

# Baltimore County Juvenile Drug Court Outcome and Cost Evaluation



*Submitted to:*

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# Baltimore County Juvenile Drug Court Outcome and Cost Evaluation

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## EXECUTIVE SUMMARY

### What Are Drug Courts?

Juvenile drug courts are intensive interventions that involve coordination of multiple agencies and professional practitioners applying a variety of areas of expertise, intensive case management and supervision, and frequent judicial reviews. The purpose of drug courts is to guide offenders, identified as abusing substances, into treatment that will reduce drug use and criminality, and consequently improving the quality of life for participants and their families. In the typical drug court program, participants are closely supervised by a judge who is supported by a team of agency representatives that operate outside of their traditional, sometimes adversarial roles. Benefits to society take the form of reductions in crime committed by drug court participants, resulting in reduced costs to taxpayers and increased public safety.

### How Was This Study Conducted?

NPC Research, under contract with the Administrative Office of the Courts of the State of Maryland, conducted an outcome and cost study of the Baltimore County Juvenile Drug Court (JDC) program.

### Baltimore County Juvenile Drug Court Program Description

Baltimore County Juvenile Drug Court (JDC) accepted its first participant in March 2003 and since that time has served 186 youth. It has four locations with a combined capacity of 80 youth per year. The long-term objective of BCJDC is to offer an alternative to traditional delinquency dispositions for eligible youth that will provide intensive support for juveniles with substance abuse problems who commit to an alcohol and drug free lifestyle.



The BCJDC program has four phases which can be completed by participants in a period as short as 12 months. The first two phases are highly structured, with frequent treatment sessions, supervision meetings, and drug testing. The last two phases are designed as aftercare phases, with decreasing supervision and treatment sessions, and a focus on relapse prevention and re-entry (transition of the youth receiving supports and structure from his/her family and other resources in her/his community). For the 156 drug court participants included in this study who had since exited the program, either successfully or unsuccessfully, the average number of days in the program was 407 (approximately 13 months). Graduates spent an average of 471 days in the program (almost 15 months), whereas non-graduates spent an average of 339 days in the program (approximately 11 months).

Throughout the program, participants attend drug court hearings evaluating their progress, supervision meetings with a case manager, and group and individual counseling sessions. Their family members are also included in the program and participate in family counseling. The program requires that the youth submit to drug testing, attend school or another educational or occupational activity, and complete community service. The JDC uses incentives and sanctions to encourage positive behaviors. Youth must have been abstinent for a minimum of 90 consecutive days and complete all program requirements to graduate; at which time the State's Attorney will drop the charge(s) that led to the youth's participation in the BCJDC.

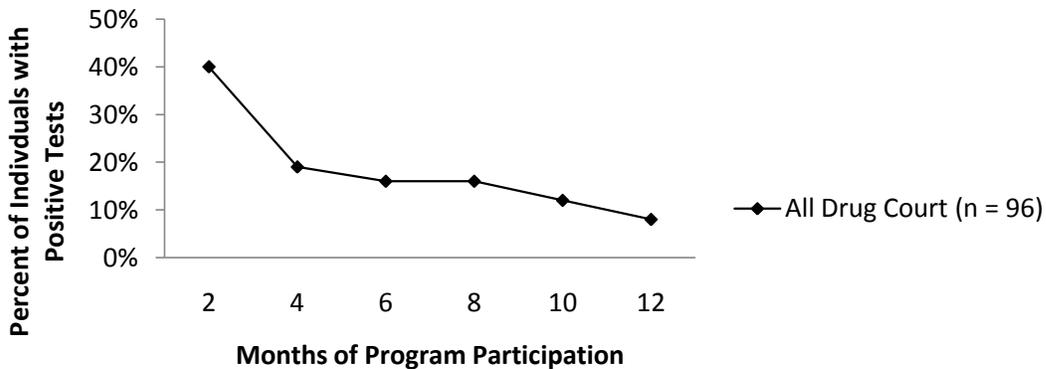
Three key policy questions of interest to program practitioners, researchers, and policymakers about drug courts were addressed in this study.

**1. Does the JDC reduce substance abuse among program participants?**

**YES: JDC participants showed reductions in drug use following entrance into the program.**

Figure A shows the percentage of program participants with a positive urine analysis (UA) test in each 2-month period for individuals receiving 12 months or more of program services, regardless of graduation status. The rate of substance use, as measured by positive drug tests among program participants, declined significantly over time, implying that involvement in the JDC reduces substance use.

**Figure A. Percent of JDC Participants with a Positive UA Test Over Time**



**2. Does the JDC program reduce recidivism in the juvenile justice system?**

**YES: JDC participants showed reductions in re-arrest rates following entrance into the program.**

There is a statistically significant re-arrest rate difference between pre-post JDC participation for JDC participants. The analysis shows the re-arrest rate decreased from 87% at pre-JDC to 56% post-JDC admission.

Further, although the arrest rates of JDC and comparison groups were statistically equivalent at pre-program, the JDC group had a significantly smaller proportion with re-arrests at post, compared to the comparison group.

Figure B. Juvenile Arrest Rates 2 Years Before and 2 Years After JDC Start Date

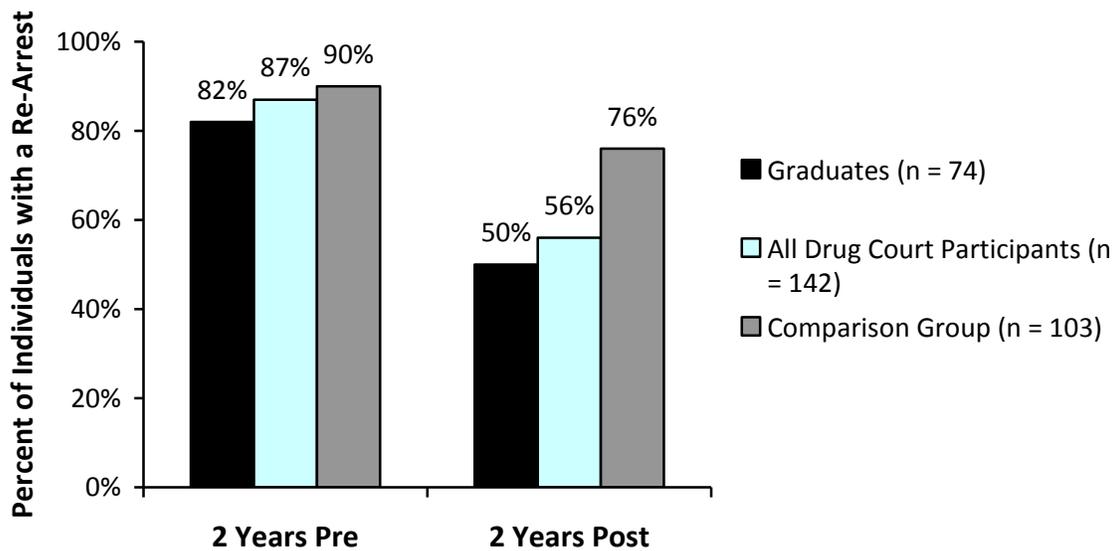
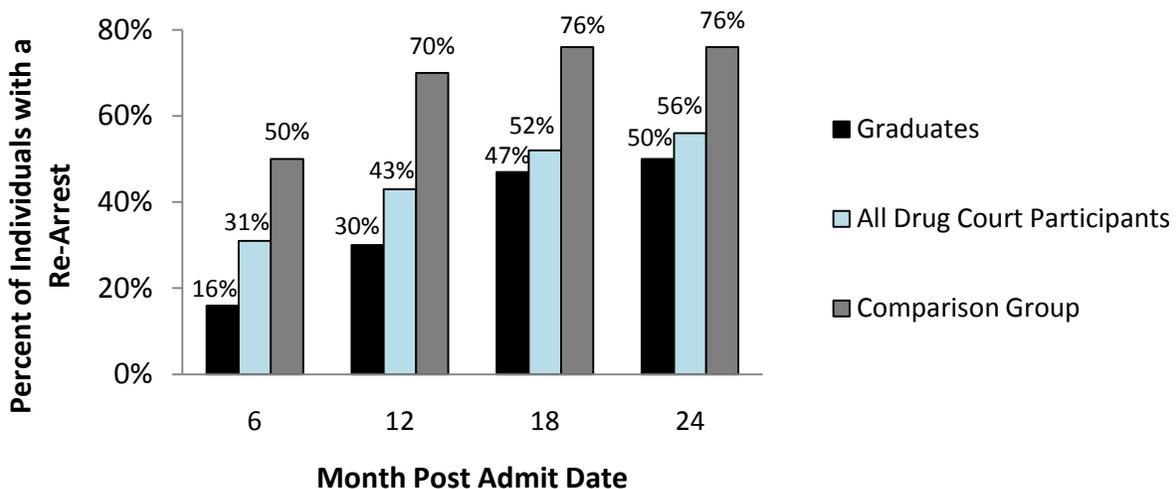


Figure C shows the percentage of youth re-arrested, grouped by their amount of available follow-up time, for the program graduates, all JDC participants and a matched comparison group of juvenile offenders who were eligible for the program but did not participate.

Baltimore County Juvenile Drug Court participants were significantly less likely to be re-arrested than the comparison group youth during each follow-up time period.

Figure C. Juvenile Re-Arrest Rate Over Time by Group<sup>1</sup>

In the 24 months following entry to the program, 50% of graduates and 56% of all JDC participants were re-arrested, while 76% of the comparison group was re-arrested.

<sup>1</sup> Sample sizes: Graduates at 6 months n = 80, 12 months n = 80, 18 months n = 77, and 24 months n = 74; All JDC participants at 6 months n = 186, 12 months n = 167, 18 months n = 152, and 24 months n = 142; Comparison group with 6 months n = 147, 12 months n = 136, 18 months n = 122, and 24 months n = 103.

### 3. Does the JDC result in savings of taxpayer dollars?

**YES: Outcome costs for JDC participants showed substantial savings, when factored against the comparison group.**

Overall, the JDC results in substantial cost savings and a return on taxpayer investment in the program. The program investment costs are \$56,631 per JDC participant. When DJS residential placements (e.g., detention) are excluded, the program investment cost is \$21,048 per participant. When program costs are divided by the average number of days in the program, the cost per day per participant for the JDC program is \$139.24 (\$51.75 when DJS placement costs are excluded), which is lower than the per day cost of every type of out-of-community DJS placement (detention, residential, and shelter care). If the program was able to use fewer detention or residential placements, and use that money for an additional caseworker or other less costly types of supervision, the program costs would be reduced and participant outcomes may be improved.<sup>2</sup>

The cost due to recidivism over 24 months from program entry was \$28,416 per JDC participant compared to \$37,178 per comparison individual, resulting in a savings of \$8,762 per participant (regardless of whether they graduate). The majority of the cost in outcomes for JDC participants over the 24 months from JDC entry was due to time in detention (\$12,680) and residential care (\$9,616), mostly for participants who were unsuccessful in completing the program.

In sum, the JDC program had a cost savings of \$8,762 per participant over 24 months, so there is a clear benefit to the taxpayer in terms of juvenile justice related costs in choosing the JDC process over traditional court processing.

#### Recommendations for Program Improvement

The Baltimore County Juvenile Drug Court program demonstrates positive outcomes for youth by reducing substance use and recidivism. These behavior changes translate into cost savings for the juvenile justice system compared to traditional court processing of youth with similar characteristics. The program may want to assess its use of detention, as it is a high-cost sanction and does not result in improved outcomes, and discuss whether there are alternative sanctions that could be utilized with higher effectiveness. The use of DJS placements are a significant expenditure that would fund important treatment alternatives, including more intensive community supervision, if the resources could be transferred. The program team may want to discuss options for using these resources for different intervention approaches. In addition, the program team may want to discuss ways to meet the unmet needs of—and challenges faced by—participating youth, particularly those who are not doing well and are headed toward termination, to maximize their opportunities for success. Offering additional incentives, particularly those individualized to the participant, can also be powerful motivators for positive behavior. Finally, it is important for drug court staff to be familiar with the physical signs of inhalant use and make sure all youth are educated about the dangers of these practices.

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<sup>2</sup> This program used to have alternatives to detention that are no longer available. The loss of these lesser restrictive facilities has negatively impacted the program. The full report has a more detailed discussion of this issue.

## INTRODUCTION-BACKGROUND

### The Drug Court Model

In the last 20 years, one of the most dramatic developments in the movement to reduce substance abuse among the criminal justice population in the United States has been the spread of drug courts across the country. The first drug court was implemented in Florida in 1989. As of May 2009, there were 2,037 adult and juvenile drug courts active in all 50 states, the District of Columbia, Northern Mariana Islands, Puerto Rico, and Guam with another 214 being planned (American University, 2009).

Drug courts are designed to guide offenders identified as drug-addicted into treatment that will reduce drug dependence and improve the quality of life for them and their families. Benefits to society often take the form of reductions in crime committed by drug court participants, resulting in reduced costs to taxpayers and increased public safety.

In the typical drug court program, participants are closely supervised by a judge who is supported by a team of state and local agency representatives who operate outside of their traditional roles. The team typically includes a drug court coordinator, addiction treatment providers, prosecuting attorneys, defense attorneys, law enforcement officers, and parole and probation officers who work together to provide needed services to drug court participants. Prosecuting attorneys and defense attorneys hold their usual adversarial positions in abeyance to support the treatment and supervision needs of program participants. Drug court programs can be viewed as blending resources, expertise, and interests of a variety of state and local jurisdictions and agencies.

Drug courts have been shown to be effective in reducing recidivism (GAO, 2005) and in reducing taxpayer costs due to positive outcomes for drug court participants (Carey & Finigan, 2004; Carey, Finigan, Waller, Lucas, & Crumpton, 2005). Some drug courts have even been shown to cost less to operate than processing offenders through traditional “business-as-usual” court processes (Carey & Finigan, 2004; Crumpton, Brekhus, Weller, & Finigan, 2004a & 2004b; Finigan, Carey, & Cox, 2007).

In 2001, NPC Research, under contract with the Administrative Office of the Courts of the State of Maryland, began cost studies of adult and juvenile drug courts across the state. The results presented in this report include the costs associated with the Baltimore County Juvenile Drug Court programs, and the outcomes of participants as compared to a sample of similar individuals who received traditional court processing.

### Process Description: Baltimore County Juvenile Drug Court

#### BALTIMORE COUNTY, MARYLAND

The Baltimore County Juvenile Drug Circuit Court (BCJDC) takes place in multiple locations. The program is located in East, West and Central Baltimore County. In addition, there is a Juvenile Drug Court aftercare program, known as Substance Abuse Re-Entry Network (SARN), which is located just north of Baltimore City. Baltimore County has a population of over 785,600 with 23% of those residents under the age of 18 (U.S. Census Bureau, 2007). In 2008, 116 out of every 1,000 youth were referred to the Department of Juvenile Services (Maryland Department of Juvenile Services, 2009). Additionally, adolescents account for nearly 10% of all referrals to treatment programs (Maryland Alcohol and Drug Abuse Association, 2007).

## **BACKGROUND AND TEAM**

Baltimore County Juvenile Drug Court began operations in fall 2002. By March 2003, the first participant began at the Central location, which was designed to serve up to 25 youth. In 2004, the program expanded to include the East and West Baltimore County locations. According to the program's operation manual, 3 to 5 youth are accepted monthly with an average daily population of 45 to 60. The program capacity is 80 and 12 to 15 youth graduate each year. One drug court coordinator works with all four of these locations. Her position is supervised by the Drug Court Judges and Court Administrator. The drug court team also includes an Assistant State's Attorney, a Public Defender, a Probation Agent from the Department of Juvenile Services (DJS) and an Addictions Counselor from the Bureau of Substance Abuse. The drug court team receives regular input from the participant's school. The long-term objective of BCJDC is to offer an alternative to traditional delinquency dispositions for eligible youth that will provide intensive support for juveniles with substance abuse problems who commit to an alcohol and drug free lifestyle.

## **ELIGIBILITY & DRUG COURT ENTRY**

Participants in the BCJDC program must admit to drug/alcohol abuse, be amenable to treatment and be between 13 and 17 years old. Program guidelines indicate that the original focus of this program was nonviolent offenders with a substance abuse problem. However, as of December 2007, the program began to consider individuals with prior violent offenses (i.e., misdemeanor assault charges) for program acceptance. In addition to these criteria, a parent or legal guardian must be willing to participate and support the youth throughout the program.

Typically, participants are referred to the drug court by their DJS case manager. Youth who participate with BCJDC are largely youth who have re-offended after having been diverted to a program for first time nonviolent offenders. Once the referral has been made, the State's Attorney's Office (SAO) sends a letter to each prospective participant advising them that they may be eligible for drug court and that they should seek counsel in the form of a private attorney or the public defender. A copy of the letter is also forwarded to the Public Defender (PD). Prior to arraignment, prospective participants can meet with the BCJDC coordinator to discuss eligibility and interest in the program. If an eligible youth indicates intent to participate, her/his case will be set for adjudication on the next BCJDC hearing date. The PD may counsel his/her client about participation at arraignment.

## **DRUG COURT PROGRAM PHASES**

The BCJDC program has four phases which can be completed by participants in a period as short as 12 months. The first two phases are highly structured and the last two are designed as after-care phases.

### ***Phase Requirements***

Phase 1 lasts a minimum of 4 months with attendance at drug court hearings required twice each month. In this phase, the youth must meet with the DJS case manager on a weekly basis. The participants must attend gender-specific therapy weekly. An educational plan and community service arrangement are created in this phase. Individual treatment sessions with an addictions counselor are required twice weekly while attendance at group sessions is required once per week. Individual sessions take place two times per week, while family counseling happens on a monthly basis. A minimum of one random urinalysis is conducted each week and a saliva test is also administered weekly.

Phase 2 lasts a minimum of 3 months. Education goals are monitored in this phase. There are not as many requirements as there are in Phase 1; however, contact with DJS, individual and group counseling, court hearing attendance and drug test requirements remain the same. In order to advance to Phase 3, participants must have no positive drug tests for the last 45 days, adhere to a family contract, and be employed and/or in a school or training program.

Phase 3 lasts at least 90 days and participants focus on relapse prevention. The requirements for drug court hearing attendance decrease to one session per month. Saliva drug testing is no longer required; therefore, drug testing is reduced to one random urinalysis each week. Individual counseling sessions continue each week; however, attendance at group sessions is no longer required. Family meetings take place once each month. In order to advance to Phase 4, participants cannot have had any positive drug tests in the last 60 days.

Phase 4 lasts a minimum of 2 months and prepares the youth for re-entry into life outside of the drug court program. Participants continue to attend court hearings once per month, have contact with their DJS case manager as needed and are given one random urinalysis per week. In individual therapy, an aftercare plan is constructed. Also, a pre-discharge family meeting is held in which the aftercare plan is discussed.

#### **INCENTIVES AND SANCTIONS**

BCJDC participants are rewarded for achieving and maintaining treatment goals. Incentives are given out at the BCJDC hearings or at treatment based on the treatment team's decisions. Incentives include praise from the judge and/or other drug court team members at the drug court hearing, progress pins, early phase advancement, participation in group activities (e.g., miniature golf, sporting events and outings), and less restrictive curfew hours.

Sanctions are also part of the program and are handed down for unacceptable behavior. Participants are given a list of potential sanctions when they start the program. Possible sanctions include essay writing, community service, community detention, modified curfew hours, and electric monitoring. The team understands that, occasionally, there will be a need to increase treatment intensity, but this adjustment is not considered punishment.

#### **GRADUATION AND NON-COMPLETIONS**

There are several ways in which a participant can exit BCJDC. Graduation indicates that all program requirements have been met. "Satisfactory termination" refers to youth who have been in the program for long periods of time and have turned 18 years old. They have either requested release from the program and/or the team agrees that they have made significant progress in the program and should be released. Those youth who are completely non-compliant are "terminated" and often committed for placement or unsatisfactorily released from probation.

Upon graduating from the program, charges against the youth are dismissed. However, the SAO reserves the right to deny this procedure, especially if the victim is extremely opposed to this decision.



# OUTCOME-IMPACT EVALUATION

## Outcome Evaluation Methods

### RESEARCH STRATEGY

The primary criminal justice system outcome of interest to drug court programs is the juvenile justice and criminal justice recidivism of participants after beginning, or completing, the program. Re-arrests are defined in this study as any new juvenile arrest after program entry and this study does not include non-criminal events, such as traffic citations.

This study examines outcomes over a 2-year period for program participants and a matched comparison group. NPC Research staff identified a sample of JDC participants who entered the program between March 2003 and September 2008. This time frame included all JDC participants since the program's inception and allowed for the availability of at least 6 months of recidivism data post-program entry for all sample participants. Although it is generally advisable to leave out participants in the first 6 months to a year of program implementation (due to typical program adjustments when starting out) and it is also advisable to examine outcomes for at least two years after program start, neither option was feasible for this study due to the small number of program participants.

Graduation rates were calculated for the JDC by dividing the number of participants who graduated by the total number who exited the program, for those participants who had enough opportunity to have completed the program. The graduation rate does not include active participants. However, it does include youth who were discharged into other services (these youth appear as "non-graduates").

Differences in demographics and criminal history between JDC graduates and non-graduates were examined to determine if there were indications that specific groups were more likely to be unsuccessful and therefore might need additional attention from the program to increase successful outcomes.

### OUTCOME-IMPACT STUDY QUESTIONS

The outcome evaluation was designed to address the following study and policy questions:

1. Does the JDC reduce substance abuse among program participants?
2. Does the JDC program reduce recidivism in the juvenile justice system?
3. To what extent are participants successful in completing the JDC program?
4. What participant and program characteristics predict successful outcomes (i.e., program completion, decreased recidivism)?

### DATA COLLECTION AND SOURCES

NPC staff members adapted procedures developed in previous drug court evaluation projects for data collection, management, and analysis of these data. The data collected included juvenile supervision, juvenile court cases, juvenile detention placements, and juvenile arrests. In addition, data that was available on the drug court participants only included days spent in adult prison and local adult jail, adult criminal justice recidivism in the form of arrest records, local adult court

case information, substance abuse treatment services and program data from multiple sources.<sup>3</sup> Once all available data were obtained for the participant and comparison groups, the data were compiled, cleaned and moved into SPSS 15.0 for statistical analysis. The evaluation team employed univariate and multivariate statistical analyses using SPSS, which are described in more detail in the data analysis section. The majority of the data necessary for the outcome evaluation were gathered from the administrative databases described below and presented in Table 1.

#### *Baltimore County Juvenile Drug Court*

Data were provided by the JDC office that included names, demographic information, program acceptance status, time spent in JDC, and discharge status for JDC participants only.

#### *ASSIST, Department of Juvenile Services*

Data on juvenile supervision, court cases, detention placements and juvenile arrests were provided for the JDC and comparison groups by the Department of Juvenile Services from their ASSIST database.

#### *Maryland Department of Public Safety & Correctional Services*

The Maryland Department of Public Safety & Correctional Services (DPSCS) provided data for JDC participants from their management information system that stores Maryland adult criminal justice information in the OBSCIS I & II and Criminal Justice Information System (CJIS) systems, including arrest information, charges, prison and local jail stays and probation and parole episode information.

#### *Maryland Judicial Information System*

The Maryland Administrative Office of the Courts provided data from their JIS system on court cases heard in Baltimore County for JDC participants.

#### *Substance Abuse Management Information System (SAMIS)*

Substance abuse treatment data for the JDC participants were obtained from administrative records at the Maryland Alcohol and Drug Abuse Administration (ADAA). These records included dates of treatment episodes, level of care for services provided (e.g., individual counseling session, intensive outpatient session, detoxification) and drug testing conducted by treatment facilities.

#### *HIDTA (High Intensity Drug Trafficking Area) Automated Tracking System (HATS) operated by the University of Maryland, Institute for Governmental Services and Research*

Exports from the HATS data system provided urinalysis test results and participant program information from March 2003 to April 2007 for JDC participants.

#### *Statewide Maryland Automated Record Tracking (SMART) operated by the University of Maryland, Institute for Governmental Services and Research*

Data were extracted from SMART, a client tracking system for state agencies and private treatment providers, for JDC participants. These data include the results of urinalysis tests and dates of court hearings for youth in the program from September 2007 to June 2009.

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<sup>3</sup>All data were gathered for this study with appropriate Institutional Review Board approval, including HIPAA waivers. Memorandums of Understanding (MOUs) with individual data sources were also obtained as needed.

**Table 1. Data Sources**

<b>Database</b>	<b>Source</b>	<b>Example of Variables</b>
JDC Program Coordinator's List of Participants	Program Coordinator	Acceptance status, time spent in JDC, discharge status.
ASSIST	Maryland Department of Juvenile Services (DJS)	Time spent in juvenile placements (residential, detention, shelter care); time spent on juvenile probation, # alleged/formal offenses, juvenile court cases
Offender Based State Correctional Information System (OBSCIS II) [electronic data]	Maryland Department of Public Safety & Correctional Services (DPSCS)	Demographics, prison data.
Criminal Justice Information System (CJIS) [electronic data]	Maryland Department of Public Safety & Correctional Services (DPSCS)	Adult arrest history, arrest charges.
Judicial Information Systems (JIS) [electronic data]	Maryland Judiciary, on behalf of the State court systems (including the Motor Vehicle Administration and DPSCS)	District Court case management (e.g., case dates)
Maryland Judiciary Case Search (online electronic data)	Maryland Judiciary	DTC court hearing information for Circuit Court cases
Substance Abuse Management Information System (SAMIS)	Maryland Department of Health and Mental Hygiene (DHMH); Alcohol and Drug Abuse Administration (ADAA)	Number of treatment episodes; time spent in treatment; level of care, drug of choice

## **SAMPLE SELECTION**

### ***Drug Court Participant Group***

This study examines outcomes over a 2-year period from program entry for program participants and a matched comparison group. All JDC participants who entered the program from March 2003 to September 2008 were selected for this study. JDC participant information was obtained from a list kept by the JDC Program Coordinator. The number of JDC participants in this study's cohort is presented in Table 2 by the year of their admission.

**Table 2. Baltimore County JDC Admissions by Year**

Year	Admissions
2003	5
2004	36
2005	36
2006	44
2007	35
2008	30
<b>Total</b>	<b>186</b>

### *Comparison Group*

A comparison group was selected from a group of similar youth who were eligible for the program but who did not participate in the program for various reasons, e.g., they had not been identified as a potential participant at the time of an arrest, they had not been referred to the program, or they had opted out of the program. The comparison group for this study was chosen using the same eligibility criteria used by the program to select its participants. Specifically, potential participants must have been under 18 years old at the time of their violation and have had no history of violent offenses or drug trafficking. They must be residents of Baltimore County and under a moderate, high or intensive level of juvenile supervision during the time period. These criteria were established in consultation with the JDC coordinator and the JDC team described their program participants as juveniles who would generally be under high supervision.

Based on the selection criteria, information on potential comparison group individuals was provided by the Department of Juvenile Services in the form of de-identified data on 1728 juvenile offenders on moderate, high or intensive-level supervision between January 2004 and September 2008 in Baltimore County. These individuals were identified as having an eligible charge in their juvenile arrest history that matched the juvenile arrest histories of the JDC youth. The eligible charges for program entry include:

1. Drug Charges: Controlled Dangerous Substance (CDS) – Possession, Possession of Drug Paraphernalia, CDS – Distribution, CDS (Marijuana) - Manufacture or Distribution with Intent to Distribute
2. Alcohol and Tobacco-related charges: Tobacco Violation, Driving While Intoxicated - Driving While Impaired
3. Malicious Destruction of Property
4. Assault 2nd Degree/Battery
5. Theft – Misdemeanor or Felony
6. Burglary 1st Degree
7. Trespassing

Potential comparison group youth were included in the final comparison group for analysis if they had ever been arrested on at least one of the JDC eligible charges. This arrest was coded as their “eligible arrest” and was used to determine a point in time from which “prior” arrests were counted, as well as an equivalent point of program entry to determine when subsequent arrests would be counted. Potential comparison youth were then eliminated if they were found to have had an ineligible charge, i.e., a charge of a serious or violent nature, in their juvenile arrest histories.

The JDC program participants and potential comparison youth were then matched on demographic variables (age, gender, and ethnicity), type of charge for the eligible arrest (drug, property, person or other), level of supervision and prior criminal history. This extensive matching process eliminated most of the potential comparison youth. During the matching process, those juveniles for whom data were missing, or were outliers on any of the matching characteristics, were excluded.

In sum, the potential comparison youth were matched to the JDC group individuals on the following characteristics:

1. Gender
2. Race/Ethnicity
3. Age at index arrest
4. Total number of all juvenile arrests in 2 years prior to “eligible” arrest
5. Total number of juvenile drug arrests in 2 years to “eligible” arrest
6. Total number of juvenile property arrests in 2 years to “eligible” arrest
7. Total number of juvenile person arrests in 2 years to “eligible” arrest
8. Total number of other juvenile arrests in 2 years to “eligible” arrest
9. Drug charge present in 2 years to “eligible” arrest
10. Property charge present in 2 years to “eligible” arrest
11. Person charge present in 2 years to “eligible” arrest
12. Other charge present in 2 years to “eligible” arrest
13. Drug charge present on “eligible” arrest
14. Property charge present on “eligible” arrest
15. Person charge present on “eligible” arrest
16. Other charge present on “eligible” arrest

For the final comparison group, there was no significant difference between the drug court and comparison youth on any of the characteristics listed above. The value ranges for these characteristics that are continuous variables, e.g., number of arrests, were also similar between JDC and comparison groups. The two groups were equivalent on the mean number of days in residential treatment facilities and the mean number of days in other residential facilities. The only difference found in the available data between the two groups was that the JDC group was found to have a significantly higher mean number of days in detention in the two years prior to the program start date or equivalent than the comparison group.

The final sample included 186 drug court participants and 147 comparison juveniles.

## DATA ANALYSES

Once the comparison group was selected and all data were gathered on all study participants, the data were compiled, cleaned, and imported into SPSS 15.0 for statistical analysis. The evaluation team is trained in a variety of univariate and multivariate statistical analyses using SPSS. The analyses used to answer specific questions were:

1. Does the JDC reduce substance abuse among program participants?

The dates of positive drug tests (urinalyses or UAs) for JDC participants were obtained from the program through the HATS and SMART systems. To determine whether there was a reduction in drug use, the numbers of individuals who were tested over 12 months while in the program were coded as being tested and testing positive (yes/no) during each 2 month time period from program start.

In addition, the 2-year means for re-arrests with drug charges were calculated for JDC and comparison groups. Univariate analysis of variance was performed to compare the mean number of re-arrests with drug charges for all JDC participants with the comparison group. The means comparing the JDC to the comparison groups were adjusted for differences between the groups on gender, age at eligible arrest, ethnicity, number of prior arrests, type of prior arrests, type of eligible arrest, and time at risk to re-offend. Time at risk was calculated by summing the total amount of days the juvenile was in detention, residential treatment, or shelter during each follow-up period and then subtracted that number from the total possible time during the follow-up period, resulting in the total amount of time in each follow-up period that the youth was potentially in the community to re-offend.

The non-adjusted means for graduates within each group are included for reference but should not be compared directly with the comparison group as the comparison group includes an unknown number of individuals who, had they participated in drug court, may have been discharged from the program and are therefore not equivalent to drug court graduates.

2. Does the JDC program reduce recidivism in the juvenile justice system?

Univariate analysis of variance was performed to compare the mean number of re-arrests for JDC and comparison groups. The means comparing the JDC and comparison groups were adjusted for any differences between the groups on gender, age at eligible arrest, race/ethnicity, number of prior arrests, type of prior arrests, type of eligible arrest, and time at risk to re-offend. As described above, time at risk was calculated by summing the total amount of days the juvenile was in detention, residential treatment, or shelter during each follow-up period and then subtracted that number from the total possible time during the follow-up period, resulting in the total amount of time in each follow-up period that the youth was potentially in the community to re-offend.

The non-adjusted means for graduates within each group are included for reference but should not be compared directly with the comparison group as the comparison group includes an unknown number of individuals who, had they participated in drug court, may have been discharged from the program and are therefore not equivalent to drug court graduates.

Crosstabs were run to examine differences in recidivism rates, i.e., the percentage of youth re-arrested, between JDC and comparison groups. Chi-square analyses were used to identify any significant differences in re-arrest rates between JDC and comparison groups.

3. To what extent are participants successful in completing the JDC program and within the intended time period?

To measure the programs' level of success at graduating participants, graduation rates and average lengths of stay were calculated. Graduation rates were calculated by dividing the number of participants who were no longer active in the JDC program by the number of graduates, i.e., participants who completed the program successfully. Average length of stay was calculated as the mean number of days between the program start date and program end date for each participant to determine if, on average, participants graduate within the intended time period.

4. What participant and program characteristics predict successful outcomes, i.e., program completion and decreased recidivism?

Graduates and non-graduates from the JDC were compared on demographic characteristics and criminal history (number of arrests during the 2 years prior to program entry) to determine whether any characteristics predicted program graduation or recidivism. In order to best determine which demographic characteristics were related to graduation, Chi-square and independent samples t-tests were performed to identify which factors were significantly associated with program success.

Participant characteristics were also examined in relation to subsequent re-arrests following program entry. Chi-square and independent samples t-test were performed to identify which factors were significantly associated with recidivism. Logistic regression was also used, including all variables of interest in the model, to determine if any characteristics were significantly related to being re-arrested above and beyond other characteristics.

Ultimately, the JDC and comparison groups were examined through data provided by DJS from their ASSIST database for a period up to 2 years from the date of JDC program entry or equivalent. For the comparison group, an equivalent "start date" was calculated by adding 100 days, which was the median number of days from their eligible case arrest to JDC program entry that had been calculated from the JDC participants, to the eligible arrest date. The evaluation team utilized the ASSIST data to determine whether there was a difference in juvenile re-arrests, placements, and other outcomes of interest between the JDC and comparison groups.

All individuals who were studied for the outcomes report had at least 6 months of follow-up time, which included 186 JDC participants (80 graduates, 76 non-graduates, and 30 active participants) and 147 comparison group individuals.

## LIMITATIONS OF THIS STUDY

Findings from this study should be interpreted with caution due to the following limitations:

**Unavailable data:** Despite having agreements already in place with DJS based on previous work, DJS was unwilling to release the names of the comparison group individuals. As a result, treatment data and adult criminal justice data, e.g., adult re-arrests during the outcome period, could not be matched with the comparison group. In addition, there was no data available on whether comparison group individuals had an assessed substance abuse problem (other than having prior drug charges).

**Start-up participants were included in the participant sample:** JDC participants who received services during the implementation of the JDC program were included to increase sample sizes. Typically, participants in drug court programs during the first 6 to 12 months post program startup are excluded in order to avoid introducing biases based on implementation factors, including lower fidelity to the intended program model, lack of staff experience with the program, and staff turnover.

A future study of the potential impacts of the Baltimore County JDC program is suggested, given the limitations of the current study. An increased follow-up time period, larger sample sizes that would increase statistical power and allow participants who were in the program during the first year of JDC to be omitted, as well as obtaining data that were more complete would provide additional information about the impact of this program.

## Outcome Evaluation Results

### DESCRIPTION OF THE SAMPLES

Table 3 provides demographic information for JDC and comparison groups. Independent samples t-tests and chi-square analyses showed no significant differences between JDC and comparison groups on the characteristics listed in this table.

**Table 3. JDC and Comparison Group Characteristics**

	All JDC Participants N = 186	Comparison Group N = 147
Gender		
Male	88%	88%
Female	12%	12%
Ethnicity		
Caucasian	68%	67%
Non-Caucasian	32%	33%
Mean age at eligible arrest date	15 years	15 years
Median	15 years	15 years
Range	13 – 17 years	13 – 17 years
Type of charge at eligible arrest		
Drug-related	53%	61%
Property-related	28%	33%
Person-related	12%	17%
‘Other’	22%	26%
Average number of <u>total</u> arrests in the 2 years prior to the arrest leading to program participation	2.77 (range 0 – 14)	2.68 (range 0 – 10)
Average number of <u>drug</u> arrests in the 2 years prior to the arrest leading to program participation	.96 (range 0 – 8)	.82 (range 0 – 5)

Data from the ADAA were available for 165 of the 186 JDC participants on treatment services they received. In addition to treatment services, these data included drug of choice, mental health problems, health insurance information, and living situation status.

#### *Substance Use Status*

The most common primary drug of choice among JDC participants was marijuana (89%). Alcohol was the most common secondary drug of choice for 50% of JDC participants. Heroin, crack

and cocaine, oxycodone, hallucinogens and other opiates were also used but in smaller numbers. The average age at first substance use was 12. Most JDC participants (73%) reported to their treatment provider that they had used tobacco in the last 30 days.

#### *Other Available Demographics*

About one-third of the JDC participants (37%) were identified as having a current mental health problem, based on treatment data. For those JDC participants who had family income information available from treatment data, the median family income was approximately \$40,000 per year (substantially higher than the federal poverty level of \$22,050 for a family of four). In addition, about one third of JDC youth were listed as homeless (30%).

Most, (78%) JDC participants received some publicly funded substance abuse treatment services during their program participation though more than half (56%) had the means to pay for some costs through private insurance or family self-pay.

## Outcome Study Results

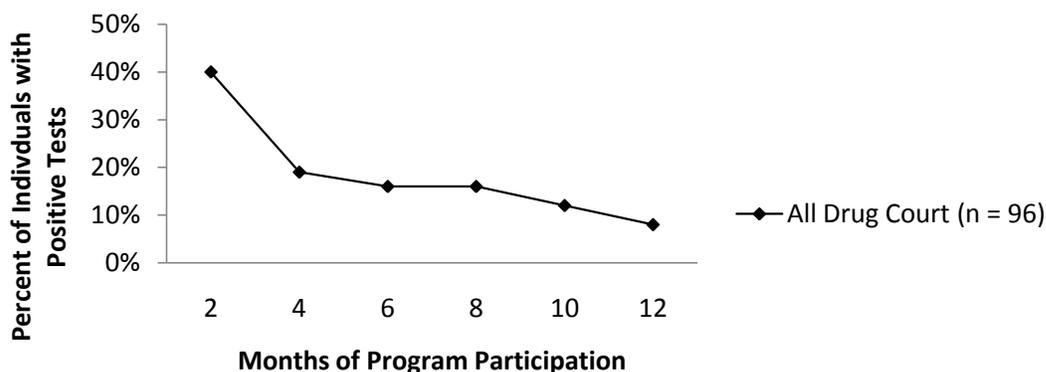
### **POLICY QUESTION #1: DOES PARTICIPATION IN THE DRUG COURT PROGRAM REDUCE SUBSTANCE USE?**

#### *Drug Testing*

**YES: JDC participants showed reductions in drug use following entrance into the program.**

Figure 1 shows the percentage of program participants with a positive urine analysis (UA) test in each 2-month period for individuals receiving 12 months or more of program services, regardless of graduation status. The rate of substance use, as measured by positive drug tests among program participants, declined over time, implying that involvement in the JDC reduces substance use. The rate of substance use significantly decreased from months 1-2 to 3-4 ( $p < .05$ ).

**Figure 1. Percent of JDC Participants with a Positive UA Test Over Time**



It is important for drug court programs to employ drug testing strategies that ensure that participants cannot use without detection. Otherwise, apparent reductions in positive UAs could be a reflection of participants manipulating the system rather than actual decreases in use. In addition, the program should be aware that youth may use inhalants, which are not likely to be detected by standard drug tests.

### Drug-related Offenses

Another way to determine whether there are reductions in drug use is to examine the number of re-arrests with drug charges over time.<sup>4</sup> Figure 2a displays the mean number of drug re-arrests per person for 6-month periods over 24 months after program entry among the JDC and comparison groups. The drug court participants had significantly fewer re-arrests with drug charges during every time period ( $p < .05$ ).

**Figure 2a. Cumulative Mean Number of Drug Re-Arrests Over Time**

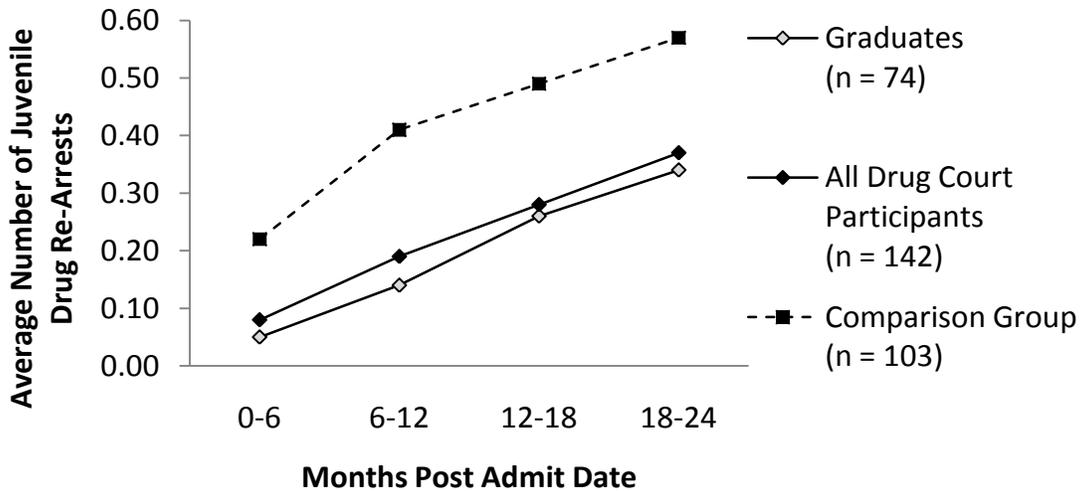
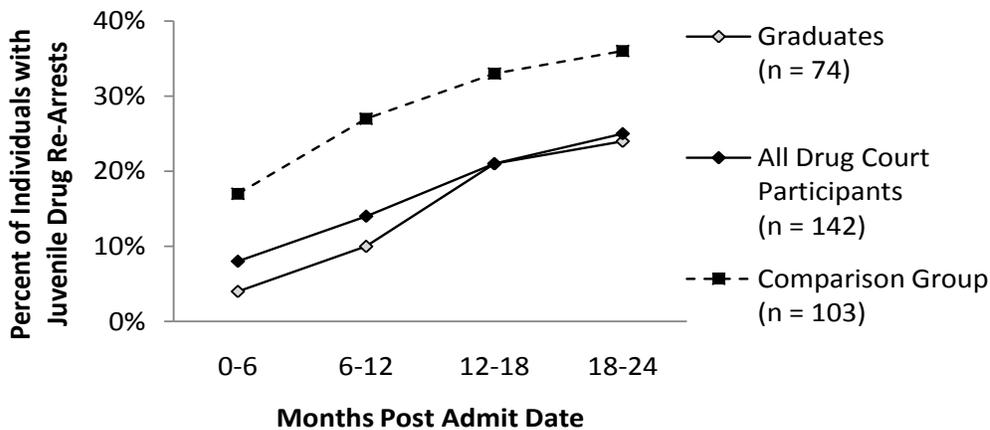


Figure 2b provides a slightly different look at the same issue of determining whether drug use decreases due to drug court participation. Rather than looking at the number of drug re-arrests over time, Figure 2b shows the number of *individuals* who were re-arrested with a drug charge at least once over the same 24 month period. This graph is remarkably similar to Figure 2a, illustrating that significantly fewer ( $p < .05$ ) drug court participants are re-arrested with drug charges at every time point in contrast to the comparison group.

**Figure 2b. Cumulative Percent of Participants with a Drug Re-Arrest Over Time**



<sup>4</sup> It is also well-substantiated that substance abuse contributes to criminal offending regardless of the type of offense (e.g., VanderWaal, McBride, Terry-McElrath, & VanBuren, 2001).

The drug court participants maintained a reasonably low re-arrest rate at each time period, indicating that program effects last beyond the program. The comparison group had a higher number of drug re-arrests initially but steadily decreased over time. It is unclear what factors may have led to the decrease in drug arrests in the comparison group.

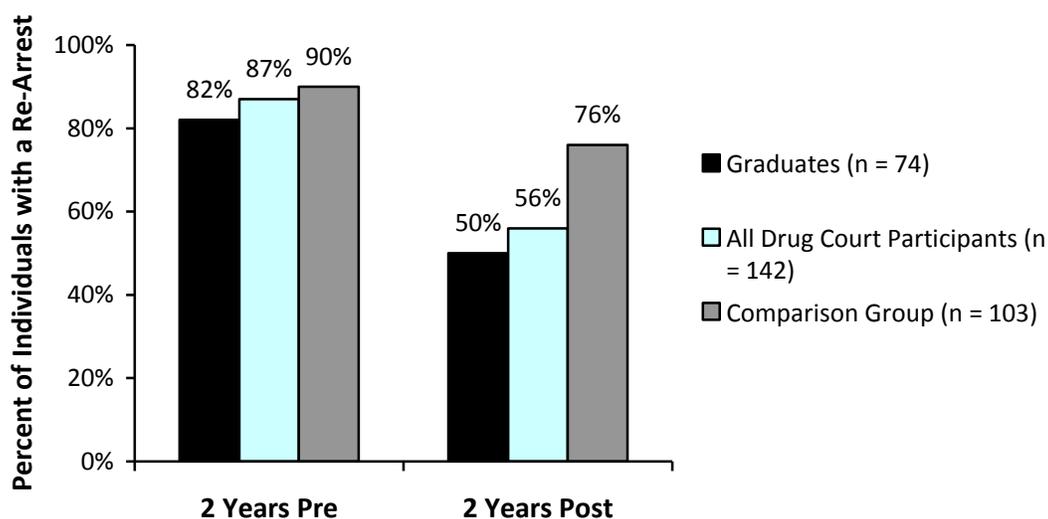
**POLICY QUESTION #2: DOES PARTICIPATION IN THE DRUG COURT PROGRAM REDUCE RECIDIVISM?**

**YES: There is a pattern of lower recidivism rates and lower numbers of re-arrests for program participants**

*Juvenile Justice Recidivism Rate*

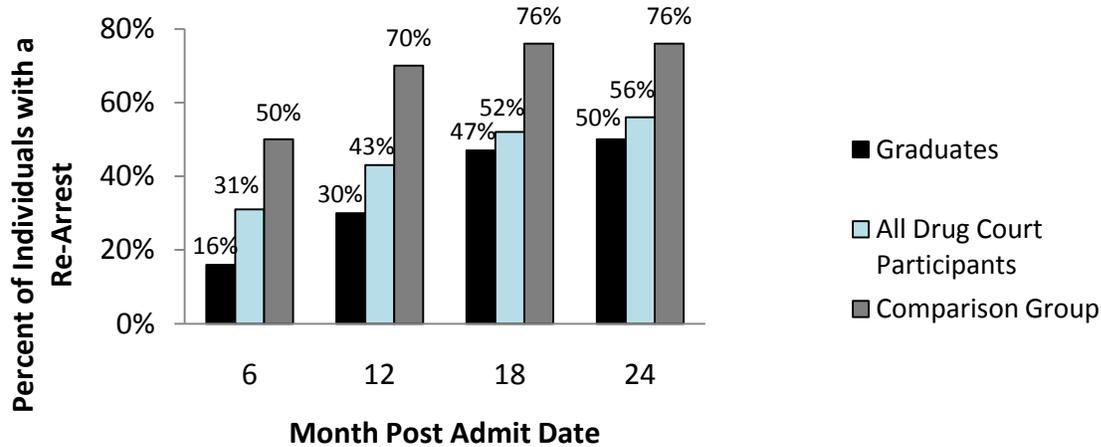
Figure 3 shows the arrest rate (the percentage of youth arrested) in the drug court and comparison group for the 24 months pre-program and 24 months post-program. The pre time period includes the 2 years leading up to the eligible arrest. The post time period begins at program start date (or equivalent for the comparison group).

**Figure 3. Juvenile Arrest Rates 2 Years Before and 2 Years After JDC Start Date**



The percentage of youth arrested in the JDC group in the 2 years post program start was significantly less than the percentage re-arrested pre-program, regardless of graduation status. The percent of youth re-arrested in the comparison group also decreased but not significantly. Further, although the arrest rates of JDC and comparison groups were statistically equivalent at pre-program, the JDC group had a significantly smaller proportion with re-arrests at post, compared to the comparison group. This indicates that the JDC program is effectively reducing recidivism for its participants.

Figure 4, shows the recidivism rate for JDC participants over time in 6-month blocks. The recidivism rate for JDC participants is significantly lower than that for the comparison group at every time period, regardless of graduation status.

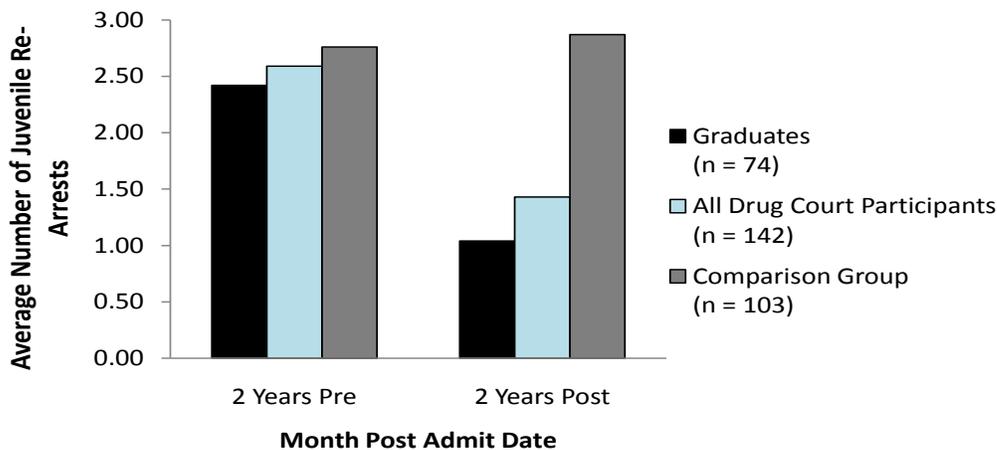
**Figure 4. Juvenile Re-Arrest Rate Over Time by Group<sup>5</sup>**


In the 24 months following entry to the program, 50% of graduates and 56% of all JDC participants were re-arrested, while 76% of the comparison group was re-arrested.

#### *Number of Juvenile Re-Arrests*

An analysis of the *number* of re-arrests per youth shows a similar pattern as the re-arrest rate in Figures 3 and 4.

The mean number of total juvenile re-arrests for the drug court and comparison groups for the 24 months pre-program and 24 months post-program is shown in Figure 5. The pre time period includes the 2 years leading up to the eligible arrest. The post time period begins at JDC start date (or equivalent for the comparison group) and continues to 2 years post-start.

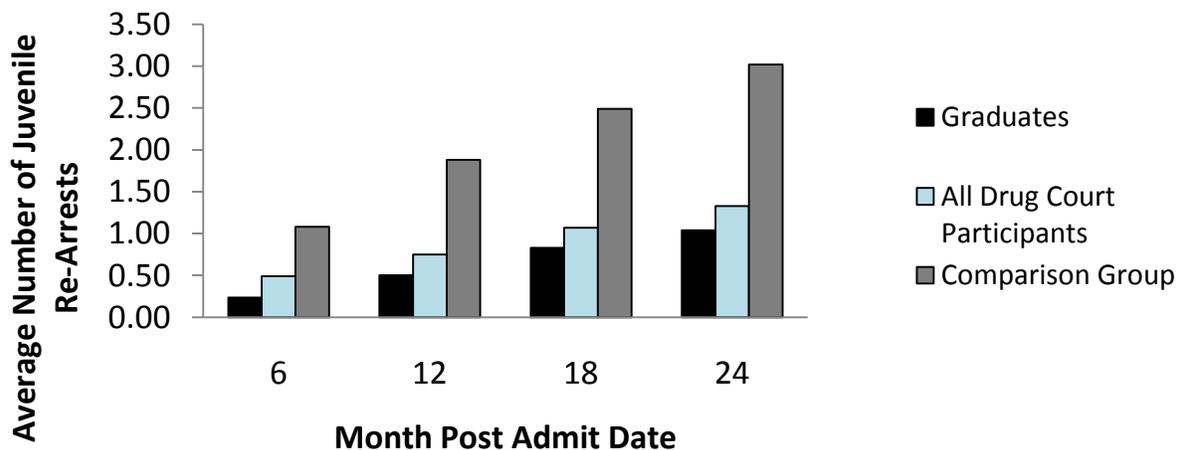
**Figure 5. Mean Number of Juvenile Re-Arrests 2-Years Pre and 2-Years Post Program by Group**


<sup>5</sup> Sample sizes: Graduates at 6 months n = 80, 12 months n = 80, 18 months n = 77, and 24 months n = 74; All JDC participants at 6 months n = 186, 12 months n = 167, 18 months n = 152, and 24 months n = 142; Comparison group with 6 months n = 147, 12 months n = 136, 18 months n = 122, and 24 months n = 103.

The JDC participants were re-arrested significantly less often ( $p < .05$ ) in the 24 months post program than in the 24 months pre-program in contrast to the comparison group which was not re-arrested less often (and in fact, was re-arrested slightly more often). This indicates an effect from the program on reducing the number of re-arrests among JDC participants. Further, although the drug court and comparison group were statistically equivalent at 24 months pre-program, the JDC participants had significantly fewer re-arrests than the comparison groups at 24 months post-program.

Figure 6 shows the mean number of juvenile re-arrests over time from program entry for JDC graduates, all JDC participants, and the comparison group in 6-month blocks. JDC participants showed a significantly lower number of re-arrests at every time period compared to the comparison group.<sup>6</sup>

**Figure 6. Cumulative Number of Juvenile Re-Arrests Over Time by Group<sup>7</sup>**



### *Chronic Offenders*

Chronic offenders were defined as those youth who had three or more arrests in the 24-month follow-up period. Among those individuals who had a full 24 months of follow-up time, there were significantly fewer JDC participants who were chronic offenders than comparison group members (20% of JDC participants and 42% of the comparison group) ( $p < .05$ ). The mean number of re-arrests at 24 months for all JDC individuals with chronic subsequent arrests was 4.6 compared to a mean of 5.7 for the comparison group chronic re-offenders.

<sup>6</sup> The mean number of re-arrests was adjusted to control for differences between JDC and comparison groups on gender, race/ethnicity, age at eligible arrest, prior arrest history, and time of opportunity for re-offending (that is, the time the youth was NOT in a detention facility or other residential placement). These results differ somewhat from the mean number of re-arrests reported in the Cost Section of this report, which adjusted for differences between groups on demographic characteristics and prior arrest history but not for time of opportunity as actual incarceration days are included in the costs.

<sup>7</sup> Sample sizes: Graduates with 6 months  $n = 80$ , 12 months  $n = 80$ , 18 months  $n = 77$ , and 24 months  $n = 74$ ; All JDC participants with 6 months  $n = 186$ , 12 months  $n = 167$ , 18 months  $n = 152$ , and 24 months  $n = 142$ ; Comparison group with 6 months  $n = 147$ , 12 months  $n = 136$ , 18 months  $n = 122$ , and 24 months  $n = 103$ .

### *Adult Criminal Justice Recidivism (Juvenile Drug Court group only)*

In addition to the data provided by the Department of Juvenile Services, data were also obtained for JDC participants who later came into contact with the adult criminal justice system.<sup>8</sup> NPC worked to collect these records from the Maryland Department of Public Safety and Correctional Services (DPSCS) and Baltimore County Sheriff's Office/Detention Center. DPSCS provided records of prison admissions and statewide arrest records. The Baltimore County Detention Center provided entry and release dates for jail time served.

Adult criminal justice outcomes were examined for the 2 years after JDC entry. Examination of the data showed that most JDC youth (85%) became adults during the study's time frame. Adult data, including arrests, District and Circuit Court cases, and jail and prison time could be analyzed for the JDC group only.

Of the individuals (n = 158) who became adults during the outcomes period (2 years), 14% (n = 22) were arrested in the adult system during the 2 years after their JDC entry date. Of the 22 individuals who had been arrested, 32% were arrested more than once, 100% had a district court case and 50% had a circuit court case. Thirty-two percent of these 22 individuals had spent some time in the Baltimore County Detention Center and two of the JDC participants had served time in state prison.

Among those who graduated from the JDC program and also turned 18 within the outcomes period (n = 66), 11% or 7 individuals had an arrest in the adult system; 3 of these 66 participants were arrested as adults more than once during the 2 years post program entry. Of graduates who had been arrested as adults, all had district court cases, 4 had circuit court cases, and 4 spent time at the detention center, none were found in the state prison data.

These data show that a similar percentage of all participants were re-arrested as adults, whether or not they graduated (14% for all participants and 11% for graduates), indicating that the drug court program may have a positive effect on participants, even if they did not successfully complete the program.

### **POLICY QUESTION #3: DO PARTICIPANTS OF THE JDC PROGRAM COMPLETE THE PROGRAM SUCCESSFULLY AND WITHIN THE INTENDED TIME PERIOD?**

During the study period, the overall average graduation rate for the JDC was 52%.<sup>9</sup> The national average graduation rate for adult drug court programs is around 50% (Belenko, 2001); however, there is not yet a published average for juvenile drug court programs. Nonetheless, using the adult standard shows that this program is above-average in helping participants successfully complete the program.

However, a point of interest is that the graduation rate was higher early in the program's history (64% in 2004) but has decreased over time as shown in Table 4. This decrease may reflect changes over time in program policies regarding criteria for exiting or changes to the population of youth who are accepted into the program. The JDC program may want to examine the portion

<sup>8</sup> Because no names or other identifiers for the comparison group were provided by DJS, we were unable to match the comparison group individuals to the adult data system.

<sup>9</sup> In 2007, the program implemented an aftercare track to provide more intensive treatment services to youth who needed it. These youth are discharged from the JDC into that service, and therefore will appear to be program "non-graduates." This practice may be artificially deflating the proportion of participants who graduate from the program as there is not currently a system in place for merging data on the two program tracks when participants have successfully completed the aftercare track. Approximately 6-7 youth per year are moving into the aftercare track.

of their services that focuses on keeping youth engaged in the program and determine if further assistance is needed to ensure that the youth and their families have what they need to enable them to successfully participate in required activities, e.g., transportation, child care, etc.

In addition, the average time for graduates to complete the program was close to 15 months; the program is designed to be completed in a minimum of 12 months.

**Table 4. Number of JDC Graduates in Study Sample by Year**

Admission Year	Number		Graduation Rate
	Graduated (N = 79)	Number Discharged (N = 72)	
2003	3	2	60%
2004	23	13	64%
2005	15	19	44%
2006	23	20	53%
2007	15	18	45%
<b>Total</b>	<b>79</b>	<b>72</b>	<b>52%</b>

Note: Most of the youth in entering the program in 2008 were still in service at the time the data for this study were collected, so there are not enough youth to calculate an accurate graduation rate for this year.

#### **POLICY QUESTION #4: WHAT PREDICTS PARTICIPANT SUCCESS?**

*Which characteristics of drug court participants are associated with positive drug court program outcomes, e.g., graduation and reduced recidivism?*

##### *Graduation*

NPC examined the characteristics of JDC participants who successfully completed the program (graduates) and those who were “terminated” or left the program for non-compliance before completing (non-graduates). Differences between these two groups can illustrate the characteristics of the participants who are likely to have success in JDC and the characteristics of the participants who may need additional or specialized services to succeed.

Characteristics of graduates and non-graduates were compared and are presented in Table 5. Graduates had a significantly longer length of stay in the program, compared to non-graduates ( $p < .05$ ) and had significantly less time spent in detention, shelter, and residential placements during their time in the program ( $p < .05$ ). Finally, although only significant at the level of a trend ( $p < .10$ ), graduates had a lower mean number of person arrests prior to JDC entry compared to non-graduates. There was no significant difference between graduates and non-graduates on age, gender or ethnicity, indicating that the program is serving these populations equally well.

**Table 5. Characteristics of JDC Graduates and Non-Graduates**

	JDC Graduates N = 80	JDC Non-Graduates N = 76	Significantly Different? <sup>10</sup> ( <i>p</i> < .05)
Gender			
Female	11%	15%	No
Ethnicity			
Non-White	29%	28%	No
Mean age in years, at eligible arrest date	15	15	No
Mean length of stay in JDC in days	471	339	<b>Yes</b>
Mean number of days at risk (not incarcerated or in residential treatment) during the program	424	238	<b>Yes</b>
Average number of <u>total</u> arrests in the 2 years prior to the arrest leading to program participation	2.33	2.79	No
Average number of <u>drug</u> arrests in the 2 years prior to the arrest leading to program participation	.88	.93	No
Average number of <u>property</u> arrests in the 2 years prior to the arrest leading to program participation	1.01	1.11	No
Average number of <u>person</u> arrests in the 2 years prior to the arrest leading to program participation	.41	.67	<b>Trend</b>

When these JDC participant characteristics were analyzed together in relation to graduation status in a logistic regression analysis, longer time in the program as well as less time in detention, residential, and shelter facilities were significant predictors of graduation above and beyond other characteristics. These results are similar to those found in many other studies of juvenile and adult drug court programs (e.g., Carey, Marchand, & Waller, 2006) and indicate that the increased use of jail and detention does not lead to successful outcomes for drug court participants. It is important to note that non-graduates had significantly more time in detention than graduates: 37 days on average for graduates, versus 56 days on average for non-graduates ( $p < .05$ ).

We suggest that the JDC team perform two activities: (1) Examine their options for sanctions to ensure that there are several alternate choices for team response to participant behavior aside from jail or detention. Particularly, the team should determine if their responses to participant non-compliance are meaningful to the participant and have a clear connection to promoting positive behavior change in the participant. (2) Talk to the participants who are heading toward termination to see if the team can learn what the barriers are for those participants in complying with program requirements and determine whether there is further assistance (e.g., transportation, learning to keep a calendar or schedule) that would make it possible for these participants to be successful in meeting program expectations.

<sup>10</sup> Yes indicates  $p < .05$ , No indicates  $p > .10$ , Trend indicates  $p > .05$  and  $p < .10$ .

### Recidivism

Participant characteristics and arrest history were also examined in relation to whether or not participants were re-arrested in the 2 years following JDC entry. These analyses include JDC participants who had 24 months of follow-up time post JDC entry. The results are shown in Table 6.

As shown in Table 6, JDC participants were more likely to have been re-arrested within 24 months of program entry if they were younger at the time of their eligible arrest, had more total priors in the 24 months before their eligible arrest, and had more property priors in the 24 months before their eligible arrest. Further, although only significant at the level of a trend, JDC participants were more likely to have been re-arrested within 24 months of program entry if they spent more time in detention, jail or other residential placements while enrolled in the JDC program.

When these factors were entered into a logistic regression model, and each variable was controlled for, time spent in the JDC program became a significant predictor, above and beyond the other characteristics but time at risk did not. Further two characteristics were marginally significant above and beyond the other characteristics at the level of a trend ( $p < .10$ ), indicating that individuals who were male and who were younger at eligible arrest were likely to recidivate by 24 months.

**Table 6. Demographic and Criminal Justice History-Related Variables That Predict Recidivism at 24 Months**

	Participants who were re-arrested were more likely to:	Significant Predictor of Recidivism at 24 Months? <sup>11</sup> ( $p < .05$ )
Gender		No
Ethnicity		No
Mean age at eligible arrest date	Be younger at program entry	<b>Yes</b>
Mean length of stay in JDC program		No
Time at risk	Have more time detention and other residential placements during the program	<b>Trend</b>
Program status at exit		No
Average number of <u>total</u> arrests in the 2 years prior to the arrest leading to program participation	Have more total prior arrests	<b>Yes</b>
Average number of <u>drug</u> arrests in the 2 years prior to the arrest leading to program participation		No
Average number of <u>property</u> arrests in the 2 years prior to the arrest leading to program participation	Have more prior property arrests	<b>Yes</b>
Average number of <u>person</u> arrests in the 2 years prior to the arrest leading to program participation		No

<sup>11</sup> Yes indicates  $p < .05$ , No indicates  $p > .10$ , Trend indicates  $p > .05$  and  $p < .10$ .

Similar to the results for predictors of graduation, the results of this analysis show that spending more time in the program is associated with more success (lower recidivism). There are suggestions listed above regarding activities that the team may perform to assist participants in remaining engaged in the program longer, specifically, finding a larger variety of possible team responses to participant behavior and talking to participants about the barriers they are experiencing in meeting program requirements. In addition, these results show that being younger and having a more extensive criminal history is associated with greater recidivism after leaving the program. These findings are consistent with the criminal justice literature in general in predicting risk for re-arrest. It may be difficult for the program to adjust services to address these two characteristics, however, it could be useful for the program to determine if the services provided are developmentally appropriate for the range of participant ages and possibly introduce educational classes around changing criminal thinking to address particularly those participants that have a more significant criminal history.

### **OUTCOME SUMMARY**

Overall, outcomes for JDC participants are quite positive. After participation in the program, regardless of whether they graduate, JDC participants had fewer positive drug tests over time and were re-arrested on drug charges less often than the comparison group of similar individuals who did not participate, indicating a reduction in drug use due to program participation.

Further, JDC participants had significantly lower recidivism than the comparison group, measured both by the recidivism rate and the average number of re-arrests per person. When the re-arrest rate was examined using a 24-month pre-post model, JDC participants were re-arrested significantly less often post program compared to pre-program. In contrast, there was no significant reduction in the pre-post analysis for the comparison group, indicating that the reduced recidivism rate for the JDC group was due to program participation.

The average graduation rate for the program was 51% although the rate started higher and decreased over time, indicating either changes in graduation requirements or the JDC participant population. In addition, an examination of the characteristics of those who graduated from the program compared to those who did not graduate showed that JDC graduates were more likely to be in the program longer, have less time in detention and fewer prior arrests non-graduates. In addition, JDC participants had more time in detention than comparison youth. It was suggested that the JDC team examine new or additional options for sanctions (or other team responses to participant behavior) besides time in detention.

In sum, the results of this study indicate that the JDC program is successful in its main goals of reducing participant drug use and reducing participant recidivism.

## COST EVALUATION

The Baltimore County Juvenile Drug Court cost evaluation was designed to address the following study questions:

1. How much does the JDC program cost?
2. What is the 24-month cost impact on the juvenile justice system of sending offenders through JDC or traditional court processing?
3. What is the impact on the juvenile justice system of the time between the eligible arrest and JDC program entry (in terms of arrests and juvenile detention)?

### Cost Evaluation Methodology

#### COST EVALUATION DESIGN

##### *Transactional and Institutional Cost Analysis*

The cost approach utilized by NPC is called Transactional and Institutional Cost Analysis (TICA). The TICA approach views an individual's interaction with publicly funded agencies as a set of *transactions* in which the individual utilizes resources contributed by multiple agencies and jurisdictions. Transactions are those points within a system where resources are consumed and/or change hands. In the case of drug courts, when a participant appears in court, resources such as judge time, state's attorney time, defense attorney time, and court facilities are used. When a program participant has a drug test, urine cups are used. Court appearances and drug tests are transactions. In addition, the TICA approach recognizes that these transactions take place within multiple organizations and institutions that work together to create the program of interest. These organizations and institutions contribute to the cost of each transaction that occurs for program participants. TICA is an intuitively appropriate approach to conducting cost assessment in an environment such as a drug court, which involves complex interactions among multiple taxpayer-funded organizations.

##### *Cost to the Taxpayer*

In order to maximize the study's benefit to policymakers, a "cost-to-taxpayer" approach was used for this evaluation. This focus helps define which cost data should be collected (costs and avoided costs involving public funds) and which cost data should be omitted from the analyses (e.g., costs to the individual participating in the program). The core of the cost-to-taxpayer approach in calculating benefits (avoided costs) for drug court specifically is the fact that untreated substance abuse will cost various tax-dollar funded systems public funds that could be avoided or diminished if substance abuse were treated. In this approach, costs that result from untreated substance abuse are used in calculating the benefits of substance abuse treatment.

##### *Opportunity Resources*

NPC's cost approach looks at publicly funded costs as "opportunity resources." The concept of *opportunity cost* from economics relates to the cost of doing an activity instead of doing something else. The term *opportunity resource* as it is applied in TICA describes resources that are now available for a given use because they have not been consumed for an alternative activity. For example, if substance abuse treatment reduces the number of times that a client is subsequently incarcerated, the local Sheriff may see no change in his or her budget, but an opportunity

resource will be available to the Sheriff in the form of a jail bed that can now be filled by another person.

## **COST EVALUATION METHODS**

The current cost evaluation builds on the outcome evaluation performed by NPC on the Baltimore County Juvenile Drug Court. The costs to the juvenile justice system (cost-to-taxpayer) in Baltimore County incurred by participants in Drug Court are compared with the costs incurred by those who were eligible for the program and were otherwise similar to JDC participants but who did not enter Drug Court. In addition, the specific program costs are calculated separately in order to determine the per-agency costs of the Baltimore County Juvenile Drug Court program.

### *TICA Methodology*

The TICA methodology as it has been applied in the analysis of the Baltimore County Juvenile Drug Court is based upon six distinct steps. Table 7 lists each of these steps and the tasks involved.

Steps 1 through 3 were performed through analysis of court and JDC documents, including review of this program's process evaluation report (conducted by another organization) and through interviews with key stakeholders. Step 4 was performed in the outcome evaluation. Step 5 was performed through interviews with Drug Court and non-drug court staff and with agency finance officers. Step 6 involved calculating the cost of each transaction and multiplying this cost by the number of transactions. All the transactional costs for each individual are added to determine the overall cost per individual. This information was generally reported as an average cost per individual. In addition, the TICA approach has made it possible to calculate the cost for Drug Court processing for each agency.

This evaluation utilized a previously conducted process evaluation and interviews with program staff to identify the specific program transactions to include in this study. Cost data were collected through interviews with Drug Court staff and jurisdiction and agency contacts with knowledge of jurisdiction and agency budgets and other financial documents, as well as from budgets either found online or provided by jurisdiction and agency staff.

The costs to the juvenile justice system outside of the Drug Court program costs consist of those due to new juvenile criminal arrests, juvenile court cases, juvenile probation, shelter care, residential care, and juvenile detention. Program costs include drug court sessions, case management, group and individual treatment sessions, family counseling, juvenile probation, drug tests, juvenile detention, shelter care, and residential care.

**Table 7. The Six Steps of TICA**

	<b>Description</b>	<b>Tasks</b>
<b>Step 1:</b>	Determine flow/process (i.e., how clients move through the system)	<ul style="list-style-type: none"> <li>• Site visit</li> <li>• Interviews with key stakeholders (agency and program staff)</li> </ul>
<b>Step 2:</b>	Identify the transactions that occur within this flow (i.e., where clients interact with the system)	<ul style="list-style-type: none"> <li>• Analysis of process information gained in Step 1</li> </ul>
<b>Step 3:</b>	Identify the agencies involved in each transaction (e.g., court, treatment, police)	<ul style="list-style-type: none"> <li>• Analysis of process information gained in Step 1</li> </ul>
<b>Step 4:</b>	Determine the resources used by each agency for each transaction (e.g., amount of judge time per transaction, amount of attorney time per transaction, number of transactions)	<ul style="list-style-type: none"> <li>• Interviews with program key informants using cost guide.</li> <li>• Administrative data collection of number of transactions (e.g., number of court appearances, number of treatment sessions, number of drug tests)</li> </ul>
<b>Step 5:</b>	Determine the cost of the resources used by each agency for each transaction	<ul style="list-style-type: none"> <li>• Interviews with budget and finance officers</li> <li>• Document review of agency budgets and other financial paperwork</li> </ul>
<b>Step 6:</b>	Calculate cost results (e.g., cost per transaction, total cost of the program per participant)	<ul style="list-style-type: none"> <li>• Support and overhead costs (as a percentage of direct costs) are added to the direct costs of each transaction to determine the cost per transaction</li> <li>• The transaction cost is multiplied by the average number of transactions for program participants to determine the total average cost per transaction type</li> <li>• These total average costs per transaction type are added to determine the program and outcome costs</li> </ul>

### Cost Evaluation Results

Juvenile drug courts are intensive interventions that involve coordination of multiple agencies and professional practitioners applying a variety of areas of expertise, intensive case management and supervision, and frequent judicial reviews. Drug courts are typically made possible through the application and coordination of resources drawn from multiple agencies located in more than one jurisdictional organization. Although the amount of staff time and other resources (buildings, materials and supplies and operating equipment) made available by a number of public organizations represents substantial public costs, research in drug courts demonstrates that due to decreased future system impacts (less frequent re-offending, for example), this investment frequently results in substantial future savings. In addition, drug courts can provide cost-effective intensive treatment and supervision in a community-based setting rather than relying on next

steps in the continuum of services such as residential placements. This report tests whether this pattern holds for the Baltimore County JDC program.

As described above, the Transactional and Institutional Cost Analysis (TICA) approach was used to calculate the costs of each of the transactions that occurred while participants were engaged in the program. Program transactions calculated in this analysis include drug court sessions, case management, group and individual treatment sessions, family counseling, juvenile probation, drug tests, juvenile detention, shelter care, and residential care. The costs for this study were calculated to include taxpayer costs only. All cost results provided in this report are based on fiscal year 2009 dollars.

## COST EVALUATION QUESTION #1: PROGRAM COSTS

### *How much does the JDC program cost?*

#### *Program Transactions*

A ***Drug Court Session***, for the majority of drug courts, is one of the most staff and resource intensive program transactions. In the Baltimore County Juvenile Drug Court, these sessions include representatives from:

- Circuit Court of Maryland (Judge, Court Clerk, and Drug Court Coordinator)
- Baltimore County State's Attorney's Office (State's Attorney)
- Maryland Office of the Public Defender (Public Defender)
- Baltimore County Sheriff's Office (Deputy Sheriff)
- Baltimore County Police Department (Police Officer)
- Maryland Department of Juvenile Services (Case Manager)
- First Step (Substance Abuse Counselor)
- Bureau of Substance Abuse (Counselor)

The cost of a ***Drug Court Appearance*** (the time during a session when a single program participant interacts with the Judge) is calculated based on the average amount of court time (in minutes) each participant interacts with the judge during the Drug Court session. This includes the direct costs of each Drug Court Team member present, the time Team members spend preparing for the session, the agency support costs, and jurisdictional overhead costs. The average cost for a single Drug Court appearance is **\$187.35** per participant.

***Case Management*** is based on the amount of staff time dedicated to case management activities during a regular work week and is then translated into a total cost for case management per participant per day.<sup>12</sup> The agencies involved in case management for the Baltimore County Juvenile JDC program are the Circuit Court, Bureau of Substance Abuse, First Step Substance Abuse Services and Department of Juvenile Services. The daily cost of case management in this program is **\$12.15** per participant.

***Drug Treatment Sessions*** are provided by the Bureau of Substance Abuse (BSA), a public treatment agency that is part of the Health Department of Baltimore County, and First Step Services, a community organization that receives funds from BSA and the Maryland Alcohol and Drug Abuse

<sup>12</sup> Case management includes meeting with participants, evaluations, phone calls, referring out for other help, answering questions, reviewing referrals, consulting, making community service connections, assessments, documentation, file maintenance, and residential referrals.

Administration (ADAA), among other sources. BSA has separate rates for the cost of girls' treatment and the cost of boys' treatment. Both agencies offer individual, group, and family therapy. Individual treatment per session at BSA is **\$29.50** per male participant and **\$22.86** per female participant. BSA Group treatment per participant per session is **\$24.09** for females and **\$16.09** for males. Family sessions at BSA are **\$355.75** for males and **\$169.02** for females. Mental Health Assessments at First Step are **\$167.89**. Individual treatment at First Step is **\$121.59** per session and group treatment is **\$30.39** per person per session. First Step family sessions are **\$100.32** per family/participant.

**Drug Tests** are performed by First Step and Bureau of Substance Abuse. The cost per urinalysis (UA) for boys is **\$7.18** and for girls is **\$8.20**. A grant from the Drug Court Commission covers drug tests for JDC male participants. The Bureau of Substance Abuse covers drug tests for female participants. UA's for all participants of the Aftercare track are covered by BSA.

**Juvenile Probation** is provided by DJS. A representative of DJS provided NPC's researchers with the cost of juvenile supervision, which was identified as **\$25.06** per day.

**Juvenile Detention, Residential Care, and Shelter Care** were provided at multiple DJS-owned-and-operated state facilities. Juvenile detention at the Charles Hickey School is \$549.00 per day, detention at the Thomas J. S. Waxter Children's Center is \$478.00 per day, and juvenile detention days at other state facilities cost an average of \$513.50 per day. Residential care costs \$379.00 per day at the William Donald Schaefer House, \$491.00 per day at the Maryland Youth Residence Center, and an average of \$435.00 at other residential facilities. Shelter costs for girls were \$254.83 per day at Sykesville, \$206.80 at Catonsville juvenile shelter for boys and an average of \$230.82 at other shelter facilities. All costs were provided to NPC by a DJS representative.

#### **Program Costs**

Table 8 provides the unit cost per transaction, the average number of JDC transactions per participant, and the average cost per participant for each type of transaction. The average cost per participant is the product of the unit cost multiplied by the average number of program transactions per participant. The sum of these transactions is the total per participant cost of the program. The table includes the average for JDC graduates (N = 74) and for all JDC participants (N = 142), regardless of completion status. It is important to include participants who were discharged as well as those who graduated as all participants use program resources, whether they graduate or not.

**Table 8. Average JDC Program Costs per Participant**

<b>Transaction</b>	<b>Transaction unit cost</b>	<b>Average number of transactions per JDC graduate</b>	<b>Average cost per JDC graduate N = 74</b>	<b>Average number of transactions per JDC participant</b>	<b>Average cost per JDC participant N = 142</b>
<b>Drug Court Appearances</b>	\$187.35	30.70	<b>\$5,752</b>	26.39	<b>\$4,944</b>
<b>Case Management</b>	\$12.15	470.83 Days <sup>13</sup>	<b>\$5,721</b>	406.71 Days	<b>\$4,942</b>
<b>Probation Days</b>	\$25.06	456.79	<b>\$11,447</b>	396.76	<b>\$9,943</b>
<b>BSA Individual Treatment Sessions Boys</b>	\$29.50	.33	<b>\$8</b>	.21	<b>\$6</b>
<b>BSA Individual Treatment Sessions Girls</b>	\$22.86	.15	<b>\$3</b>	.23	<b>\$5</b>
<b>BSA Group Treatment Sessions Boys</b>	\$16.09	.50	<b>\$8</b>	.33	<b>\$5</b>
<b>BSA Group Treatment Sessions Girls</b>	\$24.09	1.11	<b>\$27</b>	.59	<b>\$14</b>
<b>BSA Family Treatment Boys</b>	\$355.75	.03	<b>\$11</b>	.03	<b>\$11</b>
<b>BSA Family Treatment Girls</b>	\$169.02	.06	<b>\$10</b>	.05	<b>\$8</b>
<b>First Step Mental Health Assessments</b>	\$167.89	.59	<b>\$99</b>	1.13	<b>\$190</b>
<b>First Step Individual Treatment Session</b>	\$121.59	5.70	<b>\$693</b>	4.33	<b>\$526</b>
<b>First Step Group Treatment Session</b>	\$30.39	4.68	<b>\$142</b>	3.41	<b>\$104</b>
<b>First Step Family Session</b>	\$100.32	1.09	<b>\$109</b>	.83	<b>\$83</b>

<sup>13</sup> The average cost per participant for case management is calculated based on the average number of days participants spent in the JDC program.

Transaction	Transaction unit cost	Average number of transactions per JDC graduate	Average cost per JDC graduate N = 74	Average number of transactions per JDC participant	Average cost per JDC participant N = 142
JDC UA Tests for Boys	\$7.18	45.57	\$327	34.91	\$251
JDC UA Tests for Girls	\$8.20	3.04	\$25	2.00 <sup>14</sup>	\$16
Charles Hickey School – Detention	\$549.00	3.56	\$1,954	15.08	\$8,279
Waxter Detention Days	\$478.00	.88	\$421	5.31	\$2,538
Other Detention Days	\$513.50	33.68	\$17,295	33.81	\$17,361
Schaefer Residential Days	\$379.00	2.34	\$887	6.99	\$2,649
Maryland Youth Residence Center	\$491.00	4.80	\$2,357	6.44	\$3,162
Other Residential Days	\$435.00	.43	\$187	3.37	\$1,466
Sykesville Shelter for Girls	\$254.83	.11	\$28	.22	\$56
Catonsville Juvenile Shelter for Boys	\$206.80	.16	\$33	.26	\$54
Other Shelter Days	\$230.82	0	\$0	.08	\$18
<b>Total JDC</b>			<b>\$47,544</b>		<b>\$56,631</b>

Note: Average costs per participant have been rounded to the nearest whole dollar amount.

On average, the total cost per participant in JDC is **\$56,631**. Note that the most expensive area of cost for the program by far is detention days (\$28,178), followed by juvenile probation (\$9,943) and residential placements (\$7,277). The probation result is commensurate with the drug court model, which emphasizes high supervision.

<sup>14</sup> Although gender-specific UA transactions exist for DTC, the average number of UAs is calculated across all participants in order to produce a per-participant average. Because there were so few girls in DTC compared to boys, the average UA calculation for the female-specific UAs is much lower per all DTC participants than it would be for female participants only.

However, we highly recommend that the JDC examine its use of detention and residential care (63% of total program costs), as the funds used to pay for the high cost of DJS placements could potentially be put to better use by hiring more case managers, more treatment providers or providing other, less costly services to JDC participants such as assistance with family housing and transportation or other less costly forms of supervision.

*Program Costs per Agency*

Another useful way to examine program costs is to break them down by agency. Table 9 shows the JDC program cost per participant by agency.

**Table 9. Average JDC Cost per Participant by Agency**

<b>Agency</b>	<b>Average Cost per JDC Graduate N = 74</b>	<b>Average Cost per JDC Participant N = 142</b>
Baltimore County Circuit Court	\$2,146	\$1,846
Baltimore County State's Attorney's Office	\$482	\$414
Baltimore County Sheriff's Office	\$30	\$26
Baltimore County Police	\$185	\$159
Bureau of Substance Abuse	\$1,727	\$1,443
First Step Treatment Services	\$2,775	\$2,397
Maryland Office of the Public Defender	\$1,768	\$1,520
Maryland Department of Juvenile Services	\$38,432	\$48,827
<b>Total<sup>15</sup></b>	<b>\$47,545</b>	<b>\$56,632</b>

Because the DJS provides case management, juvenile detention, residential, and shelter care to JDC participants, it shoulders 86% of the total JDC program costs (\$48,827). The next highest costs come from treatment services (\$3,840) followed by the Circuit Court (\$1,846).

The other agencies involved in the JDC program (State's Attorney, Office of Public Defender, Police Department and Sheriff's Department) incur their costs primarily through staff attendance at Baltimore County JDC sessions or conducting arrests.

*Local Versus State Costs for the JDC Program*

State policy leaders and administrators may find it useful to examine programs costs by jurisdiction (state or local/county). The majority of JDC program costs accrue to the State of Maryland (89% or \$50,347 per participant), mainly due to the DJS placement services (detention, residential, and shelter care). The local or Baltimore County portion of costs are 11% of total program costs per participant, or \$6,285. All treatment costs were included in local and Baltimore County costs because any State of Maryland funding that supports treatment services is disbursed through the BSA.

<sup>15</sup> Totals in this row may not match the totals in the outcome costs by transaction table due to rounding.

## COST EVALUATION QUESTION #2: OUTCOME/RECIDIVISM COSTS

### *What is the 24-month cost impact on the juvenile justice system of sending offenders through JDC or traditional court processing?*

As described in the cost methodology section of this report, the Transactional and Institutional Cost Analysis (TICA) approach was used to calculate the costs of each of the criminal justice system outcome transactions that occurred for JDC and comparison group participants. Transactions are those points within a system where resources are consumed and/or change hands. Outcome transactions for which costs were calculated in this analysis included re-arrests, subsequent court cases, detention time, residential and shelter care placement time, and juvenile probation time. Only costs to the taxpayer were calculated in this study. All cost results represented in this report are based on fiscal year 2009 dollars or updated to fiscal year 2009 dollars using the Consumer Price Index.

#### *Outcome Cost Data*

The outcome statistics reflect data through April 2009. There were 245 individuals for whom at least 24 months of outcome data were available (142 Drug Court participants and 103 comparison group members). All Drug Court participants in the cohorts included in these analyses had exited the program (graduated or were unsuccessful at completing the program).

Outcome costs were calculated for 24 months after Drug Court entry (or an approximate start date for comparison group members). The outcome costs discussed below do not represent the entire cost to the criminal justice system. Rather, the outcome costs include the transactions for which NPC's research team was able to obtain outcome data and cost information. However, we believe that the costs represented capture the majority of system costs. Outcome costs were calculated using information from the Baltimore County Police Department, the Maryland Circuit Court in Baltimore County, the Baltimore County State's Attorney's Office, the Maryland Office of Public Defender in Baltimore County, the Maryland Department of Juvenile Services in Baltimore County, and the Maryland State Operating Budget (FY 2009).

The methods of calculation were carefully considered to ensure that all direct costs, support costs and overhead costs were included as specified in the TICA methodology followed by NPC. It should be noted that, since NPC accounts for all jurisdictional and agency institutional commitments involved in the support of agency operations, the costs that appear in NPC's analysis typically will not correspond with agency operating budgets.

#### *Outcome Transactions*

The majority of **Juvenile Arrests** for Baltimore County are conducted by the Baltimore County Police Department. The average cost of a single arrest conducted by the Baltimore County Police Department is **\$184.69**.

**Juvenile Court Cases** include all court cases, including those cases that are reviewed and rejected by the Baltimore County State's Attorney's Office, as well as those cases that result in arraignment and are adjudicated. Court case costs are shared among the Maryland Circuit Court, the Baltimore County State's Attorney's Office, and the Maryland Office of the Public Defender. The average cost of a juvenile court case is **\$2,624.00**.

**Juvenile Probation** is provided by DJS. A representative of DJS provided NPC's researchers with the cost of juvenile supervision, which was identified as **\$25.06** per day.

*Shelter Care* is funded by the Maryland Department of Juvenile Services. Facilities providing shelter care are state-owned and operated facilities. The cost of shelter care for boys is **\$206.80** at Catonsville and the cost for girls is **\$254.83** at Sykesville. These facilities were used as a proxy for all other shelter care facilities that participants in this cost analysis attended.

*Residential Care* is funded by the Maryland Department of Juvenile Services. Residential care is **\$379.00** per person per day at the William Donald Schaefer House and **\$491.00** per person per day at the Maryland Youth Center. The average cost of residential at these two facilities is **\$435.00** per person per day, which was used as a proxy for other residential facilities that participants in this cost analysis attended.

*Juvenile Detention* is provided by the Maryland Department of Juvenile Services. Detention facilities are state-owned and operated facilities. These facilities include the Hickey School Youth Facility (for boys) and the Thomas J. S. Waxter Children's Center (for girls). Juvenile detention is **\$549.00** per person per day at the Hickey School Youth Facility and **\$478.00** per person per day at Waxter Children's Center. The Baltimore County juveniles in this analysis also attended other detention facilities throughout the state. The average cost of Hickey School Youth Facility and Waxter Children's Center—**\$513.50**—was used as a proxy for other detention facilities.

NPC's researchers were not able to acquire the individual level **adult** outcome data for the comparison group sample required to assess the impact of the Baltimore County Juvenile JDC on adult criminal justice system costs. As a result, no adult costs are included in this analysis.

#### *Outcomes and Outcome Cost Consequences*

Table 10 presents the average number of juvenile justice system outcome events (e.g., the average number of juvenile re-arrests, the average number of juvenile probation days, etc.) incurred per participant for Baltimore County JDC graduates, all participants (both graduated and non-graduates combined), and the comparison group for 24 months after entry date (or equivalent date for the comparison group).

**Table 10. Average Number of Outcome Transactions per JDC and Comparison Group Member (Including JDC Graduates) Over 24 Months**

<b>Transaction</b>	<b>JDC Graduates N = 74</b>	<b>All JDC Participants N = 142</b>	<b>JDC Comparison Group N = 103</b>
Juvenile Arrests	1.04	1.42	2.87
Juvenile Court Cases	.58	.76	1.15
Juvenile Probation Days	32.98	152.57	182.59
Hickey Detention Days	1.07	10.64	19.47
Waxter Detention Days	.12	3.65	0
Other Detention Days	.78	9.92	23.61
Schaefer Residential Days	.16	1.01	1.39
Maryland Youth Residential Days	.92	2.14	2.45
Other Residential Days	.01	18.81	10.31
Catonsville Shelter Days	.02	.01	.03
Sykesville Shelter Days	.02	.07	.05
Other Shelter Days	0	.09	.03

As can be seen in this table, JDC participants have fewer re-arrests, juvenile court cases, juvenile probation days and detention days than members of the comparison group. Residential and shelter care days are the only outcome transactions for which JDC participants show a higher rate than the comparison group. From these results an interpretation can be reasonably asserted that participation in JDC is associated with less severe juvenile recidivism activity.

Graduates of the JDC show smaller numbers than all drug court participants and comparison group members across every transaction. It is also clear from Table 11 that participants who ultimately are discharged from the program are responsible for the majority of the consumption of juvenile justice system services during the outcome time period, especially in terms of juvenile probation, detention and residential care.

#### *Outcome Cost Results*

Table 11 demonstrates the costs associated with the outcomes described above for all JDC participants, JDC graduates, and the comparison sample.

**Table 11. Juvenile Justice System Outcome Costs per JDC and Comparison Group Member (Including JDC Graduates) Over 24 Months**

Transaction	Transaction Unit Cost	JDC Graduates N = 74	All JDC Participants N = 142	JDC Comparison Group N = 103
Juvenile Arrests	\$184.69	\$192	\$262	\$530
Juvenile Court Cases	\$2,624.00	\$1,522	\$1,994	\$3,018
Juvenile Probation Days	\$25.06	\$826	\$3,823	\$4,576
Hickey Detention Days	\$549.00	\$587	\$5,841	\$10,689
Waxter Detention Days	\$478.00	\$57	\$1,745	\$0
Other Detention Days	\$513.50	\$401	\$5,094	\$12,124
Schaefer Residential Days	\$379.00	\$61	\$383	\$527
Maryland Youth Residential Days	\$491.00	\$452	\$1,051	\$1,203
Other Residential Days	\$435.00	\$4	\$8,182	\$4,485
Catonsville Shelter Days	\$206.80	\$4	\$2	\$6
Sykesville Shelter Days	\$254.83	\$5	\$18	\$13
Other Shelter Days	\$230.82	\$0	\$21	\$7
<b>Total</b>		<b>\$4,111</b>	<b>\$28,416</b>	<b>\$37,178</b>

Note: Average costs per participant have been rounded to the nearest whole dollar amount.

Table 11 reveals that JDC participants cost less for every transaction except residential and shelter care, due to less severe juvenile justice recidivism. The cost for detention (\$12,680) is the most expensive transaction for both JDC participants and comparison group members, followed by residential care (\$9,616 for JDC participants). If the use of detention and residential care had been less for the JDC participants (and especially the JDC participants who did not successfully graduate), the overall cost savings due to program participation would have been substantially greater.

The total average cost savings after 24 months is **\$8,762** per JDC participant, regardless of whether or not the participant graduates. If the JDC program continues in their current capacity of serving a cohort of 60 participants annually, this savings of \$4,381 per participant per year (\$8,762 divided by 2) results in a yearly savings of **\$262,860** per cohort year, which can then continue to be multiplied by the number of years the program remains in operation and by the number of cohorts over time. This savings continues to grow for participants every year after program entry. If savings continue at the same rate, after 10 years the savings *per cohort* will total **\$2,628,600**.

Another interesting point of analysis involves the graduates. We have previously introduced the idea of considering this group from an epidemiological perspective—this is the group that has received the designed “dosage” and term of treatment for the therapeutic intervention under con-

sideration. From this perspective the difference in average total cost between this group and the comparison group of \$33,067 after 24 months is an immediate return on the therapeutic investment in the graduate group. However, it is important to remember that the graduates are not directly comparable to the comparison group as they are the most successful participants.

#### *Outcome Costs by Agency*

As was noted above in our discussion regarding the attractiveness of the TICA approach to program cost analysis, in this study NPC was able to identify the juvenile justice outcome costs on an agency-by-agency basis. In Table 12 we present the outcome costs by agency.

**Table 12. Juvenile Justice System Outcome Costs by Agency per JDC and Comparison Group Member (Including JDC Graduates) Over 24 Months**

Jurisdiction/Agency	JDC Graduates N = 74	All JDC Participants N = 142	JDC Comparison Group N = 103	Difference (Benefit)
Baltimore County Police Department	\$192	\$262	\$530	\$268
Baltimore County Circuit Court	\$362	\$474	\$718	\$244
Baltimore County State's Attorney's Office	\$529	\$693	\$1,049	\$356
Maryland Office of the Public Defender	\$631	\$827	\$1,251	\$424
Maryland Department of Juvenile Services	\$2,398	\$26,160	\$33,629	\$7,469
<b>Total<sup>16</sup></b>	<b>\$4,112</b>	<b>\$28,416</b>	<b>\$37,177</b>	<b>\$8,761</b>

Note: Average agency costs per participant have been rounded to the nearest whole dollar amount.

Similar to many of the drug court studies in which NPC has been involved, greater outcome savings associated with JDC participants accrue to some agencies than others:

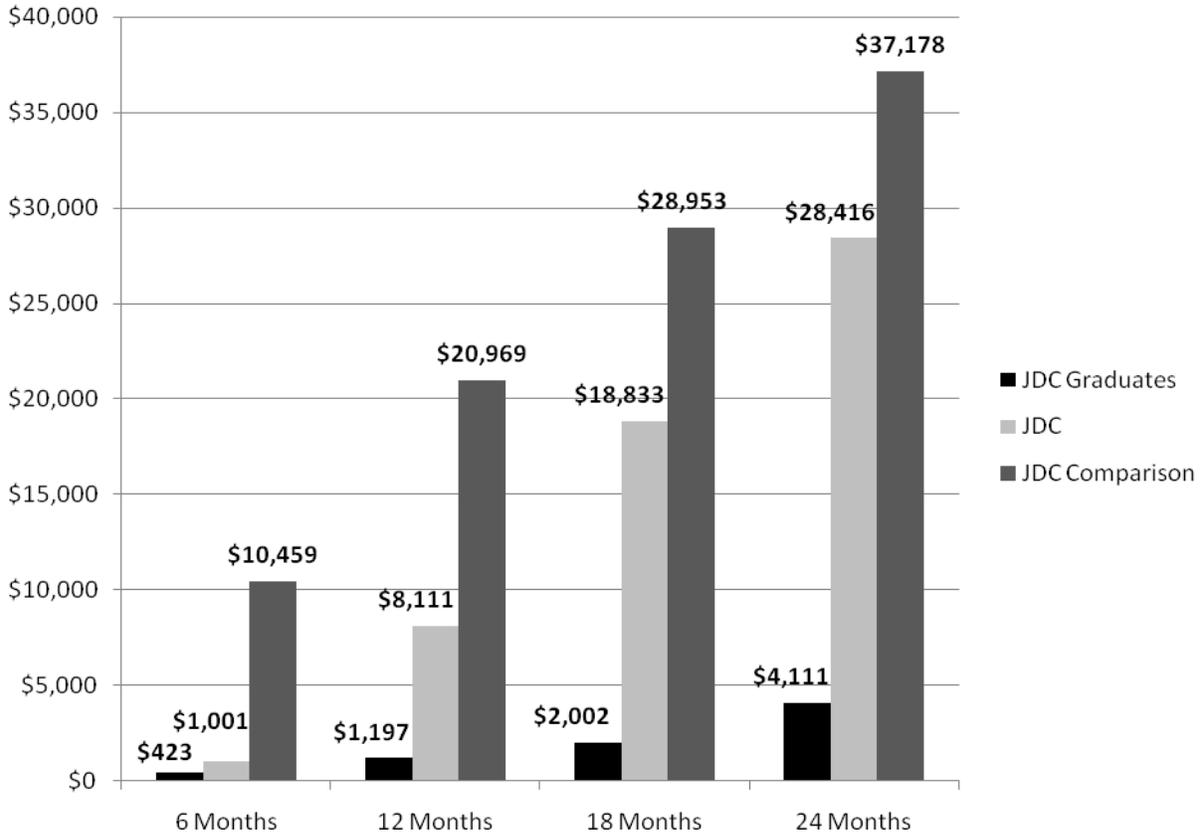
- 51% in outcome costs savings was shown for the Baltimore County Police Department, due to fewer juvenile re-arrests;
- 34% in outcome costs savings was demonstrated for the Circuit Court, State's Attorney's Office, and Office of the Public Defender;
- 22% in outcome costs savings was shown for DJS, due to fewer placements for JDC participants than for comparison group juveniles.

A focus on JDC graduate outcome costs illuminates even more dramatic agency-specific outcome cost impacts. Due to low rates of recidivism, JDC graduates show outcome costs of \$4,112 (\$24,304 less than all JDC participants and \$33,065 less than the comparison group) after 24 months. The largest impact is associated with DJS. After 24 months the graduates had experienced \$31,231 less in DJS outcome costs as had the comparison group. This can be interpreted as a 93% savings for the agency that is involved in more outcome costs than any other juvenile agency included in this study.

<sup>16</sup> Totals in this row may not match the totals in the outcome costs by transaction table due to rounding.

Figure 7 displays a graph of the cumulative outcome costs over the 24 months post-JDC entry (or the equivalent for the comparison group). Note that these results by 6 month periods are not the same participants over time, but represent those different cohorts of participants who had at least 6, 12, 18 and 24 months of follow-up time, respectively.

**Figure 7. Juvenile Justice Recidivism Cost Consequences per Person: JDC Participants and Comparison Group Members (Including JDC Graduates) Over 24 Months**



**COST EVALUATION QUESTION #3: COST OF TIME BETWEEN ARREST AND JDC PROGRAM ENTRY**

*What is the impact on the juvenile justice system of the time between the eligible arrest and JDC program entry (in terms of arrests and detention)?*

Key Component #3 of the Key Components of Drug Courts is about identifying eligible individuals quickly and promptly placing them in the drug court program. A shorter time between arrest and program entry helps ensure prompt treatment while also placing the offender in a highly supervised, community-based environment where he or she is less likely to be re-arrested and therefore less likely to be using other juvenile criminal justice resources. The longer the time between arrest and program entry, the greater the opportunity for offenders to re-offend before entering treatment. This gap leads to the question, what is the impact in terms of re-arrests and detention in the time between arrest and entry into the JDC program for participants? These two areas were selected to highlight this question because detention is the primary cost incurred by

the program and arrests are representative of the public safety impact of individuals in the community committing additional crimes.

This section describes the juvenile criminal justice costs for arrests and detention experienced by JDC participants between the time of the JDC eligible arrest and JDC program entry. Both transactions were described in the outcome costs section above. Costs were calculated from the time of the program eligible arrest to program entry (an average of 272 days for JDC participants and 286 days for JDC graduates).

*Costs Between Arrest and JDC Entry*

Table 13 represents the costs of re-arrests and detention time per person for JDC graduates and all JDC participants (graduates and non-graduates combined) from the program eligible arrest to program entry.

**Table 13. Re-arrest and Detention Costs per JDC Member (Including JDC Graduates) From Arrest to Program Entry**

Transaction	Transaction Unit Cost	Average Number of Transactions per JDC graduate	Average Cost per JDC Graduate N = 80	Average Number of Transactions per JDC Participant	Average Cost per JDC Participant N = 186
Arrests	\$184.69	0.03	\$6	0.02	\$4
Hickey Detention Days	\$549.00	1.64	\$900	3.13	\$1,718
Waxter Detention Days	\$478.00	0.75	\$359	1.24	\$593
Other Detention Days	\$513.50	9.38	\$4,817	7.15	\$3,672
<b>Total</b>			<b>\$6,082</b>		<b>\$5,987</b>

Note: Average costs per participant have been rounded to the nearest whole dollar amount.

As can be seen in Table 13, there are substantial costs accruing to the juvenile justice system from the time of the JDC eligible arrest through entry into the JDC program (\$5,987 for all JDC participants and \$6,082 for JDC graduates). It should be noted that these costs only include arrests and detention time during the time from the JDC eligible arrest to entry into the JDC (an average of 272 days for JDC participants and 286 days for JDC graduates). Other criminal justice costs, such as court cases and juvenile probation days are also most likely accruing. These costs emphasize that the sooner the JDC gets offenders into the program, the more criminal justice system costs can be minimized.

**COST SUMMARY**

Overall, the JDC results in substantial cost savings and a return on taxpayer investment in the program. The program investment costs are \$56,631 per JDC participant. When DJS placements are excluded, the program investment cost is \$21,048 per participant. When program costs are divided by the average number of days in the program, the cost per day per participant for the JDC program is \$139.24 (\$51.75 when DJS placement costs are excluded), which is lower than the per day cost of every type of DJS placement (detention, residential, and shelter care). If the

program made a policy decision to suspend or revoke program participation of youth who are sent to longer-term placements, the program costs would be reduced and those placement costs would only be attributed to the outcomes equation.

The cost due to recidivism over 24 months from program entry was \$28,416 per JDC participant compared to \$37,178 per comparison individual, resulting in a savings of \$8,762 per participant (regardless of whether they graduate). The majority of the cost in outcomes for JDC participants over the 24 months from JDC entry was due to time in detention (\$12,680) and residential care (\$9,616), mostly for participants who were unsuccessful in completing the program.

In sum, the JDC program had a cost savings of \$8,762 per participant over 24 months, so there is a clear benefit to the taxpayer in terms of juvenile justice related costs in choosing the JDC process over traditional court processing.

## DISCUSSION/SUMMARY OF FINDINGS

This study of the Baltimore County Juvenile Drug Court program shows positive outcomes for drug court participants, compared to youth who had similar demographic characteristics and criminal histories but who did not participate in drug court. JDC youth had significant reductions in substance use and offending over time, and significantly fewer new arrests than the comparison group. In addition, JDC participants cost the juvenile justice system less money after program participation than youth in the comparison group who experienced traditional court processing. Youth who graduate from the program cost the juvenile system substantially less than program participants overall, mostly due to their low rates of recidivism and their less frequent use of detention and other out-of-home placements.

The main cost that drives the difference between program and comparison groups is placement—longer term stays in detention and treatment programs, though program youth have an increased rate of use of residential placement while comparison youth have an increased rate of detention. This distinction may reflect increased access to treatment services due to program participation.

The program's cost is greatly impacted by the use of detention as a sanction during JDC participation and this impact is being felt even more strongly now that the program has lost access to alternatives to detention. In 2008, the shelter facilities that the program accessed for weekend or short-term out-of-community sanctions (MYRC, GUIDE and Sykesville for girls) were closed. These facilities accommodated late admissions on Friday through Sunday, responded rapidly for court requests for beds, and provided treatment programming specifically for JCD youth. Program staff found this service to be effective at breaking patterns of problem behaviors. Though these facilities were closed due to budget constraints, it is important to attend to the cost implications of using more expensive placements as an alternative. The program was negatively impacted by the loss of these lesser restrictive facilities, and overall, the juvenile justice system in Maryland may see a cost increase rather than decrease due to this change.

This program may want to review the services available for participating youth, to make sure that the intensity of services matches the need as indicated by the substance abuse assessment and juvenile justice risk assessment. In addition, the program should ensure that all youth have access to aftercare and transitional services, to maximize their chance for success after the end of treatment and program participation. Offering additional incentives, particularly those individualized to the participant, can also be powerful motivators for positive behavior.

Finally, the program staff should be aware of potential inhalant use among participants as it is a common way for youth to access substances and also use substances that are likely to be undetected by standard drug testing methods. All direct service staff should be familiar with the physical signs that may indicate inhalant use has occurred and make sure all youth are educated about the dangers of these practices.

A review of program policies and practices will benefit the program as it continues to serve very high-risk and high-need youth in the future.



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