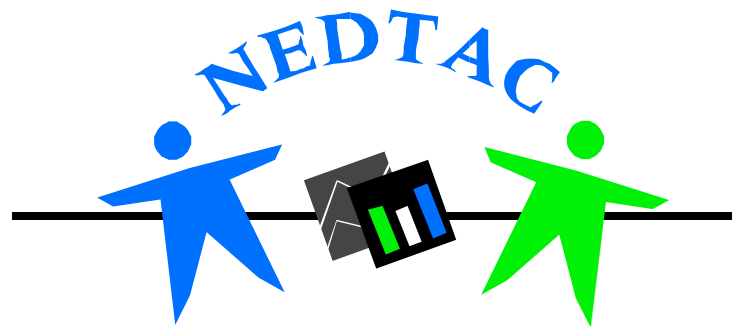


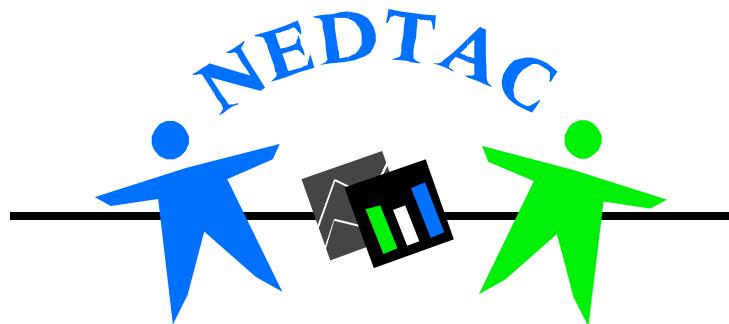
**NATIONAL EVALUATION DATA AND
TECHNICAL ASSISTANCE CENTER**



**FOLLOWING-UP DRUG ABUSE TREATMENT COHORTS:
HOW NECESSARY IS A HIGH RESPONSE RATE?**

May 1999

**NATIONAL EVALUATION DATA AND
TECHNICAL ASSISTANCE CENTER**



**FOLLOWING-UP DRUG ABUSE TREATMENT COHORTS:
HOW NECESSARY IS A HIGH RESPONSE RATE?**

Prepared by

Susanna Nemes, Ph.D.

Eric Wish, Ph.D.

Brook Wraight, B.A.

Nena Messina, M.A.

**Center for Substance Abuse Research (CESAR)
University of Maryland, College Park**

May 1999

This document was supported by the Center for Substance Abuse Treatment, Department of Health and Human Services, Caliber/NEDTAC Contract No. 270-94-0001.

CSAT
Center for Substance
Abuse Treatment
SAMHSA

TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	i
ACKNOWLEDGMENTS	ii
ABSTRACT	iii
I. INTRODUCTION	1
II. METHODS	4
1. SAMPLE DESCRIPTION	4
2. FOLLOW-UP DATA COLLECTION	7
3. COMMUNITY VERSUS IN-PRISON RESPONDENTS	8
III. RESULTS	11
1. RESEARCH QUESTION 1	11
2. RESEARCH QUESTION 2	14
3. RESEARCH QUESTION 3	18
4. RESEARCH QUESTION 4	24
IV. DISCUSSION	29
REFERENCES	31

FOREWORD

The effectiveness of publicly funded substance abuse treatment has come under increasing scrutiny in recent years. Indeed, the need to justify the expense of treatment programs based on the results achieved has never been more critical. Toward this end, the Center for Substance Abuse Treatment (CSAT) entered into a cooperative agreement called the District of Columbia Treatment Initiative (DCI). The DCI was an experiment designed to test the efficacy of providing enhanced inpatient and outpatient treatments of different durations to clients seeking treatment in Washington, D.C. The organizations involved in the cooperative agreement included CSAT; D.C. Alcohol and Drug Abuse Services Administration (ADASA); the National Institute on Drug Abuse (NIDA); Koba Associates, Inc., in collaboration with the Research Triangle Institute (RTI); the Institute for Behavior Resources (IBR); and Second Genesis, Inc.

The Center for Substance Abuse Research (CESAR), at the University of Maryland, College Park, was funded by CSAT to conduct a follow-up study with clients who participated in the DCI; specifically, clients assigned to the Second Genesis residential programs. The objective of the study was to determine the extent to which client outcomes differed between clients receiving the experimental program (6 months of inpatient treatment followed by 6 months of outpatient care) and those receiving the standard program (10 months of inpatient treatment followed by 2 months of outpatient care). The study obtained a very high follow-up rate (93%), which is essential to the accurate measurement of treatment outcomes.

This report addresses questions arising from the assumption that at least 80 percent of the target sample of clients must be successfully followed up to avoid obtaining results from a biased sample of easy-to-locate persons. Because a 93 percent follow-up response rate was obtained for the DCI study, it was possible to examine the correlates of follow-up difficulty and the potential bias to the results that would have occurred if only the easier to reach sample members had been studied.

Sharon Bishop
Project Director
National Evaluation Data and
Technical Assistance Center (NEDTAC)

ACKNOWLEDGMENTS

The District of Columbia Treatment Initiative (DCI) was a cooperative agreement among the D.C. Alcohol and Drug Abuse Services Administration (ADASA), the National Institute on Drug Abuse (NIDA), through a contract from Caliber Associates, the Center for Substance Abuse Treatment (CSAT), Koba Associates, Inc., in collaboration with the Research Triangle Institute (RTI), the Institute for Behavior Resources (IBR), and Second Genesis, Inc.

We are grateful to the staff and clients at Second Genesis for their participation. We also appreciate the assistance of Jerome Jaffee, Barry Brown, Herman Diesenhaus, Gary Palsgrove, Jeffrey Hoffman, John Carver, Samuel Carson, Robert Gesumaria, and the Addiction Prevention and Recovery Administration (APRA). Finally, special thanks to the interviewers who conducted the follow-up interviews and worked day and night to locate the clients. Without the cooperation of all these parties, this study would not have been possible.

We wish to thank Susanna Nemes, Ph.D., Eric Wish, Ph.D., Nena Messina, M.A., and Brook Wraight, B.A., from CESAR for their development of this report, and Ron Smith, Ph.D., at CSAT for his guidance, review, and comments.

ABSTRACT

Assessment of treatment outcome often requires researchers to locate and reinterview clients long after they have left treatment. Finding these persons is fraught with difficulties, especially if many of the intended respondents are still abusing drugs or committing crimes. To avoid obtaining results from a biased sample of easy to locate persons, researchers have traditionally believed that at least 80 percent of the target sample of clients must be successfully followed-up. These assumptions have rarely been systematically investigated, however. Are persons who are difficult to locate really different from those easy to locate? And even if they are, is obtaining a follow-up response rate of 80 percent necessary to avoid biasing findings?

This report addresses these questions using information obtained from the D.C. Treatment Initiative (DCI), a treatment outcome study involving persons assigned to treatment in a therapeutic community (TC). Because the DCI obtained a follow-up response rate of 93 percent and documented all efforts to locate the target sample, it was possible for us to examine the correlates of follow-up difficulty and the potential bias to the results that would have resulted if only the easier to reach sample members had been studied.

Among the major findings were:

- Persons who were successfully followed-up were more likely to have completed treatment than persons not followed-up
- Only two variables at baseline, age and number of arrests prior to admission, were related to difficulty of follow-up
- Easiest to reach persons were more likely to be employed at follow-up than persons who were more difficult to follow-up
- Persons difficult to locate were more likely to be using cocaine and to be arrested post-discharge
- Cocaine use and arrests might be considerably underestimated in samples derived from less than 80 percent of the target sample of clients.

It is clear from our findings that clients who are difficult to locate do tend to have higher rates of treatment drop-out, and post-discharge unemployment, drug use and crime. Because these variables are often central to assessing treatment effectiveness, researchers would be well served to heed the rule of obtaining follow-up response rates of at least 80 percent.

I. INTRODUCTION

The ability to locate and interview participants in treatment outcome studies is essential. High follow-up rates allow researchers to have the confidence to draw conclusions from their findings and to increase the generalizability of the findings. Generalizability is greatly threatened with low follow-up rates, as non-responders may be more deviant, sick, or have poorer outcomes than reinterviewed respondents. Interviewing a small subsample at follow-up is likely to bias findings in favor of clients who are located more easily or who are willing to participate in the study. As a result, clients whose lives are more stable may be interviewed more frequently than those whose lives are unstable. A low follow-up rate may also exclude clients who are homeless, who are using drugs, or who are involved in criminal activities, all of whom are important members of the sample. High follow-up rates are particularly important in treatment outcome studies, in order to measure treatment outcome accurately.

An 80 percent response rate has been considered acceptable when conducting follow-up research (Apsler & Harding, 1991), although others have argued that 70 percent is a satisfactory completion rate (Polich, Armor, & Braiker, 1980). The National Institute on Drug Abuse (NIDA) Community Research Branch has also “clearly and repeatedly stated the need for an 80 percent or higher follow-up rate” (Desmond, Maddux, Johnson, & Confer, 1995; Wish, Robins, Helzer, Hesselbrock, & Davis, 1978). Many of the studies reported in the literature reflect lower rates. Several reviews of the results of follow-up investigations in the mental health and substance use areas reveal that more than 25 percent of the subjects are usually not located for evaluation at follow-up (Sobell, Brochu, Sobell, Roy, & Stevens, 1987). One review of longitudinal surveys in the United States found that of those studies with follow-up periods of 4-10 years, the average attrition rate was 47 percent (Capaldi & Patterson, 1987). According to Vaillant (1975), studies with 20 percent to 25 percent attrition “are probably not worth doing.”

Prior studies have identified characteristics that correlate with respondents that are difficult to locate or to recruit (see Exhibit I-1). Cottler et al. (1987) conducted a psychiatric epidemiologic study of the general population and identified those who were young, male, black, nonrural resident, educated, and full-time employed as requiring more contact efforts. In addition, those who met the diagnostic criteria for an alcohol disorder required almost 20 percent more contact attempts than those without the disorder; they were also more likely to refuse to participate once contacted. In a study of drug abusers, Cottler and colleagues (1996) found that employment status was the only characteristic associated with being difficult to track. In another study of drug abusers, Walton et al. (1998) found that reuse of substances at follow-up was associated with tracking difficulty. Other studies have also found that age, gender, alcohol use and severity of drug use are related to being hard to find in follow-up studies (Robins, 1966;

Twitchell, Hertzog, Klein, & Schuckit, 1992; Wish, Robins, Helzer, Hesselbrock, & Davis, 1978). Psaty et al. (1994), in a telephone follow-up study, found that attrition was highest among blacks (51.3%) and lowest among whites (37.5%). Other predictors of loss to follow-up were age, employment, education, marital status, income, and alcohol consumption.

EXHIBIT I-1		
CORRELATES OF FOLLOW-UP DIFFICULTY, A REVIEW OF THE LITERATURE		
CORRELATES OF FOLLOW-UP DIFFICULTY	POPULATION STUDIED	STUDY
Race; Age; Employment; Education; Marital Status; Income; Alcohol Consumption	Community-based health intervention population	Psaty, et al. (1994)
Age; Gender; Race; Education; Employment; Geographic Location	Psychiatric population	Cottler, et al. (1987)
Employment	Drug using population	Cottler, et al. (1996)
Age; Gender; Alcohol Use; Severity of Drug Use	Sociopathic population; Male population; Vietnam veteran population	Robins, et al. (1966) Twitchell, et al. (1992) Wish, et al. (1978)
Not Listed in Telephone Directory	Vietnam veteran population	Robins, et al. (1977)
Drug Use at Follow-up	Substance abuse treatment population	Walton, et al. (1998)

Robins (1977) studied Vietnam veterans and concluded that “ease of location is highly correlated with outcome.” For example, participants with the worst outcomes may be dead and therefore easy to locate through vital records, and participants with the best outcomes should be listed in the telephone directory, also making them easy to locate. She considered the rest of the participants “difficult to find.” High educational status has also been associated both with response and with nonresponse (Cottler, 1987).

Desmond and colleagues (1995), in a review of tracking methods for substance abusers, stated that “patience, persistence, time, and travel” are necessary for obtaining high follow-up rates. Methods traditionally used for tracking respondents at follow-up have been phone, mail, outreach, and the criminal justice system. Appropriate resources to conduct a thorough follow-up effort are also essential.

The District of Columbia Treatment Initiative (DCI) obtained a high follow-up rate (93%) and collected detailed information on tracking attempts. Our study therefore provides us with the

unique opportunity to examine the topic of follow-up difficulty. This paper will focus on the following research questions: (1) Do clients who were interviewed at follow-up differ from clients who were not interviewed at follow-up?; (2) Are there client characteristics that distinguish clients who were more difficult to track?; (3) Are differences in outcomes related to how difficult it was to track a client?; and (4) How do sample estimates change as more difficult to reach clients are added to the sample?

Overview of the DCI Study

The DCI study obtained a 93 percent follow-up rate for 412 substance abusers who had participated in treatment at least 9 months prior to the follow-up. The clients were part of the DCI. The DCI, with its high follow-up rate and extensive information on drug use, criminal history, psychological status, social relations and demographic information, is especially valuable for studying correlates of follow-up difficulty. Our follow-up rate of 93 percent also enables us to study how our sample might change had we stopped at a lower sample response rate.

The DCI was designed to test the efficacy of providing abbreviated inpatient treatment to clients seeking treatment in Washington, D.C. An important difference between the Abbreviated Inpatient and Standard Inpatient therapeutic communities was the length of inpatient and outpatient treatment provided. The Standard Inpatient Program offered 10 months of inpatient treatment followed by 2 months of outpatient services, and the Abbreviated Inpatient Program offered 6 months of inpatient treatment followed by 6 months of outpatient services. Persons who sought treatment at the Central Intake Division (CID) run by the D.C. Alcohol and Drug Abuse Services Administration (ADASA) or who were court ordered to obtain treatment were eligible to participate in the DCI. A complete description of the process and eligibility criteria are available in the DCI Project final report (Nemes, Wish, & Messina, 1998) and in Karson and Gesumaria (1997).

II. METHODS

1. SAMPLE DESCRIPTION

Four hundred and sixty-one (461) study participants were found to be eligible and agreed to participate in the study. Of these 461 participants, 412 were randomly assigned to one of the two residential drug abuse treatment facilities between February 1992 and January 1994. A total of 194 of the remaining 412 clients were assigned to the Standard Inpatient Program and 218 were assigned to the Abbreviated Inpatient Program.

The major differences between the two programs were length of planned residential stay and outpatient treatment, a greater number of clinical staff per client at the Abbreviated Inpatient site, and a larger percentage of female beds at the Abbreviated Inpatient site. Specifics on each of the treatment programs are available in the DCI Project final report (Nemes, Wish, & Messina, 1998) and in Karson and Gesumaria (1997). In order to complete either treatment program, clients were expected to fulfill all requirements of both the inpatient and outpatient portions of treatment. Clients at the Standard and Abbreviated sites were compared at admission to ensure that random assignment resulted in similar clients in each program. The random assignment resulted in few differences in the characteristics of the two groups at admission.

The sample consisted of primarily black male respondents, in their early 30s. The majority of the respondents had held legitimate jobs in the past, had attended nearly 11 years of school, and had never been married. About half the sample was diagnosed with either Antisocial Personality Disorder (APD) or APD and Depression. Exhibit II-1 provides a description of the sample.

Exhibit II-2 shows drug use prior to admission. The participants reported high rates of illegal drug and alcohol use, with crack as the most frequently cited serious drug problem. The most commonly used drug reported was cocaine, followed by alcohol. Less than one-half reported using heroin. About one-third of the sample reported injecting drugs and approximately half of the participants had received treatment for alcohol/drug problems prior to participating in this study.

Exhibit II-3 describes clients' criminal histories, by self-report and according to criminal justice records. Clients reported active criminal histories. Ninety percent of participants reported being arrested at some point in their lives and spending an average of approximately three years in jail in their lives. Sixty-eight percent reported being either on probation or on

EXHIBIT II-1	
DEMOGRAPHIC CHARACTERISTICS AT ADMISSION (N=412)^a	
Male	72%
Black	98%
Age at Baseline (Mean=32.2 years)	
19 to 25 years	14%
26 to 30 years	32%
31 to 35 years	26%
36 to 55 years	<u>28%</u>
	100%
Mean Years of Education	10.9
Ever Worked at Legitimate Full-time Job	90%
Marital Status	
Married\Living Together	16%
Divorced\Separated\Widowed	14%
Never Married	<u>70%</u>
	100%

^a N's vary slightly due to missing data.

EXHIBIT II-2	
SELF-REPORTED DRUG USE AT ADMISSION (N=412)^a	
Most Serious Drug Problem	
Crack	52%
Heroin	19%
Cocaine	16%
Drugs Used Five or More Times in Life	
Cocaine	94%
Alcohol	89%
Crack	82%
Marijuana	84%
Hallucinogens	55%
Heroin	41%
Ever Used Needles to Inject Drugs	31%
Ever Received Prior Tx for Alcohol/Drugs	49%

^a N's vary slightly due to missing data.

EXHIBIT II-3	
CRIMINAL JUSTICE STATUS AT ADMISSION (N=412)^a	
Self-Reported Status at Admission	
Criminal Justice Status	
On Probation	57%
On Parole	11%
Other Status ^b	4%
No Criminal Status	<u>28%</u>
	100%
Ever Arrested	90%
Mean Number of Adult Arrests	7.2
Ever Arrested for:	
Sale of Drugs	61%
Possession of Drugs	57%
Probation/Parole Violations	33%
Burglary	22%
Robbery	22%
Weapons Offenses	18%
Mean Number of Adult Convictions	3.3
Mainly Supported by Illegal Activities	55%
Mean Time in Jail in Lifetime (years)	3.1
Criminal Justice Records Based Status at Admission	
Criminal Justice Status	
On Probation	49%
On Parole	11%
Other Status ^b	7%
No Criminal Status	<u>33%</u>
	100%
Mean Number of Adult Arrests	9.1
Mean Number of Arrests in 12 Months Prior to Admission	1.0

^a N's vary slightly due to missing data.

^b Includes awaiting sentence/trial, on bail, case pending, and any other status.

parole at admission (60% according to records). According to records, clients had been arrested an average of 9 times in their lifetimes (7.2 times according to self-report) and once in the year prior to admission. Overall, this sample is representative of "hard-core" substance abusers, including homeless users, users involved in illegal activities, and long-term users who traditionally compose treatment outcome populations. In fact, Karson and Gesumaria, in their 1997 article which describes the DCI program, stated that, "The client sample was typical of the chronic

substance-abusing, antisocial clients treated by TCs.” Therefore, our findings on the correlates of follow-up difficulty may apply to other follow-up studies of TC clients.

2. FOLLOW-UP DATA COLLECTION

An effort to locate and reinterview all 412 clients who had been randomly assigned to inpatient treatment at admission was begun in January of 1995, an average of 19 months after treatment discharge. All clients had signed a consent form at baseline agreeing to participate in the follow-up portion of the study. Clients also had provided locator information with which to be tracked at follow-up. Ninety-three percent of the eligible target sample were successfully interviewed (380 of 408 clients). Four respondents had been dropped from the follow-up sample because they passed away prior to being interviewed.

Various techniques were used to try to reach the respondents, including mailing letters to addresses provided, phoning respondents, family members and friends, visiting addresses listed, conducting street outreach in respondents’ neighborhoods, identifying respondents’ whereabouts through the criminal justice system, and locating respondents with information provided by other respondents. The statistics presented in Exhibit II-4 describe the final tracking method used that resulted in an interview. These statistics do not describe the number of times a respondent may have scheduled an appointment prior to being interviewed, or the methods used to locate the respondent each of those times. The most effective tracking method was phoning, which usually involved making numerous calls to friends and family, phoning at various times of the day, evening and on weekends, and obtaining phone numbers from other sources. Approximately 45 percent of the respondents were ultimately tracked through a phone contact. The next most efficient and very cost-effective method was mailing letters. An estimated 32 percent of the sample were interviewed in response to a letter received. This process also often involved sending multiple letters to all parties involved, and using post office codes to make decisions about the most useful mailing plan. Twelve percent of the sample were located through street outreach. These were consistently some of the most difficult respondents to track. Usually phone and mailing attempts were futile in these cases. Eight percent of the respondents interviewed were identified within the criminal justice system, with information provided by prisons and probation/parole officers. Three percent of the respondents were located with the assistance of another respondent.

EXHIBIT II-4	
FINAL TRACKING METHOD THAT LED TO FOLLOW-UP INTERVIEW	
(N=380)	
FINAL TRACKING METHOD	PERCENT CONTACTED
Phone Contact	45%
Mailing Letters	32%
Street Outreach	12%
Criminal Justice System ^a	8%
Referred from a Respondent	<u>3%</u>
	100%

^a Includes probation, parole, and prison systems.

The total number of attempts required to track and interview our sample was 2,686 and the mean number of attempts for the entire samples was 6.5 attempts. Exhibit II-5 describes the number of tracking attempts required to interview clients. Twenty-one percent of clients in the target sample were tracked in one attempt. Approximately one-third (31%) were tracked by two attempts. One-half were tracked by four or fewer attempts. Nearly three-quarters of the target sample (73%) were tracked by nine or fewer attempts. Eighty-seven percent of the target sample were tracked in up to 15 attempts. The remaining 6 percent of the target sample were tracked in 16 to 35 attempts. Approximately half of the ultimate interviewed sample (54%) were tracked by 4 attempts, and 91 percent were tracked by 13 attempts.

Approximately one-fifth (18%) of the target sample was incarcerated at follow-up. This is an important sub-group in our sample and in the next section, we examine if they were more difficult to track than community respondents.

3. COMMUNITY VERSUS IN-PRISON RESPONDENTS

Eighteen percent of the target sample (n=73) were interviewed in prison at follow-up. Exhibit II-6 describes the total tracking attempts that were required to interview respondents in prison compared to respondents interviewed in the community (non-prison). Only 3 percent of prison clients were interviewed after one tracking attempt, compared to 28 percent of non-prison clients. Nineteen percent of non-prison respondents were tracked in 10 or more attempts, compared to 25 percent of prison clients. The mean number of attempts required to interview prison clients was 7.0, compared to 5.7 attempts to interview non-prison clients. Overall,

EXHIBIT II-5				
TOTAL TRACKING ATTEMPTS, BY PERCENTAGE OF RESPONDENTS (N=376*)				
TOTAL ATTEMPTS	% OF TARGET SAMPLE	CUMULATIVE % OF TARGET SAMPLE	% OF INTVWD. SAMPLE	CUMULATIVE % OF INTVWD. SAMPLE
1 Attempt	21%	21%	23%	23%
2 Attempts	9%	31%	10%	33%
3 Attempts	12%	43%	13%	46%
4 Attempts	7%	50%	8%	54%
5 Attempts	4%	54%	4%	58%
6 Attempts	5%	59%	5%	63%
7 Attempts	7%	65%	7%	70%
8 Attempts	5%	70%	5%	75%
9 Attempts	4%	73%	4%	79%
10 Attempts	4%	77%	4%	83%
11 Attempts	3%	80%	3%	86%
12 Attempts	2%	82%	2%	88%
13 Attempts	3%	85%	3%	91%
14 Attempts	2%	86%	2%	93%
15 Attempts	1%	87%	1%	94%
16 to 35 Attempts	6%	93%	6%	100%

* Two people were excluded who were interviewed without having to be tracked.

EXHIBIT II-6		
TOTAL TRACKING ATTEMPTS BY INTERVIEW LOCATION (N=378)		
TOTAL TRACKING ATTEMPTS	NON-PRISON (N=305)	PRISON (N=73)
1 Attempt	28%	3%
2 to 4 Attempts	30%	37%
5 to 9 Attempts	23%	35%
10 or More Attempts	<u>19%</u>	<u>25%</u>
	100%	100%
Mean # of Attempts	5.7	7.0

although the difference was not significant, there is a trend suggesting that prison clients required more attempts to be successfully followed up. As shown in Exhibit II-4, only eight percent of the

respondents interviewed were identified within the criminal justice system, with information provided by prisons and probation/parole officers. The remaining incarcerated respondents were located by family or friends or other tracking sources.

As expected, more difficult to reach clients had to be tracked for longer periods of time and involved greater tracking efforts, as demonstrated by the number of tracking attempts. Exhibit II-7 describes the relationship between total tracking attempts and amount of time tracked for the clients that were successfully tracked and interviewed. The majority of clients found in one attempt were tracked for 1 month or less (95%). The majority of clients found in two to four attempts were tracked within 3 months (84%). Nearly 90 percent of clients found in five to nine attempts were tracked for up to 6 months. It took more than 6 months to track the 23 percent of clients interviewed in 10 or more attempts. Clients tracked in one attempt were tracked an average of 11.8 days, but those requiring 10 or more attempts were tracked for an average of 131 days.

Twenty-eight clients from the target sample were never interviewed. Of the 28 respondents who were not interviewed, two were contacted but refused to participate and three were scheduled multiple times but never completed the interview.

EXHIBIT II-7				
TOTAL TIME TRACKED BY TOTAL TRACKING ATTEMPTS				
(N=376*, INTERVIEWED SAMPLE)				
TIME TO INTERVIEW	TOTAL TRACKING ATTEMPTS REQUIRED			
	1 Attempt (n=86)	2 to 4 Attempts (n=118)	5 to 9 Attempts (n=95)	≥10 Attempts (n=77)
<1 Week	58%	25%	2%	1%
>1 Week to 1 Month	37%	26%	17%	5%
>1 Month to 3 Months	4%	33%	37%	25%
>3 Months to 6 Months	1%	14%	31%	44%
>6 Months to 9 Months	0%	2%	12%	22%
> 9 Months	<u>0%</u>	<u>0%</u>	<u>1%</u>	<u>1%</u>
	100%	100%	100%	100%
Mean # of Days:	11.8	50.4	100.0	131.0

* Two people were excluded who were interviewed without having to be tracked.

III. RESULTS

1. *Research Question #1: How do clients who were interviewed at follow-up differ from clients who were not interviewed at follow-up?*

To answer this question, we compared the 93 percent of our target sample who were interviewed to the 7 percent that who were not interviewed. We examined a number of variables including demographic characteristics, psychological status, drug use history, criminal activity and treatment status. Differences were found in only a few areas.

The only difference in the demographic characteristics of the two groups was found in ethnic composition (See Exhibit III-1). While the overwhelming majority of both groups were black, the sample of those who were interviewed consisted of a greater percentage of black respondents (99% versus 86%, $p < .01$). No significant differences were found in the areas of gender, age, employment history, education, marital status, or psychological diagnoses.

Significant differences were not found between groups with regard to criminal history prior to admission, as obtained from records or on information based on self-reports (see Exhibit III-2). According to criminal justice records, those interviewed at follow-up were arrested an average of 8.9 times prior to admission, compared to those not interviewed at follow-up, who were arrested an average of 11.2 times. Self-reported data produced a similar trend. Although results were not significant when comparing the mean number of adult arrests, prior to admission, those not followed up had more arrests. It is possible that this difference would have been significant with larger sample sizes. No differences in drug use at admission were found between clients who were followed up and clients who were not followed up (analyses not shown).

As Exhibit III-3 shows, a greater percentage of persons followed-up completed treatment (37% versus 14%, $p < .05$). This is to be expected because completers of both phases of treatment are probably more stable and accessible to be reinterviewed. This finding also implies that if high response rates are not achieved in treatment outcome studies, outcomes and conclusions drawn may be biased towards those who completed treatment.

EXHIBIT III-1		
DEMOGRAPHIC CHARACTERISTICS AT BASELINE, BY FOLLOW-UP STATUS		
(N=406)		
	FOLLOW-UP (n=378^a)	NO FOLLOW-UP (n=28^a)
Male	72%	68%
Black	99% **	86% **
Mean Age at Admission	32.0 years	34.0 years
Ever Worked Legitimate Job	90%	89%
Highest Grade Attended (Mean)	10.9 years	11.0 years
Marital Status		
Never Married	70%	63%
Married/Living Together	16%	26%
Divorced/Separated/Widowed	<u>14%</u>	<u>11%</u>
	100%	100%
Raising Children	31%	35%
Hierarchical SCID Diagnoses ^b		
No Disorder	20%	19%
Provisional Only	11%	5%
Other Disorders	10%	10%
Depression	11%	19%
APD	38%	43%
APD + Depression	<u>12%</u>	<u>5%</u>
	100%	100%

^a N's vary slightly due to missing data. Excludes four deceased clients.

^b SCID generated diagnostic categories are based on hierarchical categories and may include one or more of the previous disorders. For example: Clients diagnosed with Depression may also be diagnosed with other disorders. Clients diagnosed with APD may also have other disorders, but Depression is excluded. Clients diagnosed with APD and Depression may also have other disorders.

** p < .01

EXHIBIT III-2		
CRIMINAL HISTORY DATA, BY FOLLOW-UP STATUS (N=406)		
	FOLLOW-UP (n=378^a)	NO FOLLOW-UP (n=28^a)
Based on Criminal Justice Records		
Criminal Status at Admission		
Parole/Probation	60%	57%
Jail/Bail	6%	18%
No Criminal Status	<u>34%</u>	<u>25%</u>
	100%	100%
Mean # Adult Arrests	8.9	11.2
Prior to Admission	7.7	9.8
12 Months Prior to Admission	1.0	0.9
Based on Self-Report		
Criminal Status at Admission		
Parole/Probation	67%	70%
Jail/Bail	3%	4%
No Criminal Status	<u>30%</u>	<u>26%</u>
	100%	100%
Mean # Adult Arrests Prior to Admission	7.8	10.3

^a N's vary slightly due to missing data.

** p < .01

EXHIBIT III-3		
TREATMENT COMPLETION, BY FOLLOW-UP STATUS (N=406)		
	FOLLOWED-UP (n=378)	NOT FOLLOWED-UP (n=28)
Mean Time Spent in (in months)		
Inpatient Phase	6.4	6.0
Outpatient Phase ^a	<u>2.0</u>	<u>1.7</u>
Inpatient and Outpatient Phases	8.4	7.7
Completed Treatment	37%*	14%

^a Includes 179 people who did not attend outpatient phase.

* p < .05

More differences would have probably been found between groups if the follow-up rate had been much lower. It is difficult to find differences when one of the two groups being compared consists of only 7 percent of the sample. In order to test this hypothesis, we conducted analyses comparing the first 80 percent of our tracked sample to the remaining 20 percent of the sample. This increased the sample size of the group (from 28 to 82 clients). Still, the only differences found between the two groups were race and treatment completion, indicating that it is difficult to identify characteristics at baseline related to difficulty of following up clients. There were no differences in other demographics, drug use or criminal activity at baseline. Overall, the group that was interviewed at follow-up and the group that was not interviewed were similar at admission. Hence we conclude that it would be difficult to predict who would be successfully followed up based on baseline and demographic characteristics.

2. *Research Question 2: Are there client characteristics that distinguish clients who were more difficult to track from those who were easier to track?*

This section presents comparisons of clients who were “easy” to reach at follow-up versus those who were “difficult” to reach at follow-up. For analysis, the sample was broken into four groups based on total tracking attempts required to interview the clients: one attempt; two to four attempts, five to nine attempts, and ten or more attempts.

The amount of locator information collected at baseline was similar between the groups, with no significant differences found (analyses not shown). Further, no significant demographic differences were found (see Exhibit III-4). Clients who were easier to track did not differ in terms of gender, race, age, employment history, educational level, marital status, or psychological diagnoses from those who were more difficult to track. However, significant differences were found in the areas of drug use, prior treatment, and criminal justice involvement (see Exhibits III-5 and III-6).

At baseline, a greater percent of the clients who were easiest to reach reported having used heroin five or more times in their lives when compared to those who were most difficult to track. Also, a greater percent of those easiest to track had received prior treatment for drugs/alcohol. Specifically, 65 percent of those tracked in one attempt reported having received prior treatment for alcohol/drugs, 44 percent of those tracked in 2 to 4 attempts and of those tracked in 5 to 9 attempts reported receiving prior treatment, and 47 percent of those tracked in 10 or more attempts reported receiving prior treatment. Difficult to reach clients also reported a greater number of adult arrests. Clients who were tracked in one attempt reported an average of

EXHIBIT III-4				
DEMOGRAPHIC CHARACTERISTICS AT ADMISSION, BY TOTAL ATTEMPTS				
	1 ATTEMPT (n=87)	2 to 4 ATTEMPTS (n=121)	5 to 9 ATTEMPTS (n=104)	≥10 ATTEMPTS (n=98)
Male	64%	74%	77%	69%
Black	100%	98%	98%	95%
Mean Age at Admission (s.d.)	33.3 (5.7)	32.5 (6.7)	31.2 (6.5)	31.4 (6.9)
Ever worked legitimate job	92%	88%	94%	85%
Highest Grade Attended (Mean)	10.9 years	10.5 years	11.2 years	10.7 years
Marital Status				
Never Married	67%	71%	71%	70%
Married/Living Together	14%	17%	19%	15%
Divorced/Separated/Widowed	<u>19%</u>	<u>13%</u>	<u>11%</u>	<u>16%</u>
	100%	100%	100%	100%
Hierarchical Psychological Diagnoses ¹	(n=75)	(n=97)	(n=85)	(n=79)
No Disorder	13%	19%	27%	18%
Provisional Only	11%	11%	12%	9%
Other Disorders	11%	11%	11%	6%
Depression	15%	11%	7%	11%
APD	29%	38%	37%	46%
APD + Depression	<u>21%</u>	<u>9%</u>	<u>7%</u>	<u>10%</u>
	100%	100%	100%	100%

¹ SCID generated diagnostic categories are based on hierarchical categories and may include one or more of the previous disorders. For example: Clients diagnosed with Depression may also be diagnosed with other disorders. Clients diagnosed with APD may also have other disorders, but Depression is excluded. Clients diagnosed with APD and Depression may also have other disorders.

EXHIBIT III-5				
SELF-REPORTED DRUG USE AT ADMISSION, BY TOTAL ATTEMPTS				
	1 ATTEMPT	2 to 4 ATTEMPTS	5 to 9 ATTEMPTS	≥10 ATTEMPTS
Drugs Used Five or More Times in Life	(n=86)	(n=120)	(n=102)	(n=95)
Cocaine	95%	93%	95%	95%
Alcohol	87%	89%	85%	91%
Crack	92%	84%	88%	86%
Marijuana	80%	83%	89%	82%
Hallucinogens	55%	56%	54%	52%
Heroin	56%*	39%*	33%*	40%*
Most Serious Drug Problem	(n=86)	(n=119)	(n=96)	(n=76)
Crack	63%	59%	65%	59%
Heroin	17%	23%	20%	24%
Cocaine	12%	5%	3%	0%
Ever Used Needles to Inject Drugs	(n=86)	(n=120)	(n=102)	(n=95)
	40%	29%	28%	30%
Ever Received Prior Tx for Alcohol/Drugs	65%*	44%*	44%*	47%*

* p = < .05

EXHIBIT III-6				
SELF-REPORTED CRIMINAL HISTORY AT ADMISSION, BY TOTAL ATTEMPTS				
	1 ATTEMPT (n=86)	2 to 4 ATTEMPTS (n=120)	5 to 9 ATTEMPTS (n=102)	≥ 10 ATTEMPTS (n=95)
Criminal Justice Status				
On Probation	57%	57%	57%	55%
On Parole	11%	11%	12%	12%
Other Status ¹	4%	4%	1%	5%
No Criminal Status	<u>29%</u>	<u>28%</u>	<u>30%</u>	<u>28%</u>
	100%	100%	100%	100%
Mean Age at First Arrest	21.1 years	19.4 years	19.4 years	20.1 years
Mean Number of Adult Arrests	7.4*	6.7*	7.8*	10.1*
Mean Time in Jail in Lifetime	2.4 years	3.5 years	3.3 years	3.9 years

¹ Includes awaiting sentence/trial, on bail, case pending, and any other status.

* p = .05

7.4 adult arrests, which is significantly less than those tracked in 10 or more attempts (10.1 arrests). Based on our results, it is not possible to anticipate which clients will be difficult to track based on demographic characteristics. However, heroin use, treatment history and arrest history, as reported at admission, may be helpful in distinguishing clients that may require additional efforts to be tracked at follow-up.

3. *Research Question 3: Are differences at follow-up related to how difficult it was to track clients?*

Drug use was associated with the ability to track clients at follow-up. Looking at non-prison respondents (Exhibit III-7), the easier to reach clients were significantly more often employed than their difficult to reach counterparts (67% versus 47%, $p < .01$). The most difficult to reach clients were more likely to self report the use of cocaine (50%) and crack (47%) at follow-up than their easier to reach counterparts. However, the urinalysis results indicated no differences in drug use in the three days before the follow-up interview as related to follow-up difficulty. Differences were not found by intensity of drug use at follow-up (Exhibit III-8), either.

The most difficult to reach clients were most likely to be under criminal justice supervision at follow-up (63%). (See Exhibit III-9). Criminal justice records showed that those who were most difficult to locate had more arrests 6 months post discharge than those who had been easier to locate.

Multivariate analyses were conducted to determine which variables were associated with clients that are more difficult to track (defined as requiring 5 or more tracking attempts). The regression included the following variables: age, gender, educational level, prior treatment, arrests prior to baseline, employment at follow-up, cocaine use, and arrests in the 6 months post-treatment (see Exhibit III-10). Results indicated that age, prior arrests, and employment at follow-up are the variables that remained associated with difficulty in tracking. Older clients and clients who were employed at follow-up were easier to track. On the other hand, clients with more arrests prior to treatment admission were more difficult to track.

EXHIBIT III-7
STATUS AT FOLLOW-UP, BY TOTAL ATTEMPTS

	1 ATTEMPT	2 to 4 ATTEMPTS	5 to 9 ATTEMPTS	≥10 ATTEMPTS
Employment Currently Employed, Non-Prison	(n=84 ^a) 67% **	(n=92 ^a) 75% **	(n=69 ^a) 58% **	(n=60 ^a) 47% **
Self-Reported Post-Treatment Drug Use	(n=86)	(n=119)	(n=96)	(n=76)
Cocaine	28% *	35% *	46% *	50% *
Crack	26% *	34% *	43% *	47% *
Alcohol	23%	36%	40%	38%
Marijuana	11%	17%	22%	18%
Heroin	6%	13%	12%	20%
Urinalysis at Follow-up, Positive for	(n=83 ^b)	(n=91 ^b)	(n=65 ^b)	(n=60 ^b)
Cocaine/Crack	29%	34%	43%	42%
Marijuana	5%	11%	5%	12%
Alcohol	8%	9%	11%	4%
Opiates	11%	9%	9%	12%

* p < .05

** p < .01

^a Excludes respondents in prison and respondents not interviewed at follow-up.

^b Excludes respondents in prison, respondents interviewed by phone, respondents not interviewed, and one respondent who refused to provide urine specimen.

EXHIBIT III-8
INTENSITY OF DRUG USE, BY TOTAL ATTEMPTS^a

	1 ATTEMPT (n=86)	2 to 4 ATTEMPTS (n=119)	5 to 9 ATTEMPTS (n=96)	≥10 ATTEMPTS (n=76)
Alcohol Use in Past 6 Months*				
No Use	77%	64%	60%	62%
<1 Time Per Month	9%	9%	13%	16%
1 to 3 Times Per Month	1%	7%	7%	8%
1 to 2 Times Per Week	5%	4%	4%	4%
3 to 6 Times Per Week	5%	7%	8%	4%
1 Time Per Day	0%	3%	4%	3%
2 or More Times Per Day	4%	7%	3%	4%
Marijuana Use in Past 6 Months*				
No Use	90%	83%	78%	82%
<1 Time Per Month	5%	4%	7%	7%
1 to 3 Times Per Month	4%	3%	3%	7%
1 to 2 Times Per Week	1%	4%	5%	4%
3 to 6 Times Per Week	1%	3%	3%	1%
1 Time Per Day	0%	1%	0%	0%
2 or More Times Per Day	0%	2%	3%	0%
Cocaine Use in Past 6 Months*				
No Use	72%	65%	54%	50%
<1 Time Per Month	9%	8%	12%	11%
1 to 3 Times Per Month	4%	8%	7%	3%
1 to 2 Times Per Week	4%	2%	6%	11%
3 to 6 Times Per Week	6%	3%	9%	4%
1 Time Per Day	1%	4%	0%	5%
2 or More Times Per Day	5%	11%	11%	14%

EXHIBIT III-8 (CONTINUED)
INTENSITY OF DRUG USE, BY TOTAL ATTEMPTS^a

	1 ATTEMPT (n=86)	2 to 4 ATTEMPTS (n=119)	5 to 9 ATTEMPTS (n=96)	≥10 ATTEMPTS (n=76)
Crack Use in Past 6 Months*				
No Use	74%	66%	57%	53%
<1 Time Per Month	8%	8%	9%	11%
1 to 3 Times Per Month	4%	8%	7%	3%
1 to 2 Times Per Week	4%	1%	6%	11%
3 to 6 Times Per Week	4%	3%	9%	4%
1 Time Per Day	1%	4%	0%	5%
2 or More Times Per Day	6%	10%	10%	14%
Heroin Use in Past 6 Months*				
No Use	94%	87%	86%	80%
<1 Time Per Month	0%	3%	3%	8%
1 to 3 Times Per Month	1%	3%	2%	1%
1 to 2 Times Per Week	1%	2%	3%	1%
3 to 6 Times Per Week	1%	0%	1%	4%
1 Time Per Day	1%	1%	0%	3%
2 or More Times Per Day	1%	4%	2%	3%

* Percentages may not equal 100% exactly due to rounding.

^a Excludes respondents not interviewed at follow-up.

EXHIBIT III-9				
CRIMINAL STATUS AT FOLLOW-UP, BY TOTAL ATTEMPTS				
	1 ATTEMPT	2 to 4 ATTEMPTS	5 to 9 ATTEMPTS	≥ 10 ATTEMPTS
Self-Reported Status at Follow-Up				
In prison, on probation/parole, or on pre-trial release	(n=84 ^a) 36%	(n=92 ^a) 39%	(n=69 ^a) 45%	(n=60 ^a) 40%
Arrested 6 Months Post Discharge	(n=86) 15%	(n=118) 19%	(n=95) 21%	(n=76) 24%
Criminal Justice Records Based Status at Follow-Up				
In prison, on probation/parole, or on pre-trial release	(n=87) 42% *	(n=121) 54% *	(n=104) 57% *	(n=98) 63% *
Arrested 6 Months Post Discharge	13% *	22% *	24% *	30% *
Number of Arrests Following Admission	0.98	0.95	1.30	1.48
Mean Time from Discharge to First Arrest (in months)	(n=34) 10.2	(n=59) 7.0	(n=58) 7.2	(n=59) 8.2
Mean Time from Admission to First Arrest (in months)	18.4	14.8	14.7	15.8

* p < .05

^a Excludes respondents in prison and respondents not interviewed at follow-up.

EXHIBIT III-10					
LOGISTIC REGRESSION ASSESSING TOTAL TRACKING ATTEMPTS					
(N=248)					
VARIABLE	B	S.E.	df	Sig.	Exp(B)
Gender					
[Male]					
Female	-.3463	.3274	1	.2903	.7073
Age	-.0512	.0229	1	.0249*	.9500
Highest Grade Attended	.0817	.0671	1	.2238	1.0851
Arrests Prior to Admission	.0366	.0177	1	.0386*	1.0373
Prior Tx For Drugs/Alcohol					
[No]					
Yes	.0035	.2773	1	.9898	1.0035
Employed at Follow-up					
[No]					
Yes	-.7459	.3002	1	.0130*	.4743
Post-Tx Cocaine Use.					
[Yes]					
No	-.5463	.2957	1	.0647	.5791
Arrested 6 Months Post-Tx					
[Yes]					
No	.0797	.3683	1	.8286	1.0830
Constant	.9196	1.0738	1	.3918	

* p < .05

[brackets]: indicate reference category.

4. *Research Question 4: How do sample estimates change as more difficult to find clients are added to the sample?*

Our previous findings indicate that more difficult to find clients were different from those who were easier to find and interview at follow-up on several dimensions. This indicates that a low response rate can lead to a bias in follow-up results. The question that follows is how much bias? We conducted analyses to answer the question of how our sample estimates changed as difficult to reach clients were added to the sample. Exhibits III-11 and III-12 present the cumulative proportion of the target sample involved with describe drug use and criminal activity at admission, as more difficult to reach clients were added to the sample. Exhibit III-11 demonstrates that estimates of cocaine use at admission did not vary in any systematic way as more difficult to reach clients were added to the sample. Cocaine use at admission only ranged from 94 percent to 96 percent whether the sample included the people tracked after one attempt (22% of target sample) or if those tracked in up to 35 attempts (100% of the target sample) had been included. Similarly, criminal justice involvement at admission remained stable at 71 percent to 72 percent.

Exhibits III-13 and III-14 compare various samples of clients at follow-up, by cumulative tracking attempts. The range in cocaine use at follow-up was from 27 percent to 39 percent. When only people tracked after one attempt (22% of the ultimate sample) were included, there was an estimated 27 percent cocaine use, but when the sample included those tracked in up to up to 35 attempts (93% of the ultimate sample) were included, the sample estimate increased to 39 percent. This indicates that if a large number of tracking attempts had not been conducted, the sample estimate of cocaine use would have been reduced. For example, if we had stopped recruiting sample members after three attempts (which would include 43% of the ultimate sample) we would have estimated that 33 percent of the sample was using cocaine at follow-up. This was 6 percentage points below the final sample estimate of 39 percent.

When comparing post-treatment arrests at follow-up by cumulative tracking attempts, the range in the sample that reported being arrested was from 38 percent to 49 percent. Of those tracked in one attempt, which included 20 percent of the sample, only 38 percent reported post-treatment arrests, compared to 49 percent of those in the final sample. The estimate obtained from the sample of persons interviewed in 6 or less attempts (56% of the final sample) is close to the estimate obtained for the final sample. The sample that we recruited after 10 to 15 attempts (80% of the final sample) had estimates of post-treatment cocaine use and arrests that were very close to the estimates of the final sample.

EXHIBIT III-11
SELF-REPORTED COCAINE USE AT ADMISSION,
BY CUMULATIVE TRACKING ATTEMPTS

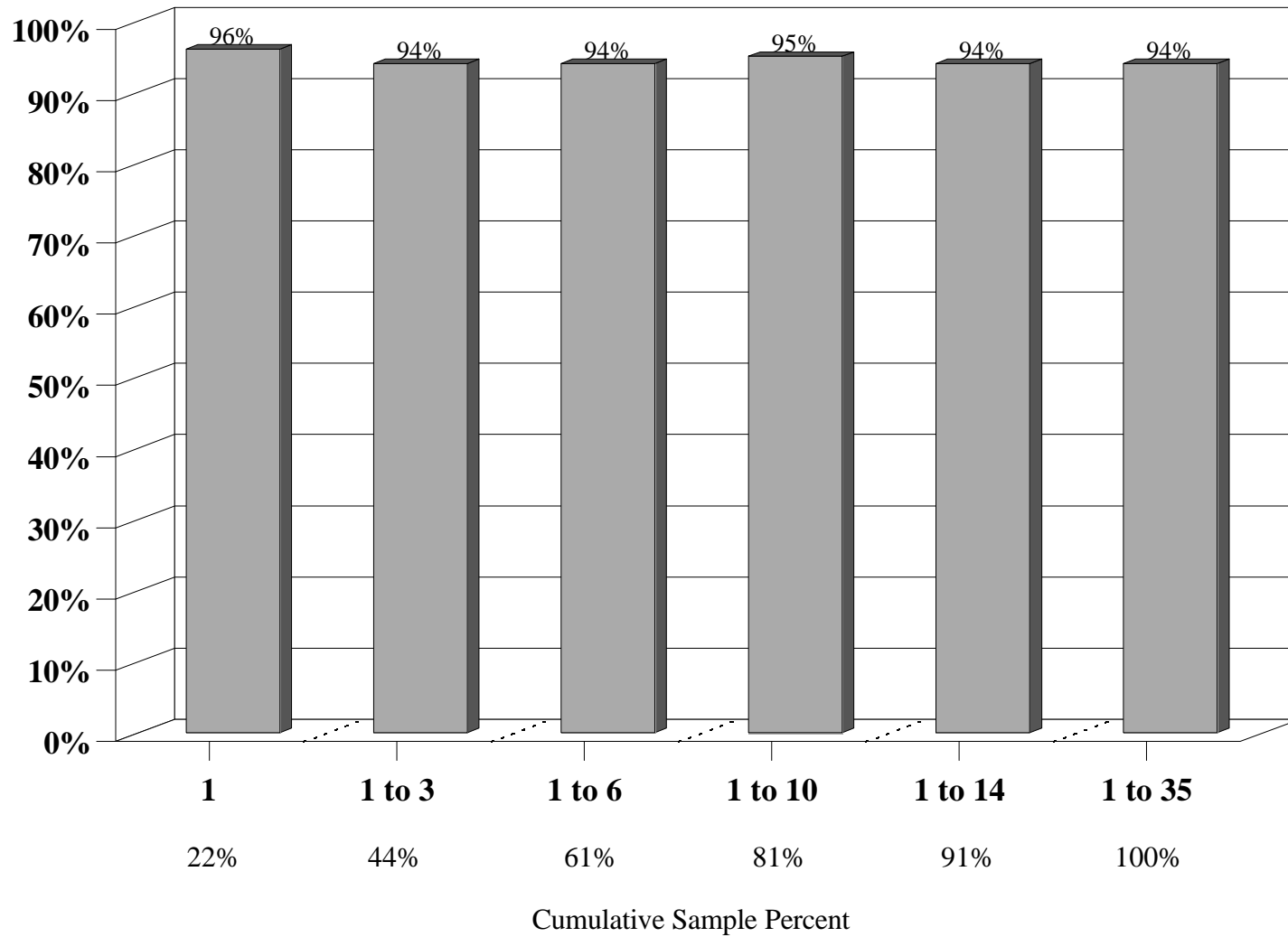


EXHIBIT III-12
CRIMINAL JUSTICE INVOLVEMENT AT ADMISSION,
BY CUMULATIVE TRACKING ATTEMPTS

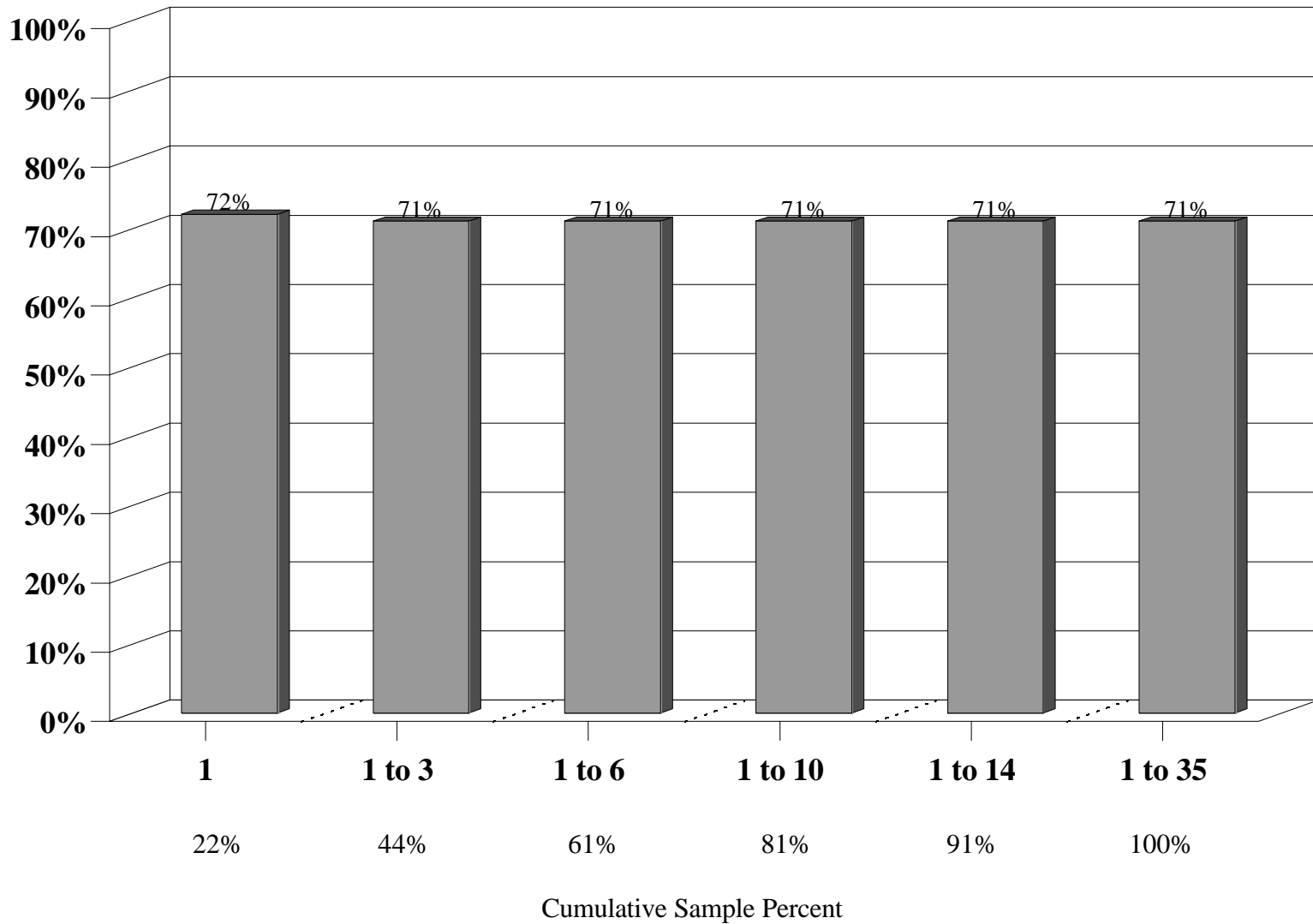


EXHIBIT III-13 CHANGES IN SAMPLE ESTIMATES OF COCAINE USE AT FOLLOW-UP, BY CUMULATIVE TRACKING ATTEMPTS

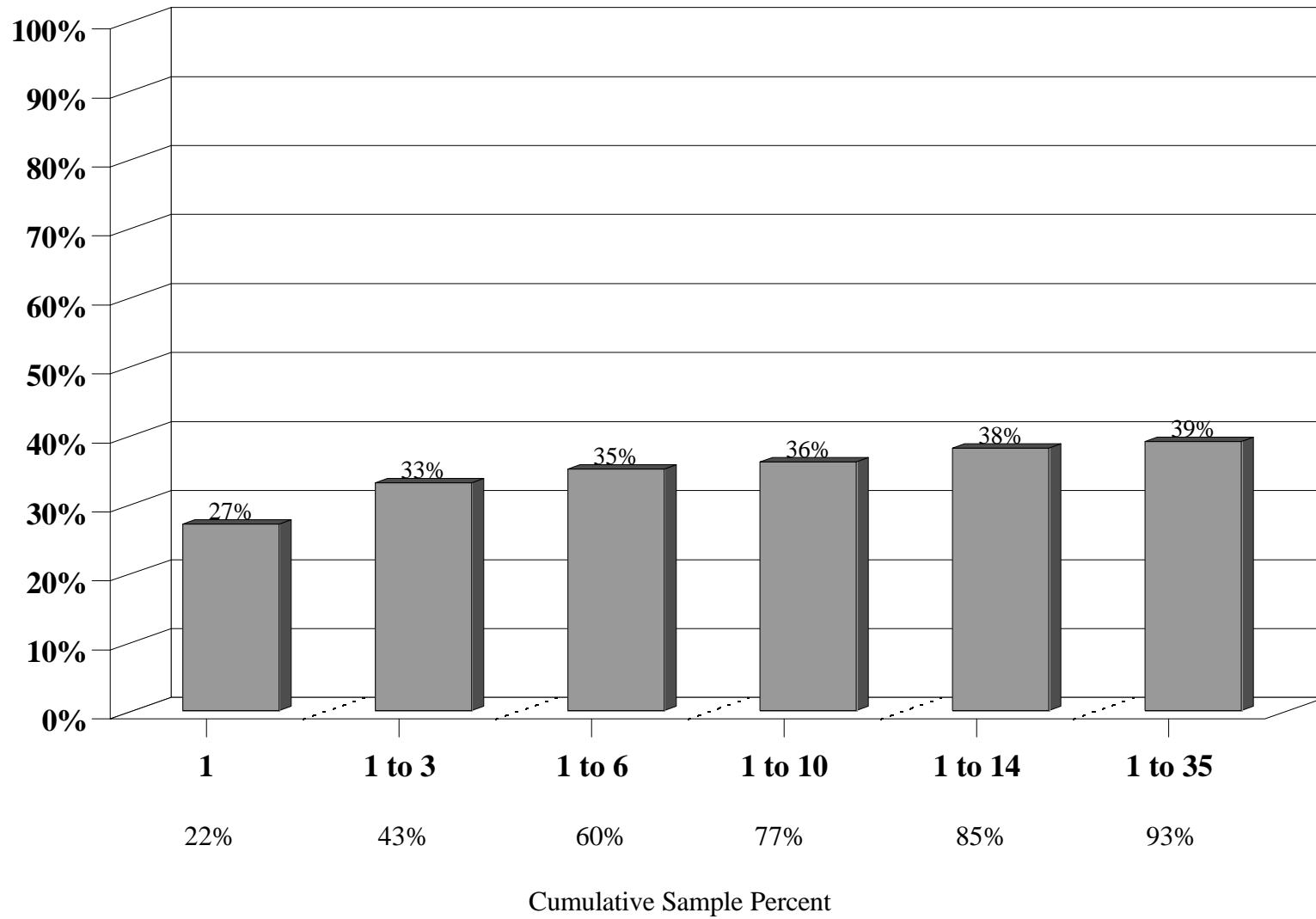
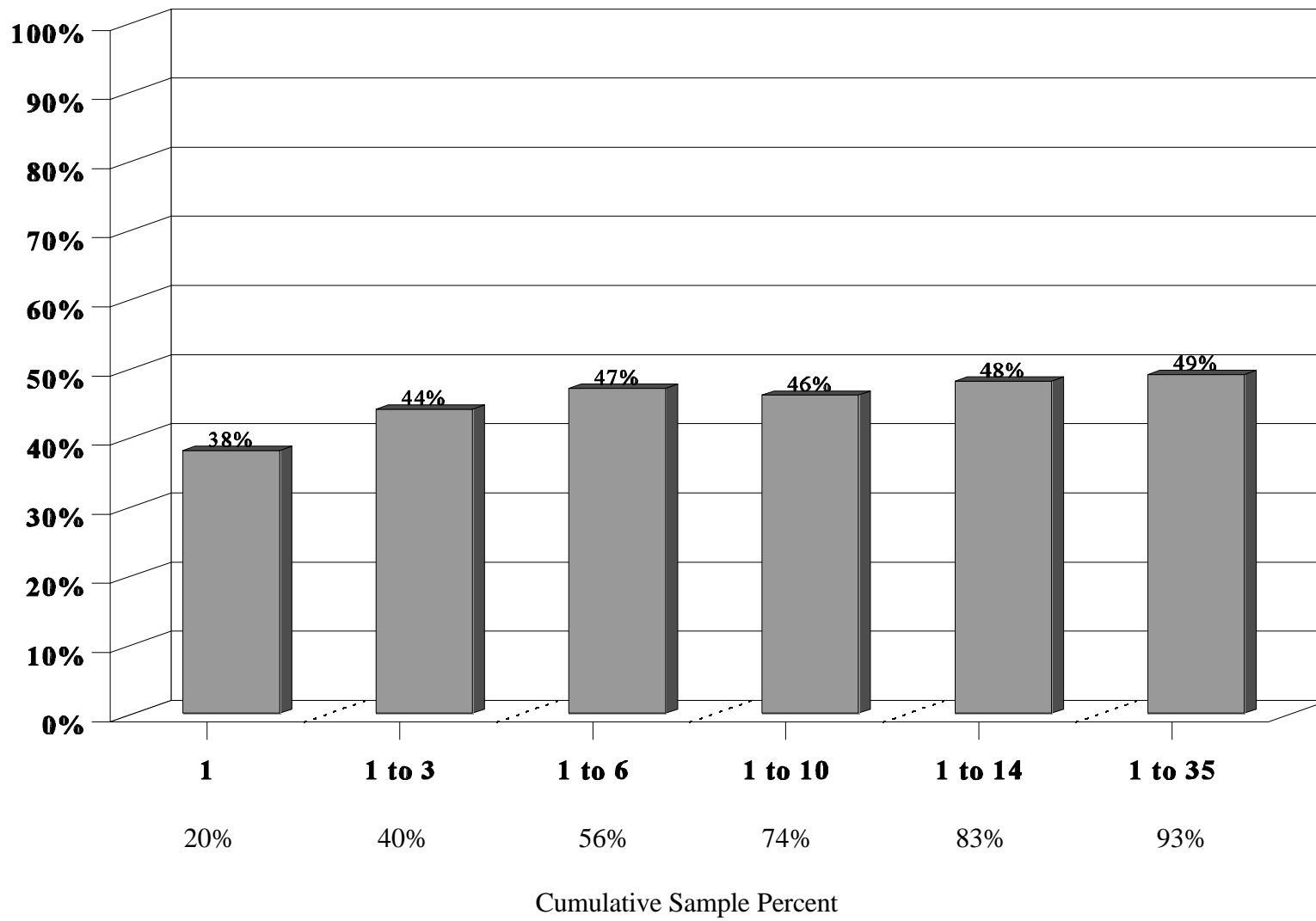


EXHIBIT III-14 CHANGES IN SAMPLE ESTIMATES OF POST-TREATMENT ARRESTS, BY CUMULATIVE TRACKING ATTEMPTS



IV. DISCUSSION

Treatment follow-up studies have been hampered by poor follow-up rates, which may reduce generalizability of findings. This is particularly important in treatment outcome studies, where both treatment completers and drop-outs need to be interviewed to be able to study the effectiveness of treatment.

Even when high follow-up rates are achieved, it is important to compare the minority that were not interviewed at follow-up to those who were. As found in this study, even when follow-up studies have high response rates, differences can still exist between clients interviewed and clients not interviewed. We found that clients interviewed at follow-up were more likely to have completed both the inpatient and outpatient phases of treatment than clients not interviewed at follow-up. Although it is unrealistic to expect to re-interview 100 percent of the target sample, the differences between the two groups underscore the importance of re-interviewing as many clients as possible. In order to re-interview as many clients as possible, it is essential to plan follow-up studies with appropriate time, staff and resources so that the necessary efforts can be made for tracking clients.

We also compared clients who were easy to track with clients who were difficult to track on a number of baseline and follow-up characteristics. We hoped to find correlates at baseline that might allow researchers to determine who is harder to find at follow-up. Unfortunately we did not find many baseline characteristics that may predict who will be more difficult to follow. When clients who were easy to track were compared to clients who were difficult to track, no differences in demographic characteristics were found. Our bivariate analyses found that clients could be distinguished at baseline in the areas of criminal justice involvement, drug use, and treatment prior to admission. However, once multi-variate analyses were conducted, controlling for a number of relevant variables, only age and number of arrests prior to admission were related to follow-up difficulty. The implication is that studies that intend to follow up young clients and clients with numerous arrests prior to treatment, should allow appropriate time and resources for clients who may be difficult to track. It is not surprising that clients with a greater number of arrests were more difficult to track as these clients may be more suspicious and hiding from law enforcement agencies. It is important to recognize that and to be willing to expend the extra effort to track these suspicious clients and to help them realize that participating in the study will not be harmful to them. It may be helpful, when tracking clients with extensive criminal histories, to check if any are incarcerated at follow-up prior to tracking them by phone/mail or using other traditional methods.

As might be expected because of the time frame, more follow-up characteristics than baseline characteristics were related to tracking difficulty. These correlates of follow-up difficulty included post-discharge unemployment, drug use and crime. Clients deemed most difficult to reach were more involved with the criminal justice system than those who were easiest to reach. Post-discharge drug use was also associated with the ability to track clients at follow-up. The most difficult to reach clients were more likely to self report the use of cocaine and crack at follow-up than their easiest to reach counterparts. Again, this points to the importance of persistence in tracking cocaine using clients in order to avoid underestimating drug use at follow-up. Also, at follow-up, the easiest to reach clients were significantly more often employed than their difficult to reach counterparts. The findings of this study clearly indicate the importance of not giving up on clients after a few tracking attempts. If tracking attempts had been discontinued after four attempts or fewer, the followed-up sample would have been different from the sample that was not followed up. In that case, the conclusions that would have been drawn based on the findings would have been biased and not truly representative of the original “hard core” sample that participated in treatment. This supports conclusions from prior studies which indicate the need for high follow-up rates. In samples that have high rates of criminal activity, high rates of cocaine use and low rates of employment, it is necessary to be prepared to go to great lengths to obtain appropriate follow-up rates, as was done in our study.

Our findings indicated that more difficult to find clients were different from those who were easier to find and interview at follow-up on several dimensions. This indicates that a low response rate can lead to a bias in follow-up results. We conducted analyses to assess how sample estimates change as difficult to reach clients are added to the sample. Estimates of cocaine use and criminal involvement at admission did not vary in any systematic way as more difficult to reach clients were added to the sample, based on number of tracking attempts. However, we found that our estimates of post-treatment cocaine use and arrests would have been significantly reduced in samples of easier to reach respondents. We found that the estimates of post-treatment cocaine use and arrests obtained from the samples containing close to 80 percent of the target sample were virtually identical to the estimates obtained from the 93 percent of the target sample eventually interviewed. Because variables that are often central to assessing treatment effectiveness may be underestimated with low follow-up rates, researchers would be well served to heed the rule of obtaining follow-up response rates of at least 80 percent.

REFERENCES

- American Psychiatric Association (APA). (1987). Diagnostic and Statistical Manual of Mental Disorders, 3rd ed. (DSM-III-R). Washington, DC.
- Anglin, M.D., Hser, Y., & Booth, M.W. (1994). Sex differences in addict careers. American Journal of Drug and Alcohol Abuse, 13, 253-280.
- Bale, R.N., Arnoldussen, B.H., & Quittner, A.M. (1984). Follow-up difficulty with substance abusers: Predictors of time to locate and relationship to outcome. The International Journal of the Addictions, 19(8), 885-902.
- Ball, J.C., & Pabon, D.O. (1965). Locating and interviewing narcotic addicts in Puerto Rico. Sociology and Social Research, 49(4), 401-411.
- Bucholz, K.K., Shayka, J.J., Marion, S.L., Lewis, C.E., Pribor, E.F., & Rubio, D.M. (1996). Is a history of alcohol problems or of psychiatric disorder associated with attrition at 11-year follow-up? Annals of Epidemiology, 6(3), 228-234.
- Condelli, W.S. (1986). Client evaluations of therapeutic communities and retention. In: Therapeutic Communities for Addictions (Eds. DeLeon, G. & Ziegenfuss, J.T.), Springfield, IL: Charles C. Thomas.
- Cottler, L.B., Compton, W.M., Ben-Abdallah, A., Horne, M., & Claverie, D. (1996). Achieving a 96.6 percent follow-up rate in a longitudinal study of drug abusers. Drug and Alcohol Dependence, 41, 209-217.
- Cottler, L.B., Zipp, J.F., Robins, L.N., & Spitznagel, E.L. (1987). Difficult-to-recruit respondents and their effect on prevalence estimates in an epidemiologic survey. American Journal of Epidemiology, 125, 329-339.
- Craig, R.J. (1979). Locating drug addicts who have dropped out of treatment. Hospital and Community Psychiatry, 30(6), 402-404.
- Decoufle, P., Holmgreen, P., Calle, E.E., & Weeks, M.F. (1991). Nonresponse and intensity of follow-up in an epidemiologic study of Vietnam-era veterans. American Journal of Epidemiology, 133(1), 83-95.
- DeLeon, G. (1995). Therapeutic communities for addictions: A theoretical framework. The International Journal of the Addictions, 30(12), 1603-1645.
- DeLeon, G., & Rosenthal, M.S. (1989). Treatment in residential therapeutic communities. In T.B. Karasu (Vol ed.), Treatments of Psychiatric Disorders: Vol. 2(pp. 1380-1398). American Psychiatric Press.

- Flynn, P.M., Hubbard, R.L., Forsyth, B.H., Fountain, D.L., Smith, T.K., & Hoffman, J.H. (1992). The Individual Assessment Profile (IAP): Standardizing the assessment of substance abusers. Paper Presented at American Psychological Association Annual Convention, Washington, D.C. Research Triangle, NC: Research Triangle Institute.
- Forrest, G.G. (1992). Chemical dependency and antisocial personality disorder: Psychotherapy and assessment strategies. New York: The Hawthorne Press.
- Forthofer, R.N. (1983). Investigation of nonresponse bias in National Health and Nutrition Examination Survey II. American Journal of Epidemiology, 117(4), 507-515.
- Goldstein, P.J., Abbott, W., Paige, W., Sobel, I., & Soto, F. (1977). Tracking procedures in follow-up studies of drug abusers. American Journal of Drug and Alcohol Abuse, 4(1), 21-30.
- Hoffman, J. A., Schneider, S., Koman, J., Flynn, P., Luckey, J., Cooley, P., Wish, E., & Diesenhaus, H. (1995). The centralized intake model for drug abuse treatment: The role of computerized data management. Computers in Human Behavior, 11(2), 215-222.
- Inciardi, J.A., Martin, S.S., Butzin, C.A., Hooper, R.M., & Harrison, L.D. (1997). An effective model of prison-based treatment for drug involved offenders. Journal of Drug Issues, 24, 1-24.
- Karson, S., & Gesumaria, R. (1997). Program description and outcome of an enhanced, 6-month residential therapeutic community. In Community as Method: Therapeutic Communities for Special Populations and Settings. Westport, CT: Praeger.
- Kranzler, H., Rounsaville, B., & Tennen, H. (1995). Validity of the SCID in substance abuse patients. National Institute on Drug Abuse, 2, 35.
- Lewis, C., Johnson, B.D., Golub, A., & Dunlap, E. (1992). Studying crack abusers: Strategies for recruiting the right tail of an ill-defined population. Journal of Psychoactive Drugs, 24(4), 323-336.
- McCusker, J., Vickers-Lahiti, M., Stoddard, A., Hindin, R., Bigelow, C., Zorn, M., Garfield, F., Frost, R., Love, C., & Lewis, B. (1995). The effectiveness of alternative planned durations of residential drug abuse treatment. American Journal of Public Health, 85(10), 1426-1429.
- Messina, N., Wish, E., & Nemes, S. (1997). The Efficacy of Therapeutic Community Treatment for Substance Abusers with Co-Occurring Antisocial Personality Disorder. Paper presented at American Society of Criminology Annual Conference, San Diego, CA.

- Moos, R., & Bliss, F. (1978). Difficulty of follow-up and outcome of alcoholism treatment. Journal of Studies on Alcohol, 39(3), 473-490.
- Nemes, S., Wish, E., & Messina, N. (In press). Comparing the impact of standard and abbreviated treatment in a therapeutic community: Findings from the District of Columbia Treatment Initiative Experiment. Journal of Substance Abuse Treatment.
- Nemes, S., Wish, E., & Messina, N. (1998, February). District of Columbia Treatment Initiative Final Report, Published by the National Evaluation Data and Technical Assistance Center.
- Nurco, D.N., & Lerner, M. (1971). The feasibility of locating addicts in the community. The International Journal of the Addictions, 6(1), 51-62.
- Spitzer, R.L., Williams, J., Gibbon, M., & First, M. (1989). Instruction Manual for the Structured Clinical Interview for DSM-III-R (SCID, 5/1/89 Revision). New York: Biometrics Research Department New York State Psychiatric Institute.
- Psaty, B.M., Cheadle, A., Koepsell, T.D., Diehr, P., Wickizer, T., Curry, S., et al. (1994). Race- and ethnicity-specific characteristics of participants lost to follow-up in a telephone cohort. American Journal of Epidemiology, 140(2), 161-171.
- Robins, L.N. (1977). Problems in follow-up studies. American Journal of Psychiatry, 134(8), 904-907.
- Robins, L.N. (1966). Deviant Children Grown Up: A Sociological and Psychiatric Study of Sociopathic Personality. Baltimore, MD: Williams and Wilkins Company.
- Simpson, D.D. (1986). Twelve year follow-up of opioid addicts treated in therapeutic communities. Therapeutic Communities for Addictions: Readings in Theory, Research, and Practice. Springfield: IL: Charles C. Thomas.
- Spitzer, R.L., Williams, J.B., Gibbon, M., & First, M.B. (1990). User's guide for the Structured Clinical Interview for DSM-III-R. American Psychiatric Press, Inc.: Washington, D.C.
- Twitchell, G.R., Hertzog., C.A., Klein, J.L., & Schuckit, M.A. (1992). The anatomy of a follow-up. British Journal of Addiction, 87,1327-1333.
- Vaillant, G.E. (1973). A 20-year follow-up of New York narcotic addicts. Archives of General Psychiatry, 29, 237-241.

- Walton, M.A., Ramanathan, C.S., & Reischl, T.M. (1998). Tracking substance abusers in longitudinal research: Understanding follow-up contact difficulty. American Journal of Community Psychology, 26, 233-253.
- Wish, E., Hoffman, J., & Nemes, S. (1997). The validity of self-reports of drug use at treatment admission and at follow-up: Comparisons with urinalysis and hair assays. In L. Harrison (Ed.), The validity of self-reports: The implications for survey research. NIDA Research Monograph, 167, 200-225.
- Wish, E., Robins, L.N., Helzer, J.E., Hesselbrock, M., & Davis, D.H. (1978). Monday morning quarterbacking on limiting call-backs: Evidence from a panel study of veterans. Presented at the Annual Meeting of the Association of Public Opinion Research, Virginia.
- Woody, G., & Metzger, D.S. (1994). Causes of death in injection-drug users. New England Journal of Medicine, 329, 1661.
- Wright, J.D., Tupper, L.A., Devine, J.A. (1993). Tracking non-traditional populations in longitudinal studies. Department of Sociology, Tulane University, New Orleans. Unpublished, 1-33.

The perspective offered in this document is solely that of the author(s) and does not reflect the policies or views of the Federal government, or any of its Departments or Agencies.