY92 were arrested 1.427 times, while untreated clients were arrested 2.134 times. In other words, not treating clients was associated with a 50% increase in subsequent arrests.

- Subsequent drug and property crime arrests dropped from .572 (untreated) to .316 (treated), on average. In other words, there was a 49% increase in drug and property arrests associated with not providing drug and alcohol treatment.
- Among these clients, violent crime arrests dropped from .079 for untreated clients to .057 for treated clients. In other words, there was a 39 percent increase in arrests for violent crime felonies associated with not providing drug and alcohol treatment.

Generally, if 70 percent of the 20,298 clients who needed drug and alcohol treatment during FY92 received it during that year, they would have accounted for 3,623 fewer arrests for property and drug crimes and 313 fewer arrests for violent crimes during the subsequent four years.

The regression equations used to produce the "mean arrests per client" estimates are shown in Table 3-2 below. For the Ordinary Least Squares (OLS) regression models, the response variables are numbers of arrests (all kinds, violent felonies, drug/property crimes) in the follow-up period: FY93-FY96. For logistic regression models, the response variables are dichotomous with a value of 1 if arrested in the follow-up periods, and a value of 0 otherwise. All coefficients are significant at the .001 level.

3-2: Statistical associations between arrests and AOD treatment

Independent Variables	All Kinds of Crimes		Violent Felonies		Drug/Property Crimes	
	Parameter Estimates from OLS Model	Odds Ratio, Logistic Model	Parameter Estimates from OL5 Model	Odds Ratio, Logistic Model	Parameter Estimates from OLS Model	Odds Ratio, Logistic Model
Intercept	2.523		0.154		0.915	
Treatment (1= Treated)	-0.708	0.622	-0.022	0.686	-0.255	0.508
Gender (1= Male)	0.417	1.660	0.045	2.458	0.168	1.671
Race (1=White)	0.558	0.771	-0.040	0.599	-0.127	0.781
Age	-0.036	0.964	-0.003	0.954	-0.012	0.965
# of Arrests for Prior Crimes, all kinds	0.736	1.546				
# of Prior Felony Arrests			0.186	2.905		
# of Arrests for Prior Drug/Property Crime					0.235	1.799
R-SQUARED	19%		4%		6%	
Concordant Pairs		70%		69%		65%

Is Treatment Cost Effective?

A reduction in arrests means less time in local jails, fewer court appearances and convictions, and less time in state prisons. All these elements of the criminal justice system are a cost to taxpayers, and any program that can reduce arrests can have significant system-wide effects.

To determine whether treatment is cost effective, the analyses shown above were used as inputs in the cost-benefit model developed at the Washington State Institute for Public Policy. The following table illustrates the total amount of benefit to the criminal justice system in Washington State which results from providing AOD treatment to DSHS clients who need it.

3-3: Comparing criminal justice benefits, FY93-96, and treatment costs, FY92

Expected Criminal Justice Costs Avoided	Treatment Costs per Program	Net Taxpayer	Ratio: Taxpayer Benefits per Dollar
$2,547	$1,001	$1,546	$2.55

Table 3-3 shows that benefits to criminal justice agencies exceed the costs of providing treatment.

Indeed, every dollar invested in treatment is associated with a $2.55 reduction in criminal justice costs over the four year follow-up.

The agencies that benefit include superior courts and county prosecutors, police, adult jails, and state prisons. The amount of benefit to those individual entities can be seen in the following table.

3-4: Benefits, per program participant, for individual criminal justice agencies over the four-year follow-up period

Superior Courts and County	Local Police Departments	Adult Jails	State Prisons (Department of Corrections)	Total Criminal Justice Benefit per Program Participant
$331	$458	$230	$1,528	$2,547

These cost-benefit analyses are specific to the AOD treatment and need population examined: DSHS clients. These clients are more likely to be women than men, and they may be older than typical arrestee populations. Younger, more male populations (such as those served by drug courts or community policing strategies) might show different cost-benefit structures.

These analyses are limited to the effects of AOD treatment and subsequent crime reduction on public agencies. There is another group, victims, who are significant beneficiaries of reductions in crime. Savings to victims are not included in the Institute's model.

Summary

- Arrests are far more common among DSHS clients in need of substance abuse treatment. Although those needing treatment were outnumbered nearly 8 to 1, they contributed nearly the same number of arrests in FY92 as DSHS clients not in need of treatment.
- Treatment is associated with a large, significant reduction in subsequent arrests. This reduction holds across different types of crime. It holds even when statistically controlling for arrests prior to treatment.
- Benefits to agencies in the criminal justice system far exceed the cost of treatment. For every dollar spent on clients receiving DASA treatment in FY92, criminal justice agencies in Washington State saved $2.55.

Both local and state criminal justice agencies benefit from AOD treatment. 60 percent of the benefit goes to the state in the form of savings for the Department of Corrections, while 40 percent goes to a variety of local agencies, including courts, the police, and local jails.

APPENDIX A

Literature Review on Drug and Alcohol Treatment, Cost Offsets and Public Goods

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 select 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 pretreatment 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 if the former had also not received treatment.** This assumption makes the choice of the comparison group the most important part of this research design.

The problem that can arise in these studies is that the groups being compared might not be equivalent. There are two reasons for this. 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.

SUBSTANCE ABUSE TREATMENT AND MEDICAL COSTS

Study	Funding	Sample	Comparison	Findings	Limitations
Finigin, M. 1996.[8]	Public funded clients	1125 individuals 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. Does not control for pre-existing differences.	After treatment, the treated group cost $151 less than the comparison group.	Lack of statistical controls for client differences.
Gerstein DR, Harwood HJ, Suter N and Malloy K.1994.[9]	Public funded clients	1821 individuals agreed to participate, and were discharged after completing treatment in California during 1991-92. Data was self-reported. 50% 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 utilization. And, the self-reports attempt to recall utilization up to three years in the past.
Luchansky B, and Longhi D. 1997.[10]	Public funded clients	555 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.
Luxenberg MG, Christenson M, Betzner AE, and Rainey, J, 1996.[11]	Public funded clients	11,143 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%.
Holder HD and Hallan JB. 1986.[12]	Private-pay clients	90 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 small sample limits generalizability.

SUBSTANCE ABUSE TREATMENT AND MEDICAL COSTS, *continued*

Study	Funding	Sample	Comparison	Findings	Limitations
Holder HD and Hallan JB. 1986.12	Private-pay clients	90 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 small sample limits generalizability.
Holder HD and Blose JO. 1986.13	Private-pay clients	1697 treated members of the Federal Employees Health Benefit Program. Data came from insurance company claims records.	3 years pre compared with 3 years post.	For all clients, health care costs dropped below the highest pre-treatment levels, but not below the lowest pre levels. Younger clients (less than 44 years) had best results, and their post-treatment costs were lower than lowest pre-treatment levels.	
Holder, HD and Blose JO. 1992.14	Private-pay clients	2 samples: 1) 601 treated and 154 untreated who had 4 years of data on both pre and post medical costs. 2) 612 treated and 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% 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.

SUBSTANCE ABUSE TREATMENT AND CRIMINAL JUSTICE COSTS

Study	Funding	Sample	Comparison	Findings	Limitations
Finigin, M. 1996.8	Public funded clients	1125 individuals 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.
Gerstein DR, Harwood KT, Suter N and Malloy K 1994.9	Public funded clients	1821 individuals agreed to participate, and were discharged after completing treatment in California during 1991-92. Self-reported data. 50% response rate.	Pre-post for clients completing treatment.	33% of clients reported being arrested prior to treatment, while 13% were arrested after, a decline of over 60%.	Self-reported data based on recall of events that happened as much as 3 years in the past.
Luxenberg MG, Christenson M, Betzner AE, and Rainey J. 1996.11	Public funded clients	11,143 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. The authors estimate that that reduction will 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.
The National Treatment Improvement Evaluation Study: Preliminary Report, Washington, D.C: U.S. Dept. Of Health and Human Services.15	Public funded clients	4,411 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% before treatment to 17% after, a decline of 64%.	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	Funding	Sample	Comparison	Findings	Limitations
Finigin, M. 1996.[8]	Public funded clients	1125 individuals 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.[9]	Public funded clients	1821 individuals agreed to participate, and were discharged after, completing treatment in California during 1991-92. Self-reported. 50% response rate.	Pre-post for clients completing treatment.	Earnings declined 29% 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.
Brown M, Longhi D, and Luchansky B. 1997.[17]	Public funded clients	1215 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.
The National Treatment Improvement Evaluation Study: Preliminary Report. Washington, D.C: U.S. Dept. Of Health and Human Services.15	Public funded clients	4,411 clients from treatment programs supported by a CSAT demonstration grant.	Pre-post. All data were self-reported.	60% of clients had job income in year following treatment, as opposed to 50% 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.

APPENDIX B

Alcohol or Drug Arrests: Used to Identify Alcohol or Drug Problems (updated, March 2009)

Diagnostic Codes

ICD-9 Codes	AOD ALCOHOL AND OTHER DRUG USE, ABUSE, OR DEPENDENCE ARREST CHARGES
7200	VULDA VIOL UNIFORM LEGEND DRUG ACT
7204	VULDA-OBTAIN BY FRAUD/FORG/FALSE INFORMATION
7206	VULDA-UTTERING FORGED PRESCRIPTION
7207	VULDA PRESCRIP REQUIREMENTS FOR LEGIT MEDICAL PURPOSES
7208	VULDA-SELL OR DELIVER
7209	VULDA-POSSESSION
7219	VULDA-LABELING
7230	PRECURSOR DRUG VIOL
7232	PRECURSOR DRUG VIOL SALE, TRANSFER, FURNISH OR RECEIVE FOR UNLAWFUL MANUFACTURE
7233	PRECURSOR DRUG VIOL FALSE STATEMENT IN REPORT OR RECORD
7236	PRECURSOR DRUG VIOL FAIL TO SUBMIT REPORT
7237	PRECURSOR DRUG VIOL FAIL TO REPORT OUT-OF-STATE SOURCE
7238	PRECURSOR DRUG VIOL FURNISH OR RECEIVE WITHOUT A PERMIT
7239	PRECURSOR DRUG VIOL
7300	VUCSA VIOLATION OF THE UNIFORM CONTROLLED SUBSTANCES ACT
7301	CONTROLLED SUBSTANCE HOMICIDE DELIVER SUBSTANCE RESULTING IN DEATH OF USER
7303	INVOLVE A MINOR IN A DRUG TRANSACTION
7304	VUCSA-DEL HEROIN OR NARC TO MINOR
7306	VUCSA-DEL NARC 3,4,5 OR NON NARC 1-5 TO MINOR
7307	VUCSA-SELL HEROIN FOR PROFIT PRIOR CONV
7308	VUCSA-SELL HEROIN FOR PROFIT
7309	VUCSA - NON FELONY
7310	VUCSA-FELONY VIOLATION OF UNIFORM CONTROLLED SUBSTANCE ACT
7311	VUCSA-DELIVER TO A MINOR
7313	VUCSA-SELL OTHER THAN HEROIN FOR PROFIT PRIOR CONV
7314	VUCSA-SELL OTHER THAN HEROIN FOR PROFIT
7315	VUCSA-MANUF/DEL SCHED 1,2 NARC PRIOR CONV
7316	VUCSA-MANUF/DEL SCHED 1,2 NARC
7317	VUCSA-POSS W/INT SCHED 1,2 NARC PRIOR CONV
7318	VUCSA-POSS W/INT SCHED 1,2 NARC
7321	VUCSA-SELL FOR PROFIT
7323	VUCSA-MANUF/DEL SCHED 1,2,3 NON-NARC PRIOR CONV
7324	VUCSA-MANUF/DEL SCHED 1,2,3 NON-NARC
7325	VUCSA-POSS W/INT SCHED 1,2,3 NON-NARC PRIOR CONV
7326	VUCSA-POSS W/INT SCHED 1,2,3 NON-NARC
7327	VUCSA-MANUF/DEL SCHED 4 PRIOR CONV
7328	VUCSA-MANUF/DEL SCHED 4 NARC
7331	VUCSA-MANUFACTURE/DELIVER/POSS W/INT
7333	VUCSA-POSS W/INT SCHED 4 PRIOR CONV
7334	VUCSA-POSS W/INT SCHED 4
7335	VUCSA-MANUF/DEL SCHED 5 PRIOR CONV
7336	VUCSA-MANUF/DEL SCHED 5
7337	VUCSA-POSS W/INT SCHED 5 PRIOR CONV
7338	VUCSA-POSS W/INT SCHED 5

ICD-9 Codes	AOD ALCOHOL AND OTHER DRUG USE, ABUSE, OR DEPENDENCE ARREST CHARGES
7341	VUCSA-POSSESS WITH INTENT
7343	VUCSA-MANUF/DEL/POSS W/INT MARIJUANA PRIOR CONV
7344	MANUFACTURE/DELIVER/POSSESS WITH INTENT-MARIJUANA
7345	VUCSA-POSS HEROIN OR SCHED 1 OR 2 NON-NARC PRIOR CONV
7346	VUCSA-POSS HEROIN OR SCHED 1 OR 2 NON-NARC
7347	VUCSA-POSS SCHED 3-5 NARC OR NON-NARC PRIOR CONV
7348	VUCSA-POSS SCHED 3-5 NARC OR NON-NARC
7351	VUCSA-POSSESS
7353	VUCSA-COUNTERFEIT SUB SCHED 1,2 NARC PRIOR CONV
7354	VUCSA-COUNTERFEIT SUB SCHED 1,2 NARC
7355	VUCSA-CNTRFT SUB SCHED 3 NARC/SCHED 1-3 NON-NARC PRIOR
7356	VUCSA-COUNTERFEIT SUB SCHED 3 NARC/SCHED 1-3 NON-NARC
7358	VUCSA-LIQUID SUB OR MATERIAL IN LIEU OF A CONT SUB
7359	VUCSA-POSS MARIJ 40 G. OR LESS PRIOR CONV
7361	VUCSA-POSSESS WITHOUT A PRESCRIPTION
7363	VUCSA-POSS W/O PRESCRIP SCHED 1,2 PRIOR CONV
7364	VUCSA-POSS W/O PRESCRIP SCHED 1,2
7365	VUCSA-POSS W/O PRESC SCHED 3-4 OR NON-NARC PRIOR CONV
7366	VUCSA-POSS W/O PRESCRIP SCHED 3-4 OR NON-NARC
7369	VUCSA-POSS MARIJ 40 G. OR LESS
7370	VUCSA-POSS MARIJ UNKNOWN AMOUNT
7371	VUCSA-COUNTERFEIT SUBSTANCE
7373	VUCSA-OBTAIN BY FRAUD/FALSE/FORGED PRESCRIP PRIOR CONV
7374	VUCSA-OBTAIN/ATTEMPT OBTAIN BY FRD/FALS/FORGED PRESCRIP
7375	VUCSA-UTTER FORGED PRESCRIP PRIOR CONV
7376	VUCSA-UTTER FORGED PRESCRIP
7377	VUCSA-POSS MARIJ MORE THAN 40 G.PRIOR CONV
7378	VUCSA-POSS MARIJ MORE THAN 40 GRAMS
7379	GLUE SNIFFING *RECODIFIED (REFER TO 07398)
7381	VUCSA-FALSE/FORGED/FRAUD/MISREPRESENT
7383	POSS EPHEDRINE, PSEUDOEPHEDRINE OR ANHYDROUS AMMONIA W/INT TO MFG METHAMPHETAMINE
7384	USE BUILDING FOR UNLAWFUL DRUGS
7385	USE BUILDING FOR UNLAWFUL DRUGS MAKE AVAILABLE BUILDING FOR USE
7386	USE BUILDING FOR UNLAWFUL DRUGS ALLOW FORTIFICATION OF BUILDING
7387	USE BUILDING FOR UNLAWFUL DRUGS USE FORTIFIED BUILDING
7388	MAINTAIN PLACE/DWELLING FOR SELLING/USE CONT SUB
7389	DRUG PARAPHERNALIA
7390	IMITATION CONTROLLED SUBSTANCE
7392	IMITATION CONTROLLED SUBSTANCE DISTRIBUTE TO A MINOR
7394	IMITATION CONTROLLED SUBSTANCE MANUF/DISTRIBUTE/POSSESS W/INTENT TO DISTRIBUTE
7396	IMITATION CONTROLLED SUBSTANCE PUBLICATION; POST OR DIST ADVERTISEMENT OR SOLICIT
7397	DRUG PARAPHERNALIA - DEL TO PERSON UNDER EIGHTEEN
7398	INHALE, POSS, SALE TOXIC FUMES
7399	DRUG RELATED CHARGE
7644	DRIVE UNDER THE INFLUENCE
7645	DRIVE OR BEING IN PHYS CONTROL U/21 AFTER CONSUMING ALCOHOL
7646	PHYSICAL CONTROL BEING IN ACTUAL PHYSICAL CONTROL WHILE INTOXICATED

APPENDIX C

Diagnostic (ICD-9) Codes: Used to Identify Alcohol or Drug Problems (updated, March 2009)

Diagnostic Codes

ICD-9 Codes	AOD NEED FOR TREATMENT INDICATORS FROM MMIS and TARGET[4]
	ACTUAL TREATMENT DRG
433	Alcohol or drug abuse or dependence, left against medical advice
434	Alcohol or drug abuse or dependence, detox or other symptomatic treatment, with complications
435	Alcohol or drug abuse or dependence, detox or other symptomatic treatment, withoutcomplications
436	Alcohol or drug dependence, with rehabilitation therapy
437	Alcohol or drug dependence, detox and rehabilitation therapy
743	Opioid abuse or dependence, left against medical advice
744	Opioid abuse or dependence, detox or other symptomatic treatment, with complications
745	Opioid abuse or dependence, detox or other symptomatic treatment, without complications
746	Cocaine or other drug abuse or dependence, left against medical advice
747	Cocaine or other drug abuse or dependence, detox or other symptomatic treatment, with complications
748	Cocaine or other drug abuse or dependence, detox or other symptomatic treatment, without complications
749	Alcohol or drug abuse or dependence, left against medical advice
750	Alcohol or drug abuse or dependence, with complications
751	Alcohol or drug abuse or dependence, without complications
	HOSPITAL ICD-9 PROCEDURE CODE: REHABILITATION
94.61	Alcohol rehabilitation
94.63	Alcohol rehabilitation and detoxification
94.64	Drug rehabilitation
94.66	Drug rehabilitation and detoxification
94.67	Combined alcohol/drug rehabilitation
94.69	Combined alcohol/drug rehabilitation and detoxification
	PROCEDURE CODE: RESIDENTIAL
0171M	DASA - YOUTH ENHANCED RECOVERY HOUSE
0174M	DASA CDDA YOUTH RESIDENTIAL TREATMENT (LEVEL II) SECURE
0175M	DASA - ADOLECENT RESIDENTIAL TRMNT
0177M	DASA - YOUTH RESIDENTIAL TREATMENT - SECURE
0178M	DASA - YOUTH RESIDENTIAL TREATMENT - LEVEL I
0179M	DASA - YOUTH RESIDENTIAL TREATMENT - LEVEL II
0180M	DASA - LONG TERM RESIDENTIAL TREATMENT
0181M	DASA - INTENSIVE INPATIENT TREATMENT
0182M	DASA/FREESTANDING MEDICAL STABILIZATION
0183M	DASA PPW LONG TERM RESIDENTIAL TRMNT
0185M	SUBSTANCE ABUSE TANF LONG-TERM RESIDENTIAL TREATMENT
0187M	DASA TANF REFERRED PPW RESIDENTIAL
0194M	YOUTH SECURE EVALUATION/TREATMENT
0195M	YOUTH SECURTE EVALUATION/TREATMENT R&B
0358M	RESIDENTIAL TREATMENT
0172M	DASA - YOUTH ENHANCED RECOVERY HOUSE R&B

[4] MMIS is the Medicaid Management Information System and TARGET is DASA's Treatment and Report Generation Tool.

0176M DASA - RESIDENTIAL TRMNT R&B
0186M DASA ROOM & BOARD
0189M DASA TANF REFERRED RESIDENTIAL ROOM & BOARD
0195M YOUTH SECURTE EVALUATION/TREATMENT R&B
0196M CDDA YOUTH RESIDENTIAL R& B
H0017 Behavioral health; residential
H0018 Behavioral health; short-term residential
H0019 Behavioral health; long-term residential
H2036 Alcohol and/or other drug treatment program, per diem

INDIVIDUAL THERAPY

0012M DRUG ABUSE - INDIVIDUAL THERAPY - FULL VISIT
0013M DRUG ABUSE - INDIVIDUAL THERAPY - BRIEF VISIT
0022M ALCOHOL ABUSE/INDIVIDUAL THERAPY - FULL
0023M ALCOHOL ABUSE INDIVIDUAL THERAPY - BRIEF
0143M PEDIATRIC UNIT - IRRADIATED RED BLOOD CE
0144M SUBSTANCE ABUSE OUTPATIENT/INDIVIDUAL BRIEF
0153M SUBSTANCE ABUSE PREG/INDIVIDUAL FULL
0154M SUBSTANCE ABUSE PREG/INDIVIDUAL BRIEF
0163M SUBSTANCE ABUSE YOUTH INDIVIDUAL THERAPY-FULL
0164M SUBSTANCE ABUSE YOUTH INDIVIDUAL THERAPY-BRIEF
2133M SUBSTANCE ABUSE SSI INDIVIDUAL THERAPY-FULL
2134M SUBSTANCE ABUSE SSI INDIVIDUAL THERAPY-BRIEF
2143M SUBSTANCE ABUSE TANF INDIVIDUAL THERAPY - FULL
2144M SUBSTANCE ABUSE TANF INDIVIDUAL THERAPY - BRIEF
2153M SUBSTANCE ABUSE PARENTING WOMEN INDIVIDUAL THERAPY-FULL
2154M SUBSTANCE ABUSE PARETING WOMEN INDIVIDUAL THERAPY-BRIEF
2163M SUBSTANCE ABUSE NON-EPSDT YOUTH INDIVIDUAL THERAPY-FULL
2164M SUBSTANCE ABUSE NON-EPSDT YOUTH INDIVIDUAL THERAPY-BRIEF
2173M CHEMICAL DEPENDENCY INDIVIDUAL THERAPY, FULL VISIT
2174M CHEMICAL DEPENDENCY INDIVIDUAL THERAPY, BRIEF VISIT
2183M CDDA SANCTIONED INDIVIDUAL THERAPY-FULL
2184M CDDA SANCTIONED INDIVIDUAL THERAPY-BRIEF
2193M CDDA COMMITABLE INDIVIDUAL THERAPY-FULL
2194M CDDA COMMITABLE INDIVIDUAL THERAPY-BRIEF
H0004 Alcohol and/or drug services; individual counseling by a clinician
H2035 Alcohol and/or other drug treatment program, per hour
96154 Health and behavior intervention, each 15 minutes, face-to-face; family
96155 Health and behavior intervention, each 15 minutes, face-to-face; family

GROUP THERAPY

0014M DRUG ABUSE - GROUP THERAPY
0024M ALCOHOL ABUSE OUTPATIENT - GROUP THERAPY
0145M SUBSTANCE ABUSE OUTPATIENT/GROUP THERAPY, PER HOUR
0149M HLA D - TYPING (HTC) MIXED CULTURE STUDY
0155M SUBSTANCE ABUSE PREG/GROUP THERAPY, PER HOUR
0169M SUBSTANCE ABUSE YOUTH GROUP THERAPY
2135M SSI GROUP THERAPY
2149M SUBSTANCE ABUSE TANF GROUP THERAPY
2159M SUBSTANCE ABUSE PARENTING WOMEN GROUP THERAPY
2169M SUBSTANCE ABUSE NON-EPSDT YOUTH GROUP THERAPY
2179M CHEMICAL DEPENDENCY GROUP THERAPY (15 MIN. UNITS)
2185M CDDA SANCTIONED GROUP THERAPY
2195M CDDA COMMITABLE GROUP THERAPY

H0005	Alcohol and/or drug services; group counseling by a clinician
H0015	Alcohol and/or drug services; intensive outpatient (treatment program that operates at least 3 hours/day and at least 3 days/week and is based on an individualized treatment plan), including assessment, counseling
H0016	Alcohol and/or drug services; medical/somatic (medical intervention in ambulatory setting)
96153	Health and behavior intervention, each 15 minutes, face-to-face; group

METHADONE OPIATE SUBSTITUTION

0190M	METHADONE TREATMENT - REGULAR
0191M	METHADONE TREATMENT - PPW
0192M	METHADONE TREATMENT
2190M	SUBSTANCE ABUSE TANF OPIATE DEPENDENCY TREATMENT
2191M	SUBSTANCE ABUSE PARENTING WOMEN OPIATE DEPENDENCY TRMT
2192M	SUBSTANCE ABUSE NON-EPSDT YOUTH OPIATE DEPENDENCY TRMT
2197M	OPIATE DEPENDENCY TREATMENT
0016M	DRUG ABUSE - CHEMOTHERAPY
0146M	DRUG ABUSE OUTPATIENT/CHEMOTHERAPY
0156M	DRUG ABUSE OP PREGNANT/CHEMOTHERAPY
0166M	SUBSTANCE ABUSE EPSDT CHEMOTHERAPY
0159M	SUBSTANCE ABUSE PG & POSTPARTUM GROUP THERAPY
2139M	SSI OPIATE SUBSTITUTION TREATMENT
0016M	DRUG ABUSE - CHEMOTHERAPY
0018M	DRUG ABUSE - MEDICATION ADJUSTMENT
0166M	SUBSTANCE ABUSE EPSDT CHEMOTHERAPY
0167M	SUBSTANCE ABUSE EPSDT MEDS ADJUSTMENT
0168M	SUBSTANCE ABUSE EPSDT ACUPUNCTURE
J1230	Injection, methadone HCl, up to 10 mg

ACUPUNCTURE

0148M	DRUG ABUSE OUTPATIENT/ACUPUNCTURE
0158M	DRUG ABUSE OUTPATIENT/ACUPUNCTURE
0168M	SUBSTANCE ABUSE EPSDT ACUPUNCTURE

OTHER

0015M	DRUG ABUSE - ACTIVITY THERAPY
0165M	NON-NATIVE AMERICAN CD ENCNTR - TRIBAL MATCH
0184M	NATIVE AMERICAN CHEMICAL DEPENDENCY ENCOUNTER
0198M	NON-NATIVE AMERICAN CD ENCOUNTER
0199M	NON-NATIVE AMERICAN CD ENCOUNTER - TANF
9005M	FQHC CHEMICAL DEPENDENCY
T1015	Clinic visit/encounter, all-inclusive
0016M	DRUG ABUSE - CHEMOTHERAPY
0146M	DRUG ABUSE OUTPATIENT/CHEMOTHERAPY
0156M	DRUG ABUSE OP PREGNANT/CHEMOTHERAPY
0166M	SUBSTANCE ABUSE EPSDT CHEMOTHERAPY
0018M	DRUG ABUSE - MEDICATION ADJUSTMENT
0027M	MEDICATION ADJUSTMENT
0147M	DRUG ABUSE OUTPATIENT/MEDICATION ADJUSTMENT
0157M	DRUG ABUSE OUTPATIENT/MEDICATION ADJUSTMENT
0167M	SUBSTANCE ABUSE EPSDT MEDS ADJUSTMENT
0015M	DRUG ABUSE - ACTIVITY THERAPY

OTHER NON-TREATMENT INDICATORS

116	Detox room & board private
126	Detox room & board semi-private 2 bed
136	Detox room & board semi-private 3-4 bed

146	Detox room & board private (delux)
156	Detox room & board ward
168	CUP room and board

HOSPITAL ICD-9 PROCEDURE CODE

94.62	ALCOHOL DETOXIFICATION
94.65	DRUG DETOXIFICATION
94.68	COMBINED ALCOHOL & DRUG DETOXIFICATION

DETOX BILLING PROVIDER TYPE

96	Detox billing provider type

DETOX PROCEDURE CODE

0025M	DETOX - HOSPITAL ADMIT
0026M	DETOX - HOSPITAL FOLLOW-UPS
2050M	YOUTH DETOX STABILIZATION - SUB ACUTE
2051M	YOUTH DETOX STABILIZATION - ACUTE
H0008	Alcohol and/or drug services; subacute detoxification (hospital inpatient)
H0009	Alcohol and/or drug services; acute detoxification (hospital inpatient)
H0010	Alcohol and/or drug services; subacute detoxification (residential addiction program inpatient)
H0011	Alcohol and/or drug services; acute detoxification (residential addiction program inpatient)
H0012	Alcohol and/or drug services; subacute detoxification (residential addiction program outpatient)
H0013	Alcohol and/or drug services; acute detoxification (residential addiction program outpatient)
H0014	Alcohol and/or drug services; ambulatory detoxification

OTHER DIAGNOSIS

291	Alcohol psychosis
292	Drug psychosis
303	Alcohol dependence
304	Drug dependence
305	Alcohol/Drug abuse
571.1	ACUTE ALCOHOLIC HEPATITIS
648.3	Drug dependence - pregnant woman
V65.42	COUNSELING ON SUBSTANCE USE AND ABUSE

PROCEDURE CODE INTAKE

0010M	DRUG ABUSE - INTAKE EVALUATION
0020M	ALCOHOL ABUSE OUTPATIENT/INTAKE EVALUATION
0141M	SUBSTANCE ABUSE OUTPATIENT/INTAKE EVALUATION
0151M	SUBSTANCE ABUSE PREG/INTAKE EVALUATION
0161M	SUBSTANCE ABUSE YOUTH INTAKE PROCESSING
2131M	SSI INTAKE PROCESSING
2141M	SUBSTANCE ABUSE TANF INTAKE PROCESSING
2151M	SUBSTANCE ABUSE PARENTING WOMEN INTAKE PROCESSING
2161M	SUBSTANCE ABUSE NON-EPSDT YOUTH INTAKE PROCESSING
2171M	CHEMICAL DEPENDENCY INTAKE PROCESSING
2189M	CDDA COMMITABLE INTAKE PROCESSING

CHEMICAL DEPENDENCY PHYSICAL EXAM

0011M	DRUG ABUSE - INDIVIDUAL EXAM
0021M	ALCOHOL ABUSE OUTPATIENT - PHYSICAL EXAM
0142M	SUBSTANCE ABUSE OUTPATIENT/PHYSICAL EXAM
0152M	SUBSTANCE ABUSE PREG/PHYSICAL EXAM
0162M	SUBSTANCE ABUSE YOUTH PHYSICAL EXAM
2132M	SSI PHYSICAL EXAM
2142M	SUBSTANCE ABUSE TANF PHYSICAL EXAM
2152M	SUBSTANCE ABUSE PARENTING WOMEN PHYSICAL EXAM

2162M	SUBSTANCE ABUSE NON-EPSDT YOUTH PHYSICAL EXAM
2172M	CHEMICAL DEPENDENCY PHYSICAL EXAMINATION
2182M	CDDA SANCTIONED PHYSICAL EXAM
H0001	Alcohol and/or drug assessment

URINALYSIS

0017M	DRUG ABUSE - URINALYSIS
0170M	DASA - UA DRUG SCREEN/DRUG ABUSE REHAB

DRUG SCREEN

0019M	DRUG SCREEN BASA
0037M	DASA PANEL (7 DRUGS)
0038M	DASA SINGLE DRUG PANEL
0039M	DASA PREGNANT WOMEN TREATMENT PANEL
0065M	DASA SINGLE DRUG PANEL FOR PREGNANT WOMEN
0197M	DASA BLOOD SERUM SCREEN
2175M	CHEMICAL DEPENDENCY INITIAL SCREEN - DCFS REFERRED
H0002	Behavioral health screening to determine eligibility for admission to treatment program
H0003	Alcohol and/or drug screening; laboratory analysis of specimens for presence of alcohol or drugs
80100	Drug screen, qualitative; multiple drug classes chromatographic method

CASE MANAGEMENT

0028M	CHEMICAL DEPENDENCY - INTENSIVE CASE MANAGEMENT
0029M	CHEMICAL DEPENDENCY - INTENSIVE CASE MANAGEMENT EPSDT
0173M	DASA - TARGETED CASE MGMT (EPSDT)
2186M	SUBSTANCE ABUSE CASE MANAGEMENT
2196M	SUBSTANCE ABUSE CASE MANAGEMENT
0341M	CASE MANAGEMENT
2165M	CASE MANAGEMENT
0369M	CASE MANAGEMENT
2166M	CASE MANAGEMENT
0384M	CASE MANAGEMENT
0385M	CASE MANAGEMENT
H0006	Alcohol and/or drug services; case management
T1017	Targeted case management, each 15 minutes

THERAPEUTIC CHILD CARE

0188M	THERAPEUTIC CHILD CARE
0193M	DASA TANF REFERRED THERAPEUTIC CHILD CARE
2052M	DASA YOUTH PHYSICAL EXAM
T1009	Child sitting services for children of the individual receiving alcohol and/or substance abuse services
T1028	Assessment of home, physical and family environment, to determine suitability to meet patient's needs

HOSPITAL ICD-9 PROCEDURE CODE REHAB REFERRAL

94.53	REFERRAL ALCOHOL REHAB

APPENDIX D

Statistical Models from Chapter 1 Regression Predicting FY92 MAA AND MHD Cost Offsets (Table 2-4)

SSI Group

Regression Equation for MAA Total FY92 Costs

MAA cost in FY92 is a function of:

- Treatment (yes, no)
- MAA cost in FY90
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

8 percent of the variation is explained, and the CV is 204. All variables except Race and Education are significant at .01 or better. The equation is as follows:

92 MAA Cost = $3,280 + $2,156 (Not Treated) + $1,494 (Woman) - $1,568 (Aged 18 to 34 compared to Aged 50-65) - $878 (Aged 35 to 50 compared to Aged 51-65) + $0.47 (90 MAA Cost).

	Treated (n=2,135)	**Untreated** (n=2,419)
Unadjusted Mean	$4,162	$6,456
Adjusted Mean	$4,680	$6,836

Regression Equation for MHD Total FY92 Costs

MHD cost in FY92 is a function of:

- Treatment (yes, no)
- MHD cost in FY92
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

14 percent of the variation is explained, and the CV is 132. All variables except Gender, Race and Education are significant at .01 or better. The equation is as follows:

92 MHD Cost = $5473 + $1604 (Not Treated) - $1620 (Aged 18 to 34 compared to Aged

50-65) + $0.37 (90 MHD Cost)

	Treated (n=770)	**Untreated** (n=808)
Unadjusted Mean	$6,796	$8,729
Adjusted Mean	$6,739	$8,343

GAU/X Group

Regression Equation for MAA Total FY92 Costs

MAA cost in FY92 is a function of:

- Treatment (yes, no)
- MAA cost in FY90
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

12 percent of the variation is explained, and the CV is 265. All variables except Race and Education are significant at .01 or better. The equation is as follows:

92 MAA Cost = $2,961 + $501 (Not Treated) + $460 (Woman) - $1,298 (Aged 18 to 34 compared to Aged 50-65) - $584 (Aged 35 to 50 compared to Aged 51-65) + $0.13 (90 MAA Cost).

	Treated (n=804)	**Untreated** (n=938)
Unadjusted Mean	$2,115	$2,597
Adjusted Mean	$2,486	$2,987

Regression Equation for MHD Total FY92 Costs

MHD cost in FY92 is a function of:

- Treatment (yes, no)
- MHD cost in FY90
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

5 percent of the variation is explained, and the CV is 216. All variables except Gender, Race, Age, and Education are significant at .01 or better. The equation is as follows:

92 MHD Cost = $2,335 + $1,161 (Not Treated) + $0.34 (90 MHD Cost)

	Treated (n=804)	**Untreated** (n=938)
Unadjusted Mean	$2,219	$3,466
Adjusted Mean	$2,157	$3,318

TANF-like Group

Regression Equation for MAA Total FY92 Costs

MAA cost in FY92 is a function of:

- Treatment (yes, no)
- MAA cost in FY90
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

3 percent of the variation is explained, and the CV is 238. Only Gender, Race, and FY90 *MAA* Cost are significant. The equation is as follows:

92 MAA Cost = $2961 + $2023 (Woman) - $254(White) + $0.09(90 MAA Cost). Note: Treatment, Age and Education were not significant.

	Treated (n=614)	**Untreated** (n=318)
Unadjusted Mean	$2,550	$2,316
Adjusted Mean	$2,241	$2,230

Regression Equation for MHD Total FY92 Costs

MHD cost in FY92 is a function of:

- Treatment (yes, no)
- MHD cost in FY90
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

2 percent of the variation is explained, and the CV is 180. All variables except Gender, Race, and Age are significant at .01 or better. The equation is as follows:

92 MHD Cost = $2,035 + $844 (Not Treated) - $819 (Post-high School) + $0.39 (90 MHD Cost)

	Treated (n=614)	**Untreated** (n=318)
Unadjusted Mean	$1,872	$2,611
Adjusted Mean	$1,906	$2,750

Regression Predicting FY92 DASA Cost Offsets, SSI Group (Table 2-5)

SSI Group

Regression Equation for DASA Total FY92 Costs

MAA cost in FY92 is a function of:

- Treatment (yes, no)
- DASA cost in FY90
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

10 percent of the variation is explained, and the CV is 137. All variables except Gender and Education are significant at .01 or better. The equation is as follows:

92 DASA Cost = $1,048 - $246 (Not Treated) - $252(White) - $230 (Aged 18 to 34 compared to Aged 50-65) + $0.30 (90 DASA Cost).

	Treated (n=2,134)	**Untreated** (n=624)
Unadjusted Mean	$1,145	$941
Adjusted Mean	$1,247	$1,001

GAU/X Group

Regression Equation for DASA Total FY92 Costs

DASA cost in FY92 is a function of:

- Treatment (yes, no)
- DASA cost in FY90
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

20 percent of the variation is explained, and the CV is 113. All variables except Age and Education are significant at .01 or better. The equation is as follows:

92 DASA Cost= $1,763 - $1343 (Not Treated) - $130 (Woman) - $132 (White) + $0.15 (90 DASA Cost).

	Treated (n=3,558)	**Untreated** (n=2,524)
Unadjusted Mean	$1,777	$439
Adjusted Mean	$1,803	$460

TANF-like Group

Regression Equation for DASA Total FY92 Costs

DASA cost in the FY92 is a function of:

- Treatment (yes, no)
- DASA cost in FY90
- Demographic variables (age., sex, education, race)

This model controls for chronic health status and demographic differences.

4 percent of the variation is explained, and the CV is 125. All variables except Race and Age are significant. The equation is as follows:

92 DASA Cost = $1,060 - $640 (Not Treated) +$136 (Woman) + $137(Post-high School) + $0.13 (90 DASA Cost).

	Treated (n=614)	**Untreated** (n=318)
Unadjusted Mean	$2,250	$2,316
Adjusted Mean	$2,241	$2,230

.

Regression Predicting FY92 MAA and MHD Month Cost Offsets, SSI Group (Table 2-6)

SSI Clients

Regression Equation for MAA Cost Offsets

Average MAA cost per month in FY92 period after treatment is a function of:

- Treatment (yes, no)
- Average MAA cost per month in the baseline "before" FY92 period. For treated clients, the baseline is the time before treatment. For untreated clients, it is the first three months of FY92.
- Demographic variables (age, sex, education, race).

This model controls for acute rather than chronic health status, and hence controls for adverse selection into the non-treatment group (which was occurring in our prior model and was not adequately controlled with the controls on chronic health status).

19 percent of the variation is explained, and the CV is 194. All variables except Age, Race and Education are significant at .01 or better; the age contrast has a significance level of .084.

The equation is as follows: 92. After MAA Cost Per Month = $199 + $149 (Not Treated) + $.0.29 (92 MAA Before Cost-Per-Month) + $186 (Woman).

To generate the adjusted annual cost offset for medical assistance, the $149 treatment impact per month was multiplied by the average months after treatment (8 months) for an FY92 MAA cost offset for the SSI population of $1,192 per client per year.

Regression Equation for MHD Cost Offsets

Average MHD cost per month in FY92 period after treatment is a function of:

- Treatment (yes, no)
- Average MHD cost per month in the baseline "before" FY92 period. For treated clients, the baseline is the time before treatment. For untreated clients, it is the first three months of FY92.
- Demographic variables (age, sex, education, race)
- "Newcomers" (Yes to "new client in FY92)

This model controls for acute status through baseline period utilization, and hence controls for adverse selection, into the non-treatment group.

34 percent of the variation is explained, and the CV is 122. All variables except Gender, Race and Education are significant at .01 or better.

The equation is as follows: 92 After MHD Cost Per Month = $36 + $156 (Not Treated) + $.0.58 (92 MHD Before Cost-Per-Month) + $215 (Was a client in FY90) + $274 (Aged 18-34 compared to Age 50-65).

To get the adjusted annual cost offset for MHD, the $156 treatment impact per month was multiplied by the average months after treatment (8 months) for an FY92 MHD cost offset for the SSI population of $1,248.

Regression Predicting FY94 MAA and MHD Cost Offsets, SSI Group
(Table 2-7)

Regression Equation for MAA Total FY94 Costs

MAA cost in FY94 for clients who were MAA clients in both 92 and 94 is a function of:

- Treatment (yes, no)
- MAA cost in FY92
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

- Eight percent of the variation is explained, and the CV is 198. All variables except Race. and Education are significant at .01 or better. The equation is as follows:

94 MAA Cost = $2,797 + $834 (Not Treated) + $733 (Woman) - $791. (Aged 18 to 34 compared to Aged 50-65) + $0.20 (92 MAA Cost). Note: Education & Ethnicity were not significant.

	Treated (n=1,787)	**Untreated** (n=1,900)
Unadjusted Mean	$3,411	$4,605
Adjusted Mean	$4,029	$4,863

Regression Equation for MHD Total FY94 Costs

MHD cost in FY94 for clients who were MHD clients in both 92 and 94 is a function of:

- Treatment (yes, no)
- MHD cost in FY92
- Demographic variables (age, sex, education, race)

This model controls for chronic health status and demographic differences.

Sixteen percent of the variation is explained, and the CV is 151. Treatment, Race Age, and Education are not significant. The equation is as follows:

94 MHD Cost = $5,323 - $356 (Not Treated) - $2,474 (Women) + $053 (92 MHD Cost)

	Treated (n=459)	**Untreated** (n=472)
Unadjusted Mean	$9,042	$10,908
Adjusted Mean	$9,303	$9,659

Regression Predicting FY94 DASA Cost Offsets, SSI Group (Table 2-8)

Regression Equation for DASA Total FY94 Costs

DASA cost for FY94, for clients who used DASA services in 92 and 94, is a function of:

- Treatment (yes, no)
- DASA cost in FY92
- Demographic variables (age, sex, education; race)

This model controls for chronic health status and demographic differences...

16 percent of the variation is explained, and the CV is 124. All variables except Gender, Race, Age and Education are significant at .01 or better. The equation is as follows:

94 DASA Cost = $770 + $512 (Not Treated) + $0.45 (92 DASA Cost).

	Treated (n=794)	**Untreated** (n=185)
Unadjusted Mean	$1,593	$2,063
Adjusted Mean	$1,604	$2,116

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Improve Outcomes and Reduce Government Costs by Increasing Alcohol/Drug Treatment for DSHS Clients

This paper was the first analysis by RDA to examine the costs and benefits of treating alcohol and drug problems for adult DSHS clients. Clients who needed and did not receive treatment were identified using medical diagnoses, arrests, and AOD treatment records. Two areas of potential cost offsets for expanding treatment were examined: physical and behavioral health care costs, and criminal justice costs.

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