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Demonstration in Birmingham, Alabama: Final  
Report**

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# CHAPTER 1

## INTRODUCTION

Breaking the Cycle (BTC) is a multi-site research and demonstration project designed to develop and test a comprehensive strategy for addressing substance abuse among offenders. In 1996, Birmingham, Alabama was selected as the first BTC demonstration site. When fully implemented, BTC in Birmingham would target its services to all drug-involved adults under the supervision of criminal justice agencies. The University of Alabama at Birmingham's (UAB) Treatment Alternative to Street Crime (TASC) program was selected as lead agency. Since that time, Jacksonville, Florida, and Pierce County (Tacoma), Washington have also started BTC projects that target adult offenders. These three demonstration sites are being evaluated by the Urban Institute (UI) and the Treatment Research Institute (TRI). UI managed the evaluation, conducting the process evaluation site visits, collecting data on program services and justice system activities, and analyzing the impact of BTC. TRI recruited the evaluation samples, designed the instruments managed the surveys, and is conducting the cost-benefit analysis. One BTC program for juveniles has begun work in Eugene, Oregon and is being evaluated by the Research Triangle Institute. All the research and demonstration projects are managed by the National Institute of Justice with funds provided by the Office of National Drug Control Policy.

This report presents findings on the impact of the Birmingham BTC program on offenders and the criminal justice system and an analysis of the costs and benefits of BTC services.

### *The BTC Vision*

BTC is grounded in several decades of research that documents the effectiveness of court-supervised treatment for offenders through drug courts and community-based treatment administered by Treatment Alternatives to Street Crime (TASC) programs (see Belenko, 1999; Anglin, Longshore and Turner, 1999). However, access to these programs is generally limited to offenders who meet selection criteria defined by charge, criminal history, or type of sentence. Prior to BTC, no jurisdiction had offered an intervention to all felony offenders involved with drugs (tailoring the services to the seriousness of the abuse), independent of their case and criminal history. The goal was to ensure that criminal justice agencies focus on the challenge of reducing drug use and drug-related crime among offenders under supervision. The following four elements represent the core of the BTC model:

- **Early Intervention**

The BTC model calls for identifying offenders who are eligible for drug treatment immediately after they are arrested. An arrest can provide the best opportunity to intervene, because it may force an individual to confront his or her substance abuse problem. To capitalize on this moment of opportunity, BTC plans include pre-arraignment drug testing of all offenders between arrest and first appearance. This should be followed by a clinical assessment and timely placement in an appropriate treatment modality for those with a positive drug test or other indicators of substance abuse.

- **Judicial Oversight**

BTC requires close judicial oversight of drug treatment participation. The experience of drug courts has shown that close judicial oversight can help reduce drug use and criminal behavior among participants. BTC seeks to apply this lesson to all drug-using defendants who are under any form of criminal justice supervision. In most jurisdictions, judges have broad authority to impose and enforce conditions of pretrial release that impact public safety. For judicial officers to exercise this authority, they need quick access to drug test results and treatment participation information at every court hearing.

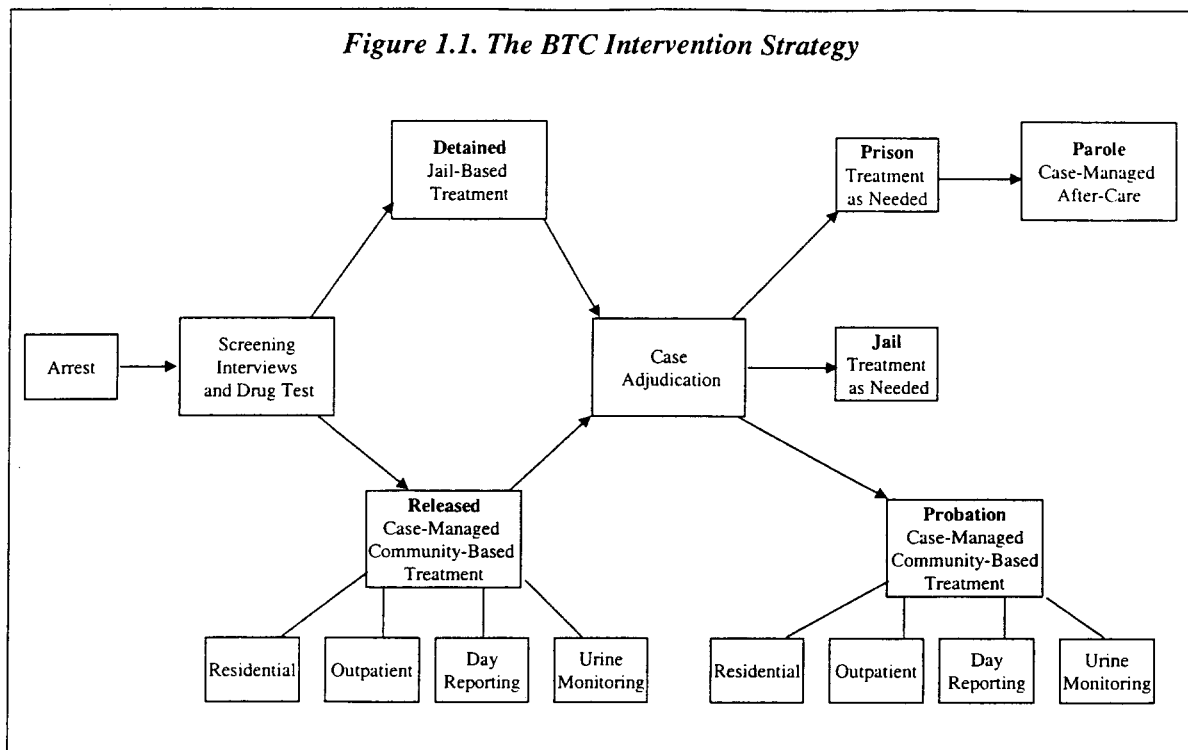
- **Use of Graduated Sanctions and Incentives**

The agencies involved in BTC are expected to apply steady leverage to retain offenders in treatment. Borrowing from strategies pioneered by drug courts, BTC offender management should include consistent and timely use of sanctions and incentives. In concordance with the drug court philosophy and social science research findings, sanctions should be immediate and certain, graduating in severity as needed, and incentives should be used to reward treatment progress.

- **Close Collaboration Between Criminal Justice Agencies and Drug Treatment**

BTC requires justice agencies and treatment providers to collaborate in focusing their expertise and mandates on changing offender behavior. As partners, these agencies should engage in joint planning, exchange of information on offender status, and collaborative monitoring of offender compliance. Operationally, this means setting up procedures for three purposes: (1) to assess every drug-using defendant entering the criminal justice system, (2) to prepare individualized treatment plans and conditions, and (3) to encourage judicial review of treatment participation or drug testing at each court appearance.

BTC is designed to provide an appropriate intervention for drug-involved offenders at every stage of criminal justice supervision, from arrest through the completion of probation or post-incarceration supervision. Figure 1.1 presents an overview of the BTC strategy, which includes a continuum of pretrial treatment options, such as jail-based programs for those detained and post-adjudication treatment for offenders in prison, in jail, and on probation.



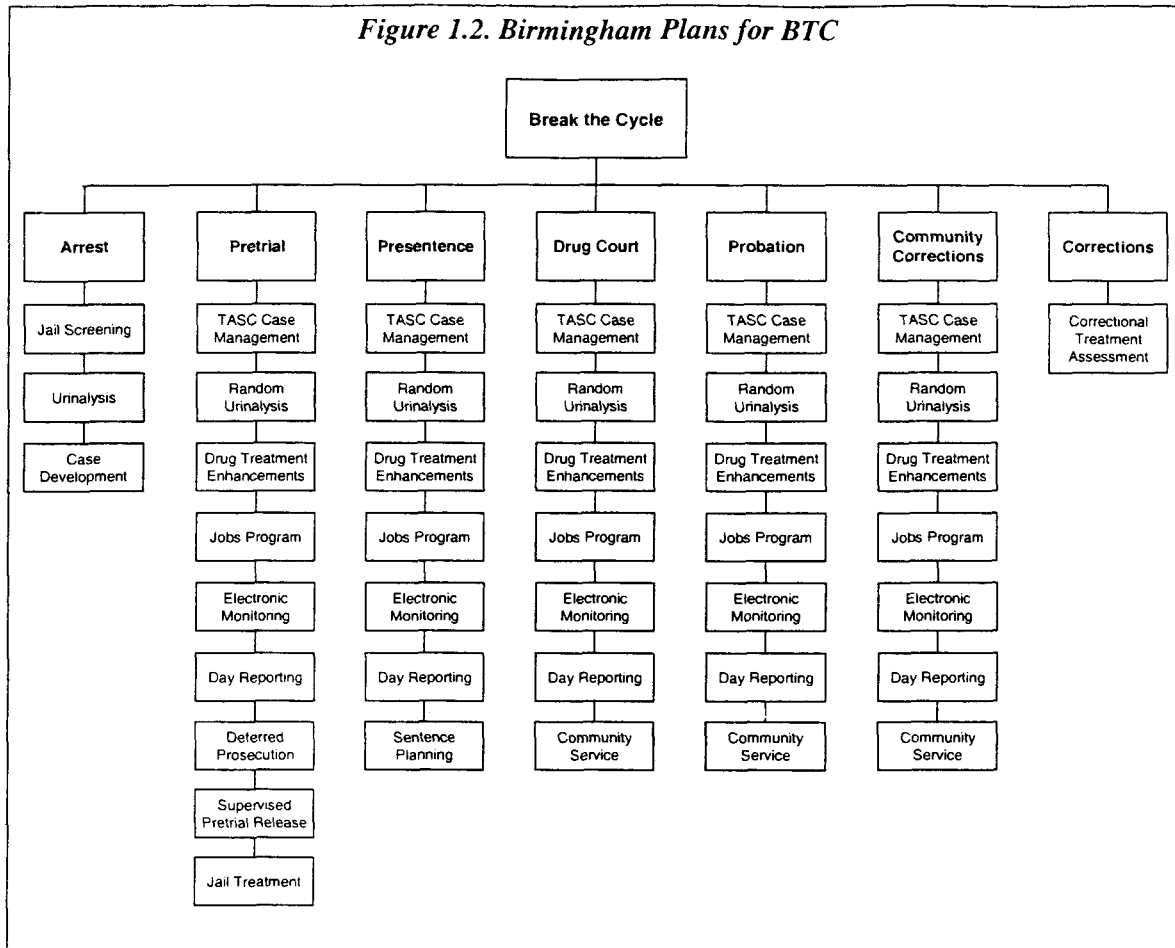
### ***BTC in Birmingham***

The strategy for implementing BTC in Birmingham involved the following system changes:

- Procedures for early intervention, careful case management, and proper treatment referrals that would match the level of supervision and treatment to defendant needs.
- Judicial review of all BTC defendants' records of treatment participation and drug testing at each court appearance as a means of improving treatment retention and compliance with drug testing requirements.
- Appropriate and consistent use of graduated sanctions to support justice system requirements.
- A continuum of services that would be provided to offenders throughout their period of criminal justice supervision.
- Ongoing collaborative planning by the justice agencies in Birmingham for the design and enactment of global change in the criminal justice system.

An overview of drug treatment and supervision plans submitted by Birmingham for BTC is shown in Figure 1.2.

Figure 1.2. Birmingham Plans for BTC



Source: The Birmingham BTC Proposal to NIJ

Birmingham's plans called for the BTC intervention to begin with screening, drug testing, and case development shortly after arrest and to continue with services across all stages of criminal case processing, from pretrial through community corrections. The BTC services at each stage were to include case management, drug testing, jobs programming, drug treatment enhancements, and a range of supervision options, such as day reporting and electronic monitoring.

The implementation of this plan was divided into three phases to allow time for BTC to devise and test procedures before instituting them system-wide. The Planning Phase began in October 1996 and ended in May 1997. During Phase I of implementation – June 1997 through mid-August 1998 – BTC offered services to defendants arrested on felony drug charges. The design of Phase I allowed the BTC network to test new policies and procedures; to reorganize staffing, technology, and operations as needed to support the inclusion of a large portion of the arrestee population; and to begin the process of designing services that could continue from arrest to the end of a defendant's period of justice system supervision. Phase II, which extended BTC to all felony defendants, began August 10, 1998. This evaluation is based on BTC operations between October 1998 and May 1999, the period of most complete implementation. The process evaluation findings from each of the three phases are presented in earlier reports from the Urban Institute, *Baseline Report on Birmingham, Alabama's Breaking the Cycle*

*Initiative* (Carver, Harrell, and Cavanagh, 1998), and *Process Evaluation Report on Phase I Implementation in Birmingham, Alabama* (Harrell, Cavanagh, and Hirst, 1998), and *Implementing System-Wide Interventions For Drug-Involved Offenders In Birmingham, Alabama: Evaluation Of The Breaking The Cycle Demonstration* (Harrell, Hirst, and Mitchell, 2000).

### ***Organization of Report***

This report examines the impact of BTC on offenders and the criminal justice system during the project's full implementation (Phase II). Chapter 2 describes the services provided during the implementation phase and summarizes the findings of the process evaluation report. Chapter 3 presents the methodology used in the impact evaluation. Findings about effects of BTC on offenders are presented in Chapter 4 (drug use and crime) and Chapter 5 (health, employment, and family problems). The changes in case processing and outcomes that occurred with the introduction of BTC are described in Chapter 6. Chapter 7 contains a summary and discussion.



## CHAPTER 2

# THE IMPLEMENTATION OF BTC IN BIRMINGHAM

This chapter summarizes the findings from the process evaluation of BTC implementation, providing information on the services delivered by BTC and a context for interpreting the results of the impact analysis.

### *Interagency Collaboration*

BTC envisioned close collaboration among justice agencies and treatment agencies, with TASC serving as the linking agency. Under BTC, TASC would also be responsible for screening and assessing defendants for BTC eligibility and TASC case managers would be responsible for the supervision of BTC clients on pretrial release. During the planning phase of BTC (prior to offering services to offenders), TASC worked to arrange agreements on joint efforts to supervise and treat offenders, meeting individually with each justice agency and treatment provider. This management model proved unequal to the tasks of getting agreement and action on procedures for exchanging information and amending policies that affected a number of agencies. BTC then established a Policy Board comprising representatives from the courts, the jail, parole and probation, the defense bar, prosecutor's office, TASC, and the sheriff's department. During Phase I and full implementation, the Policy Board met regularly to review the progress of the project and make recommendations on program and system changes. Smaller subcommittees met to discuss issues such as District Court judges, probation, and MIS development and reported their findings to the full committee. Major accomplishments of the Policy Board include the following:

- Development of a Memorandum of Understanding (MOU) during the Planning Phase that outlined the responsibilities of each agency and demonstrated commitment to BTC (See Attachment A for a copy). The Presiding Circuit Court Judge, the District Attorney, the Sheriff, the Probation Supervisor, the President of the Criminal Bar Association, directors of three drug treatment agencies, and the President of the County Commission signed the MOU.
- Implementation of a new bond condition during Phase I that required all felony defendants to report to TASC (the BTC lead agency) upon pretrial release so that they could be screened for BTC eligibility.
- Implementation of methods for early identification of drug-using defendants during Phase I. Substance abuse screening for released defendants took place at BTC following release from jail and was facilitated when TASC opened a second office a short distance from the jail and courthouse complex. Substance abuse screening of defendants not immediately released on bond was scheduled for their initial court appearance.

- Establishment of alternative dockets for various types of drug-involved defendants. These included a deferred prosecution program, a drug court, and an expedited docket (Most of these developments occurred during Phase I of BTC implementation).
- Introduction during Phase I of review hearings for probationers and BTC clients awaiting grand jury review.

### *Early Intervention and Placement in Services*

BTC made impressive accomplishments in Birmingham in achieving early case identification and expanding the use of drug testing for defendants on pretrial release. BTC (1) developed automated drug testing procedures capable of testing a large number of defendants; (2) implemented a sophisticated management information system (MIS) for conducting client assessments, tracking client supervision and drug test results, and generating court reports; (3) placed case managers near clients in offices in and near the court house; and (4) developed the capacity for on-site drug testing in court. During the eight-month period from October 1998 to July 1999, BTC offered intervention services to a large number of drug-involved felony defendants, as summarized below.

- Assessed and admitted 3,047 defendants into BTC services at TASC. Fifty-seven percent of these assessments were available took place within one week of arrest.
- Referred 2,562 BTC clients (84%) to drug treatment during pretrial release.
  - 767 were referred to urine monitoring only.
  - 530 were referred to day reporting or educational groups plus urine monitoring.
  - 1,265 were referred to more intensive outpatient or residential treatment plus urine monitoring.
  - Sixteen percent of the BTC clients received no referral to treatment, although nearly half of these received some drug testing.
- BTC also placed most clients in treatment without long delays.
  - 98% of the 1,297 referred to urine monitoring only or urine monitoring in combination with educational groups entered their assigned program, most within a few days. Over 90% of those who entered urinalysis testing only remained active in BTC for 90 days or longer after entry.
  - 90% of the 1,265 BTC clients who were referred to more intensive outpatient or residential treatment entered their assigned program. The median waiting period was just over two weeks. Over 60% of those who entered remained active in BTC for 90 days or longer after entry.

- Drug tested 95% of the BTC clients at least once. The average number of tests scheduled was 10.5 per client.
  - Scheduled 30,922 drug tests for BTC clients during pretrial release: 52% of the tests were negative, 23% positive, and 25% were missed.
  - Thirty percent of those scheduled for testing never tested positive; 12% tested positive for heroin (alone or with other drugs); 33% tested positive for cocaine (alone or with drugs other than heroin).

However, BTC early intervention and treatment placements were limited to defendants released from the jail while their cases were pending. No screening, assessment, or treatment services were provided to defendants not released from jail. Plans to set up these services were abandoned in the face of severe space and staff shortages at the jail.

### ***Compliance Monitoring and Sanctioning***

BTC case managers were responsible for monitoring compliance with drug test requirements and treatment attendance for BTC clients on pretrial release and responding to infractions with administrative sanctions. Overall, 86% of the clients with any infractions received an administrative sanction. However, the sanctioning was not certain, swift, or severe.

- Multiple infractions tended to precede each sanction. BTC clients averaged 6.6 infractions, but only 2.6 sanctions.
- Sanctions occurred weeks after the first infraction in a series. The time between the first infraction and the first sanction was over one month. This declined to three weeks between the next infraction after the first sanction and the subsequent sanction, and then to two weeks between the next post-sanction infraction and the subsequent sanction.
- The sanctions were relatively mild and rarely graduated to severe penalties, despite repeated violations. Sixty percent of the clients with infractions received an alert letter notifying them that they were in violation of BTC requirements, 42% were subjected to a case review by the case manager, 23% were terminated from BTC for noncompliance, and 10% were referred to more intensive treatment. Those terminated faced no judicial sanction for termination.

### ***Judicial Oversight***

District Court judges received reports from TASC on BTC client drug test results and treatment compliance whenever those clients were scheduled to appear in court. Although the MIS records on the contents of these reports were not available for analysis, it must be assumed that many contained references to the 21,384 infractions committed by 2,509 (81%) of the BTC clients. However, the judges did not regularly review these reports and, with the exception of clients in drug court, few ever received a judicial sanction. In response to the lack of judicial monitoring, BTC established new compliance hearings. Using the services of a retired judge, the court began to hold compliance hearings for (1) defendants awaiting an indictment hearing

before a Grand Jury (typically a five month wait between the District Court waiver and the Grand Jury), and (2) offenders placed on probation at sentencing. However, a very small proportion of clients were referred to these hearings, appearance rates were low, and penalties for non-appearance were rarely imposed.

- 368 BTC pretrial clients and 42 BTC clients on probation were scheduled for a review hearing.
- Appearance rates averaged 43% for the BTC pretrial clients and 72% for BTC clients on probation.
- 72 pretrial clients (3% of the clients with any infractions) received a sanction involving time in jail; 19 of these clients were in the drug court.

However, the availability of BTC supervision and treatment was a factor in the decision of the court to expand the options available for drug-involved offenders by adding an expedited docket and a diversion program to the drug court option. These programs increased the number of drug-involved offenders released from the jail to BTC for testing and treatment and provided a court endorsement of BTC.

### ***Implementation of the BTC Model***

BTC was successful primarily in subjecting more defendants on pretrial release to drug testing and referring them to treatment. Key areas in which BTC goals were not met included the following:

- Treatment for defendants detained at the jail before or after sentencing was part of the BTC plan, but was not implemented due to lack of space.
- Lack of coordination between TASC and the Probation Department led to a failure to drug test and refer to treatment BTC clients who were on probation. During BTC, TASC administered between 112 and 180 drug tests each month to a caseload of more than 2,500 probationers. A separate evaluation of the drug testing of BTC clients on probation found that an average of 132.9 tests were conducted monthly between January 1998 and March 1999 (Yarber, 1999). Neither agency monitored drug treatment participation by these offenders.
- Sanctions were not administered with a high level of certainty or speed, and did not consistently increase in severity. This was true of administrative sanctions proposed for use by TASC case managers and for sanctions available to the judges.
- Judicial monitoring of BTC clients was minimal.

As a result, the drug interventions provided under BTC were far more similar to a pretrial version of the TASC program in place at the start of BTC than to a model of coerced abstinence. BTC was successful in screening defendants for substance abuse and placing drug users released from jail in some form of intervention. Failure to use graduated sanctions was a particularly

serious flaw in implementation, because nearly half of BTC clients received drug testing only. Drug testing in the absence of sanctioning (even when combined with judicial monitoring) has been found to be of minimal effectiveness in producing drug abstinence (Harrell, Cavanagh, and Roman 1999; Cavanagh and Harrell, 1995) Thus, the new system lacked provisions for ensuring defendant accountability, a key element of BTC. The new system also was unable to provide a continuum of care throughout the justice system. The problems encountered in setting up treatment options in the jail, developing additional intensive drug treatment slots, and extending community-based drug monitoring and treatment to BTC clients on probation limited the program's scope to defendants on pretrial release and may actually have decreased the level of case management and treatment available to offenders on probation.

### ***Lessons on BTC Implementation***

One of the major lessons of BTC in Birmingham is that major system reform of the type envisioned by the project must be supported by technology, collaborative planning, and staff in every participating agency. Many of the barriers to implementation can be traced to underlying problems that made it difficult for agencies to undertake major reforms and offer expanded services:

- A severely overcrowded jail, excess case backlogs clogging the court dockets, and huge caseloads for case managers at TASC and officers in the Probation Department. Staff simply were not available to undertake additional responsibilities for offender supervision.
- Lack of computer systems and technology to support client tracking and timely exchange of interagency information.
- Lack of a history of interagency collaboration around system problem solving and agencies that were narrowly focused on their immediate budget and staffing problems. No one agency can direct system-wide reform. Only collectively can agencies devise ways to share resources to serve the interests of all.
- The judges, the Sheriff, and the District Attorney were elected, so political considerations reduced their willingness to take risks on reform and introduced an element of competition between officials of different political parties.
- Shortages in drug treatment slots made it difficult to find appropriate placements for offenders in need of intensive treatment modalities.

Substantial progress was made toward addressing these barriers during BTC. Significant reductions in jail overcrowding were achieved through alternative dockets and dispositions, undertaken in conjunction with BTC assessment and case management. Computerized assessment and drug testing were implemented. By establishing the Policy Board, BTC initiated a continuing process of collaborative planning.

## CHAPTER 3

### THE IMPACT EVALUATION DESIGN AND METHODS

The goal of the impact analysis was to answer a series of questions about the effects of BTC on individual offenders. Does BTC reduce criminal involvement and substance abuse? Does BTC result in gains in legitimate employment, family cohesion, and residential stability? How do features of the services and sanctions received affect outcomes for offenders? Does the impact of BTC depend on characteristics of the participants? The impact evaluation also examined the effects of BTC on the functioning of the criminal justice system by looking at changes in the length of time required to reach a disposition, the number of hearings, and the kinds of sentences imposed.

The analysis of the impact on individuals uses quasi-experimental design to compare a sample of 137 offenders selected prior to full implementation to a sample of 245 offenders eligible for the full range of BTC interventions. The impact of BTC on case processing time, use of detention, sentencing, and compliance with court orders are evaluated using criminal justice records of offenders entering the system before and after BTC. The analysis of the impact of BTC on case processing is based on comparing records from criminal justice agencies on the handling of their cases.

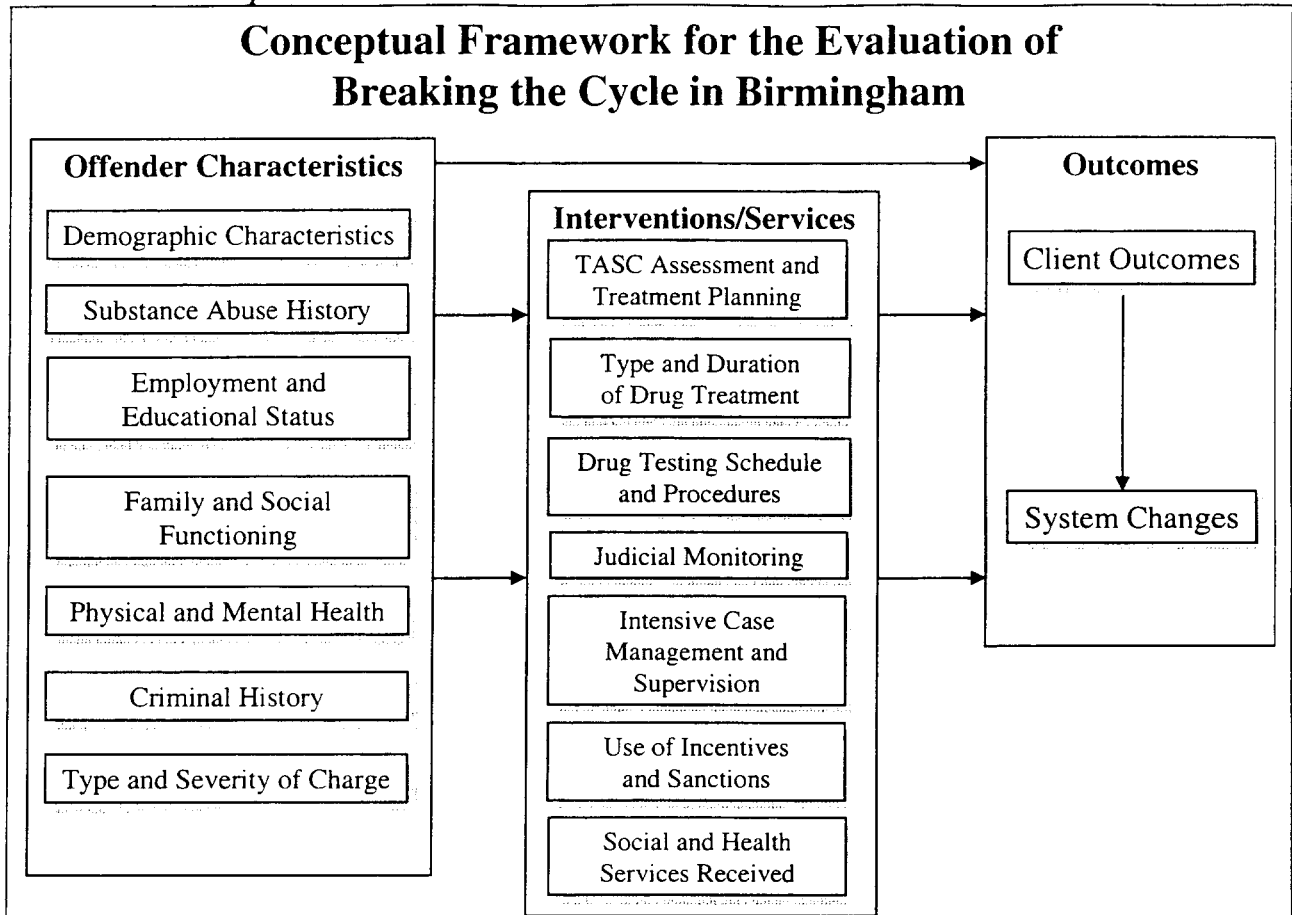
#### *The Conceptual Framework*

The conceptual framework guiding the study design and choice of data to be collected is shown in Exhibit 3.1. The evaluation examined the outcomes illustrated in the boxes on the far right. Goals for offenders include decreased drug and alcohol use and negative consequences associated with use, reduced criminal activity, longer time to re-arrest, improved economic well-being and increased rates of employment, improved family and social functioning, and improved physical and psychological health. System outcomes to be examined include the number of hearings and number of days between arraignment and case disposition, top charge at conviction, sentences imposed, use of alternatives to incarceration, and recidivism.

Offender characteristics that may affect both the type of services received and the response are shown on the far left of the exhibit. These factors are used as control or stratification variables. They include demographic or background characteristics of the offender such as age, ethnicity, and gender; substance abuse pattern and severity; current employment and educational status; family status and current living situation; physical and mental health; prior criminal activity, arrests and convictions; and current charge.

The center column illustrates factors hypothesized to affect offender and system outcomes. These include drug treatment placements, type and duration of drug treatment, drug testing, frequency of judicial monitoring, intensity of contact with case managers or court supervision staff, the types of incentives and sanctions, and the timeliness and consistency of sanctioning.

*Exhibit 3.1 Conceptual Framework*



### ***Data Collection***

The impact of BTC was assessed using the results of surveys designed and managed by TRI. The samples were interviewed shortly following arrest (baseline) and again nine months later (follow-up) using a version of the Addiction Severity Index (McLellan, Kushner, Metzger, Peters, et al., 1992) modified to include additional questions about illegal activities and participation in drug treatment services. Copies of the questionnaires are provided in Appendix A. Data on arrests were collected from criminal history records. Data on drug test results, sanctions and infractions data, and participation in on-site drug education groups were collected from the BTC management information system. The data sources for key domains are shown in Exhibit 3.2. Definitions of the variables used in the analysis are shown in the Glossary at the end of this report.

The pre-BTC sample was recruited between March 13 and May 2, 1997 by inviting arrestees tested for the Drug Use Forecasting (DUF)<sup>2</sup> project in the Birmingham jail to take part in the study. Following the DUF drug test and interview, arrestees were invited by a research recruiter to consent to be a part of the study. Those who agreed (n = 311) signed a consent form

which included agreement to their DUF drug test results to the research team with the understanding that they would receive a \$10 stipend by mail and would be contacted for the study if they were found to be eligible. Only those who tested positive for at least one drug (n = 236, 76% of those who consented) were considered eligible and included in the comparison sample.

The BTC sample was recruited from the defendants ordered to BTC upon release. Plans to recruit them following a drug test in the jail had to be changed when BTC dropped plans to screen for program eligibility at the time of arrest. In lieu of in-jail drug testing, BTC required defendants charged with felonies to report to TASC within 24 hours of release from the jail on bond. The defendants were screened at that time for BTC eligibility using a drug test and short self-administered questionnaire. Those who tested positive, reported drug use, or were charged with drug felonies became eligible for BTC. The BTC sample was recruited immediately following the TASC screening by inviting defendants found eligible for BTC to participate in the study. Between September 8 and November 5, 1998, 596 defendants were contacted and initially determined to be BTC eligible; 545 of these individuals agreed to participate in the study (91%) and were sent a payment of \$10. However, 171 of them were later found to be ineligible because their charges were dropped or reduced to a misdemeanor, or they lived outside Jefferson County and thus not eligible for BTC services, leaving a final sample of 374.

Baseline interviews were conducted with 192 pre-BTC sample members and 374 BTC sample members. The 45-minute interviews were conducted by telephone (1%) or in person (99%). Pre-BTC sample baseline interviews took place approximately a month following consent (median = 28 days); 63% took place in jail and 36% in person in the community. All BTC sample baseline interviews were conducted in person at TASC within a day of consent. Participants received \$10 for the baseline interview. The non-random nature of the sample and the varying sample selection criteria produced significant differences between the two groups, particularly in areas concerning employment and criminal histories; however, the samples were similar on drug use variables (Table 3.1).

Although the pre-BTC had all tested positive at time of arrest, the baseline interviews conducted some weeks later showed lower rates of drug use in the past 30 days. Their drug use may have increased the risk of criminal behavior and detection — leading to the arrest, and the baseline interviews captured a 30-day period of less drug use or the comparison group may have underreported their drug use. The somewhat higher rate of self-reported marijuana use in the past 30 days reported by the BTC sample may have resulted from interviews conducted within a week of arrest.



*Exhibit 3.2: Data Source Matrix*

<b>Category in Conceptual Framework</b>	<b>MIS</b>	<b>NCIC</b>	<b>AOC</b>	<b>Survey</b>	<b>Drug Treatment Records</b>
<b>OFFENDER CHARACTERISTICS</b>					
Demographic Characteristics	X			X	
Substance Abuse History	X			X	
Employment and Education Status	X			X	
Family Composition and Living Situation	X			X	
Physical and Mental Health	X			X	
Criminal History	X	X	X		
Type and Severity of Charge	X	X	X		
<b>INTERVENTIONS/SERVICES</b>					
Court Assessment/Treatment Planning	X				
Type and Duration of Drug Treatment	X				X
Drug Testing Schedule and Procedures	X				
Judicial Monitoring	X				
Intensive Case Management or Court Supervision	X				
Use of Incentives and Sanctions	X				
Social and Health Services Received	X				
<b>OUTCOMES (Client Outcomes)</b>					
Reduced Drug Use	X			X	
Reduced Criminal Activity	X	X	X	X	
Longer Time to Rearrest	X	X	X		
Improved Economic Well-being				X	
Improved Family and Social Functioning				X	
Improved Physical and Psychological Health				X	
Reduced AIDS Risk Behavior					
Improved Housing Situation				X	
<b>OUTCOMES (System Changes)</b>					
Number of hearings			X		
Days to disposition			X		
Top charge at disposition			X		
Sentence imposed			X		
Alternatives to incarceration			X		
Days in jail before and after BTC intervention					
Recidivism during and after BTC intervention		X	X		

**Table 3.1. Baseline Differences in Demographic Characteristics by Group and Completion Status (n=566)**

	Pre-BTC sample (n = 192)			BTC sample (n = 374)		
	No Follow-up (n = 55)	Follow-up (n = 137)	Total (n = 192)	No Follow-up (n = 129)	Follow-up (n = 245)	Total (n = 374)
Male	89%	82%	84%	82%	78%	79%
African-American	73%	69%	70%	61%	66%	64%
Unmarried	89%	88%	89%	90%*(g)	82%*(g)	85%
Mean Age in Years	30	34*(f)	32	27	29*(f)	30
Mean Years of Education	12	11	11	12	12	12
Mean # Days Paid for Work, Past 30	7	5***(f)	5	11	13***(f)	12
Mean # Days Paid for Work, Past 6 Months	66*(g)	48***(f) *(g)	54	74	82***(f)	79
Mean Employment Income Past 30 Days	\$299	\$261 ***(f)	\$272	\$546	\$673 ***(f)	\$629
Received Public Assistance Past 6 Months	15%	14%	14%	7%	10%	9%
Type of offense (target arrest) <sup>x</sup>						
Drug	35%	26%		71%	66%	
Mean Age First Drug Use	16	16	16	16	16	16
Self-Report Drug Use Past 30 Days						
Cocaine	20%	32%	29%	28%	31%	30%
Opiates	0%	7%	5%	5%	6%	6%
Marijuana	31%	30%**(f)	30%	57%	54%**(f)	55%
Other	6%	8%	7%	5%*(g)	12%*(g)	9%
Mean Baseline ASI Composite Scores (Range from 0 to 1)						
Medical	0.16	0.18**(f)	0.18	0.07	0.11**(f)	0.10
Employment/Support	0.74	0.80***(f)	0.79	0.66*(g)	0.58***(f)*(g)	0.61
Alcohol Use	0.12	0.14	0.13	0.09	0.11	0.11
Drug Use	0.07	0.08**(f)	0.08	0.04	0.05**(f)	0.05
Legal	0.40	0.40	0.40	0.40	0.41	0.40
Family/Social	0.18	0.17***(f)	0.17	0.08	0.08***(f)	0.08
Psychiatric	0.21	0.22***(f)	0.22	0.06	0.07***(f)	0.07

Differences between follow-up/no-follow-up within group signified by \*(g). Differences between groups with follow-up signified by \*(f).

\* P < .01 \*\* p < .01 \*\*\* P < .001

<sup>x</sup> Target arrests in this table are considered preliminary, and may not be an accurate reflection of the target arrest charges for the entire sample.

Follow-up interviews that were similar to the baseline interviews were conducted by phone. Most participants received \$10 for completing the follow-up interview, although some hard-to-contact participants received \$20. Originally, two follow-up interviews were planned, one at nine months and one at 15 months after sample recruitment. However, analysis of results from comparison sample interviews found no significant differences in outcomes measured at the two times so follow-up interviews for BTC sample were limited to the 9-month follow-up interview. For the comparison sample, the 9-month follow-up was used when available (n = 113) and the 15-month follow-up used if no 9-month follow-up was completed (n = 24). The actual time between baseline and follow-up varied as a result, with the average length of time between interviews was 290 days (median = 264 days). For the pre-BTC comparison sample, the time between baseline and follow-up ranged from 92 days (for one respondent whose baseline interview was conducted a long time after sample recruitment) to 599 days. For the BTC sample the time between interviews ranged from 239 to 428 days.

The timing of sample recruitment and interviewing for the pre-BTC and BTC samples is illustrated in Figure 3.1. As indicated, the pre-BTC sample was selected during the end of the BTC planning phase, while the BTC sample was selected during the full implementation phase. The figure also illustrates the extended period of baseline interviewing for the comparison sample. For this group, the interviews were not scheduled until after test results were received. Only at that time could efforts to locate and interview respondents begin. The BTC sample baseline interview was conducted at the time of consent, which resulted in interviews much closer to the time of arrest.

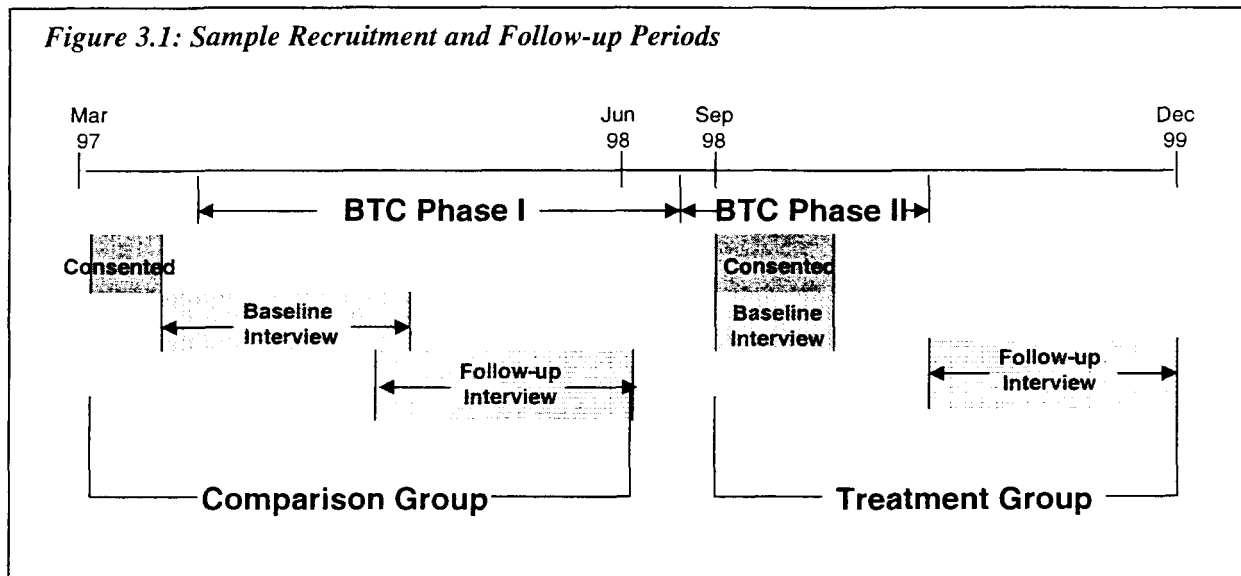


Figure 3.2 presents a pipeline analysis that illustrates sample selection and attrition rates. The comparison sample began with 311 arrestees who consented to be part of the study. No data were available on those who refused to talk with the recruiter, but very few of those who spoke with the recruiter failed to sign a consent form. Of the 236 eligible pre-BTC sample members, 192 (81%) completed the baseline interview and 137 completed a follow-up interview (58% of the eligible sample, 71% of those interviewed at baseline and assigned for follow-up interview). Of the 596 eligible sample members, 545 (91%) consented and completed a baseline interview. However, 171 were subsequently dropped from the sample because they were later found to be ineligible for BTC services, leaving BTC sample of 374 eligible defendants. Of these, follow-up interviews were completed with 245 (66% of the eligible sample).

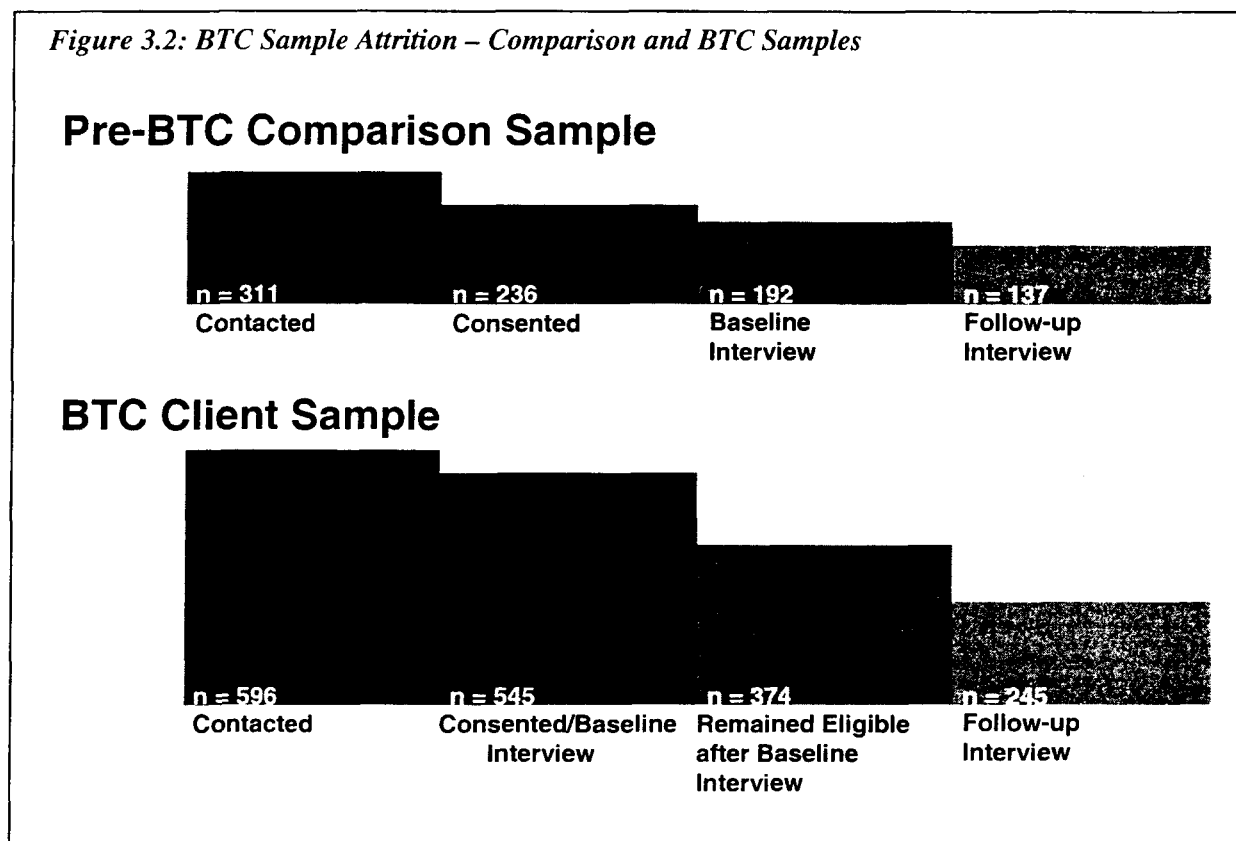
### **Data Analysis**

Data analysis began by checking for potential biases introduced by sample attrition and selection bias.

### Sample attrition

The attrition analysis included the traditional method of predicting response at follow-up (yes or no) as a function of sample characteristics and methods proposed by Biglan et al. (1991) that test the hypothesis that baseline risk scores vary significantly by group (BTC or comparison), attrition (yes or no), or the interaction of these two factors. A more complete description of the results of the attrition analysis is presented in Appendix B.

Figure 3.2: BTC Sample Attrition – Comparison and BTC Samples



To examine threats to the internal validity of the comparisons, based on the survey data, attrition analysis tested whether the attrition rate differed between group and whether the characteristics of those who remained in the study differed as a function of group. The *internal validity* of the study refers to the level of confidence that any measured differences between the groups are due to the intervention rather than to extraneous factors. Sample attrition threatens the internal validity of a study when subjects who drop out of one condition differ systematically from those who drop out of another condition on characteristics that are related to the outcome variables. The analysis found no evidence of differential attrition by group. No significant interactions were found between group and attrition. This indicated no differential attrition by group on key dependent variables that would have compromised the internal validity of the study. Older subjects who completed follow-up interviews were more likely to have low alcohol composite scores, while younger subjects interviewed at follow-up were likely to have high alcohol composite scores. Older subjects who completed follow-up interviews were more likely to have a drug charge, and younger subjects who completed follow-up interviews were more likely to have a non-drug charge.

The external validity of the study is the degree to which the results of the comparison can be generalized to conditions other than those under which the study was conducted. If subjects, regardless of experimental condition, who drop out of the study are systematically different for those who remain, then the analysis sample may not reflect the characteristics of the target population that the original sample was designed to represent. The analysis found no significant differences between the demographic characteristics, drug or alcohol use, or legal involvement of respondents who stayed in the study and those who dropped out. The results of this analysis suggest that attrition did not introduce additional differences into the study.

Exhibit 3.3 summarizes the findings of the checks of internal and external validity.

**Exhibit 3.3. Sample Attrition (n = 566)**

	Differences Significant	Differences Not Significant
Overall Sample Attrition	No differences	<ul style="list-style-type: none"> <li>• Baseline Drug Composite Score</li> <li>• Baseline Alcohol Composite Score</li> <li>• Baseline Legal Composite Score</li> </ul>
Attrition as a Function of Group	No differences	<ul style="list-style-type: none"> <li>• Baseline Drug Composite Score</li> <li>• Baseline Alcohol Composite Score</li> <li>• Baseline Legal Composite Score</li> </ul>
Differential Group Attrition <sup>a</sup>	No differences	<ul style="list-style-type: none"> <li>• Baseline Legal Composite Score</li> <li>• Baseline Drug Composite Score</li> <li>• Baseline Alcohol Composite Score <sup>b</sup></li> <li>• Target Arrest (Drug/Non-Drug) <sup>b</sup></li> </ul>

<sup>a</sup> Interaction between group and attrition as predictor of baseline severity scores.

<sup>b</sup> No significant difference by groups – baseline alcohol score and target arrest show differential attrition by age.

### **Selection Bias**

Given the evidence of differences in the samples at baseline, the analysis uses two strategies to control for these differences. The strategies include traditional multivariate models that incorporate control variables to measure observed sample differences and a two-stage estimation procedure designed to capture the effects of unmeasured sample differences (Heckman, 1978, 1979). The two-stage method is used to assess whether unmeasured variables, related to both treatment status and the outcomes of interest (e.g., recidivism), lead to bias in the estimates of BTC's effect (Barnow, Cain, & Goldberger, 1980; Smith & Paternoster, 1990; Winship & Mare, 1992). At the first stage, the likelihood of being a BTC sample member was estimated using predictors believed to differentiate the two groups. The purpose of this first-stage equation is to obtain a correction factor, which in essence is a proxy for unmeasured variables. This correction factor is then included in a second-stage equation as an independent variable, along with other variables hypothesized to effect the outcome of interest (see Winship & Mare, 1992; or Winship & Morgan, 1999).

The model selected for the first-stage equation was chosen on the basis of its predictive power and parsimony (Table 2). The predictors of group membership were sex (Female = 1), number of days incarcerated during the 30 days prior to initial interview, current probation/parole status (Yes = 1), number of self-reported crimes committed in the six months prior to the baseline interview, lifetime number of times treated for drug abuse, usual work

pattern in the past 3 years (Full-time/Student = 1, Part-time= 2, Other is omitted from the equation), time at current residence (in months), and number of days in the past 30 respondents reported each of the following kinds of problems: drug problems, psychological problems, or employment problems. These variables measure the constructs of criminal history, seriousness of substance abuse problem, medical/psychological problems, ties to the community, and demographic factors. Collectively, these variables produce a pseudo-R<sup>2</sup> of .38. The addition of more variables did not significantly improve the model fit to the data.<sup>3</sup>

**Table 3.2 Sample Selection Model (First-stage Equation)**

Variable	Parameter Estimate	b/Std. Error	p-level
Constant	1.40	4.79	0.00
Female	0.34	1.64	0.10
Time at current residence	-0.01	-1.91	0.06
Full-time Employment/Student <sup>a</sup>	0.56	2.42	0.02
Part-time Employment	0.57	2.21	0.03
Days in Jail, past 30 days	-0.06	-7.84	0.00
On Parole/Probation at Sample Entry	-0.44	-2.45	0.01
Lifetime number of prior drug treatment episodes	-0.10	-1.48	0.14
Number of Self-Reported Offenses, past 6 months	-0.01	-2.41	0.02
Days experiencing Drug Problems, past 30 days	-0.02	-1.75	0.08
Days experiencing Psychological Problems, past 30 days	-0.02	-2.23	0.03
Days experiencing Employment, past 30 days	-0.03	-2.90	0.00
<b>Model Fit</b>			
Pseudo-R <sup>2</sup>	0.38		
-2LL	180.93; 11 DF <i>p</i> = 0.0001		
N	382		

<sup>a</sup> The full-time and part-time employment variables are indicator variables; the suppressed category is all other responses, including "service," "retired/disability," "unemployed," or "in controlled environment."

### ***Analysis Techniques***

Dichotomous drug and recidivism outcome variables were estimated using bivariate probit analysis which simultaneously estimates the first- and second-stage models and the correlation between the two error terms (Rho). This term corrects for selection bias (Smith & Paternoster, 1990: 1118).<sup>4</sup> Models with counts as dependent variables (e.g., number of arrests), were estimated using bivariate probit for the first stage and a separate negative binomial regression for the second-stage. All models were estimated in LIMDEP 7.0 (Greene, 1995).

## CHAPTER 4

### BTC IMPACT ON OFFENDERS

This chapter utilizes the sample and the methodologies described in the previous chapter to estimate Breaking the Cycle's impact on client drug use and criminal activity.

#### *Reductions in Drug Use*

The analyses that follow test the general hypothesis that BTC reduced participant drug use by comparing BTC and pre-BTC samples self-reported drug use at follow-up, controlling for prior drug use and other factors hypothesized to affect drug use. Breaking the Cycle's impact on drug use was measured by self-reported drug use in the 30 days prior to the follow-up interview.<sup>1</sup> The dependent variables include use of any drug (yes/no), any stronger drugs (i.e., heroin and/or cocaine use) (yes/no), and any marijuana during the 30 days prior to follow-up. Multivariate probit analysis with and without the selection bias correction, described in the last chapter, were used to test the hypothesis that BTC participants were less likely than the comparison sample to report drug use on the follow-up interview. The independent variables in the models include (1) BTC treatment, (2) number of days in jail in the 30 days prior to the follow-up interview (to control for relative access to drugs), (3) demographic variables (sex, race, age, and education), (4) drug use in the 30 days before the baseline interview (to control for individual differences in severity of substance abuse problems), (5) several measures of employment and criminal history (in order to control for differences observed between the BTC and pre-BTC samples at baseline), and (6) any interactions between group and the above variables (in order to allow the above variables to have varying effects conditional on BTC status). All of these measures, except number of days in jail in the month prior to follow-up interview, were baseline measures. (See the Glossary for definitions of the variables.)

BTC clients were less likely to report any drug use, any stronger drug use and any marijuana use in the 30 days before follow-up than comparison sample members were. Table 4.1 displays the percentages of clients from each group who reported drug use in the 30 days prior to the follow-up interview.<sup>2</sup> While the absolute magnitudes of these differences are relatively small, ranging from roughly 6% to 3%, the differences may be attenuated by the fact that respondents from the pre-BTC sample had considerably less opportunity to use illicit drugs. The pre-BTC sample, on average, spent 9 more days in jail than the BTC sample during the 30 days before the follow-up interview and were still more likely to use illicit substances during that same period.

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<sup>1</sup> This drug use measure includes use of heroin, other opiates, cocaine, marijuana, amphetamines, barbiturates, other sedatives, hallucinogens, and inhalants.

<sup>2</sup> The sample is limited to known drug users and excludes 32 BTC sample members put in BTC for urine monitoring because they had been charged with a felony drug offense and subsequently discharged because they did not test positive for drugs while in BTC.

**Table 4.1 Self-reported Drug Use in the 30 days Prior to the Follow-up Interview**

Drug Use	BTC sample (n = 213)	Pre-BTC sample (n = 137)	Significance of Difference <sup>a</sup>
Any Drug Use	23%	26%	0.29
Any Stronger Drug Use	8%	12%	0.06
Any Marijuana Use	10%	16%	0.06
Number of days incarcerated	1.9	11.5	0.00

<sup>a</sup> These significance tests are all one-tailed. Chi-square tests were used for the first four comparisons, and a t-test was employed for the last comparison.

To isolate the effects of BTC, probit analysis of group differences in the likelihood of reporting drug use in the 30 days before follow-up were conducted. The models included variables to control for personal characteristics that might affect differences in drug use and drug use in the 30 days before the baseline interview. Two models are shown for each drug use outcome. The model in the first column estimates the impact of BTC on client drug use without controlling for selection bias; the model in the second column adds a selection bias correction factor to the model as described in Chapter 3. When the correction factor in the second model is statistically significant, conclusions should be based on the model in that column. If the correction factor is not significant, conclusions should be based on the model in the first column. In general, the models with the selection bias correction did not significantly improve the models fit to the data, suggesting that the control variables included in these models adequately control for differences between the two groups.

Table 4.2 shows that BTC had a marginally statistically significant impact on any drug use and use of stronger drugs in the 30 days before the follow-up interview, controlling for other factors. Because the correction factor was not significant, these conclusions are based on the model in the first column. Table 4.2 also shows that BTC had a more complex effect on marijuana use. This model reveals that BTC's effect was conditional on race; BTC had statistically significant and substantial effects on marijuana use of African-American clients, but no effect on the marijuana use of Whites. One way of describing the results in Table 4.2 is to say that BTC participation is expected to reduce the latent propensity to use any drug by 0.29 and any harder drug use by 0.35, holding all other variables constant.

Another way of describing the results is to convert these parameter estimates into predicted probabilities (see Long, 1997) that show the likelihood of drug use, holding all variables except BTC treatment at their means. These probabilities represent the "average" effect of BTC on drug use, if all other variables were the same.<sup>3</sup> Presented this way (see Figure 4.1), the predicted probability of any drug use in the past 30 days is 17% for the BTC sample and 26% for the pre-BTC sample, holding all other variables at their mean values. The percentage of BTC sample members reporting any stronger drug use was half that of pre-BTC sample members (4% versus 8%). The largest difference was in the probability of any marijuana use by African-Americans (4% in the BTC sample versus 18% in the pre-BTC sample). However, there were no significant differences in marijuana use among white defendants in the two samples.

<sup>3</sup> Throughout this report parameter estimates all be converted into predicted probabilities when significant differences emerge. These predicted probabilities should be interpreted in the manner given in the above example.



**Table 4.2 Self-Reported Drug Use in the 30 Days Prior to Follow-up Interview, controlling for Defendant Characteristics and Sample Differences**

Variable	Any Drug Use		Any Hard Drug Use		Any Marijuana Use	
	Probit w/o Selection Correction	Probit w/Selection Correction	Probit w/o Selection Correction	Probit w/Selection Correction	Probit w/o Selection Correction	Probit w/Selection Correction
BTC Treatment <sup>a</sup>	-0.29*	-0.53*	-0.35*	-0.60	0.00	-0.53
Age	0.01	0.01	0.03***	0.03**	-0.01	-0.01*
Female	-0.15	-0.13	0.04	0.05	-0.65**	-0.62
Black	-0.02	-0.03	0.29	0.27	0.38	0.32
Black*BTC Tx	—	—	—	—	-0.84**	-0.78
Education	-0.07*	-0.07*	-0.12**	-0.13	-0.04	-0.05
Employ Bother	-0.06	-0.09	-0.09	-0.11	0.12	0.08
Days Worked	-0.01	-0.01	-0.01	-0.01	0.01	0.01
Months in Jail	0.01	0.01	0.00	0.00	0.01*	0.01
On Probation	0.25	0.20	0.17	0.11	0.49**	0.38
Serious Offender	-0.21	-0.22	-0.14	-0.16	-0.10	-0.12
Prior Offenses	0.00	0.00	0.00	0.00	0.00	0.00
Prior Drug Use	0.01	0.01	0.01	0.01	0.02***	0.02**
Days in Jail	-0.05***	-0.05***	-0.05***	-0.05***	-0.04***	-0.04***
Constant	0.24	0.42	-0.80	-0.60	-0.59	-0.21
Selection Correction <sup>b</sup>	—	0.19	—	0.19	—	0.37
N	350	350	350	350	350	350
-2LL	-344.98	-615.05	-181.56	-451.89	-224.65	-493.66

<sup>a</sup> Significance tests for this variable are one-tailed.

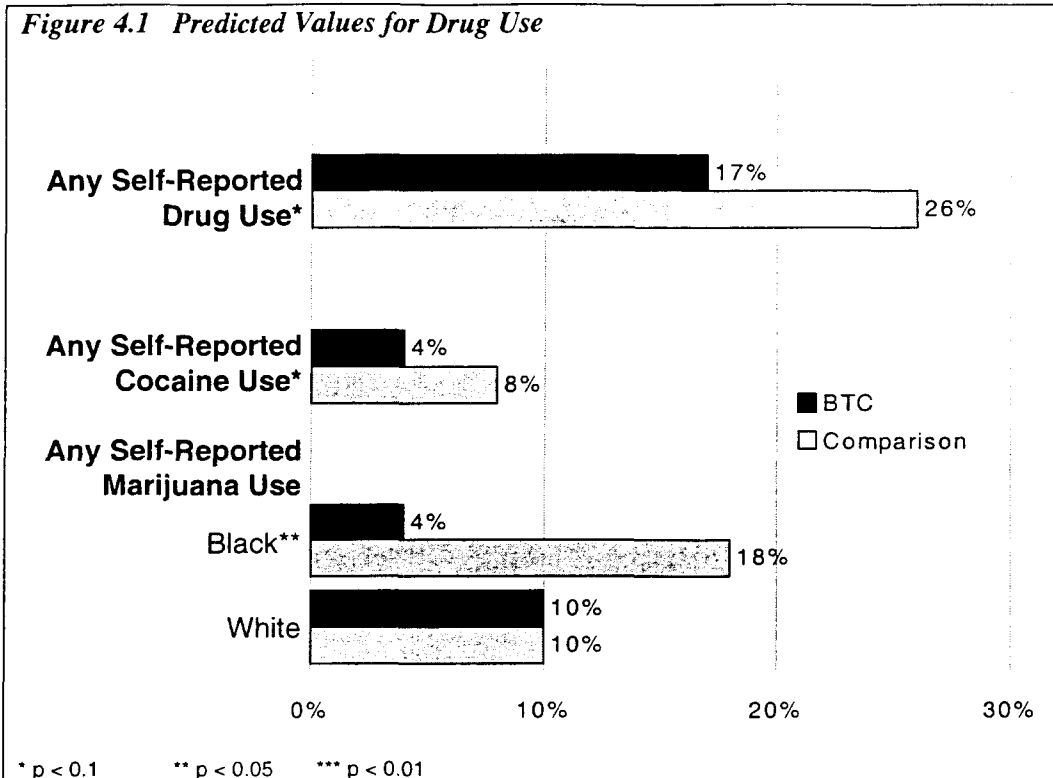
<sup>b</sup> This term refers to the correlation between the error terms in the first- and second-stage equations (Rho).

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

However, examination of reports of drinking alcohol to intoxication in the 30 days before the follow-up interview (reported by 16% of the BTC sample and 12% of the pre-BTC sample) did not show any significant differences as shown in the results of the multivariate modeling testing for group differences (Table 4.3). This suggests that the focus of BTC on illegal drug use through testing, treatment and supervision did not have a carry-over effect on alcohol abuse.

### ***Reductions in Criminal Activity***

One of the key premises of the Breaking the Cycle program was that recidivism could be reduced if drug-involved arrestees are promptly identified and referred shortly thereafter to appropriate treatment modalities. The following analysis utilizes official arrest and self-report data to test the hypothesis that BTC reduced continued criminal activity. The analysis also assesses whether BTC reduced the likelihood of any recidivism, and whether BTC reduced the number of offenses committed in both the official and self-report data.



**Table 4.3 Drank Alcohol to Intoxication Weekly in 30 Days Prior to Follow-up**

Variable	Probit w/o Selection Bias Correction	Probit w/Selection Bias Correction
BTC Treatment	0.16	0.12
Age	0.01	0.00
Female	-0.23	-0.17
Black	0.08	-0.01
Education	-0.08*	-0.06
Employment Bothers	0.33	0.33
Days Worked	0.01	0.01
Months in Jail	0.01	0.01
On Probation	0.37*	0.29
Serious Offender	0.10	0.07
Prior Self-Reported Offenses	0.00	0.00
Prior Alcohol Use	0.02**	0.02**
Days in Jail past 30 days	-0.05***	-0.05***
Constant	-0.76	-0.81
Selection Correction <sup>a</sup>	—	0.00
N	350	350
-2LL	-259.79	-530.03

<sup>a</sup> This term refers to the correlation between the error terms (Rho).

\*p < 0.10; \*\*p < 0.05; \*\*\*p < 0.01

In order to test whether BTC reduced recidivism, respondents at follow-up were queried about the number of times they had committed 14 types of offenses in the 6 months prior to the

follow-up interview, and respondents were asked how many times they were arrested for these offenses arrested for these same 14 types of offenses.<sup>4</sup> Additionally, official criminal justice records were collected on the BTC and pre-BTC samples. These data were used to measure any arrest in the 12 months after sample entry and the number of arrests in the 12 months after sample entry. However, criminal history records could not be located for 179 of the 566 baseline interviewees; 124 of these missing criminal histories were BTC sample members and the remaining 55 were comparison sample members.

Table 4.4 reports the mean number of arrests for the two groups and the percentage of each group who were arrested at least once in the six months prior to the follow-up interview. This six-month time period is presented because it allows a direct comparison between the self-reported and the official arrest data, allowing the data in the table to serve as a simple reliability test of the self-report data. To the extent that self-reported arrests comport with the official records, confidence in the self-report data is bolstered.

**Table 4.4 Mean Number of Arrests in the Six Months prior to Follow-Up Interview**

	BTC Treatment (n = 222)	Comparison (n = 137)	Significance of Difference <sup>a</sup>
Average number of total self-reported arrests	0.27	0.57	0.001
Any self-reported arrests	16%	32%	0.001
Average number of official arrests	0.13	0.61	0.001
Any official arrest	9%	39%	0.001

<sup>a</sup> These significance tests are all one-tailed. A t-test was used for the first comparison, and a chi-square test was employed for the last comparison.

The data in Table 4.4 present two key preliminary findings. First, official records and self-report data both indicate that the BTC sample were arrested substantially less often than the pre-BTC sample. However, as noted in Chapter 3, the BTC sample had significantly less involvement in crime prior to BTC. For this reason, these observed differences could be due to pre-existing differences between the two groups. The analysis that follows controls for individual and group differences to minimize this risk.

The comparison of self-reported arrests to official arrests shows differences in the two samples in the percentage of self-reported arrests showing up in the official arrest records. In the pre-BTC sample, percentage reporting an arrest was similar to the percentage with an official arrest record (32% versus 39%). The BTC sample was less likely to report arrest and less likely to have an official arrest recorded. However, the two estimates are farther apart, with 16% reporting an arrest, but only 9% having an arrest recorded. Two explanations suggest themselves, either: (1) the official records did not capture all of the arrests incurred by the BTC sample, or (2) the BTC sample counted many arrests from earlier time periods in the six-month period before the interview (a recognized memory error known as "telescoping"). Unfortunately, it is impossible to definitively reject one of these hypotheses. This complication vividly illustrates the importance of having more than one data source in analyzing criminal offending outcomes. To the degree that separate analyses of self-report and official data comport, added confidence is given to each set of results.

<sup>4</sup> The fourteen types of offenses were: shoplifting or vandalism; parole or probation violations; drug offenses; forgery; weapons offenses; burglary, larceny, or breaking and entering; robbery; assault; arson; rape; homicide or manslaughter; prostitution; contempt of court; and any other offenses.

## Official Arrests

The analysis first assesses BTC's effect on officially recorded offenses in the twelve months after sample entry. The models control for defendant characteristics and criminal history to examine the independent effect of BTC on recidivism. Two models are shown for each dependent variable. The first omits the selection bias correction. The second includes the selection bias correction described in Chapter 3. Negative binomial estimation is used for the number of arrests and bivariate probit estimation is used for the likelihood of any arrest.

The results displayed in Table 4.5 demonstrate that BTC significantly reduced both the likelihood of arrest and the number of arrests incurred in the 12 months after sample entry, controlling for other variables. Table 4.5 also reveals that the rates and numbers of arrests were significantly lower for the BTC sample than for the pre-BTC sample, regardless of race.

**Table 4.5. The Probability of Arrest and Number of Arrest in the 12 months After Sample Entry**

Variable	Any Arrests		Number of Arrests	
	Probit w/o Selection Correction	Probit w/ Selection Correction	NegBin w/o Selection Correction	NegBin w/ Selection Correction
BTC Treatment <sup>a</sup>	-1.25***	-0.83**	-1.61***	-1.03**
Age	-0.01	-0.01	-0.02	-0.02
Female	-0.05	-0.09	-0.05	-0.10
Black	-0.36	-0.35	-0.33	-0.35
Black*BTC Tx	0.65**	0.63**	0.91**	0.93**
Education	0.03	0.03	0.03	0.03
Employ Bother	0.12	0.17	0.16	0.24
Days Worked	-0.01	-0.02*	-0.01	-0.02*
Months in Jail	0.00	0.00	0.00	0.00
On Probation	-0.18	-0.10	0.09	0.19
On Probation*BTC Tx <sup>b</sup>	0.63**	0.61**	—	—
Serious Offender	0.05	0.07	0.17	0.21
Prior Arrests	0.02	0.02	0.03*	0.03**
Prior Offenses	0.00	0.00	0.00	0.00
Prior Drug Use	0.00	0.00	0.00	0.00
Constant	0.43	0.13	0.30	-0.15
Selection Correction <sup>c</sup>	—	-0.28	—	-0.42
Overdispersion Parameter	—	—	0.77***	0.74***
N	387	387	387	387
-2LL	-221.97	-393.57	-406.94	-405.44

<sup>a</sup> Significance tests for this variable are one-tailed.

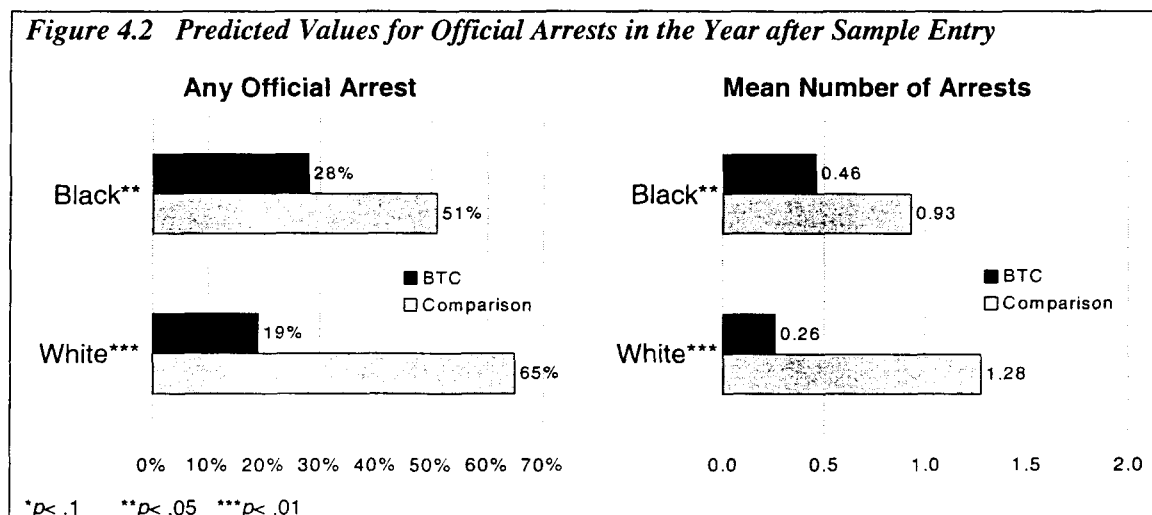
<sup>b</sup> This interaction is mean-centered; i.e., the overall sample mean has been subtracted from any observation. Thus, when this term equals zero, the BTC treatment variable is evaluated at the mean level of Probation.

<sup>c</sup> In the Bivariate Probit this term refers to the correlation between the error terms (Rho); in the Negative Binomial models this term refers to the Inverse Mills Ratio

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

However, the differences were significantly larger for white than for African-American sample members. The same results are found regardless of whether the selection bias correction is omitted or included. The selection correction does not significantly improve the model fit to these data; therefore, the conclusions and predicted probabilities are based on the models without the selection correction.

Figure 4.2 converts the parameter estimates from the probit and negative binomial regressions into predicted probabilities and predicted mean number of arrests in the twelve months after sample entry. All predicted values were calculated by holding all variables, except BTC participation and race, at their respective mean values. Figure 4.2 illustrates BTC's main and interaction effect on arrest. For both racial groups, BTC participation significantly reduced the likelihood of being re-arrested; however, this effect is considerably stronger for Whites. Likewise, while the "average" African-American in the BTC sample was predicted to have half as many arrests as the "average" African-American in the comparison sample, this effect was significantly smaller than the BTC's effect on Whites.<sup>5</sup>



### Self-Reported Arrests

Table 4.4 (above) suggests that the criminal history record checks may not have detected all of the arrests incurred by the BTC sample. If the official data did under-report the number of arrests experienced by the BTC sample, then the above results from the analysis of official arrests could be biased in the direct of finding a treatment effect, when in fact no such effect existed. Therefore, as another measure of BTC's effect on the likelihood of being arrested during the follow-up time period, the following analysis assesses BTC's effect on the number of self-reported arrests. Unlike the above analysis of official arrests, which covered the 12 months after sample entry, this analysis concerns arrests only in the six months prior to the follow-up interview.

This analysis proceeds in the same manner as the analysis of official arrests. Both any self-reported arrests and number of arrests are examined and for both outcomes, models with and without the selection bias correction were estimated. Table 4.6 displays the results of these models, which indicate that BTC significantly reduced the likelihood of any arrest for the BTC sample, regardless of race. In fact, BTC lowered the risk of recidivism by more than half. In

<sup>5</sup> It needs to be emphasized that in the current context the average offender is an imaginary person that has all of the average characteristics of entire sample. See the mean values on the analysis variables are shown in Table A.1 in Appendix C. These thus estimates do not apply to any one person in the data set, but are approximations of BTC's overall impact.

regards to number of arrests, however, BTC significantly reduced arrests only for White clients. African-American BTC participants had fewer arrests than African-Americans in the pre-BTC sample, but this difference was not significant.

**Table 4.6 Self-Reported Arrests in the Six Months Prior to Follow-up Interview**

Variable	Any Arrests		Number of Arrests	
	Probit w/o Selection Correction	Probit w/ Selection Correction	NegBin w/o Selection Correction	NegBin w/ Selection Correction
BTC Treatment <sup>a</sup>	-0.40**	-0.62**	-1.70***	-2.39***
Age	-0.01	-0.01	-0.04**	-0.04**
Female	-0.05	-0.03	0.02	0.09
Black	0.24	0.24	-0.38	-0.38
Black*BTC Tx	—	—	1.37**	1.33**
Education	-0.01	-0.01	-0.03	-0.02
Employ Bother	0.63***	0.59**	0.97**	0.91*
EmployBother*BTC Tx	-0.96**	-0.92**	-1.65**	-1.63**
Days Worked	0.01	0.01	0.01	0.02
Months in Jail	0.00	0.00	0.00	0.00
On Probation	0.48***	0.44**	0.59*	0.47
Serious Offender	0.31*	0.29*	0.40	0.33
Prior Offenses	0.00	0.00	0.00	0.00
Prior Drug Use	0.01	0.01	0.02**	0.02**
Constant	-1.09**	-0.92	-0.05	0.37
Selection Correction <sup>b</sup>	—	0.17	—	0.56
Overdispersion Parameter	—	—	1.64***	1.59***
N	382	382	382	382
-2LL	-178.44	-337.07	-272.18	-270.96

<sup>a</sup> Significance tests for this variable are one-tailed.

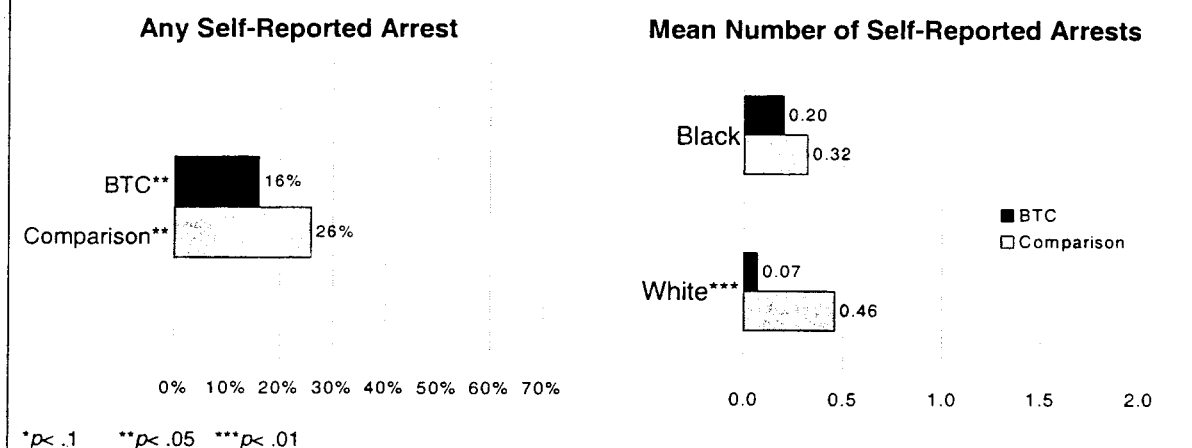
<sup>b</sup> In the Bivariate Probit this term refers to the correlation between the error terms (Rho); in the Negative Binomial models this term refers to the Inverse Mills Ratio

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

### **Self-Reported Offenses**

Arrests measure only detected offenses, so the analysis also tested the hypothesis that BTC reduced criminal activity using data on self-reported criminal offenses collected in the follow-up interviews. These self-report measures of criminality may be a more complete record of offending, because official measures of crime record only those offenses detected by the authorities. The majority of offenses go undetected, so these self-report measures provide important additional insight into the effectiveness of BTC.

**Figure 4.3 Predicted Values for Self-Reported Arrests in the Six Months Prior to Follow-up**



The survey instrument asked respondents to report the number of times they had committed 14 types of offenses in the last 6 months: shoplifting or vandalism, parole or probation violations, drug offenses, forgery, weapons offenses, burglary/larceny/breaking and entering, robbery, assault, arson, rape, homicide or manslaughter, prostitution, contempt of court, and any other offenses. Responses were used to create three summary measures of self-reported crime, all covering the six months before follow-up interview: (1) the number of total offenses committed, regardless of type of offense; (2) number of drug offenses (sales/distribution) committed; (3) number of non-drug offenses (all types of offenses, except drug offenses). These three summary measures were then used to create three dichotomous variables indicating any recidivism, any drug recidivism, and any non-drug recidivism, respectively.

Table 4.7 below displays the means of each of the three measures of offending. These results indicate that BTC participants self-reported significantly less recidivism of all types than the pre-BTC sample, before controlling for other factors. In the analyses that follow, more rigorous analytic techniques are employed to control for the sample differences.

**Table 4.7 Self-Reported Offenses in the 6 Months Prior to Follow-up Interview**

Offense Type	BTC sample (n = 245)	Pre-BTC sample (n = 137)	Significance of Difference <sup>a</sup>
Percent reporting any offense	21%	39%	0.001
Mean number of offenses	2.07	13.72	0.001
Percent reporting any non-drug offense	15%	29%	0.001
Mean number non-drug offenses	0.73	5.02	0.001
Percent reporting any drug offense	10%	23%	0.001
Mean number reporting drug offenses	1.34	8.69	0.001

<sup>a</sup> These significance tests are all one-tailed. T-tests were used for the first five comparisons, and a chi-square test was employed for the last comparison.

The analyses control for demographic factors, employment and offending histories. Two models are shown for each dependent variable. The first omits the selection bias correction. The second includes the selection bias correction described in Chapter 3. Probit models are used to estimate

BTC's effect on the likelihood of any recidivism. The number of self-reported offenses is a count variable and most respondents (73%) reported no offenses, so ordinary least squares regression is inappropriate (see Long, 1997), instead negative binomial estimation is utilized.

Furthermore, because the number of self-reported offenses has a heavy positive skew (i.e., most respondents reported no offenses but a small number of offenders reported substantial involvement in crime) this variable was re-coded to censor the maximum number of offenses at the 95<sup>th</sup> percentile (31 offenses). Thus, all offenders reporting more than 31 offenses were re-coded to the censored maximum of 31.

The analysis of self-reported offenses is shown in Table 4.8. Similar to the results from the arrest analyses, BTC's effect on any self-reported offense interacts with race. White members of the BTC sample were less likely to report criminal offending than white members of the pre-BTC sample, but there was no significant difference between African-Americans in the two samples. The negative binomial analyses indicate that BTC sample members did not report significantly fewer offenses than members of the pre-BTC sample did.

**Table 4.8 Self-Reported Recidivism in the Six Months Prior to Follow-up**

Variable	Any Self-Reported Offenses		Number of Offenses Committed	
	Probit w/o Selection Correction	Probit w/Selection Correction	NegBin w/lo Selection Correction	NegBin w/ Selection Correction
BTC Treatment <sup>a</sup>	-0.88***	-0.97**	-0.44	-1.52*
Age	0.00	0.00	-0.01	-0.01
Female	-0.18	-0.17	-0.66	-0.52
Black	-0.30**	-0.30	0.61	0.49
Black*BTC Tx	0.79*	0.79**	—	—
Education	-0.07	-0.07	-0.33**	-0.31**
Employ Bother	0.36**	0.34	0.89	0.75
EmployBother*BTC Tx	-0.90**	-0.89**	-2.96***	-2.93**
Days Worked	-0.02	-0.01	-0.05**	-0.04*
Months in Jail	0.00	0.00	-0.01	-0.01
On Probation	0.26	0.24	0.80*	0.56
Serious Offender	0.08	0.07	-0.32	-0.33
Prior Offenses	0.00	0.00	0.01	0.01
Prior Drug Use	0.01*	0.01	0.00	0.00
Constant	0.52	0.59	4.29***	4.86
Selection Correction <sup>b</sup>	—	0.07	—	0.76
Overdispersion Parameter	—	—	7.22***	7.07***
N	382	382	382	382
-2LL	-402.44	-720.04	-490.11	-488.84

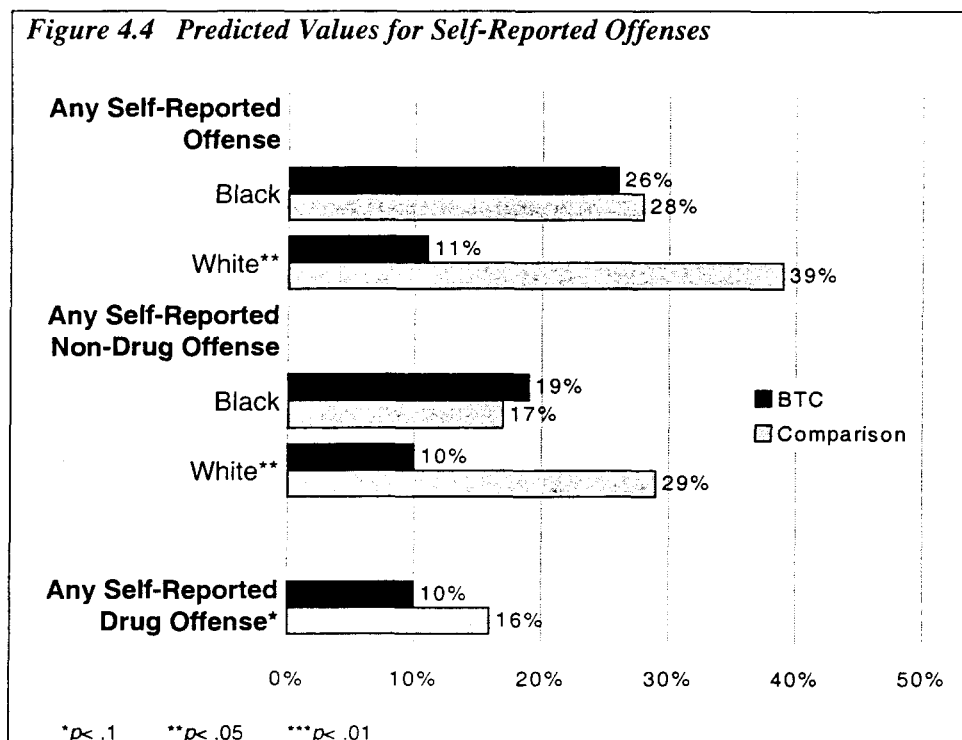
<sup>a</sup> Significance tests for this variable are one-tailed.

<sup>b</sup> In the Bivariate Probit this term refers to the correlation between the error terms (Rho); in the Negative Binomial models this term refers to the Inverse Mills Ratio.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$



Figure 4.4 illustrates the results of these analyses by showing the differences in probability of reporting an offense holding all other variables at their means. There were no significant differences between the BTC and pre-BTC samples in the negative binomial analysis, so these results are omitted from the figure.



Additional analyses were performed to determine if BTC participation affected the likelihood of drug and non-drug recidivism because of the substantive interest in BTC's effect on drug crimes. These two outcomes were also heavily skewed by the presence of a few high-rate offenders. Both outcomes were re-coded censoring at the 95<sup>th</sup> percentile (maximum = 15 for drug offenses and 5 for non-drug offenses).

Table 4.8 displays the results from these regression analyses. These results indicate that BTC had a marginally significant effect on drug offenses for both racial groups; however, BTC did not significantly reduce the number of drug offenses committed. For non-drug offenses, BTC reduced the likelihood of offending only for White BTC clients. Figure 4.4 (above) illustrates these findings. The results from these three separate analyses of recidivism outcomes (official arrest, self-report arrest, and self-report offenses committed) clearly indicate that BTC reduced the likelihood of recidivism for White clients, regardless of data source and type of crime. The consistent main effects of BTC support the conclusion that BTC reduced recidivism for African-American clients. However, this reduction is smaller in magnitude than BTC's effect on White clients and BTC did not appear to reduce the likelihood of non-drug offenses for African-Americans.

**Table 4.8 Self-Reported Drug and Non-Drug Offenses**

Variable	Any Drug Offenses		Number of Drug Offenses		Any Non-Drug Offenses		Number of Non-Drug Offenses	
	Probit w/o Selection Correction	Probit w/Selection Correction	NegBin w/o Selection Correction	NegBin w/ Selection Correction	Probit w/o Selection Correction	Probit w/Selection Correction	NegBin w/o Selection Correction	NegBin w/ Selection Correction
BTC Treatment <sup>a</sup>	-0.33*	-0.62*	-0.60	-2.35	-0.74**	-0.81*	0.20	-0.42
Age	-0.01	-0.01	-0.01	-0.02	0.00	0.00	-0.01	-0.01
Female	-0.20	-0.17	-0.70	-0.60	-0.17	-0.16	-0.48	-0.45
Black	0.21	0.21	1.40	1.4	-0.38	-0.38	-0.09	-0.09
Black*BTC Tx	—	—	—	—	0.75**	0.75**	—	—
Education	-0.09*	-0.09*	-0.41	-0.41	-0.05	-0.06	-0.13	-0.13
Employ Bother	0.51**	0.44	-0.36	-0.44	0.32	0.31	0.59	0.57
EmployBother*BTC Tx	-1.09**	-1.02**	—	—	-0.76*	-0.75*	-2.01**	-2.00**
Days Worked	-0.01	-0.01	-0.05	-0.02	-0.02**	-0.02	-0.04**	-0.04**
Months in Jail	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00
On Probation	0.06	0.01	0.69	0.44	0.42**	0.41**	0.42	0.39
Serious Offender	0.06	0.04	-0.49	-0.47	0.12	0.11	0.04	0.02
Prior Offenses	0.01*	0.01	0.02	0.01	0.00	0.00	0.01	0.01
Prior Drug Use	0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.02
Constant	0.08	0.29	4.88	5.92	0.04	0.10	0.94	1.04
Selection Correction <sup>b</sup>	—	0.23	—	1.37	—	0.05	—	—
Overdispersion Parameter	—	—	14.77***	14.16***	—	—	4.15***	4.14***
N	382	382	382	382	382	382	382	382
-2LL	-284.46	-601.33	-323.32	-321.50	-343.18	-660.82	-299.26	-299.21

<sup>a</sup> Significance tests for this variable are one-tailed.

<sup>b</sup> In the Bivariate Probit this term refers to the correlation between the error terms (Rho); in the Negative Binomial models this term refers to the Inverse Mills Ratio.

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

## CHAPTER 5

### THE IMPACT OF BREAKING THE CYCLE ON EMPLOYMENT, FAMILY AND HEALTH PROBLEMS

Involvement in Breaking the Cycle was hypothesized to directly lead to reductions in drug use and criminal activity, and these changes were hypothesized to lead to improvements in social and economic well being. The BTC surveys included a number of Addiction Severity Index items designed to measure respondents' perceptions of problems in a number of domains, including health, social and family relationships, and employment. This section tests the hypothesis that BTC participation led to reductions in problems in these areas by comparing problems reported by the two samples in the thirty days before the follow-up interview, controlling for sample differences and problems at baseline.

Table 5.1 compares the BTC and pre-BTC samples on health, social, and employment problems in the 30 days before follow-up without controlling for sample differences. The results indicate that BTC sample members were significantly less likely to report problems in the thirty days before follow-up in every area except medical problems. The following sections test the significance of these differences using multivariate models and controls for selection bias.

*Table 5.1 Self-reported Problems in the 30 Days Prior to Follow-up Interview*

	BTC sample (n = 245)	Pre-BTC sample (n = 137)	Significance of Difference <sup>a</sup>
<b>Health Problems</b>			
One or more days with medical problems in past 30 days	22%	21%	0.84
Number of Psychological Problems	0.32	0.54	0.03
One or more days with psychological problems in past 30 days	18%	34%	<0.01
<b>Social/Family Problems</b>			
One or more days with serious social conflicts in past 30 days	9%	20%	<0.01
Days paid for working in past 6 months	66.82	53.08	0.03
One or more days with employment problems in past 30 days	22%	31%	0.04

<sup>a</sup> These significance tests are all two-tailed. T-tests were used for the count variable, and chi-square tests were employed for comparisons expressed in percentages.

## Health Problems

Although BTC clients were more likely to report using medical services in the 30 days before the follow-up interview than pre-BTC clients, they were not significantly less likely to report medical problems on one or more days during the month (Table 5.2). They were also no less likely to report having a psychological problem on one or more days in the month than the comparison group. When asked about a list of specific symptoms of psychological distress, the BTC sample did not report significantly fewer symptoms than the pre-BTC group during the past 30-days. The list of symptoms included serious depression, serious anxiety or tension, hallucinations, trouble controlling violent behavior, serious thoughts of suicide, or attempted suicide. These summary measures of perceptions of physical and mental health do not indicate that improvements in these domains resulted from participation in BTC.

**Table 5.2 Self-Reported Health Problems in the 30-days before the Follow-up Interview**

Variable	Medical Problems, Past 30 Days		Total Psychological Problems, Past 6 Months <sup>a</sup>		Any Psychological Problems, Past 30 Days <sup>b</sup>	
	Probit w/o Selection Correction	Probit w/Selection Correction	NegBin w/o Selection Correction	NegBin w/ Selection Correction	Probit w/o Selection Correction	Probit w/Selection Correction
BTC Treatment	-0.01	-0.02	0.04	0.17	-0.29	-0.15
Age	0.02**	0.02**	0.39*	0.03*	0.02***	0.02***
Female	0.36*	0.36	-0.19	0.38	0.33*	0.32
Black	-0.14	-0.14	0.03	-0.18	-0.27*	-0.26
Education	-0.04	-0.04	-0.05	-0.05	-0.01	-0.01
Employ Bother	-0.41**	-0.41*	0.38	0.40	0.35*	0.36*
Days Worked	0.00	0.00	-0.01	-0.01	0.00	0.00
Months in Jail	0.00	0.00	-0.01	-0.01	-0.01**	-0.01*
Months Jail*BTC Tx	0.01**	0.01**	—	—	0.02**	0.02*
On Probation	0.07	0.07	0.11	0.14	0.01	0.03
Serious Offender	0.01	0.01	-0.02	-0.02	-0.17	-0.16
Prior Offenses	0.00	0.00	0.00	0.00	0.00	0.00
Prior Drug Use	-0.01	-0.01	0.01	0.01	0.00	0.00
Days in Jail	-0.03**	-0.03**	-0.02	-0.02	0.01	0.01
Prior Medical Measure	0.03***	0.03***	0.06**	0.06**	—	—
Constant	-0.80*	-0.80	0.32**	0.33**	0.02***	0.03**
Selection Correction <sup>a</sup>	—	0.00	-1.61	-1.73	-1.07**	-1.18*
Overdispersion Parameter	—	—	—	-0.09	—	-0.09
			2.14***	2.14***	—	—
N	382	382				
-2LL	-176.31	-335.15	382	382	382	382
			-287.00	-286.97	-185.58	-344.34

<sup>a</sup> In the Negative Binomial model this term refers to the Inverse Mills Ratio; in the Probit models this term refers to the correlation between the error terms (Rho).

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

<sup>b</sup> This outcome is the sum of a series of questions asking respondents if they have experienced the following: serious depression; serious anxiety or tension; experienced hallucinations; trouble controlling violent behavior; serious thoughts of suicide; or attempted suicide.

<sup>c</sup> Respondents were asked how many days they had experienced psychological problems in the last 30 days. This outcome was re-coded as a dichotomy to minimize the positive skew; the higher category indicates having experienced at least one day of psychological problems.

<sup>d</sup> In the Negative Binomial model this term refers to the Inverse Mills Ratio; in the Bivariate Probit models this term refers to the correlation between the error terms (Rho).

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

## Employment Problems

The analysis similarly failed to find that BTC sample members were less likely to experience an employment problem in the thirty days before follow-up and did not report significantly more days of employment during the period (Table 5.3). The significant interaction between group and days working in the thirty days before baseline interview is used as a control variable to eliminate group differences in days of incarceration during the month before the baseline and does not indicate a significant difference in BTC impact related to prior employment.

**Table 5.3 Self-Reported Employment Prior to Follow-up Interview**

Variable	Days Paid for Working, in Past 6 Months		Any Employment Problems in Past 30 Days	
	OLS w/o Selection Correction	OLS w/Selection Correction	Probit w/o Selection Correction	Probit w/ Selection Correction
BTC Treatment <sup>a</sup>	-23.13***	-0.67	-0.20	-0.12
Age	-0.20	-0.18	-0.02**	-0.02**
Female	6.60	5.12	-0.01	-0.02
Black	-20.35***	-20.02***	0.15	0.15
Education	-2.13	-1.96	0.00	0.00
Education*BTC Tx	6.15**	6.06**	—	—
Employ Bother	-1.81*	13.22**	0.30	0.29
Days Worked	11.07***	1.46**	-0.02***	-0.02**
Days Worked*BTC Tx	1.98***	-1.46**	—	—
Months in Jail	0.01	0.05	-0.01	-0.01
Months in Jail*BTC Tx	—	—	0.02***	0.02***
On Probation	6.95	11.31*	-0.15	-0.13
On Probation*BTC Tx	—	—	—	—
Serious Offender	2.97	3.89	0.21	0.21
Prior Offenses	0.04	0.08	0.00	0.00
Prior Drug Use	-0.13	-0.13	0.00	0.00
Days in Jail	-1.77***	-1.67***	-0.01	-0.01
Prior Work	0.40***	0.41***	0.00	0.00
Constant	78.84***	62.35**	0.20	0.14
Selection Correction <sup>a</sup>	—	-15.78**	—	-0.06
N	382	382	382	382
R <sup>2</sup> /-2LL	0.36	0.36	-194.14	-352.96

<sup>a</sup> In the Ordinary Least Squares (OLS) regressions, this term refers to the Inverse Mills Ratio. In the Bivariate Probit regression, this term refers to the correlation between the error terms (Rho).

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

## Conflicts with Family and Others

BTC did have significant and substantial effects on social conflict, as the models in Table 5.3 show. Any days of conflict with family members in the thirty days before follow-up were reported by 2% of the BTC sample and by 14% of the pre-BTC sample. Days of conflict with others in the thirty days before follow-up were reported by 7% of the BTC sample and by 9% of the pre-BTC sample. The average number of days of conflict for both groups was higher for conflict with family members than for others, which is not surprising given the expected frequency of contacts with family members. Thus, the results of the combined variable, shown below, are largely made up of reduction in conflict with family members.

**Table 5.3 Self-Reported Social/Family Conflict Outcomes**

Variable	Days Experiencing Serious Social Conflict, Past 30 Days <sup>a</sup>		Any Days Experiencing Serious Conflict, Past 30 Days <sup>b</sup>	
	NegBin w/o Selection Correction	NegBin w/ Selection Correction	Probit w/o Selection Correction	Probit w/Selection Correction
BTC Treatment <sup>a</sup>	-2.15**	-3.78**	-0.69***	-1.23***
Age	0.16*	0.14*	0.03**	0.03*
Age*BTC Tx	-0.22**	-0.21**	-0.05**	-0.05**
Female	0.98	1.27	0.52**	0.53**
Black	-0.09	-0.05	-0.13	-0.12
Education	-0.21	-0.24	-0.08	-0.08
Employ Bother	0.62	0.30	0.10	0.00
Days Worked	0.02	0.05	0.02**	0.03**
Months in Jail	0.00	-0.01	-0.02*	-0.02
Months Jail*BTC Tx	—	—	0.03**	0.03*
On Probation	0.15	-0.10	-0.02	-0.12
Serious Offender	-0.42	-0.34	0.00	0.01
Prior Offenses	-0.03	-0.03	0.00	-0.01
Prior Drug Use	-0.01	-0.01	0.00	0.00
Days in Jail	-0.03	-0.04	-0.01	-0.01
Prior Conflicts Measure	0.04	0.02	0.01	0.00
Constant	-2.43	-0.95	-0.91	-0.51
Selection Correction <sup>c</sup>	—	1.17	—	0.41
Overdispersion Parameter	10.62***	10.11***	—	—
N	382	382	382	382
-2LL	-252.68	-251.45	-125.64	-283.25

<sup>a</sup>This outcome is the sum of two questions asking respondents if how many days they had experienced serious conflicts with their family or with other people, in the past 30 days.

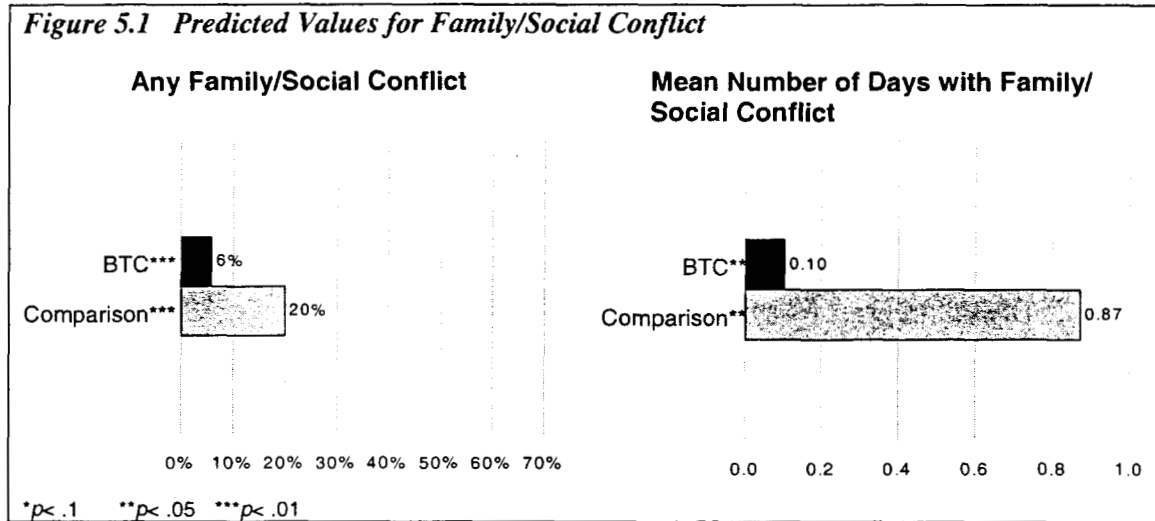
<sup>b</sup>This outcome is a dichotomous variable based on the preceding outcome: the higher category indicates having had experienced at least one day of social conflicts.

<sup>c</sup>In the Negative Binomial model this term refers to the Inverse Mills Ratio; in the Probit models this term refers to the correlation between the error terms (Rho).

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

The BTC impacts in this area were exceptionally strong. Estimates of the magnitude of the group differences at the mean values of the control variables are shown below in Figure 5.1.

**Figure 5.1 Predicted Values for Family/Social Conflict**



## CHAPTER 6

# CHANGES IN CASE PROCESSING AND OUTCOMES DURING BTC IMPLEMENTATION

BTC introduced significant changes in criminal justice policies and practices. This chapter presents the changes in court system operations during BTC and examines the effects of these changes on case disposition, duration, and sentencing. The first section presents an analysis of samples of felony cases filed before and after BTC implementation. The second section examines predictors of case disposition, duration, and sentence using data collected from the impact evaluation samples described in the previous chapter. This assessment of the impact of BTC includes controls for differences in the characteristics of the offenders and cases. It does not, however, control for a wide variety of influences on criminal case processing during this period of time which acted independently of, and in combination with, BTC to cause some of the described changes.

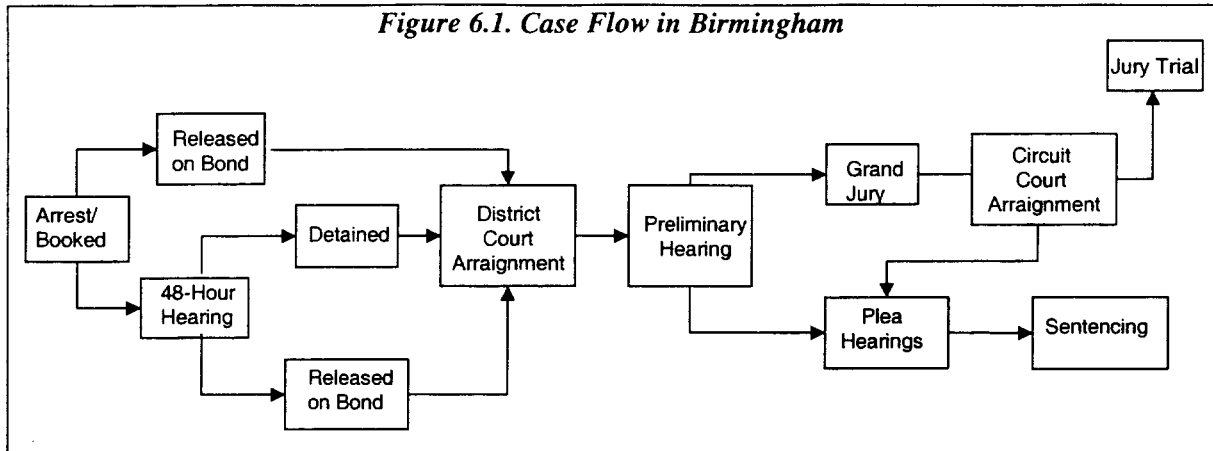
### *Major Court Innovations during BTC*

The effects of BTC on case handling must be understood within the context of the procedures used in Birmingham. Figure 6.1 illustrates the process followed by felony cases from arrest to case disposition.

- ❑ Arrest to Release. Some defendants were released immediately after booking; those who were detained appeared before a duty judge within 48 hours at an initial or “48-hour hearing,” where conditions of release were determined. A bond was set for most defendants, and the majority bonded out within a week. A small number were released on their own recognizance.
- ❑ Cases Filing. Decisions on filing charges (initiated by swearing out a warrant) were made by the District Attorney’s Office upon review of the preliminary charges, bond, and release recommendations. All cases began in District Court, the lower court in Alabama’s two-tiered court system. The three District Court judges presided over arraignments, conducted preliminary hearings and bond reviews, took pleas, conducted bench trials, and imposed sentences.
- ❑ Arraignment. The arraignment hearing in District Court was scheduled to occur within seven to ten days of arrest for defendants in need of a court-appointed attorney (about 65%), but could be postponed for several weeks by defendants with private attorneys.
- ❑ Preliminary Hearing. A preliminary hearing was scheduled for several weeks after arraignment. Attorneys of defendants who wished to accept the plea offer filed an intent to plea at that time and a plea hearing was scheduled for two weeks later. Felony defendants who declined the District Court plea offer received a District Court disposition of waived to the grand jury, closing the District Court case.



- District Court Sentencing. A sentencing hearing followed the formal plea hearing by about one month.



- Grand Jury Hearing. Due to large case backlogs, grand jury hearings occurred three to six months after waiver from District Court.
- Arraignment in Circuit Court. If the grand jury indicted the defendant, a case was filed in Circuit Court, arraigned, and a second plea offer was presented. If the defendants declined the plea offer, a trial was scheduled in Circuit Court. If the defendant accepted the plea offer, they were sentenced in Circuit Court. However, if the defendant was eligible for drug court or a specialized docket, the case was closed in Circuit Court and reopened in District Court.

One of the first BTC changes was the development of a release bond that would require felony defendants to report to TASC following release. The new bond was a top priority at the first Policy Board meeting and, following group consensus, it was instituted March 2, 1998. The availability of additional monitoring of defendants through BTC had the effect of increasing the number of defendants released pending case disposition.

Most of the changes in case processing during BTC resulted from the response to a huge backlog of unresolved criminal court cases and severe jail overcrowding. According to a 1998 report by the Alabama Judicial Data Center (AJDC), Jefferson County criminal judges (both District and Circuit Court) in the Birmingham division had a backlog of 3,000 cases that were more than a year old. The AJDC breakout of the cases pending in Circuit Court found that the 5 judges had more than 8,000 cases pending and an average caseload of 1,600. About 37% of their cases were more than a year old. In contrast, the American Bar Association and the Alabama Supreme Court have held that criminal cases should be resolved within 180 days to ensure a defendant's constitutional right to a speedy trial. Judicial response to these findings varied, but some judges faulted the difficulty in settling cases involving mandatory minimums (which do not allow judicial discretion, so defendants often demand jury trials), and the rising number of capital murder cases that require days or weeks to try. A study, conducted by the National Center for State Courts, of nine felony court systems around the country found that Jefferson County was one of the slowest to dispose of felony cases.

The jail crisis was brought to a head in May of 1998 when Jefferson County entered into a consent decree after a inspection by the U.S. Department of Justice found severe overcrowding in violation of the law. County commissioners agreed to resolve the jail overcrowding, proposed to build a new jail (with an 896-bed capacity) by the fall of 1999 and to find immediate ways to reduce the jail population by 400, and to keep the number of inmates in the existing jail near 1,000. The county commissioners then initiated study of the costs of jail construction and a review of the existing criminal justice system.

While awaiting the results of the system review, the court introduced several new programs that used BTC resources to reduce the jail overcrowding and case backlogs and advance the goal of early identification and treatment of drug-involved offenders. These innovations took place between October 1998 and June 1999, the months of full BTC implementation.

**The Rocket Docket.** The “Rocket Docket,” was implemented to move the cases of pretrial jail inmates through the system and relieve pressure on the overcrowded jail. It required the 16 circuit judges from the civil, criminal, and family court divisions to handle the cases of nearly 600 inmates who were housed in the jail, selecting the oldest cases first. The Rocket Docket ran for two weeks in October 1998 and one week in January 1999. Relatively few of the defendants appearing on the rocket docket were released – most were sentenced to state prison. It reduced the jail population and helped the county comply with the consent decree. The process identified issues that the criminal justice system needed to address: (1) it was difficult to locate offenders, and especially to identify who was in jail, (2) the county lacked the facilities and court staff to handle the caseloads, and (3) the backlog problem consisted primarily of pending Circuit Court cases.

**The Expedited Docket.** Jefferson County introduced a second court initiative to reduce jail overcrowding and case backlogs: an expedited docket targeted at the large number of defendants who rejected the District Court plea offer, opting to wait four to five months for a grand jury hearing. It was limited to Class C felonies identified as eligible by the Assistant District Attorney and TASC treatment program. Most of these defendants were already on pretrial release, had already been assessed by BTC, and had already been participating in BTC for several months at the time the docket was introduced. TASC case managers prepared a list of TASC clients who they considered eligible, based on offense (this included most non-violent felonies) and treatment compliance and their cases were placed on the expedited docket.

Expedited docket hearings occurred within 14 days of a District Court waiver to the grand jury. Defense attorneys for defendants willing to accept a plea that required a sentence that involved TASC treatment and supervision entered a pre-sworn admission of probable cause, and waived the right to a grand jury hearing. This process avoided the delays in gaining admittance to drug court that resulted from case backlogs and long waits for toxicology reports from the State. Between March and August 1999, 76 defendants on the expedited docket were sentenced to probation, and a smaller number were transferred to the diversion program, set for trial, or dismissed; this resulted in a significant reduction in the number of cases awaiting grand jury hearings.

**Diversion Program.** The backlog of cases prompted the court to reinstate the previously suspended diversion program as part of BTC. The BTC diversion program only admitted first-time felony offenders with a drug charge that involved the possession of small quantities of drugs (no sales cases or large quantity possession cases), and who agreed to plead guilty, with the understanding that if they remained drug-free and had no additional arrests, the plea would be set aside at the end of six months. Participants were referred to TASC for assessment, treatment if needed, and supervision, but participants were not rejected from the program if they did not present evidence of substance abuse. Between January and August 1999, 816 defendants entered the program. Of this group, 458 (56%) were already active TASC clients who had entered BTC at the time of arrest. Most of these defendants had been released from the jail prior to program entry, although a few participants were still in jail. Some of these defendants had been waived to the grand jury and were waiting for a hearing to be scheduled; others had been placed directly on the deferred docket for District Court disposition.

While not directly part of the BTC implementation effort, these initiatives, combined with the existing drug court, greatly expanded the options for handling drug-related cases during BTC and the role BTC played in providing early intervention, court-supervised treatment, and TASC case management for a variety of drug-related cases. The three specialized dockets are summarized below. It is likely that many of the changes in case handling observed during BTC can be attributed to these innovations.

**Figure 6.1 Alternative Court Dockets for Drug-Related Cases during BTC**

	<b>Deferred Docket</b>	<b>Drug Court</b>	<b>Expedited Docket</b>
<b>Eligibility</b>	Felony drug cases  Quantity of substance cannot exceed 5 g. cocaine, 113 g. marijuana, 10 pills of any kind, or 10 individual baggies.  District Attorney determines eligibility.	Drug cases excluding sales and violent offenders  Judge/District Attorney/Defense Attorney jointly determine eligibility.	Class C felonies (non-drug and drug cases)  District Attorney determines eligibility
<b>Typical Referral Source</b>	Defense attorney	Judges and/or defense attorneys	District Attorney
<b>Duration of Supervision</b>	6 months	12 months	6 months
<b>Fee<sup>1</sup></b>	\$1,000	\$1,500	Low-risk - \$35/mo. for six months High-risk - \$500
<b>Incentive for Compliance</b>	Charge dismissed	Charge dismissed	Expedited disposition Less costly Usually better plea offer
<b>Related Definitions</b>			Low-risk = compliant at the point of placement on expedited probation; typically "urines only" clients  High-risk = non-compliant (i.e. positive UA, not reporting as required) at the point of placement on expedited probation; typically "ten pointers" and/or offenders in need of treatment

## ***Case Handling, Disposition, and Sentencing Before and During BTC***

Data from the Alabama Administrative Office of the Courts (AOC) were used to examine the changes in criminal case processing associated with the introduction of BTC. To assess changes, the evaluation compares two samples of felony cases filed in Jefferson County District Court. The first sample, the pre-BTC sample, consists of all felony filings (n = 1,491) between October 1, 1997 and December 31, 1997 (the period prior to implementation of any BTC services). The second sample, the BTC sample, consists of all felony cases (n = 2,024) filed between October 1, 1998 and December 31, 1998 during the most extensive implementation of BTC services. The data collected on these cases include all court actions by the District and Circuit court in Jefferson County during the 365 days following filing. The data include all actions related to a single incident.

A comparison of the charges during the two time periods is shown in Table 6.1. The results indicate that the number of cases filed in the last quarter of 1997 (pre-BTC) increased from 1,491 to 2,024 in the last quarter of 1998 (during BTC). The largest increases occurred in two offense categories: cases involving drug charges and cases involving "other" charges, like bad checks.

***Table 6.1 Increases in Felony Filings by Charge Category***

<i>Charge</i>	<i>Pre-BTC</i>	<i>During BTC</i>	<i>Percent Change</i>
Violent	274	309	+13%
Property	492	543	+10%
Drug	564	915	+62%
Other	161	257	+59%
Total	1,491	2,024	+36%

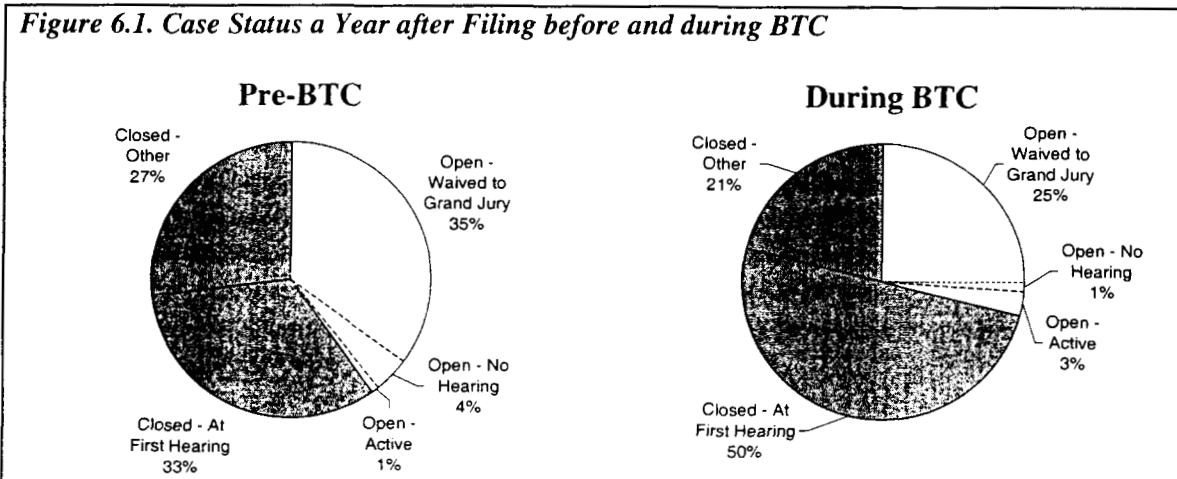
At the end of one year, the percentage of cases remaining open had dropped significantly under BTC (Table 6.2). In the pre-BTC sample of cases, about 60% of the felony cases were closed within a year of filing. The large majority of the open cases had received a District Court disposition of waived to Grand Jury, but had not yet been filed in Circuit Court. During BTC, about 70% of felony cases were closed at the end of a year, and a smaller percentage of the total (25% compared to 35%) remained open, with a District Court disposition indicating that the case had been waived to the Grand Jury. These gains reflect the efforts made during BTC to improve the speed of court processing.

**Table 6.2 Pre-BTC/BTC Comparison of Case Processing**

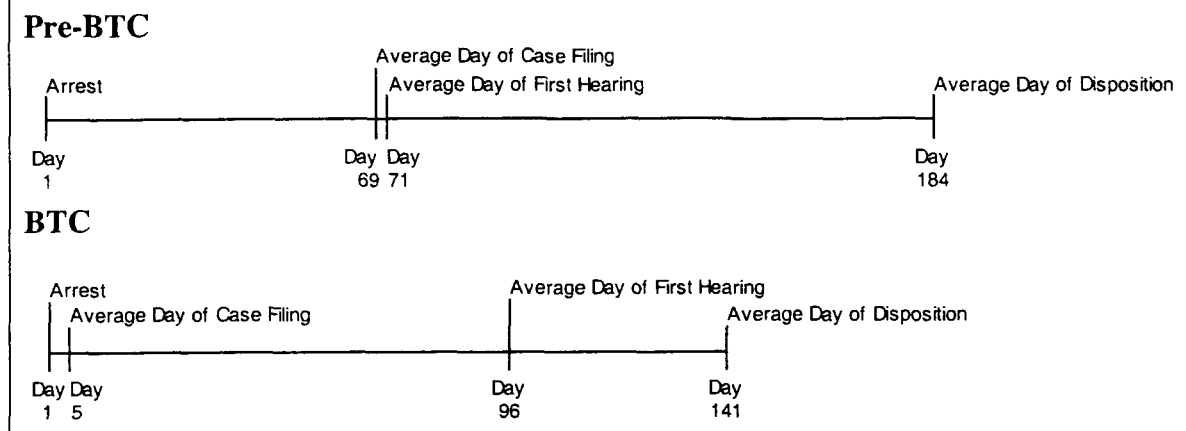
Characteristic	Pre-BTC N = 1,491	BTC N = 2,024
<b>Case Status One Year from Case Filing</b>		
Open Cases	600 (40%)	582 (29%)
<i>Waived to Grand Jury</i>	523 (35%)	505 (25%)
<i>No Court Hearings One Year after File Date</i>	73 (5%)	12 (<1%)
<i>Open Active</i>	4 (<1%)	65 (3%)
Closed Cases	891 (60%)	1442 (71%)
<i>Dismissed/Nolle Prossed/Acquitted</i>	290 (20%)	597 (29%)
<i>Guilty/Convicted</i>	584 (39%)	783 (39%)
<i>Other</i>	16 (1%)	62 (3%)
<b>Total</b>	<b>1,491 (100%)</b>	<b>2,024 (100%)</b>

Figure 6.1 also shows another important change: an increase in the number of cases disposed of at the first hearing from 33% in the pre-BTC sample to 50% in the BTC sample. Efforts to encourage early pleas account for this reduction. The introduction of the diversion option conversely resulted in some delay in reaching final disposition, as defendants were given six months to comply with requirements and earn dismissal of their case. Other changes in case processing occurred between these two time periods. Figure 6.2 shows the case processing timeline prior to BTC (the top line) and during BTC (the bottom line). These lines show:

- A significant reduction in the time between arrest and case disposition for cases closed within a year of filing (a growing portion of all cases). Looking only at cases closed within a year of filing, the data show that the overall time from arrest to case disposition fell from 184 days in the pre-BTC period to 141 days during BTC, a 43-day reduction in time to disposition.



**Figure 6.2. Timelines: Pre-BTC/BTC Comparison of Average Number of Days to Events**



- ❑ Most of the reduction in time to disposition came from a substantial increase in the percentage of cases disposed of at the first hearing. In the pre-BTC sample, 33% of the cases were disposed of at the first hearing. This rose to 50% during BTC.
- ❑ The growth in cases settled at the first hearing reduced the average number of hearings (down by 0.1) from 1.3 prior to BTC to 1.2 during BTC for cases closed within a year of filing.

Overall, the time between arrest and first hearing was 23 days longer during BTC than before BTC, despite a significant reduction in time between arrest and filing. Before BTC the time between arrest and filing was 69 days, but the first hearing occurred about 4 days after filing. During BTC, the time between arrest and filing was only 5 days, but the time between filing and first hearing rose to 91 days. This may reflect the sharp increase in the number of cases filed (see Table 6.1).

The sentences imposed during BTC also shifted, with substantially more offenders getting probation and fewer being sentenced to incarceration only (Table 6.3). The percentage of closed cases in which the sentence was probation only increased from 42% before BTC to 57% during BTC. The percentage of closed cases in which the sentence was incarceration decreased from 40% to 19%. These differences may partly reflect the changes in charges that defendants faced during the two periods and special plea offers made to defendants on the expedited and rocket dockets.

**Table 6.3 Pre-BTC/BTC Comparison of Sentences Imposed (Guilty Only, n=1,367)**

Type of Sentence Imposed	Pre-BTC	BTC
Probation Only <sup>a</sup>	244 (42%)	450 (57%)
Confinement Only	232 (40%)	149 (19%)
Confinement and Probation	89 (15%)	83 (11%)
Other	19 (3%)	101 (13%)
Total	584 (100%)	783 (100%)

<sup>a</sup> Probation Only includes all sentences involving a term of probation and any sanction other than a period of imposed confinement (i.e., a term of probation plus restitution, or fines, etc.).

## ***Changes in Case Handling, Disposition, and Sentencing in the Evaluation Samples***

In order to more carefully explore changes in case processing during BTC, the following section uses the case files of the defendants included in the impact evaluation sample (described in Chapter 3). Of the total baseline sample (n = 566), 480 of these cases were located in the AOC data. Each case was followed for one year from original case filing date. These cases were compared on several case processing measures, including closure rate, disposition (guilty rate), and average number of hearings to case closure. The findings produced from these analyses follow the case processing trends for the larger sample described in the preceding section.

As the first measure of changes in case processing, cases were compared on closure 12 months after initial case filing date. BTC cases were more likely to be resolved within 12 months of original case filing, more likely to result in a period of confinement (if found guilty), but were less likely to be found guilty, as shown in Table 6.4. That table also shows that the cases differed on other variables, which may affect case disposition such as charge and lifetime number of months incarcerated, but showed no significant differences in age, race, and gender. To remove the effects of these differences on the outcomes of interest, these variables were entered as control variables in the regression analyses that follow. To examine the effects of BTC on the likelihood that a case would be disposed of within a year of filing, a logistic regression was used to predict case status (closed = 1) 12 months after initial case filing, controlling for offender characteristics and the differences before and during BTC in charges (more drug offenses during BTC) and prior incarceration (higher in the comparison sample). These results indicate that the odds of a BTC case being closed within one year was 79% greater than a comparison case being closed in the same amount of time (Table 6.5).

**Table 6.4 Comparison of Case and Client Variables for the BTC and Comparison Samples.**

<i>Measure</i>	<b>BTC Cases (n=333)</b>	<b>Comparison Cases (n=147)</b>
Case Closed within 12 months of filing	61%	46%***
Found Guilty, if closed	50%	69%***
Sentenced to period of confinement, (if guilty)	21%	6%
Mean number of Hearings to Case Close	1.44	1.63***
Type of Charge		
Drug Distribution	9%	4%
Drug Possession	53%	35%***
Disorder	5%	3%
Person/Violent	5%	11%**
Weapons	5%	2%
Property	23%	44%
Defendant Background Characteristics		
Female	21%	16%
Black	64%	70%
Mean Age	31.0	32.2
Lifetime number of months incarcerated	5.7	15.1***

<sup>a</sup> Omitted Category

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

**Table 6.5 Logistic Regression Estimates of Case Disposition within a Year of Filing**

<b>Variable</b>	<b>Parameter Estimate</b>	<b>Standard Error</b>	<b>Significance- Level</b>
BTC Case	0.58	0.22	<0.01
Female	0.46	0.26	0.08
Black	-0.24	0.21	0.26
Age	-0.01	0.01	0.80
Disorder Offense	-0.25	0.52	0.64
Drug Distribution Offense	-1.78	0.43	<0.01
Drug Possession Offense	-0.55	0.24	0.02
Person/Violent Offense	-1.08	0.41	<0.01
Weapons Offense	-0.20	0.53	0.71
Lifetime months Incarcerated	-0.01	>0.01	0.01
Drug Use	0.29	0.27	0.28
Constant	0.42	0.47	0.37
<hr/>			
Model Fit			
N	480		
-2 log likelihood (covariates only)	45.861 with 11 DF ( $p=0.001$ )		

However, comparisons of the cases closed within a year of filing did not find significant differences between the BTC and comparison samples in the number of hearings per case or likelihood of conviction:

- Poisson regression analysis found no significant differences in the number of hearings prior to disposition between BTC cases and comparison cases, controlling for other factors (see Table 6.6).



- Logistic regression showed no significant differences in the likelihood of conviction between BTC cases and comparison cases, controlling for other factors. (Table 6.7).

**Table 6.6** *Number of Hearings to Disposition for Cases Closed within a Year of Filing (Poisson Regression)*

<b>Variable</b>	<b>Parameter Estimate</b>	<b>Standard Error</b>	<b>Significance-Level</b>
BTC Case	0.13	0.26	0.79
Female	0.04	0.13	0.76
Black	0.01	0.11	0.92
Age	<0.01	<0.01	0.95
Disorder Offense	0.08	0.26	0.76
Drug Distribution Offense	0.37	0.25	0.14
Drug Possession Offense	0.01	0.13	0.91
Person/Violent Offense	0.26	0.24	0.28
Weapons Offense	0.18	0.25	0.46
Lifetime months Incarcerated	0.01	<0.01	0.16
Drug Use	<0.02	0.16	0.89
Constant	0.07	0.26	0.79
<b>Model Fit</b>			
N	273		
-2 log likelihood (covariates only)	5.91 with 11 DF ( $p < .10$ )		

**Table 6.7** *Disposition of Cases Closed within a Year of Filing (Logistic Regression)*

<b>Variable</b>	<b>Parameter Estimate</b>	<b>Standard Error</b>	<b>Significance-Level</b>
BTC Case	-0.36	0.34	0.29
Female	-0.58	0.33	0.08
Black	-0.04	0.29	0.90
Age	-0.01	0.01	0.45
Disorder Offense	-1.67	0.65	0.01
Drug Distribution Offense	-2.22	0.75	<0.01
Drug Possession Offense	-1.76	0.34	<0.01
Person/Violent Offense	-1.29	0.64	0.04
Weapons Offense	-0.79	0.65	0.23
Lifetime months Incarcerated	-0.01	<0.01	0.10
Drug Use	0.08	0.41	0.84
Constant	1.98	0.69	<0.01
<b>Model Fit</b>			
N	273		
-2 log likelihood (covariates only)	53.28 with 11 DF ( $p = 0.0001$ )		

## Summary

The introduction of a number of changes in case handling during the period of BTC full implementation resulted in a significant increase in the proportion of cases disposed of within a year of filing. Overall, the analysis found that:

- The aggregate statistics showed a drop in the average time to case disposition of 43 days and an increase in cases closed within a year of filing of eleven percentage

points 60% to 71%). These findings were confirmed by the multivariate analysis of the cases of defendants in the impact sample. These analyses, which control for differences in the clients and charges, found that the difference in likelihood that cases would be closed within a year was highly significant ( $p < .01$ ).

- ❑ The aggregate statistics show that while the number of cases awaiting a Grand Jury hearing a year after filing had been reduced, one quarter of the felony cases were still open at the end of a year pending an indictment hearing.
- ❑ The aggregate statistics also show that the influx of cases resulted in lengthening the delay for a first year, so that despite the dramatic reduction in the time between filing and first hearing, the time between arrest and first hearing actually grew. This could have been the effect of handling the backlog and efforts to reduce jail overcrowding.
- ❑ Although the aggregate statistics showed a substantial increase in the proportion of cases disposed of at the first hearing and the raw comparison of the impact sample shows fewer hearings per case during BTC, this difference disappeared in the multivariate analysis, suggesting that the case and client characteristics may have accounted for the lower number of hearings per case during BTC.
- ❑ Analysis of the impact samples indicates that during BTC cases were less likely to result in a findings of guilty (perhaps due to successful completion of the diversion program), but more likely to result in incarceration if a guilty findings was entered. This suggests that the system was focusing on the more serious cases/offenders, and offering alternatives in less serious cases.

## CHAPTER 7

### SUMMARY AND DISCUSSION

The evaluation of BTC in Birmingham produced consistent evidence of reductions in criminal activity and drug use among drug-involved defendants. The impact analysis, which controlled for sample differences, found that BTC clients, compared to defendants prosecuted before the introduction of BTC, were significantly less likely to:

- Report any drug use and any stronger drug use in the 30 days prior to the follow-up interview;
- Report any marijuana use in the 30 days prior to the follow-up interview if they were African-American;
- Be arrested in the year after sample entry;
- Have fewer arrests in the year after sample entry if they were white;
- Report an arrest in the six months before the follow-up interview; and
- Report committing fewer offenses in the six months before the follow-up interview if they were white.

Less evidence of declines in drug-related problems was found. The analysis indicated that BTC clients were not significantly less likely than pre-BTC defendants to report physical or mental health problems in the 30 days before the follow-up interview were. However, there was a highly significant reduction in the likelihood and number of conflicts with family members and friends in the 30 days prior to follow-up among the BTC clients.

Since BTC implementation diverged in important respects from the model initially envisioned, the results need to be interpreted in light of the actual services delivered. The observed effects were produced by a pretrial intervention program directed at felony defendants (all charges) released from jail on bond who were required to undergo drug screening and assessment and participate in drug intervention programs. BTC added drug screening, ongoing drug testing, referrals to treatment, and responses – albeit not swift, certain, or severe responses – to failures to take drug tests, test drug-free, and otherwise comply with BTC rules. The program records indicate that drug users were referred to treatments that were appropriate for the level of severity of their drug problems and, moreover, that most of those referred to treatment were placed in services. Although the monitoring and sanctioning of noncompliance with these requirements fell far short of the ideal, the defendants were aware that their drug use was being monitored and perceptions of the potential threat of sanctions or consequences at the time of sentencing may also have contributed to the program's impact on their behavior. BTC services were not extended to those on probation, so it is not clear whether defendants not facing sentencing would respond in the same way. These findings also leave open the question of what

effects would be observed by incorporating judicial review hearings and more systematic use of sanctions. Evidence on this may become available when evaluation of the two other adult BTC sites is completed, providing that they overcome the barriers to implementation.

The results also suggest that intervention with drug-involved offenders can, as a practical matter, begin shortly after arrest for much larger portion of the arrestee population than is targeted by drug courts or pretrial diversion programs. While drug courts accept defendants who want to join, are charged with drug offenses, and have no pending charges or prior convictions for violent offenses, BTC accepted defendants with most felony charges, providing they qualified for a bond and were able to secure release. BTC succeeded in making referral for drug screening a routine condition of release, using lower bonds as an incentive for cooperation. The result was a substantial increase in the pool of defendants released, which helped reduce jail overcrowding without a significant increase in threat to public safety.

The challenges facing implementation of expanded criminal justice drug interventions must be recognized and require detailed advance planning. The Birmingham case study revealed the following major barriers to change:

- A severely overcrowded jail limiting the space and staff to conduct drug tests and treatment sessions for inmates;
- Heavy case backlogs clogging the court dockets, which contributed to judicial reluctance to hold review hearings;
- The difficulties inherent in engaging state-managed agencies in local innovations in the absence of any incentives for participation;
- Lack of computer systems and technology to support client tracking and interagency exchange of information on a timely basis.
- Lack of a history of interagency collaboration around system problem solving, the priority for agencies to focus on their immediate budget and staffing problems, and the competition for funds. A single agency cannot direct system-wide reform. Only collectively can agencies devise ways to share resources to serve the interests of all.
- An understanding that reform involves political risk for elected officials and can introduce competition between officials of different political parties.

BTC, despite the implementation problems, made important contributions to the functioning of the justice system in Birmingham. One was the implementation of procedures for widespread drug testing and monitoring for defendants on pretrial release. TASC developed automated drug testing procedures to manage a large number of defendants, developed capacity for on-site drug testing in court, and implemented a sophisticated management information system for storing client assessments, tracking client supervision and drug test results, and generating court reports, but did not, unfortunately, link to criminal justice information systems.

The demonstration program also helped to increase coordination among the partner agencies and established a forum for future planning. The availability of BTC services was an important consideration in the court's decision to expand options for releasing detained offenders into the community subject to participation in drug testing and treatment through deferred prosecution, referral to drug court, and an expedited docket for cases involving drug charges. The importance of BTC in these initiatives is underscored by the decision of the Jefferson County Commissioners to continue funding the pretrial BTC intervention after the end of federal funding, in lieu of raising funds for additional jail space.

The findings on BTC in Birmingham points to the benefits of increased early intervention with drug-involved defendants. However, the findings should be considered preliminary. These results are based on the experience of a single site and should thus be generalized to other areas with care. Replications underway in Jacksonville and Tacoma will provide evidence on the extent to which other jurisdictions achieve similar results. Other limitations stem from the limits of self-reported drug use, which may be denied, particularly by those who have participated in a treatment program. The consistency of the findings based on self-report criminal activity and arrest records is reassuring in this regard. Lastly, while the results suggest that BTC interventions for offenders who use drugs, at least during pretrial release, was associated with reductions in drug use and crime, we cannot ever be sure that statistical techniques control for the sample differences eliminated the possibility of selection bias.

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***APPENDIX A:***

***GLOSSARY OF RESEARCH VARIABLES***



## ***GLOSSARY OF RESEARCH VARIABLES***

### **Demographics – Self-Report**

**Age at Sample Entry.** The mean age of the total sample at baseline was 32, the mean age of the comparison group was 34, and the mean age of the treatment group was 29.

**Gender.** Responses on the survey were coded as 1 or 2, with 1 being male and 2 being scored as female. Mean for males in the comparison group was 0.82, and mean for males in the treatment group was 0.78.

**Race.** Responses on the survey were coded as 1 = Non-Hispanic White; 2 = Non-Hispanic Black; 3 = American Indian; and 6 = Hispanic – Mexican. In the total sample, 67% of sample members were Non-Hispanic Black, 32% were Non-Hispanic White, < 1% were American Indian, and 1% were Hispanic – Mexican. In the comparison group, 69% were Non-Hispanic Black, 28% were Non-Hispanic White, 1% were American Indian, and 2% were Hispanic – Mexican. In the treatment group, 66% were Non-Hispanic Black, and 34% were Non-Hispanic White.

**Black** – This dichotomous variable indicates that the respondent self-identified as African-American. African-American=1, 0 = other.

**Education** – This variable represents the number of years respondents reported completing.

### **Participation in Treatment – Official Records**

**First Referral to Treatment.** This variable indicates where the respondent was first referred to a treatment program by the TASC program (only treatment group). Programs include urinalysis only, AA/NA, cognitive skills, drug education group, outpatient, intensive outpatient, residential rehabilitation, inpatient, other referrals, and no placement. Mean for urinalysis only was 0.18, mean for AA/NA was 0.01, mean for cognitive skills was 0.02, mean for drug education group was 0.00, mean for outpatient was 0.39, mean for intensive outpatient was 0.17, mean for residential rehabilitation was 0.00, mean for inpatient was 0.06, mean for all other referrals was 0.02, and mean for no referral was 0.15.

**Entered First Referral to Treatment.** This variable indicates whether, if the respondent was referred to a treatment program by the TASC agency, the respondent entered his or her referral (only treatment group), as indicated by

having at least one attendance day. Programs include urinalysis only, AA/NA, cognitive skills, outpatient, intensive outpatient, intensive outpatient, inpatient, and other referrals. Means were 0.98 for urinalysis only, 1.00 for AA/NA, 0.83 for cognitive skills, 0.99 for outpatient, 0.98 for intensive outpatient, 0.80 for inpatient, and 1.00 for all other referrals.

**Days to First Placement.** This variable indicates the number of days from referral to entry into first placement for those respondents who entered the modality (treatment group only). Programs include urinalysis only, AA/NA, cognitive skills, outpatient, intensive outpatient, intensive outpatient, inpatient, and other referrals. Means were 73 days for urinalysis only, 81 days for AA/NA, 20 days for cognitive skills, 6 days for outpatient, 31 days for intensive outpatient, 1 day for inpatient, and 3 days for all other referrals.

**Status in Treatment Placement.** This variable indicates the status of respondents (treatment group only) in treatment programs that they were ever referred to by TASC. Programs include urinalysis only, AA/NA, cognitive skills, drug education group, methadone, outpatient, intensive outpatient, intensive outpatient, residential rehabilitation, and inpatient. Responses are coded 0 = open, 1 = closed. Means were 0.29 for urinalysis only, 0.15 for AA/NA, 0.64 for cognitive skills, 0.66 for drug education group, 0.33 for methadone, 0.69 for outpatient, 0.60 for intensive outpatient, 0.60 for residential rehabilitation, and 0.70 for inpatient.

**Days Enrolled in Treatment Placement.** This variable indicates the number of days that respondents (treatment group only) were enrolled in treatment programs that they were ever referred to by TASC. Programs include urinalysis only, AA/NA, cognitive skills, drug education group, methadone, outpatient, intensive outpatient, intensive outpatient, residential rehabilitation, and inpatient. Medians were 185 days for urinalysis only, 163 days for AA/NA, 82 days for cognitive skills, 32 days for drug education group, 358 days for methadone, 120 days for outpatient, 73 days for intensive outpatient, 108 days for residential rehabilitation, and 62 days for inpatient.

### ***Drug Test Results – Official Records***

**Number of Drug Tests Scheduled.** This variable indicates the number of drug tests that respondents (treatment group only) were ever scheduled for by the TASC program. Mean was 16.2 tests.

**Number of Negative Drug Tests.** This variable indicates the number of drug tests for which respondents (treatment group only) received a negative result at the TASC program. Mean was 8.6 negative tests.

**Number of Positive Drug Tests.** This variable indicates the number of drug tests for which respondents (treatment group only) received a positive result at the TASC program. Mean was 4.0 positive tests.

**Number of Missed Drug Tests.** This variable indicates the number of drug tests for which respondents (treatment group only) were scheduled but missed at the TASC program. Mean was 3.6 missed tests.

**Days to First Drug Test.** This variable indicates the number days between assessment and first drug test at the TASC program (treatment group only). Median was 0 days.

**Never Tested Positive for Drugs.** This variable indicates whether the respondent ever tested positive for drugs (treatment group only) at TASC. Responses are coded as 0 = ever had a positive test, 1 = no positive tests. Mean was 0.22.

**Drugs Ever Tested Positive for.** This variable indicates what drugs the respondent ever tested positive for (treatment group only) at TASC. Responses are coded as 0 = ever had a positive test, 1 = no positive tests. Drug combinations include marijuana/other except heroin/cocaine, cocaine/other except heroin, heroin/other, and other drugs. Means were 0.57 for marijuana/other except heroin/cocaine, 0.56 for cocaine/other except heroin, 0.27 for heroin/other, and 0.20 for other drugs.

#### **Infractions and Sanctions – Official Records**

**Ever had Infraction.** This variable indicates whether the respondent (treatment group only) ever committed an infraction at TASC. Responses were coded 0 = no, 1 = yes. Mean for any infraction was 0.89, mean for drug test infractions was 0.86, and mean for other compliance infractions was 0.43.

**Number of Infractions.** This variable indicates the number of infractions that respondents at the treatment group had at TASC. Mean for any infraction was 10.9 infractions, mean for drug test infractions was 7.9 infractions, and mean for other compliance infractions was 6.7 infractions.

**Number of Sanctions per Clients with Infraction.** This variable indicates the number of sanctions given to respondents (treatment group only) who had infractions at TASC. Mean for respondents with any infraction was 3.5 sanctions, mean for respondents with drug test infractions was 3.2 sanctions, and mean for respondents with other compliance infractions was 1.5 sanctions.

#### **Participation in TASC – Official Records**

**Case Status 90 Days after TASC Entry.** This variable indicates the respondent's case status at TASC 90 days after entry into the program (treatment group only). Responses were coded 0 = no, 1 = yes for each status. Means were 0.81 for open cases, 0.01 for completed TASC successfully, 0.12 for terminated for non-compliance, less than 0.01 for rearrested and terminated, 0.11 for terminated for

poor attendance/performance, 0.07 for closed for other reasons, 0.03 for transferred to probation and closed, 0.03 for left treatment doing well prior to completion, less than 0.01 for no longer eligible for BTC, and less than 0.01 for other closures.

### ***Criminal Justice Contact – Official Records***

**Target Drug Arrest Charge.** This variable indicates whether the target arrest charge for the respondent (arrest bringing them into the sample) was for drug-related charges. Responses are coded 0 = non-drug charge, 1 = drug charge. Mean for the comparison group was 0.26 and mean for the treatment group was 0.66.

**Any Arrest prior to Sample Entry.** This variable indicates whether respondent was ever arrested prior to his or her entry into the sample. Responses are coded 0 = no, 1 = yes. The mean for the comparison group was 0.95 and the mean for the treatment group was 0.93.

**Any Drug Arrest prior to Sample Entry.** This variable indicates whether respondent was ever arrested for drug charges prior to his or her entry into the sample. Responses are coded 0 = no, 1 = yes. The mean for the comparison group was 0.61 and the mean for the treatment group was 0.58.

**Any Violent Arrest prior to Sample Entry.** This variable indicates whether respondent was ever arrested for a violent crime prior to his or her entry into the sample. Responses are coded 0 = no, 1 = yes. The mean for the comparison group was 0.49 and the mean for the treatment group was 0.38.

**Any Arrest for Property Crime prior to Sample Entry.** This variable indicates whether respondent was ever arrested for a property crime prior to his or her entry into the sample. Responses are coded 0 = no, 1 = yes. The mean for the comparison group was 0.73 and the mean for the treatment group was 0.50.

**Any Arrest for Other Crime prior to Sample Entry.** This variable indicates whether respondent was ever arrested for other crime prior to his or her entry into the sample. Responses are coded 0 = no, 1 = yes. The mean for the comparison group was 0.53 and the mean for the treatment group was 0.49.

**Any Arrest for Violation prior to Sample Entry.** This variable indicates whether respondent was ever arrested for a violation prior to his or her entry into the sample. Responses are coded 0 = no, 1 = yes. The mean for the comparison group was 0.57 and the mean for the treatment group was 0.30.

**Any official arrest** - This variable indicates whether official criminal justice records indicated that respondent was arrested in the year after sample entry. Responses are coded 0 = no, 1 = yes.

**Number of arrests** – This variable indicates the number of times each respondent was arrested in the year after sample entry according to official criminal justice records.

**Months in Jail** – This variable indicates the number of months the respondent reported have been incarcerated in their lifetime at the baseline interview.

**Number of days incarcerated** - This variable indicates the number of days in the 30 days prior to the follow-up interview the respondent was detained or incarcerated.

**Total self-reported arrests** - Respondents were asked how many times they had committed: shoplifting/vandalism, parole/probation violations, drug offenses, forgery, weapons offense, burglary/larceny/breaking and entering, robbery, assault, arson, rape, homicide/manslaughter, prostitution, contempt of court, and other offenses in the six months prior to the follow-up interview. This variable indicates the total number of offenses the respondent reported having committed in the six months prior to follow-up interview.

**Any self-reported arrests** - Respondents were asked how many times they had been arrested in the six months prior to the follow-up interview for: shoplifting/vandalism, parole/probation violations, drug offenses, forgery, weapons offense, burglary/larceny/breaking and entering, robbery, assault, arson, rape, homicide/manslaughter, prostitution, contempt of court, and other offenses in the six months prior to the follow-up interview. This variable indicates whether the respondent reported having been arrested for any of these offenses in the six months prior to follow-up interview. Responses are coded 0 = the respondent reported no arrests, 1 = the respondent reported having been arrested one or more times.

**On probation** – This variable indicates whether the respondent self-reported being on parole or probation at the time of the baseline interview. Responses are coded 0 = not on probation or parole, 1 = on probation or parole at baseline.

**Serious offender** – This variable is a dichotomous indicator. Responses are coded 1 = the respondent reported committing one of the following serious offenses in the six months prior to the baseline: Burglary, Robbery, Assault, Arson, Rape, Homicide, Weapons Offense; 0 = the respondent reported committing none of these offenses.

**Prior offenses** – Respondents were asked how many times they had committed: shoplifting/vandalism, parole/probation violations, drug charges, forgery, weapons offense, burglary/larceny/breaking and entering, robbery, assault, arson, rape, homicide/manslaughter, prostitution, contempt of court, and other offenses in the six months prior to the baseline interview. This variable is the total number

of offenses the respondent reported committing in the six months prior to the baseline interview.

**Any self-reported offense** – Respondents were asked how many times they had committed: shoplifting/vandalism, parole/probation violations, drug offenses, forgery, weapons offense, burglary/larceny/breaking and entering, robbery, assault, arson, rape, homicide/manslaughter, prostitution, contempt of court, and other offenses in the six months prior to the follow-up interview. This variable indicates whether the respondent reported having committed any of these offenses in the six months prior to follow-up interview. Responses are coded 0 = the respondent reported having committed none of these offenses, 1 = the respondent reported having committed one or more of these offenses.

**Any self-reported non-drug offense** – This variable indicates whether the respondent reported having committed: shoplifting/vandalism, parole/probation violations, forgery, weapons offense, burglary/larceny/breaking and entering, robbery, assault, arson, rape, homicide/manslaughter, prostitution, contempt of court, and other offenses in the six months prior to the follow-up interview. Responses are coded 0 = the respondent reported having committed none of these offenses, 1 = the respondent reported having committed one or more of these offenses.

**Number of non-drug offenses** - This variable indicates the total number of times in the six months prior to the follow-up interview that the respondent reported having committed: shoplifting/vandalism, parole/probation violations, forgery, weapons offense, burglary/larceny/breaking and entering, robbery, assault, arson, rape, homicide/manslaughter, prostitution, contempt of court, and other offenses.

**Number of drug offenses** - This variable indicates the number of times in the six months prior to the follow-up interview that the respondent reported having committed a drug offense.

**Any self-reported drug offense** – This variable indicates whether the respondent reported having committed any drug offenses. Responses are coded 0 = the respondent did not reported having committed a drug offenses, 1 = the respondent reported having committed one or more drug offenses.

### ***Medical Problems – Self-Report***

**Any Lifetime Chronic Medical Problems.** This variable was collected only at baseline. Responses were coded 0 for no and 1 for yes. In the total group, the mean response was 0.21. In the comparison group, mean response was 0.28, and the mean response was 0.19 for the treatment group.

**Number of Times in Emergency Room Past 6 Months.** This variable indicates the number of times in the past 6 months that the respondent had been to an emergency room for any reason (physical, psychiatric, drug/alcohol). For the comparison group, responses at baseline ranged from 0 to 12, with a mean of 0.46; at follow-up, responses ranged from 0 to 6, with a mean of 0.24. For the treatment group, responses at baseline ranged from 0 to 10, with a mean of 0.41; at follow-up, the responses ranged from 0 to 6, with a mean of 0.33.

**Number of Times seen a Physician in Past 6 Months.** This variable indicates the number of times in the respondent went to a clinic or saw a physician for a medical problem during the last 6 months. For the comparison group, responses at baseline ranged from 0 to 12, with a mean of 0.47; at follow-up, responses ranged from 0 to 8, with a mean of 0.50. For the treatment group, responses at baseline ranged from 0 to 12, with a mean of 0.69; at follow-up, responses ranged from 0 to 24, with a mean of 0.97.

**Regularly Taking Prescription Medication.** This variable, coded as 0 for No and 1 for Yes, indicates whether the respondent was currently taking prescribed on a regular basis for a physical problem. For the comparison group, mean response at baseline was 0.17, and 0.14 at follow-up. For the treatment group, mean response at baseline was 0.20 and mean response at follow-up was 0.21.

**Any Health Insurance.** This variable, coded as 0 for No and 1 for Yes, indicates whether the respondent currently had any form of public or private health coverage. For the comparison group, mean response at baseline was 0.29 and 0.28 at follow-up. For the treatment group, mean response at baseline was 0.33 and mean response at follow-up was 0.39.

**Number of Days Experienced Medical Problems in Past 30.** This variable indicates the number of days in the past 30 that the respondent experienced medical problems. For the comparison group, response at baseline ranged from 0 to 30, with a mean of 4.58; at follow-up, response ranged from 0 to 30, with a mean of 3.73. For the treatment group, response at baseline ranged from 0 to 30, with a mean of 2.98; response at follow-up ranged from 0 to 30, with a mean of 2.80.

**Number of Times Hospitalized in Past 6 Months.** This variable indicates the number of times in the past 6 months the respondent was hospitalized overnight for medical problems. For the comparison group, the range at baseline was 0 to 3, with a mean of 0.15; at follow-up, the responses ranged from 0 to 2, with a mean of 0.05. For the treatment group, the range at baseline was 0 to 2, with a mean of 0.06; at follow-up, the responses ranged from 0 to 2, with a mean of 0.07.

**Medical Composite Score.** This variable is a composite index of current functioning over the preceding 30 days that is calculated by weighting and summing critical items in the medical domain. Scores range from 0 to 1, with

higher scores indicating greater problem severity. The mean for the comparison group at baseline was 0.18, and 0.13 at follow-up. The mean for the treatment group at baseline was 0.11, and 0.11 at follow-up.

**Total use of medical services** – This variable indicates the total number of times the respondent in the six months prior to the follow-up interview reported having been hospitalized for a medical problem, been to an emergency room for any problem, and/or gone to a clinic or seen a physician for a medical problem.

**Reported one or more days with medical problems past 30** – This variable indicates that the respondent reported having experienced a medical problem on one or more days in the 30 days prior to the follow-up interview. Responses are coded 0 = no medical problems, 1 = one or more days experiencing a medical problem.

### **Employment/Support Problems – Self-Report**

**Usually Employed Full-time Past 3 Years.** This variable, asked only at baseline, indicates whether the respondent was usually employed full-time in the past three years. Responses were coded as 0 = No and 1 = Yes. For the comparison group, the mean response was 0.45. The treatment group mean response was 0.64.

**Usually Unemployed Past 3 Years.** This variable, asked only at baseline, indicates whether the respondent was usually unemployed during the past three years. Responses were coded as 0 = No and 1 = Yes. For the comparison group, the mean response was 0.19. In the treatment group, the mean response was 0.06.

**Any Welfare/Disability Received Past 6 Months.** This variable indicates whether the respondent received benefits from any welfare or disability in the past 6 months, including AFDC, SSI, General Welfare, or Disability. Responses were coded 0 = No, 1 = Yes. For the comparison group, the mean at baseline was 0.13; at follow-up, the mean was 0.12. In the treatment group, the mean response at baseline was 0.11 and the mean response at follow-up was 0.11.

**Employment/Support Composite Score.** This variable is a composite index of current functioning over the preceding 30 days that is calculated by weighting and summing critical items in the employment/support domain. Scores range from 0 to 1, with higher scores indicating greater problem severity. The mean for the comparison group at baseline was 0.81, and 0.75 at follow-up. The mean for the treatment group at baseline was 0.58, and 0.60 at follow-up.

**Employ Bother** – This variable indicates whether the respondent being "troubled or bothered" by employment problems in the 30 days prior to the baseline interview. Responses are coded 0 = not bothered at all, 1 = some bothers.



**Days worked** – The variable indicates the number of days the respondent reported being paid for working for in the 30 days prior to the baseline interview.

**Full-time employment/student** – This variable indicates that the respondent's usual employment pattern in the past three years was either full-time employment (40 hours per week) or a student. Responses are coded 1 = full-time employment or student, 0 = other (part-time, service, retired/disabled, unemployed, or in controlled environment).

**Part-time employment** – This variable indicates that the respondent's usual employment pattern in the past three years was either part-time employment (less than 40 hours per week). Responses are coded 1 = part-time employment, 0 = other (part-time, service, retired/disabled, unemployed, or in controlled environment).

**Money from employment/pension past 30 days** – This variable indicates the total amount of money the respondent reported receiving from employment or a pension in the 30 days prior to the follow-up interview.

**Money from government sources past 30 days** – This variable indicates the total amount of money the respondent reported receiving the following government sources in the 30 days prior to the follow-up interview: AFDC, social security, general welfare, unemployment.

**Reported one or more days with employment problems, past 30** – This variable indicates that the respondent reported having experienced employment problems in the 30 days prior to the follow-up interview. Responses are coded 0 = no employment problems, 1 = one or more days with employment problems.

#### ***Drug/Alcohol Use Problems – Self-Report***

**Any Lifetime Use Alcohol to Intoxication.** This variable indicates whether the respondent ever used alcohol to intoxication during his or her lifetime. Responses are coded 0 = No, 1 = Yes. At baseline, mean response for comparisons was 0.64 and mean for treatment was 0.43. At follow-up, mean response for comparisons was 0.70 and mean for treatment was 0.56.

**Any Lifetime Use Marijuana.** This variable indicates whether the respondent ever used marijuana during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean responses for comparison was 0.69 and mean for treatment was 0.76. At follow-up, mean for comparisons was 0.75 and mean for treatment was 0.77.

**Any Lifetime Use Cocaine.** This variable indicates whether the respondent ever used cocaine during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparison was 0.69 and mean for treatment was

0.44. At follow-up, mean for comparisons was 0.69 and mean for treatment was 0.48.

**Any Lifetime Use Opiates.** This variable indicates whether the respondent ever used opiates during his or her lifetime. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.18 and mean for treatment was 0.11. At follow-up, mean for comparisons was 0.19 and mean for treatment was 0.16.

**Any Lifetime Use Other Drugs.** This variable indicates whether the respondent ever used other drugs, including methadone, barbiturates, other sedatives/hypnotics/tranquilizers, amphetamines, hallucinogens, or inhalants during his or her lifetime. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.26 and mean for treatment was 0.20. At follow-up, mean for comparisons was 0.30 and mean for treatment was 0.23.

**Ever Injected a Drug.** This variable indicates whether the respondent ever injected any drug during his or her lifetime. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.10 and mean for treatment was 0.02. At follow-up, mean for comparisons was 0.10 and mean for treatment was 0.02.

**Months of Last Period of Voluntary Abstinence.** This variable, asked only at baseline, indicates the length of the respondents last period of voluntary abstinence from the major substance of abuse. At baseline, mean responses for comparison was 5 months and mean for treatment was 6 months.

**Ever Had Detoxification Treatment.** This variable indicates whether the respondent ever had detoxification treatment for alcohol or drug use during his or her lifetime. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.13 and mean for treatment was 0.02. At follow-up, mean for comparisons was 0.14 and mean for treatment was 0.02.

**Any Past 30 Days Use Alcohol to Intoxication.** This variable indicates whether the respondent used alcohol to intoxication during the past 30 days. Responses are coded 0 = No, 1= Yes. At baseline, mean response for comparisons was 0.31 and mean for treatment was 0.35. At follow-up, mean response for comparisons was 0.20 and mean for treatment was 0.23.

**Any Past 30 Days Use Marijuana.** This variable indicates whether the respondent ever used marijuana during the past 30 days. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.30 and mean for treatment was 0.54. At follow-up, mean for comparisons was 0.16 and mean for treatment was 0.11.

**Any Past 30 Days Use Cocaine.** This variable indicates whether the respondent ever used cocaine during the past 30 days. Responses are coded 0 = no, 1=yes. At baseline, mean response for comparison was 0.32 and mean for treatment was 0.31. At follow-up, mean for comparisons was 0.12 and mean for treatment was 0.07.

**Any Past 30 Days Use Opiates.** This variable indicates whether the respondent ever used opiates during his or her lifetime. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.06 and mean for treatment was 0.06. At follow-up, mean for comparisons was 0.02 and mean for treatment was 0.05.

**Any Past 30 Days Use Other Drugs.** This variable indicates whether the respondent ever used other drugs, including methadone, barbiturates, other sedatives/hypnotics/tranquilizers, amphetamines, hallucinogens, or inhalants during the past 30 days. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.08 and mean for treatment was 0.12. At follow-up, mean for comparisons was 0.04 and mean for treatment was 0.07.

**Had Outpatient Treatment in Past 30 Days.** This variable indicates whether the respondent was treated in an outpatient setting for alcohol or drugs in the past 30 days (including AA/NA) during the past 30 days. Responses are coded 0 = no, 1=yes. At baseline, mean responses for comparison was 0.07 and mean for treatment was 0.05. At follow-up, mean for comparisons was 0.15 and mean for treatment was 0.14.

**Alcohol Use Composite Score.** This variable is a composite index of current functioning over the preceding 30 days that is calculated by weighting and summing critical items in the alcohol use domain. Scores range from 0 to 1, with higher scores indicating greater problem severity. The mean for the comparison group at baseline was 0.14, and 0.08 at follow-up. The mean for the treatment group at baseline was 0.12, and 0.08 at follow-up.

**Drug Use Composite Score.** This variable is a composite index of current functioning over the preceding 30 days that is calculated by weighting and summing critical items in the employment/support domain. Scores range from 0 to 1, with higher scores indicating greater problem severity. The mean for the comparison group at baseline was 0.09, and 0.03 at follow-up. The mean for the treatment group at baseline was 0.05, and 0.02 at follow-up.

**Any self-reported drug use** - This variable indicates whether the respondent self-reported any drug use in the 30 days prior to the follow-up interview. Drugs included were heroin, other opiates, barbiturates, other sedatives, cocaine, amphetamines, marijuana, hallucinogens, and inhalants. Responses are coded as 0 = no drug use in the 30 days prior to follow-up, 1 = used one or more substances in the 30 days prior to follow-up.

**Any self-reported cocaine use** - This variable indicates whether the respondent self-reported one or more days of cocaine use in the 30 days prior to the follow-up interview. Responses are coded as 0 = no cocaine use in the 30 days prior to follow-up, 1 = used cocaine on one or more days in the 30 days prior to follow-up.

**Any self-reported marijuana use** - This variable indicates whether the respondent self-reported one or more days of marijuana use in the 30 days prior to the follow-up interview. Responses are coded as 0 = no marijuana use in the 30 days prior to follow-up, 1 = used marijuana on one or more days in the 30 days prior to follow-up.

**Any stronger drug use** - This variable indicates whether the respondent self-reported one or more days of cocaine or heroin use in the 30 days prior to the follow-up interview. Responses are coded as 0 = no cocaine or heroin use in the 30 days prior to follow-up, 1 = used cocaine or heroin on one or more days in the 30 days prior to follow-up.

**Prior drug use** – Respondents were asked how many days in the past 30 days prior to baseline they had used heroin, other opiates, barbiturates, other sedatives, cocaine, amphetamines, marijuana, hallucinogens, and inhalants. This variable is the total number of days the respondent reported using each drug in the 30 days prior to the baseline interview.

**Number of prior drug treatment episodes** – This variable indicates how many times the respondent reported having been treated for drug abuse.

**Prior alcohol use** – This variable indicates the number of days in the 30 days prior to the baseline interview that the respondent reported drinking alcohol to intoxication.

### ***Legal Problems – Self-Report***

**Ever Charged with a Property Crime.** This variable indicates whether the respondent was ever arrested and charged with a property crime (shoplifting/vandalism, forgery, burglary/larceny/B&E) during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.48 and mean response for treatment was 0.28. At follow-up, mean response for comparisons was 0.51 and mean response for treatment was 0.31.

**Ever Charged with a Drug Crime.** This variable indicates whether the respondent was ever arrested and charged with a drug crime during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.55 and mean response for treatment was 0.74. At follow-up,

mean response for comparisons was 0.60 and mean response for treatment was 0.74.

**Ever Charged with a Violent Crime.** This variable indicates whether the respondent was ever arrested and charged with a violent crime (robbery, assault, arson, rape, homicide/manslaughter) during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.36 and mean response for treatment was 0.22. At follow-up, mean response for comparisons was 0.38 and mean response for treatment was 0.24.

**Ever Charged with Other Crime.** This variable indicates whether the respondent was ever arrested and charged with other crime (parole/probation violations, weapons offense, prostitution, contempt of court, other) during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.65 and mean response for treatment was 0.33. At follow-up, mean response for comparisons was 0.68 and mean response for treatment was 0.39.

**Past 30 Days Charged with a Property Crime.** This variable indicates whether the respondent was ever arrested and charged with a property crime (shoplifting/vandalism, forgery, burglary/larceny/B&E) during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.21 and mean response for treatment was 0.18. At follow-up, mean response for comparisons was 0.09 and mean response for treatment was 0.05.

**Past 30 Days Charged with a Drug Crime.** This variable indicates whether the respondent was ever arrested and charged with a drug crime during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.32 and mean response for treatment was 0.67. At follow-up, mean response for comparisons was 0.09 and mean response for treatment was 0.03.

**Past 30 Days Charged with a Violent Crime.** This variable indicates whether the respondent was ever arrested and charged with a violent crime (robbery, assault, arson, rape, homicide/manslaughter) during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.12 and mean response for treatment was 0.10. At follow-up, mean response for comparisons was 0.04 and mean response for treatment was 0.02.

**Past 30 Days Charged with Other Crime.** This variable indicates whether the respondent was ever arrested and charged with other crime (parole/probation violations, weapons offense, prostitution, contempt of court, other) during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.44 and mean response for treatment was 0.21. At follow-up, mean response for comparisons was 0.19 and mean response for treatment was 0.10.

**Past 30 Days Committed a Property Crime.** This variable indicates whether the respondent committed a property crime (shoplifting/vandalism, forgery, burglary/larceny/B&E) during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.29 and mean response for treatment was 0.19. At follow-up, mean response for comparisons was 0.15 and mean response for treatment was 0.05.

**Past 30 Days Committed a Drug Crime.** This variable indicates whether the respondent committed a drug crime during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.39 and mean response for treatment was 0.66. At follow-up, mean response for comparisons was 0.23 and mean response for treatment was 0.10.

**Past 30 Days Committed a Violent Crime.** This variable indicates whether the respondent committed a violent crime (robbery, assault, arson, rape, homicide/manslaughter) during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.16 and mean response for treatment was 0.09. At follow-up, mean response for comparisons was 0.07 and mean response for treatment was 0.02.

**Past 30 Days Committed Other Crime.** This variable indicates whether the respondent committed any other crime (parole/probation violations, weapons offense, prostitution, contempt of court, other) during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.51 and mean response for treatment was 0.20. At follow-up, mean response for comparisons was 0.18 and mean response for treatment was 0.12.

**Past 30 Days Engaged in Illegal Activity for Profit.** This variable indicates whether the respondent engaged in any illegal activity for profit in the past 30 days. Responses were coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.20 and mean response for treatment was 0.21. At follow-up, mean response for comparisons was 0.07 and mean response for treatment was 0.02.

**Legal Composite Score.** This variable is a composite index of current functioning over the preceding 30 days that is calculated by weighting and summing critical items in the legal domain. Scores range from 0 to 1, with higher scores indicating greater problem severity. The mean for the comparison group at baseline was 0.40, and 0.25 at follow-up. The mean for the treatment group at baseline was 0.41, and 0.21 at follow-up.

### ***Family Problems – Self-Report***

**Usually Lived with Family/Partner Past 3 Years.** This variable indicates whether the respondent usually lived with any family member or sexual partner

during the past 3 years (with sexual partner and children, with sexual partner alone, with children alone, with parents, or with family). Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.82 and mean response for treatment was 0.79. At follow-up, mean response for comparisons was 0.72 and mean response for treatment was 0.83.

**Usually Lived Alone Past 3 Years.** This variable indicates whether the respondent usually lived alone during the past 3 years. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.07 and mean response for treatment was 0.10. At follow-up, mean response for comparisons was 0.12 and mean response for treatment was 0.09.

**Usually Lived in a Controlled Environment Past 3 Years.** This variable indicates whether the respondent usually lived in a controlled environment during the past 3 years. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.02 and mean response for treatment was 0.01. At follow-up, mean response for comparisons was 0.12 and mean response for treatment was 0.04.

**Experienced Serious Problems Getting Along with Family/Friends Co-workers in Lifetime.** This variable indicates whether the respondent had significant periods in which he or she had serious problems getting along with family, friends, or co-workers (includes mother, father, brother/sisters, sexual partner/spouse, children, other significant family, close friends, neighbors, or co-workers) in his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.57 and mean response for treatment was 0.38. At follow-up, mean response for comparisons was 0.64 and mean response for treatment was 0.46.

**Ever Physically or Sexually Abused.** This variable indicates whether the respondent ever was physically or sexually abused during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.23 and mean response for treatment was 0.07. At follow-up, mean response for comparisons was 0.26 and mean response for treatment was 0.11.

**Ever Physically and Sexually Abused.** This variable indicates whether the respondent ever was physically and sexually abused during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.08 and mean response for treatment was 0.02. At follow-up, mean response for comparisons was 0.09 and mean response for treatment was 0.02.

**Never Physically or Sexually Abused.** This variable indicates whether the respondent ever was never physically or sexually abused during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.77 and mean response for treatment was 0.93. At follow-up,

mean response for comparisons was 0.74 and mean response for treatment was 0.89.

**Conflicts with Family/Others Past 30 Days.** This variable indicates whether the respondent had any conflicts with family or others during the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.23 and mean responses for treatment was 0.11. At follow-up, mean response for comparisons was 0.24 and mean response for treatment was 0.13.

**Family/Social Composite Score.** This variable is a composite index of current functioning over the preceding 30 days that is calculated by weighting and summing critical items in the family/social domain. Scores range from 0 to 1, with higher scores indicating greater problem severity. The mean for the comparison group at baseline was 0.17, and 0.12 at follow-up. The mean for the treatment group at baseline was 0.08, and 0.04 at follow-up.

**Reported one or more days with serious social conflicts past 30** – This variable indicates that the respondent reported having experienced a serious conflict with a family member or other people in the 30 days prior to the follow-up interview. Responses are coded 0 = no social conflicts, 1 = one or more days with social conflicts.

### **Psychiatric Problems – Self-Report**

**Ever Treated as Inpatient.** This variable indicates whether the respondent was ever treated in an inpatient hospital for any psychological or emotional problem during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.11 and mean response for treatment was 0.07. At follow-up, mean response for comparisons was 0.12 and mean response for treatment was 0.08.

**Ever Treated as Outpatient.** This variable indicates whether the respondent was ever treated as an outpatient or private patient for any psychological or emotional problem during his or her lifetime. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.12 and mean response for treatment was 0.07. At follow-up, mean response for comparisons was 0.12 and mean response for treatment was 0.12.

**Treated for Psychiatric Problems Past 6 Months.** This variable indicates whether the respondent was treated for psychiatric problems (as an inpatient, outpatient, or private patient) during the past 6 months. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.07 and mean response for treatment was 0.02. At follow-up, mean response for comparisons was 0.04 and mean response for treatment was 0.09.



**Experienced Psychiatric Problems in Past 30 Days.** This variable indicates whether the respondent experienced psychiatric or emotional problems in the past 30 days. Responses are coded 0 = no, 1 = yes. At baseline, mean response for comparisons was 0.58 and mean response for treatment was 0.24. At follow-up, mean response for comparisons was 0.34 and mean response for treatment was 0.18.

**Psychiatric Composite Score.** This variable is a composite index of current functioning over the preceding 30 days that is calculated by weighting and summing critical items in the psychiatric domain. Scores range from 0 to 1, with higher scores indicating greater problem severity. The mean for the comparison group at baseline was 0.22, and 0.11 at follow-up. The mean for the treatment group at baseline was 0.07, and 0.06 at follow-up.

**Total number of psychological problems** – This variable indicates the total number of the following psychological problems the respondent reported having experienced in the 30 days prior to the follow-up interview: serious depression, serious anxiety or tension, hallucinations, trouble controlling violent behavior, serious thoughts of suicide, attempted suicide.

**Reported one or more days with psychological problems past 30** - This variable indicates that the respondent reported having experienced a psychological problem on one or more days in the 30 days prior to the follow-up interview. Responses are coded 0 = no psychological problems, 1 = one or more days experiencing a psychological problem.

### **Case Processing – Official Records**

**Open cases** –Charges filed initially in District Court that had not reached disposition within the first 365 days of initial filing in District Court

**Closed cases** – Charges filed initially in District Court that had reached disposition within the first 365 days of initial filing in District Court.

**BTC Case** – This variable indicates that a case involves a client involved in BTC and who took part in the evaluation survey. Responses are coded 1 = BTC evaluation sample survey member, 0 = not in BTC or did not take part in the evaluation survey.

**Drug Distribution** – This variable indicates that the most serious charge concerned a drug distribution offense; e.g., distribution of controlled substance, trafficking in cocaine. Responses are coded 1 = drug distribution offense, 0 = other.

**Drug Possession** – This variable indicates that the most serious charge concerned a drug possession offense. Responses are coded 1 = drug possession charge, 0 = other.

**Disorder** – This variable indicates that the most serious charge concerned a public order offense; e.g., disorderly conduct, loitering, giving false name. Responses are coded 1 = public order offense, 0 = other.

**Person/Violent** – This variable indicates that the most serious charge concerned a violent offense; e.g., assault, robbery, rape. Responses are coded 1 = person/violent offense, 0 = other.

**Weapons** – This variable indicates that the most serious charge concerned a weapons offense; e.g., unlawful possession of a firearm, carrying a concealed weapon. Responses are coded 1 = weapons offense, 0 = other.

**Property** – This variable indicates that the most serious charge concerned a property offense; e.g., theft, worthless checks. Responses are coded 1 = property offense, 0 = other.

**Drug use (Table 6.5)** – This variable indicates that the respondent at baseline reported some drug use.

***APPENDIX B:***

***ANALYSIS OF SAMPLE ATTRITION***

## ANALYSIS OF SAMPLE ATTRITION

Sample attrition routinely occurs in longitudinal studies of interventions for drug-involved felony offenders, such as Breaking the Cycle. Subjects may drop out of the sample for a variety of reasons: by the time of the follow-up interview, some subjects may have moved away from the area, do not consent to participate in the follow-up interview, or otherwise cannot be located for an interview at follow-up. In studies, such as the evaluation of BTC, that do not allow for the random assignment of subjects to each condition, attrition rates may further differ across groups. If attrition is systematically related to the study's outcomes, attrition can affect the validity of between-group comparisons (*internal validity*) and limit the extent to which findings can be generalized to the entire population of drug-involved felony offenders (*external validity*).

The *internal validity* of the study refers to the level of confidence that any measured differences between experimental conditions are due to the experimental treatment rather than to extraneous factors. Sample attrition threatens the internal validity of a longitudinal study when subjects who drop out of one condition systematically differ from those who drop out of another condition on characteristics that are related to an outcome variable. Although subjects may have been equivalent at baseline, differential rates of attrition may mean that subjects in each condition are not longer comparable at follow-up. Therefore, any observed between-group differences in the outcome variable at follow-up may be due to the differences in the characteristics of the subjects who remained in each condition.

Sample attrition can also threaten the *external validity* of a study, or the degree to which the results of an experimental comparison can be generalized to conditions other than those under which the study was conducted. If subjects, regardless of experimental condition, who drop out of the study are systematically different from those who remain, then the final sample may not reflect characteristics of the target population.

This appendix examines the extent to which sample attrition affected the BTC evaluation. The attrition analyses, guided by the work of Biglan et al. (1991), examine the effects of attrition on both the internal and external validity of the survey data between baseline and follow-up. The proportion of sample members in each condition, and overall, who completed the two surveys is illustrated in Figure 1.

### Differences Sample Descriptors and Attrition

Before conducting regression analyses to measure the effects of differential attrition across groups, descriptive measures of the baseline characteristics of each sample were constructed and compared within both treatment conditions. Chi-squared tests of significance for differences in proportions and t-tests for differences in means were used to examine within-group differences in the characteristics and survey responses of sample members who had completed follow-up interviews and those who had not. Table 1 below outlines the few significant differences on baseline characteristics that existed within each group. A significantly lower proportion of treatment group

members who completed follow-up interviews reported being married than those who completed only the baseline survey, but a higher proportion of the treatment group who completed the follow-up survey reported using other drugs in the past 30 days before baseline than those who did not completed the follow-up. Those in the treatment group who completed the follow-up also had lower ASI employment/support composite scores than those who did not complete the interview. Comparison group members who completed follow-up interviews were paid for significantly fewer mean days of working in the past 6 months, and a significantly lower proportion reported using cocaine in the past 30 days before baseline than those who completed only the baseline survey.

Table 1

Baseline Differences in Demographic Characteristics between Sample Members by Survey Completion Status  
(n=566)

	Comparison Group (n = 192)			Treatment Group (n = 374)		
	No Follow-up (n = 55)	Follow-up (n = 137)	Total (n = 192)	No Follow-up (n = 129)	Follow-up (n = 245)	Total (n = 374)
Male	89%	82%	84%	82%	78%	79%
African-American	73%	69%	70%	61%	66%	64%
Unmarried	89%	88%	89%	90%*(g)	82%*(g)	85%
Mean Age in Years	30	34*(f)	32	27	29*(f)	30
Mean Years of Education	12	11	11	12	12	12
Mean # Days Paid for Work, Past 30	7	5***(f)	5	11	13***(f)	12
Mean # Days Paid for Work, Past 6 Months	66*(g)	48***(f)	54	74	82***(f)	79
Mean Employment Income Past 30 Days	\$299	\$261 *(g) ***(f)	\$272	\$546	\$673 ***(f)	\$629
Received Public Assistance Past 6 Months	15%	14%	14%	7%	10%	9%
Type of offense (target arrest) <sup>x</sup>						
Drug	35%	26%		71%	66%	
Mean Age First Drug Use	16	16	16	16	16	16
Tested Positive for Drugs at Sample Entry <sup>1</sup>						
Cocaine	52%	70%***(f)	65%	23%	31%***(f)	28%
Opiates	4%	6%	5%	7%	3%	5%
Marijuana	61%	54%*(f)	56%	46%	42%*(f)	43%
Other <sup>2</sup>	9%	17%***(f)	15%	6%	5%***(f)	5%
Tested Negative for All Drugs at Sample Entry	2%	0%***(f)	1%	37%	38%***(f)	38%
Self-Report Drug Use Past 30 Days (Survey)						
Cocaine	20%	32%	29%	28%	31%	30%
Opiates	0%	7%	5%	5%	6%	6%
Marijuana	31%	30%***(f)	30%	57%	54%***(f)	55%
Other	6%	8%	7%	5%*(g)	12%*(g)	9%
Self-Report Drug Use Past 30 Days (DUF for Comparisons)						
Cocaine	57%*(g)	53%*(g)	54%			
Opiates	0%	5%	4%			
Marijuana	65%	57%	59%			
Other	11%	10%	11%			
Mean Baseline ASI Composite Scores (Range from 0 to 1)						
Medical	0.16	0.18***(f)	0.18	0.07	0.11***(f)	0.10
Employment/Support	0.74	0.80****(f)	0.79	0.66*(g)	0.58****(f) *(g)	0.61
Alcohol Use	0.12	0.14	0.13	0.09	0.11	0.11
Drug Use	0.07	0.08***(f)	0.08	0.04	0.05***(f)	0.05
Legal	0.40	0.40	0.40	0.40	0.41	0.40
Family/Social	0.18	0.17****(f)	0.17	0.08	0.08****(f)	0.08
Psychiatric	0.21	0.22****(f)	0.22	0.06	0.07****(f)	0.07

<sup>1</sup> Initial drug test results missing for 9% of no follow-up treatment group and 9% of the follow-up treatment group.

Differences between follow-up/no-follow-up within group signified by \*(g). Differences between groups with follow-up signified by \*(f).

\* P < .01 \*\* p < .01 \*\*\* P < .001

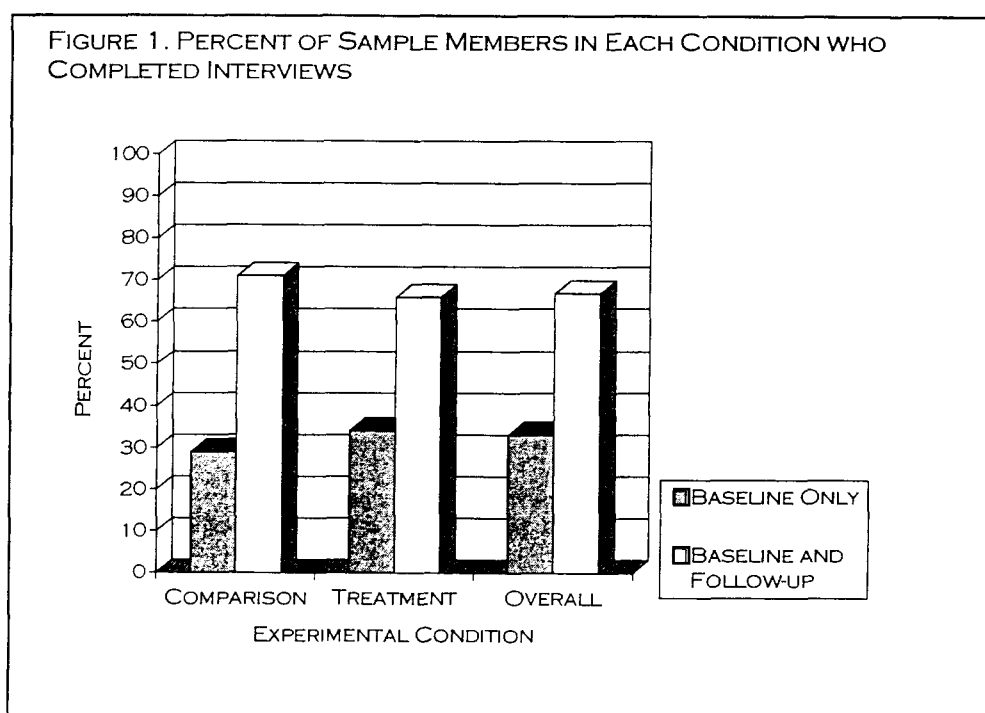
<sup>2</sup> Drugs tested for at BTC: barbiturates, benzodiazepines, cannabinoid, cocaine, opiates, propoxyphene, phencyclidine, and amphetamines. ADAM screening tests included marijuana, cocaine, opiates, PCP, benzodiazepines, propoxyphene, methadone, mehaqualone, barbiturates, methamphetamines, ephedrine, phenylpropanolamine, phentermine, phenethylamine, and amphetamines.

<sup>x</sup> Target arrests in this table are considered preliminary, and may not be an accurate reflection of the target arrest charges for the entire sample.

## Internal Validity

The effects of sample attrition on internal validity can be detected in two ways: (1) testing whether the attrition rate differs between experimental conditions (2) examining whether the characteristics of those who remain in the study differ as a function of any of the experimental conditions. Both types of attrition analysis were conducted for the BTC group. The first is the more traditional method of testing for attrition bias, and it allows a determination of whether sample members in one condition with particular characteristics are more likely to drop out than sample members in the other condition. It does not, however, allow for significance tests of the covariance of attrition with treatment condition, which tests whether subjects who remain in the treatment condition are different from those who remain in the comparison condition. Even if subjects drop out of the two conditions at different rates, the samples could be comparable if subjects with similar characteristics remain in the study. By the same token, if subjects drop out of each condition at the same rates, but those who remain differ across measures of the dependent variable, then internal validity could be compromised.

Descriptions of the models of each dependent variable and discussions of the



significance of main effects and interactions follow. Findings are presented in Table 1.

- **Attrition.** Following Biglan, et.al. (1991), the first model tested for differential attrition rate by group and other sample descriptors. The impact analysis examines

criminal activity and substance use at follow-up as a function of baseline criminal activity and drug use, group assignment, and other control variables. Therefore, a logistic regression model was used to predict attrition (a dummy variable coded as 1 if a follow-up interview was conducted, and 0 if the follow-up interview was not conducted) as a function of age, gender, group, and measures of the outcome variables (ASI drug, alcohol, and legal composite scores) at baseline. ASI composite scores are continuous variables measured from 0 to 1, with higher values indicating increasing severity of associated problems. Model specifications were set to model the probability that the dependent variable was equal to 1 (i.e., interviewed at follow-up). Two stages of the model were tested. The first included no interaction terms, and the second included interactions between group assignment and each of the composite scores. The models took the general form:

- (1) attrition = group, age, gender, baseline drug composite score, baseline legal composite score, baseline alcohol composite score
- (2) attrition = group, age, gender, baseline drug composite score, baseline legal composite score, baseline alcohol composite score, interactions between composite scores and group

The model that used attrition as the dependent variable examined whether study dropouts varied by any of the independent variables, including group and baseline severity scores. Models 1 and 2 found no main effects and Model 2 found no significant interactions, showing no differential rates of attrition on the variables included in the models.

Following Biglan et al. (1991), multivariate regression models of ASI composite scores (continuous variable ranging from 0 to 1) were tested (1) as a function of age, gender, group, and attrition and (2) as a function of those independent variables, with the addition of interactions. These models were used to predict baseline levels of the outcome variables as a function of interactions between group assignment and demographic characteristics, controlling for main effects. Any significant interaction between group and attrition would indicate differential attrition by group on key dependent variables that would compromise the internal validity of the findings.

No significant interactions were found between group and attrition, few significant interactions were found in any of the models, and there appear to be few compromises to the internal validity of the study, based on the analyses conducted below. Separate models were constructed for each of the ASI composite scores. Models that used ASI composite scores as the dependent variable took the form below:

- (1) ASI composite score = group, age, gender, attrition
- (2) ASI composite score = group, age, gender, attrition, attrition \* group, attrition \* age, attrition \* gender



*Descriptions of each of the models and the findings follow:*

- **Legal Composite Score.** The model that used legal composite score at baseline examined whether there were different baseline rates of legal involvement/criminal history for those who dropped out and stayed in the study in each group. Models 1 and 2 found no significant main effects for any of the independent variables and Model 2 found no significant interactions between the independent variables. Therefore, there was no indication that dropouts from the treatment condition differed from dropouts from the comparison condition on baseline legal composite score.
- **Alcohol Composite Score.** The model that used alcohol composite score at baseline examined whether there were different baseline rates of alcohol use for those who dropped out and stayed in the study for each group. Models 1 and 2 found a significant main effect for age and Model 2 found a significant interactions between age and follow-up. The parameter estimate for age indicates that older respondents had higher baseline alcohol severity scores. The parameter estimate for the interaction of age and follow-up indicates that that older respondents who stayed in the study were likely to have lower baseline severity levels of alcohol use; older subjects who dropped out of the study were likely to have high baseline alcohol severity scores and younger subjects who dropped out were likely to have low baseline alcohol severity scores.
- **Drug Composite Score.** The model that used drug composite score at baseline examined whether there were different baseline rates of drug involvement for those who dropped out and stayed in the study for each group. Models 1 and 2 found a significant main effect for age, gender, and group and Model 2 found no significant interactions. The parameter estimates for age, gender, and group indicate that older respondents and men had higher baseline drug severity scores and treatment group members had higher baseline drug severity scores. There were no significant interactions, and thus, there was no indication that dropouts from the treatment condition differed from dropouts from the comparison condition on baseline drug composite score.
- **Target Charge.** An additional multivariate logistic regression model of target arrest charge (drug/non-drug) was tested (1) as a function of age, gender, group, and attrition ( whether a follow-up interview was conducted – yes/no) and (2) as a function of those independent variables, with the addition of interactions. The model specifications were set to model the probability that the dependent variable was equal to 1 (i.e., drug charge).

The model that used target arrest charge as the dependent variable examined whether study dropouts from each experimental condition varied by target arrest charge. Models 1 found a significant effect for age and group, and 2 found a significant main effect for group and Model 2 found a significant interaction between age and attrition. The parameter estimates for age and group indicate that older respondents and

treatment group members were more likely to have drug charges. The parameter estimate for the interaction between age and attrition indicates that older respondents who remained in the study were likely to have drug charges, and younger sample members who dropped out of the study and older sample members who dropped out of the study were more likely to have drug and non-drug charges, respectively. When the interaction was added to the model, the parameter for age became non-significant, indicating that the effect of age alone had less effect than the interaction of age and follow-up on the dependent variable.

Table 2

Predicting Attrition: Main Effects and Interactions Significantly Related to Selected Dependent Variables at Baseline

Independent Variables	Legal Composite Score		Alcohol Composite Score		Drug Composite Score		Target Arrest Charge		Attrition	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	Main Effects	Interactions	Main Effects	Main Effects	Main Effects	Interactions	Interactions	Interactions	Main Effects	Interactions
Intercept	.449***	.451***	.016	-.020	.042**	.030	-1.715	-1.281	.067	.179
Age	-.001	-.001	.003***	.004***	.001*	.001**	0.028**	.001	.010	.009
Gender	-.027	-.026	.015	.023	-.021*	-.025*	0.096	.551	.334	.342
Group	.001	-.001	.014	.006	.032***	.030***	1.708***	1.488***	-.228	-.390
Follow-up (yes/no)	-.008	-.013	-.020	.097	-.010	.027	-0.325	-1.138	--	--
Group * Follow-up	--	.007	--	.024	--	.003	--	0.371	--	--
Age * Follow-up	--	.000	--	-.003*	--	.008	--	.041*	--	--
Gender * Follow-up	--	-.004	--	-.034	--	-.001	--	-.585	--	--
Drug Composite Score at Baseline	--	--	--	--	--	--	--	--	1.003	.993
Legal Composite Score at Baseline	--	--	--	--	--	--	--	--	-.009	-.099
Alcohol Composite Score at Baseline	--	--	--	--	--	--	--	--	.592	.015
Group * Legal Composite Score at Baseline	--	--	--	--	--	--	--	--	--	.064
Group * Drug Composite Score at Baseline	--	--	--	--	--	--	--	--	--	.399
Group * Alcohol Composite Score at Baseline	--	--	--	--	--	--	--	--	--	1.064
R <sup>2</sup> (χ <sup>2</sup> for logistic regression models – target charge/attrition as dependent variables)	.004	.004	.037	.045	.058	0.066	85.725	89.979	8.490	9.508
df	565	565	565	565	565	565	4	7	6	9
Probability	.699	.945	.0003	.001	.0001	.0001	.0001	.0001	.2043	.3918

• p < .05 \*\* p < .01 \*\*\* p < .001

## *External Validity*

Sample attrition can also compromise the external validity, or generalizability, of a study. Attrition threatens the external validity of a study if subjects who drop out are systematically different from those who remain. For this analysis, subjects in both conditions were pooled. Logistic regression models predicted attrition as a function of demographics and baseline ASI composite scores. The model excludes group assignment. Table 2 shows the results of the analysis of the effects of attrition on external validity.

*Table 2*

Predicting Attrition: Main Effects and Interactions Significantly Related to Selected Dependent Variables at Baseline (excluding group)

Independent Variables	Attrition
	Main Effects
Intercept	-0.089
Age	0.011
Gender	0.310
Drug Composite Score at Baseline	1.263
Legal Composite Score at Baseline	-0.032
Alcohol Composite Score at Baseline	0.555
$\chi^2$	7.205
df	5
Probability	0.206

No significant main effects were found in Model 1 or Model 2 and Model 2 found no significant interactions. Therefore, the analysis found no threats from attrition to the external validity of the study from any of the demographic variables or the baseline measures of the outcome variables.

## *Summary*

There appear to be few threats to the internal or external validity of the Birmingham BTC study. No significant interactions were found in any of the models between treatment condition (group) and attrition (follow-up). Table 3 shows the only significant interactions with attrition. There was no differential attrition by group on any of the baseline measures of the dependent variables, indicating few threats to internal validity. No threats to external validity were found in the analysis.

*Table 3. Baseline Alcohol Use, Age, and Charge: Significant Interactions Related to Attrition.*

Comparison	Baseline and Follow-up (yes/no)
Treatment and Comparison Group	Older subjects who remained in the study were more likely to have low baseline alcohol severity scores.
	Younger subjects who remained in the study were more likely to have high baseline alcohol severity scores.
	Older subjects who remained in the study were more likely to have drug charges.
	Younger subjects who remained in the study were more likely to have non-drug charges.

***APPENDIX C:***

***ADDICTION SEVERITY INDEX***

**INSTRUCTIONS**

1. Leave No Blanks - Where appropriate code:  
X = question not answered  
N = questions not applicable  
Use only one character per item.
2. Item numbers circled are to be asked at follow-up. Items with an asterisk are cumulative and should be rephrased at follow-up (see Manual).
3. Space is provided after sections for additional comments.

**ADDICTION SEVERITY INDEX**

**SEVERITY RATINGS**

The severity ratings are interviewer estimates of the patient's need for additional treatment in each area. The scales range from 0 (no treatment necessary) to 9 (treatment needed to intervene in life-threatening situation). Each ratings is based upon the patient's history of problem symptoms, present condition and subjective assessment of his treatment needs in a given area. For a detailed description of severity ratings' derivation procedures and conventions, see manual. **Note:** These severity ratings are optional.

**Fifth Edition - Birmingham**

**SUMMARY OF PATIENTS**  
**RATING SCALE**

- 0 - Not at all
- 1 - Slightly
- 2 - Moderately
- 3 - Considerably
- 4 - Extremely

G1. I.D. NUMBER

G2. LAST 4 DIGITS OF SSN

G3. PROGRAM NUMBER

G4. DATE OF ADMISSION

G5. DATE OF INTERVIEW

G6. TIME BEGUN  :

G7. TIME ENDED  :

G8. CLASS:  
1 - Intake   
2 - Follow-up

G9. CONTACT CODE:  
1 - In Person   
2 - Phone

G10. GENDER:  
1 - Male   
2 - Female

G11. INTERVIEWER CODE NUMBER

G12. SPECIAL:  
1 - Patient terminated   
2 - Patient refused   
3 - Patient unable to respond

G29. PARTICIPANT LOCATION DURING INTERVIEW  
1 - Incarcerated (jail or prison)   
2 - Emancipated (released)

**GENERAL INFORMATION**

NAME \_\_\_\_\_

CURRENT ADDRESS \_\_\_\_\_  
\_\_\_\_\_

G13. GEOGRAPHIC CODE

G14. How long have you lived at this address?

G15. Is this residence owned by you or your family?

G16. DATE OF BIRTH

G17. RACE   
1 - White (Not of Hispanic Origin)  
2 - Black (Not of Hispanic Origin)  
3 - American Indian  
4 - Alaskan Native  
5 - Asian or Pacific Islander  
6 - Hispanic - Mexican  
7 - Hispanic - Puerto Rican  
8 - Hispanic - Cuban  
9 - Other Hispanic

G18. RELIGIOUS PREFERENCE   
1 - Protestant  
2 - Catholic  
3 - Jewish  
4 - Islamic  
5 - Other  
6 - None

G19. Have you been in a controlled environment in the past 30 days?   
1 - No  
2 - Jail  
3 - Alcohol or Drug Treatment  
4 - Medical Treatment  
5 - Psychiatric Treatment  
6 - Other

G20. How many days?

**ADDITIONAL TEST RESULTS**

G21. Shipley C.Q.

G22. Shipley I.Q.

G23. Beck Total Score

G24. SCL-90 Total

G25. MAST

G26.

G27.

G28.

**SEVERITY PROFILE**

9									
8									
7									
6									
5									
4									
3									
2									
1									
0									
PROBLEMS	MEDICAL	EMP/SUP	ALCOHOL	DRUG	LEGAL	FAM/SOC	PSYCH		















***APPENDIX D:***

***ADDICTION SEVERITY INDEX FOLLOW-UP INTERVIEW***

# ADDICTION SEVERITY INDEX - FOLLOW-UP INTERVIEW

## INSTRUCTIONS

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 N = questions not applicable  
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2. Item numbers circled are to be asked at follow-up. Items with an asterisk are cumulative and should be rephrased at follow-up (see Manual).
3. Space is provided after sections for additional comments.

## SEVERITY RATINGS

The severity ratings are interviewer estimates of the patient's need for additional treatment in each area. The scales range from 0 (no treatment necessary) to 9 (treatment needed to intervene in life-threatening situation). Each ratings is based upon the patient's history of problem symptoms, present condition and subjective assessment of his treatment needs in a given area. For a detailed description of severity ratings' derivation procedures and conventions, see manual. **Note:** These severity ratings are optional.

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## SUMMARY OF PATIENTS RATING SCALE

- 0 - Not at all
- 1 - Slightly
- 2 - Moderately
- 3 - Considerably
- 4 - Extremely

## GENERAL INFORMATION

G1. I.D. NUMBER

G2. LAST 4 DIGITS OF SSN

G3. PROGRAM NUMBER

G4. DATE OF ADMISSION

G5. DATE OF INTERVIEW

G6. TIME BEGUN  :

G7. TIME ENDED  :

G8. CLASS:   
 1 - Intake  
 2 - Follow-up

G9. CONTACT CODE:   
 1 - In Person  
 2 - Phone

G10. GENDER:   
 1 - Male  
 2 - Female

G11. INTERVIEWER CODE NUMBER

G12. SPECIAL:   
 1 - Patient terminated  
 2 - Patient refused  
 3 - Patient unable to respond

NAME \_\_\_\_\_

CURRENT ADDRESS \_\_\_\_\_

\_\_\_\_\_

G19. Have you been in a controlled environment in the past 30 days?   
 1 - No  
 2 - Jail  
 3 - Alcohol or Drug Treatment  
 4 - Medical Treatment  
 5 - Psychiatric Treatment  
 6 - Other

G20. How many days?

G29. PARTICIPANT LOCATION DURING INTERVIEW   
 1 - Incarcerated (jail or prison)  
 2 - Emancipated (released)

## ADDITIONAL TEST RESULTS

G21. Shipley C.Q.

G22. Shipley I.Q.

G23. Beck Total Score

G24. SCL-90 Total

G25. MAST

G26.

G27.

G28.

## SEVERITY PROFILE

9									
8									
7									
6									
5									
4									
3									
2									
1									
0									
PROBLEMS	MEDICAL	EMP/SUP	ALCOHOL	DRUG	LEGAL	FAM/SOC	PSYCH		

**MEDICAL STATUS**

M1. How many times *since we first spoke* (interviewers: use date of first interview) have you been hospitalized for medical problems? (Include o.d.'s, d.t.'s, exclude detox.)

M17. How many times *since we first spoke* (interviewers: use date of first interview) have you seen a physician or received any medical care? (exclude hospitalizations)

M18. How many times *since we first spoke* (interviewers: use date of first interview) have you received any treatment or counseling for your medical problems?

Now I want to ask you about the last six months:

M12. How many times have you been hospitalized for medical problems in the past 6 months?

# Days in hospital

M13. What for? \_\_\_\_\_     
 \_\_\_\_\_     
 \_\_\_\_\_

M14. How many times have you been to an emergency room for any problem (physical, psychiatric, drug/alcohol) during the last 6 months?

M15. How many times have you gone to a clinic or seen a physician for a medical problem during the last 6 months?

M4. Are you taking any prescribed medication on a regular basis for a physical problem? 0 - No 1 - Yes

M16. Do you currently have any form of public or private health coverage? 0 - No 1 - Yes

If **YES**, check all that apply:

- a. Medicaid (Medical Assistance, MA, MediCal)
- b. Medicare
- c. VA
- d. Private Insurance or BlueCross
- e. Other (e.g., Worker's Comp)

M5. Do you receive a pension for a physical disability? (Exclude psychiatric disability.) 0 - No 1 - Yes \_\_\_\_\_

Specify

M6. How many days have you experienced medical problems in the past 30 days?

***FOR QUESTIONS M7 & M8 PLEASE ASK PATIENT TO USE THE PATIENT'S RATING SCALE***

M7. How troubled or bothered have you been by these medical problems in the past 30 days?

M8. How important to you now is treatment for these medical problems?

**CONFIDENCE RATINGS**

Is the above information significantly distorted by:

M10. Patient's misrepresentation? 0 - No 1 - Yes

M11. Patient's inability to understand? 0 - No 1 - Yes

**COMMENTS**

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