STEPS TO SUCCESS

Baltimore Drug and Alcohol Treatment Outcomes Study

A report submitted to Baltimore Substance Abuse Systems, Inc.

January 24, 2002

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The report you are about to read, commissioned by Baltimore Substance Abuse Systems, Inc. (BSAS), shows conclusively that drug treatment is effective in Baltimore City. It is tempting, when presented with research of this caliber, to trumpet its findings with great fanfare; but addiction is nothing to celebrate. Many addicted Baltimore residents lead lives of quiet desperation, shielded from public view except when drug-related crime makes the front page of the morning paper.

For years, Baltimore has cited national studies on the effectiveness of drug treatment. Three years ago, we began our DrugStat program to closely monitor treatment program outcomes in order to strengthen performance. Now we have the first system-wide analysis demonstrating that, in Baltimore City, treatment works. In 1999, Baltimore City and the Maryland General Assembly began a partnership to substantially increase investment in drug treatment. This commitment, if fulfilled, would increase by $25 million funding for Baltimore City's treatment system. Any wise investor would seek evidence that his/her dollars are well spent. This new data is proof of the logic and public health benefit of making treatment available "on demand."

This study shows that, as we continue to invest in drug treatment, we can expect dramatic reductions in crime, overdose deaths and drug-related emergency room visits. We are more confident than ever of the effectiveness of drug treatment and are armed with findings that prove what treatment practice and common sense have told us. As a result, we must redouble our efforts to provide drug treatment for all who need it.

We are indebted to the University of Maryland, Johns Hopkins University, and Morgan State University for their collaboration and commitment to excellence. Finally, I would like to offer a special thank you to the treatment providers of Baltimore City who labor long hours to meet incredible demand.

And yet, we cannot pause long to celebrate nor indulge much in congratulation, for with this data comes a public health responsibility to make "treatment on demand" a reality. I am heartened to open this new year, a fresh legislative session before us, with the much-anticipated release of the Baltimore Drug and Alcohol Treatment Outcomes Study. May it strengthen our convictions that our work makes a difference.

Peter L. Beilenson, M.D., M.P.H.
Baltimore City Health Commissioner
Chairman of BSAS Board of Directors

The Baltimore Drug and Alcohol Treatment Outcomes Study

A Report Submitted to Baltimore Substance Abuse System by:

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Acknowledgements

We thank the hundreds of treatment participants who gave their time to this study. We wish them success in confronting their alcohol and drug problems. We salute Dr. Peter Beilenson and former Mayor Kurt Schmoke whose vision galvanized Baltimore to support treatment on demand and who initiated this project with Baltimore Substance Abuse Systems to evaluate and continually monitor and improve treatment efforts in the city.

The Directors of the participating treatment programs and their staff deserve great credit for supporting this work in their clinics. Baltimore Substance Abuse Systems (BSAS) was an outstanding research partner. We extend our heartfelt thanks to Andrea Evans, Bonnie Cypull, Jim Graham and Walter Powell and the many others who, while at BSAS, moved the project forward with grace and competence.

Finally, we offer our thanks to Mayor Martin O'Malley for continuing support for these treatment efforts and to the many State officials who have made support for treatment throughout Maryland a top priority in order to save lives and money, prevent disease, reduce crime, and improve the quality of the lives of our citizens, families and communities.

Executive Summary

Introduction

The Baltimore Drug and Alcohol Treatment Outcomes Study is the largest and most rigorously conducted drug treatment outcomes study that focuses on a single city. It is one of the key components of Baltimore's strategy to rigorously evaluate and continuously improve the public treatment system, as it expands to meet the needs of the city's uninsured citizens. Overall, the study found a marked reduction in drug and alcohol use, crime, risky health behaviors and depression among participants who voluntarily entered publicly funded outpatient drug and alcohol programs in Baltimore City. This comprehensive study is the result of an unprecedented collaboration among the University of Maryland, Johns Hopkins University and Morgan State University, with the cooperation of 16 treatment programs and nearly 1,000 treatment participants. Baltimore Substance Abuse Systems, the agency responsible for publicly funded treatment in the city, funded the study.

Methodology

The data included in these analyses represent findings from 991 uninsured Baltimore City residents who voluntarily entered outpatient drug and alcohol treatment through 16 publicly funded programs from 1998-1999. Two kinds of programs are included in the study, those that treat heroin addicted individuals with methadone and counseling and those that treat alcohol, heroin, cocaine and other drug users with counseling only. All study participants provided informed consent and completed an initial assessment; the 991 reported in detail here also returned for at least one treatment session. Since this subset of 991 participants may have received as few as one treatment session, treatment outcomes represent conservative estimates of the benefits of treatment. In keeping with the methodology of earlier national studies, participants' self-reported behaviors at treatment entry were compared with those reported at one, six, and 12 months thereafter. While self-reports under confidential research conditions have been shown to be generally valid, investigators also examined objective measures of drug use and crime, including urine drug tests and official arrest and imprisonment records.

Participants

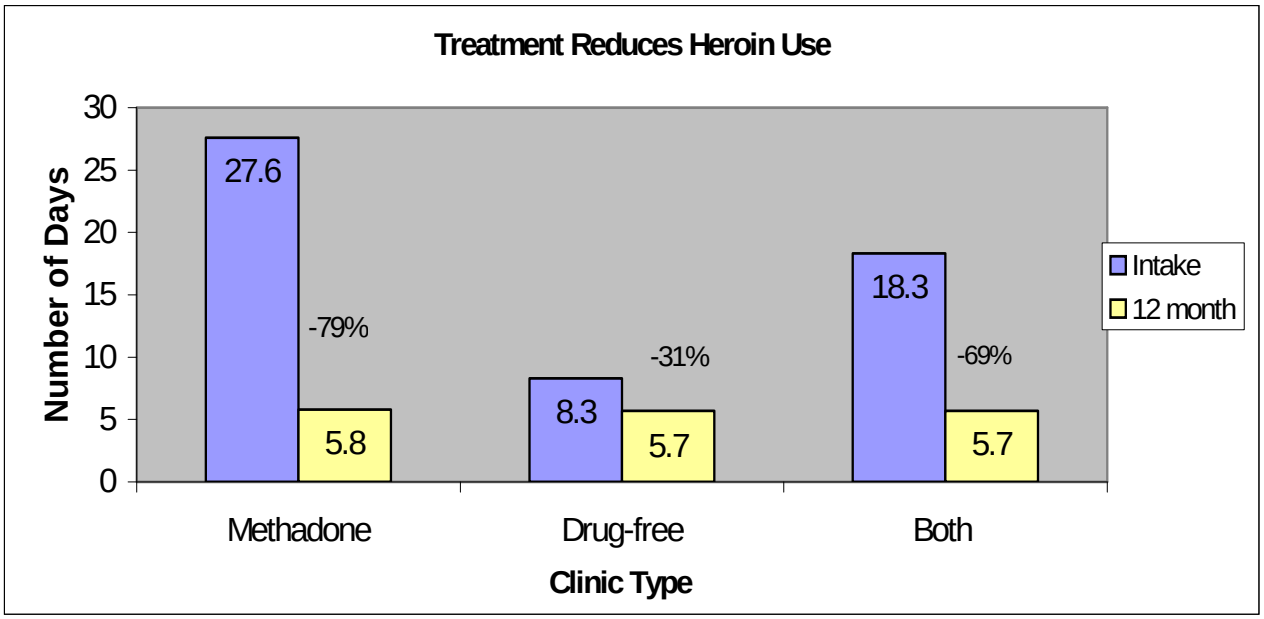
The average participant in the Baltimore Drug and Alcohol Treatment Outcomes Study was 37 years old. Nearly 50 percent were women and 85 percent were African-American. Three-quarters of the clients treated were unemployed and had an average annual income well below the poverty line, indicating that the public treatment system is fulfilling its mission to serve individuals who otherwise could not afford to enter drug treatment. On average, participants reported using heroin on 18 of the 30 days prior to entering treatment entry, using cocaine on six of 30 days and drinking to intoxication on four of 30 days. Given the difficulty women often face in entering treatment, the large proportion of women who participated in the study indicates that stigma surrounding substance abuse is not an insurmountable barrier to seeking treatment.

Reduction in Drug Use

Overall drug use among participants was significantly reduced as early as 30 days after treatment and remained below the pre-treatment levels at 12 months. These reductions in drug use are consistent with those found in large multi-city trials that have been conducted over the past 20 years. Urine drug testing confirmed over 70 percent of the self-reports of cocaine abstinence and over 75 percent of the self-reports of heroin abstinence. These high rates of agreement between self-reported drug use and urine results are also consistent with earlier studies and support the accuracy of self-report data.
Heroin Use

Heroin use declined at statistically significant rates for all treatment participants. Over the first 30 days of treatment, heroin use declined by 72 percent. This improvement was sustained at 12 months after intake (69 percent). Clients enrolled in methadone programs used heroin three times more frequently in the month prior to intake than clients enrolled in drug-free treatment. The decline in heroin use was greater for those enrolled in methadone programs at the one, six and 12 month follow-up interviews than for those enrolled in drug-free treatment.

Despite the widely recognized difficulty associated with discontinuing heroin use, drug treatment was associated with a remarkable and sustained reduction in heroin use up to one year from treatment entry. Heroin use contributes significantly to overdose death, emergency room visits and associated infections such as hepatitis B and C and HIV. The proven effectiveness of heroin treatment underscores the need for treatment capacity in those programs.

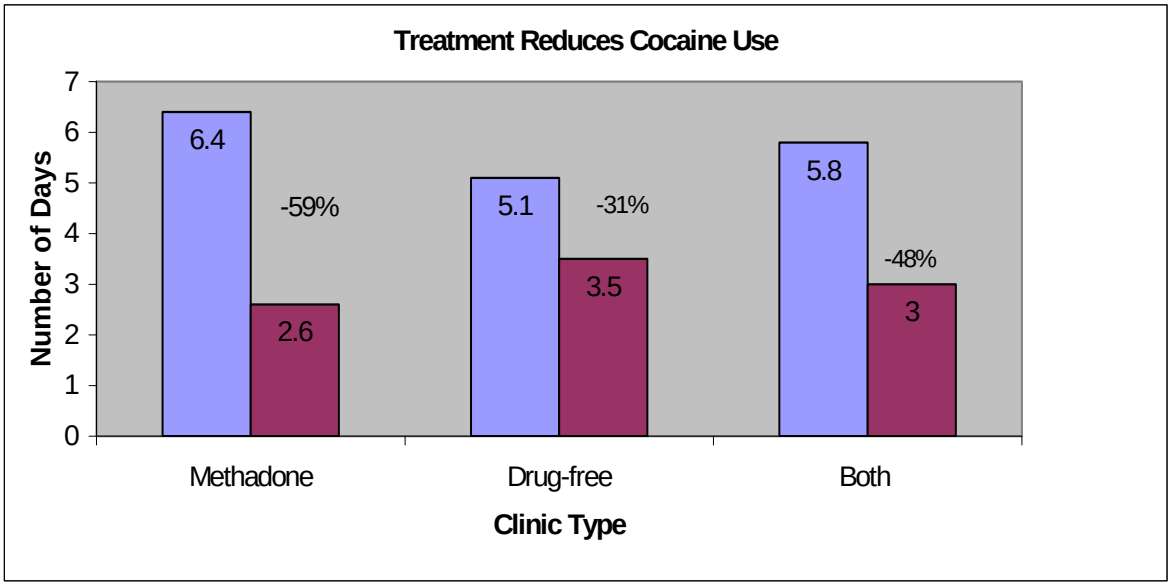


This Figure shows the average number of days clients used heroin within the past 30 days prior to intake assessment and 12 months after initiating treatment services.

Cocaine Use

There was a statistically significant decrease in participants' cocaine use over the 12 months following treatment entry. Cocaine use declined by 64 percent at 30 days from intake, 43 percent at six months and 48 percent at 12 months. Clients enrolled in methadone treatment had a higher baseline level of cocaine use (6.4 days) than those enrolled in drug-free treatment (5.1 days). There was a greater decrease in cocaine use among participants in drug-free programs compared to participants in methadone programs over the first 30 days of treatment (70 percent vs. 59 percent). Although both groups maintain improvement at six and 12 months, cocaine use declined at a lower rate among participants in drug-free treatments than among those in methadone clinics.

The erosion in improvement for drug-free clients is probably due to the higher dropout rate seen in these clinics compared to methadone programs. Treatment retention has repeatedly been linked to improved outcomes. Efforts by Baltimore to improve treatment retention, such as its Drug Stat Program in which outcomes are reviewed monthly by the treatment program directors, BSAS staff and the Health Commissioner to hold programs accountable and improve performance, are therefore critical to increased success.

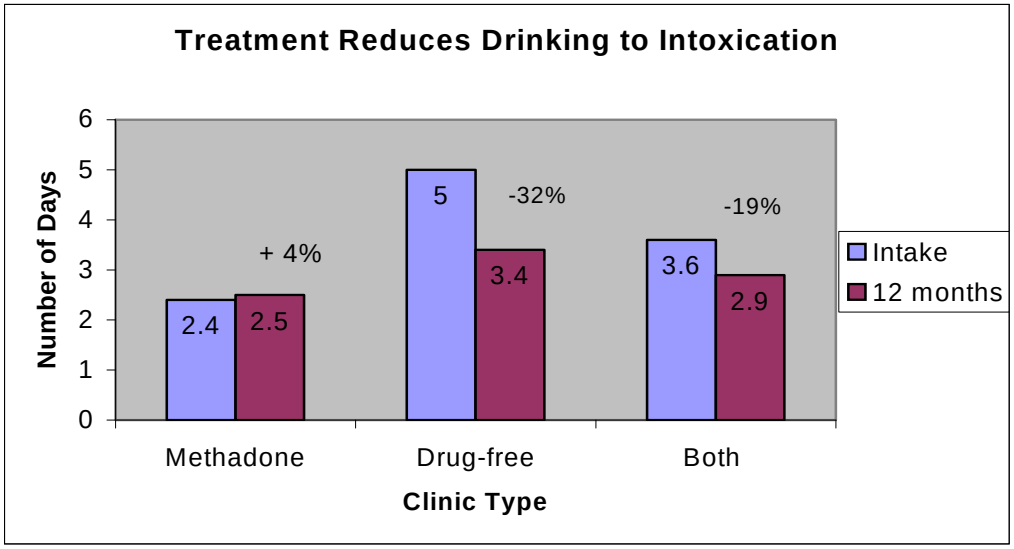


This figure shows the average number of days clients used cocaine within the 30 days prior to intake assessment and the 12 months after initiating treatment services.

Reduction in Alcohol Use

The study finds a statistically significant reduction in overall alcohol use during the 12 months following treatment entry. The average number of days of drinking to intoxication declined by 64 percent at one month after intake and 34 percent at six months. By 12 months after intake, participants reported drinking to intoxication 19

percent less than they had at intake. These findings indicate that treatment significantly reduces heavy drinking over the first month of treatment and, though the improvement attenuates over time, heavy drinking remains considerably less frequent (19 percent) even after one full year after the start of treatment. Participants treated in drug-free programs had greater alcohol problems at baseline and showed greater and more sustained improvement than those participants enrolled in methadone treatment.

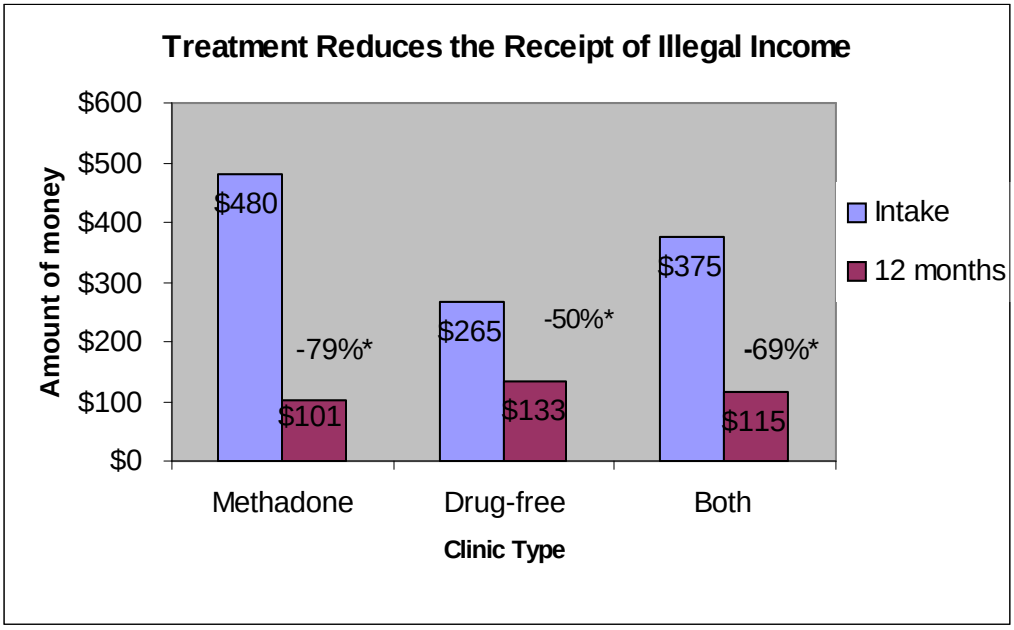


This figure shows the average number of days clients drank to intoxication within the 30 days prior to intake assessment and the 12 months after initiating treatment services.

Reduction in Crime

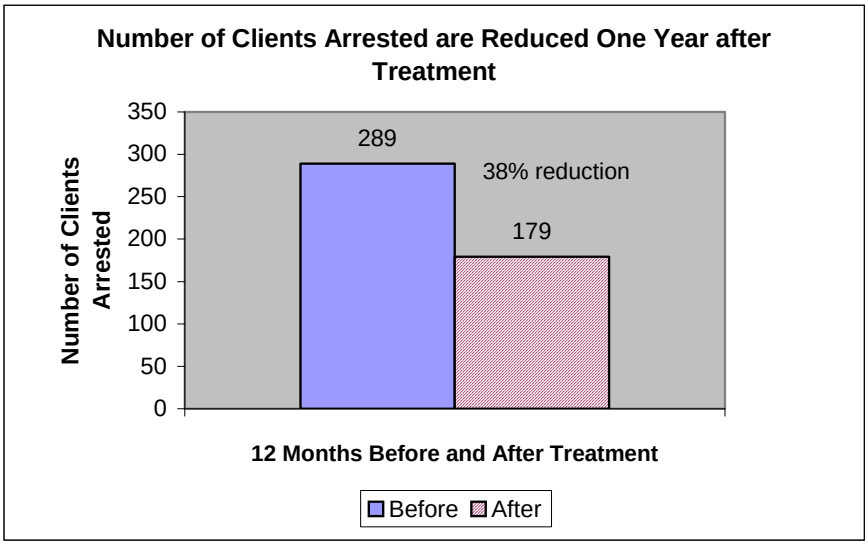
Researchers and law enforcement experts have linked the illegal nature of behaviors associated with drug addiction to crime. The legal problems of study participants improved significantly over the 12-month study follow up period, confirming previous national studies that indicate that addiction-related crime decreases significantly as a result of effective treatment.

Participants engaged in illegal activities 64 percent less at 12 months after treatment entry. Participants also significantly reduced the amount of illegal income they received by 77 percent at one month after treatment entry. At 12 months after treatment entry, the amount of illegal income remained low at 69 percent below levels at the start of treatment. This decrease occurred among participants in both kinds of treatment, although the methadone participants started at a higher level of illicit income and improved more markedly than the drug-free clients. The other self-reported drops in crime days, illegal income and drug use all underscore the importance of drug treatment as a key part of Baltimore's crime reduction strategy.



This figure shows the amount of illegal income received by the clients in the 30 days prior to intake and the 12 months after initiating treatment services.

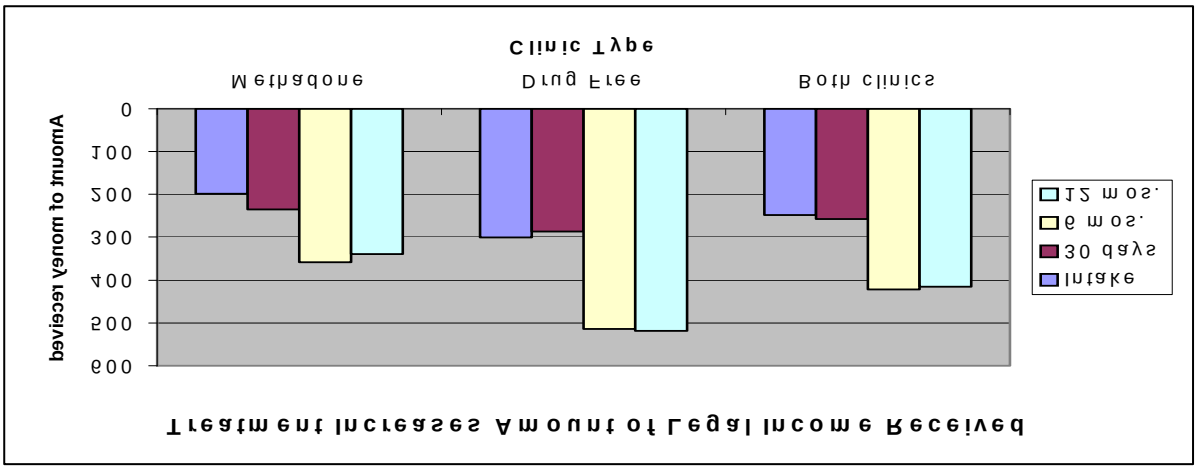
Official arrest records show a 38 percent decline in the number of treatment participants whose arrest led to an imprisonment in the 12 months prior to treatment (289 participants) compared to the 12 months after treatment entry (179 participants). These data must be considered preliminary, as there is often a time lag for sentencing, which results in an underreporting of the number of imprisonments during the follow-up period. Future reports, using additional data will update these preliminary findings.



The preliminary data in this figure are restricted to a subgroup of clients who were found guilty of crimes that led to imprisonment by the Division of Corrections.

Increased Earned Income

Treatment participants worked 52 percent more and earned 67 percent higher wages in the 30 days prior to the 12-month follow-up interview than they did in the 30 days prior to entering treatment. These improvements included "off the books" employment, which constitute an important source of income for marginalized populations. This informal labor market does not include illegal income but is characterized by a lack of health and other benefits, poor job stability and low pay. Though participants' income increased to an average of $415 per month, it remained considerably below the poverty level.



Treatment Increases Amount of Illegal Income Received

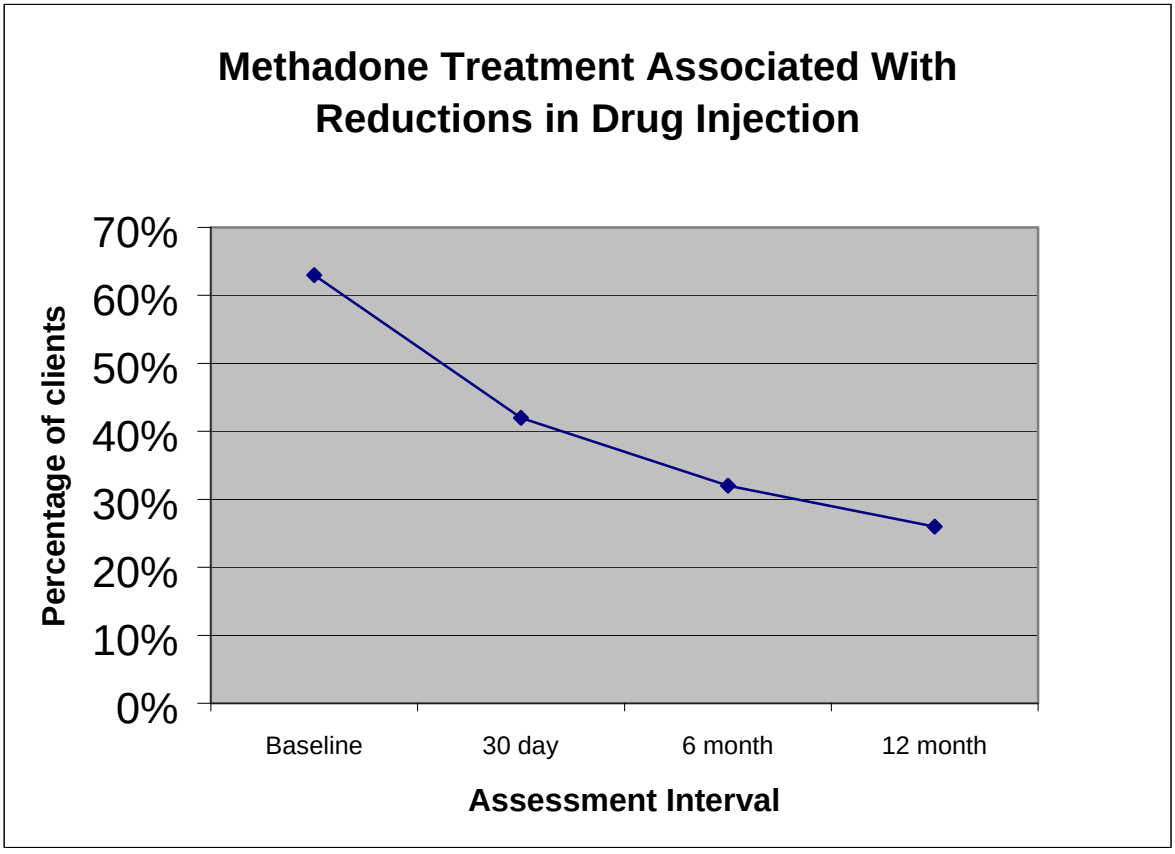
This figure shows the increase in the average amount of money earned within the past 30 days at each assessment period, separated by the type of clinic the client attended; then, both clinics are combined for an average of the clinics.

Decreased Depression

A substantial minority of people enrolling in drug and alcohol treatment had symptoms of depression at treatment entry. Study findings show a statistically significant decrease in depression scores across the study's follow-up intervals. Participants enrolled in methadone programs had more severe depression and more marked improvement than people treated in drug-free clinics. While many symptoms of depression improve with abstinence from drugs or alcohol, it is important to have anti-depressant medications and psychotherapy available for those clients whose depression does not spontaneously remit after drug and alcohol treatment alone.

Reduction in HIV Risk Behavior

Alcohol and drug dependence increases the risk of transmitting HIV, Hepatitis B and C and other sexually transmitted diseases through sharing injection equipment and unsafe sex. Study findings show a 59 percent reduction in drug injection among methadone clients at 12 months from the start of treatment. These robust reductions in drug injection reduce the risk of disease transmission.



This figure shows data from methadone clinics and is based on the response to the question, "Have you injected drugs in the past 30 days?" All time points cover the 30 days immediately preceding the evaluation.

Shooting galleries are buildings in which intravenous drug users congregate. They are a site of the spread of HIV, hepatitis and other sexually transmitted diseases through sharing of needles and other drug paraphernalia, as well as through trading sex for drugs. There was a statistically significant decline in the number of participants frequenting shooting galleries over the 12 months after entering treatment.

Benefits of Treatment- on-Demand

The benefits of treatment-on-demand for alcohol and drug dependent people can be measured by comparing participants' behaviors during the 30 days before they entered treatment with those reported in the first 30 days after entering treatment. Based on the average drop in drug use and crime in the first 30 days of treatment compared to the 30 days prior to treatment entry, treatment of an additional 1,000 people per year avoids: 164,000 days of heroin use, 45,600 days of cocaine use, 63,600 days of crime and $3.2 million in illegal income.

Negative Impacts on People and Society Resulting from Delays in the Onset of Treatment Services (for 1,000 people)

Behavioral Domain	30-Day Delay	6-Month Delay	12-Month Delay
Additional Drug Use			
Days of Heroin Use	13,700	82,200	164,400
Days of Cocaine Use	3,800	22,800	45,600
Additional Crime			
Days of Crime	5,300	31,800	63,600
Illegal Income	$267,850	$1,607,100	$3,214,200

Conclusions

The finding of Baltimore Drug and Alcohol Treatment Outcome Study are compelling as they confirm and build upon the results of other nationwide studies and upon documented trends in the past year in Baltimore (e.g., decrease in drug-related emergency room visits, overdose deaths and crime). Even after one year from treatment entry, participants significantly reduced their heroin, cocaine and alcohol use, decreased the number of crimes they committed, improved their psychological functioning, increased their legal income and reduced their risk of getting and transmitting life threatening diseases such as HIV and hepatitis. These findings support the efforts of the City of Baltimore and the State of Maryland to expand and improve the city's treatment system. Expanding the capacity of the public system will enable all city residents to have rapid access to high quality treatment services resulting in improved health and well-being for them, and their families and communities.

I. Introduction

The City of Baltimore and the State of Maryland have embarked on the long, groundbreaking process of squarely facing their alcohol and drug related problems. In 1997, under the leadership of Mayor Kurt Schmoke and Health Commissioner Peter Beilenson, Baltimore began to commit its own funds to expand and enhance its inadequately funded public drug treatment system. Part of this new treatment capacity was dedicated to the evaluation described in this report. The evaluation sought to measure changes in patient outcomes before and after treatment; the effect of providing treatment within 48 hours of request; and, the provision of limited enhancements to standard care.

At the time of the 1997 treatment expansion, which has continued under the administration of Mayor Martin O'Malley through unprecedented state support, the City of Baltimore was suffering from the impact of addiction. This report will provide a snapshot of the City at the time of the treatment expansion and highlight improvements in key city drug-related indicators that occurred since the ongoing treatment expansion began. The report will then describe the study, its participants, and its main findings to date. Further information will be provided in the future from the wealth of data collected.

The City of Baltimore

Population

Baltimore is a neighborhood town with a population of 645,593 (http:\\www.census.gov). In Baltimore, 64% of the population is African American, 32% is White, and 4% are from other races. Only 61% of the population aged 25 and older has a high school diploma. The median household income for 1998 was $35,200 and 19% of the population lives at or below the poverty level (US Census Bureau, 1998).

Crime

Baltimore continues to be plagued by problems common to many inner cities. In 1998, Baltimore ranked as the second most violent city in America. Among the 207 cities with a population of 100,000 or more, Baltimore's violent crime rate ranked eighth, property crime rate ranked 29th, and the murder rate was over seven times the national average. In Baltimore, in 1999, the murder rate per 100,000 population was 43.2, compared to New York (9.1) and New Orleans (33.2).

Drug Problems

The drug arrest rate per 100,000 people in 1997 was 2,153 persons. In 1999 there were 324 drug overdose deaths in Baltimore, triple the 1990 rate (Drug Strategies, 2000). There were an estimated 59,000 substance abusers that lived in Baltimore City (http://www.baltimorecity.gov). Intravenous drug use in Baltimore is the leading cause of new HIV infection. Hepatitis B infection is twice as common among drug injectors aged 15-30 compared to the rates found in New York, Los Angeles, Chicago, and New Orleans. In 1998, the year this evaluation began, the estimated number of arrests of drug

using individuals alone exceeded the number of people treated in the public treatment system.

Improvements in the Treatment System

Since the present study began, Baltimore Substance Abuse Systems has expanded and enhanced the treatment services offered by its providers. Significantly, BSAS has also strengthened its evaluation capacity. The city's treatment slots increased by 15% from 1999 to 2001 while the number of individuals treated is projected to increase from over 16,000 in 1999 to 22,000 in 2002. Treatment enhancements include an increase in the number of clinics providing psychiatric and detoxification services, job readiness training and family therapy.

Numerous recommendations of BSAS's Scientific Advisory Committee (comprised of 13 nationally recognized experts in drug treatment and research) have been implemented. These recommendations included: the purchasing of urine drug testing services from a single laboratory for the entire system to reduce expenses and improve data transfer and evaluation capacity, standardizing the frequency with which urine drug tests are collected across clinics, and implementing a performance improvement system to monitor and continually improve treatment outcomes. The performance improvement system, called DrugStat, is a series of regular meetings in which the Health Commissioner and BSAS staff review and compare selected clinic outcomes (e.g., treatment retention, utilization and urine testing results) with objective benchmarks, with the clinic's past performance, and with the performance of other clinics. This process of expansion, enhancement and increased accountability has been able to continue thanks to significant funding increases provided by the State of Maryland.

Key Citywide Indicators: 2001

As cited by Woody & Munoz (2000) researchers have identified three levels of studies (Munoz et. al., 2000) in the field of AIDS treatment that have relevance to drug treatment. The first level includes *efficacy* studies conducted in research settings. The second level consists of *effectiveness* studies, conducted in real life clinical settings. While these two types of studies provide important information about treatments and patient outcomes, they do not provide direct information on how those outcomes affect community-wide indices.

At the patient level, drug and alcohol treatment efficacy and effectiveness studies have shown that treatment reduces drug and alcohol use, crime and high-risk behaviors that lead to the spread of HIV and hepatitis. These findings do not translate into a demonstrable impact on community-wide outcomes until a critical ratio of treated to untreated addicted individuals in a community is reached (Woody and Munoz 2000). Such community-level impact has been shown in the improvements in AIDS outcomes among gay men (e.g., increased life span among those infected). Community-level impact on outcomes has been demonstrated in the early 1970's, when the incidence of hepatitis, overdose death, drug-related emergency room visits and crime rates decreased under the leadership of Dr. Jerome H. Jaffe, in response to the rapid expansion of the nation's drug and alcohol treatment system (Massing, 1999).

Potential citywide indicators that could be affected by a significant treatment expansion include the number of: drug-related emergency room visits, overdose deaths, new HIV, hepatitis and sexually transmitted disease cases, and rates of drug related crimes (e.g., possession, sales, burglary, robbery and prostitution). Though the rates of all

of these indices are multi-determined (for example, crime rates may vary with the strength of the economy, changes in law enforcement strategy, and the introduction of new drugs of abuse) one could reasonably expect that these indices would improve as a result of a significant treatment expansion, such as the one underway in Baltimore.

The number of drug-related emergency room visits in Baltimore in 2001 fell by 19%, the largest drop among United States cities (http:\\www.DrugAbuseStatistics.SAMSHSA.gov). This reduction encompassed both heroin and cocaine emergency room mentions. San Francisco was the only other city whose drug related emergency room visits declined and it is also the only other city in our nation that is trying to provide drug treatment on demand. These findings are consistent with possible population effects related to treatment expansion.

In addition, the number of overdose deaths in Baltimore has dropped from a high of 323 in 1999 to 302 in 2000 and 241 in the preliminary 2001 report (http:www.baltimore.gov/government/police/stats020102.html). While other factors may also contribute to reductions in drug overdose deaths (e.g., changes in the purity of street drugs), increased availability of treatment also plays a role.

The rates of new cases of drug related infectious diseases should also decline with expanded treatment availability. For example, syphilis rates have dropped significantly in Baltimore during the last two years. Again, aggressive case finding and treatment for syphilis played an important role in this reduction, nevertheless, a reduction in cocaine use in the city, could also contribute to the decline in syphilis cases by reducing prostitution and high risk sexual behaviors. New cases of HIV and Hepatitis B and C may also decline with treatment expansion.

According to the Baltimore City Police Department from 1999 to 2001, violent crime dropped 24% and robberies decreased 28%. After a decade of more than 300 homicides per year, the number of homicides declined to 261 in the year 2000 and 259 in 2001. Again, while the reduction in crime is multi-determined, the use of effective policing strategies combined with drug treatment expansion should lead to lower rates of drug related crimes, in particular property crimes, and drug charges.

Individuals in Substance Abuse Treatment in Baltimore

A snapshot of the people who received treatment through the publicly-funded system at the start of this evaluation is provided by the Baltimore Substance Abuse Systems (BSAS), the quasi-public organization which is responsible for the city's drug treatment services. BSAS's comprehensive data set includes types of drugs used, types of treatment received, and response to treatment services.

Individuals frequently have problems with two or more drugs. Of those in substance abuse treatment in Baltimore, the primary substances of abuse were heroin (70%), cocaine/crack (55%), alcohol (38%), marijuana (19%), and other opioids (3%).

The age groupings of drug-addicted individuals in treatment in Baltimore are shown in Table 1. Of the 16,818 people who received treatment in 1998, approximately 78% were African-American, 21% were Caucasian, and 1% were of other races (Native American and Asian/Pacific Islander). Table 2 shows the racial breakdown of people entering substance abuse treatment in 1998.

Table 1: Age distribution of individuals receiving treatment in Baltimore in 1998 through BSAS funded programs

Age Group	Male	Female	Total	Percent
Under 18	615	324	939	5.6
18 to 25	976	489	1,465	8.7
26 to 30	1,179	1,131	2,310	13.7
31 to 40	3,720	3,202	6,922	41.2
41 to 50	2,815	1,428	4,243	25.2
Over 50	735	170	905	5.4
Unknown	30	4	34	.2
Total	10,070	6,748	16,818	100.0

Table 2: Racial categories of individuals receiving BSAS-funded treatment in 1998

Racial category	Male	Female	Total	Percent
African-American	7,757	5,390	13,147	78.17
Caucasian	2,218	1,293	3,511	20.88
Other	66	36	102	.61
American Indian	11	25	36	.21
Asian/Pacific Islander	17	3	20	.12
Alaskan Native	1	1	2	.01
Totals	10,700	6,748	16,818	100

There are several different program modalities for substance abuse treatment in Baltimore. These include outpatient counseling, intensive outpatient counseling, methadone maintenance, residential treatment, detoxification, and treatment provided in prisons and jails (correctional). Individuals in treatment may move between these modalities over the course of treatment based on their clinical needs. Table 3 below provides a snapshot of the number of people treated in these service modalities in 1998.

Table 3: Individuals treated in different treatment modalities through BSAS funded programs in 1998

Modalities	Male	Female	Total	Percent
Outpatient	4,154	1,620	5,774	34.3
Methadone Maintenance	2,602	2,789	5,391	32.0
Intensive outpatient	1,589	857	2,446	14.6
Residential	1,110	887	1,997	11.9
Detoxification	607	546	1,153	6.9
Correctional	8	49	57	.3
Totals	10,070	6,748	16,818	100

Overview of the Study

Individuals who entered substance abuse treatment at one of 16 citywide programs, each of which received funding for 50 additional treatment slots, were asked if they would participate in this evaluation. Clients who were newly admitted to the treatment programs and agreed to participate in the study were randomly assigned to either a rapid admission or the usual admission procedure of the clinic. The rapid admission condition planned to admit them to treatment within 48 hours of intake. Following the intake visit, the usual admission condition planned to admit them to treatment according to the clinics' usual procedures, typically with 48 hours delay for outpatient programs and at least three weeks delay for clinics offering methadone.

The purpose of the evaluation was to assess: 1) the effectiveness of the treatment, 2) the impact of rapid treatment, and, 3) the effect of providing limited service enhancements. Each participating clinic offered one type of service enhancement:

psychiatric treatment, vocational counseling, intensive outpatient counseling (for methadone clinics only, since it already was provided in drug free clinics), and family therapy. Client outcomes were measured in terms of changes in alcohol and drug use, criminal behavior, HIV-risk behaviors, health and psychological status, employment, and family and social functioning. Participants were assessed by a comprehensive battery of tests repeated at four time points: intake and 30-days, six-months, and 12-months after intake. In addition, those individuals who did not enter treatment within seven days had an additional assessment at 30-days following the start of treatment. All of the treatment response data is based on the assessments conducted at 30 days after starting treatment.

II. Participating Clinics

In the first year of the project, 16 treatment clinics participated (8 methadone programs, 8 drug free programs) in response to a competitive Request for Proposals issued by BSAS to increase service capacity. After the first year, three of the drug free programs were removed from the study because of a small number of client admissions. The 16 original programs were:

Outpatient Programs

Greater Baltimore Medical Center at Weinberg - Clinic 1
1017 East Baltimore Street
Baltimore, MD 21201

Greater Baltimore Medical Center at Weinberg - Clinic 2
1017 East Baltimore Street
Baltimore, MD 21201

Mountain Manor
3800 Frederick Avenue
Baltimore, MD 21229

Next Passages Drug Free Substance Abuse
Counseling Service
2901 Druid Park Drive Suite A-103
Baltimore, MD 21215

Total Health Care
1800 North Charles Street
Baltimore, MD 21201

Quarterway, Inc. Tuerk House
730 N. Ashburton Street
Baltimore, MD 21216

Universal Counseling Services
101 W. Read Street Suite 211
Baltimore, MD 21201

University of Maryland Alcohol and Drug Abuse Program
630 W. Fayette Street
Baltimore, MD 21201

Methadone Programs

Adapt Cares
3101 Towanda Avenue
Baltimore, MD 21215

Daybreak Rehabilitation Program
2490 Giles Road
Baltimore, MD 21225

Man Alive Research, Inc.
2100 North Charles Street
Baltimore, MD 21218

New Hope Treatment Center
2401 W. Baltimore St.
Baltimore, MD 21223

R.E.A.C.H
2104 Maryland Avenue
Baltimore, MD 21202

Reflective Treatment Center/East Baltimore Drug Abuse
707 Constitution Street
Baltimore, MD 21202

Sinai Hospital Addictions Recovery Program
2401 W. Belvedere Avenue Rymland Bldg.
Baltimore, MD 21215

University of Maryland
Methadone Treatment Program
630 W. Fayette St.
Baltimore, MD 21201

Participating Clinic Characteristics

In the fall of 1998 a member of the evaluation team conducted a site visit and administered a survey to the clinic directors to describe the clinics' physical facilities, personnel, staff, and program operations. The survey revealed the following characteristics, which are reported by clinic type where differences existed between the two (methadone and drug-free outpatient clinics):

1. Physical Facilities

Neighborhood:	*Methadone*	*Drug-free*
Residential	13 %	67%
Commercial	25 %	33%
Mixed	50 %	0
Other	12 %	0
Physical facilities:		
Urine observation capacity	100 %	67%

2. Clinic Staff

Total Number of staff members:			
	Mean	27.0	15.0
	SD	4.5	9.3
	Min	21.0	6.0
	Max	32.0	28.0
Number of full-time positions:			
	Mean	23.8	9.5
	SD	5.7	6.2
	Min	13.0	4.0
	Max	30.0	20.0
Number of part-time positions:			
	Mean	3.8	5.5
	SD	2.4	3.9
	Min	4.0	0
	Max	8.0	11.0

Proportion of clinics with the following types of full- or part-time staff:

Social Workers	80.0 %
Registered Nurses	46.7 %
LPN	60.0 %
Primary Care Physician	80.0 %
Psychiatrist	75.3 %
Psychologists	13.3 %
Counselors	100 %

Treatment staff members (full and part-time):	*Methadone*	*Drug-free*
Social workers		
Mean	2.3	3.2
SD	2.6	4.4
Min	0	1.0
Max	8.0	12.0
Registered nurses		
Mean	0.6	0.5
SD	0.5	0.8
Min	0	0
Max	1.0	2.0
Licensed Practical Nurse		
Mean	2.8	0.5
SD	0.9	1.2
Min	1.0	0
Max	4.0	3.0
Other Physicians		
Mean	1.5	0.8
SD	1.2	1.7
Min	0	0
Max	4.0	2.0
Psychiatrists		
Mean	0.8	2.0
SD	0.7	1.7
Min	0	0
Max	2.0	4.0

Counselors

Mean	8.1	3.1
SD	3.3	2.7
Min	4.0	0
Max	12.0	8.0

Psychologists

Mean	0.1	0.2
SD	0.4	0.4
Min	0	0
Max	1.0	1.0

3. The Program

Hours of operation of the clinic from Monday through Friday:

	Hours	*Methadone* (%)	*Drug-free* (%)
Open:	6 am	12	0
	7 am	50	0
	8 am	25	67
	9 am	12	33
Close:	5 pm	12	50
	6 pm	75	17
	7 pm	13	0
	8 pm	0	0
	9 pm	0	33

Number of treatment slots available: 2,560

Number of current active clients: 3,101

Number of slots per treatment center	*Methadone*	*Drug-free*
Mean	317	95
SD	77	22
Min	213	70
Max	435	127

Number of active clients per center:

Mean	322	72
SD	89	55
Min	170	15
Max	488	162

*Treatment slots are assigned to particular groups of people in **60 %** of the methadone clinics and **none** of the outpatient clinics through special funding streams:*

HIV positive	160
Veteran Homeless	130
Empowerment zone	30
Correctional system	102
Needle exchange	70

4. Intake Procedures

Accepts walk-in clients	80% of clinics
Telephone appointment	100% of clinics

Methadone Program Waiting List Data:

Waiting list	35.7% of clinics
Number of current clients on waiting list	650
Avg. number of clients on waiting list per clinic	130
Average length of stay in waiting list	124 days (SD=104); range=26-270
Average number of days between first contact and admission to treatment	45 days (SD=82); range=0-270

Drug-free clinics had no waiting list

Assessment

Intake assessment is staffed by:	*Methadone*	*Drug-free*
Social worker	37%	0
Nurse	75 %	50%
Physician	75 %	50%
Psychiatrist	12 %	33%
Counselor	100 %	100%

Intake questionnaires:

Addiction Severity Index	100%	50%
CAGE	12%	0%
Michigan Alcohol Screening Test	37%	40%
Beck Depression Inventory	12%	33%
Average total number of hours for intake	2.8	2.1

5. Treatment

Expected duration of treatment episode (%):

Unlimited	100	0
180 days or less	0	67
More than 180 days	0	33

Type of services provided (%):

Individual therapy	100	100
Group therapy	100	100
12-step program	87	83
Vocational skills training	50	50
Parenting training	50	33
Psychiatric treatment	50	100
Pastoral counseling	12	50
Harm reduction	62	18
Family therapy	100	67
Men's groups	62	50
Women's groups	100	67
Specialized HIV/AIDS counseling	100	83
Life skills group	87	50

Medications prescribed:

Drug abuse medications:	*Methadone*	*Drug-free*
Methadone	100%	17%
LAAM	37%	0%
Buprenorphine	25%	0%
Naltrexone	37%	0%
Naloxone	12%	0%
Alcohol abuse medications:		
Antabuse	75%	33%

Psychiatric medications:

Antidepressants	50%	50%
Anti-anxiety	50%	17%
Lithium	50%	50%
Carbamazepine	50%	50%

On-site personnel:

Medical:

Primary care physician	87%	50%
Psychiatry	62%	83%
Ob-Gyn	25%	33%
Pediatrics	12%	17%

Alcohol and Drug Treatment:

Intensive Outpatient	50%	100%
Standard Outpatient	100%	83%
Medical Detoxification	75%	33%

Self Help Groups:

Alcoholics Anonymous	38%	33%
Narcotics Anonymous	50%	50%

6. Referral

Percent of drug-free and methadone clinics that refer clients for other services:	93.3%

Average percent of clients referred to:

Other substance abuse services	10.0%
Psychiatric services	6.5%
Inpatient medical care	12.9%
Legal services	6.0%
Academic institutions	12.2%
Social services agencies	18.7%
HIV clinics	8.0%
Housing department	6.2%

III. Study Participants

Overview

Participants were drawn from adults seeking methadone or drug-free outpatient services through BSAS at one of the 16 participating clinics. Each of these clinics was assigned 50 new addiction treatment slots for voluntary clients who did not have Medicaid. A total of 1,303 clients were referred by BSAS for participation. Inclusion criteria in the study were: 1) age 18 or older; 2) need for alcohol and/or drug abuse treatment; 3) agreement to sign informed consent to participate; and, 4) residence in Baltimore City. Individuals were excluded if they were enrolled in Medicaid or were referred by the criminal justice system, as they had separately funded treatment slots.

Recruitment

Clients were recruited for the project after they requested treatment either by phoning Baltimore Substance Abuse System's intake number or by requesting treatment directly at the clinic. If scheduled clients did not keep their appointments, Project Coordinators accepted walk-in clients who were otherwise eligible to participate. In the event that walk-in clients appeared at the clinic seeking treatment and there were no unscheduled appointments available, they were referred to the BSAS intake coordinator and gained treatment through the normal process.

Screening Criteria for Participation in the Study. Determination of eligibility for participating in the study protocol was made by asking the following screening questions (see Table 4).

Table 4: Screening questions

1. Do you live in the city of Baltimore?
   Clients not living in the city of Baltimore were not eligible to participate in the study and were referred to other treatment slots.

2. Do you have Medicaid?
   Clients with Medicaid were not eligible to participate in the study and were referred to their managed care organization for drug treatment referral.

3. Have you been court ordered for drug treatment?
   Court ordered clients were not eligible to participate in the study and were referred to other designated criminal justice treatment slots through BSAS.

Randomization Procedure

When a client presented for treatment directly at the clinic, the Project Coordinator explained the research protocol to the patient. If the client agreed to participate, the Project Coordinator then called BSAS who then randomly assigned the participant to either Rapid or Usual intake conditions.

IV. Procedures

Overview

After clients had requested treatment, the Project Coordinator fully explained the study to them. Those agreeing to participate in the study signed a consent form that had been approved by the Institutional Review Board (IRB) for Human Research of the University of Maryland School of Medicine. Clients next received their randomization assignment from BSAS and began participating in the assessment process, as detailed below.

Consent Forms and Confidentiality

Clients entering treatment were asked if they were interested in learning more about the treatment evaluation study. When they agreed to hear more about the study the Project Coordinator provided them with a detailed description of the study and then obtained signed informed consent of those willing to participate. At regular intervals, the Principal Investigator reviewed the completeness of the consenting policy of each clinic. Five copies of the IRB approved consent forms were signed by each subject. The consent forms were distributed as follows:

1. Patient
2. Research file
3. Clinic file
4. Project Coordinator's file
5. Principal Investigator

Benefits. At least half of the study participants had a chance to begin treatment faster than had they not agreed to participate in the study.

Risks. The potential risks associated with participation in this evaluation were considered low. Treatments provided were routine clinical services and not experimental. Participants entered treatment at least as quickly as they would have had they not participated in the study. No physically intrusive procedures were used in the evaluation. The assessment instruments asked participants to provide personal information on alcohol or drug use and sexual behavior. This type of disclosure, even with assurance of confidentiality, may cause some distress. However, clients could discontinue the interview at any time or refuse to answer certain questions. In the current study, there were no participants who complained of discomfort from the questions. We obtained a Federal Certificate of Confidentiality to protect the participants' research records from subpoena and court ordered release.

Assessment Intervals

Clients were assessed at four time intervals: (1) Intake; (2) 30 days after Intake; (3) six months after Intake; and (4) 12 months after Intake. In addition, one other assessment was given to those individuals who did not start treatment within one week of their intake (the 30-days after Treatment Assessment); this second 30-day assessment was used in comparing the pre-post-treatment responses of these participants.

Tracking Participants

In order to contact the research participants for follow-up, we concentrated on seven issues: 1) Collection of contact information; 2) Organization of tracking efforts;

3) Attention to staff training and support; 4) Use of phone and mail follow-up; 5) Use of incentives; 6) Establishing rapport with participants; 7) Assurance of confidentiality.

1. Collection of Contact information

The research staff were required to collect extensive information at intake and at each subsequent interview. Since information in hard to reach populations changes constantly, obtaining contact information at intake was necessary but insufficient. Information was collected at regular intervals using a twenty-four hour message line.

Contact information collected at the beginning of the project in a Respondent Locator Form was updated regularly and facilitated direct and indirect contact with the participant. In addition, contact with agencies such as shelters, healthcare for homeless providers, and other services helped the interviewer determine specifically what information they needed in order to locate the clients.

2. Organization of Tracking Efforts

Notes and information on attempts to contact the research participant were indispensable in maintaining the tracking information of each participant. A Participant Information Binder was used to maintain these notes.

Patient Information Binder: A client information binder was updated daily by the outreach coordinator and all attempts to locate were dated, recorded and the results noted directly in the binder. The Project Supervisor reviewed the binder with the outreach coordinator on a regular basis to examine reasons why some clients could not be located.

3. Attention to Staff Training and Support

The selection, training and supervision of interviewing staff were of primary importance.

Staff Training Methods: Staff training included a strong component of managing issues related to confidentiality and establishing rapport with clients. For example, staff training included training on methods of gaining information without revealing anything to the client's family, friends or outside agencies. In addition, staff training concentrated on creating an atmosphere of respect to help the participant feel at ease.

Staff Support: The tracking staff were successful, in part, due to the support and encouragement of their supervisor as well as to the team building that was both formally and informally accomplished. Tracking participants was difficult, and at times appeared futile. Psychological support was necessary to help retain good outreach coordinators and research interviewers because it takes a lot of energy to locate clients. Even the easy to locate participants often required several appointments before the interview took place.

4. Use of Phone and Mail in Tracking Efforts

Two successful techniques used for tracking clients are telephone and mail. Telephone tracking was useful in contacting clients; even homeless clients often had access to a phone for receiving messages. Phone contacts allow the interviewing staff to convey the importance of the follow-up interview and promote enthusiasm in the participant. Clients were given the pager numbers of the follow-up coordinators, as well as a 24-hour message line. The phone was also

useful in maintaining contact on a twenty-four hour message line, which allowed clients to reschedule appointments or update any contact information.

Some participants responded with a mailed reminder of an upcoming interview appointment. More reluctant participants could be persuaded to contact the interviewing staff by mailing a reminder for a follow-up interview using certified mail. All correspondence included a reference to the incentive offered for completion of the interview, a clear method of contacting the staff, and reinforcement of the importance of their role in the research project.

5. Use of Incentives

The evaluation staff used a payment of $23.00 for each follow up interview completed and provided bus tokens to clients in addition to snacks and juice during the interview.

6. Establishing Rapport

Establishing a relationship with the participant based on dignity and respect was fundamental.

7. Assurance of confidentiality

One important component to establishing rapport was assuring the participants that all information was confidential. Patient confidentiality was assured through staff training and the Federal Confidentiality Certificate obtained from the National Institute on Drug Abuse.

In the evaluation project all personal identifying information was separated from the data we collected. Clients were given a unique ID number

that was not identified with their name on their file. The Principal Investigator kept a list of names and identifiers in a separate locked cabinet.

Assessments

We interviewed the clients with a comprehensive array of standardized assessments. The assessments were administered on one day usually over a two or three hour period in the following order:

1. Demographic Questionnaire

After eligibility had been determined, a Demographic questionnaire was administered. This questionnaire was composed of 12 questions that collected information on the clients' gender, date of birth, age, ethnicity, religious preference, living arrangements, marital status, educational history, number of hours worked per week, and information about the people who usually live in the clients' household (relationship to patient, age, sex, education, marital status, and employment).

2. Mini-Mental Status Examination

The Mini Mental Status Exam is a quick way to evaluate cognitive function. It is often used to screen for dementia or monitor its progression (Folstein et al., 1975). The simple questions on this exam assess orientation, registration, attention and calculation, recall, and language. Items are scored on a point system, with a maximum score of 30. A score of 24 or above is considered in the normal range.

3. Addiction Severity Index

This is a well-known substance abuse assessment tool (McLellan et. al., 1985, 1992), designed to assess problems in seven areas typically found among individuals with drug and alcohol problems: medical condition, employment/support, alcohol and drug use, legal status, family relations, and psychiatric function. It is an interview designed to measure and detect the severity of the problems in each of these seven areas. Within each area a series of questions is asked pertaining to that particular area and a Composite score is derived from several of the questions. The Composite scores are measures of problem severity, with higher scores indicating greater problem severity.

4. Lifetime Treatment History

The Lifetime Treatment History (LTH) is a questionnaire devised to examine what type of professional treatment the client has had in their lifetime. It asks 19 different questions about how much and what type of substance abuse treatment the respondent has had in their lifetime and in the last 12 months.

5. Treatment Services Review

The Treatment Services Review (TSR) (McLellan et al., 1992) is a brief structured interview designed to provide information on the type and amount of services provided (on or off-site) to a substance abuse client. The treatment services are divided into seven problem areas of the Addiction Severity Index: medical condition, employment support, alcohol and drug use, legal status, family relations, and psychiatric function.

6. Respondent Locator Form

This form was designed to document the places the clients might be in the future so that we could contact them for follow-up assessments. It includes 34 questions about telephone numbers and addresses the patient might be contacted at, including contact information from relatives and friends.

7. Zung Self-Rating Depression Scale

The Zung Self-Rating Depression Scale (Zung 1965) is a short, self-administered test that provides a numerical score to indicate the presence and severity of depressive symptomatology. There are 20 items on the scale that suggest particular symptoms from one of four symptom categories, namely affect, physiological disturbances, psychomotor disturbances, and psychological symptoms.

Clients are asked to rate each item as it relates to them during the week prior to taking the test by checking one of four boxes, range from "None OR a Little" of the "Time to Most OR All of the Time". These responses are assigned a value from 1 to 4 for positive items, and 4 to 1 for negative items. The raw score is the sum of the items computed. These scores can range from 20 to 80, with higher scores indicating more depression. An index score is then computed by dividing the raw score by the total number of possible points (i.e., 80) and multiplying the ratio by 100. The index score thus expresses a person's score as a percentage of the maximum score and can range from 25 to 100%. A score below 50 indicates that the individual is within the normal range; 50 to 59 indicates the presence of minimal to mild depression; 60 to 69 indicates the presence of moderate to marked depression; 70 and over indicates the presence of severe to extreme depression.

8. The Social Adjustment Scale-Self Report (SAS-SR)

The SAS-SR derives from the Social Adjustment Interview (Weissman and Paykel, 1974). The details of the development of the SAS-SR, including reliability and validity information can be found in Weissman and Bothwell (1976) and in Weissman et. al. (1978). The SAS-SR is a paper and pencil test completed by the subject. The Project Coordinator instructed the client about the format and the questions prior to completing the self-report. When the client could not read, or had problems understanding the questions, the Project Coordinator administered the test to him or her. The directions to the client were as follows:

"On the following pages are questions asking you about your work, spare time, and family life. We are interested in how you have been doing in these areas in the past two weeks. There are no right or wrong answers to these questions, as everyone has had different experiences in the past two weeks. For all questions, the word 'partner' could mean a partner of the opposite sex or of the same sex".

There are a total of 63 questions on the SAS-SR. Participants, however, did not have to answer each of the 63 questions as there were many skip patterns. For example, if the patient did not work outside the home, the questions in that section were skipped; or, if the patient was not a student, the questions in that section were skipped.

A set of coding rules was developed to aid the Project Coordinators in coding the data appropriately. The coding scheme detailed the acceptable values, as well as the conditional rules for skip patterns. There are two scoring systems: 1) an overall adjustment score, which is a sum of all the items divided by the number of items actually

scored; 2) a role area mean score, which is a sum of the items in a role area divided by the sum of the items actually scored in that area. The role areas are as follows:

Work Outside the Home
Work at Home
Work as a Student
Social and Leisure
Extended Family
Marital
Parental
Family Unit
Economic

Findings from the SAS-R will be analyzed in a future report.

9. Risk Assessment Battery (RAB)

The RAB (Metzger 2000) is a 45 self-report item that assesses the clients' engagement in specific drug use and sexual behaviors known to convey a high risk of transmitting HIV and other blood-borne infectious diseases. The instrument assesses the frequency of this behavior in the past 30 days and in the past six months. It is divided into four separate sections. The first section, Drug and Alcohol Use, asks questions about behavior related to injecting, smoking, snorting, or using alcohol, cocaine, crack, amphetamines, marijuana, benzodiazepines, or hallucinogens. Section 2, Needle Use, asks questions related to syringes. For example, one of the questions is "With how many different people did you share needles in the past six months?" Section 3 asks questions related to Sexual Practices. Such questions examine how many partners the respondent has had within the past 30 days and past six months. Other questions in this section ask if the partner has been exposed to HIV through any kind of sexual contact. The fourth and final section, Concerns about HIV and Testing, ask the patient how concerned or worried they are about contracting HIV or AIDS.

10. Need/Want Questions

The participating treatment programs each offered one treatment enhancement that was drawn from the treatment literature and feedback from clinic personnel. These enhancements were: psychiatric evaluation and treatment; family therapy; vocational or educational counseling; and intensive outpatient treatment (offered to methadone programs only, since all drug-free programs had such a component). The Need/Want Questionnaire was used to assess the overlap between the areas of enhancements selected by the evaluation team, in consultation with clinic providers, and the client's self-perceived need and desire for the services. In addition, we wanted to compare outcomes in targeted areas for those who wanted and needed enhanced services in clinics where they were not available, with those who wanted and needed similar services where they were available. There were four categories of need/want questions, which mirrored the service enhancements. Project Coordinators asked the clients:

1. Do you need family or social help?
2. Do you want family or social help?
3. Do you need vocational help?
4. Do you want vocational help?
5. Do you need intensive outpatient help?
6. Do you want intensive outpatient help?
7. Do you need psychiatric help?
8. Do you want psychiatric help?

11. Service Encounter Data

The purpose of collecting data on service encounters was to evaluate which services the patient received. All clinics provided basic, individual, and group counseling. Some clinics provided one or more 'enhanced' services, which may or may not have been funded by this project. These enhanced services included psychiatric

evaluation and treatment, vocational, family, and intensive outpatient program services. The service encounter data collection form collected information on the following 26 different services:

Orientation

Individual Counseling

Support Group: men, women, etc.
Relapse Prevention
Substance Abuse Education
Maintenance Group

Intensive Outpatient Program

Case management referral

Family Therapy
Vocational Group/Individual
12 Step

Physician
MD/RN Assessment

Naltrexone/Revia
Antabuse
Detoxification
Acupuncture

Psychiatric Evaluation
Psychiatric Follow-Up
Grief
Dual Diagnosis
Psychotropic Medication

Wellness/Nutrition

Intermediate Care

Missed Methadone or Missed Appointment

In February 2000, a systematic survey of the 13 participating clinics was conducted to assess the completeness of the service encounter data that had been

collected compared with the records in the clients' clinical charts. Through this review, we determined that the service encounter data from nine of the thirteen participating clinics were consistently and accurately collected.

12. Urine Drug Testing

Urine samples collected from willing participants at the one, six month and 12-month assessment period were tested for heroin, cocaine, marijuana, and methadone. In addition to urine testing at the assessment times, urine data collected by the clinics during the course of routine treatment were made available to the study. These data are used to confirm self-reported abstinence.

13.Criminal Justice Data

Arrest data covering the year before and the year after study enrollment were obtained through an interagency agreement between BSAS and the Information Technology and Communication Division of the Department of Public Safety and Correctional Services. These data were limited to participants who were arrested, found guilty and placed into the custody of the Division of Corrections. The data for those arrested who were found innocent or who were awaiting trial at the time these data were obtained reside in a separate database in the Department and are being sought for examination for a subsequent report.

Data from some of the measures described above were not fully analyzed and available for inclusion in this first report. These measures include the Social Adjustment Scale, service encounter data, lifetime treatment history, and the TSR. These data will be presented in follow up reports on additional primary and all secondary analyses.

V. Data Collection, Management, and Analysis

Data Collection

Each clinic was assigned a full-time Project Coordinator and a Data Entry Assistant who reported both to the Clinic Director and to the Principal Investigator of the study. The Project Coordinator was responsible for interviewing the clients and maintaining contact with the client for follow-up interviews.

Research Staff Training

Project Coordinators completed an intensive training course covering each of the assessment instruments used in the study. Initial staff received their training on assessment measures at Johns Hopkins; staff hired later in the project were trained at the University of Maryland, using procedures similar to those employed at Johns Hopkins.

Project Coordinator Training. The Project Coordinators received approximately three months of assessment training and data management training prior to the start of the data collection, and were given booster-training sessions once a month for the next six months. When new Project Coordinators were hired, due to staff turnover, they participated in a similar training schedule. The specialized training instructor reviewed ASI's on a monthly basis, looking for inconsistencies and errors in scoring.

Data Entry Assistant Training. Data Entry Assistants were trained by the staff at the University of Maryland on the data entry software developed for the study. They received limited training on the assessment measures and full training on the assessment

schedule to facilitate proper data coding and quality control editing. This training was provided to familiarize Data Assistants with the assessment process and to give them a context in which to understand their data entry.

Data Entry

The Data Entry Assistants entered all participant data from their clinic site and maintained a quality control system with the Project Coordinator and the Principal Investigator.

Data Entry Program

The data entry program was developed especially for the project using Access, a Microsoft Office program. Access is a low level language that is relatively easy to use and all of the clinics already had the hardware necessary to use Microsoft programs. The program allowed for data to be entered clinic by clinic and was written to be user friendly and flexible. Data were entered into tables, and each table constituted a separate assessment, with the exception of the ASI. The ASI was split into two data entry tables since Access only allows 255 fields per table, and the ASI had 371 fields.

Data Coding

To insure that coding was standardized for particular data elements, a set of coding rules was developed for the SAS and the ASI.

Data Storage

Project Coordinators were regularly reminded that all data should be kept in locked storage cabinets. All Project Coordinators were instructed not to leave data on desks or in unlocked drawers. The data were not stored with the regular clinic records.

Several visits were made to the clinics to examine the data storage process to ensure that the safety of the research data and the client's confidentiality were being maintained. In addition, we regularly reviewed the procedures for maintaining confidentiality with the Project Coordinators.

Data Transfer

Each clinic sent a weekly update of the client data to BSAS. Data were typically transferred via modem using software developed specifically for this purpose. The data transfer program allowed programs to send a zipped file from their local hard drive to a separate directory on the BSAS file server. Each program site had a separate username and password. Once the Access databases were deposited into separate directories, the BSAS Database Manager (Walter Powell) moved the data to his system PC for data transformation and re-transmission to the University of Maryland and Morgan State University.

Data Transformation

Once the Access data from each of the clinics had been merged into one data file, it was downloaded to Dr. Ahmed of Morgan State University who then transformed the data into SPSS files. Each of the assessments at each of their respective follow-up time periods constituted a separate SPSS file. We then combined these files for data analysis, as necessary.

Data Analysis

Data were analyzed using SPSS 10.1 for Windows at both the University of Maryland by Dr. Jeannette Johnson and Mr. Bradford Plemons and Morgan State University by Dr. Ashraf Ahmed. First, the data were analyzed overall, producing

frequencies and descriptive statistics for all the clients. Second, the data were parsed using clinic type as the nominal variable into two groups—drug free clients and methadone clients.

General linear modeling was utilized for longitudinal analyses. Specifically, a repeated measures design with two between factors (clinic type: methadone vs. drug-free; intake condition: rapid vs. usual) and one within subject factor (time of assessment: intake, 30 days, six months and 12 months) was used. For example, Zung standard scores at different assessment intervals were entered as the within subject factor, clinic type and intake condition as between subject factors. The results were examined for significant main effects and interactions. Post-hoc pair-wise comparisons were conducted and a Scheffe' correction was implemented. In addition, non-parametric techniques, such as chi-squares, were utilized when appropriate. Parametric analyses were also done using ANOVA's and t-tests when appropriate.

VI. Results

Most of the primary results of the study are presented in two sections; data from additional primary evaluations of the study and all secondary evaluations will be summarized in subsequent reports. The first section of the present report provides information on the clients in terms of treatment entry assignment, follow-up, and sociodemographic characteristics. The second component of this section provides data on changes associated with treatment participation and each of the following critical outcome domains: 1) changes in drug and alcohol use; 2) changes in criminal activities; 3) changes in employment status and productivity; 4) changes in physical and mental health symptoms; 5) changes in HIV drug use and sexual risk behaviors; and 6) change in indexes of social stability and functioning.

Section 1: Client Sample

Below we present sociodemographic information on the client sample and the results of the randomization procedure. Study participants were split into two mutually exclusive groups: those who returned for at least one treatment session and those who completed the first day of intake but did not come back for any treatment services. The current report focuses primarily on the first group of clients, those who returned to the treatment program for services at least once after completing the initial intake session.

Total Sample Reported

There were a total of 1,303 clients referred to outpatient treatment for substance use disorder. About half of the clients (48.6%; n=634) were referred to programs that use methadone as part of the treatment plan (methadone clinics). The remaining 51.4% of the sample (n=669) were referred to treatment programs that did not use methadone (drug-free clinics).

Randomization to Usual Versus Rapid Admission

About half of the sample of 1,303 participants (51%, n=664) was randomly assigned to the program's usual admission condition (Usual); the remaining 639 clients were assigned to the rapid admission condition (Rapid). Clients randomly assigned to the clinic's Usual admission condition began receiving services on the next regularly scheduled admission day; this was expected to result in a delay of several days to weeks between completion of the study intake evaluation and the onset of routine treatment services. Clients assigned to the Rapid Admission condition were expected to begin receiving treatment services within 48 hours of completing the study intake evaluation. Examination of the randomization schedule (Usual vs. Rapid Admissions) by treatment setting (methadone vs. drug-free settings) revealed no significant differences in randomization assignation by type of clinic setting (Pearson Chi-square =.135, df =1, p=.713).

Assignment to Treatment Entry

Conducting research in community treatment settings poses some challenging methodological issues. One such issue in the current study involved maintaining the randomization schedule to Usual versus Rapid Admissions. Some clients assigned to

Usual Admission condition were referred to programs that had no waiting list simply because BSAS created new treatment slots to support the study, treatment services could be initiated immediately upon completing the study intake evaluation. And some clients assigned to the Rapid Admission Condition were referred to clinics that at various times could not implement treatment services within the expected 48-hours after completing the study intake assessments. This problem constituted a deviation from the randomization procedure.

To fully evaluate the randomization assignments, the actual number of days between intake and onset of treatment services was calculated for clients assigned to each study condition (Usual vs. Rapid Admission). Clients who were actually scheduled to begin receiving treatment services within the first two days following the initial intake evaluation were classified as receiving Rapid Admission. Clients whose first appointment for treatment service was three days or more from completing the initial study intake were classified as receiving Usual Admission. Table 5 presents the results of this analysis by type of clinic setting (methadone vs. drug-free settings).

Table 5: Usual versus Rapid Admission by Type of Clinic Setting

Clinic Type	What the Client Actually Received		Total number of clients
	Usual Admission	Rapid Admission	
Methadone	359 (56.6%)	275 (43.4%)	634 (100%)
Drug-free	211 (31.5%)	458 (68.5%)	669 (100%)
Overall	570 (43.7%)	733 (56.3%)	1303 (100%)

As shown in Table 5, the overall direction of the client assignments was in the direction of providing Rapid Admission to slightly more of the clients than expected. This resulted primarily from almost 70% of clients referred to drug-free settings being offered treatment within 48-hours, rather than the 50% expected rate.

Mean Length of Time to Onset of Treatment Services

The mean length of time to onset of treatment services for those who returned to the clinic reflects about an 11-day delay in services from intake to onset of treatment for clients in the Usual Condition. The mean length of time to onset of treatment services for those who actually received Rapid Admission was less than 1-day (mean 0.27; SD=.44); the mean length of time to onset of treatment services for clients who actually received Usual Admission was 11.97 days (SD=20.05). The relatively large standard deviation (SD) in clients who actually received Usual Admission results from considerable variability in the duration of delay for onset of services, with those assigned to

methadone settings waiting longer for onset of treatment than those referred to drug-free settings.

Treatment Entry Assignment in Clients Returning for Treatment

Of the 1,303 clients participating in the study, 20.4% (n=266) attended the intake assessment only. These 266 clients therefore did not receive any treatment services beyond those normally associated with the intake evaluation and were often lost to follow-up despite numerous attempts to contact them in the community.

Table 6 shows the distribution of clients who attended the intake assessment only versus those who returned to the clinic for services after completing the intake evaluation. The results are presented by type of treatment setting. As can be seen, significantly more of the clients referred to treatment clinics that use methadone received treatment services compared to clients referred to drug-free settings (chi-sq=21.557, df=1, $p<.001$).

Table 6: Clients returning or not returning for treatment services by type of clinic setting

Client Response	Type of Clinic Setting		
	Methadone	**Drug-free**	**Total**
Intake assessment only	96 (15.1%)	170 (25.5%)	266
Returned for treatment	538 (84.9%)	499 (74.5%)	1037
Total	634 (100%)	669 (100%)	1303

Table 7 examines the associations between the original random assignment schedule to Usual versus Rapid Admission conditions and return for any treatment services following completion of the intake evaluation. For this set of analyses, the two treatment settings were collapsed into a single group (methadone and drug-free combined). As shown in the Table, no significant difference was found by original randomization schedule (chi-square=.716, df=1, p=.398); similar proportions of clients assigned to Usual versus Rapid Admission status returned for services after the intake evaluation.

Because of the relatively large number of participants who did not keep to their original random assignment schedule to Usual versus Rapid, these data were re-analyzed using the actual conditions experienced by clients with respect to immediate versus delayed treatment services. Similar to the first set of analyses using the original random assignment schedule, no significant difference was observed between actual Usual versus Rapid onset of treatment services and return to the clinic for services (Chi square=.822 ,

df=1, p=.424). Taken together, these data show that returning to the clinic for services was unrelated to the expected or actual assignment to Usual versus Rapid onset of services.

Table 7: Clients returning or not returning for treatment services by original random assignment schedule

Client Response	Original Random Assignment Schedule		
	Usual	**Rapid**	**Total**
Intake assessment only	130 (19.5%)	136 (21.4%)	266
Returned for treatment	535 (80.5%)	502 (78.6%)	1037
Total	665 (100%)	638 (100%)	1303

Overall Study Follow-Up Rates

The rate of follow-up for each of the assessment time-points in clients that returned to the clinic for treatment service was compared to those who failed to return for services.

Follow-up Rates in Clients Returning for Treatment

Of the total sample of 1,037 clients who returned for treatment, 46 cases did not have adequate information to match their files. This left a total of 991 clients with matching files who both completed intake and returned at least once to the clinic for treatment services. This subgroup was used to determine the follow-up rates of clients across time-points and type of treatment setting. The numerator was the number of Addiction Severity Indexes completed at 30-days, six and twelve months after study intake. As

shown in Table 8, the overall follow-up rates are 76% at 30 days, 70% at six months and 65% at 12 months after completing the intake evaluation.

Table 8: Follow-up assessment rates for clients returning for treatment services

Clinic Type	Assessment Period			
	Intake	**30 days**	**6 months**	**12 months**
Methadone Setting	509	421 (83%)	408 (80%)	370 (73%)
Drug-free Setting	482	332 (69%)	286 (59%)	271 (56%)
Total	991	753 (76%)	694 (70%)	641 (65%)

Follow-up Rates in Clients Not Returning to Treatment

The follow-up rates were also determined for clients who completed the initial intake but did not return for treatment services. The follow-up rates for this subgroup of study participants were low: 33% at 30-days, 25% at 6 months and 24% after 12 months. Additional analyses of this subgroup are not included since the follow-up rates are too low to draw statistically meaningful conclusions.

Demographic Characteristics of Clients who Received Treatment Services

A total of 948 clients both returned to the clinic for treatment services and completed the Demographic Questionnaire at intake. There were no significant differences between methadone and drug-free clinics on any sociodemographic characteristic. The following figure and tables separate clients by type of clinic setting.

The mean age of clients in methadone treatment was 37.5 years, as was the mean age of clients in drug-free treatment. No client was under the age of 18. Figure 1 presents the percentages of clients falling within nine age categories. Table 9 presents the data on other sociodemographic characteristics of clients by type of treatment setting. As shown below, the two groups were comparable on each of the variables included in this analysis.

Figure 1: Percentage of clients within each age category.

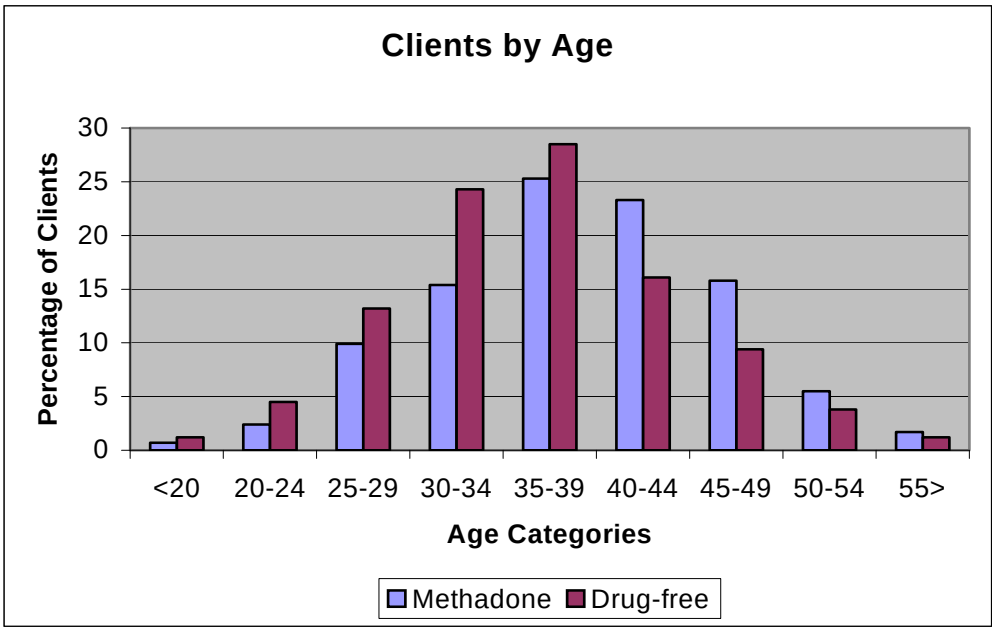


Table 9: Sociodemographic characteristics of clients receiving treatment (reported as percentages) separated by clinic type

Client characteristic	**Clinic Type**	
	Methadone	**Drug-free**
Gender		
Male	50	53
Female	50	47
Marital Status		
Married	13	13
Divorced	28	26
Never Marr.	57	59
Widow/er	2	2
Education		
6-8th grade	5	5
9-12th grade	77	72
3 yrs. college	15	17
4 or more yrs	4	7
Ethnicity		
African-American	84	86
Caucasian	14	10
Other	2	4
Religion		
Protestant	6	10
Catholic	15	10
Baptist	51	48
Other	18	19
None	10	14
Employment:		
Full Time	11	17
Part Time	6	6
Sporadic	4	4
Unemployed	79	73
Living Facility		
Shelter	1	4
Group Living	1	6
Public Housing	22	16
Neither	76	74

Section 2: Effectiveness of Treatment Services

This section is divided into six content areas, each focusing on a critical measure of substance abuse treatment response. The first section presents data on changes in the use of drugs and alcohol associated with participation in treatment services. This is followed by the presentation of data assessing changes over time in each of the remaining five areas: HIV Risk Behaviors, extent of criminal behaviors, employment functioning, physical and mental health symptoms, and social functioning.

Reductions in Drug And Alcohol Problems

Changes in Self-Reported Use of Drugs

The Drug Use Composite score of the Addiction Severity Index (ASI) is one of the most commonly used measures of change in drug abuse research. The ASI drug and alcohol use domains assess the frequency and severity of drug use problems in the past 30 days for a wide range of drugs, including: heroin, other opiates/analgesics, barbiturates, sedatives, cocaine, amphetamines, cannabis, hallucinogens and alcohol.

ASI Drug Use Composite scores were determined at intake and again at 30 days, six months and 12 months after beginning the study. Changes in composite scores over time were analyzed using a general linear model using assessment time as a within-subject factor. Clinic type (methadone or drug-free) and intake condition (rapid or usual) were entered as between-subject factors. Results indicated that Drug Use Composite scores (shown in Table 10) decreased across time, from intake to 12 months after intake; lower composite scores indicate less severe problems ($F(3,465)=68.28$, $p<.001$). Pairwise comparisons revealed significant differences between the Drug Composite

severity scores at intake compared to scores at each of the subsequent assessment interval points (30-days, 6 months and 12 months). There were no significant differences between intake condition (rapid vs. usual), treatment setting (methadone vs. drug free), and changes in drug use over time; indicating that regardless of intake condition or clinic setting, drug use was reduced.

Table 10: Addiction Severity Index - Drug Use Composite Scores

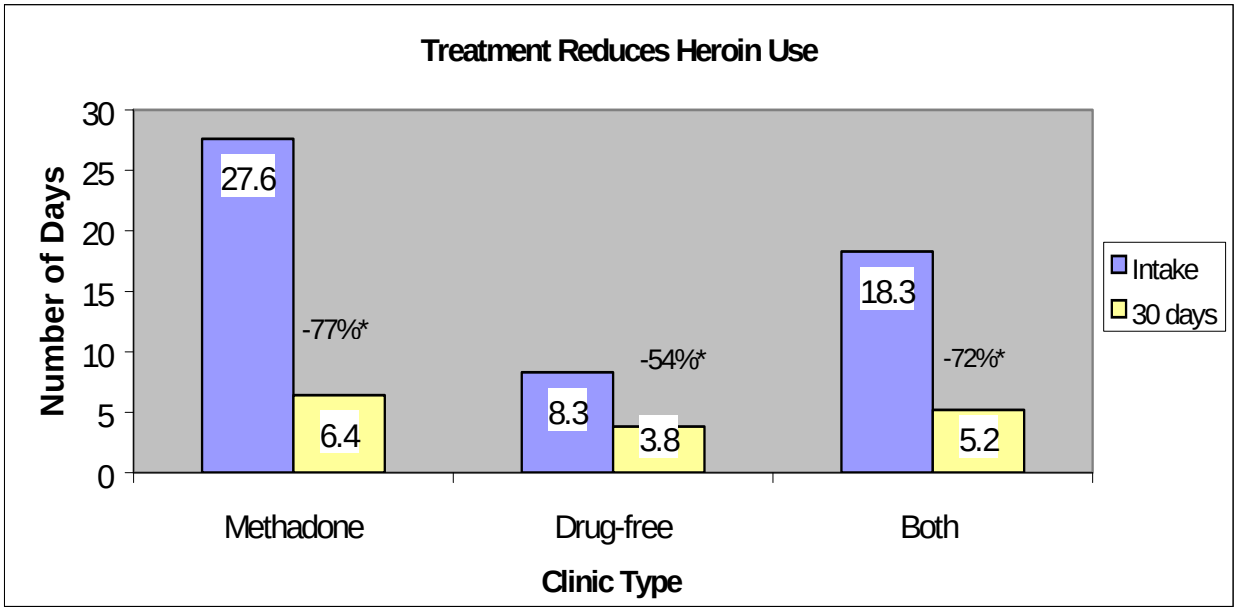
ASI Time-points	Mean Drug Use Composite Score
Combined Sample	
Intake	.492
30 Days	.381
6 Months	.396
12 Months	.396

All time points cover the 30-days immediately preceding the evaluation

Treatment Services Associated with Reduced Use of Heroin

Using a General Linear Model analysis of variance, a statistically significant change over time occurred for heroin use ($F(3,463)=82.53$, $p<.001$). Figure 2 shows that heroin use was reduced an average of 13 days per client after the first month of treatment.

Figure 2: Reductions in the average number of days using heroin 30 days after the intake.



This Figure shows the average number of days clients used heroin within the past 30 days prior to intake assessment and 30-days after initiating treatment services.

As shown in Table 11, substantial group differences were observed in the percentage reduction in heroin use over time among clients who received services in clinics that used methadone compared to drug-free settings. Clients who received services in methadone clinics had consistently larger reductions in heroin use than clients in drug-free settings across every time-point, particularly months 6 and 12 months. These data provide compelling evidence of the effectiveness of treatment services that include methadone in the management of heroin use.

Table 11: Reductions in average number of days clients used heroin use (reported as percentages)

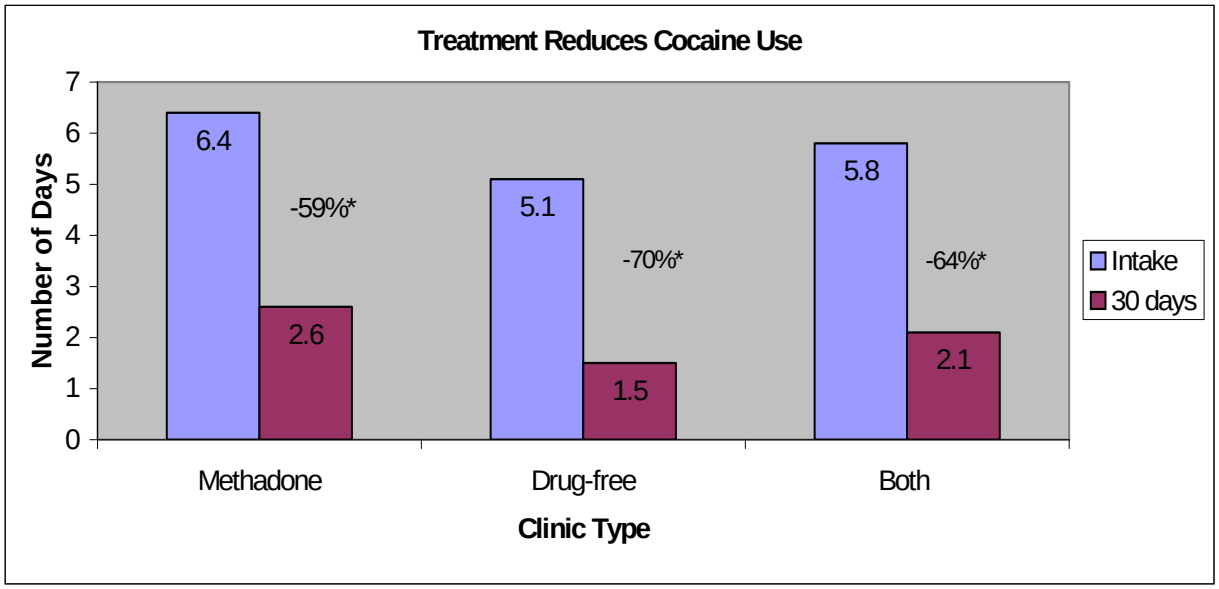
Type of Clinic	From Intake to 30 days*	From Intake to 6 months*	From Intake to 12 months*
Methadone Setting	77%	82%	79%
Drug-free Setting	54%	33%	31%
Both clinics combined	72%	72%	69%

***Before/after difference. All time points cover the 30-days immediately preceding the evaluation**

Treatment Services Associated with Reduced Use of Cocaine

Using a General Linear Model analysis of variance, a statistically significant change over time was also found for cocaine use ($F(3,463)=30.2$, $p< .001$). Figure 3 shows that cocaine use was reduced an average of 3.7 days per client after the first month of treatment.

Figure 3: Reductions in the average number of days using cocaine 30 days after intake.



This figure shows the average number of days clients used cocaine within the 30 days prior to intake assessment and the first 30-days after initiating treatment services.

As shown in Table 12, group differences were also observed in the percentage reduction in cocaine use over time in clients who received services in clinics that used methadone compared to drug-free settings. Clients who received services in methadone clinics had a somewhat smaller reduction in cocaine use than clients in drug-free settings at the 30-day assessment, but larger reductions in use at months 6 and 12 compared to clients in drug-free clinic settings. These findings suggests that drug-free clinics may produce greater reductions in cocaine use very early in treatment, but have greater problems maintaining this improvement over time.

Table 12: Reductions in average number of days clients used cocaine (reported as percentages)

Type of Clinic	From Intake to 30 days*	From Intake to 6 months*	From Intake to 12 months*
Methadone Setting	59%	53%	59%
Drug-free Setting	70%	25%	31%
Both clinics combined	64%	43%	48%

***Before/after difference. All time intervals cover the 30-days immediately preceding the evaluation.**

Treatment Services Associated with Reduced HIV Drug Risk Scores

Some of the data from the Drug Risk scores of the HIV Risk Assessment Battery (RAB) are presented in this section to further evaluate the validity of the ASI self-report data. The RAB was administered at the same time-points as the ASI and should reveal similar patterns of change in drug use over time assuming validity of the self-reports. This set of analyses presents the results from two items in the RAB, including: proportion of clients who reported any drug injections in the 30-days preceding each assessment interval, and the total Drug Use HIV risk behavior score. In addition to providing an important estimate of the concurrent validity of the ASI self-reported drug use data, each

of these risk behaviors are strongly associated with the transmission of HIV and Hepatitis B and C and are critical public health indexes of successful intervention.

The highest possible Drug Risk Score is 22. As expected given the reductions of drug use documented using the ASI, the total Drug Use Risk Scores on the RAB decreased significantly across time (see Table 13).

Table 13: Total Drug Risk by Type of Clinic and by Assessment Interval

Clinic Type		**Intake**	**30 days**	**6 months**	**12 months**
Methadone Setting	Mean (SD)	2.1(2.9)	1.1(1.2)	.87(1.9)	.69(1.6)
	n	495	415	391	364
Drug-free Setting	Mean (SD)	.66(1.9)	.43(1.8)	.56(1.9)	.44(1.6)
	n	460	304	277	266
Total Score	Mean (SD)	1.4(2.6)	.81(1.9)	.74(1.9)	.58(1.6)
	n	955	719	668	630

All time points cover the 30-days immediately preceding the evaluation.

Table 14 presents data on percentage of clients reporting any drug injection by type of clinic setting and assessment time interval. Consistent with the reductions in drug use captured by the ASI, the proportion of clients reporting any drug injection substantially decreased across all time intervals for clients being treated in clinics that use methadone. The lack of reduction in drug injection among clients receiving services in drug-free settings likely results from a ceiling effect, most clients denied drug injection at intake and at each time-point thereafter.

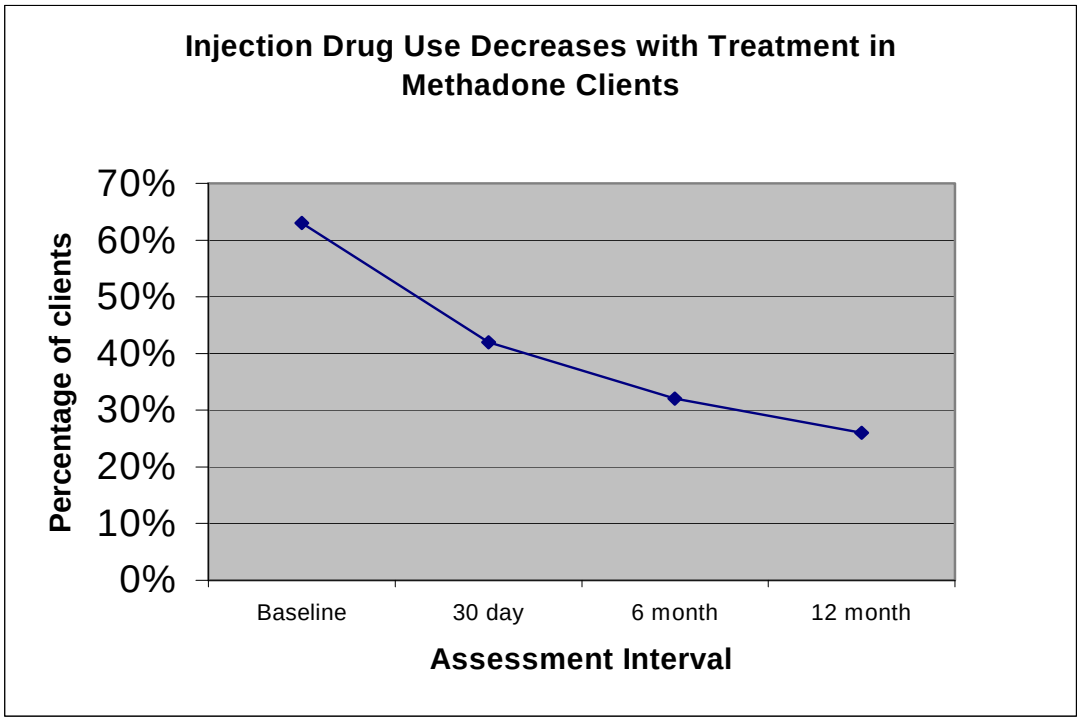
Table 14: Percent of Clients Injecting Drugs in Past 30 Days

Clinic Type	Response Category	Assessment Interval			
		Baseline	30 days	Six months	12 months
Methadone Setting	No	37%	58%	68%	74%
	Yes	63%	42%	32%	26%
Drug-free Setting	No	84%	88%	87%	89%
	Yes	16%	12%	13%	11%
All clinics combined:	No	59%	71%	76%	80%
	Yes	41%	29%	24%	20%

All time points cover the 30-days immediately preceding the evaluation

The change in proportion of clients in methadone clinics is graphically shown in Figure 4, and indicates the steady reduction in the number of clients who injected drugs over time.

Figure 4: Reductions in clients injecting drugs in clinics that use methadone (reported as percentages)



This figure shows data from clinics that used methadone and are based on client response to RAB question, "Have you injected drugs in the past 30-days?" All time points cover the 30-days immediately preceding the evaluation.

Treatment Services Associated with Reduced Alcohol Use

The ASI also provides a Composite score for alcohol use problems. Composite scores were calculated for intake and each follow-up time-point: 30-days, 6 months and 12 months after initiating treatment services. Changes in these composite scores were analyzed using a multivariate general linear model as a within-subject factor, clinic type (methadone or drug-free) and intake condition (Rapid or Usual) were entered as between-subject factors.

As shown in Table 15, the alcohol problem composite score decreased between intake and the 12-month evaluation ($F(3, 469)=15.75$, $p<.001$); lower Composite scores indicate less severe problems. Pairwise comparisons revealed significant differences between the alcohol Composite scores at intake compared to scores at each of the subsequent assessment time points. A significant main effect was found for type of clinic setting ($F(1, 471)=21.02$, $p<.001$) indicating that mean Composite scores are lower for clients in methadone (.078) versus clients in drug-free clinic settings (.143). In addition, an interaction between type of clinic and scores across assessment intervals was also significant ($F(1, 471)=11.44$, $p=.001$), showing greater reductions in Composite scores over time in clients receiving services in drug-free clinic settings.

Table 15: Mean ASI Alcohol Composite Scores Overall and by Type of Clinic Setting

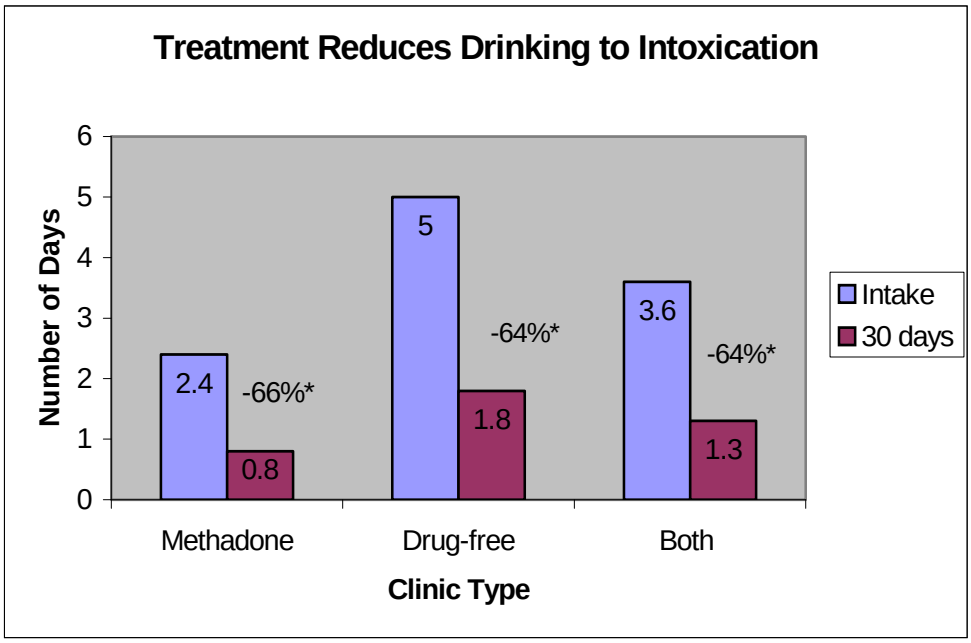
Type of Clinic Setting	Mean Composite Score
Overall	
Intake	.155
30 Days	.102
6 Months	.090
12 Months	.096
Methadone Clinic	
Intake	.088
30 Days	.089
6 Months	.059
12 Months	.076
Drug-free Clinic	
Intake	.222
30 Days	.114
6 Months	.121
12 Months	.117

All time points cover the 30-day immediately preceding the evaluation

Drinking to Intoxication Reduced Across Time

Figure 5 shows that treatment services were also associated with an average of 2.3 fewer days of drinking to intoxication after the first month of starting treatment.

Figure 5: Changes in the average number of days of drinking to intoxication.



This figure shows the average number of days clients drank to intoxication within the 30 days prior to intake assessment and the first 30 days after initiating treatment services.

Table 16 shows the change in the average number of days clients drank to intoxication, reported as percentages during the 30-days preceding each evaluation (intake and the 30-days preceding the follow-up evaluations at 30-days, 6 and 12 months after the start of treatment). Data are separated by type of clinic setting. As shown, substantial decreases were observed in drinking to intoxication across both clinic settings

and over all time-points, except for clients in methadone settings where a 4 % increase was observed at the 12 month follow-up.

Table 16: Changes in average number of days clients drank to intoxication (reported as percentages)

Type of Clinic	From Intake to 30 days after onset of treatment*	Intake to 6 months after onset of treatment*	Intake to 12 months after onset of treatment*
Methadone Setting	-66%	-37%	+4%
Drug-free Setting	-64%	-39%	-32%
Both clinic settings combined	-64%	-34%	-19%

***Before/after difference. All time points cover the 30-days immediately preceding the evaluation**

Confirmation of Self-Reported Reductions in Drug Use

Self-reports of drug use are one of the most sensitive measures of change available to community-based treatment programs. These reports are also vulnerable to the vagaries of memory and to motivations by clients to falsely report their patterns of drug use. When self-report data are used as a primary outcome measure, it is important to obtain an estimate of the validity of those reports. This was done in the present study. The validity of self-reported reductions in drug use was evaluated using a biological index of drug exposure - urine specimens that were collected and tested during each of the time points evaluated in the study.

For this critical set of analyses, all available urine data collected within each of the assessment time intervals were included (study specimens collected at each assessment interval and all of the specimens routinely collected by the treatment clinic during each interval of time). The evaluation focused on estimating the validity of the self-reported use of heroin and cocaine. These two drugs were selected because: 1) they were the most widely used substances in the sample and provide the strongest opportunity to evaluate the validity of self-reported changes and 2) the strong legal and social prohibitions against use of heroin and cocaine make them particularly vulnerable to under-reporting of use. In effect, this strategy is a stringent test of the validity of self-reported use because it selects the very drugs most likely to be under-reported by clients.

As shown in Table 17, between 70% to 77% of cocaine and 75% to 83% of heroin self-reported abstinence was confirmed using the test results from urine specimens collected within each of the time-points being evaluated. This suggests good validity of the ASI self-report data on drug use. The second major finding from this set of analyses is that the validity of the patient's self-reported drug use increases over time. The longer a client remains in treatment, the more accurate their self-reports become.

Table 17: Under-reporting of heroin and cocaine abstinence in the ASI during the past 30 days of each assessment time-interval

Variables	30 Days After The Onset of Treatment		Six Months After The Onset of Treatment		Twelve Months After The Onset of Treatment	
	Heroin	Cocaine	Heroin	Cocaine	Heroin	Cocaine
Clients who report **NOT** using heroin/cocaine on the ASI	348	468	416	442	415	433
Clients who had at least one urine test	275	378	288	307	206	201
Urine Results:						
Tested positive[1]	70	114	51	75	42	46
Tested negative[2]	205	262	232	228	161	151
Unknown[3]	-	2	5	4	3	4
Total	275	378	288	307	206	201
% Under reporting[4]	25.5	30.1	17.7	24.4	20.3	22.9

[1] Positive in at least one test during the past 30 days.
[2] Negative in all tests during the past 30 days.
[3] Unknown in all tests.
[4] Percent under reporting = (tested positive/clients who had at least one urine test among those clients who reported not using the drugs x 100

Changes in HIV High Risk Behaviors

The primary source of information for evaluating rates of change over time in selected HIV Risk Behaviors was the Risk Assessment Battery (RAB), an empirically developed self-report questionnaire covering critical drug use and sexual behaviors known to convey considerable risk of transmitting HIV and other blood borne infectious diseases. The questionnaire provides a Drug Use Risk score, a Sexual Risk Score and a

Combined Behavioral Risk Score. In addition, several of the critical items in the drug and sexual risk behavior sections are presented to illuminate aspects of the overall changes in risk behavior scores observed during the study.

Total HIV Drug Risk Behavior Score

As shown in Table 18, HIV Drug Risk scores decreased significantly across time ($F(1,481)=84.63$, $p<.001$); as noted earlier, this pattern of change was most evident in clients managed in clinics that use methadone. This results from the fact that this subgroup of clients had higher risk scores at intake, and therefore had greater opportunity to demonstrate reductions in the behavior over time.

Table 18: Total HIV Drug Risk Scores Presented by Type of Clinic and by Assessment Interval

Clinic Type		**Intake**	**30 days**	**6 months**	**12 months**
Methadone Setting	Mean (SD)	2.1(2.9)	1.1(1.2)	.87(1.9)	.69(1.6)
	n	495	415	391	364
Drug-free Setting	Mean (SD)	.66(1.9)	.43(1.8)	.56(1.9)	.44(1.6)
	n	460	304	277	266
Total Score	Mean (SD)	1.4(2.6)	.81(1.9)	.74(1.9)	.58(1.6)
	n	955	719	668	630

All time points cover the 30-days immediately preceding the evaluation

Frequency of Drug Injecting

Some of the decline over time in the Drug Risk score was accounted for by considerable reduction in the percentage of clients who reported any drug injections across each time interval. Results from general linear modeling indicated that drug

injection decreased steadily from intake to 12 months after intake (F (1,481)=84.63, p<. 001). As shown in Table 19, collapsing across type of clinic, the proportion of clients who reported injecting any drugs steadily dropped over time**.** By the 12-month, 80% of the clients denied any drug injection in the past 30-days. A significant interaction (F(1,481)=39.87, p<.001) was also observed between type of clinic setting and drug injection over time**.** Clients in methadone clinics reported greater reduction over time in drug injection than clients in drug-free settings. There was no statistically significant difference between rapid vs. usual condition.

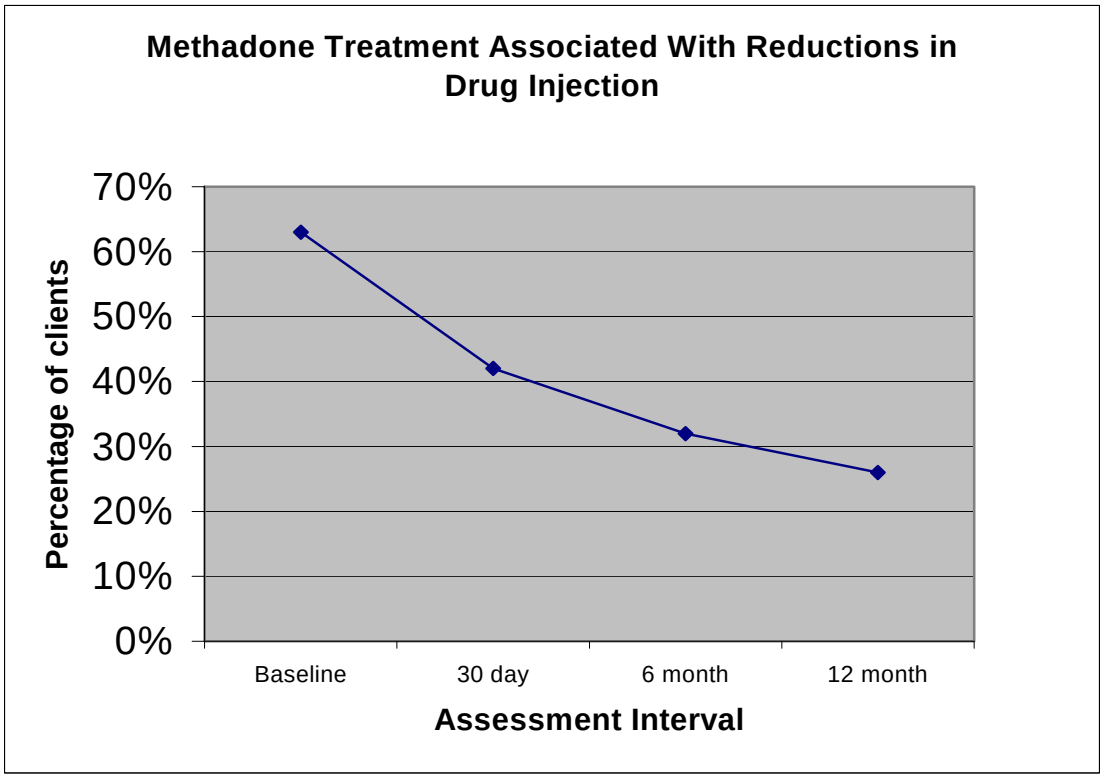
Table 19: Proportion of Clients Injecting Drugs in the Past 30 Days.

Variables		Intake	30 days	6 months	12 months
Injected drugs	No	59.5%	70.5%	75.7%	80.4%
	Yes	40.5%	29.5%	24.3%	19.6%
	Totals	981	749	690	639

Data from combined sample of clients and all time points covers the 30-days immediately preceding each evaluation.

This critically important reduction in clients who injected drugs over the course of the study is also shown graphically for clients in clinics that used methadone (Figure 6), and clearly illustrates the impressive reduction over time in the number of clients who continued to inject drugs over the course of the study.

Figure 6: Treatment Services Associated With Reductions in Drug Injection in Clinics Using Methadone.



This figure shows data from clinics that use methadone and based on response to question, "Have you injected drugs in the past 30-days?" All time points cover the 30-days immediately preceding the evaluation

Needle Sharing Practices

Another critically important public health finding from the study was the consistently low rates over time of self-reported needle sharing among those who injected any drugs. Table 20 shows the frequency of self-reported needle sharing at intake and each of the subsequent evaluation intervals.

Table 20: Proportion of Clients Who Shared Injection Equipment in Past 30 Days

Variables		Intake	30 days	6 months	12 months
Shared needles or other equipment	No	94.4%	95.1%	95.5%	95.9%
	Yes	5.6%	4.9%	4.5%	4.1%
Total number of clients		977	748	687	637

All time points cover the 30-days immediately preceding the evaluation

Clients also reported at intake, 30 days, 6 months and 12 months after the onset of treatment how often they used a shooting gallery to inject drugs within the prior 30-days. Results from general linear modeling indicated that the use of shooting galleries decreased steadily from intake to 12 months ($F(1, 465)=29.461$, $p<.001$). In addition, an interaction between type of clinic setting and "shooting gallery" use across assessment interval was also significant, and this trend was also linear ($F(1, 465)=7.054$, $p=.008$). More specifically, pairwise comparisons revealed significant differences between the number of clients sharing needles or other injection equipment at intake compared to the number of clients sharing injection equipment during the 30-days immediately preceding all subsequent time-points.

Changes in HIV Sexual Risk Behaviors

Most of the clients (95%) self-identified as heterosexual so it was impossible to meaningfully evaluate sexual behavior by primary sexual orientation. Prior research suggests that focusing on specific sexual behaviors (instead of sexual orientation) is the

preferred methodology for assessing risk of sexual transmitting HIV and other blood borne infectious diseases**.**

Total HIV Sex Risk Score

Similar to the Total Drug Use Risk Behavior score, the RAB produces a total Sexual Risk Behavior score. The highest possible Sexual Risk Score is 18, the lowest score is 0; higher scores indicate greater behavioral risk. Table 21 shows relatively low risk scores at intake and modest significant reductions over each of the subsequent time intervals. ($F(1, 466)=7.221$, $p<.01$) The good news here is that the relatively low Sexual Risk Behavior score observed at intake is sustained over the time-course of the study.

Table 21: Sex Risk Behavior Scores Over Time

Clinic Type		**Intake**	**30 days**	**6 months**	**12 months**
Methadone	Mean (SD)	4.2(2.5)	3.5(2.1)	3.4(2.1)	3.5(2.2)
Setting	N	493	412	392	364
Drug-free	Mean (SD)	4.3(2.6)	3.9(2.5)	3.8(2.6)	3.9(2.5)
Setting	N	456	304	275	265
Total	Mean (SD)	4.3(2.6)	3.6(2.3)	3.6(2.3)	3.7(2.3)
	N	949	716	667	629

All time points cover the 30-days immediately preceding the evaluation

Modest changes in the preferred direction were also observed on several individual items that comprise the Sexual Risk Behavior section of the questionnaire. Table 22 shows that the proportion of clients reporting any involvement in prostitution decreased over time.

Table 22: Proportion of clients who were paid money in exchange for having sex w with others

Variables		Intake	30 days	6 months	12 months
Paid for Sex?	**Not At All**	90.6%	98.3%	96.0%	94.3%
	A Few Times or More	9.3%	1.7%	4%	5.7%
	Total	980	753	683	636

Data collapses clients across type of clinic setting. All time points cover the 30-days immediately preceding the evaluation

Overall HIV Risk Behavior Score

The RAB produces an Overall HIV Risk Behavior Score by collapsing across items in the Drug and Sexual Risk Behavior sections. This score provides an indicator of overall risk for transmitting HIV or other blood borne infectious diseases through drug use and sexual behavioral practices. Table 23 below shows that the total risk scores decrease across time. A significant main effect for time ($F(1,470)=18.04$, $p<.001$) indicates that reductions in scores over time were observed for both clinic settings. No main effects were observed for either type of clinic setting (methadone vs. drug-free) or intake condition (rapid vs. usual), indicating that changes were comparable over time across settings and across intake conditions.

Table 23: Overall HIV Risk Behavior Score

Clinic Type		Intake	30 days	6 months	12 months
Methadone	Mean (SD)	6.3(4.1)	4.5(2.9)	4.3(3.1)	4.2(2.8)
Setting	N	485	404	383	359
Drug-free	Mean (SD)	5.0(3.4)	4.4(3.5)	4.4(3.6)	4.4(3.0)
Setting	N	447	292	270	262
Total	Mean (SD)	5.7(3.8)	4.4(3.2)	4.3(3.3)	4.392.90
	N	932	696	653	621

All time points cover the 30-days immediately preceding the evaluation

Perceived Risk for HIV Infection

The study also assessed client's perceived risk of transmitting HIV infection. Clients were asked about the extent of their concern over transmitting HIV during the intake evaluation, and again at the 30 days, 6 months, and 12 months evaluations. As expected given the major reductions in drug use and risky drug use practices over time, results from general linear modeling indicated that concerns about transmitting HIV and AIDS decreased steadily over time ($F(1, 468)=17.384$, $p<.001$). Pairwise comparisons revealed significant differences between the extent of concern at intake compared to expressed levels of concern at each of the subsequent evaluations. Clients also provided data on extent of concern about having been exposed to HIV and AIDS at the intake evaluation and each subsequent evaluation (30 days, 6 months, and 12 month post-intake). As expected, the results from general linear modeling indicate that concern over possible exposure to HIV and AIDS decreased steadily across all time-points ($F(1, 466)=8.336$, $p=.004$). Pairwise comparisons revealed significant drops over concern of HIV exposure between intake, six month and 12 month follow-up evaluations.

Changes in Illegal Activities

Possible changes in criminal behavior were indexed using several variables and strategies, including both self-reported behaviors and objective indices of criminal activities and legal consequences. This report focuses on some of the self-report data from the Addiction Severity Index and currently available data from the Maryland Department of Public Safety and Correctional Services on the numbers of clients who were arrested, adjudicated in court and imprisoned by in the Division of Corrections for any period of time following sentencing. This data does not include information on clients incarcerated in the Baltimore City Detention Center or other county administered jails. The City's Detention Center data is maintained in a separate database by the Department of Public Safety and Correctional Services. Data from jails outside Baltimore City are not readily available. Nevertheless, additional data will be obtained and analyzed that will provide a count of the number of clients arrested in the 12-months before and after intake into the study, independent of whether or not the charge has been adjudicated in court and led to some period of imprisonment.

Treatment Services Associated with Reduction in Legal Problems

The Legal Composite scores from the ASI at intake, 30 days after intake, 6 months after intake, and 12 months after intake were evaluated using a multivariate general linear model as within-subject factors. Clinic type (methadone or Drug-free) and admission condition (Rapid or Usual) were entered as between-subject factors. As expected from the reductions observed in frequencies and patterns of drug use, Legal Composite scores decreased across time, from intake to 12 months ($F(3, 475)=35.39$, $p<.001$); with lower scores indicating less severe legal problems. As shown in Table 24, pairwise

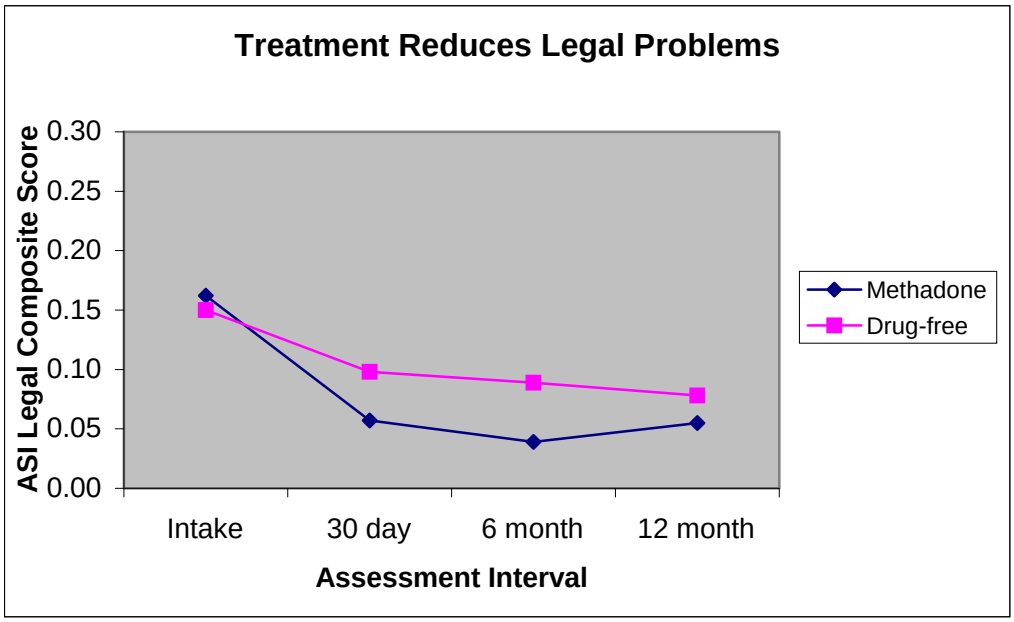
comparisons revealed significant differences between the Legal Composite scores at intake compared to scores at each subsequent assessment interval (30-days, 6 months and 12 months), demonstrating that early reductions in illegal behavior are maintained over time. In addition, an interaction between clinic type and legal scores across assessment interval was also significant ($F(1, 477)=11.08$, $p=.001$), indicating greater reductions in legal problems in clients receiving service in clinics that use methadone.

Table 24: Mean ASI Legal Composite Scores Overall and by Type of Clinic Setting

Type of Clinic Setting	Mean Composite Score
Overall	
Intake	.156
30 Days	.078
6 Months	.064
12 Months	.067
Methadone Clinic	
Intake	.162
30 Days	.057
6 Months	.039
12 Months	.055
Drug-free Clinic	
Intake	.150
30 Days	.098
6 Months	.089
12 Months	.078

Figure 7 provides a more visual representation of the change over time in the overall Legal Composite score. These data support the earlier data on reductions in drug use over time and clearly illustrate the intimate and critical relationship between drug use and illegal activities in the greater Baltimore metropolitan area.

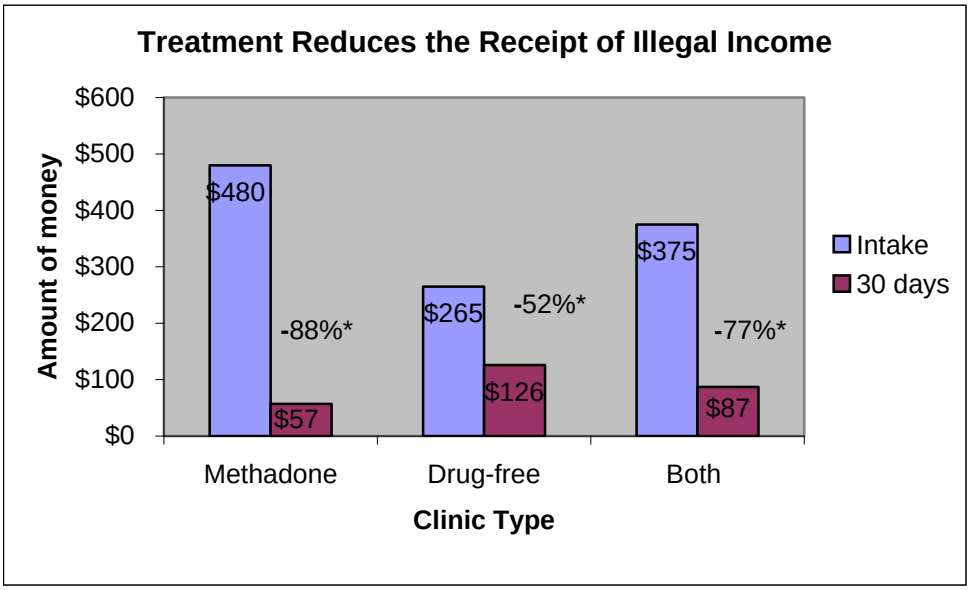
Figure 7: Mean ASI Legal Composite Severity Scores Decrease Across Time



Treatment Associated with Reductions in Illegal Income

Figure 8 shows that the illegal income produced by clients after only one month of treatment dropped an average of $288.

Figure 8: Reduction in Amount of Illegal Income.

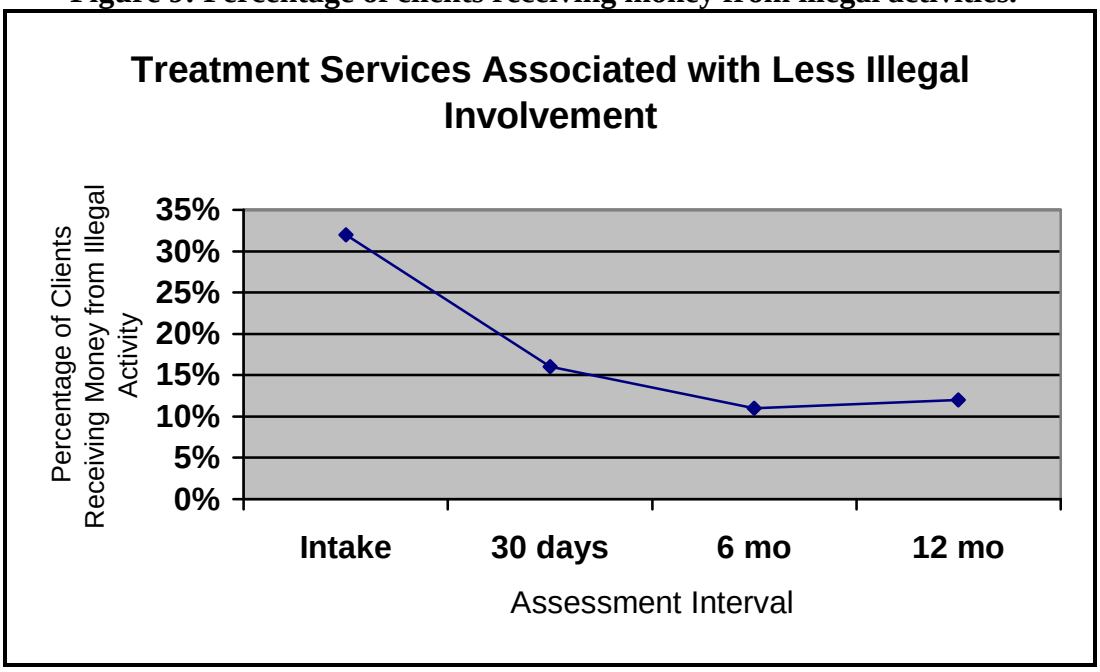


These data show the illegal income received by the clients in the 30 days prior to intake and in the first 30-days after starting treatment.

Treatment Associated with Fewer Clients Involved in Illegal Activities

As shown in Figure 9, a steady and progressive reduction was observed over time in the proportion of clients reporting any illegal activities. This is highly consistent with the drop in illegal income shown above, and provides a good estimate of the extent of validity associated with that change. At intake, 32% indicated reporting receiving some money from illegal activity during the past 30 days. Within as few as 30-days after beginning treatment, the proportion of clients reporting any illegal income dropped to about 18%, and declined further at both the 6- and 12-month evaluations. These data clearly support the view that simply reducing drug use is meaningfully associated with reduced illegal activities, and also provide strong support for the sustained nature of the drop in illegal behaviors.

Figure 9: Percentage of clients receiving money from illegal activities.



All time points cover the 30-days immediately preceding the evaluation

Treatment Associated with Reductions in Days Of Illegal Activities

The number of days clients reported any involvement in illegal activities for profit was determined for the 30-days preceding intake into the study and again for the 30-days immediately preceding each re-evaluation (30-day, 6-months, 12-months). The number of days of illegal behavior was entered into a repeated measures design where clinic type (methadone or drug-free) and intake condition (Rapid or Usual) were entered as between-subject factors. As shown in Table 25, the number of days clients were involved in illegal activity decreased overall from intake to 12 months ($F(3, 481)=27.73$, $p<.001$), and the results support a curvilinear trend ($F(1, 483)=58.79$, $p<.001$). Pairwise comparisons using a Scheffe' statistical correction indicate that the number of days of illegal activity observed at intake was significantly higher than the number of such days reported at each of the subsequent evaluations. No significant main effects were

observed for clinic type or admission condition; indicating that neither clinic setting or immediate versus delayed onset of treatment influenced the drop in crime.

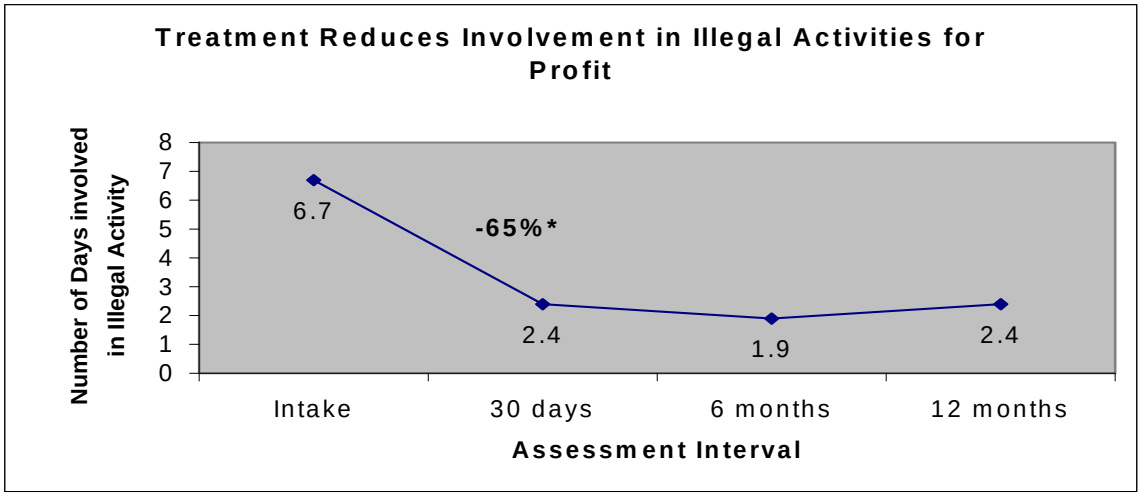
Table 25: Number of Days in Past 30 Days Involved in Illegal Activities For Profit

Study Time Points	Mean Number of Days
Overall	
Intake	6.69
30 Days	2.37
6 Months	1.93
12 Months	2.39

***Before/after difference. All time points cover the 30-days immediately preceding the evaluation**

Figure 10 also present this impressive drop in the number of days clients were involved in illegal activity between the 30-days preceding intake and the first 30-days after starting treatment.

Figure 10: Number of days engaged in illegal activity for profit in the last 30 days



A repeated-measures design was used to evaluate changes in the number of days of illegal activity for profit over a longer time interval than the first 30-days following the onset of treatment services. Changes in the number of days of illegal activity were evaluated over 6-month intervals. This set of analyses used data from the intake and 6 and 12-month re-evaluation intervals. Clinic type (methadone versus drug-free) and intake admission condition (Usual versus Rapid) were entered as between-subject variables.

The number of days involved in illegal activity during the past 6 months declined from intake to 12 months after intake ($F(2, 531)=38.17$, $p<.001$), with results indicating a linear trend ($F(1, 532)=61.32$, $p<.001$). Pairwise comparisons using a Scheffe' correction show that the number of days of illegal activity significantly differed between the 6 months preceding intake and 6 months after the onset of treatment services, and between intake and six month period immediately preceding the 12 month evaluation (see means in Table 26 below). Additionally a main effect was observed for type of clinic setting ($F(1, 532)=11.25$, $p=.001$) and a significant interaction was found between clinic type and number of days spent engaged in illegal activities across time-points ($F(1, 532)=5.22$, $p=.023$). Examination of the means presented in Table 26 shows that while clients in methadone and drug-free clinics engaged in illegal activity for approximately the same number of days over the 6 month immediately preceding the intake evaluation, greater reductions in days of illegal activity were observed for clients in clinics that use methadone at both the 6 and 12 evaluation compared to clients in drug-free clinic settings.

Table 26: Number of Days in Past 6 Months Involved in Illegal Activities for Profit.

Type of Clinic Setting	Mean Number of Days
Overall	
Intake	40.6
6 Months	15.2
12 Months	16.1
Methadone Clinic	
Intake	40.7
6 Months	6.5
12 Months	9.0
Drug-free Clinic	
Intake	40.5
6 Months	23.9
12 Months	23.1

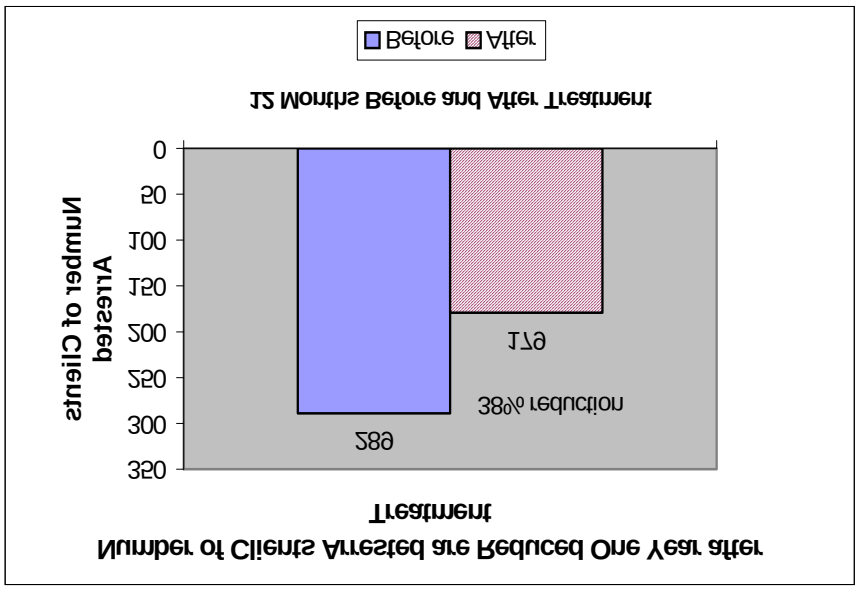
Treatment Associated with Reductions in Arrest and Conviction

As part of the study, some data have already been obtained from the Information Technology and Communication Division of the Department of Public Safety and Correctional Services on the number of arrests of clients in the 12-month before and after intake into the study. The current data set is limited to information on arrests that were subsequently adjudicated in court and led to some period of imprisonment post-sentencing. General arrests information for the entire sample, independent of legal status of the charge, will be provided by the Department of Public Safety and Correctional Services in the near future. These new data, once acquired will comprise part of a secondary report on the study.

Total Number of Clients Arrested, Adjudicated and Imprisoned 12 months Before and After Starting Treatment

One year prior to study enrollment, 289 clients were arrested, adjudicated and imprisoned under the custody of the Division of Corrections. As shown in Figure 11, the number of clients arrested, adjudicated and incarcerated post-sentencing dropped to 179 during the twelve months following study intake. This change constitutes a 38% drop in the arrest of clients who were both adjudicated and served time in Corrections post-sentencing. These data must be interpreted with caution because they was obtained only three months following the last possible 12-month follow-up date. Hence, it may not have been possible for a number of trials in the post-treatment sample to be concluded.

Figure 11. Preliminary findings on the number of clients arrested, adjudicated and imprisoned for one year before and one year after starting treatment

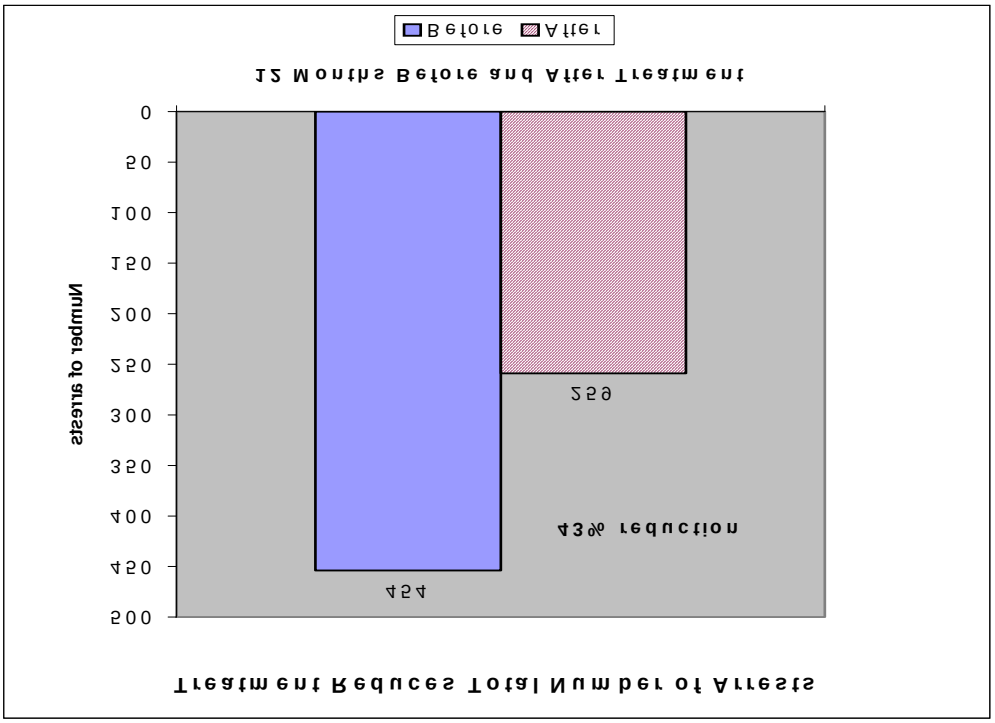


The clients in this figure are restricted to a subgroup who were found guilty of crimes that led to imprisonment in the Division of Corrections.

Total Number of Arrests In Clients that were Adjudicated and Imprisoned

This subgroup of 289 clients arrested and adjudicated for at least one arrest in the one year prior to treatment accounted for a total of 454 arrests (an average of 1.57 arrests per client); the 179 clients from this subgroup that were arrested after starting treatment accounted for a total of 259 arrests (an average of 1.44 arrests per client). Figure 12 shows a 43% decrease in the *total number of arrests* for this subgroup of clients from one year before to one year after starting treatment. However, as mentioned above, given the limited three month follow-up time available in the data, this finding should be interpreted with caution.

Figure 12: Preliminary Findings on the Number of Arrests for Clients Adjudicated and Imprisoned Post-sentencing for the 12 Months Before and After Treatment.



The clients in this figure have all been found guilty of crimes that led to imprisonment in the Division of Corrections in the 12 months before and after starting treatment

Changes in Employment

ASI Changes Over Time in Employment Composite Score

The ASI Employment Composite Score is commonly used in drug abuse studies to assess baseline employment problems and changes over time. The Composite scores at intake, 30 days after intake, 6 months after intake, and 12 months after intake were entered into a general linear model as within-subject factors. Clinic type (methadone or drug-free) and intake admission condition (Rapid or Usual) were entered as between-subject factors. As shown in Table 27, the results indicated that Employment Composite scores decreased across the assessment interval from intake to 12 months; lower scores reflecting less severe employment problems ($F(3, 478)=22.74$, $p<.001$). Moreover, a linear trend indicated that scores decrease from intake to 30 days, 6 months and 12 months after starting treatment ($F(1, 480)=63.56$, $p<.001$). Pairwise comparisons revealed significant differences between the Employment Composite scores at intake compared to scores after 6 months and after 12 months from starting treatment. Composite scores also declined between the 30-days after starting treatment and at both the 6 and 12 month evaluations.

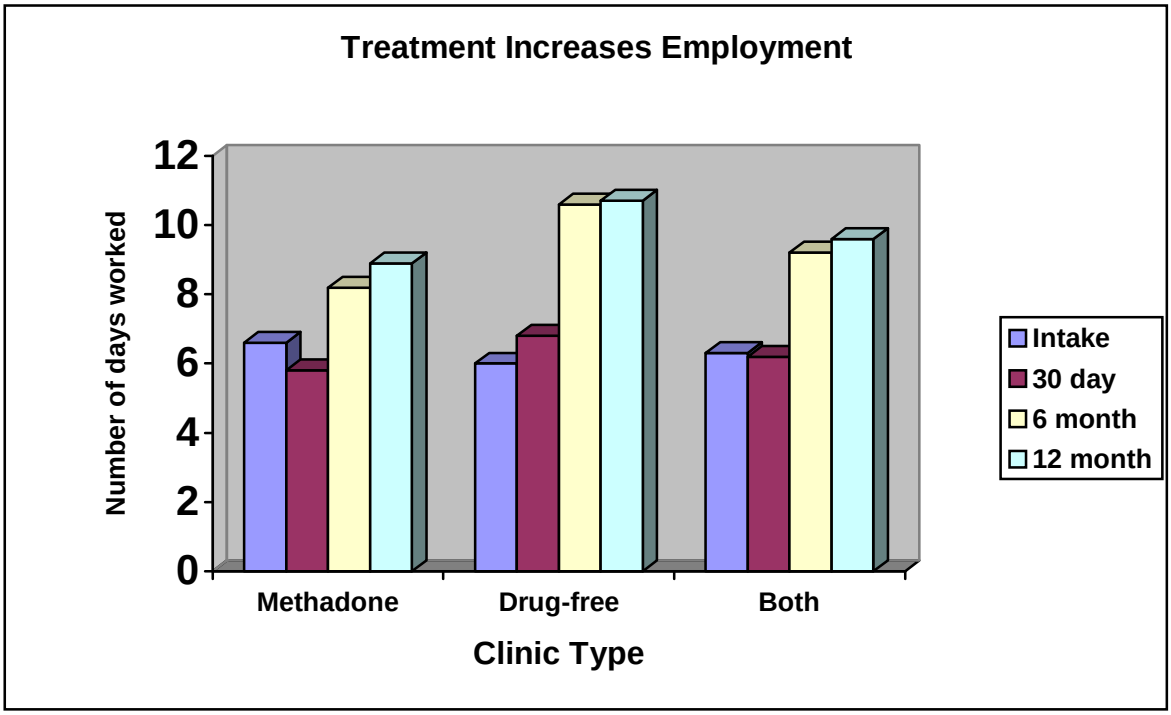
Table 27: ASI Employment Composite Scores.

Overall	Mean Composite Score
Intake	.774
30 Days	.773
6 Months	.710
12 Months	.686

All time points cover the 30-days immediately preceding study entry

Additional analysis evaluated changes over time in the average number of days clients were paid for working in 30-day blocks of time at each assessment interval (30-days after starting treatment and 30-days prior to the 6 and 12 month evaluations). As shown in Figure 13, clients reported a significant increase in the average number of days working for pay across the assessment intervals ($F(3,446)=31.0$, $p<.001$). This increase was significantly greater for drug free compared to methadone settings ($F(3,446)=2.65$, $p<.048$).

Figure 13: Increases in the average number of days worked for pay in the past 30 days at four separate assessment periods: intake, 30 day assessment, 6 month assessment, and 12 month assessment.

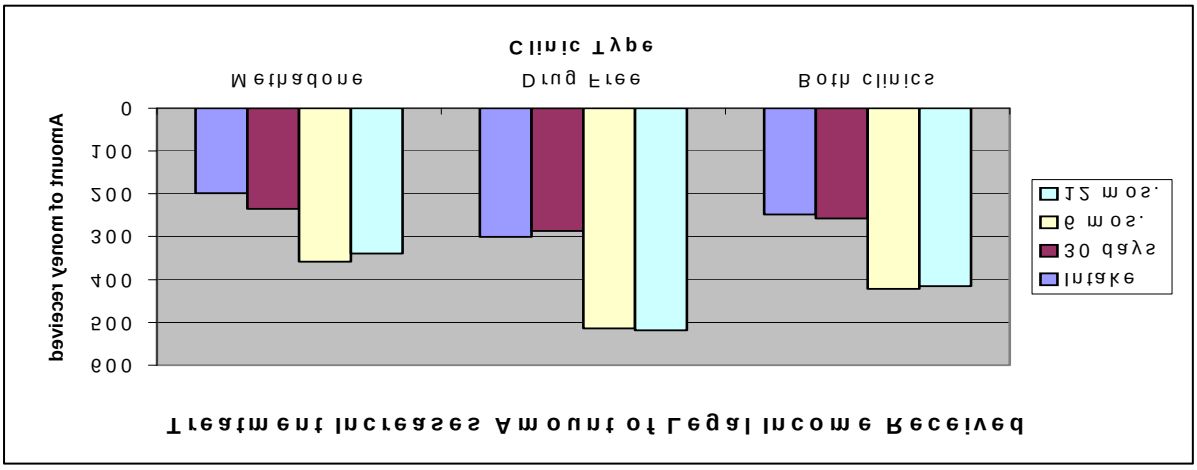


Client data is presented for the methadone clinic settings, drug-free clinic settings and for both types of clinics combined.

Consistent with the increase in number of days work, clients also reported increases in the amount of money earned from paid employment. As shown in Figure 14,

clients reported a consistent and progressive increase in amount of money earned legally (F(3,453)=22.56, p<.001). In this case as well, clients in drug-free clinics showed greater improvement compared to those in methadone clinics (F(3,453)=3.25, p<.022).

Figure 14: Increases in the average amount of money earned in the past 30 days.



This data shows the increase in the average amount of money earned within the past 30 days at each assessment period separated by the type of clinic the client attended; then, both clinics are combined for an average of the clinics.

Additional evidence for the reported decrease over time in employment problems is provided by a set of question included in the study at each assessment interval on the perceived Need and Want for employment-related counseling services. As shown in Tables 28 and 29, fewer clients reporting both needing and wanting employment-related counseling services over time. These data provide critical evidence of concurrent validity of the decline in self-reported employment problems on the ASI.

Table 28: Relationship Between Mean ASI Employment Severity Scores and Perceived Need for Vocational Counseling Services

Need Vocational Counseling	Intake	30 days	6 months	12 months
Yes	.84*	.82*	.75*	.75*
N	494	387	330	311
t-test statistic	8.65	5.786	4.855	3.81
No	.7	.71	.65	.66
n	427	312	306	283

*** p <.001, df=1 using a t-test to test the differences between 'Yes' and 'No.' All time points cover the 30-days immediately preceding the evaluation**

Table 29: Relationship Between Mean ASI Employment Severity Scores and Desire for Vocational Counseling Services

Want Vocational Counseling	Intake	30 days	6 months	12 months
Yes	.83*	.81*	.74*	.75*
n	510	399	342	320
t-test statistic	8.35	5.327	3.912	3.749
No	.70	.71	.65	.66
n	411	300	293	274

*** p <.001, df=1 using a t-test to test the differences between 'Yes' and 'No." All time points cover the 30-days immediately preceding the evaluation**

Changes in Physical and Mental Health

A number of studies have reported high rates of psychiatric problems in people seeking treatment for a substance use disorder (Brooner, et.al., 1998**)** and that treatment services are associated with reductions in the frequency and severity of these problems. This was evaluated in the present study in several ways, using empirically derived measures of depression and general psychiatric distress. The Zung Depression Scale and the Psychiatric Severity Section of the ASI were the primary sources of data for this set of analyses, though data from the Service "Needs and Want" questionnaire are included here as a measure of concurrent validity for changes reported over time in the ASI.

Mental Health Problems

Symptoms of Depression

The Zung Depression Scale was administered at intake, 30 days after intake, and both 6 and 12 months after intake. These scores were entered into a general linear model as within-subject factors. Clinic type (methadone or drug-free) and intake condition (Rapid or Usual) were entered as between-subject factors. Results indicated that Zung Depression scores decreased across assessment interval from intake to 12 months after intake ($F(3, 482)=51.70$, $p<.001$). A score below 50 indicates the absence of problematic symptoms of depression, scores between 50 to 59 indicates minimal to mild symptoms of depression; scores between 60 to 69 indicates moderate to marked depression and scores above 70 indicates the presence of severe symptoms of depression. As indicated in Table 30, clients in both types of treatment setting started out with depression symptoms bordering the mild to moderate severity, and both groups dropped to the very low end of

the mild symptom category within 30-days of beginning treatment for their substance use disorder.

A curvilinear trend indicated that depression scores decreased from intake to 30 days after intake, before increasing slightly at the 6 and 12 months evaluations ($F(1, 484)=71.44$, $p<.001$) (see means in Table 30). Specifically, pairwise comparisons revealed significant differences between the Zung scores at intake compared to scores at each of the subsequent assessment interval points. In addition, a main effect for clinic type emerged ($F(1,484)=6.48$, $p=.011$), with a significant interaction between clinic type and scores across assessment interval ($F(1, 484)=21.78$, $p<.001$; see means in Table 30). To describe the interaction, means were examined and revealed that clients in methadone suffer from more severe depression at intake and the severity of their depression declined at a greater rate after intake compared to clients in drug-free treatment.

Table 30: Changes Over time in Zung Depression Scores by Type of Clinic

Type of Clinic Setting	Mean Depression Score
Overall	
Intake	57
30 Days	50
6 Months	51
12 Months	51
Methadone Clinic	
Intake	60
30 Days	51
6 Months	51
12 Months	52
Drug-free Clinic	
Intake	54
30 Days	50
6 Months	50
12 Months	50

All time points cover the 30-days immediately preceding the evaluation

Addiction Severity Index - Psychiatric Composite Score

The ASI Composite scores for psychiatric problems at intake, 30 days after intake and 6 and 12-months after intake were entered into a general linear model as within-subject factors. Clinic type (methadone or Drug-free) and intake condition (Rapid or Usual) were entered as between-subject factors. As shown in Table 31, results indicate that psychiatric distress decreased across assessment interval from intake to 12 months; lower scores reflecting less severe psychiatric problems ($F(3, 472)=8.47$, $p<.001$). Moreover, a linear trend indicated that scores decreased from intake to 30 days after intake to 6 months and 12 months after intake ($F(1, 474)=15.43$, $p<.001$). In addition, a significant interaction was observed between type of clinic setting and psychiatric composite scores across assessment intervals, and this finding was also linear ($F(1, 474)=18.29$, $p<.001$). At 12 months, contrary to the participants enrolled in methadone treatment, those in drug-free treatment have reduced ASI Psychiatric Composite Scores. Pairwise comparisons revealed significant differences between the Psychiatric Composite scores at intake compared to scores at each of the subsequent assessment time-points, reflecting the clinically positive associations between reduced psychiatric distress and substance abuse treatment services.

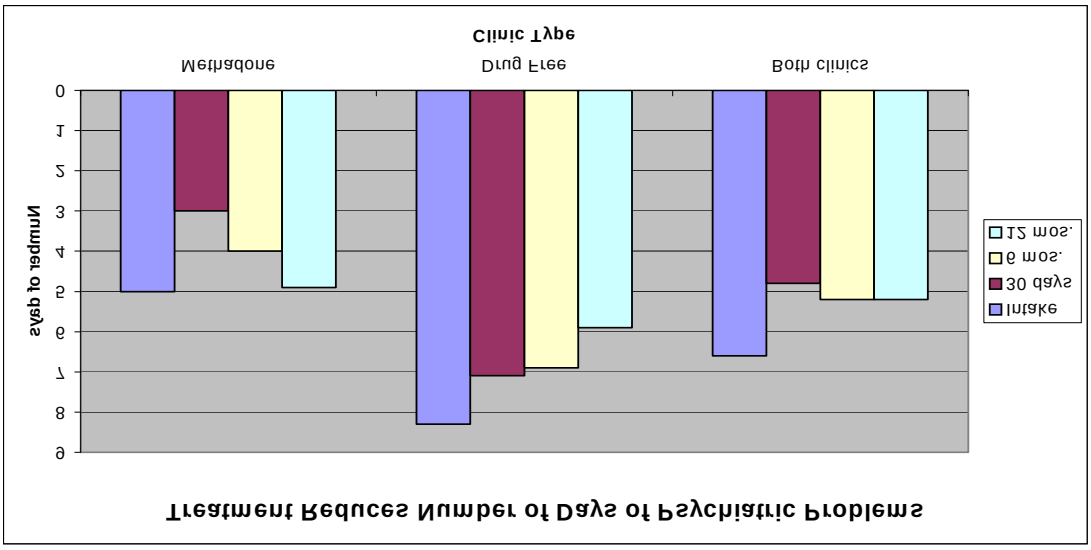
Table 31: ASI Psychiatric Composite Scores and by Type of Clinic

Type of Clinic Setting	Mean Composite Score
Overall	
Intake	.206
30 Days	.164
6 Months	.167
12 Months	.152
Methadone Clinic	
Intake	.138
30 Days	.094
6 Months	.128
12 Months	.132
Drug-free Clinic	
Intake	.274
30 Days	.235
6 Months	.206
12 Months	.172

All time points cover the 30-days immediately preceding the evaluation

Consistent with the reported changes in extent of psychiatric distress reported by clients over time, data plotted in Figure 15 shows a corresponding and statistically significant decrease in the average number of days clients reported having any emotional problems during the 30-days preceding the 30-day, six-month and 12-month assessment time-points ($F(3,447)=7.87$, $p<.001$). The decrease in days of self-reported emotional problems was greater for clients in drug-free clinics compared with clients in methadone clinics ($F(3,447)=4.14$, $p<.007$).

Figure 15: Decreases Over Time in the Average Number of Days of Psychological Distress



These data indicate the number of days that clients experienced psychological problems in the 30 days prior to interviews at study entry and one, six and 12 months thereafter.

Additional evidence for the reported decrease over time in psychiatric distress reported by clients pre and post-onset of treatment services is provided by a set of questions included in the study at each assessment interval on the perceived Need and Want for specialized psychiatric counseling services. As shown in Tables 32 and 33, fewer clients over time reported both needing and wanting specialized psychiatric services. These data provide critical evidence of concurrent validity of the self-reported drop in psychiatric distress over time.

Table 32: Relationship Between Mean ASI Psychiatric Severity Scores and Clients Perceived Need for Specialized Psychiatric Services

Need Help With Psychiatric Problems	Intake	30 days	6 months	12 months
Yes	.38*	.30*	.27*	.23*
n	238	182	166	156
t-test statistic	19.02	12.31	9.73	5.717
No	.11	.10	.10	.12
n	685	531	492	459

p <.001, df=1 using a t-test to test the differences between 'Yes' and 'No.' All time points cover the 30-days immediately preceding the evaluation

Table 33: Relationship Between Mean ASI Psychiatric Severity Scores and Clients Desire for Specialized Psychiatric Services

Want Help With Psychiatric Problems	Intake	30 days	6 months	12 months
Yes	.37*	.30*	.26*	.21*
n	262	204	180	174
t-test statistic	18.858	12.97	9.286	5.779
No	.10	.10	.10	.11
n	660	508	477	440

p <.001, df=1 using a t-test to test the differences between 'Yes' and 'No.' All time points cover the 30-days immediately preceding the evaluation

Other Medical Problems

Overall Medical Problem Severity

The ASI provides a Composite Score for other medical problems. Data from this section were used to evaluate changes in medical problem severity over time. Medical

Composite scores at intake, 30 days after intake, 6 months after intake, and 12 months after intake were entered into a general linear model as within-subject factors. Clinic type (methadone or Drug-free) and intake condition they actually received (Rapid or Usual) were entered as between-subject factors. As shown in Table 34, results indicate that medical problems decreased across assessment interval from intake to 12 months after intake; lower scores indicate less severe medical problems ($F(3, 481)=2.56$, $p=.054$). Pairwise comparisons revealed significant differences between the Medical Composite scores at intake, the 30 days after starting treatment and the 30-days preceding the 6 month evaluation. Neither type of clinic setting nor intake admission status (Usual versus Rapid) was associated with changes in the severity of medical problems over time.

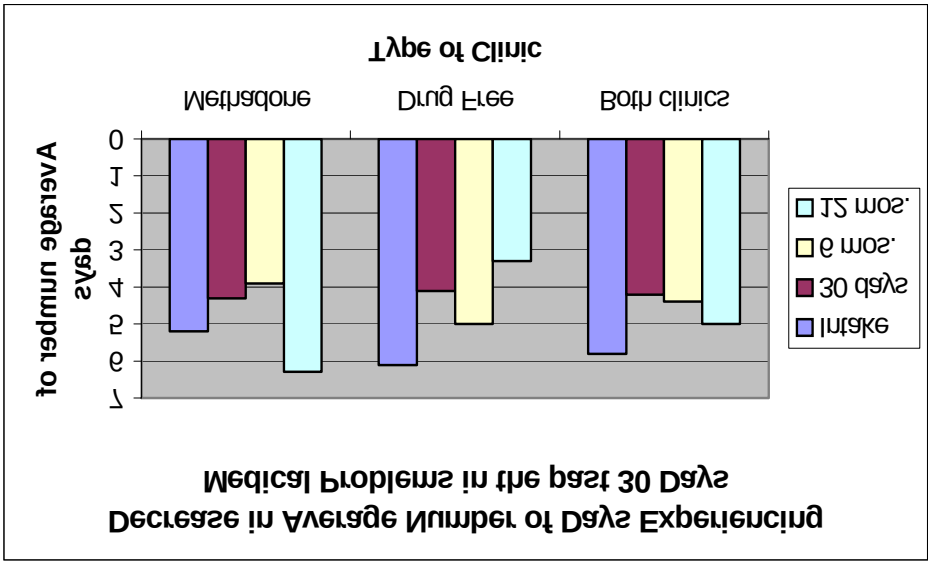
Table 34: Changes in ASI Medical Composite Scores.

		Mean Composite Score
Overall		
	Intake	.250
	30 Days	.208
	6 Months	.213
	12 Months	.217

All time points cover the 30-days immediately preceding the evaluation

Consistent with the reported reduction in severity of medical problems, clients reported a reduction over time in the average number of days in which they experience medical problems (see Figure 16).

Figure 16. Decreases in the average number of days experiencing medical problems.



This Figure shows the decreases in the average number of days clients experienced medical problems within the past 30 days, overall and by clinic setting and across assessment intervals

Changes in Family/Social Problems

A limited amount of data on family and social problems was summarized and available for inclusion in this first report. The available data provides an evaluation of changes in Family/Social problem severity at intake and over time, and data on the client's need and desire for specialized family counseling services in the clinic setting. More detailed data on the scope and quality of family and social functioning at intake and over the course of the study will be included in the final report covering secondary analyses of study findings.

Family/Social Problem Severity

The Family/Social Composite score of the ASI was used to assess changes in problem severity over time. Composite scores at intake, 30 days after intake, 6 months after intake, and 12 months after intake were entered into a general linear model as within-subject factors. Clinic type (methadone or Drug-free) and intake admission condition (Rapid or Usual) were entered as between-subject factors.

As shown in Table 35, results indicate that Family/Social problem composite scores decreased across assessment interval from intake to 12 months after intake; lower scores reflecting less severe family/social problems ($F(3, 465)=17.72$, $p<.001$). Moreover, as can be seen by inspection of the mean scores over time, scores tend to decrease from intake to 30 days after intake, and to 6 and 12 months after intake ($F(1, 467)=49.95$, $p<.001$). This linear trend is similar to the one found in the Composite Severity scores for other ASI domains. In addition, an interaction between clinic type and scores across assessment interval was also significant, and this trend was also linear ($F(1, 467)=5.43$, $p=.020$). More specifically, pairwise comparisons revealed significant differences between each of the family scores at all assessment points.

Table 35: Changes Over Time in ASI Family/Social Composite Scores

Type of Clinic Setting	Mean Composite Score
Overall	
Intake	.212
30 Days	.160
6 Months	.147
12 Months	.118
Methadone Clinic	
Intake	.149
30 Days	.091
6 Months	.102
12 Months	.079
Drug-free Clinic	
Intake	.276
30 Days	.228
6 Months	.192
12 Months	.158

All time points cover the 30-days immediately preceding the evaluation.

Additional evidence for the reported decrease over time in family and social problems reported by clients pre- and post-onset of drug treatment services is provided by a set of question from the Services Needs/Wants questionnaire administered in the study at each assessment interval.

As shown in Tables 36 and 37, fewer clients over time reported needing or wanting specialized counseling services for family or social problems. These data provide critical evidence of concurrent validity for the self-reported drop over time in the ASI Family/Social Composite score.

Table 36: Relationship Between Mean ASI Family/Social Scores and Clients Perceived Need for Specialized Family/Social Counseling Services

Need Specialized Help With Family And Social Problems	Intake	30 days	6 months	12 months
Yes	.37*	.27*	.25**	.23
n	292	223	200	192
t-test statistic	9.4	4.675	2.31	
No	.24	.21	.22	.21
n	635	491	46	419

*** p <.001, df=1; **p<.01, df=1 using a t-test to test the differences between 'Yes' and 'No.' All time points cover the 30-day immediately preceding the evaluation**

Table 37: Relationship Between Mean ASI Psychiatric Scores and Clients Desire for Specialized Counseling Services for Family/Social Problems

Want Specialized Help With Family And Social Problems	Intake	30 days	6 months	12 months
Yes	.36*	.27*	.24	.23
n	324	245	213	207
t-test statistic	8.654	4.9		
No	.24	.21	.22	.21
n	602	468	432	404

*** p <.001, df=1 using a t-test to test the differences between 'Yes' and 'No.' All time points cover the 30-day immediately preceding the evaluation**

Treatment Services Data

Similar to the Family/Social Section of this report, only limited data were analyzed and available on the delivery of specialized treatment services in the study. The available data are restricted to assessing the extent to which the areas of service enhancement selected for the study overlap with the perceived interest and desire of clients enrolling in the study. The areas of service enhancement employed in the study were rationally selected by the evaluation team in collaboration with BSAS staff, using data from a comprehensive review of the drug abuse treatment literature and numerous meetings with area treatment service providers.

Overlap Between Selected Service Enhancements and Clients Interest in the Service

Needing and Wanting Enhanced Clinical Services

A series of eight questions were asked of the clients regarding their treatment services needs and wants. These questions were: 1) Do you **need** family services, vocational services, intensive outpatient treatment, or psychiatric evaluation; and 2) Do you **want** family services, vocational services, intensive outpatient treatment, or psychiatric evaluation? Clients were asked these questions at each assessment interval and provided a dichotomous response (yes vs. no) to each. Client responses were summarized by type of clinic setting (methadone versus drug-free).

Figure 17: Proportion of clients in clinics using methadone expressing interest in availability of intensive drug abuse treatment services in setting

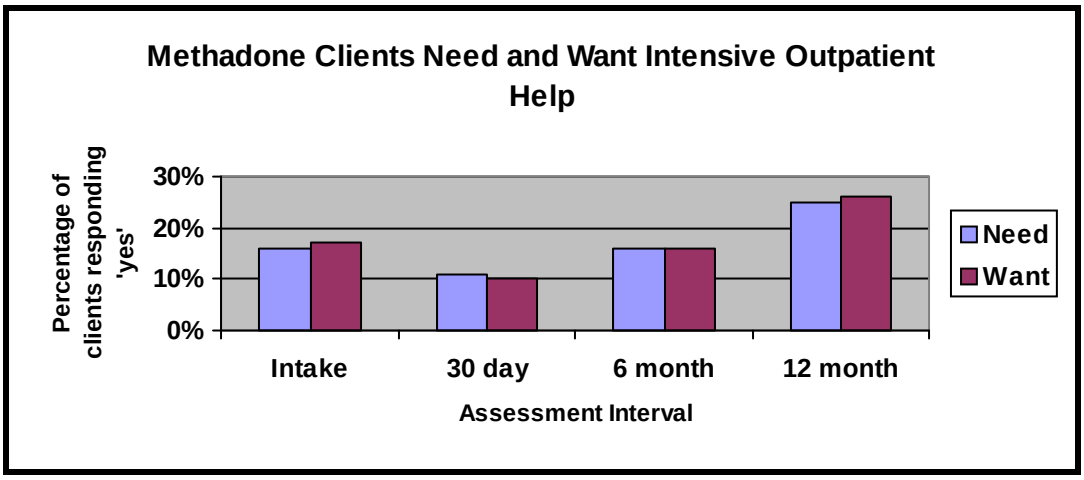
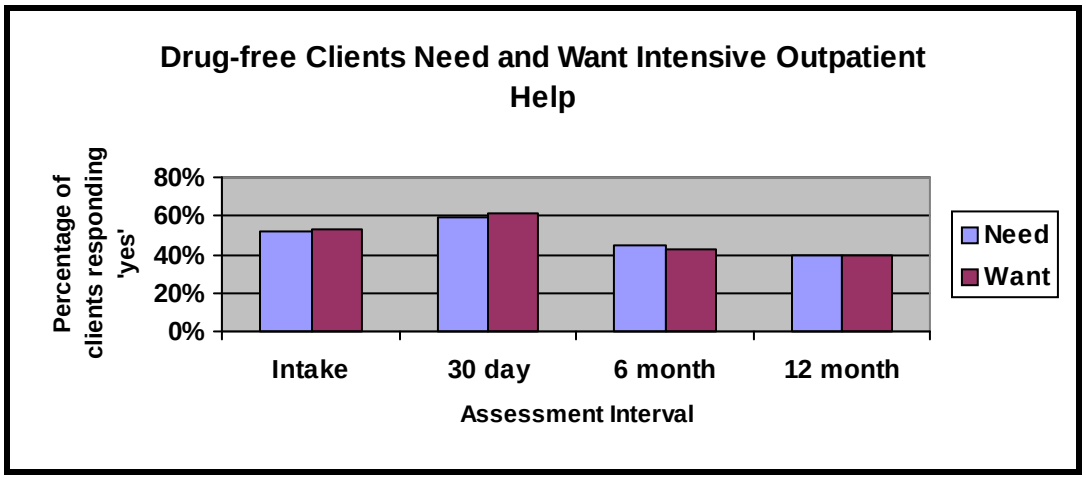


Figure 18: Proportion of clients in drug-free clinics expressing interest in availability of intensive drug abuse treatment services in setting



As expected, more than one-third of all clients expressed interest at one or more assessment intervals in having intensive drug abuse counseling services available in the clinic; this finding was most clear for clients in drug-free clinic settings.

The next set of figure reflects clients' interest in having specialized psychiatric services available in clinics using methadone.

Figure 19: Proportion of clients in clinics using methadone that expressed interest in having specialized psychiatric services in the setting.

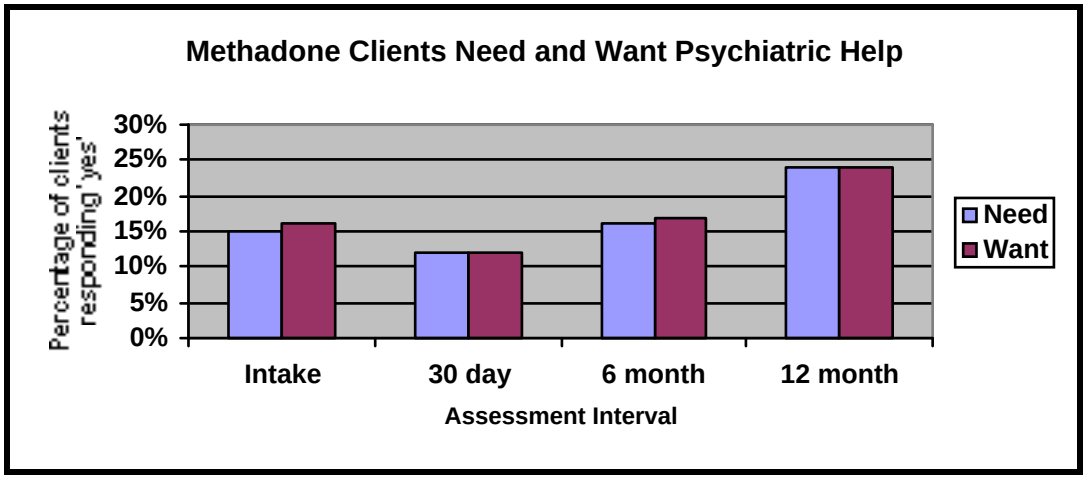
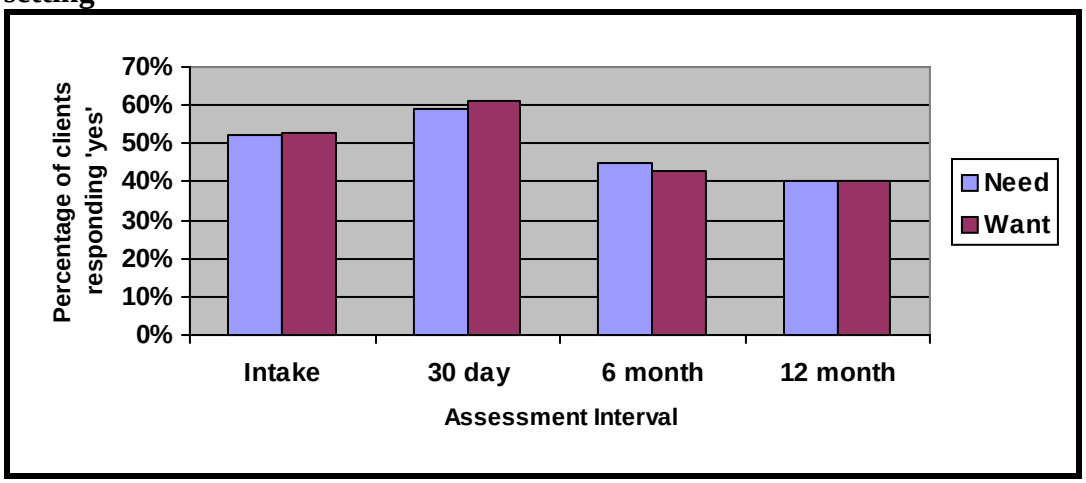


Figure 20: Proportion of clients in drug-free clinics using that expressed interest in having specialized psychiatric services in the setting



As expected, at least a third of all the clients expressed interest at one or more of the assessment intervals in having specialized psychiatric services available in the setting.

The next set of two figures shows the proportions of clients expressing interest in having specialized vocational help available in the setting.

Figure 21: Proportion of clients in clinics using methadone that expressed interest in having specialized vocational services in the setting

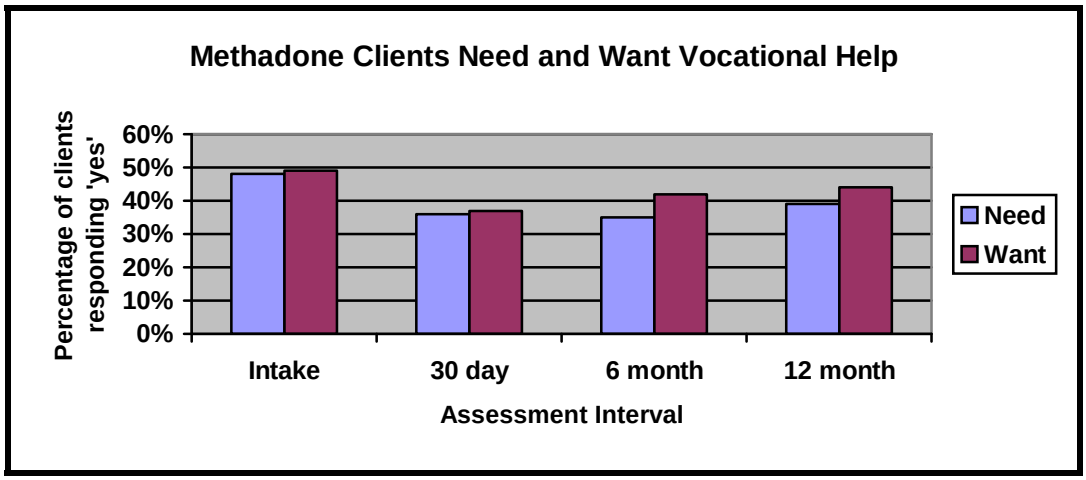
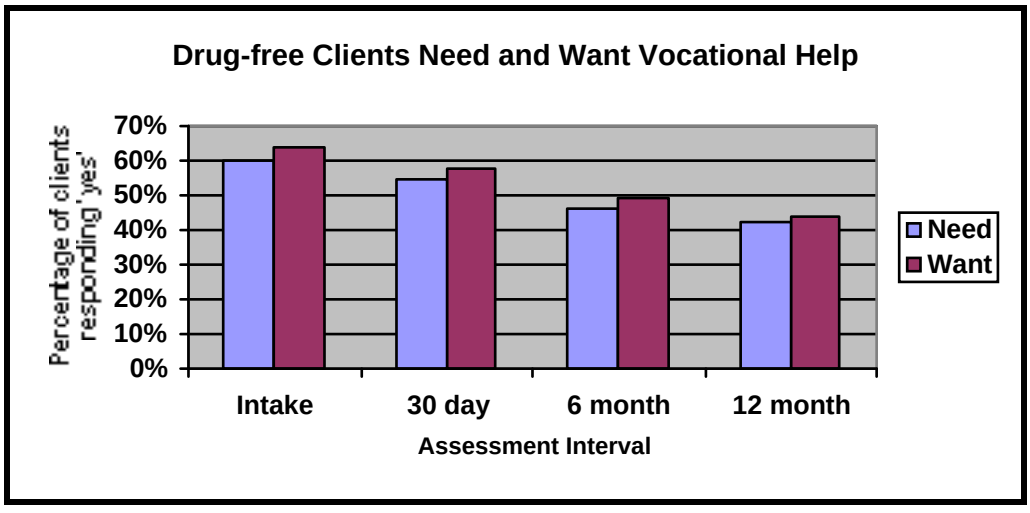


Figure 22: Proportion of clients in drug-free clinics that expressed interest in having specialized vocational services in the setting



As shown across these figures, more than two-thirds of all clients expressed interest at one or more of the assessment intervals in having specialized vocational counseling services available to them in the setting.

The final set of two figures show the proportion of clients interested in having specialized family and social counseling service available in the treatment setting.

Figure 23: Proportion of clients in clinics using methadone that expressed interest in having specialized family/social counseling services in the setting

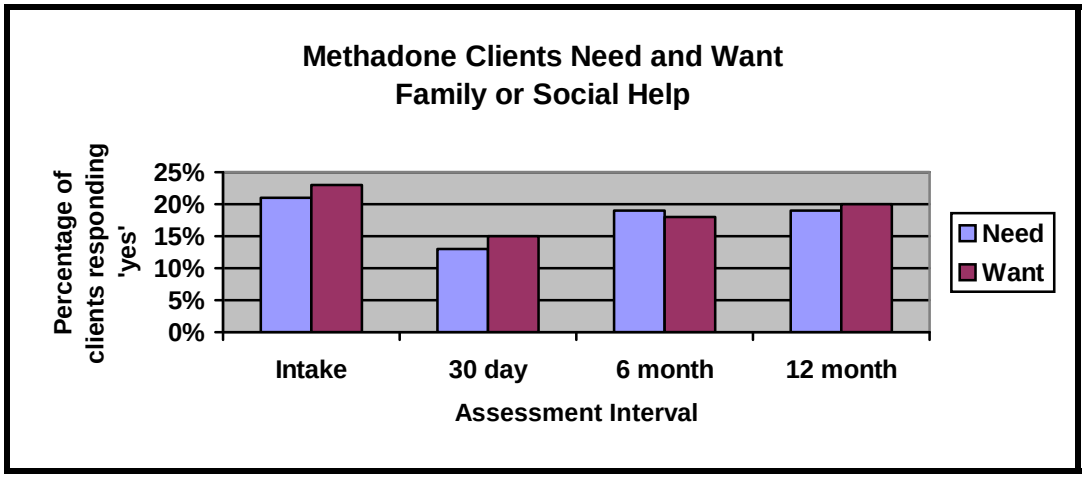
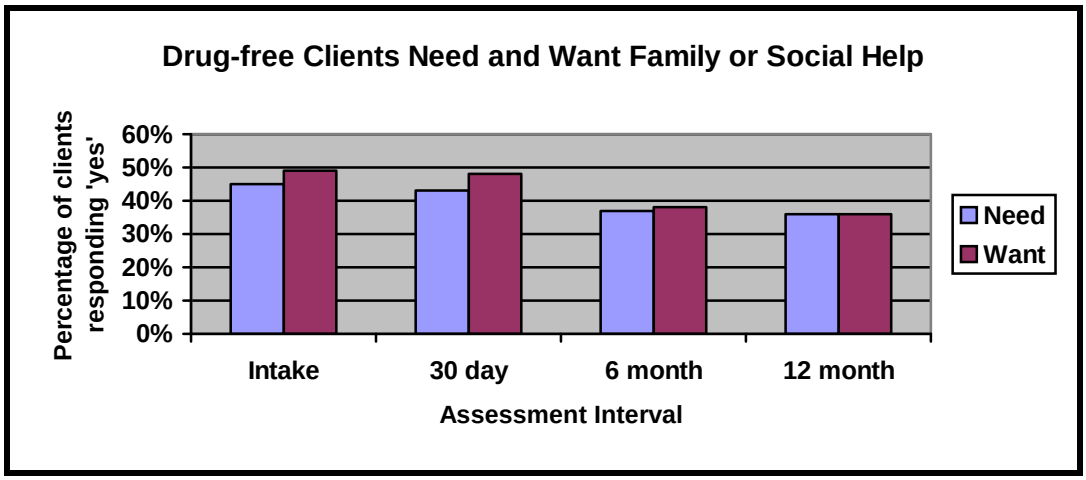


Figure 24: Proportion of clients in drug-free clinics that expressed interest in having specialized family/social counseling services in the setting



As expected, more than a third of all clients expressed interest at one or more of the assessment intervals in having access to specialized family counseling in the clinic setting. In summary, these data reflect good overlap between the service enhancements selected for the study and the needs and wants of clients receiving treatment in these settings. It also provides empirical support for further efforts to provide the type of treatment enhancement selected for this study in other clinics in the greater Baltimore metropolitan area. Secondary analyses of the service data will be conducted to evaluate the extent to which services were delivered and to determine any associations between the delivery of this service and the overall response to treatment.

VII. Impact of Delaying Onset of Treatment Services

The impact of delaying onset of treatment services was one of the central targets of investigation in the study. The extent to which this could be evaluated was limited by the large number of deviations from treatment assignment that resulted in very few delays in the start of services for clients assigned to the Usual admission condition, and in the relatively short period of delay in services (about 10-days) that occurred in those actually exposed to the intervention. As mentioned earlier, this occurred most frequently in drug-free clinic settings because all of the slots were newly created and available at the start of the study. A decision was made by the evaluators and BSAS early on to provide rapid service to all clients when slots were available, rather than forcing the delay of treatment services to maintain the original randomization schedule. Rapid turnover of clients in the drug-free modality (as compared to clinics using methadone) maintained the high availability of slots over much of the study period.

Despite these limitations, several clear and compelling points can be made about the possible effects of delaying the onset of treatment services. The first of these findings is that delaying the onset of treatment services generally had no impact on response to those services. Clients whose treatment was delayed responded as well to services once offered as those whose treatment commenced immediately following the intake evaluation. This is most evident in the data on changes in drug use pre- versus post-onset of treatment services. Clients whose treatment services were delayed largely achieved the same magnitude of reduction in indices of drug use and HIV drug use risk behavior as

those whose treatment began immediately upon completion of the intake evaluation (see above subsection on “Changes in Drug Use”); equally important, this very positive response to treatment was as rapid in the delayed group as it was in the immediate treatment group. It is important to know that treatment remains highly effective even under conditions where people must wait to receive services.

While delays in the onset of treatment services did not meaningfully diminish the response to treatment, the cost of these delays can be measured in terms of continuing drug use and crime while individuals are out of treatment. Table 38 shows the impressive reduction in drug use and crime that results from even brief exposure to treatment services. These data compare critical indices of drug use disorder for a 30-day time-block, contrasting the 30-days prior to onset of services to the first 30-days after treatment was initiated. Clients achieved impressive reductions in heroin and cocaine use during this relatively brief exposure to service, along with notable reductions in HIV risk behavior and striking reductions on critical indices of crime.

Table 38: Comparison of Clients Drug Use and Illegal Activities Before and After the Onset of Treatment Services

	Number of Clients (N)	Mean		t-value	p-value
		30-Days Preceding Baseline Evaluation	30-Days After Initiating Treatment		
1. Amount of Illegal Income	751	$368.52	$100.67	6.88	<.001
2. Number of Days Used Heroin	751	18.91	5.18	28.38	<.001
3. Number of Days Used Cocaine	751	5.91	2.13	11.77	<.001
4. Number of Days Of Illegal Activities	751	6.64	1.30	13.22	<.001

Paired sample t-tests for all clients who had an ASI at baseline and 30-days after starting treatment.

Using the change data from Table 38, the negative impact of remaining out of treatment for 30-day blocks of time can be estimated. As shown in Table 39, every 30-days without treatment is associated with an estimated 13,700 days of additional heroin use and 3,800 days of additional cocaine use for every 1,000 drug users in the community. As for crime, every 30-days without treatment is associated with 5,300 additional days of crime and an additional $267,850 of illegal income for every 1,000 drug users in the community. This is considerable drug use and crime that can be eliminated by further increases in the availability of drug abuse treatment services in Baltimore.

Table 39: Estimating the Negative Impacts on People and Society Resulting from the Absence of Drug Abuse Treatment Services

Behavioral Domain	30-Day Absence	6-Month Absence	12-Month Absence
Additional Drug Use			
Days of Heroin Use	13,700	82,200	164,400
Days of Cocaine Use	3,800	22,800	45,600
Additional Crime			
Days of Crime	5,300	31,800	63,600
Illegal Income	$267,850	$1,607,100	$3,214,200

Based on per person impacts times 1,000 people

These data estimate the scope of the possible consequences of a treatment system with inadequate capacity to serve a large group of out-of-treatment drug users. In Baltimore City, where the need for drug abuse treatment continues to exceed the available services, the negative impact to the person, the community, using our estimated is staggering. Focusing solely on the indices of crime, providing immediate services to only an additional 5,000 people in the City in need of drug abuse treatment could eliminate about 318,000 days of crime and $16,071,000 of criminal income on an annual basis. These data are alone compelling reasons to continue the efforts by many to increase the availability of drug treatment services and outreach to out-of-treatment drug users, to the point where most treatment-seekers wait a matter of days versus weeks and months for service.

VIII. Discussion

This study, conducted with nearly 1,000 clients treated across 16 of Baltimore's publicly funded outpatient drug treatment programs, provides compelling support for the effectiveness of drug treatment in reducing drug use, crime and HIV risk behaviors. Large-scale national studies have demonstrated the effectiveness of publicly funded drug treatment (Gerstein DR, et., al., 1997; Hubbard RL et al., 1997; Simpson & Sells, 1982; Hubbard et al., 1989) in decreasing alcohol and drug use and in reducing criminal activity associated with addiction. The present study supports and extends these consistent national findings by utilizing some of the best methodology from its predecessors. Self-report data was collected under confidential conditions by well-trained interviewers using standardized instruments. Concurrent validity was checked by using multiple self-report measures indexing the same behavior. Objective urine drug testing and the Department of Public Safety and Correctional Services' report of imprisonment provide critical confirmation of the self-reported data. Finally, as the data includes participants with as little as one treatment session, the study's findings are a conservative estimate of the benefits of treatment.

Sharp reductions in drug use were observed among participants as quickly as 30 days after the start of treatment in both methadone and drug-free clinics. Indeed, heroin use fell by 72%, cocaine use by 64%, and drinking to intoxication by 64% over the first month of treatment. Importantly, at twelve months from the start of treatment, participants largely sustained their improvements by reducing their heroin use by 69%,

cocaine use by 48%, and, drinking to intoxication by 32%. These findings are made even more impressive by a core group of the self-report data on drug use that was confirmed by drug testing: 75%-82% confirmed abstinence for heroin and 70%-77% confirmed abstinence from cocaine. These confirmation rates were comparable to those reported in another large multi-site treatment study that used urine data to evaluate the validity of self-reported drug use (Gerstein et. al., 1997). These robust reductions in drug use following the onset of treatment participation are associated with the other key findings of the study, namely significant reduction in criminal behavior and HIV risk behavior. Finally, these reductions in alcohol and drug use are similar to those found in national studies (Gerstein et al., 1997; Hubbard et al. 1989; Hubbard et al., 1997).

Data from the present study demonstrate a significant reduction in criminal behavior following the onset of treatment services. Large scale, confidential self-report studies conducted over the past twenty years on the relationship between drug addiction and crime have shown a strong association between frequency of criminal activity and rates of heroin, cocaine or other drug use (Chaiken & Chaiken, 1990; Kinlock et al., 1998; Nurco et al., 1991). In the present study, crime for profit decreases considerably (77%) after as few as 30 days of treatment. On average, receipt of illegal income decreased by $288 per participant in the first month of treatment. This is a conservative estimate since illegal income that is derived from stolen property usually represents only a fraction of its true value of stolen property. In addition, the proportion of participants who reported having received illegal income, and the number of days they reported engaging in illegal activity, significantly decreased following treatment onset.

Preliminary data obtained from the Department of Public Safety and Corrections indicate that the number of people arrested, adjudicated and imprisoned one year before, versus one year after initiating treatment was reduced by 38% from 289 to 179. These data, however, must be considered preliminary and interpreted with great caution since the number of participants imprisoned after treatment are almost certainly underrepresented as a result of the sometimes considerable time lag between arrest and sentencing. Future reports will also explore additional arrest data.

Reduction in HIV risk behavior, from a client and a public health perspective, is a prime benefit of drug abuse treatment services. Previous work has argued that drug abuse treatment is one of the strongest HIV risk-reduction interventions available (Metzger et. al., 1998). Findings from the present study show that HIV risk among participants decreased significantly, mostly as a result of the steep drop in drug injection seen in the methadone clinic sample. These results provide confirmation of the self-reported reduction in drug use found in the Addiction Severity Index measures, which were further confirmed by available urine specimens.

The high and sustained number of participants who denied sharing injection equipment over the 12 month course of the study was welcomed news and may be attributable to Baltimore's needle exchange program (Vlahov et al., 1997; Brooner et al., 1998), as well as the harm reduction education conducted during treatment and in other outreach settings. Nevertheless, given the high prevalence of drug injection in Baltimore, the multiple daily heroin and or cocaine injections by drug-dependent people, and the relative ease with which HIV and hepatitis B and C are transmitted via needle sharing, even low rates of needle sharing are problematic. Since drug treatment has been shown to

reduce HIV sero-conversion nearly six fold (Metger et al., 1993), efforts to expand treatment and needle exchange programs protect not only the individual receiving services in treatment but also the public at large.

There are multiple indications that opioid-dependent clients treated in clinics that use methadone had uniformly better responses than those treated in drug-free settings. The data from clinics using methadone showed greater reduction in heroin use as well as greater reduction in cocaine use and drug injection. While clients improved over time regardless of the treatment setting, these findings provide compelling evidence of the need to make medications available to heroin users being managed in drug-free settings. BSAS should take full advantage of buprenorphine for the treatment of heroin dependence in drug-free clinics once the Food and Drug Administration approve the intervention for use.

There is indication that drinking to intoxication among methadone clients 12 months after treatment slightly exceeded pre-treatment levels. This finding merits the attention of the treatment system, which should undertake additional training in clinics that use methadone to improve the detection and treatment of alcohol abuse.

Though protocol deviations limited the extent to which the study could evaluate the impact of delayed treatment services, there were several important findings. At least relatively brief delays in service had no discernable impact on the response to treatment once it was initiated. Despite this good news, delays in the onset of service do negatively impact the person and society**.**

Based on the estimates by the Baltimore City Health Department, there are approximately 59,000 alcohol and drug-dependent people in Baltimore. If an additional

5,000 (17%) of these people enter treatment, the City would avoid approximately 318,000 days of crime, over $16 million of illegal income, 822,000 days of heroin use and 228,000 days of cocaine use. These findings, combined with data from other studies showing the cost-effectiveness of treatment services (Gerstein et al., 1994), produce unequivocal support for the current and planned expansion of treatment slots in Baltimore City, and for the development and implementation of more aggressive and effective outreach and recruitment strategies for out-of-treatment people.

The investigators, BSAS and the treatment program directors selected the treatment enhancements (e.g., psychiatric, vocational) provided during this study. Though details of outcomes related to the delivery of these enhancements were not available for inclusion in this first report, it is reassuring that many of the study participants indicated they both needed and wanted one or more of these empirically-selected treatment enhancements. Furthermore, the enhancements correlated with problems identified among participants during the research. Finally, subsequent to the study's initiation, the National Institute on Drug Abuse recommended these enhancements as part of a comprehensive drug treatment system (NIDA 1999).

While the present study had a number of strengths that were outlined above, it also has a limitation common to multi-site outcome studies conducted with a large number of participants, namely loss to follow-up. The present study's follow-up rates at one, six and twelve months (respectively 76%, 70% and 65%) were acceptable and within the range of the rates of another recent national study (Hubbard et. al., 1997). The average follow-up rates in the methadone treated sample (83%, 80% and 73%) reflect the higher retention rate in that treatment modality and hence the greater ease at tracking

participants. Nevertheless, it is possible that participants lost to follow-up had different outcomes than those who were interviewed.

Baltimore and San Francisco are the nation's only two cities moving towards providing drug treatment on demand in order to improve the lives of individuals and their families and to reduce the despair, disease, death, crime and loss of economic opportunity associated with widespread drug problems. The positive findings of the present study are supported by recent changes in Baltimore's citywide indices of drug-related crime and disease; they indicate that Baltimore's efforts to reach treatment on demand are paying off. This year, Baltimore and San Francisco were the only two cities in the country whose number of drug-related emergency room visits declined. Over the past two years, Baltimore's violent crime has dropped 24%, homicides have gone below 300 for two consecutive years, robberies have declined 28%, and drug overdose deaths have declined 25%. Given the proven cost-effectiveness of treatment (Gerstein et al 1994) and its positive impact on individuals, families and communities, the City of Baltimore and the State of Maryland appear to be making the right investments in drug and alcohol treatment expansion.

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