

# NEDS

NATIONAL EVALUATION DATA SERVICES

## **CRIMINAL JUSTICE STATUS AND SUBSTANCE ABUSE TREATMENT OUTCOMES**

**August 2001**

**CSAT**  
Center for Substance  
Abuse Treatment  
SAMHSA

**National Opinion  
Research Center**

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## CRIMINAL JUSTICE STATUS AND SUBSTANCE ABUSE TREATMENT OUTCOMES

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**CSAT**  
Center for Substance  
Abuse Treatment  
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## FOREWORD

The Center for Substance Abuse Treatment (CSAT) works to improve the lives of those affected by alcohol and other substance abuse, and, through treatment, to reduce the ill effects of substance abuse on individuals, families, communities, and society at large. Thus, one important mission of CSAT is to expand the availability of effective substance abuse treatment and recovery services. To aid in accomplishing that mission, CSAT continues to invest significant resources in the development and acquisition of high quality data about substance abuse treatment services, clients, and outcomes. Sound scientific analysis of this data provides evidence upon which to base answers to questions about what kinds of treatment work best for what groups of clients, and about which treatment approaches are cost-effective methods for curbing addiction and addiction-related behaviors.

In support of these efforts, the Program Evaluation Branch (PEB) of CSAT established the National Evaluation Data Services (NEDS) contract to provide a wide array of data management and scientific support services across various programmatic and evaluation activities. Essentially, NEDS is a pioneering effort for CSAT in that the Center previously had no mechanisms established to pull together databases for broad analytic purposes or to house databases produced under a wide array of activities. One of the specific objectives of the NEDS project is to provide CSAT with a flexible analytic capability to use existing data to address policy-relevant questions about substance abuse treatment. This report has been produced in pursuit of this objective.

This report examines the criminal justice involvement of clients in the National Treatment Improvement Evaluation Study (NTIES). This report describes a measurement and classification approach to criminal behavior and status; provides findings concerning the relative extent and severity of criminal activity among classes of NTIES clients; develops a multivariate assessment of severity incorporating age and sex predictors; reports the relative effects of criminal behavior and status on substance abuse treatment outcomes, and discusses implications for substance abuse treatment research, policy, and practice.

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## EXECUTIVE SUMMARY

Researchers, practitioners, and policy makers are very much interested in the relationship between crime and substance use, and between criminal justice processes and substance abuse treatment. Public intoxication and driving while intoxicated have for many decades been among the most common categories of arrests and convictions, while illicit drug possession and trafficking have become leading offenses for incarceration, especially since the spread of mandatory minimum sentencing at the State and Federal levels and the growth in the numbers of cocaine-related offenses.

Many studies have shown that substance abuse treatment has an effect not only on substance use, but on criminal activities that are especially correlated with substance use, such as drug trafficking, driving while intoxicated, burglary, larceny, theft, and fraud. Other studies have indicated that treatment of individuals who are in various stages of criminal justice processing can be beneficial. Some kinds of drug treatment in correctional institutions show promising effects on recidivism rates. A number of studies have reported that clients enrolled in treatment while under pressure or directives from criminal justice processes (sometimes referred to as “coerced” into treatment) stay in treatment for longer periods than others, suggesting that strengthening or expanding these approaches would be good policy. However, other studies, including previous reports from the National Treatment Improvement Evaluation Study (NTIES), have shown that pressure to enter treatment from criminal justice sources yields slightly worse or neither better nor worse outcomes than pressure from social, personal, or health-related sources.

In the present study, we classify all NTIES clients by criminal justice status at the time treatment started, describe the characteristics of these status groups, and determine the relationship between criminal justice status and treatment outcome. Based on this, we provide some practical conclusions for practitioners and policy makers and develop recommendations for further analyses of the NTIES data and other data.

### 1. SAMPLE AND METHODS

Unlike the populations in most substance abuse treatment outcome studies, the clients in NTIES were in a broad range of criminal justice situations, ranging from prison- and jail-based service delivery units to community-based programs enrolling individuals in all phases of the justice system. The present study is designed to investigate the distribution of clients across all of these phases, classify them compactly in a logical typology of criminal justice groups, and determine the relative extent and severity of criminal activity among these groups, so that further

analyses will offer the best possible precision in measuring the effects of pretreatment criminal justice situations on the effectiveness and costs of treatment.

At the time of admission to treatment, 98 percent of all 6,593 clients in the NTIES admission sample reported a history of criminal activity. About six out of seven clients reported ever having been arrested, three out of four had been incarcerated for at least 24 hours, one-fourth were currently in prison or jail, and large fractions were on probation or parole or had outstanding warrants or convictions pending. These characteristics of the overall NTIES sample were little different in the subset of clients included in the analytic sample for outcome analysis, which comprised those who were successfully interviewed at follow-up (about 82% of the total admission group) and had spent a significant amount of their post-treatment period in the community rather than remaining incarcerated following a period of treatment in jail or prison. We divided the sample into 10 distinct subgroups according to their current criminal justice status and then examined the current and past criminal justice activities and history of each group to develop a more refined ordering and understanding.

We examined four approaches to measuring criminal activities in the NTIES admission questionnaire and for each approach, developed one or more scales of the extent or intensity of criminal activity. Three measures were developed on the basis of self-report of arrest history. One of these measures reflected the number of types of offenses (from a list of more than 20 types) for which the client had ever been arrested; a second was the number of types for which arrests had occurred in the past year; the third was the total number of lifetime arrests (since one arrest could be for multiple types of criminal activities and several arrests could be for the same type of activity). A fourth measure was based on the number of types of criminal or delinquent activities the individual had ever engaged in (whether or not arrested), and a fifth measure was based on the types of illegal activities from which the client had ever derived a majority of his or her income for a period of time. Finally, we examined the age at which clients may first have engaged in the five most common types of criminal activities, ordered all of the individuals in terms of how early they began this activity if they did engage in it, and then ordered them into quintiles according to relative precociousness of criminal activity. A statistical assessment of all these measures revealed that each was weakly to moderately correlated with all the others, indicating that there was an underlying dimension of criminality, but not one that would further generate a useful single scale. We, therefore, used all six measures in the analysis of criminal justice groups.

## **2. FINDINGS**

Based on these assessments, we found that 4 of the 10 criminal justice groups, comprising about one-third of NTIES clients, comprised a tier with generally the most extensive criminal histories: those currently (that is, at the time of admission to treatment) in prison, currently on parole, and currently in jail serving time or awaiting disposition of charges by trial or delivery of sentence by a judge. These groups exceeded all others on every measure of criminal activity except past-year arrests, for which their substantial amounts of time incarcerated reduced the possibility of arrest in this period. On average, clients in these groups had engaged in seven to eight average criminal activities and been arrested for four types. They reported that one of these activities, on average, had comprised a main source of income. They reported an average of 9 to 12 lifetime arrests and 1 or 2 arrests in the past year. These currently incarcerated groups began their criminal activities earlier than other NTIES clients.

Three other groups were similar to each other on most criminal justice measures: those who were on juvenile or adult probation, those not in jail but with outstanding warrants or pending court cases, and those with no current criminal justice status but who had been incarcerated in the past. These groups together comprised about 43 percent of all NTIES clients; of this group, two-fifths were probationers, two-fifths had one or more past episodes of incarceration, and one-fifth had outstanding warrants or cases. These groups averaged seven lifetime criminal activities, three of which led to arrest, and they averaged somewhat lesser reliance on these types of activities for income relative to the upper tier. These groups also reported seven or eight lifetime arrests on average and one arrest in the past year. Current probationers tended to have been the most precocious and those with only distal periods of serving time the least precocious in terms of average age of onset of criminal activities.

The last three groups, a tier comprising slightly less than one-fourth of NTIES clients, shared the characteristic of reporting no current criminal justice status or past incarceration, and, additionally, were lower on every measure of lifetime criminal activity. About 40 percent of this group reported an average of one or two lifetime arrests, and about one-third reported past-year arrests. About 10 percent of this group denied ever engaging in any criminal activities.

In a multivariate analysis, we examined the extent to which criminal status subgroup membership predicted the various criminal activity scores, controlling for the effects of age and sex. We found that the number of offense types, averaging between six and seven per client, was higher by about one offense type for males compared with females across each category, and tended to decline by one category for each 25 years of age, which may reflect the tendency to commit fewer types of offenses as one ages, combined with the tendency to forget and discount

the importance of early criminal activity. With age and sex controlled, the prison, parole, jail-awaiting-sentence, outstanding-case, and ever-incarcerated groups were about equal in numbers of offenses, the jail-sentence and probation groups were slightly lower, and the bottom tier was dramatically lower.

Similar results were obtained for criminal support, except that there was no difference by sex, little effect by age, and prisoners and parolees were significantly more likely to support themselves by illegal work. Age-of-onset results nearly washed out for the criminal subgroups, with both the prison and no-arrest groups reporting highest ages of onset in the analysis. Both sex and age had very pronounced effects, with older and female clients reporting older ages of onset by about two years. The multivariate results for lifetime types of arrest offenses and number of lifetime and past-year arrests were in line with the unadjusted arrest results. On all measures, those with no arrests and no offense activities were least likely, and about equally so, to report diverse or numerous arrests. Males reported significantly more types and numbers of lifetime but not past-year arrests. The lifetime arrest profile increased somewhat with age, but past-year arrest numbers declined with age and were highest for the probation and jail-sentenced groups.

In a final multivariate analysis, we examined the effect of criminal justice status on the principal outcomes of substance abuse treatment among the subset of NTIES clients who were followed up approximately one year after treatment and who were in the community (rather than continuously incarcerated) for a significant number of months following the treatment episode. These analyses covered the extent of improvement in level of substance use among users of each of the five major substances in the NTIES population (heroin, crack cocaine, cocaine powder, marijuana, and alcohol). We controlled for a variety of client characteristics at admission to treatment, for client behavior during treatment, and for characteristics of the treatment programs. In general, client behavior in treatment—including abstinence during treatment, length of stay, and completion of the planned treatment protocol—was the best predictor of outcome, and criminal justice status had no independent effect on outcomes, net of other predictors.

Our multivariate results specifically confirm that patients who *avoid substance use during treatment*, who *do not leave treatment after short periods* and who *complete their treatment plans* are more likely to report improvement in terms of substance use outcomes at follow-up, compared respectively with in-treatment users, early leavers, and non-completers. We found virtually no differences in substance use treatment outcomes due to client demographics or other pretreatment characteristics, except that clients who cite two or more (versus fewer than two) previous substance use treatment episodes report greater degrees of improvement in levels of alcohol intoxication, and, among methadone maintenance clients, in

levels of heroin use. We also found that a number of program characteristics measured in NTIES yield statistically significant, albeit relatively low, levels of correlation with outcomes. Several of these characteristics—availability of case management and other ancillary services, clinical staff who focus exclusively on substance use clients, and staff who are relatively new to the SDU—may be directly related to the specific objectives and characteristics of CSAT demonstration programs.

### **3. IMPLICATIONS FOR RESEARCH**

We were able to divide the treatment sample into three distinct tiers according to their current criminal justice status and criminal history: those *incarcerated*, whether in prison, in jail, or on parole or equivalent status in the community; those with *prior criminal convictions or cases pending*, whether in the community on a probationary sentence (violation of which could reactivate the original case), in the community with outstanding warrants or awaiting trial or sentencing, or simply with a prior period of incarceration; and those with *no prior incarceration or current sentence or cases*. These three groups appear logically sound and can be discriminated easily to classify clients in any type of substance abuse treatment outcome study. The essential similarities between different elements of each tier provide a sound basis for comparing treatment programs in meta-analyses or other analytical procedures. Moreover, these groups can be further classified into 10 different subsets, and we found some differences among subsets within tiers, particularly among the lowest tier, that may be teased out in multivariate analyses.

In general, differences in criminal justice status did not contribute to the prediction of outcomes of treatment as measured by extent of improvement for any of the five major types of substances—heroin, crack cocaine, cocaine powder, marijuana, or alcohol—after controlling for a variety of other preadmission and in-treatment characteristics, including program characteristics. That is, treatment appeared to be about equally effective or ineffective in reducing substance abuse for clients in each major tier of criminal justice status, taking into account other variations in pre-treatment characteristics and program characteristics measured in NTIES. These findings and the multivariate results on components of treatment merit further exploration in the NTIES data set, and we would encourage other studies to collect and analyze comparable information.

### **4. IMPLICATIONS FOR PRACTICE**

Most substance abuse treatment professionals, whether working inside or outside of criminal justice institutions, have, by simple exposure to their clients as well as by professional

training, become familiar with the workings of the criminal justice system. The results reported here emphasize the importance not only of understanding how this system works but of finding ways to link with and relate constructively to this system, since the great majority of clients in publicly supported treatment (as exemplified in NTIES sites) are involved—in the past or present—in the criminal justice system. Such relationships will always have some elements of an uneasy alliance, since the interests of justice and therapy may not always coincide. Nevertheless, clients' criminal justice history and status appear neither to compromise nor to amplify the effectiveness of substance abuse treatment in reducing substance use.

Practitioners should especially note that patients who *avoid substance use during treatment*, who *do not leave treatment after short periods* and who *complete their treatment plans* are more likely to report improved substance use outcomes at follow-up than, respectively, clients who use substances during treatment, leave treatment early, and fail to complete their treatment plan. These findings will not surprise most clinicians, but we emphasize the consistency of these results across different substances and their robustness in our multivariate analyses, which control for so many other factors. We believe that clinicians should be proactive in developing and following treatment plans and aggressive in trying to keep clients engaged in treatment, even—perhaps particularly—when the clients are reluctant or evasive.

## **5. IMPLICATIONS FOR POLICY**

We subdivided community-based and incarcerated populations into subgroups that are homogeneous in terms of criminal history, although varying somewhat in current official status. However, we found no measurable effect of criminal justice status on substance abuse treatment outcomes in NTIES. Criminal justice involvement is neither an obstacle to treatment nor a particular aid in the sense of affecting outcomes independently of other client and program characteristics. The use of criminal justice agencies, such as drug courts or correctional agencies, to route clients to treatment or to host treatment programs will work to the extent that treatment programs work. For many, if not most, clients, a single exposure to treatment (like a single arrest) does not “solve” their substance use problems. However, we found evidence that multiple exposures to treatment improve the likelihood that a new episode of methadone maintenance treatment or treatment for alcohol use will yield a positive outcome. Therefore, it looks like good public policy for criminal justice agencies, or any other social services agencies, to cooperate to expand the accessibility of substance use treatment.

Our findings reinforce the significance of coordination between systems of treatment and supervision, which enable treatment or assessment and referral agencies to track and serve individuals as they pass through transitional gateways (such as arrest, trial, sentencing, and

parole) between lockup or correctional institutions and the community (Center for Substance Abuse Treatment, 1998). Treatment providers who work closely with justice institutions, as well as their counterparts in courts, corrections departments, and police departments, have come to recognize that loss of continuity of care at these crucial transitions seldom serves the interests of justice, protection, or rehabilitation. Measures to strengthen these interstitial linkages so as to ensure access to treatment regardless of criminal justice status are a crucial part of the web of recovery.

## **I. INTRODUCTION**

## I. INTRODUCTION

Since the later years of the 19<sup>th</sup> century, the public, policy makers, and substance abuse researchers have been continuously interested in the relationship between crime and substance use and between criminal justice processes and substance abuse treatment (Moore and Gerstein, 1981; Musto, 1988; Institute of Medicine, 1990; Courtwright, 1992). Focus has shifted over time, as attention has centered serially on such issues as drunk driving, marijuana trafficking by middle class youth, street crime by heroin addicts, prosecution of crack-using mothers, the violence of open-air drug markets, and innovations such as “boot camps” and drug courts. While attention revolves from one area to another, arrests and convictions for public intoxication and for driving while intoxicated have, for many decades, remained the most common offenses leading to police and courtroom activity, while illicit drug possession and trafficking have grown to become major offenses leading to incarceration, especially since the spread of mandatory minimum sentencing at the State and Federal levels and expansion in the numbers of apprehensions and prosecution for cocaine-related offenses (see <http://www.ojp.usdoj.gov/bjs/>; <http://www.albany.edu/sourcebook/>).

Criminal activity has been a major focus of the best known large-scale substance use treatment outcome studies (e.g., Hubbard et al., 1989; Simpson & Sells, 1990, Gerstein et al., 1994, 1997; Simpson & Curry, 1997; see also Gerstein & Johnson, 1999, Johnson & Gerstein, 2000). Questions about the effects of treatment on crime and of criminal justice processes on treatment outcomes are woven into the fabric of treatment research and practice, including concepts such as addiction severity (Treatment Research Institute, 1990). These studies and numerous others have shown that substance abuse treatment has an effect not only on substance use but on criminal activities that are strongly associated with substance use, such as drug trafficking, driving while intoxicated, burglary, larceny, theft, and fraud. Other studies have indicated that treatment of individuals who are in various stages of criminal justice processing can be beneficial, and studies of substance abuse treatment in correctional settings have shown modest but promising effects on indexes of recidivism such as re-arrest, conviction, and return to prison (Gerstein & Harwood, 1990; Pearson & Lipton, 1999). Some studies have reported that clients enrolled in treatment while under pressure or directives from criminal justice processes (sometimes referred to as “coerced treatment”) stay in treatment for longer periods than more “voluntary” admissions to the same programs; however, these findings are not unqualified, since other studies, including the National Treatment Improvement Evaluation Study (NTIES), have found that pressure to enter treatment from criminal justice sources is not significantly associated or is negatively associated with differences in client outcomes when compared with pressure from social, personal, or health-related dimensions (Center for Substance Abuse Treatment, 1995; Gerstein et al., 1997; Sechrest & Sichor, 2001).

The present study is designed to create a foundation for more intensive study of the relationship between crime, criminal justice systems, and substance abuse treatment outcomes using NTIES. NTIES was a large-scale treatment outcomes study conducted by the National Opinion Research Center at the University of Chicago for the Center for Substance Abuse Treatment (CSAT) to evaluate the effectiveness of comprehensive treatment services provided by CSAT-sponsored demonstration projects. The NTIES project collected longitudinal data from a purposive sample of substance abuse treatment clients drawn from service delivery units (SDUs)<sup>1</sup> in 16 States across the country. These units were based in community settings as well as in prisons and jails, and many of the community institutions were either components of criminal justice agencies or contracted with these agencies to provide services to probationers or parolees. Data on substance use, criminal behavior, employment status, income, housing, risk behaviors, and other psychosocial measures were collected at intake (pre-treatment), during treatment, and at post-treatment follow-up. In addition (although not part of the present report), arrest records were obtained from the two States with the largest numbers of NTIES service delivery units, covering more than one-third of all NTIES admissions, and urine specimens were collected from a random sample composed of one-half of all the clients interviewed at follow-up one year after discharge from treatment. These data were used to validate client information from the NTIES interviews. For further details on NTIES, see Gerstein et al. (1997), the dedicated issue of the *Journal of Psychopathology and Behavioral Assessment* introduced by Smith (2000), and the appendix at the end of this report.

The following sections investigate the distribution of clients across all of the phases of criminal justice involvement, from commission of criminal offenses through arrest, trial and conviction, sentencing to probation or incarceration, serving time in jails or prisons, and parole or other supervision. These investigations are meant to support further analyses by enabling them to optimize the measurement of the effects of pre-treatment criminal justice situations on the effectiveness and costs of treatment. After describing the item-level measures available in the NTIES admission instrument, we report on a series of scaling operations designed to summarize these measures. We then describe a classification approach that compactly arranges all clients across a typology of mutually exclusive criminal justice categories. We then provide findings concerning the relative extent and severity of criminal activity among these groups, including a multivariate assessment of the severity of criminal activity incorporating age and sex predictors, and the effects of criminal justice status and of other predictors on outcomes of

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<sup>1</sup> An SDU was defined for the purposes of NTIES as a specified clinical staff at a single site providing a single level of care to a defined stream of clients (Gerstein et al., 1997). The classification of level of care as used here was based on three parameters: facility type (e.g., hospital, correctional facility); intensity of care (e.g., 24-hour vs. outpatient visits); and planned duration of service (e.g., more or less than two months). Client streams were defined as any limitations that restricted clients according to age (adult vs. adolescent), sex (men or women only), or eligibility for methadone treatment.

treatment in terms of change in levels of use of the five main types of substances used by NTIES clients. We conclude with a discussion of the implications of these findings for research, policy, and substance abuse treatment practices.

## **II. SAMPLE AND METHODS**

## II. SAMPLE AND METHODS

In this chapter, we describe the NTIES sample and the item-level measures available in the NTIES admission instrument. The chapter also presents a series of scaling operations designed to summarize the measures and a classification approach that arranges all clients across a typology of mutually exclusive categories.

### 1. THE NTIES CLIENT SAMPLE

This analysis uses two populations in substance abuse treatment, one of which is a subset of the other. Most of the study focuses on the entire cohort of 6,593 clients admitted to the NTIES research protocol in a purposive sample of 78 service delivery units (SDUs) in 16 States during 1993 and 1994. Based on a preliminary survey, the NTIES staff originally identified 792 potential SDUs among the population of grant recipients and sub-recipient agencies funded by the Treatment Improvement Demonstration programs initiated by CSAT's predecessor agency, the Office for Treatment Improvement, in the early 1990s. After initially screening out support agencies such as intake, management, and medical services units that did not directly provide substance abuse treatment, the NTIES staff enumerated 698 entities that appeared to be distinct treatment SDUs, and successfully recruited more than three-quarters of these to provide detailed administrative data and aggregated clinical information. NTIES staff also selected a purposive sample of 82 of these 698 SDUs in which to voluntarily enroll individual patients over a period of approximately 14 months in a treatment outcomes study and enroll individual clinicians in a study of their demographic, educational, and training characteristics; caseload profiles; and attitudes toward the importance of different treatment components.

Of the 82 eligible SDUs, 78 agreed to participate in the patient outcome and clinician studies. However, seven of these SDUs were subsequently omitted from the analytic sample due to early program closure (when funds were not renewed) or minimal case flows. In two of these SDUs, no clinicians completed the requested forms. The SDUs were divided among five modalities of treatment: methadone, outpatient (non-methadone), short-term residential, long-term residential, and correctional.

A final part of the study used only the NTIES analytic outcome sample comprised of 4,411 clients in 71 service delivery units whom we successfully interviewed at follow-up from treatment approximately one year after discharge *and* who were released to the community for a significant period of post-treatment exposure. This analytic outcome sample does not include 18 percent of the admission cohort who were lost to follow-up (in other words, it is drawn from the 82 percent of the admission cohort who were successfully interviewed at follow-up). It excludes a further 15 percent (of the 6,593 clients) whose period was appreciably longer or shorter than

the desired 9 to 15 months after treatment or who were interviewed at follow-up but turned out to have remained continuously in jail or prison for all or nearly all of the NTIES field period. Virtually all of this last set of omitted clients had received their NTIES treatment episode in a jail- or prison-based SDU, but had not yet been released from incarceration at the conclusion of NTIES data collection. Outcomes for this group are important; however, since they were not exposed to risks of resumption of substance use in the community during the NTIES field period, we could not assess their behavior the same way we assess clients who were in the community after treatment.

Demographic and other admission characteristics of clients in these samples and of the NTIES SDUs have been exhaustively described elsewhere (e.g., Gerstein et al., 1997; see also the papers in the journal issue introduced by Smith [2000] and previous technical reports available from the NEDS Web site as referenced in the appendix). In brief, the average NTIES client in both the overall and analytic samples was 33 years old at admission; the majority were African American; about 70 percent were male; the most commonly used substances were alcohol, marijuana, crack cocaine, cocaine powder, and heroin; and they were treated in SDUs that included correctional units, methadone outpatient, non-methadone outpatient, and long-term (treatment plans exceeding two months) and short-term residential programs.

The NTIES client population at intake reported very extensive criminal behavior on a lifetime and past-year basis, and concomitant high levels of contact with agencies of the criminal justice system. At the time of admission to treatment, virtually the entire sample (98%) of NTIES clients reported a history of criminal behavior, with about two-thirds reporting having sold drugs, shoplifted, driven while intoxicated, or received stolen goods. About six out of seven reported having been arrested in their lifetimes, with about one-third of those reporting a first arrest or detention before age 15 and another third before age 21. Three out of four had been incarcerated for at least 24 hours, just over half had been incarcerated within the past year, and one-fourth were in prison or jail at the time of admission to treatment. Comparably large fractions were on probation or parole or had outstanding warrants, criminal cases, or sentences pending.

## **2. MEASURES USED IN THE ANALYSIS: CRIMINAL MEASURES**

NTIES used a computer-assisted interview in which the questionnaire was administered using a laptop computer; printed, laminated visual aids (“showcards”) were used at times to assist the interview process. Nearly all questions about criminal behavior were grouped together in an integrated module midway through each of the three NTIES client interviews: at admission to treatment, discharge from treatment, and at one-year followup. For the present study, we use

a subset of criminal behavior items drawn entirely from the intake interview. The sequence and content of questions presented to NTIES clients in this module, and instructions to interviewers, were as follows (we omit questions that are not used in this analysis):

Read introductory script:

*Now, I would like to ask about your involvement with the police, the courts, and illegal activities. Let me remind you that this information will remain strictly confidential and you can refuse to answer any question. **If respondent is 18 years or older say:** As you answer these questions, please include any involvement you had **before and after you were 18 years old.***

(Hand respondent the laminated showcard listing types of criminal activities):

*Have you ever done any of the following things?*

Read each activity on the card chart and code the response, “yes” or “no.” Point to each activity on the showcard as asked about.

*Driven a vehicle (car, truck, van or motorcycle) while you were drunk or high (DWI/DUI)?*

*Stolen a vehicle (car, truck, van or motorcycle)?*

*Sold drugs yourself or helped someone else sell drugs, including cutting, weighing, packaging or manufacturing drugs?*

*Gotten customers for prostitutes (pimping)?*

*Had sex for money or drugs (prostitution)?*

*Passed bad checks, forged checks, or used a stolen credit card?*

*Worked in bookmaking, numbers or illegal gambling?*

*Taken someone's money or property in some way, such as fraud or embezzlement?*

*Bought or had things you knew were stolen (fenced)?*

*Taken something from a store without paying for it, that is, shoplifted?*

*Broken into a house, a business, or a vehicle to take someone else's money or property?*

*Used a weapon or physical force against someone to steal money or property from them?*

*Set fire to a house, building, or vehicle (arson)?*

*Destroyed or damaged someone's property in some other way?*

*Attacked or threatened someone with a weapon?*

*Beaten up someone?*

*Severely hurt someone on purpose in any other way?*

*Forced someone to have sex or to do any kind of sex act against their will?*

*Killed someone, other than by accident?*

*Done anything else against the law that I didn't ask about? (SPECIFY)*

After completing the serial review of all possible criminal activities, for activities to which “yes” was recorded, additional questions were asked. For the questions about arrests, slight changes or additions to the descriptions above were made so as to approximate the language of penal offense codes, and drug possession, and (for juveniles only) curfew/truancy/runaway violations were added to the list of specified arrest charges. The first question, regarding age, was asked only for a specific subset of items (vehicle theft, burglary, robbery, weapon use, rape), and interviewers were instructed to probe for an approximate age if the respondent was uncertain:

*How old were you when you **first** (Read description of the activity)?*

*Next, I want to ask you about times you have been arrested and booked or taken into custody. **[If over age 18: Again, please include times before and after you were 18.]***

*Please tell me if you have ever been arrested and booked or taken into custody for . . . (Read description)?*

For each type of offense on which there was an arrest, the respondent was asked:

*Since [same month in previous year], have you been arrested and booked for [offense]?*

Respondents who reported any lifetime arrests were asked:

*Altogether, how many times have you been arrested and booked or taken into custody?*

*Would you say, one time, 2-3 times, 4-10 times, or 11 times or more?*

All respondents were asked:

*Have you ever been in jail or prison for more than 24 hours at one time?*

*How long was your last stay in jail or prison?*

*Since (DATE 12 MONTHS AGO), have you been released from jail or prison?*

*Right now, are you under any of the following kinds of supervision? (Probe for current status.)*

***Age 25 or under only:***

*Juvenile Probation?*

*Juvenile Parole or Conditional Release?*

***For all:***

*Adult Probation*

*Adult Parole or Conditional Release?*

*Work Release?*

*Electronic Monitoring or Other Supervision?*

*Right now, do you have any (other) criminal charges or criminal cases against you, including a conviction that you are awaiting sentencing for?*

*Right now, do you have any outstanding warrants for your arrest?*

Item nonresponse rates at this point in the interview were very low, less than one per thousand at most, and typically zero.

### **3. OTHER MEASURES USED IN THE ANALYSIS**

Each of the three NTIES client interviews asked about the nonmedical use—that is, use that is not under a doctor’s regular care for a medical or psychiatric condition—of 13 different

types of substances, each of which was listed on a “show card” with various synonyms. The 13 types were as follows: alcohol, cocaine powder, crack cocaine, marijuana/hashish, heroin, uppers (stimulants), opiates other than heroin or methadone, downers (sedatives and tranquilizers), hallucinogens, PCP (phencyclidine), methadone (nonprescribed), inhalants, and miscellaneous others. In a separate analysis (Gerstein & Zhang, 2001), we have shown that five of these types account for virtually all of the primary substance use of patients in the NTIES sample: alcohol, marijuana, cocaine powder, crack cocaine, and heroin. The questions used to measure the frequency and pattern of use of these five substances in the present analysis were as follows:

*What is the drug or drug combination that made you come to treatment this time?*

*Have you used <Substance> five times or more?*

*When did you last use <Substance>? Was it within the past month, 1–12 months ago, or more than 12 months ago?*

*In the month you used <Substance> the most, how many days did you use it? Would you say it was 1 day, 2–5 days, 6–10 days, 11–20 days, or 21 days or more?*

*In the past 30 days, how many days have you been drunk on beer, malt liquor, wine, wine cooler, or hard liquor? Would you say none, 1 day, 2-5 days, 6-10 days, 11-20 days, or 21 days or more?*

For users of each substance, we recoded information about peak month use (or, in the case of alcohol, past month days drunk) during the nominal 12-month period at both the intake interview and at the follow-up interview.<sup>2</sup> We recoded the extent of <Substance> use in the peak month as none (meaning there was no use of the substance during the pretreatment year), 1-5 days, 6-20 days, or 21 days or more. For convenience, we labeled these levels as “none,” “low,” “medium,” and “high.” Our scheme for capturing behavioral change across treatment was based on the cross-period tabulation in Exhibit 2-1. Notice here that the largest positive value indicates the maximum reduction in substance use and is therefore the most desirable result. Also notice

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<sup>2</sup> In the NTIES intake interview, these questions referred specifically to the 12-month period immediately prior to treatment admission or, in the case of clients in jail- or prison-based treatment units, the 12 months before the start of the current period of incarceration. In the follow-up interview, these questions referred specifically to the period between the last actual day of treatment and the time of the follow-up interview (except for 144 individuals who were in continuous methadone maintenance, who were simply asked about the past 12 months). The average follow-up duration for the analytic outcome sample was 11 months, varying from 5 to 16 months. Since most of the follow-up interviews did not take place exactly 12 months after treatment, we refer to that period as “nominal.” For all of the outcome variables used in the NTIES Final Report (Gerstein et al., 1997), we described and calculated hazard-curve adjustments to standardize responses to a 12-month period. These adjustments made virtually no difference to any of the results. We have, therefore, not further complicated the present analyses by adjusting the outcomes for varying follow-up durations.

that those who report no use of <Substance> in the 12 months before treatment are excluded from the analysis of change in use of that substance. For standard regression analyses, we used the range of values in the table from -2 to +3. However, for logistic regression models employing binary outcomes, all of the positive values in this table were further recoded to “1” to indicate treatment improvement, while those who scored zero or a negative value were assigned “0” to indicate no improvement. For further information, see Gerstein & Zhang (2001).

<b>EXHIBIT II-1</b>				
<b>CODING SCHEME FOR CHANGE IN &lt;SUBSTANCE&gt; USE</b>				
<b>Peak Month Use Before Treatment</b>	<b>Peak Month Use After Treatment</b>			
	<b>None</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
Low	1	0	-1	-2
Medium	2	1	0	-1
High	3	2	1	0

A number of measures were culled from earlier analyses of client outcomes in order to be used as covariates in modeling changes in substance use from before treatment to after treatment. These measures include:

**Reasons for coming to treatment.** Four items were selected as dichotomous variables (present/absent) from an open-ended listing of reasons for seeking treatment, as cited by clients at admission: pressure from criminal justice agencies, including a defense attorney; pressure to improve or maintain a family relationship with a parent, spouse, or partner; an issue relating to one’s children, such as custody concerns or wishing to be a better parent; and general personal reasons, such being tired, disgusted, seeking change, wanting a better lifestyle, and so forth.

**Referral to treatment.** Three referral sources were selected as dichotomous variables (present/absent): referral by a criminal justice official; referral by a spouse, partner, or family member; and self-referral.

**Prior treatment.** This variable was recoded as a three-level dummy variable, with no prior treatment as the reference group; one prior treatment episode; and two or more prior treatment episodes.

**Length of Stay.** We classified clients by the number of months in treatment and according to whether they fell above or below the approximate median length of stay observed in

the modality of treatment of the SDU in which they received care. These cutting points were set at one month for short-term residential SDUs, two months for correctional or long-term residential SDUs, three months for outpatient SDUs, and seven months for methadone SDUs.

**Treatment Completion.** Based on data from program records and client self-report, we classified every client as having either completed his or her treatment plan, left treatment before completing the treatment plan, or being still in treatment at the time outcome was measured.

**Goals of Treatment.** Clients were asked at the time of the discharge interview whether they had agreed very much (versus somewhat or not at all) with their primary clinician on the objectives of their treatment episode in terms of personal change, and whether they tried very much (versus somewhat or not at all) to achieve the goals of the treatment plan. We created a dichotomous variable: those affirming *both* agreeing with and trying very much to reach those goals, versus non-affirmation of either or both. In addition, the specific treatment goals were codified in two dichotomous variables, one reflecting whether *abstinence from* substance use was an identified goal and the second reflecting whether any *other* goals, such as improving health or reducing criminal activity, were specified by the client.

**Substance Use during Treatment.** Two ordinal measures indicated the average number of days per month during treatment of substance use and of drunkenness, respectively. The ordinal categories were 0 days, 1–10 days, 11–20 days, and 21–30 days. Since alcohol is not an illegal substance per se and is not the primary substance problem for most clients, we considered the extent of drunkenness a more discriminating indicator.

**Services during Treatment.** Binary measures were developed for each of the following services: receipt of any counseling or instruction to build job skills, any attendance at 12-step meetings, and whether the client spent more than one occasion per week on average with her or his primary clinician. In addition, a count variable was developed summing up the number of types of services received, beyond substance abuse counseling.

**Case Management.** An additional dichotomous variable that did not necessarily reflect interaction between the individual client and the SDU was whether the SDU administrator reported that case management services were being made available at the SDU.

**Clinician Priorities.** We asked clinicians in each SDU to rank the relative importance of 12 service activities measured in the clinician questionnaire. Analyses of these responses yielded five factor-based scales that indicated the level of relative importance attached by the

clinician to different types of services. These five scales, described further in Gerstein and Zhang (2001), were as follows:

- *Medical* considered to be the most important activities: medical and psychiatric services; least important: 12-step meetings)
- *Self-efficacy* (most important: counseling to build self-esteem and social skills; least important: drug or alcohol testing)
- *Behavior control* (most important: counseling to change self-damaging behavior and social environments; least important: spiritual counseling)
- *Drug education* (important: information about alcohol and drugs; not important: other training or education)
- *Contingency management* (important: rewards and punishments).

#### **4. SEVERITY OF CRIMINAL BEHAVIOR**

We examined four approaches to measuring the severity of criminal activities over time, based on the items described above in the NTIES admission questionnaire. For each approach, we developed one or more scales of the extent or intensity of criminal activity. Three measures were developed on the basis of self-report of arrest history. One measure reflected the number of types of offenses (from the types listed above) for which the client had ever been arrested; a second was the number of types for which arrests had occurred in the past year; the third was the total number of lifetime arrests (since one arrest could be for multiple types of criminal activities and several arrests could be for the same type of activity). A fourth measure was based on the number of types of criminal or delinquent activities the individual had ever engaged in (whether or not arrested), and a fifth measure was based on the types of illegal activities from which the client had ever derived a majority of his or her income for a period of time.

Finally, we examined age of onset—that is, the age at which a client first engaged in each of the five types of criminal activities discussed above. We first ranked all of the respondents in terms of how early they began an activity if they had engaged in it, relative to all others who reported the same activity. These ranks were averaged for each individual, and these mean ranks then were ordered into quintiles from lowest (earliest age of onset) to highest (latest age of onset). An individual in the middle quintile (assigned the value 3) would be one whose age of onset was between the 40<sup>th</sup> and 60<sup>th</sup> percentile relative to other NTIES respondents; clients in the lowest and highest quintiles were assigned the values of 1 or 5, respectively. In general,

quintiles were separated by between one and two years average age of onset, which can be viewed as the individual's relative precociousness of entering into criminal activities.

A statistical assessment of all these measures revealed that each was weakly to moderately correlated with all the others (see Exhibit II-2), indicating there was an underlying dimension of criminality, but not one that would further generate a useful single scale. (More technically, in factor analyses, only one general factor yielded an eigenvalue greater than one, but a scale based on using all measures did not achieve an acceptable alpha score.) We therefore used all six measures independently in the analysis of criminal justice groups.

<b>EXHIBIT II-2</b>						
<b>CORRELATION MATRIX AND FIRST EIGENVECTOR</b>						
<b>FOR CRIMINAL SEVERITY MEASURES</b>						
	<b>LT Types of Criminal Activities</b>	<b>LT Types of Criminal Support</b>	<b>Index of Earliness of Onset</b>	<b>LT Types of Arrests</b>	<b>PY Types of Arrests</b>	<b>LT Number of Arrests</b>
Activities						
Support	0.42					
Onset	-0.21	-0.16				
LT types of arrests	0.51	0.34	-0.17			
PY types of arrests	0.20	0.19	-0.14	0.41		
No. of arrests	0.39	0.23	-0.14	0.66	0.34	
1 <sup>st</sup> Eigenvector coefficient	0.45	0.36	-0.23	0.53	0.35	0.47

## 5. CRIMINAL STATUS SUBGROUPS

We divided the sample into a fairly substantial number of distinct subgroups according to their criminal supervision status and responses to questions about criminal activities. After appreciable efforts at “lumping and splitting,” we arrived at a hierarchical grouping of 10 subsets according to an estimated level of jeopardy involved, preliminary to examining the current and past criminal justice activities and history of each group. The subgroups and numbers classified in each<sup>3</sup> were as follows:

<sup>3</sup> Thirty-two cases out of 6,593, or 0.5 percent, could not be classified in this way due to missing items on one or more of the necessary definitional elements.

<b>EXHIBIT II-3 CRIMINAL SUBGROUP</b>	
<b>Definition of Group</b>	<b>Number in NTIES Admission Cohort</b>
In prison	866
On parole or other community supervision	570
In jail awaiting sentencing, and not on parole	238
In jail serving a sentence, and not on parole	556
On probation, and none of the above	1,138
Outstanding warrant or case pending, and none of the above	538
Previous incarceration, and none of the above	1,167
Ever arrested, and none of the above	567
Ever engaged in any of type of criminal activity, and none of the above	786
None of the above (No criminal behavior)	136

### **III. FINDINGS**

### III. FINDINGS

The relationships between the criminal subgroups and the six scales of severity of criminal behavior are displayed in Exhibit III-1.

EXHIBIT III-1 CRIMINAL JUSTICE GROUPS BY CRIMINAL SEVERITY MEASURES							
Group	N	Types of Lifetime Offenses	Types of Lifetime Offenses for Support	Index of Age of Onset of Criminal Activity	Types of Lifetime Arrests	Types of Past year Arrests	Number of Lifetime Arrests
Prison	866	7.37	1.00	2.76	4.39	1.15	9.16
Parole	570	7.82	0.93	2.80	4.27	1.15	10.12
Jail/waiting	238	7.64	0.83	2.92	4.05	1.79	11.99
Jail/serving	556	7.05	0.61	2.89	3.80	1.64	10.12
Probation	1,138	6.91	0.65	2.92	3.29	1.29	8.12
Case waiting	538	7.28	0.75	3.09	2.82	1.14	6.95
Ever served	1,167	7.14	0.69	3.17	3.08	0.52	7.91
Ever arrested	567	5.22	0.34	3.29	1.52	0.32	3.35
Any activity	786	4.35	0.28	3.30	-	-	-
None	136	-	0.05	-	-	-	-
<b>TOTAL</b>	<b>6,562</b>	<b>6.56</b>	<b>0.66</b>	<b>3.00</b>	<b>2.90</b>	<b>0.89</b>	<b>6.41</b>

Four of the criminal justice groups, which together included about one-third of NTIES clients, comprised a tier with generally the most extensive criminal justice histories: those currently (that is, at the time of admission to treatment) in prison, currently on parole, and currently in jail serving a sentence or awaiting disposition, that is, trial or delivery of sentence by a judge. The prison, parole, and awaiting-disposition groups exceeded all others (or all but one of the others) on every measure of criminal activity, while the group serving jail time (generally on sentences of a year or less, but in some cases longer due to overcrowding in State prisons where longer sentences would ordinarily be served) were similar to the other incarcerated groups on measures of arrest but slightly lower on measures of lifetime criminal activity. The prison and parole groups were somewhat lower than might otherwise be expected in their numbers of past-year arrests, for which the substantial amounts of time they spent incarcerated presumably reduced the possibility of arrest in this period. On average, clients in these groups had engaged

in seven to eight average criminal activities (out of 20 or more types of crimes) and been arrested for at least four types. They reported that one of these activities, on average, had comprised a main source of income. They reported an average of 9 to 12 lifetime arrests and 1 to 2 arrests in the past year. Those in jail awaiting sentencing reported the highest average—12 arrests. This group began their criminal activities earlier than other NTIES clients.

Three other groups were similar to each other on most criminal justice measures: those with outstanding warrants or pending court cases, those who were on juvenile or adult probation, and those with no current criminal justice status but who had been incarcerated in the past. These groups together comprised about three out of seven, or 43 percent, of all NTIES clients; of this group, two-fifths were probationers, two-fifths had one or more past episodes of incarceration, and one-fifth had outstanding warrants or court cases. These groups averaged about seven lifetime criminal activities, three of which led to arrest, and they averaged somewhat lesser reliance on these types of activities for income relative to the upper tier. These groups also reported seven or eight lifetime arrests on average and about one arrest in the past year. We found a hierarchy in terms of average age of onset of criminal activities; probationers were youngest and those with past incarcerations only were the eldest at onset.

The last three groups, comprising slightly less than one-fourth of NTIES clients, shared the characteristic of reporting no current criminal justice status or past incarceration and were lower on every measure of lifetime criminal activity. About 40 percent of this group reported an average of one or two lifetime arrests, and about one-third reported past-year arrests; about 10 percent of this group denied ever engaging in any criminal activities.

In a multivariate analysis, we examined the extent to which criminal subgroup membership predicted the various criminal severity scores, controlling for the effects of age and sex (see Exhibit III-2). We found that the number of offense types, averaging between six and seven per client, was higher by about one offense type for males compared with females across each category, and tended to decline by one category for each 25 years of age, which may simply reflect a tendency to commit fewer types of offenses as one ages combined with a tendency to forget and discount the importance of early criminal activity. With age and sex controlled, the prison, parole, jail-awaiting-sentence, outstanding-case, and ever-incarcerated groups were about equal in numbers of offenses, the jail-sentence and probation groups were slightly lower, and the bottom tier (least intensive criminal justice status) was dramatically lower.

<b>EXHIBIT III-2</b> <b>PREDICTION OF CRIMINAL SEVERITY SCORE BY CRIMINAL SUBGROUP</b> <b>(CONTROLLING FOR AGE AND SEX): GENERALIZED LINEAR MODEL</b> <b>COEFFICIENTS</b>						
	Types of Lifetime Offenses	Types of Lifetime Offenses for Support	Index of Age of Onset of Criminal Activity	Types of Lifetime Arrests	Types of Past year Arrests	Number of Lifetime Arrests
INTERCEPT	7.85***	1.07***	1.16***	2.15***	1.34***	1.37***
In prison	-0.27	0.24***	0.26***	1.31***	0.48***	0.20***
On parole	0.36	0.19	0.06	1.21***	0.52***	0.35***
In jail/waiting	0.17	0.11	0.08	0.90***	1.21***	0.58***
In jail/sentenced	-0.38*	-0.12	0.09	0.71***	1.04***	0.33***
On probation	-0.46*	-0.09	0.15**	0.27**	0.65***	0.08*
Case pending	0.03	0.03	0.15*	-0.19	0.55***	-0.10**
Ever incarcerated (referent)	0	0	0	0	0	0
Ever arrested	-1.88***	-0.38---	0.18**	-1.44***	-0.26***	-0.60***
Criminal activity	-2.65***	-0.45***	0.24***	-2.87***	-0.61***	-1.76***
No criminal activity	-6.88***	-0.65***	(Omitted)	-2.92***	-0.54	-1.79***
Male (referent is female)	0.99***	-0.02	-0.75***	0.54***	-0.03	0.22***
Age (per 10-year increment)	-0.40***	0.10***	0.74***	0.15***	-0.20***	0.09***
R <sub>2</sub>	0.15	0.04	0.24	0.31	0.21	0.52
Mean	6.56	0.65	3.00	2.90	0.89	1.63

\* Significant at  $p < .05$

\*\* Significant at  $p < .01$

\*\*\* Significant at  $p < .001$

Similar results were obtained for criminal support, except that we found no difference by sex, little effect by age, and significantly more likelihood that the prisoners and parolees supported themselves economically from illegal occupations. Age-of-onset results nearly washed out for the criminal subgroups, with both the prison and no-arrest groups reporting highest ages of onset in the analysis. Both sex and age had very pronounced effects, with older

clients and women reporting older ages of onset by about two years. The multivariate results for lifetime types of arrest offenses and number of lifetime and past-year arrests were in line with the unadjusted arrest results. On all measures, those with no arrests and with no offense activities were least likely, and about equally so, to report broad or numerous arrests. Males reported significantly more types and numbers of lifetime but not past-year arrests. The lifetime arrest profile increased somewhat with age, but past-year arrest numbers declined with age and increased most for the probation and jail-sentenced groups.

In a final series of multivariate analyses, we examined the effect of criminal justice status on the principal outcomes of substance abuse treatment among the subset of NTIES clients who were followed up approximately one year after treatment and who were in the community (rather than continuously incarcerated) for a significant number of months following the treatment episode. These analyses covered the extent of improvement in level of substance use among users of each of the five major substances in the NTIES population (heroin, crack cocaine, cocaine powder, marijuana, and alcohol) and controlled for a variety of client characteristics at admission to treatment, for client behavior during treatment, and for characteristics of the treatment programs. In general, client behavior in treatment—including abstinence during treatment, length of stay, and completion of the planned treatment protocol—was the best predictor of outcome, and criminal justice status had no independent effect on outcomes, net of other predictors.

In developing multivariate models of change in substance abuse for each of the five principal substances, we used an approach developed in Gerstein and Zhang (2001). Exhibit III-3 reports two kinds of regression results for each substance, including the results of one special analysis run only on heroin clients enrolled in methadone SDUs. Except for criminal justice subgroups, this table only includes rows for predictor variables with at least one significant model coefficient. In each case, the results reported here indicate that a particular postulated predictor of treatment outcome was statistically significant, controlling for all other predictors. In most cases, these predictors were also significant correlates of improvement when considered only in restricted subsets of predictors or as a solo predictor of outcome. Criminal justice subgroups were not a significant predictor in either regression model for any substance.

EXHIBIT III-3 SUMMARY OF RESULTS OF TREATMENT OUTCOME MODELS						
	Substance					
	Heroin	Heroin (in (Methadone)	Crack cocaine	Cocaine Powder	Marijuana	Alcohol (Drunkenness)
CJS status ranging 1-10 <sup>1</sup>						
CJS subgroup 1 vs. subgroup 3 <sup>2</sup>						
CJS subgroup 2 vs. subgroup 3 <sup>2</sup>						
Multiple prior treatments (vs none)		OR: 2.89				OR: 1.87 OLS: .20
Pressure from the law					OR: 1.72	
Pressure from family						<b>OR: .64</b>
Clinician priority Medical <sup>1</sup>					<b>OR: .46</b>	<b>OR: .51</b>
Clinician priority: Self-efficacy <sup>1</sup>					<b>OR: .61</b>	<b>OR: .38</b>
Clinician priority: Drug educ <sup>1</sup>					<b>OR: .73</b>	
Clinician priority: Cont mgmnt <sup>1</sup>						<b>OR: 1.64</b>
Total SDU staff mostly male <sup>1</sup>						OR: 1.92
Clinician percent male <sup>2</sup>						<b>OLS: -.42</b>
Clinicians most 3+ yrs at SDU <sup>1</sup>				<b>OLS: -.48</b>		OLS: -.58
Clinicians treat only Sub Abuse <sup>1</sup>				OLS: .47	OLS: .31	OLS: .64
Clinicians: Most have degrees <sup>1</sup>					<b>OLS: .35</b>	
SDU has case managers				OLS: .15		<b>OR: .63</b>
Plan goals other than abstinence						OR: .49
Attended 12 step				OLS: .18		<b>OR: .34</b> <b>OLS: -.22</b>
Received job skill training						OLS: .19
Agreed & adhered to plan	OLS: .20					
Number of services		OR: 1.34	<b>OR: .92</b>			OR: 1.12
Drug use during treatment	<b>OR: .67</b> <b>OLS: -.22</b>	<b>OR: 0.67</b>	<b>OR: .64</b> <b>OLS: -.33</b>	<b>OR: .59</b> <b>OLS: -.24</b>	<b>OR: .76</b> <b>OLS: -.18</b>	<b>OLS: -.12</b>
Treatment not completed	<b>OR: .54</b> <b>OLS: -.21</b>	<b>OR: 0.34</b>	<b>OR: .48</b> <b>OLS: -.16</b>		<b>OR: .66</b>	
Length of stay above median <sup>2</sup>	OR: 2.36	OR: 2.93				
Length of stay (log of months) <sup>1</sup>			OLS: .19	OLS: .10	OLS: .13	
Length of stay (log squared) <sup>1</sup>	OLS: .06		<b>OLS: -.07</b>		<b>OLS: -.04</b>	
Variance explained (Adjusted r <sup>2</sup> )	logit: .18 OLS: .08	logit: .37 (no OLS)	logit: .08 OLS: .06	logit .11 OLS: .06	logit: .10 OLS: .04	logit: .19 OLS: .06
OLS Intercept	1.12		1.93	.96	1.58	1.20

<sup>1</sup>. Only included in the OLS model.    <sup>2</sup>. Only included in the logistic regression model.

OR: Logistic regression coefficients, transformed to odds ratios. Values less than one represent reduced odds of improvement; values greater than one represent higher odds of improvement

OLS: Ordinary least squares unstandardized regression coefficients. Positive values mean positive correlation with improvement; negative values mean negative correlation with improvement

All listed coefficients are significant at the level of <.05 and negative effects on outcome are **bolded**.

In general, no model of improvement in substance use accounted for a high proportion of the total variance in outcome for any substance, whether we measured improvement as a dichotomy or an ordered scale. Clearly, we have not captured most sources of variation in improvement with the measures we used. Nevertheless, some degree of covariation has been effectively specified. The greatest, though still moderate, level of explanatory leverage was for heroin use, in particular, heroin use among clients in methadone programs. For heroin use in general and for methadone clients in particular, a single-level logistic model was able to account, respectively, for 17 percent and 36 percent of the total variance in improvement, as measured with the simple dichotomous improvement measure.

The frequency of drug use during treatment was a significant predictor of (lack of) improvement across all drug types—indeed it was the only predictor significant across all drug types. One might conclude simply that past behavior predicts future behavior, but this will not suffice. *All* of these individuals were using within the year *before* treatment began, but only about 15 percent of them, with relatively little variation by type, reported any level of drug use *during* treatment. While this relatively limited exposure limits the probative power of this measure, it is nevertheless revealing that clients who do not respond well during treatment are the ones most consistently at risk of an unproductive outcome at follow-up.

The significant predictors of improvement in heroin use were length of stay and frequency of drug use (any drug use, not necessarily heroin) during treatment; whether treatment had been completed and the treatment plan accepted by the client in non-methadone SDUs; and in methadone SDUs, the number of different types of services received, and whether the client had been treated on at least two previous occasions. Improvement in crack cocaine use was affected by the same core measures that affected heroin improvement: the frequency of drug use during treatment, completion versus non-completion of the treatment protocol, and the length of stay. However, the negative coefficient on the squared length of stay indicates a nonlinear relationship in which, beyond a certain “optimal” point, controlling for all other correlates of outcome, longer stays become associated with a worsened rather than improved outlook for substance use. Changes in cocaine powder use also covaried with length of stay and drug use during treatment; however, for this substance, a number of clinician factors rose to independent significance. In particular, greater improvement occurred at SDUs where clinicians treated only substance abuse clients, where a greater fraction of clinicians were relatively new to the SDU (fewer than three years), and where case managers were present.

For marijuana users, treatment compliance and length of stay were significant predictors of improvement at outcome, and, as with cocaine, clinician factors also emerged as significant

covariates of improvement. However, different clinician characteristics achieved significance for marijuana than for cocaine. Marijuana improvement was higher in SDUs where more clinicians held college degrees and where clinicians were likely to assign relatively low priority to medical services or to therapeutic promotion of self-efficacy. One additional significant result was that improvement in marijuana use occurred more often among users who cited criminal justice sources as a source of pressure leading them to seek treatment. (When this model and all other models were run without this variable, the coefficients of criminal justice groups remained nonsignificant.) In conjunction with the clinician results, this suggests that marijuana use is more responsive to treatment in populations and SDUs that focus more on the behavioral circumstances and consequences of using rather than medical and self-image dimensions.

Finally, improvement in alcohol use, while related to drug use during treatment, was more weakly associated with the in-treatment measure than were other drug types. On the other hand, a substantially broader set of clinical characteristics were significantly associated with alcohol outcomes. The following characteristics were positively related to improvement: receipt of job training, overall number of services received, presence of case managers, and a higher percentage of SDU staff who were new and who treated only substance abuse clients. The following were negatively related to outcome: clinicians who were mostly male but overall clinical staffing that was mostly female; and clinicians who were oriented toward medical, self-efficacy, and contingency management service activities. In addition, clients who reported pressure from family were less likely to improve, while clients reporting two or more prior treatments were more likely to improve. These findings do not easily add up to a simple picture, but they do add up to a persuasive argument that the pre-treatment circumstances and clinical services conditioning improvements in alcohol use are configured differently from those applying to the other core substances, with a somewhat greater similarity to marijuana and cocaine powder than to crack cocaine or heroin.

**IV. IMPLICATIONS FOR  
RESEARCH, PRACTICE, AND POLICY**

## **IV. SUMMARY AND IMPLICATIONS FOR FURTHER RESEARCH, PRACTICE, AND POLICY**

### **1. IMPLICATIONS FOR RESEARCH**

We were able to divide the treatment sample into three distinct tiers according to their current criminal justice status and criminal history: those *incarcerated*, whether in prison, in jail, or on a parole status in the community; those with criminal *cases pending or prior convictions*, whether in the community on a probationary sentence (violation of which could reactivate the original case), in the community with outstanding warrants or awaiting trial or sentencing, or simply with a prior period of incarceration; and those with *no prior incarceration or current sentence or cases*. These three groups appear logically sound and can be discriminated easily to classify clients in any type of substance abuse treatment outcome study. The essential similarities between different elements of each tier provide a sound basis for comparing treatment programs in meta-analyses or other analytical procedures. Moreover, these groups can be further classified into 10 different subsets, and there are some differences among subsets within tiers, particularly among the lowest tier, that may be teased out in multivariate analyses.

In general, differences in criminal justice status did not contribute to the prediction of outcomes of treatment as measured by extent of improvement for any of the five major types of substances—heroin, crack cocaine, cocaine powder, marijuana, or alcohol—after controlling for a variety of other preadmission and in-treatment characteristics, including program characteristics. That is, treatment appeared to be about equally effective or ineffective in reducing substance abuse for clients in each major tier of criminal justice status, taking into account other variations in pre-treatment characteristics and program characteristics measured in NTIES.

### **2. IMPLICATIONS FOR PRACTICE**

Most substance abuse treatment professionals, whether working inside or outside of criminal justice institutions, have, by simple exposure to their clients as well as by professional training, become familiar with the working processes of the criminal justice system. The results reported here emphasize the importance not only of understanding how this system works, but of finding ways to link with and relate constructively to this system, since the great majority of clients in publicly supported treatment (as exemplified in NTIES participating sites) were involved in the operations of criminal justice. Such relationships will always have some elements of an uneasy alliance, since the interests of justice and therapy may not always coincide. Nevertheless, clients' criminal justice history and status appear neither to compromise nor amplify the effectiveness of substance abuse treatment in reducing substance use.

### **3. IMPLICATIONS FOR POLICY**

Community and incarcerated populations can be subdivided and reclassified into cross-cutting subgroups that are demonstrably similar to each other in terms of criminal activities, although varying in current official status. However, the analysis of criminal status and substance abuse treatment outcomes in NTIES suggests that criminal justice involvement is neither an obstacle nor a particular aid to treatment in the sense of affecting outcomes independently of other client and program characteristics. These findings reinforce the significance of integrated systems of treatment and supervision that can track and serve individuals as they pass through transitional gateways between lockup or correctional institutions and the community, including processes of arrest, trial, sentencing, and parole (Center for Substance Abuse Treatment, 1998). Treatment providers who work closely with justice institutions, as well as their counterparts in courts, corrections departments, and police departments, have come, in many cases, to recognize that loss of continuity of care at these crucial transitions seldom serves the interests of justice, protection, or rehabilitation, and that measures to strengthen these interstitial linkages so as to assure access to treatment regardless of criminal justice status are a crucial part of the web of recovery.

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## **APPENDIX**

## APPENDIX

### DESCRIPTION OF THE NATIONAL TREATMENT IMPROVEMENT EVALUATION STUDY AND CENTER FOR SUBSTANCE ABUSE TREATMENT DEMONSTRATIONS (1990-1992)

The National Treatment Improvement Evaluation Study (NTIES) was a national evaluation of the effectiveness of substance abuse treatment services delivered in comprehensive treatment demonstration programs supported by the Center for Substance Abuse Treatment (CSAT). The NTIES project (1992-1997) was designed and performed for CSAT by the National Opinion Research Center at the University of Chicago with assistance from Research Triangle Institute. The NTIES project collected longitudinal data between FY 1992 and FY 1996 on a purposive sample of clients in treatment programs receiving demonstration grant funding from CSAT. Client-level data were obtained at treatment intake, at treatment exit, and 12 months after treatment exit. Service delivery unit (SDU) administrative and clinician (SDU staff) data were obtained at two time points, one year apart.

#### 1. THE NTIES DESIGN

##### 1.1 The Administrative/Services Component

The NTIES study design had two levels—an administrative or services component and a clinical treatment outcomes component. The administrative component was designed to assess how CSAT demonstration funds were used, what improvements in services were implemented at the program level, and what kind and how many programs and clients were affected by the demonstration awards. Four data collection instruments were used to gather administrative/services data: the NTIES Baseline Administration Report (NBAR), the NTIES Continuing Administrative Report (NCAR), the NTIES Exit Log, and the NTIES Clinician Form (NCF).

The unit of analysis for the administrative component was the SDU, defined by CSAT as a single site offering a single level of care. The classification of *level of care* is based on three parameters: facility type (e.g., hospital, etc.); intensity of care (e.g., 24-hour, etc.); and type of service (e.g., outpatient, etc.). An SDU could be a stand-alone treatment provider or it could be one component of a multitiered treatment organization. For example, a large county mental health agency may be the *organization* within which the SDU is located. The organization may have multiple substance abuse treatment components, such as a county hospital and a county (ambulatory) mental health center. The county hospital may have multiple SDUs, such as an

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inpatient detoxification service, an outpatient counseling service, and a hospital satellite center providing transitional care. In summary, the SDU provided NTIES evaluators with a stable, uniform level of comparison for examining service delivery issues.

A range of key clinician-specific data elements (within the administrative component) were assessed using the NTIES Clinician Form (NCF). The NCF items were an important adjunct to the facility- (SDU) level instruments; these items assessed clinician training, experience, client exposure, and service provision, and were completed by all counseling and clinical (medical and therapeutic) staff at the individual SDUs.

## 1.2 Clinical Treatment Outcomes Component

The unit of analysis for the clinical treatment outcomes component was individual client data. NTIES measured the clinical outcomes of treatment primarily through a “before/after” or “pre- to post-treatment” design. This method compares behaviors or other individual characteristics in the same participants, measured in similar ways, before and after an intervention.

Information about clients’ lives for the *before* period were obtained from the NTIES Research Intake Questionnaire (NRIQ), which was administered sometime during the clients’ first three weeks of treatment. The specific areas assessed included:

- Drug and alcohol use
- Employment
- Criminal justice involvement and criminal behaviors
- Living arrangements
- Mental and physical health.

Information about clients’ lives for the *after* period were obtained from the NTIES Post-discharge Assessment Questionnaire (NPAQ), with the same areas assessed at roughly 12 months post-treatment. Other client data sources included a treatment discharge interview (NTIES Treatment Experience Questionnaire, NTEQ), abstracted client records, urine drug screens collected at the time of the follow-up interview, and arrest reports from State databases.

### 1.3 The Outcome Analysis Sample

Between August 1993 and October 1994, research staff successfully enrolled 6,593 clients at 71 SDUs to participate in three waves of an in-person, computer-assisted data collection protocol. These SDUs were chosen from the universe of treatment units receiving demonstration grant funding from CSAT. Some of the selected facilities were wholly supported by CSAT awards, while others received only indirect support or none.

Clients were interviewed three times: shortly after their first day of treatment, when they left treatment, and then at 12 months after the end of treatment. Fifteen percent of the eligible clients refused or avoided participation, and 82 percent of the recruited individuals (5,388 clients) completed a follow-up interview. Additional sample exclusions included:

- Missing or undetermined treatment exit date
- Inappropriate length of follow-up interval (less than 5 or more than 16 months)
- Clients incarcerated for most or all of the follow-up period (nearly all had been treated while incarcerated, and were not yet released).

The additional sample exclusions resulted in a final outcome analysis sample of 4,411 individuals.

## 2. TREATMENT DEMONSTRATION PROGRAMS

CSAT initiated three major demonstration programs and made 157 multiyear treatment enhancement awards across 47 States and several territories during 1990 through 1992. One objective common to all demonstrations was CSAT's emphasis on the provision of "comprehensive treatment" services to targeted client populations. The recipients of these awards focused special attention on the substance abuse treatment service needs of minority and special populations located primarily within large metropolitan areas. The demonstration programs are briefly described below.

### 2.1 Target Cities

Under this demonstration, nine metropolitan areas were selected to receive awards, of which half were included in the NTIES purposive sample. The following treatment improvement activities were explicitly provided for in the awards:

- Establishment of a Central Intake Unit (CIU) with automated client tracking and referral systems in place
- Provision of comprehensive services, including vocational, educational, biological, psychological, informational, and lifestyle components
- Improved inter-agency coordination (e.g., mental health, criminal justice, and human service agencies)
- Services for special populations—adolescents, pregnant and postpartum women, racial and ethnic minorities, and public housing residents.

## **2.2 Critical Populations**

Under this demonstration program, awardees were required to implement “model enhancements” to existing treatment services for one or more of the following critical populations: racial and ethnic minorities, residents of public housing, and/or adolescents. Special emphasis was given to services provided to the homeless, the dually diagnosed, or persons living in rural areas. A total of 130 grants were awarded, covering services such as vocational support/counseling, housing assistance, integrated mental health and/or medical services, coordinated social services, culturally directed services, and others.

## **2.3 Incarcerated and Non-incarcerated Criminal Justice Populations**

Under this demonstration program, funds were directed toward improving the standard of comprehensive treatment services for criminally involved clients in correctional and other settings. Some program emphasis was placed on ethnic and/or racial minorities. Nine correctional setting demonstrations were funded: five in prisons, three in local jails, and one across a network of juvenile detention facilities. All projects included a screening component to identify substance abusing inmates, a variety of targeted treatment interventions (e.g., therapeutic communities, intensive day treatment programs), and a substantial aftercare component.

A total of 10 non-incarcerated projects were funded. Five programs targeted interventions at clients in diversionary programs, three focused services on probationers or parolees, and two programs targeted both populations. Almost all of the funded demonstration projects included the following components:

- Basic eligibility determination, followed by systematic screening and assessment
- Referral to treatment
- Graduated sanctions and incentives while in treatment
- Intensive supervision in treatment
- Community-based aftercare with supervision and service coordination.

In total, 19 criminal justice projects were funded as part of the CSAT 1990-1992 demonstrations, and as indicated in the next section, these projects were purposively over-sampled in order to obtain a more robust evaluation of this program.

### **3. DESCRIPTION OF SDUs AND CLIENTS BY TREATMENT MODALITY AND PROGRAM TYPE**

The 71 SDUs contributing clients to the outcome analysis sample are characterized by modality and (demonstration) program type in Exhibit A-1 below. Among the 698 SDUs in the NTIES universe: 52 percent (n=365) were Target Cities programs, 39 percent (n=274) were Critical Populations programs, and 9 percent (n=59) were Criminal Justice programs.

In terms of the SDUs sampled for the NTIES outcome analysis, 44 percent were Target Cities programs, 38 percent were Critical Populations programs, and 23 percent were Criminal Justice programs. Criminal Justice SDUs were purposely over-sampled as part of the NTIES evaluation design (CSAT, 1997). Nearly half of the sampled SDUs were (non-methadone) outpatient programs, and about one-quarter were long-term residential programs.

<b>EXHIBIT A-1</b>						
<b>SDUs IN THE OUTCOME ANALYSIS SAMPLE</b>						
<b>Program Title</b> Number of SDUs (% of NTIES Universe) <sup>1</sup>	<b>NTIES Sample</b>	<b>Methadone</b>	<b>Outpatient</b>	<b>Long-Term Residential</b>	<b>Short-Term Residential</b>	<b>Correctional</b>
<b>Target Cities</b> n=365 (52%)	31 (44%)	6	15	6	4	0
<b>Critical Populations</b> n=274 (39%)	27 (38%)	1	13	10	3	0
<b>Criminal Justice</b> n=59 (9%)	13 (23%)	0	5	0	0	8
<b>Totals</b> N=698 (100%)	71 (100%)	7	33	16	7	8

As shown in Exhibit A-2, 59 percent of all NTIES clients were sampled from Target Cities SDUs. Slightly more than 21 percent of were sampled from Critical Populations SDUs and 20 percent were sampled from Criminal Justice SDUs. Outpatient (non-methadone) SDUs treated more than one-third (35%) of the clients in the outcomes analysis sample, and almost 80 percent of these were sampled from Target Cities programs.

Readers who are interested in more detailed information about the NTIES project are invited to visit the NEDS Web site at <http://neds.calib.com>. The NEDS Web site provides the full-length version of the NTIES Final Report (Gerstein, 1997), as well as copies of all data collection instruments employed in NTIES.

<sup>1</sup> The original NTIES universe of SDUs included a program type called *Specialized Services*. Because clients for the outcome analysis sample were not drawn from these SDUs (n=94), they are excluded from the exhibit.

<b>EXHIBIT A-2</b>					
<b>DISTRIBUTION OF CLIENTS IN THE OUTCOMES ANALYSIS SAMPLE</b>					
<b>Program Title</b> Number of Clients (% of Analysis Sample)	<b>Methadone</b>	<b>Outpatient client</b>	<b>Long-Term Residential</b>	<b>Short-Term Residential</b>	<b>Correctional</b>
<b>Target Cities</b> n=2,600 (59%)	337 (89%)	1,214 (78%)	504 (60%)	505 (58%)	0
<b>Critical Populations</b> n=931 (21%)	45 (11%)	220 (14%)	298 (35%)	368 (42%)	0
<b>Criminal Justice</b> n=880 (20%)	0	132 (8%)	39 (5%)	0	709 (100%)
<b>Totals</b> n=4,411 (100%)	422	1,5++	841	873	709

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