

The Effect of Drug Court Programming on Recidivism: The Cincinnati Experience

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The impetus of the drug court movement can be traced to a number of factors, such as the social and organizational costs of imprisonment and the literature surrounding the effectiveness of community-based treatment. Regardless of its origins, however, drug courts have altered the way in which court systems process drug cases and respond to drug-dependent offenders. Evaluations of U.S. drug courts are beginning to emerge, and although the outcome results are encouraging, not all courts are showing a reduction in rearrest rates. Despite the rapid expansion of drug courts, their growing prevalence, and popularity, little is known about the drug court model's ability to achieve its objectives in a variety of circumstances. This research adds to the literature on drug courts by examining the effect of drug court programming on multiple indicators of recidivism. Results of the study are mixed; however, the drug court treatment group did perform better when examining arrest for a drug-related offense.

Keywords: *drug courts; treatment; recidivism*

Within less than a decade, virtually every state in the United States has implemented a drug court. As of June 2001, there were a total of 697 drug court programs in operation—serving an estimated 226,000 offenders—and another 427 programs were being planned (Office of Justice Programs, 2001). Furthermore, it is likely that drug courts will continue to spread under the urging and encouragement of the federal government. Congress has placed a high priority on drug courts: In fiscal year 1999, the Drug Courts Program Office of the U.S. Dept. Of Justice was awarded \$40 million in funding for drug court development and research (Belenko, 2001). Moreover, 30

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states have enacted legislation related to planning, operating, and funding of drug courts (Office of Justice Programs, 2001). It has become apparent that what started as an experiment in 1989 in the Dade County (FL) Circuit Court has grown into a national movement that has altered the way in which court systems process drug cases and respond to drug-dependent offenders.

The drug court movement has emerged in response to multiple social, organizational, and experiential demands. As such, drug courts utilize numerous strategies for processing, controlling, and treating drug use. Not surprisingly, drug court programs also encompass a wide range of objectives and take a number of forms. In an attempt to add to the limited drug court research, this study explores the effectiveness of one drug court located in Cincinnati, Ohio. The evaluation compares drug court participants to a comparable group of offenders on a number of factors. Moreover, a variety of recidivism measures are used to determine the effect of this particular drug court on behavior.

THE DRUG COURT MOVEMENT

The impetus of the drug court movement can be traced to a number of factors. First, the drug court can be seen as an outgrowth of the general political and social movement to crack down on drugs. The 1970s and 1980s witnessed tremendous growth in the use of illegal drugs among virtually all segments of the U.S. population. In addition to the increased prevalence of drug use during this time, the public began to express widespread alarm about drugs and drug-related crime. Within this context, the United States undertook a war on drugs. Today, the control of drug use remains at the forefront of the nation's criminal justice policy agenda (Walker, 1994), and the public continues to view drug use as one of the most important problems facing the United States (Maguire & Pastore, 1998). Thus, the drug court movement, in part, reflects the enduring priority that policy makers and the public place on controlling drug use and drug-related crime.

Second, the National Association of Drug Court Professionals have noted that the drug court may be seen as an outgrowth of the interest in developing community-based, team-oriented, criminal justice innovations that have the flexibility to mobilize community support and resources. More broadly, they suggest that the drug court is a type of community court that, along with community policing, community prosecution, and community corrections, is part of the community justice movement (Drug Court Programs Office, 1997).

Third, it may be argued that drug courts have also been precipitated by the organizational needs created by the war on drugs. By the end of the 1980s, the

war on drugs was beginning to severely tax the criminal justice system. Finn and Newlyn (1997) observed, for instance, that arrests for drug offenses increased by 56% between 1982 and 1991, with arrests for drug crimes totaling more than \$1 million by the early 1990s. Prosecutions for drug-related crimes also increased dramatically during this time period. For example, in Washington, D.C., prosecution for drug offenses rose by a dramatic 503% between 1983 and 1987 (Klienman & Smith, 1990). Finally, by 1991, one out of four inmates was either serving time or awaiting trial for a drug-related offense (DiMascio, 1997).

The growing number of drug-related cases especially affected urban courts. A 1989 study revealed, for instance, that between 1983 and 1987, drug-related cases increased by 56% across 17 court systems (Goerdts & Martin, 1989). In large urban courts, the increases were more dramatic: Boston experienced a 175% increase, Jersey City's drug-related caseload rose by 114%, the caseload in the Bronx grew by 109%, and Oakland's drug caseload increased by 95%. In addition, this research revealed that, overall, drug-related cases took slightly longer to process than other felonies (excluding murder, rape, and robbery cases). In response to the increased demand, court systems, during the early 1990s, began to search for innovative ways to expedite the processing of drug-related cases.

In addition to targeting drug cases for accelerated case processing, attention has also focused on trying to break the cycle of drug use and crime. The strong relationship between drug use and criminality, coupled with the chronic nature of addiction, suggests that drug users will continue to commit crime, clog the courts, and fill our jails and prisons if their addictions go unchecked. In light of this, the courts and criminal justice policy makers have recognized that improved case processing alone will not address the organizational strain created by drug offenders.

Fourth, even after a decade of get-tough policies—from aggressive policing measures to mandatory sentences directed at controlling the use and sale of drugs—drug use remains a persistent, if somewhat less widespread, problem. Indeed, the very individuals who have been most aggressively targeted by the war on drugs—criminal offenders—continue to report high levels of drug use. For example, findings from the Arrestee Drug Abuse Monitoring (ADAM) Program reveal that approximately 65% of arrestees sampled in 1998 tested positive for drug use (Maguire & Pastore, 1999). Moreover, experience and research have begun to demonstrate that drug addiction is a chronic, relapsing condition that is not effectively addressed by sanctions, enhanced monitoring, or longer prison sentences (see, e.g., Belenko, Maradrita, & McElroy, 1992; Fagan, 1994; see also Andrews & Bonta, 1998).

In contrast, research has also revealed that drug addiction is responsive to treatment. There is a growing body of evidence that indicates that drug treatment—especially intensive, long-term treatment—can successfully reduce drug use and criminality (Anglin & Hser, 1990; French, Zarkin, Hubbard, & Valley, 1993; Prendergast, Anglin, & Wellisch, 1995; Van Stelle, Mauser, & Moberg, 1994), even when treatment is involuntary (Anglin, Brecht, & Maddahian, 1989; Hubbard et al., 1989). In short, the failure of past efforts to meaningfully address drug use, together with improved knowledge about the nature of drug addiction and its treatment, has also been instrumental in shaping the drug court movement.

THE DRUG COURT MODEL

As might be summarized from the previous discussion, drug courts enjoy enthusiastic support from a variety of criminal justice stakeholders (see, e.g., Drug Court Programs Office, 1998b). Indeed, the drug court model seems capable of offering something for everyone. Although drug courts differ substantially between jurisdictions and the model continues to evolve, the key components of the drug court program are outlined by the U. S. Department of Justice's Drug Court Programs Office (1997):

- the integration of alcohol and drug treatment services with justice system case processing;
- a nonadversarial approach that emphasizes teamwork;
- eligible participants are defined early and promptly placed in the drug court program;
- participants are provided with access to a continuum of alcohol, drug, and other related treatment and rehabilitation services;
- abstinence is monitored by frequent alcohol and drug testing;
- a coordinated strategy governs drug court responses to participants' compliance and noncompliance; and
- ongoing judicial interaction with each drug court participant is crucial.

Other features central to the drug court model include ongoing evaluation and monitoring to gauge effectiveness; continued interdisciplinary education to promote planning, implementation and operations; and forging partnerships between drug courts, public agencies, and community-based organizations to generate local support and enhance drug court effectiveness.

Like boot camps, intensive supervision probation—and other contemporary criminal justice interventions—the drug court model purports to achieve multiple goals (see e.g., Petersilia, Lurigio, & Byrne, 1992). The primary mission of the drug court is to stop or reduce drug and alcohol use and related

criminal activity. In addition, the drug court model is designed to decrease case-processing time, alleviate the demand of drug-related cases on the court system, reduce jail and prison commitments, increase offender accountability, and provide a more cost-effective means of controlling drug offenders compared to incarceration (Drug Court Programs Office, 1997; Goldkamp, 1994).

Despite the rapid expansion of drug courts, we have seen only recently an increase in the research exploring their effectiveness. The 1997 Government Accounting Office (GAO) report and the various updated reviews of the research by Belenko (1998, 1999) have concluded that drug courts are successful in reducing recidivism and substance abuse and that graduates of these programs fare significantly better than nongraduates. In fact, Goldkamp and Weiland (1993) found lower recidivism rates among drug court participants in comparison to nonparticipants. Similar findings emerged out of the research by Peters, Haas, and Murrin (1999) on two drug courts in Florida. Moreover, research by Spohn, Piper, Martin, and Frenzel (2001) found that drug court participants had significantly lower recidivism rates when compared to traditionally adjudicated offenders. Another evaluation of a drug court in Pennsylvania revealed that drug court participants had lower rearrest rates, although they were significantly more likely to be revoked in comparison to those on regular probation supervision (Brewster, 2001). Although an increase in revocation and technical violations may seem to provide negative evidence regarding their effectiveness, it is commonly thought that these rates can be attributed to the frequency of appearances required by the court (Goldkamp, 1994).

Research indicates that graduates from U.S. drug court programs are a very successful group. Data from the drug court, located in Escambia County, Florida, indicate that graduates are significantly less likely to be rearrested in comparison to nongraduates of the program (Peters et al., 1999). Vito and Tewksbury (1998) reported that graduates outperformed their counterparts and had the lowest rate of convictions for a drug or alcohol offense. A study by Dynia and Sung (2000) found that those who completed a drug court treatment program had the lowest rearrest rate among the comparison groups examined in the 3-year follow-up period. Moreover, Sechrest and Shicor (2001) reported that graduates of a drug court in California are more likely to be self-supporting. Finally, an observational study by Wolf and Colyer (2001) revealed that those who successfully completed the program were less likely to present problems at treatment review hearings with the judge.

Despite this promising research, however, other studies are providing reason for pause. Several U.S. courts have failed to show evidence of a reduction in criminal behavior as measured by arrest. Specifically, Belenko, Fagan, and

Dumanovsky (1994) found no difference in arrest rates between drug court and comparison group members in New York City. Deschenes and Greenwood (1994) similarly reported no difference in arrest rates among drug court participants and controls in Maricopa County, California, although they did find that drug court participants had fewer technical violations. Findings from a study of a Denver, Colorado, drug court failed to find significant differences in arrests among similar offenders processed in previous courts (Granfield, Eby, & Brewster, 1998). Finally, Meithe, Hong, and Reese (2000) found that drug court participants in Las Vegas, Nevada, had higher recidivism rates (drug and nondrug offenses) than did comparison group participants.

Part of the difficulty in determining whether drug courts work is that they differ substantially from one jurisdiction to the next. Similarly, it is difficult to determine which components or combination of features of the drug court model are most important for determining success. Still, there is some evidence to suggest that drug courts have been successful at reducing drug use and recidivism among program participants. Although the number of evaluation studies is increasing, the evidence summarized earlier illustrates the continued need for further research on drug courts. In an effort to contribute to this emerging literature base, this study provides data from an outcome evaluation of an urban drug court in Cincinnati, Ohio.

THE CINCINNATI DRUG COURT

The Hamilton County Drug Court program combines accelerated case management, ongoing court involvement, and community-based drug treatment. Following arrest and before arraignment, offenders are screened by pretrial services to determine if they are eligible for the drug court program. The Hamilton County Drug Court began in March 1995 and targets arrestees who are drug dependent or in danger of becoming drug dependent. To qualify for the drug court, the following criteria must be met:

1. The defendant must be charged with a fourth or fifth degree felony.
2. There must be no history of violent behavior.
3. The current and/or past criminal behavior is drug driven.
4. The Hamilton County Prosecutor must approve of all incarcerated offenders' applications.
5. The defendant must have no active mental illness.
6. The offender must demonstrate a sincere willingness to participate in a 15-month treatment process and have no acute health conditions.

Eligible defendants who agree to enter treatment are assessed using a standardized drug assessment, released on a recognizance bond, and transported to the drug court treatment provider for an assessment. After the assessment period, defendants are returned to the drug court with a detailed treatment plan for arraignment and sentencing. Defendants may enter a plea of guilty and be placed on probation with the condition that they complete the drug court treatment program, enter a plea of guilty but refuse treatment, request treatment in lieu of conviction, or enter a plea of not guilty. Those who enter a plea of not guilty and those who refuse treatment or are rejected from the drug court program have their cases disposed under the traditional process.

Once admitted to the drug court program, participants receive a combination of services and interventions designed to increase offender accountability, decrease the likelihood of recidivism, and reduce drug dependence. These services and interventions include regular drug testing, periodic one-on-one contact with the drug court judge in the form of status review hearings, and placement in community-based drug treatment.¹ In addition, offenders placed in the drug court program are sentenced to serve time on probation or intensive supervision probation.

The drug treatment program is designed to provide community-based substance abuse treatment coupled with close supervision and frequent urinalyses. The treatment program has three phases: inpatient, outpatient, and aftercare. Placement in each level of treatment is determined by level of substance addiction. Offenders placed in residential treatment are required to stay a minimum of 2 weeks and may remain in residential treatment for up to a maximum of 90 days. The intensive outpatient phase lasts approximately 4 weeks, and groups meet 3 hours a day, four times a week. The continuing care, or aftercare phase, initially offers services twice a week for 1 hour but is eventually scaled down to one meeting every 2 weeks. Services offered during all three phases include group and individual counseling, sobriety meetings, educational services, and family involvement. The total amount of time in treatment spans an average of 15 months.

This outcome study is designed to examine the relative and combined effects of frequent court contacts and community-based drug treatment on recidivism rates. In particular, we examine the following research questions:

1. Do drug court participants differ from comparison group members with regard to arrest or incarceration rates for drug-related offenses?
2. Do drug court participants differ from comparison group members on arrest for any offense?
3. Does participation in the drug court affect the likelihood that an individual will recidivate?

4. Does participation in status review hearings influence the likelihood that an individual will recidivate?

METHOD

Research Design and Participants

To assess the effect of participation in the Hamilton County Drug Court program, this evaluation utilizes a nonequivalent control group design (Campbell & Stanley, 1963). The criteria for inclusion in the evaluation were that each participant must have (a) a reported substance abuse problem and (b) must be eligible for the drug court program. Due to the limits of the research design, these guidelines were adopted to minimize potentially relevant differences between the drug court treatment group and the comparison group. In addition, all individuals initially identified as members of the treatment and comparison groups—including those participants who did not complete the drug court program—were included in the evaluation to minimize bias associated with attrition.

Included in the evaluation are all individuals arrested and processed by pretrial services between March 1995 and October 1996 who qualified for participation in the drug court and were identified as having a drug-use problem.² Using these criteria, two groups were identified: the drug court treatment group and a comparable group of drug-involved offenders. The drug court treatment group consists of individuals who were admitted to the program and received drug court services including, but not limited to, drug treatment and court supervision ($n = 301$). The comparison group includes those individuals who were eligible for the drug court program but did not receive the drug-court-sponsored treatment services or court supervision ($n = 224$). Members of this group were eligible for the program yet either refused drug treatment or were refused by the drug court team.

Although random assignment to the drug court treatment and comparison groups was not possible, it should be noted that the members of the two groups are similar on many factors associated with relapse and criminality. Specifically, while the drug court treatment group has a higher percentage of women and people with a prior record, the group does not differ significantly from the comparison group with regard to age, race, education, or prior record for a drug-related offense (see Table 1). Notably, the groups also scored similarly on the Offender Profile Index (OPI), which is a substance-abuse-severity screening tool developed to determine the most appropriate course of intervention (Inciardi, McBride, & Weinman, 1993). The OPI mea-

TABLE 1: Descriptive Characteristics (percentages reported)

Variable	Group		Total (N = 525)
	Treatment (n = 301)	Comparison (n = 224)	
Gender			
Men	87.7*	78.1*	83.6*
Women	12.3*	21.9*	16.4*
Race			
White	35.0	33.5	34.4
Non-White	65.0	66.5	65.6
Education			
Less than high school	37.5	39.7	38.3
High school graduate	40.4	40.8	40.5
More than high school	22.1	19.6	21.1
Prior record			
Yes	97.7*	93.8*	96.0*
No	2.3*	6.3*	4.0*
Prior record for drug-related offense			
Yes	66.9	60.9	63.3
No	33.1	39.1	36.7
Offender Profile Index recommendation			
Urine testing only	6.1	6.7	6.3
Outpatient	6.8	9.0	7.7
Intensive outpatient	16.5	23.6	19.3
Short-term residential	63.4	57.9	61.3
Long-term residential	7.2	2.8	5.5
Mean age	33.4	32.5	33.0

*Statistically significant differences between groups at $p < .05$.

sures drug-use severity; criminal history; psychological functioning; and stakes in conformity, including family support, education, employment, and residential stability. The scores for each domain are summed to yield a treatment recommendation based on an individual's risk and treatment need. The treatment recommendations include long-term residential, short-term residential, intensive outpatient, outpatient, or urine testing only.³ Thus, the comparability of the treatment and control groups on this measure provides a strong indication that the groups have similar levels of need.

Sources of Data

The data for this study were obtained from four sources. First, demographic information and OPI data were collected from pretrial services. Second, information pertaining to sentences, number of status review hearings,

and prior record were gathered from the drug court docket. Examination of the court docket also allowed us to identify the members of the treatment and control groups. Third, recidivism data were obtained from the Regional Crime Information Center (RCIC). Fourth, information pertaining to incarceration was provided by the Ohio Department of Rehabilitation and Correction.

Measures

Independent variables. To explore the determinates of recidivism, we examined the effects of a number of independent variables. Of primary interest is whether participation in the drug court influences the probability that an individual will recidivate. To assess this issue, we explored whether being a member of the treatment group versus the comparison group affects various outcomes (1 = drug court, 0 = comparison group). Also of interest is whether being called before the court for status review hearings influences the probability of future offending. Aside from drug court involvement, we also assessed whether the imposition of the following sanctions typically used by drug court affected outcomes: fines, drivers' license suspension, and a sentence to probation supervision (all coded: 1 = yes, 0 = no). Finally, gender (1 = women, 0 = men), race (1 = non-White, 0 = White), age, education (1 = high school education or post-high school education, 0 = less than a high school education), OPI score (0 = outpatient, 1 = inpatient), prior record (1 = yes, 0 = no), time at risk #1 for arrests (1 = mean or above, 0 = below the mean), and time at risk #2 for incarceration (1 = mean or above, 0 = below the mean) are included in the analysis as control variables.

Dependent variables. The effect of the drug court was assessed by examining two measures of criminal behavior: (a) arrest for any charge, and (b) subsequent incarceration. We also explored whether the arrest or incarceration was drug related.⁴ Outcome data were collected in two waves. First, information regarding arrest was collected in January 1997. The sample included individuals entering the drug court between March 1995 and October 1996, allowing for an average follow-up time of 419 days. Arrest for any charge and arrest for a drug-related offense were measured as dichotomous variables (1 = arrest, 0 = no arrest; 1 = drug-related arrest, 0 = no drug-related arrests). Second, in January 1999, data were collected from the Ohio Department of Corrections to determine whether any of the individuals under study were incarcerated statewide. Data were collected in 1999 to allow for the time lag it typically takes from arrest to incarceration. Collecting incarceration data in 1999 also allowed a longer follow-up period (average follow-up time

TABLE 2: Court-Imposed Sanctions and Hearings

Variable	Group		Total (N = 525)
	Treatment (n = 301)	Comparison (n = 224)	
Primary charge			
Drug abuse	79.2	82.6	80.7
Drug trafficking	1.0	2.2	1.5
Property/theft	18.5	11.6	15.5
Other	1.3	3.6	2.3
Fines			
Yes	68.2*	72.2*	69.8*
No	31.8*	27.8*	30.2*
Suspended drivers' license			
Yes	52.6	56.8	54.2
No	47.4	43.2	45.8
Probation			
Yes	93.1*	78.7*	87.6*
No	6.9*	21.3*	12.4*
Community service			
Yes	1.9	3.1	2.4
No	98.1	96.9	97.6
Intensive supervision probation			
Yes	6.0*	14.7*	9.7*
No	94.0*	85.3*	90.3*
Mean number of status hearings	4.73	—	4.73

*Statistically significant differences between groups at $p < .05$.

of 1,243 days). Incarceration and incarceration for a drug-related offense were also measured as dichotomous variables (1 = incarceration, 0 = no incarceration; 1 = incarceration drug-related, 0 = no drug-related incarcerations).

RESULTS

Court-Imposed Sanctions and Hearings

Table 2 reports information regarding court-imposed sanctions and hearings. The majority of both groups were arrested on a drug-related charge. When exploring court-imposed sanctions, some statistically significant differences were observed between the two groups. For instance, members of the comparison group were significantly more likely to receive fines and intensive supervision probation. In contrast, the drug court members (93%) were significantly more likely to be placed on probation, although the major-

TABLE 3: Outcome Information

<i>Variable</i>	<i>Group</i>		<i>Total</i> (N = 525)
	<i>Treatment</i> (n = 301)	<i>Comparison</i> (n = 224)	
Arrest			
Yes	30.8	37.4	33.6
No	69.2	62.6	66.4
Type of charge for 1st arrest			
Drug	31.0	35.4	33.1
Theft/property	18.4*	31.7*	24.9*
Probation violation	20.7	14.6	17.8
Conduct/disorder	20.7*	6.1*	13.6*
Other	9.2	12.2	10.7
Level of arrest			
Felony	57.0	55.0	56.0
Misdemeanor	43.0	45.0	44.0
Incarcerated			
Yes	33.0	40.6	36.3
No	67.0	59.4	63.7
Incarcerated for a drug charge (of those incarcerated)			
Yes	72.7	76.9	74.7
No	27.3	23.1	25.3
Mean number of arrests	0.47	0.56	0.51

*Statistically significant differences between groups at $p < .05$.

ity of the participants in both groups received this sanction. Approximately one half the individuals in both groups had their drivers' license suspended. As typical in a drug court model, the drug court participants were required to attend status review hearings with the judge and typically appeared on five occasions.

Outcome Information

Of primary interest is whether drug court participants differed significantly from the participants in the comparison group on various indicators of criminality. The results of these analyses are summarized in Table 3. The two groups are similar when arrests for any new offense is examined. These data reveal that 32% of the participants in the treatment group and 37% of the comparison group were rearrested.

Although immediate measures of drug use were not available, we also examined whether the treatment group experienced fewer arrests for drug-related offenses to assess possible differences in drug-using behavior

between the groups. The analysis revealed a statistically significant difference in charge type indicating that the comparison group members are more likely to be arrested for a property offense in contrast to drug court members who are more likely to incur a conduct/disorder charge.⁵

In addition to examining whether drug court participants were more or less likely to be arrested than members of the comparison group, we also explored whether the mean number of arrests differed between the two groups. This analysis allowed us to determine whether drug court participants committed fewer crimes than members of the comparison group during the follow-up period. The results were not statistically significant as drug court participants experienced an average of 0.47 arrests, and members of the comparison group were arrested an average of 0.56 times.

As two final measures of recidivism, we also examined whether the treatment group differed from the comparison group with regard to subsequent incarceration and incarceration for a drug offense. These analyses provide additional indications of criminality and also give an approximate indication of whether drug court participation results in fewer prison commitments. As reported in Table 3, the two groups did not differ significantly with regard to incarceration: 33% of the drug court participants and 41% of the comparison group were incarcerated during the follow-up period. When incarceration for a drug offense was assessed, similar results were found. Specifically, of those incarcerated, 73% of the drug court participants and 77% of the comparison group members were incarcerated on a drug-related charge.

Multivariate Analyses

Several multivariate models were calculated to determine the significant predictors of recidivism and the odds of failure for both groups under consideration. Table 4 reports the results of four logistic regression models: predicting arrest, arrest for a drug-related offense, incarceration, and incarceration for a drug-related offense.

Arrest. For the model predicting arrest, the value of the model chi-square is 35.81, which is statistically significant, and the model yielded a pseudo R^2 of .118. Furthermore, our analysis revealed that gender, race, age, and education were significantly related to arrest. In particular, women, minorities, younger participants, and people with less than a high school education were more likely to be arrested. Also noteworthy is the finding that group membership was not significantly related to arrest. This model suggests that participation in the drug court does not substantially influence the odds of being arrested.

TABLE 4: Regression Models Predicting Measures of Recidivism

<i>Variable</i>	<i>Arrest</i>		<i>Drug Arrest</i>		<i>Incarceration</i>		<i>Drug Incarceration</i>	
	β	(SE)	β	(SE)	β	(SE)	β	(SE)
Group	-0.379	(0.237)	-0.758*	(0.344)	-0.237	(0.243)	-0.251	(0.258)
Gender	0.581*	(0.301)	0.923*	(0.409)	-0.690*	(0.327)	-0.289	(0.351)
Race	0.586*	(0.247)	0.688	(0.406)	0.745*	(0.252)	0.577*	(0.276)
Age	-0.443*	(0.225)	-0.680*	(0.339)	-0.496*	(0.229)	-0.381	(0.246)
Education	0.620*	(0.233)	0.188	(0.347)	0.243	(0.236)	0.185	(0.249)
Prior record	0.190	(0.880)	-0.372	(1.187)	1.045	(1.117)	5.855	(13.382)
Disposition: fine	0.285	(0.335)	0.126	(0.571)	0.633	(0.348)	0.728	(0.413)
Disposition: probation	-0.006	(0.345)	1.076	(0.596)	-0.376	(0.348)	-0.366	(0.379)
Disposition: license suspension	-0.023	(0.296)	0.582	(0.475)	0.137	(0.300)	0.735*	(0.330)
Offender profile index score	0.280	(0.249)	0.626	(0.392)	0.681*	(0.258)	0.398	(0.276)
Time at risk #1	-0.028	(0.237)	0.357	(0.365)				
Time at risk #2					-0.768*	(0.234)	-0.240	(0.251)
Model descriptives								
-2 log-likelihood	482.147		258.254		472.236		420.938	
Model chi-square	35.810*		31.527*		53.664*		48.281*	
Pseudo R^2	.118		.147		.171		.164	

*Statistically significant differences between groups at $p < .05$.

The results of the model predicting an arrest for a drug-related offense revealed different findings. The model chi-square of 31.53 is statistically significant at less than the .05 level and the pseudo R^2 for the model is .147. In this analysis, group, gender, and age were significantly related to the dependent variable of an arrest for a drug-related charge. Specifically, comparison group members, women, and younger participants were more likely to be arrested for a drug-related charge. Most noteworthy is the finding that although arrests for any new charge did not differ significantly between the two groups, we can conclude that drug court involvement did reduce the likelihood of an arrest for a drug-related charge in the multivariate models.

Incarceration. Two models predicting incarceration and incarceration for a drug-related offense were also examined. The models predicting incarceration and incarceration for a drug offense were statistically significant, with model chi-squares of 53.66 and 48.21 and with a pseudo R^2 of .171 and .164 respectively. Among the independent variables that were examined in the first model predicting incarceration, gender, race, age, OPI score, and time at risk were significant. Specifically, men, minorities, younger participants, and those individuals with more severe substance abuse severity scores had higher odds of incarceration. Interestingly, an inverse relationship between time at risk and incarceration emerged, suggesting that those who were incarcerated were also likely to fail quickly. Somewhat different results were found in the model predicting incarceration for a drug-related offense. The model suggests that minorities and those who received a drivers' license suspension were more likely to be incarcerated for a drug-related offense.

Probabilities

To provide a clearer picture of how the two groups performed based on the multivariate models, the predicted probability of recidivism was calculated for each group. This analysis involved transforming the log-odds ratios for the models into simple odds.⁶ Failure rates for each of the groups and outcome measures were then calculated. For a multivariate model, the results reveal the individual effect of group membership although statistically controlling for the other variables in the model.

The probabilities of arrest and incarceration are shown in Table 5 and illustrate more clearly the differences between the two groups. Consistent with the findings from the multivariate models, the results indicate that the drug court group had a 27% chance of being arrested compared to a 35% chance for the comparison group. Most noteworthy is the finding that the

TABLE 5: Predicted Probability of Recidivism (in percentages)

<i>Outcome</i>	<i>Group</i>	
	<i>Treatment</i>	<i>Comparison</i>
New arrest	27	35
New arrest for drug offense	10	20
New incarceration	37	42
New incarceration for drug offense	34	40

treatment group had a significantly lower probability of being arrested on a drug-related crime (10%) in contrast to the comparison group (20%).

The models predicting incarceration are more similar to those predicting arrest for any charge. Specifically, when the predicted probability of incarceration is examined, the drug court group had a 37% chance of being incarcerated compared to a 42% chance for the comparison group. Finally, the treatment group had a 34% probability of being incarcerated for a drug offense as compared to 40% among the comparison group.

Court Involvement

Table 6 reports the results of four logistic regression models predicting the same outcomes (e.g., arrest, arrest for a drug-related charge, etc.), yet limited to only the drug court participants to determine the influence of the court involvement as measured by status review hearings.

Arrest. In the model predicting arrest among drug court participants only, the model chi-square is 11.45, which is not significant. Similarly, none of the variables included in the model were significantly related to arrest. In the second model predicting an arrest for a drug-related offense, the model was significant (chi-square is 20.43). The analysis revealed that time at risk and the number of status review hearings was significant. In fact, those who participated in fewer status review hearings and were at risk longer were more likely to be arrested on a drug-related charge. This model suggests that the drug court services as measured by status review hearings is related to the likelihood of arrest for a drug-related offense.

Incarceration. Two models predicting incarceration and incarceration for a drug-related offense were also examined within this group. The models were statistically significant with pseudo R^2 of .155 and .158, respectively. In the first model, only race and age were significant. Specifically, minorities and younger drug court participants were more likely to be incarcerated.

TABLE 6: Regression Models Predicting Measures of Recidivism Among Drug Court Participants

<i>Variable</i>	<i>Arrest</i>		<i>Drug Arrest</i>		<i>Incarceration</i>		<i>Drug Incarceration</i>	
	β	(SE)	β	(SE)	β	(SE)	β	(SE)
Gender	0.167	(0.449)	1.198	(0.710)	-0.917	(0.522)	-0.647	(0.611)
Race	0.171	(0.304)	-0.248	(0.501)	0.730*	(0.321)	0.387	(0.346)
Age	-0.317	(0.286)	-0.501	(0.495)	-0.657*	(0.294)	-0.397	(0.321)
Education	0.558	(0.297)	-0.401	(0.532)	0.235	(0.304)	0.263	(0.325)
Prior record	0.595	(1.168)	6.899	(38.625)	0.654	(1.190)	5.957	(15.66)
Disposition: fine	0.339	(0.424)	-0.150	(0.889)	0.687	(0.445)	0.833	(0.539)
Disposition: probation	-0.449	(0.539)	7.324	(22.68)	-0.174	(0.566)	-0.062	(0.662)
Disposition: license suspension	-0.112	(0.380)	0.939	(0.820)	0.157	(0.383)	0.673	(0.430)
Offender profile index score	0.029	(0.313)	0.981	(0.605)	0.627	(0.328)	0.493	(0.630)
Time at risk #1	0.025	(0.025)	1.229*	(0.631)				
Time at risk #2					-0.500	(0.329)	0.001	(0.366)
Number of status hearings	-0.402	(0.380)	-1.429*	(0.572)	-0.083	(0.391)	0.109	(0.429)
Model descriptives								
-2 log-likelihood		304.207		129.602		296.438		257.024
Model chi-square		11.455		20.433*		30.374*		28.673*
Pseudo R ²		.062		.173		.155		.158

*Statistically significant differences between groups at the $p < .05$ level.

None of the variables in the second model predicting incarceration for a drug-related offense were significant.

SUMMARY AND DISCUSSION

The drug court model is based on the premise that a more flexible approach to treating drug-addicted offenders, in combination with increased court involvement and oversight of offender's treatment progress, will result in less drug dependency and lower rates of recidivism. To assess these claims we posed a number of research questions and examined them in light of the preliminary experiences of the Hamilton County Drug Court. Overall, this research provides mixed evidence that the drug court program was effective at reducing drug-related arrests and general criminality during the 1st year of operation.

Two indicators of drug-related behavior were assessed in this study: arrest on a drug charge and incarceration for a drug-related offense. Our initial comparison of recidivism rates in the bivariate analyses revealed no significant differences between the drug court treatment and comparison groups under study. However, the multivariate model predicting arrest for a drug-related offense indicates that engaging in drug court services did affect the likelihood of arrest for a drug-related offense, with probabilities of arrest at 10% and 20%, respectively. When the second indicator (e.g., incarceration for a drug-related offense) was examined, however, the group variable was not significant, suggesting that although certain demographic variables were related to the dependent variables, participation in the drug court did not significantly affect the likelihood of incarceration for a drug offense. Together these results suggest that participation in the drug court program had moderate effect on our drug-related outcomes. Thus, in response to our first research question, it appears that participation in drug court has an effect on drug-related arrests but not incarceration. The failure to uncover a relationship between participation in the drug court program and incarceration for drug-related charges might be influenced by the measure. By relying on data on incarceration, we were unable to control for court influences that may have affected the results. It could be argued that arrest is a more accurate measure because it is closer temporally to the crime and is less subject to court processing.

Also of interest is the extent to which participation in the drug court affects general criminal behavior, and in this regard, our results are fairly straightforward. When arrest was examined, we found that members of the drug court were not significantly less likely to be arrested and had a similar number of

arrests compared to the comparison group members. In addition, we found no significant difference between the two groups when incarceration for any offense was examined.

Finally, this study explored the effect of degree or intensity of drug court involvement on recidivism. Similar to the earlier findings, the result indicated that attending status review hearings was not related to our measures of arrest or incarceration for any offense but was related to arrest for a drug offense. Therefore, in response to our two final research questions, we concluded that the level of drug court involvement (i.e., participation in status review hearings before the drug court judge) exerted an effect on recidivism as measured by a drug-related arrest.

In addition to the finding that drug court involvement does have an effect on drug-related arrests, several other findings warrant discussion. First, gender was significant in three of the four models predicting outcome. Specifically, it was found that women were more likely to experience an arrest for any offense and an arrest for a drug-related offense. Men, however, were more likely to be incarcerated. Second, race was significant in three of the four models. Minorities were more likely to experience an arrest, incarceration, and incarceration for a drug offense. Finally, age was also significant in three of the four models. Specifically, younger individuals were more likely to experience an arrest, arrest for a drug-related offense, and incarceration.

The earlier-mentioned findings suggest that the drug court should pay close attention to the way in which individuals of different statuses and backgrounds respond to treatment. The implication here being that drug courts are not a one-size-fits-all solution to the drug problem. Drug courts need to recognize that drug offenders have varying levels of needs and difficulties, which must be managed to reduce their criminal behavior. On the surface, it appears as if these groups (e.g., women, minorities, younger participants) may not be receiving the appropriate services to fit their needs. Varying treatment services—not only for individual needs but also for learning styles, cultural considerations, and levels of support (e.g., existence of child care, etc.)—will inevitably increase the overall effectiveness of the court.

One caveat that requires attention is the degree to which the groups under study are comparable. There are inherent threats to internal validity that result from quasi-experimental designs. Unfortunately, as with most drug courts, the Hamilton County Drug Court was unwilling to randomly assign participants to the various groups. The multivariate analyses included a variety of variables that are related to outcome. However, the study did not control for the voluntary nature of the program. Although there are concerns for the effects of internal motivation or treatment readiness, one must also consider the literature on coerced treatment and substance abuse. Research con-

cludes that drug offenders who are coerced into treatment do not necessarily perform worse than those who chose to engage in those services (Knight, Hiller, Broome, & Simpson, 2000). In fact, some evidence suggests that coerced participants perform better than those who volunteer (Marlowe, Glass, and Merikle, 2001) and the greater the perceived threat, the greater the retention in the program (Maxwell, 2000). In effect, leading to the conclusion that simply volunteering for a program does not guarantee favorable outcomes. Given we are dealing with drug-addicted individuals, the extent of their addiction (as measured by the OPI) may well be a more important predictor of outcome. We do not wish to overstate this point and conclude that motivation has no effect on treatment: rather we argue that the voluntary nature of the program should not negate the merit of the current study findings.

POLICY IMPLICATIONS

The implementation of a drug court is often complex and difficult. It may well be that the success of the drug court model requires a lengthy implementation phase to determine the methods and procedures involved in treating these offenders differently, a consideration that was not afforded the court examined here. Our findings, although promising, are only partially supportive of the drug court's effectiveness. Even though some may argue that drug courts should be expected to only reduce substance abuse, drug courts admittedly encompass multiple goals, not the least of which is to reduce criminal behavior. Our findings suggest that although the drug court is successful in reducing future drug-related arrests, the program should improve its services and target program resources to the appropriate populations (see Johnson, Hubbard, & Latessa, 2000 for further discussion). As such, the drug court may benefit from adopting a classification system that would allow the court to maximize resources through matching appropriate services to the appropriate clients, while also recognizing and organizing resources to address the needs of clients who are likely to fail.

NOTES

1. *Status review hearing* is also seen in the literature as a *treatment hearing*. It signifies the periodic meeting with the judge to review progress in the services offered by the drug court.

2. This research was part of a larger study to evaluate the Hamilton County Drug Court program (see Johnson & Latessa 1998).

3. The OPI is used to determine initial treatment dosage (e.g., residential, outpatient, etc.). Hence, not all drug court participants receive residential treatment.

4. *Drug related* refers to any charge associated with drug use or possession. Charges included drug abuse, drug possession, drug trafficking, driving under the influence, and possession of drug paraphernalia.

5. A bivariate analysis of those who received a drug charge versus any other charge was completed to further determine whether differences existed. The analysis revealed no statistically significant differences between the two groups. The significant differences emerged when exploring those who were arrested for a property offense and conduct/disorder.

6. The estimates are the antilog of the constants. This has the effect of using parameter estimates that control for the differences to estimate the odds of failure. Using only the constant to derive the base failure expectancy has the effect of setting all the other values to 0. The estimate thus was derived from the following formula: $\log \text{odds of failure} = \text{constant} + b^{\text{race}}(0) + b^{\text{drug use severity}}(0) + b^{\text{age}}(0) + \dots + b^{\text{time at risk}}(0)$. The odds ratios were converted from the log odds by taking the antilog of the estimates described earlier. The estimated percentages presented were derived from the odds ratios. For a more detailed description of this procedure, see Langworthy and Latessa (1993).

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