Jackson County Adult Treatment Court
Kansas City and Independence, Missouri
4-Track Model Outcome and Cost Evaluation Report

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EXECUTIVE SUMMARY

Background

The Jackson County Adult Treatment Court (JCATC) Program began in October 1993. Jackson County encompasses a large urbanized area and consists of a major metropolitan community, Kansas City, with a number of suburban communities, including Independence, Missouri. Court dockets, including adult treatment court, are held in both communities. Services for treatment court participants are offered in both of these communities as well as at other sites around the county. The treatment court program has been fortunate to have a treatment court commissioner who has a long tenure with the program, providing leadership and continuity as the program has expanded and changed to reflect new research and needs in the community.

As part of a statewide initiative in July 2012, the Jackson County adult treatment court and veterans treatment court began using the Risk and Needs Triage (RANT®), a scientifically validated screening tool developed by the Treatment Research Institute (TRI), to screen participants at entry into the program. In October 2014, the program began using the RANT to place participants into quadrants based on prognostic risk and criminogenic need with the objective to use resources more efficiently by targeting the specific risks and needs of the participants. As of January 2018 there were 580 participants with RANT scores, 248 participants in Quadrant 1 (Q1) high-risk/high-need, 46 participants in Quadrant 2 (Q2) low-risk/high-need, 172 in Quadrant 3 (Q3) high-risk/low-need and 114 in Quadrant 4 (Q4) low-risk/low-need.

In October 2014, the Office of State Courts Administrator (OSCA) in Missouri, in partnership with NPC Research, received a grant from the Bureau of Justice Assistance, to perform process, outcome and cost evaluations of two drug courts operating in Missouri using the 4-track model, one of which is the JCATC.

Detailed process and outcome evaluations were conducted to determine the effectiveness and any efficiency gained by separating participants into separate tracks how best to replicate the practices. A cost-benefit analysis was conducted to determine what resources are needed to operate alternative tracks, any cost efficiencies in delivering services according to participant risk/need level and any savings due to improved outcomes. Specifically, the evaluation was designed to address the following study questions:

1. Did the program tailor the treatment court requirements and services to each of the four quadrants? That is, did the program provide services differently in each of the four tracks?
2. Did graduation rates differ before and after 4-track implementation?
3. Did placing participants into the four tracks according to assessed risk and need result in reduced recidivism including rearrests and reincarceration compared to traditional drug court and compared to individuals who were eligible for the treatment court but who did not participate?
4. What are the costs of program participation after implementing the 4-track model?
5. Were there any cost savings or offsets due to improved participant outcomes after 4-track implementation?

NPC selected a sample of treatment court participants at two time points: 1) Participants before the implementation of the 4-track model, and 2) Participants after the four tracks were implemented. Comparison groups of individuals eligible for treatment court but who did not participate in the program were selected at both time points (pre and post 4-track implementation). All individuals in the four sample groups were followed through administrative datasets for up to 4 years post program entry. Outcomes examined included graduation rates, rearrests and associated charges, and time incarcerated after program entry.

The cost approach used by NPC Research 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 from multiple agencies. In order to maximize the study's benefit to policymakers, a "cost-to-taxpayer" approach was used for this evaluation. The central core of the cost-to-taxpayer approach in calculating benefits (avoided costs) for drug courts specifically is the fact that untreated substance abuse will cost tax dollar-funded systems money that could be avoided or diminished if substance abuse were treated. The TICA approach also looks at publicly funded costs as "opportunity resources." That is, resources that are not spent on a particular transaction (e.g., time in jail) are available to be used in other contexts or for other individuals.

Results

Overall, roughly two thirds of JCATC participants were male and over half were White with an average age of roughly 31. Compared with pre-4-track JCATC participants, post-4-track JCATC had more female and fewer African American participants. None of these characteristics was significantly different in each time period's respective comparison group.

On average, for all samples, individuals had roughly 1.0 priors in the 2 years before the program entry date. There were no statistically significant differences in criminal history between the matched JCATC and comparison groups for each time period. When comparing the JCATC participants pre vs post-4-track implementation, JCATC participants had a similar total number of prior arrests across time periods. However, post-4-track participants had more arrests with property charges and more felony arrests than pre-4-track participants, indicating a shift to a higher criminality group post-4-track implementation.

Quadrants varied widely in size with the largest number of participants in Q1 (HR/HN=148), followed by Q3 (HR/LN=104), then Q4 (LR/LN=83) and finally Q2 (LR/HN=26). The majority of participants referred to the JCATC program are high-risk (70%). Participants in Q1 had the highest rates of methamphetamine and heroin/opioids and the lowest rates of alcohol as a drug of choice. Participants in Q2 had the highest rates of marijuana as drug of choice. There were differences in gender and race between quadrants; low-need participants (Q3 and Q4) were more likely to be male and African American than high-need participants (Q1 and Q2) while low-risk/high-need participants (Q2) were more likely to be female. Additionally, low-risk participants (Q2 and Q4) were older on average than high-risk participants (Q1 and Q3). As expected for individuals screened as high-risk, participants in Q1 and Q3 had a more extensive criminal history than those in the low-risk/low-need Q4. Unusually, Q2 participants had more serious prior arrests than the other quadrants including more person crimes and felony charges than the other quadrants. It is recommended that the program review their RANT screening process to ensure that individuals are being correctly placed in the quadrants according to risk level.

Answers to Research Questions

1. **Were the treatment court requirements and services tailored to each of the four quadrants?**

Yes, for the most part. Participants in all quadrants received similar amounts of supervision (e.g., similar numbers of court sessions) but high-need participants received higher amounts of group and individual counseling, while participants in Q4 had the lowest amounts of all types of treatment. Q3 had lower amounts of treatment services than the high-need quadrants. The JCATC appropriately matched treatment services to the clinical needs of its participants.

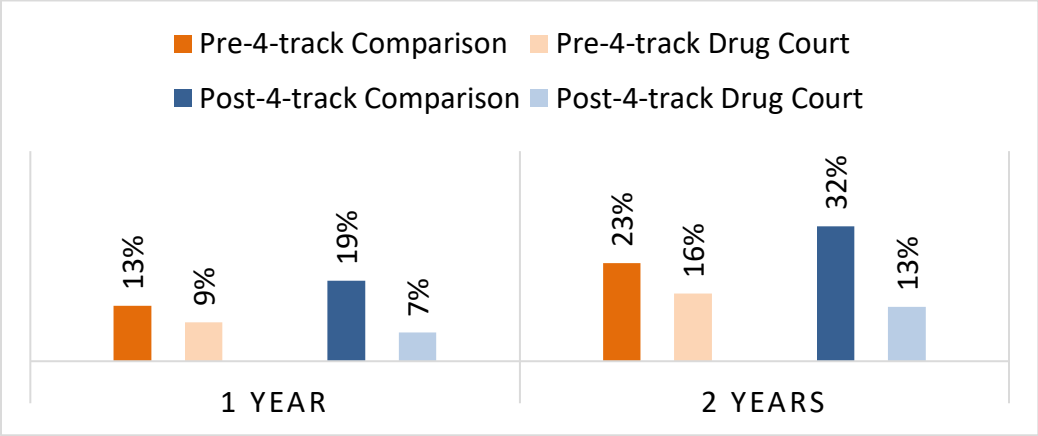
2. **Did graduation rates differ before and after 4-Track implementation?**

No. The average graduation rate, using all non-active participants who either graduated or were terminated, was 65% for pre-4-track implementation participants (2009-2013) compared with 68% for post-implementation participant (2014-2016). This is not a substantial difference. However, the graduation rate at both time period is very high, especially relative to the national graduation rate of 57% for treatment courts across the United States.

3. **Did placing participants into the 4-Tracks according to assessed risk and need result in reduced recidivism?**

Yes. At each of the 2 years from program entry both the pre-4-track and post-4-track participants had lower rearrest rates than their comparison groups. However, post-4-track participants had a larger reduction in rearrest rate than the pre-4-track participants (See Figure A).

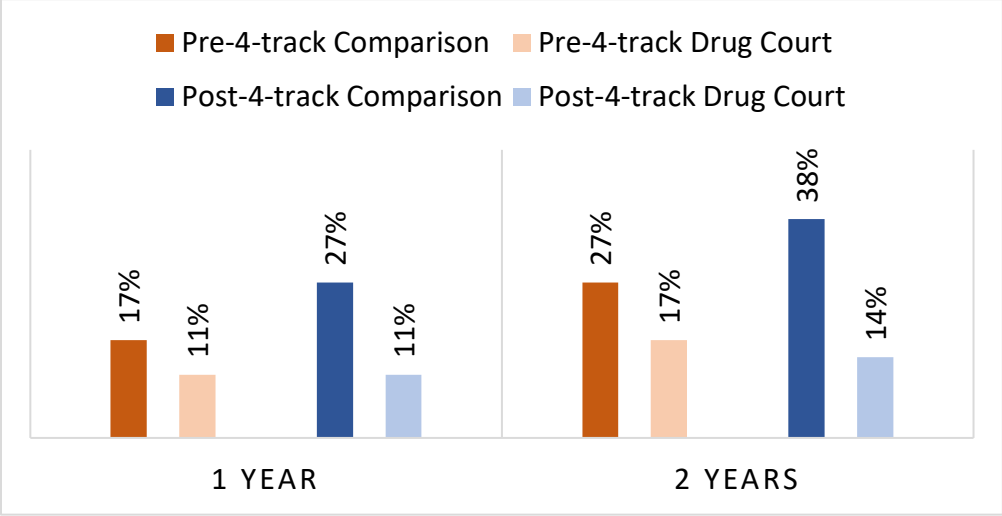
Figure A. Percent of Individuals Rearrested for any Offense over 2 Years



A review of rearrest rates by charge showed lower rates of person and property crimes for post-4-track participants compared to their comparison group, and a rearrest rate 6 times lower for drug charges (4% for JCATC participants versus 23% for the comparison group).

An examination of reincarceration rates (see Figure B) showed similar results. Participants post-4-track implementation had larger reductions in reincarceration rates (a 171% reduction in reincarceration rates post-4-track implementation compared to a 58% reduction pre-4-track). These recidivism findings indicate improved outcomes for participants related to the 4-track model.

Figure B. Average Reincarceration Rate in Jail Pre- and Post-4-Track Implementation[1]



[1] Sample sizes by group and time period: Pre-4-track JCATC Participants *n* = 1001; Pre-4-track comparison group; *n* = 1097; Post-4-track JCATC Participants *n* = 253; Post-4-track comparison group *n* = 377.

4. What are the costs of program participation after implementing the 4-Track model?

Table A shows that the total JCATC program cost (on average across quadrants) is $5,300 per participant. When program costs are examined by quadrant, the costs do not vary widely from one quadrant to the next. Q4 has the lowest program cost per participant, and Q2 has the highest cost per participant, with Q1 and Q3 falling in between Q2 and Q4. The surprising outcome is Q2 having a higher program cost per participant than Q1, mainly due to more treatment.

Table A. Program Costs per Participant Post-4-Track Implementation

Transaction	Unit Cost	Avg. Cost per Participant All JCATC	Avg. Cost per Participant Q1 (HR/HN)	Avg. Cost per Participant Q2 (LR/HN)	Avg. Cost per Participant Q3 (HR/LN)	Avg. Cost per Participant Q4 (LR/LN)
Case Management Days	$6.02	$2,125	$2,233	$2,149	$2,143	$1,981
Court Appearances	$43.86	$554	$582	$611	$524	$522
Treatment[a]	N/A	$2,087	$2,322	$3,117	$1,977	$1,504
Drug Tests	$11.25	$755	$740	$858	$648	$876
Jail Sanctions	$60.23	$56	$81	$28	$44	$34
Program Fees[b]	N/A	($277)	($304)	($190)	($280)	($269)
TOTAL		**$5,300**	**$5,654**	**$6,573**	**$5,056**	**$4,648**

5. Were there any cost savings or offsets due to improved participant outcomes after 4-track implementation?

Yes. Table B presents the outcome costs for each transaction for all JCATC participants (graduates and terminated participants combined) and the comparison groups, for both the pre-4-track and post-4-track time periods.

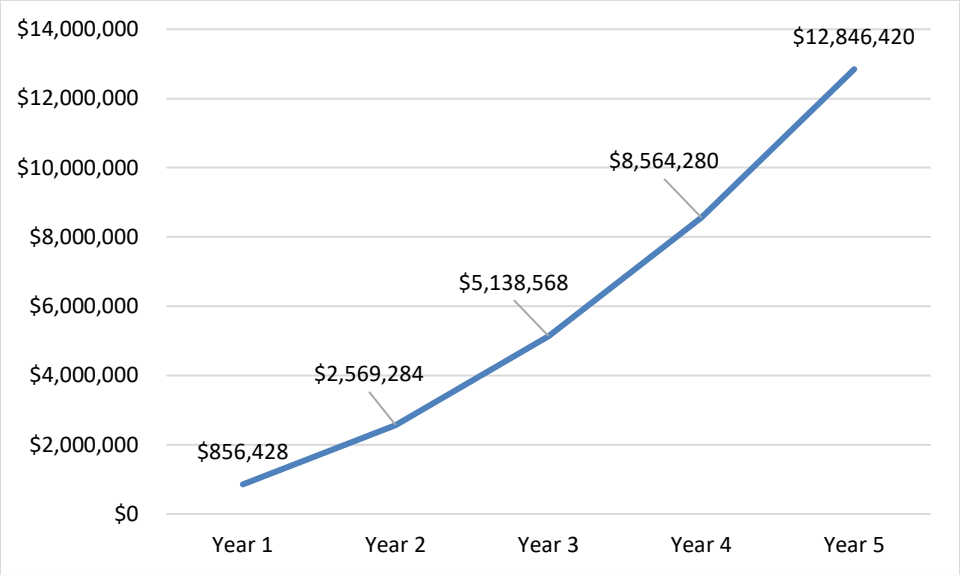
Table B. Outcome Costs per Person over 2 Years – Pre- and Post-4-Track Implementation

		Pre-4-Track		Post-4-Track	
Transaction	**Unit Costs**	**JCATC Per Person (*n* = 1009)**	**Comparison Per Person (*n* = 1115)**	**JCATC Per Person (*n* = 259)**	**Comparison Per Person (*n* = 409)**
Rearrests	$95.30	$21	$30	$15	$43
Circuit Court Cases	$2,053.03	$452	$657	$328	$924
Probation and Parole Days	$6.26	$522	$1,482	$321	$1,216
Jail Days	$60.23	$545	$679	$954	$1,273
Prison Days	$59.84	$281	$3,930	$698	$3,309
SUBTOTAL		**$1,821**	**$6,778**	**$2,316**	**$6,765**
Property Victimizations	$14,224.83	$711	$1,138	$569	$996
Person Victimizations	$46,081.54	$922	$1,843	$922	$1,382
TOTAL		**$3,454**	**$9,759**	**$3,807**	**$9,143**

The costs of criminal justice outcomes for both the pre- and post-4-track JCATC participants is less than the cost for their respective comparison groups, indicating a benefit, or savings, related to program participation in both time periods. When the difference in total costs, including victimization costs, is calculated between the JCATC participants and their comparison groups, the benefit for pre-4-track JCATC participants comes to $6,305 per participant and the benefit for post-4-track participants comes to $5,336 per participant. This difference shows that the benefit due to JCATC participation post-4-track implementation, with victimization costs are included, is slightly lower than it was pre-4-track, mainly due to post-4-track participants spending slightly more time incarcerated. The increased incarceration time may be related to the post-4-track group having a more criminal prior arrest history. However, there is still a substantial savings related to participation in the JCATC program, and a significantly lower numbers of rearrests for post-4-track participants compared to pre-4-track participants indicate that public safety is better protected post-4-track implementation.

Figure C illustrates how the savings per participant can continue to grow with the number of new participants that enter the program each year. If the JCATC program serves a cohort of 321 new participants annually, the savings of $5,336 per participant (including victimizations) over 2 years from program entry results in a combined savings of $856,428 per cohort per year, which can then be multiplied by the number of years the program remains in operation and for additional cohorts per year. After 5 years, the accumulated savings come to almost **$13 million**.

Figure C. Growth in Cost Savings Due to Positive Criminal Justice Outcomes for Post-4-Track JCATC over 5 Years



If JCATC participants continue to have positive outcomes in subsequent years, then these cost savings can be expected to continue to accrue over time, repaying the program investment costs and providing further savings in the form of opportunity resources to public agencies. These findings indicate that JCATC 4-track model is both beneficial to participants and beneficial to Jackson County and Missouri taxpayers.

These findings indicate that using risk-need-responsivity (RNR) in a drug court setting through implementing separate tracks and providing supervision and services based on each participants individualized risk and need results in increased public safety due to lower criminal recidivism as well as substantial cost savings to the taxpayer.

BACKGROUND

Drug courts are designed to guide offenders identified as having a substance use disorder into treatment that will promote recovery and improve the quality of life for the offenders and their families. Benefits to society include substantial reductions in crime and decreased drug use, 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 agency representatives operating collaboratively and somewhat outside of their traditional roles. The team typically includes a treatment court administrator, case managers, substance use 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 and defense attorneys modify their traditional adversarial roles to support the treatment and supervision needs of program participants. Drug court programs blend the resources, expertise and interests of a variety of jurisdictions and agencies.

Drug courts have been shown to be effective in reducing criminal recidivism (GAO, 2005), improving the psycho-social functioning of offenders (Kralstein, 2010), and reducing taxpayer costs due to positive outcomes for drug court participants (including fewer rearrests, less time in jail and less time in prison) (Carey & Finigan, 2004; Carey, Finigan, Waller, Lucas, & Crumpton, 2005). Some drug courts have been shown to cost less to operate than processing offenders through business-as-usual in the court system (Carey & Finigan, 2004; Carey et al., 2005).

More recently, research has focused not just on *whether* drug courts work but *how* they work, and *who* they work best for. Research based best practices have been developed (e.g., Volume I of NADCP's Best Practice Standards was published in 2013 and Volume II in July 2015). These Best Practice Standards present multiple research-based practices that have been associated with significant reductions in recidivism or significant increases in cost savings or both. The Standards also describe the research that illustrates for whom the traditional drug court model works best, specifically, high-risk/high-need individuals. The Standards recommends that drug court programs either limit their population to high-risk/high-need individuals, or develop different tracks for participants at different risk and need levels (i.e., follow a RNR model). That is, drug courts should assess individuals at intake to determine the appropriate services and supervision level based on their assessment results (e.g., Andrews, Bonta, & Wormith, 2006; Lowenkamp & Latessa, 2005). In addition, the populations of participants at different risk and need levels should not mix as the research further shows that mixing leads to worse outcomes. Specifically, mixing low-risk individuals with high-risk individuals generally results in the low-risk becoming high-risk, and providing high intensity treatment for individuals with low needs not only wastes resources, but can result in these low-need individuals becoming high-need or otherwise creating unnecessary challenges in their lives. This research has led to the development of more sophisticated drug court programs, including programs that have implemented multiple tracks for their participants based on the four “quadrants” of risk and need (HR/HN, HR/LN, LR/HN, and LR/LN). The first known programs to implement all four tracks, or quadrants, were the drug courts in Greene County and the City of St. Louis, Missouri, followed shortly after by Jackson County, where the judicial officers/commissioners and coordinators worked with their teams and with community organizations to

develop appropriate supervision, treatment and other complementary services for participants at each risk and need level.

In October 2014, the Office of State Courts Administrator (OSCA) in Missouri, in partnership with NPC Research, received a grant from the Bureau of Justice Assistance, to perform process, outcome and cost evaluations of two drug courts operating in Missouri that are using the 4-track model and to assist in the expansion of this model into four additional Missouri drug courts. The Missouri Drug Courts Coordinating Commission was interested in the costs associated with implementing this model and subsequently contracted with NPC to evaluate the costs and potential benefits in two of the expansion sites, Boone, and Osage-Gasconade counties.

All programs are using a specialized screening tool, the Risk and Needs Triage (RANT®), a scientifically validated screening tool developed by the Treatment Research Institute (TRI), to place offenders in one of the four risk-need "quadrants" (See Table 1). The programs have separate treatment and supervision requirements according to participants' risk and need levels. The 4-track model implemented in these sites is an effort to tailor the treatment court programs to the risk and needs of participants in each quadrant with the expectation that this will improve effectiveness and be more cost and resource efficient. The evaluation in these four sites is intended to determine whether this expectation is accurate. That is, the study across these four sites (Greene, Jackson, Boone, and Osage-Gasconade counties) is designed to answer the question, does implementing separate tracks based on participant risk and need in treatment courts actually result in more efficient use of program resources and in improved participant outcomes?

Table 1. The Risk and Need Quadrants

	High-Risk (HR)	**Low-Risk (LR)**
High-Need (HN)	Quadrant 1 (Q1) high-risk/high-need	Quadrant 2 (Q2) low-risk/high-need
Low-Need (LN)	Quadrant 3 (Q3) high-risk/low-need	Quadrant 4 (Q4) low-risk/low-need

This report contains the study results specifically for the Jackson County Adult Treatment Court. A summary of the study results across all four study sites is available at www.npcresearch.com under "Reports & Publications." This report includes the specific evaluation methods used in Jackson County, a brief description of the 4-track treatment court program, and the outcome (recidivism) and program cost results for the Jackson County Adult Treatment Court (JCATC).

Evaluation Design and Methods[2]

The detailed process and outcome evaluations were conducted in Greene and Jackson County treatment court programs to determine the effectiveness and efficiency gained by separating participants into appropriate tracks as well as to improve upon these tracks and determine how best to replicate the practices. A cost-benefit analysis was conducted to determine resources needed to operate alternative tracks, cost efficiencies in delivering services according to participant risk/need level and any savings due to improved outcomes. Specifically, the evaluation was designed to address the following study questions:

1. Did the program tailor the treatment court requirements and services to each of the four quadrants? That is, did the program provide services differently in each of the four tracks?
2. Did graduation rates differ before and after 4-track implementation?
3. Did placing participants into the four tracks according to assessed risk and need result in reduced recidivism including rearrests and reincarceration compared to traditional drug court and compared to individuals who were eligible for the treatment court but who did not participate?
4. What are the costs of program participation after implementing the 4-track model?
5. Were there any cost savings or offsets due to improved participant outcomes after 4-track implementation?

NPC selected a sample of treatment court participants at two time points: 1) Participants before the implementation of the 4-track model, and 2) Participants after the four tracks were implemented. Comparison groups of individuals eligible for treatment court but who did not participate in the program were selected at both time points (pre and post 4-track implementation). All individuals in the four sample groups were tracked through administrative datasets for up to four years post program entry. Outcomes examined included graduation rates, rearrests and associated charges, and time incarcerated after program entry.

The cost approach used by NPC Research 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 from multiple agencies. Transactions are those points within a system where resources are consumed and/or change hands. In the case of drug courts, when a drug court participant appears in court or has a drug test, resources such as judge time, defense attorney time, court facilities, and 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 costs assessment in an environment such as a drug court, which involves complex interactions among multiple taxpayer-funded organizations.

[2] Statistical analysis methods are included as Appendix A

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 central core of the cost-to-taxpayer approach in calculating benefits (avoided costs) for drug courts specifically is the fact that untreated substance use disorders will cost tax dollar-funded systems money that could be avoided or diminished if substance use disorders were treated. In this approach, any cost that is the result of untreated substance use disorders and that directly impacts a citizen (through tax-related expenditures) is used in calculating the benefits of treatment for substance use disorders.

Finally, NPC's cost approach looks at publicly funded costs as "opportunity resources." The concept of opportunity cost from the economic literature suggests that system resources are available to be used in other contexts if they are not spent on a particular transaction. The term opportunity resource describes these resources that are now available for different use. For example, if substance use disorder 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, who, perhaps, possesses a more serious criminal justice record than does the individual who has received treatment and successfully avoided subsequent incarceration. Therefore, any "cost savings" reported in this evaluation may not be in the form of actual monetary amounts, but may be available in the form of a resource (such as a jail bed, or a police officer's time) that is available for other uses.

SAMPLE/COHORT SELECTION

To ensure a rigorous outcome evaluation, it is necessary to select a cohort of individuals who participated in the JCATC both pre- and post-4-track implementation and a cohort of similar individuals who did not participant in the program.

The JCATC Participant Groups

The Jackson County Adult Treatment Court began implementing the 4-track model in October of 2014. The pre-4-track implementation sample selected for the study was the population of individuals who entered the program between January 2009 and December 2013. The post-4-track implementation sample was the population of individuals who entered the program from October 2014 to October 2017. This study uses an intent-to-treat design so all participants who entered the program during the selected time periods, regardless of exit status, are included in the analysis.

The Comparison Group

Step 1: Selecting the Comparison Group

The comparison sample is composed of individuals who are similar to those who participated in the treatment court program (e.g., similar demographics and criminal history) but who did not participate in the program. NPC obtained court case and arrest data for Jackson County from OSCA's Judicial Information System (JIS) (see Table 1 for more details). These data allowed for the identification of individuals who received similar types of eligible arrests (e.g., drug, property, etc.) during the same time periods as the JCATC participants and therefore were potentially eligible for the JCATC. Additional

information was gathered from the Department of Corrections (DOC) database that indicated whether they fit the eligibility criteria for the treatment court program. This information included detailed demographics and criminal history. All JCATC participants and comparison individuals were matched on all available information (described in detail below) using Mahalanobis Distance Matching.

Step 2: Matching the Comparison Group to the JCATC Group - Application of Mahalanobis Distance Matching

Comparing program participants to offenders who did not participate in the drug court (comparison group members) is complicated by the fact that program participants may systematically differ from comparison group members, and those differences, rather than drug court, may account for some or all of the observed differences in the impact measures. To address this complication, once the available comparison sample was identified, we used a method called Mahalanobis Distance Matching because it provides some control for differences between the program participants and the comparison group (according to the available data on both groups) (Rubin, 1980). Mahalanobis Distance Matching selects comparison group members that are similar to JCATC participants and provides a weighting scheme designed to mimic randomized blocked designs when random assignment is not available or feasible.

NPC matched participants with potential comparison group members on a number of participant characteristics including: 1) race, 2) age, 3) sex, and 4) prior criminal history. Table 2 lists the data elements that were used in the matching process.

DATA COLLECTION AND SOURCES

Administrative Data

The data necessary for the evaluation were gathered from administrative databases as described in Table 2. The table lists the type of data needed and the source of these data.

Table 2. Jackson County Treatment Court Data and Sources

Data	Source
Treatment Court Program Data • Participant demographics • Program start and end dates • Phase dates • Exit Status • Sanctions and Incentives	Local treatment court specific database (eCourt) Judicial Information System (JIS)
Traditional Court Data • Dates of case filings • Charges • Convictions	Judicial Information System (JIS)
Incarceration and Supervision Data • Jail entry and exit dates • Prison entry and exit dates • Probation/parole start and end dates	Jackson County Detention Center Missouri Department of Corrections
Drug Testing • Dates of drug tests • Results of drug tests	Local treatment court specific database (eCourt)
Treatment • Entry and exit dates of treatment received • Treatment modality • Units of service	Local program specific database (eCourt)

Cost Data

The TICA methodology is based upon six distinct steps. Table 3 lists each of these steps and the tasks involved.

Table 3. The Six Steps of TICA

	Description	Tasks
Step 1:	Determine flow/process (i.e., how program participants move through the system).	Site visits/direct observations of program practice. Interviews with key informants (agency and program staff) using a drug court typology and cost guide.
Step 2:	Identify the transactions that occur within this flow (i.e., where clients interact with the system).	Analysis of process information gained in Step 1.
Step 3:	Identify the agencies involved in each transaction (e.g., court, treatment, police).	Analysis of process information gained in Step 1. Direct observation of program transactions.
Step 4:	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).	Interviews with key program informants using program typology and cost guide. Direct observation of program transactions. Administrative data collection of number of transactions (e.g., number of treatment sessions, number of drug tests).
Step 5:	Determine the cost of the resources used by each agency for each transaction.	Interviews with budget and finance officers. Review of websites, agency budgets and other financial paperwork.
Step 6:	Calculate cost results (e.g., cost per transaction, total cost of the program per participant).	Indirect 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. The transaction cost is multiplied by the average number of transactions to determine the total average cost per transaction type. These total average costs per transaction type are added to determine the program costs and the outcome costs.

Step 1 (determining program process) was performed during site visits by OSCA staff, through analysis of program documents, and through interviews with key informants. Step 2 (identifying program transactions) and Step 3 (identifying the agencies involved with transactions) were performed through observation during site visits and by analyzing the information gathered in Step 1. Step 4 (determining the resources used) was performed through extensive interviewing of key informants, direct observation during a site visits, and by collecting administrative data from the agencies involved in the program. Step 5 (determining the cost of the resources) was performed through interviews with program and non-program staff and with agency financial officers, as well as analysis of budgets found online or provided by agencies. Finally, Step 6 (calculating cost results) involved calculating the cost of each transaction and multiplying this cost by the number of transactions. For example, to calculate the cost of drug testing, the unit cost per drug test is multiplied by the average number of drug tests performed per person. All the transactional costs for each individual were added to determine the overall cost per program participant/comparison group individual. This was reported as an average cost per person for the program, and outcome/impact costs due to rearrests, jail time and other recidivism costs, as well as any other service usage, such as substance use treatment. In addition, due to the nature of the TICA approach, it was also possible to calculate the cost of JCATC processing per agency, so that it is possible to determine which agencies contributed the most resources to the program and which agencies gained the most benefit.

RESULTS

This section includes brief background information about the Jackson County Adult Treatment Court and then a summary of the key results and recommendations. The section following this summary provides the detailed outcome and cost results.

The Jackson County Adult Treatment Court (JCATC) Program began in October 1993. Jackson County encompasses a large urbanized area and consists of a major metropolitan community, Kansas City, with a number of suburban communities, including Independence, Missouri. Court dockets, including drug court, are held in both communities. Services for treatment court participants are offered in both of these communities as well as at other sites around the county. The treatment court program has been fortunate to have a treatment court commissioner who has a long tenure with the program, providing leadership and continuity as the program has expanded and changed to reflect new research and needs in the community.

As part of a statewide initiative in July 2012, the Jackson County adult treatment court and veterans treatment court began using the Risk and Needs Triage (RANT®) to screen participants at entry into the program. In October 2014 the program began using the RANT to place participants into quadrants based on prognostic risk and criminogenic need with the objective to use resources more efficiently by targeting the specific risks and needs of the participants. As of January 2018 there were 580 participants with RANT scores, 248 participants in Quadrant 1 (Q1) HR/HN, 46 participants in Quadrant 2 (Q2) LR/HN, 172 in Quadrant 3 (Q3) HR/LN, and 114 in Quadrant 4 (Q4) LR/LN.

Process Evaluation Summary

From the site visit observation, team member interviews and participant focus groups, it was determined that overall, the JCATC follows essential guidelines and best practices within the 10 Key Components of Drug Courts.[3] Among its many positive attributes, the program should be specifically commended for the following practices:

- Representatives from all key agencies attend staffing and court sessions
- Excellent team member communication
- Regular email communication among the team
- A prosecuting attorney and defense attorney assigned to the program
- Eligibility criteria that includes participants with a wide range of charges
- Once they have entered the program, participants are connected with treatment services swiftly
- The program uses a validated tool to asses for risk and need levels and has developed a 4-track model that separates participants by quadrant in court and in treatment
- Participants are assigned to treatment based on their assessment results

[3] The full process evaluation report can be found on the NPC website at http://npcresearch.com/wp-content/uploads/Jackson-County-Drug-Court-Process-Evaluation.pdf

- Drug testing occurs at least twice per week
- Rapid results are obtained from drug testing (within 2 days or less)
- Jail is used sparingly
- The commissioner and team participates in regular training and all were trained in the quadrant/4-track model before implementation
- The commissioner is respectful, fair, attentive, and caring in his interactions with the participants in court
- The commissioner consistently spends greater than 3 minutes with each participant
- The JCATC collects electronic data and reviews their data regularly as a part of self-monitoring

Although this program was functioning well, there were some primary areas of suggested program improvement that arose in the staff interviews participant focus groups and observations during the site visit.

- Ensure that a defense attorney is consistently present at staffing meetings and court sessions
- Have the assigned prosecutor agree to be a part of the team for at least 2 years or indefinitely instead of rotating regularly
- Limit the number of treatment provider agencies (in addition to the main agency) to a smaller number that have contracts requiring regular, specific information be shared with the team before staffing, or assign a team member to oversee and monitor the treatment providers and collect the necessary information
- Decrease the length of time from arrest to program entry
- Create a training packet and guide for new team members, particularly those, such as the prosecutor, who rotate, or for position where there is high turnover
- Ensure all required data is entered in the statewide case management system (the JCATC is using a local case management system and the data entered appears to be complete an reliable)

NPC has found that the above list of suggestions for program improvements are common issues for treatment courts all over the U.S. Although these are important practices that the JCATC should attempt to implement as soon as possible, the program is already high functioning and engaged in many research-based best practices.

4-Track Implementation

The JCATC began implementing the 4-track model in October 2014. RANT scores were used to place participants in four different quadrants as described earlier in this report (see Table 1). The participants in each quadrant are placed in different tracks and have different requirements designed to match the participants' risks and needs. Table 4 provides a summary of the key requirements for each track. This table demonstrates the JCATC did plan program requirements and service provision to match the risk and need levels of the participants that fell in each quadrant.

Table 4. Quadrant/Track Requirements

Quadrant ("Q")	Staffing Requirements	Court Requirements	Treatment Requirements
Q1 (HR/HN)	Staffing prior to court sessions for each quadrant	1x every 2 weeks.	Separate treatment groups • Phase 1: 1 individual and 2 group sessions per week. • Phase 2: 2 individual sessions per month and 1 group per week, add criminal thinking interventions • Phase 3: 1 individual session per month, 1 group per week. • Phase 4: Add self-help groups 18-24 months LOS (200 hrs treatment, MRT, prosocial, and adaptive habilitation)
Q2 (LR/HN)	Staffing prior to court sessions for each quadrant	Non-compliance calendar	May be mixed with Q4 treatment groups • Phase 1: 4 groups and 1 individual per week. • Phase 2: 2 groups per week and 2 individual per month • Phase 3: 1 group session per week and 2 individual sessions per month 12 -18 months LOS (150 hrs treatment, adaptive habilitation)
Q3 (HR/LN)	Staffing prior to court sessions for each quadrant	1x every 2 weeks.	• MRT required • Treatment based on assessed level of care, specific to each participant • Individual sessions 2x per month throughout program • Criminal thinking interventions, no self-help groups 12-18 months LOS (100 hrs MRT, prosocial habilitation)
Q4 (LR/LN)	Staffing prior to court sessions for each quadrant	Non-compliance calendar	• Education, life skills groups. • Individual session 1x per month during program. 3-6 mos (12-26 hrs. psychoeducation)

Outcome and Cost Evaluation Results

Pre- and Post-4-Track Treatment Court Participant and Comparison Group Demographics and Criminal History. Table 5 provides the demographics for the study samples of JCATC participants pre- and post-4-track implementation overall and by quadrant at the time of program entry. For the comparison group, a "program entry date" was imputed based on the various lengths of time between arrest and entry for JCATC participants who followed a similar entry process. More specifically, participants in the JCATC can enter the program pre-plea, post-plea, post-adjudication, and post-sentencing (including entering on probation violations and re-entering from prolonged incarceration). The comparison groups were selected from different time periods in the adjudication process to match the JCATC participant groups and then a "program entry date" was imputed accordingly.

Overall, Table 5 shows that roughly two thirds of JCATC participants were male and over half were White with an average age of roughly 31. Compared with pre-4-track JCATC participants, post-4-track JCATC had more female and fewer African American participants. None of these characteristics was significantly different in each time period's respective comparison group.

Table 5. JCATC Participant and Comparison Group Characteristics Pre- and Post-4-Track Implementation: Demographics

	Pre-4-Track		Post-4-Track	
	JCATC ***N* = 1133**	***Comparison*** ***N* = 1009**	***JCATC*** ***N* = 485**	***Comparison*** ***N* = 366**
Sex				
Male	66%	66%	60%	61%
Female	34%	34%	40%	39%
Race/Ethnicity				
White	54%	56%	65%	64%
African American	44%	42%	33%	34%
Other	2%	2%	2%	2%
Age at Entry Date				
Average age in years	31 years	30 years	32 years	32 years
Range	18 – 62	17 – 71	18-70	17-72

In terms of criminal history, the comparison groups pre- and post-4-track implementation were matched to the JCATC participants and therefore were similar in their respective time periods. Table 6 shows the criminal history in the 2 years prior to program entry for the JCATC participants and the comparison group including average number of arrests for any/all charges and average numbers of arrests by type of charge (person, property, drug, or other) and level of charge (felony or misdemeanor). On average, for all samples, individuals had roughly 1.0 priors in the 2 years before the program entry date. These arrests may or may not include the arrest that led to each participant's entry into the program as some individuals enter the program on a probation violation or upon reentry after incarceration so the charge that led to program entry may have occurred before the 2 years prior to entry. There were no statistically significant differences in criminal history between the matched JCATC and comparison groups for each time period.

However, when comparing the JCATC participants pre- vs post-4-track implementation we find that post-4-track participants had more arrests with property charges and more felony arrests than pre-4-track participants, indicating a shift to a higher criminality group post-4-track implementation.

Table 6. JCATC Participant Characteristics Pre- and Post-4-Track Implementation: Criminal History

	Pre-4-Track		**Post-4-Track**	
	JCATC ***N* = 1133**	***Comparison*** ***N* = 1009**	***JCATC*** ***N* = 485**	***Comparison*** ***N* = 366**
Average number of arrests 2 years prior to program entry	0.99	0.99	0.98	0.96
Average number of person arrests 2 years prior to program entry	0.01	0.01	0.02	0.02
Average number of property arrests 2 years prior to program entry	0.11	0.11	0.16	0.15
Average number of drug arrests 2 years prior to program entry	0.79	0.78	0.72	0.68
Average number of other arrests 2 years prior to program entry	0.07	0.07	0.09	0.11
Average number of misdemeanor arrests 2 years prior to program entry	0.61	0.65	0.35	0.34
Average number of felony arrests 2 years prior to program entry	0.75	0.71	0.81	0.78

Demographics and Criminal History by Quadrant. Table 7 shows the demographic profiles for JCATC post-4-track participants separated by quadrant.[4] First note that the quadrants varied widely in size with the largest number of participants in Q1 (*N* = 148), followed by Q3 (*N* = 104), then Q4 (*N* = 83) and finally Q2 (*N* = 26). The majority of participants referred to the JCATC program are high-risk (70%).

There were differences in demographics between quadrants. Low-need participants (Q3 and Q4) were more likely to be male and African American than high-need participants (Q1 and Q2), while LR/HN participants (Q2) were more likely to be female. Additionally, low-risk participants (Q2 and Q4) were older on average than high-risk participants (Q1 and Q3).

Table 7. JCATC Post-4-Track Participant Characteristics: Demographics by Quadrant

	Q1: HR/HN *N* = 148	**Q2: LR/HN *N* = 26**	**Q3: HR/LN *N* = 104**	**Q4: LR/LN *N* = 83**
Sex				
Male	55%	45%	68%	66%
Female	45%	55%	32%	34%
Race/Ethnicity				
White	76%	81%	52%	53%
African American	22%	19%	47%	43%
Other	2%	0%	1%	4%
Age at Entry Date				
Average age in years	30 years	37 years	30 years	36 years
Range	17 – 70	18 – 70	17 – 58	18 – 72

[4] Pre-4-track participants were not screened with the RANT so it is not possible to examine the characteristics of historical JCATC participants by quadrant.

Table 8 shows the criminal history of post-4-track participants separated by quadrant. Q1 and Q2 had the greatest average number of prior arrests. Although the higher number of priors makes sense for HR/HN participants in Q1, the similar number of priors in the LR/HN participants is unusual, particular when examining the charges, where the LR/HN participants had significantly more property charges and more felony charges than participants in either of the high-risk quadrants (Q1 and Q3). Q3 had fewer priors with almost any charge than Q1 or Q2. Q4 did have lower numbers of priors than the other quadrants, but not markedly. The JCATC team should examine their RANT screening process to ensure that the staff members performing the RANT are fully trained and following the appropriate protocols for ensuring the information they are gathering is accurate.

Table 8. JCATC Participant Characteristics Pre- and Post-4-Track Implementation: Criminal History by Quadrant

	Q1: HR/HN *N* = 148	Q2: LR/HN *N* = 26	Q3: HR/LN *N* = 104	Q4: LR/LN *N* = 83
Average number of arrests 2 years prior to program entry	1.11	1.10	0.92	0.70
Average number of person arrests 2 years prior to program entry	0.03	0.00	0.03	0.00
Average number of property arrests 2 years prior to program entry	0.22	0.39	0.10	0.05
Average number of drug arrests 2 years prior to program entry	0.72	0.68	0.70	0.58
Average number of other arrests 2 years prior to program entry	0.14	0.04	0.12	0.07
Average number of misdemeanor arrests 2 years prior to program entry	0.36	0.30	0.33	0.31
Average number of felony arrests 2 years prior to program entry	0.91	1.00	0.78	0.48

Additional data were available on drug of choice, education, employment status, and housing status for most JCATC participants except for drug of choice for pre-4-track participants. Table 9 displays these characteristics for pre-and post-4-track participants. The primary drug of choice for JCATC (available post-4-track implementation only) was marijuana followed by methamphetamine and alcohol. While pre-4-track and post-4-track participants show similar education levels, post-4-track participants were slightly more likely to be unemployed and homeless.

Table 9. JCATC Participant Characteristics Pre- and Post-4-Track Implementation[5]

	Pre 4 –track *N* = 1009	Post 4 –track *N* = 366
Primary Drug of Choice		
None	--	1%
Alcohol	--	10%
Marijuana	--	60%
Methamphetamine	--	16%
Crack or Cocaine	--	4%
Heroin/Opioids	--	4%
Prescription Drugs	--	1%
Other	--	6%
Education		
Less than High School	28%	27%
High School Graduate	41%	41%
Some College	27%	28%
4 Year Degree or Higher	4%	4%
Housing Status		
Own/Rent	40%	42%
Living with Friends/Family	53%	47%
Temporary Housing or Homeless	6%	11%
Employment Status		
Full Time	41%	35%
Part Time	12%	12%
Student	0%	2%
Retired/Disabled	7%	13%
Unemployed	40%	49%

[5] Data were missing for five participants in pre-4-track implementation and two participants for post-4-track implementation except for drug of choice, where data were missing for all pre-4-track participants. Percentages are calculated out of cases where data were available.

Table 10 displays drug of choice, education, housing status, and employment status for post-4-track participants by quadrant.

Table 10. JCATC Participant Characteristics Post-4-Track Implementation: Demographics by Quadrant[6]

	Q1: HR/HN *N* = 148	Q2: LR/HN *N* = 26	Q3: HR/LN *N* = 104	Q4: LR/LN *N* = 83
Primary Drug of Choice				
Reported "None"	0%	4%	1%	2%
Alcohol	8%	4%	9%	16%
Marijuana	51%	40%	75%	60%
Methamphetamine	24%	20%	7%	12%
Crack or Cocaine	2%	12%	4%	4%
Heroin/Opioids	9%	4%	1%	0%
Nicotine	1%	0%	0%	0%
Prescription Drugs	0%	12%	0%	1%
Other	6%	4%	4%	5%
Education				
Less than High School	32%	16%	36%	12%
High School Graduate	44%	40%	34%	45%
Some College	21%	36%	27%	39%
4 Year Degree or Higher	3%	8%	4%	5%
Housing Status				
Own/Rent	30%	60%	39%	63%
Living with Friends/Family	54%	36%	50%	34%
Temp Housing or Homeless	17%	4%	11%	4%
Employment Status				
Full Time	22%	28%	39%	53%
Part Time	14%	8%	11%	12%
Student	2%	4%	2%	0%
Retired/Disabled	13%	36%	7%	12%
Unemployed	49%	24%	42%	22%

[6] Data were missing for one to three participants depending on the variable and quadrant. Percentages are calculated out of cases where data were available

A review of Table 10 shows that participants in the high-need quadrants (Q1 and Q2) had the highest rates of methamphetamine and heroin/opioids use and the lowest rates of marijuana as a drug of choice. Participants in the low-need quadrants (Q3 and Q4) had the highest rates of marijuana as drug of choice. Over 70% of the participants in the high-risk quadrants (Q1 and Q3) had a high school education or less, while more than 40% of the low-risk quadrants (Q2 and Q4) had attended college. Over half of the high-risk participants were unemployed and were homeless, while over half of the low-risk participants owned their own homes or were renting. Over half of the LR/LN participants were employed full time.

These findings demonstrate the relative criminogenic needs of high-risk participants. Regardless of clinical need (a substance use or mental health disorder) participants in the high-risk quadrants need social services related to education, employment and housing. Those in the low-risk quadrants are significantly less likely to need these services.

STUDY QUESTION #1: DID THE PROGRAM TAILOR THE TREATMENT COURT REQUIREMENTS AND SERVICES TO EACH OF THE FOUR QUADRANTS?

Did the program provide different program activities and services for the different quadrants?

Table 11 provides the program activities averaged per participant for each quadrant. As detailed in the table, the services received by participants in each quadrant were similar in terms of program length of stay and court appearances. Participants in the low-risk quadrants (Q2 and Q4) had the greatest average number of drug tests administered. Participants in Q1 had the greatest average number of jail sanction days received. Based on the findings in Table 11, the JCATC plan to adjust program requirements according to participant risk and need level may not have occurred in practice as intended based on the similar lengths of stay court appearances and drug tests.

Table 11. Program Events: Average per Participant by Quadrant Post-4-Track Implementation

Program Activities	Q1: HR/HN *N* = 144	Q2: LR/HN *N* = 24	Q3: HR/LN *N* = 103	Q4: LR/LN *N* = 81
Length of Stay (Days)	371	357	356	329
Court Appearances	13	14	12	12
Drug Tests	66	76	58	78
Jail Sanctions (Days)	1.4	0.5	0.7	0.6
Program Fees ($)	$304	$190	$280	$269

Treatment services were provided by multiple different providers. The treatment data were gathered from the JCATC program database and the services were counted in 15-minute units (other than assessments). Table 12 displays the average amount of treatment services received for post-4-track JCATC participants by quadrant. All quadrants received similar levels of assessment and relapse prevention. Participants in the high-need quadrants (Q1 and Q2) received the highest levels of group and individual counseling. Q3 had lower amounts of services than the high-need quadrants, but had more services than Q4, appropriately matching the high criminogenic needs of these participants. Overall, the findings in Table 12 indicate that treatment services are being appropriately delivered according to risk/criminogenic need and clinical need.

Table 12. Treatment Services: Average per Participant by Quadrant Post-4-Track Implementation

Treatment Services (Units = 15 minutes)	**Q1: HR/HN** *N* = 144	**Q2: LR/HN** *N* = 24	**Q3: HR/LN** *N* = 103	**Q4: LR/LN** *N* = 81
Assessments	0.81	0.75	0.88	0.77
Group Counseling	52.02	76.54	46.02	32.46
Individual Counseling	16.56	20.17	12.88	10.62
Relapse Prevention	0.07	0.08	0.08	0.09

STUDY QUESTION #2: DID GRADUATION RATES DIFFER BEFORE AND AFTER 4-TRACK IMPLEMENTATION?

Theoretically, adjusting program requirements and providing services based on assessed risk and needs should result in higher rates of successful program completion. Table 13 provides the graduation rates by year before and after implementation of the 4-track model. When active participants are excluded from the calculation, the graduation rate for participants who have exited the program is 65% for pre-4-track participants and 67% for post-4-track participants, indicating that graduation rates did not change substantially after 4-track implementation. However, the graduation rate at both time points is already quite high relative to the graduation rate of 57% for treatment courts nationally.

Table 13. Graduation Rates Pre- and Post-4-Track Implementation by Entry Year

Year	N	Exited Only Grad Rate	Graduated	Terminated	Active	Other Exit
2009 (Pre)	319	63%	60%	36%	3%	1%
2010 (Pre)	214	66%	61%	31%	7%	1%
2011 (Pre)	263	62%	58%	35%	7%	0%
2012 (Pre)	236	73%	66%	25%	9%	0%
2013 (Pre)	131	59%	47%	33%	21%	0%
2014 (Jan-Sept)	N/A	Gap Period	Not included in study sample Transition period between pre-4-track and post-4-track			
2014 (Oct-Dec) (Post)	53	67%	57%	28%	15%	0%
2015 (Post)	278	65%	49%	26%	24%	1%
2016 (Post)	240	70%	35%	15%	49%	1%

When looking at post-4-track participants by quadrant (using only those who exited the program), participants in the high-risk quadrants (Q1 and Q3) had the lowest graduation rate (58% and 59% respectively) while participants in the low-risk quadrants had very high graduation rates (81% and 87%). The difference in graduation rates between the high- and low-risk participants is not unexpected; however, the size of the difference implies that the program may need to provide some additional focus on the high-risk participants to ensure that services being provided meet the needs of those at highest risk, and that practical assistance (such as transportation, food, housing and job training) is being provided so that high-risk participants are able to successfully meet program requirements.

Table 14. Graduation Rates Post-4-Track Implementation by Quadrant (2013-2016)

	Q1: HR/HN *N* = 243	**Q2: LR/HN** *N* = 46	**Q3: HR/LN** *N* = 162	**Q4: LR/LN** *N* = 111
Graduation Rate (Grad & Term Only)	**58%**	**81%**	**59%**	**87%**
Graduated	36%	46%	38%	68%
Terminated	26%	11%	26%	10%
Active	37%	43%	36%	20%
Other Exit	1%	0%	0%	2%

STUDY QUESTION #3: DID PLACING PARTICIPANTS INTO THE FOUR TRACKS ACCORDING TO ASSESSED RISK AND NEED RESULT IN REDUCED RECIDIVISM?

Figure 1 illustrates the average number of rearrests cumulative for each year up to 2 years after program entry for JCATC participants and the comparison group. As illustrated in the graph, treatment court participants had a lower average number of rearrests relative to the comparison group both pre- and post-4-track implementation. The differences in rearrests was significant both years after program entry.[7] However, the reduction in rearrests (the effect size) was larger for the post-4-track group. [8] That is, at 2 years from entry the pre-4-track participants showed a 45% reduction in rearrests compared to the comparison group, while the post-4-track participants showed a remarkable 181% reduction in rearrests. This indicates that the JCATC program was more effective in reducing recidivism after implementing the four tracks.

Figure 1. Average Number of Rearrests over 2 Years Pre- and Post-4-Track Implementation[9]

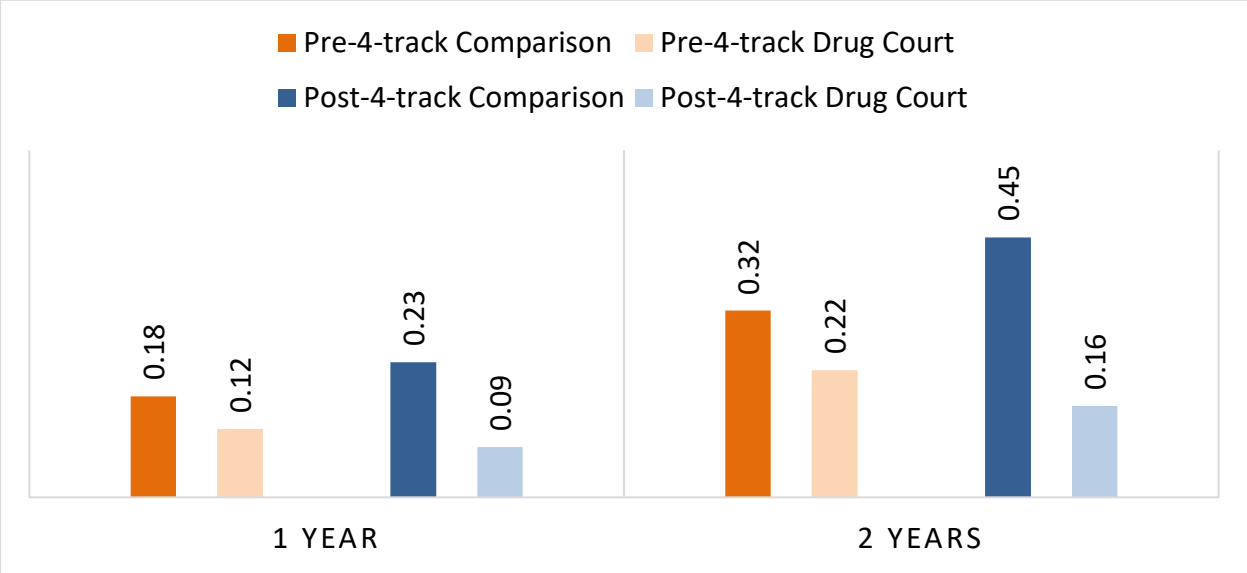


Figure 2 displays the average number of rearrests 1 and 2 years after program entry for JCATC graduates only pre- and post-4-track implementation. JCATC program graduates post-4-track implementation had fewer rearrests than JCATC graduates pre-4-track implementation, indicating again that the implementation of the four tracks resulted in a significant improvement in participant outcomes. Overall, JCATC program graduates pre- or post-4-track implementation had very few rearrests at all.

[7] Year 1: Wald $\chi^2(1) = 20.889$, $p < .001$, Incident Rate Ratio 95% CI = 1.89 < IRR < 4.93; Year 2: Wald $\chi^2(1) = 26.802$, $p < .001$, Incident Rate Ratio 95% CI = 1.92 < IRR < 4.23

[8] Year 1: Wald $\chi^2(1) = 6.779$, $p < .01$, Year 2: Wald $\chi^2(1) = 8.569$, $p < .01$

[9] Sample sizes by group and time period (1 Year, 2 Years): Pre-4-track JCATC Participants n = 1004, 1001; Pre-4-track comparison group; n = 1118, 1097; Post-4-track JCATC Participants n = 352, 253; Post-4-track comparison group n = 438, 377.

Figure 2. Average Number of Rearrests over 2 Years Pre- and Post 4-Track Implementation – Graduates Only[10]

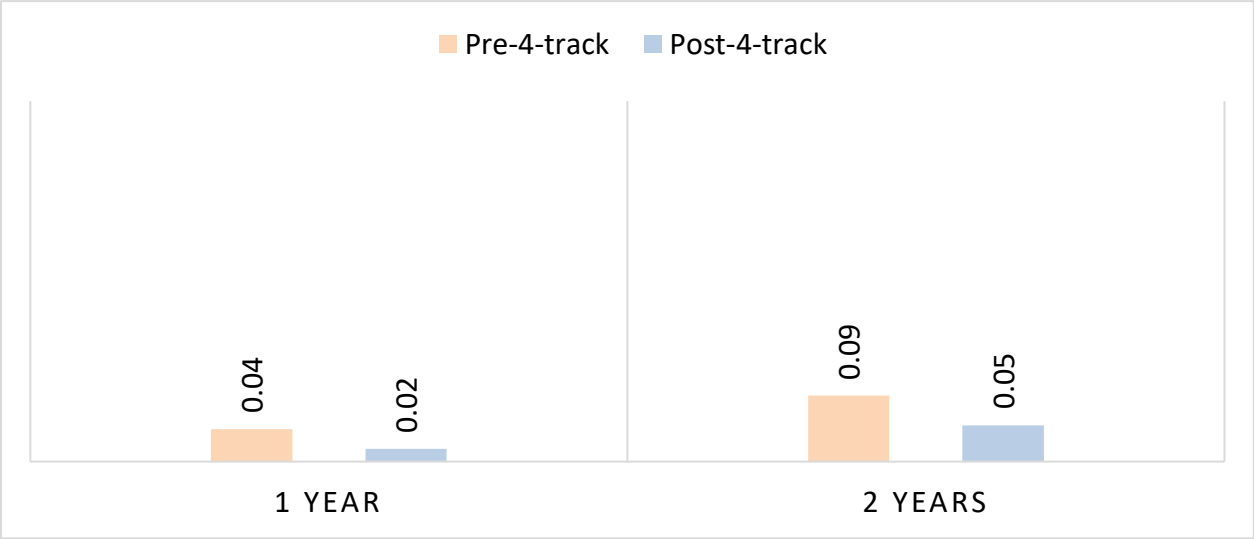
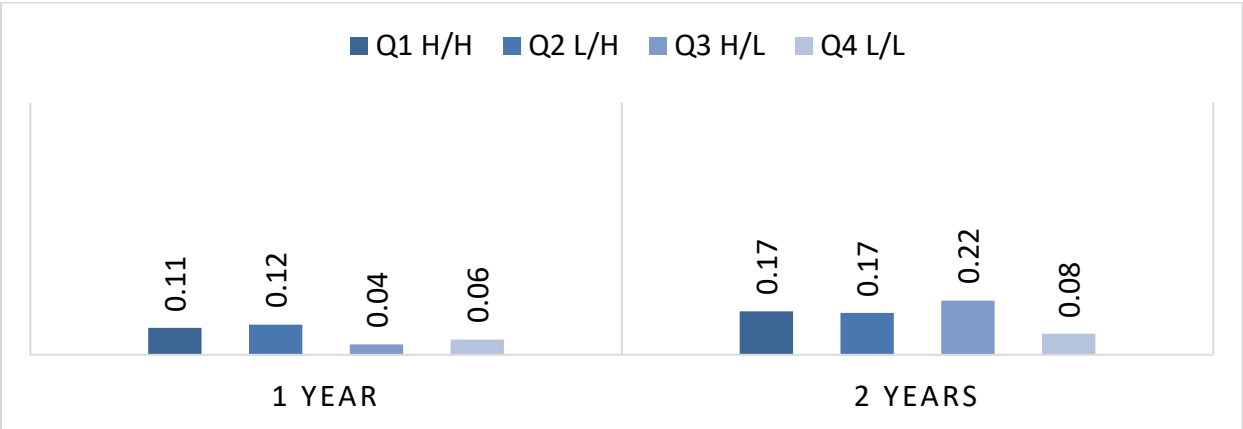


Figure 3 displays the average number of rearrests for JCATC post-4-track participants by quadrant over 2 years after program entry. After 2 years from program entry, participants in Q3 had the highest average number of rearrests and Q4 had the lowest. This is expected for the respective risk levels. However, at both 1 and 2 years after program entry, the low-risk participants in Q2 had similar numbers of rearrests as the high-risk quadrants. Similar to the findings for priors, this high number of rearrests in the LR/HN group indicates that the RANT screening process may not have appropriately classified these participants as low-risk.

Figure 3. Average Number of Rearrests over 2 Years by Quadrant[11]

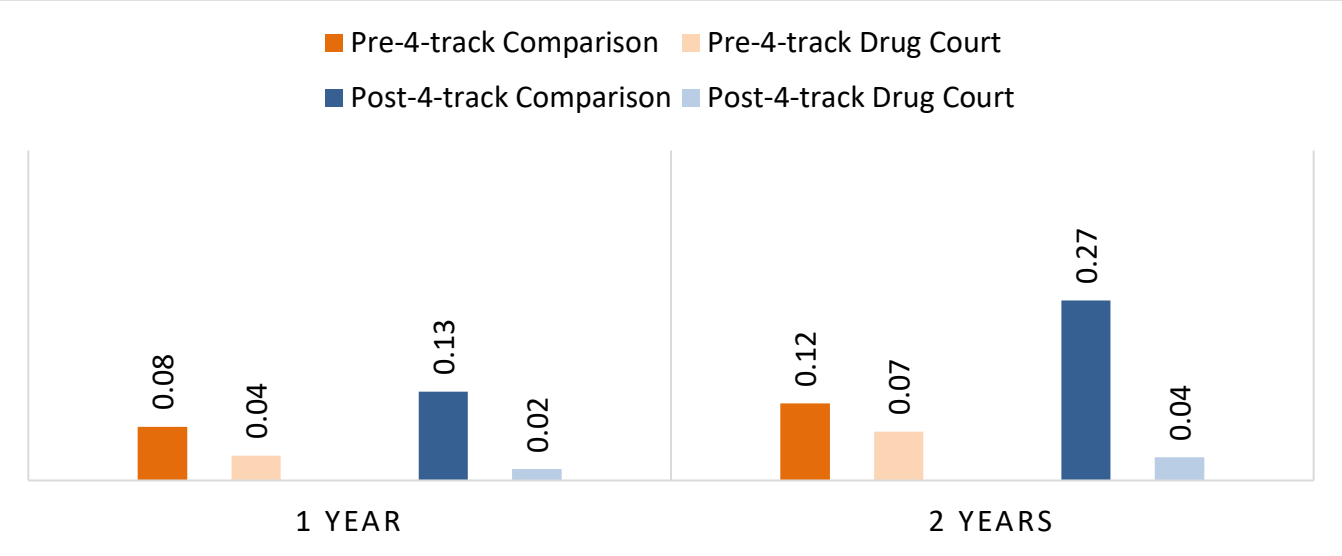


[10] Sample sizes by group and time period (1 Year, 2 Years): Pre-4-track *n* = 646, 645; Post-4-track *n* = 229, 159

[11] Sample sizes by group and time period (1 Year, 2 Years): Quadrant 1 *n* = 140, 105; Quadrant 2 *n* = 25, 18; Quadrant 3 *n* = 98, 65; Quadrant 4 *n* = 82, 60.

In addition to all rearrests, a key measure for drug courts is new arrests associated with drug charges as this is an indication of continued drug use. Figure 4 illustrates the average number of rearrests with drug charges for each year up to 2 years after program entry for JCATC participants and their comparison groups pre- and post-4-track implementation. At both pre-4-track implementation and post-4-track implementation, JCATC participants a lower average number of drug rearrests than their comparison groups at both 1 and 2 years after program entry. These differences were statistically significant.[12] Furthermore, the interaction between 4-track implementation and group was significant. The pre-4-track comparison group had roughly twice as many rearrests with drug charges as the pre-4-track JCATC participants at both 1 and 2 years from entry, while the post-4-track comparison group had more than 6 times more arrests than the post-4-track JCATC participants. [13] This further supports the effectiveness of the 4-track model.

Figure 4. Average Number of Drug Rearrests over 2 Years[14]



[12] Year 1: Wald $\chi^2(1) = 22.485$, $p < .001$, Incident Rate Ratio 95% CI = 3.35 < IRR < 18.46; Year 2: Wald $\chi^2(1) = 32.029$, $p < .001$, Incident Rate Ratio 95% CI = 3.79 < IRR < 15.56

[13] Year 1 : Wald $\chi^2(1) = 3.218$, $p < .05$; Year 2: Wald $\chi^2(1) = 16.330$, $p < .01$

[14] Sample sizes by group and time period (1 Year, 2 Years): Pre-4-track JCATC Participants *n* = 1004, 1001; Pre-4-track comparison group; *n* = 1118, 1097; Post-4-track JCATC Participants *n* = 352, 253; Post-4-track comparison group *n* = 438, 377.

To assess a more complete description of the criminality of both groups, researchers also reviewed arrests by type of charge including person (e.g., assault), property (e.g., theft), or other arrest charges (e.g., trespassing) 3 years from program entry. Table 15 displays the average number of rearrests by other (non-drug) charge type and level over 2 years from program entry for JCATC participants and the comparison group pre-4-track implementation and post-4-track implementation. JCATC participants had fewer of person, property and all other charge types compared to their respective comparison groups although none of the differences were statistically significant. When looking at charge level, post-4-track JCATC participants had significantly fewer felony rearrests than their comparison groups.[15] Furthermore, the interaction between 4-track implementation and group was significant, suggesting that the reduction in felony rearrests in JCATC participants over the comparison group increased during post-4-track implementation.[16] The difference in misdemeanor rearrests between JCATC participants and the comparison group did not reach statistical significance.

Table 15. Average Rearrests by Type over 2 Years by Pre- and Post-4-Track

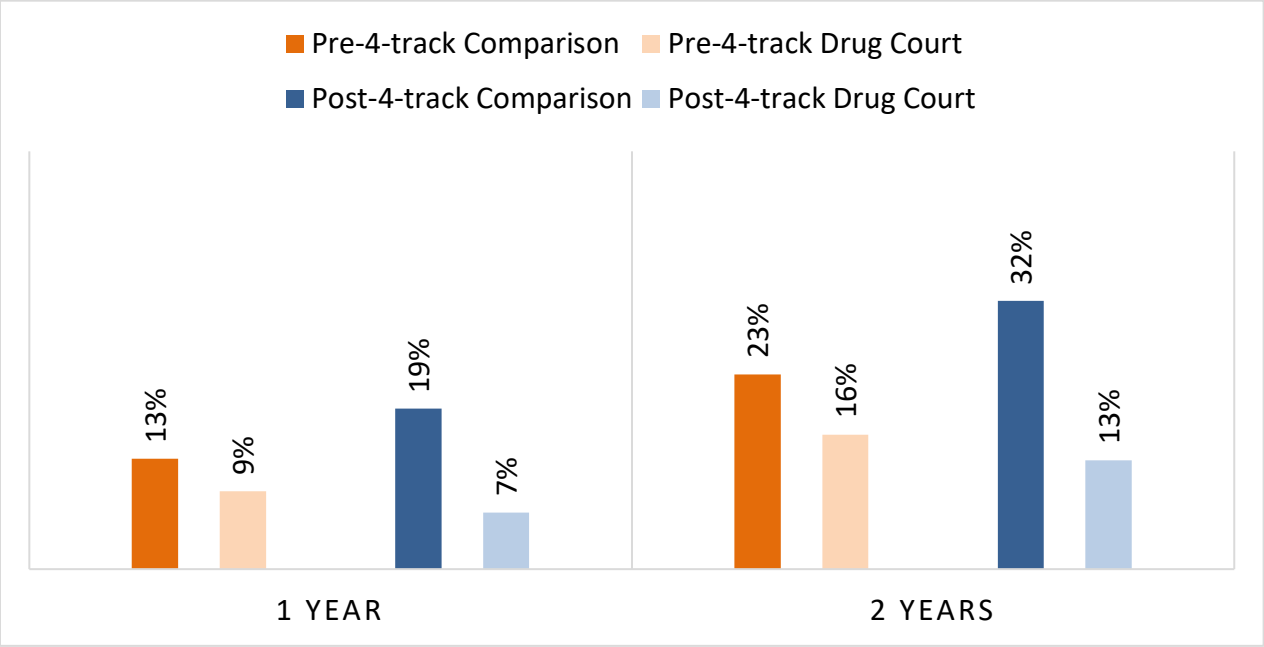
	Pre-4-track				Post-4-track			
	Comparison		JCATC		Comparison		JCATC	
	Y1	Y2	Y1	Y2	Y1	Y2	Y1	Y2
Person	0.02	0.04	0.01	0.02	0.02	0.03	0.01	0.02
Property	0.04	0.08	0.02	0.05	0.04	0.07	0.02	0.04
Other	0.04	0.08	0.04	0.07	0.05	0.08	0.03	0.07
Felony	0.12	0.20	0.07	0.14	0.19	0.38	0.05	0.11
Misdemeanor	0.08	0.15	0.06	0.11	0.06	0.10	0.03	0.06

[15] Year 1: Wald $\chi^2(1) = 20.173$, $p < .001$, Incident Rate Ratio 95% CI = 2.03 < IRR < 6.04; Year 2: Wald $\chi^2(1) = 27.546$, $p < .001$, Incident Rate Ratio 95% CI = 2.17 < IRR < 5.46

[16] Year 1 : Wald $\chi^2(1) = 6.453$, $p < .05$; Year 2: Wald $\chi^2(1) = 11.052$, $p < .01$

In addition to examining recidivism in terms of numbers of rearrests, it is also useful to examine the recidivism *rate*, the number (or proportion) of individuals from each group who were rearrested at least once over each year after program entry. Figure 5 illustrates the percent of all JCATC participants and their comparison group who were rearrested over a 2-year period for any charge following program entry. The percent of JCATC participants rearrested was significantly lower than the comparison group each year post entry with the comparison group having 3.3 times greater odds of being rearrested after 1 year and 3.2 times greater odds of being rearrested after 2 years than JCATC participants.[17] Furthermore, the interaction between 4-track implementation and group was significant, suggesting that the reduction in JCATC participants being rearrested than in the comparison group increased during post-4-track implementation.[18]

Figure 5. Percent of Individuals Rearrested for any Offense over 2 Years [19]



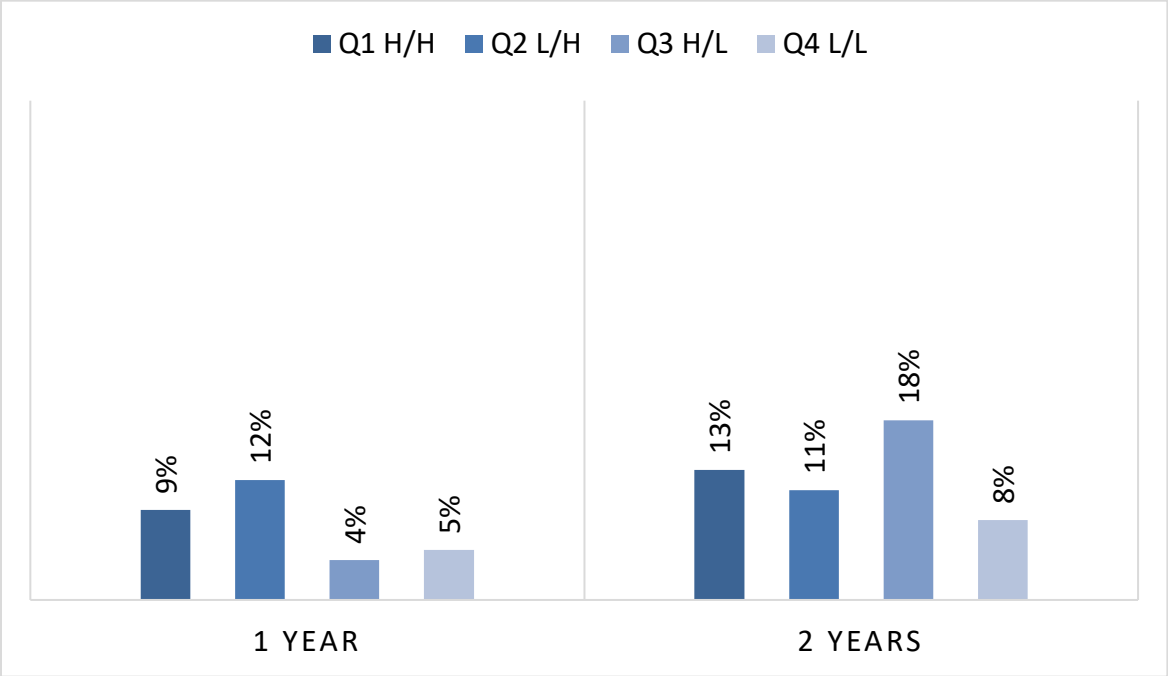
[17] Year 1: Wald $\chi^2(1) = 23.457$, $p < .001$, Odds Ratio 95% CI = 2.02 < OR < 5.25; Year 2: Wald $\chi^2(1) = 28.208$, $p < .001$, Odds Ratio 95% CI = 2.07 < OR < 4.84

[18] Year 1 : Wald $\chi^2(1) = 7.749$, $p < .01$; Year 2: Wald $\chi^2(1) = 7.829$, $p < .01$

[19] Sample sizes by group and time period (1 Year, 2 Years): Pre-4-track JCATC Participants *n* = 1004, 1001; Pre-4-track comparison group; *n* = 1118, 1097; Post-4-track JCATC Participants *n* = 352, 253; Post-4-track comparison group *n* = 438, 377.

Figure 6 displays the percent of individuals rearrested for any offense up to 2 years after program entry for JCATC participants during post-4-track implementation separated by quadrant. After 1 year from program entry, high-need participants (Q1 and Q2) had the highest percentage of participants being rearrested. At 2 years after program entry, participants in Q3 had the highest percentage of participants being rearrested while participants in Q4 had the lowest percentage of participants being rearrested. As discussed earlier, it is unusual for the low-risk participants in Q2 to be rearrested at similar rates as the high-risk participants. This indicates that either the LR/HN participants were classified incorrectly as low-risk, or that the program supervisions requirements may be too intensive for low-risk participants. The team should examine both the RANT screening process, and the services being provided to participants in Q2.

Figure 6. Percent of Individuals Rearrested for Any Offense over 2 Years [20]

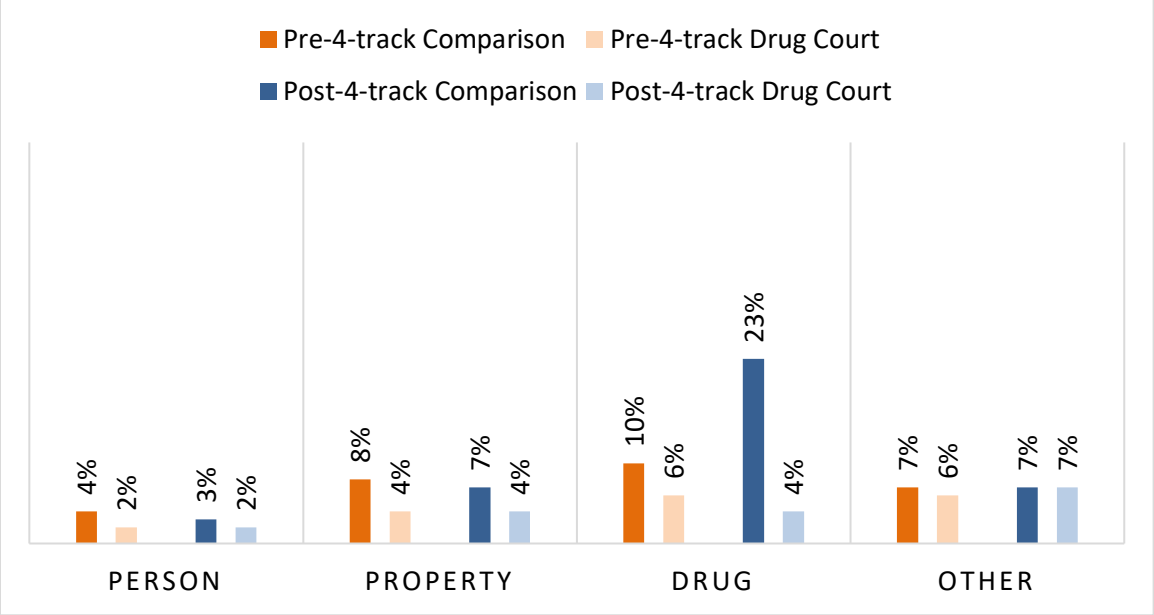


[20] Sample sizes by group and time period (1 Year, 2 Years): Quadrant 1 *n* = 140, 105; Quadrant 2 *n* = 25, 18; Quadrant 3 *n* = 98, 65; Quadrant 4 *n* = 82, 60.

To assess a more complete history of the criminality of both groups, researchers also reviewed arrests by type of charge including person (e.g., assault), property (e.g., theft), drug (e.g., possession), or other arrest charges (e.g., trespassing) 2 years from program entry in Figure 7 and level (misdemeanor and felony) in Figure 8.[21]

Figure 7 displays the percent of individuals rearrested by charge type 2 years after program entry in pre-4-track implementation and post-4-track implementation. JCATC participants pre- and post-4 track implementation had a lower percentage of individuals rearrested than the comparison group for person and property crimes 1 and 2 years after program entry, although none of these differences reached statistical significance. Further, there was no difference in "other" charges. However, JCATC participants had a significant reduction in the percentage of individuals rearrested for a drug offense, with the post-4-track comparison group having 8.0 times greater odds of being rearrested for a drug offense.[22] Additionally, the interaction between 4-track implementation and group was significant, suggesting that the reduction in the percentage of JCATC participants being rearrested for drug offenses was greater during post-4-track implementation than in the comparison group.

Figure 7. Percent of Individuals Rearrested by Arrest Charge at 2 Years[23]



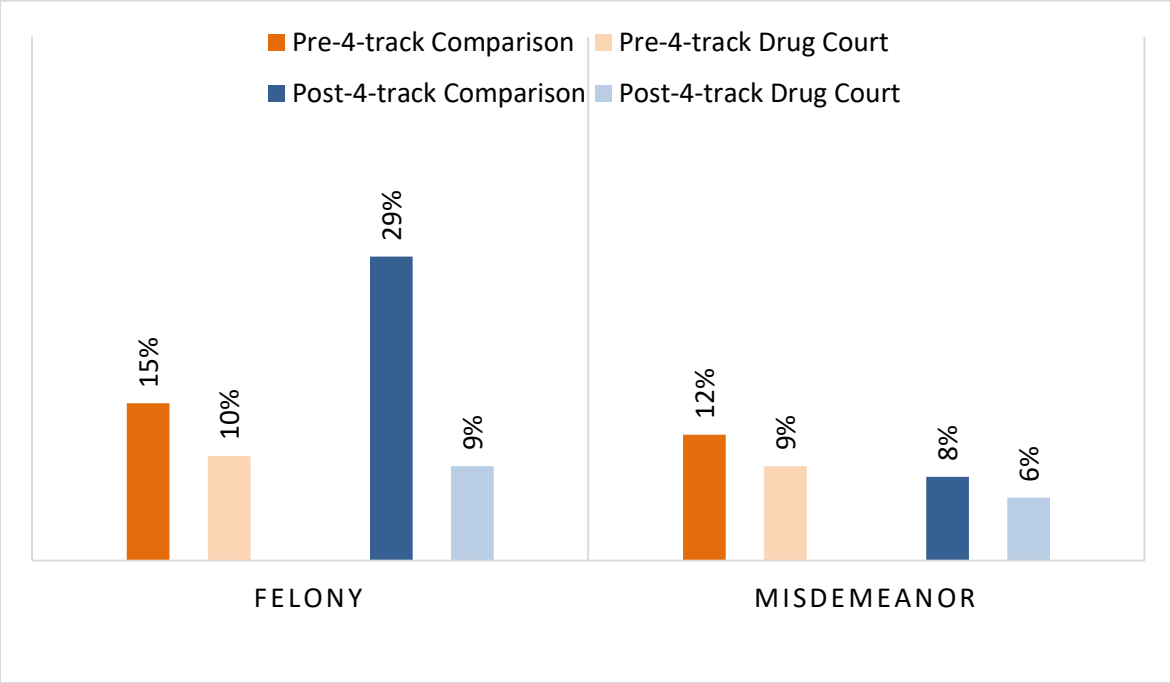
[21] When an individual received more than one charge per arrest, a single arrest could be coded as both a person and property crime. Therefore, the percentages in Figures 9-10 do not add up to the percent of total arrests reflected in Figure 7.

[22] Wald $\chi^2(1) = 33.300$, $p < .001$, Odds Ratio 95% CI = 3.96 < OR < 16.29

[23] Sample sizes by group and time period: Pre-4-track JCATC Participants $n = 1001$; Pre-4-track comparison group; $n = 1097$; Post-4-track JCATC Participants $n = 253$; Post-4-track comparison group $n = 377$.

Figure 8 displays the average number of rearrests by charge level (misdemeanors and felonies) for JCATC participants and their comparison groups 2 years after program entry. JCATC participants had a lower percentage of individuals rearrested for felonies than the comparison group. This difference reached statistical significance with the post-4-track JCATC participants having 3 times fewer felonies than the comparison group.[24] Furthermore, similar to other rearrest findings, the interaction between 4-track implementation and participation in the program was significant, indicating that JCATC participants did better post-4-track implementation. When looking at misdemeanors, JCATC participants during pre-4-track implementation and post-4-track implementation had a lower percentage of being rearrested than their comparison groups, but the differences did not reach statistical significance.

Figure 8. Percent of Individuals Rearrested by Arrest Level at 2 Years[25]

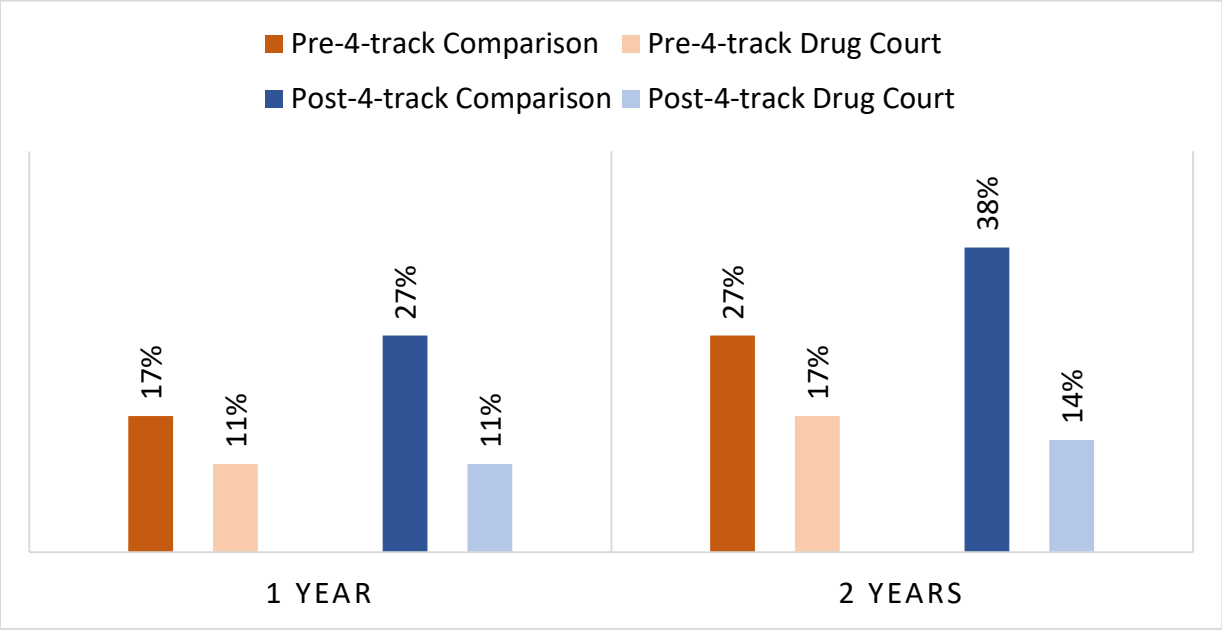


[24] Wald $\chi^2(1) = 31.542$, $p < .001$, Odds Ratio 95% CI = 2.43 < OR < 6.29

[25] Sample sizes by group and time period: Pre-4-track JCATC Participants $n = 1001$; Pre-4-track comparison group; $n = 1097$; Post-4-track JCATC Participants $n = 253$; Post-4-track comparison group $n = 377$.

Another measure of recidivism is reincarceration rates and time spent incarcerated. Figure 9 illustrates the percent of individuals reincarcerated in the 2 years after program entry (or the equivalent date for the comparison group). Jail sanctions are not included in this analysis. JCATC participants had lower rates of reincarceration than their comparison groups at both pre-4-track and post-4-track. The comparison group was expected to have 4.0 greater odds of being reincarcerated than JCATC participants 1 year after program entry and 4.3 times greater odds of being reincarcerated than JCATC participants 2 years after program entry.[26] When looking rates of reincarceration 2 years after program entry, there was a significant interaction between 4-track implementation and group, suggesting that the difference between JCATC participants and the comparison group being reincarcerated differed between pre-4-track implementation and post-4-track implementation.

Figure 9. Average Reincarceration Rate in Jail Pre and Post-4-Track Implementation[27]

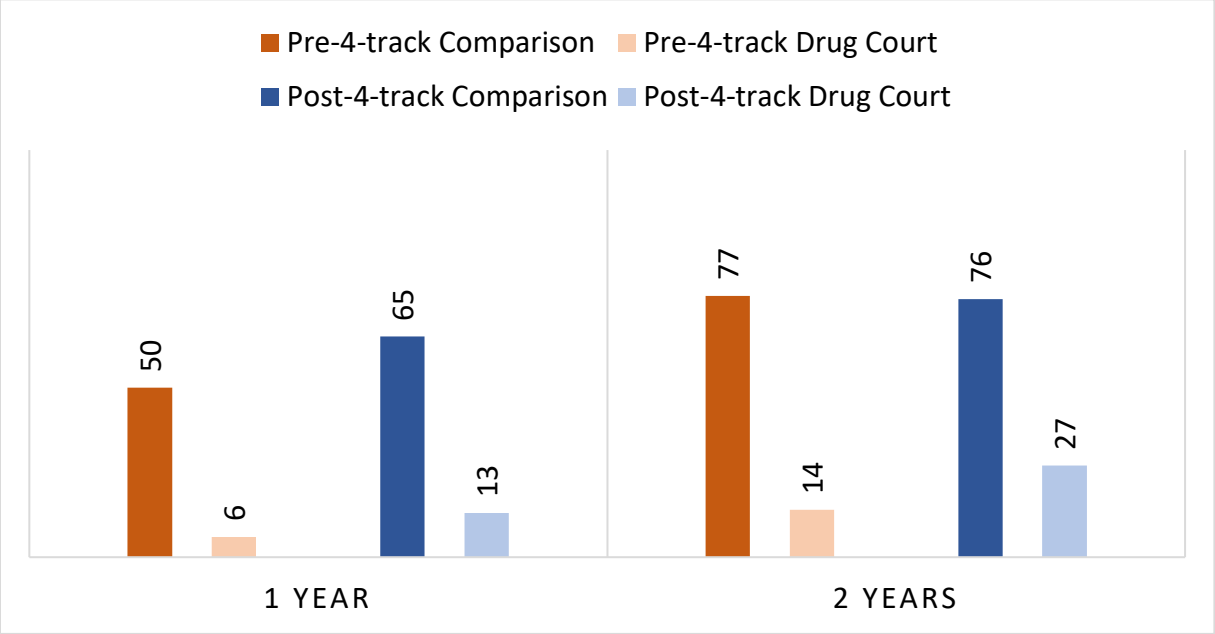


[26] Year 1: Wald $\chi^2(1) = 51.916$, $p < .001$, Odds Ratio 95% CI = 2.77 < OR < 5.92 Year 2: Wald $\chi^2(1) = 55.428$, $p < .001$, Odds Ratio 95% CI = 2.94 < OR < 6.35

[27] Sample sizes by group and time period: Pre-4-track JCATC Participants *n* = 1001; Pre-4-track comparison group; *n* = 1097; Post-4-track JCATC Participants *n* = 253; Post-4-track comparison group *n* = 377.

Figure 10 displays the average length of incarceration (both jail and prison) cumulatively over 2 years pre- and post-4-track implementation. The number of days each year is calculated based on the length of time each individual was incarcerated for a full incarceration episode (entry to exit) that started during the particular year, regardless of whether the episode ended that year or in future years. For both pre- and post-4-track periods, JCATC participants had significantly fewer days incarcerated than their respective comparison groups.[28] None of the interaction terms were significant so pre-4-track and post-4-track had similar reductions in days incarcerated.

Figure 10. Average Days Incarcerated After Program Entry Rate Pre and Post-4-Track Implementation[29]



Overall, JCATC participants showed reduced recidivism both pre- and post-4-track implementation. However, JCATC participants post-4-track implementation had significantly greater reductions in recidivism as measured by rearrests and reincarceration episodes, indicating that the 4-track model resulted in substantially better participant outcomes.

[28] Year 1: Wald $\chi^2(1) = 22.107$, $p < .001$, Incident Rate Ratio 95% CI = 2.67 < IRR < 10.86 Year 2: Wald $\chi^2(1) = 11.673$, $p < .01$, Incident Rate Ratio 95% CI = 1.64 < IRR < 6.26

[29] Sample sizes by group and sex: JCATC Men $n = 133$, JCATC Women $n = 111$; Comparison Group Men $n = 157$, Comparison Group Women $n = 126$.

STUDY QUESTION #4: WHAT ARE THE COSTS OF PROGRAM PARTICIPATION AFTER IMPLEMENTING THE 4-TRACK MODEL?

NPC built the Cost Study on findings from the Outcome Study described earlier in this report.

Program Cost Methods

Program transactions for which costs were calculated in this analysis included status review hearings (including staffings), case management, drug treatment, drug tests, jail sanctions, and program fees. The costs for this study were calculated to include taxpayer costs only. All cost results provided in this report are based on fiscal 2018 dollars or were updated to fiscal 2018 using the Consumer Price Index.

Obtaining the cost of JCATC transactions for status review hearings (i.e., court sessions) and case management involved asking each JCATC team member for the average amount of time they spend on these activities (including preparing for staffing meetings and the staffing meetings themselves), observing their activities on a site visit and obtaining each JCATC team member's annual salary and benefits from a supervisor or financial officer at each agency involved in the program. As this is typically public information, some of the salaries were found online, but detailed benefits information usually comes from the agency's financial officer or human resources department. In addition to salary and benefits, the indirect support rate and jurisdictional overhead rate were used in a calculation that results in a fully loaded cost per court session per participant and cost per day of case management per participant. The indirect support rates and overhead rates for each agency involved in the program were obtained from agency budgets that were found online or by contacting the agencies directly.

Program Transactions

Court Session or Status Review Hearing. A drug court session, for the majority of programs, is one of the most staff and resource intensive program transactions. These sessions include representatives from the following agencies:

- 16th Judicial Circuit Court
- Jackson County Division 50
- Missouri Public Defender's Office
- Jackson County Prosecuting Attorney's Office
- Missouri Department of Corrections (Division of Probation & Parole)
- Heartland Center for Behavioral Change

NPC based the cost of a Court Session or Status Review Hearing (the time during a session when a single program participant interacts with the judge) 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 for the time spent for each JCATC team member present, the time team members spend preparing for the session, the time team members spent in staffing, the agency support costs, and jurisdictional overhead costs. NPC estimated the cost for a single JCATC court appearance at $43.86 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 (taking

staff salaries and benefits, and support and overhead costs into account).[30] The agencies involved in case management are Division 50, Missouri Department of Corrections (Division of Probation & Parole), and Heartland Center for Behavioral Change. The daily cost of case management is $6.02 per participant.

Treatment Services for JCATC participants are provided by Heartland Center for Behavioral Change. The treatment costs used for this analysis are the contracted billing amounts between OSCA and Treatment Court Specialized Services Providers in each county. Each contract specifies the fixed price for each unit of service. Because total treatment costs per participant were included in the treatment dataset, there are no unit costs for treatment such as group treatment sessions or individual treatment sessions. Treatment is reported as an average cost per participant instead of unit cost per service received.

Drug Testing is paid for by the 16th Judicial Circuit Court - Division 50. Drug testing costs were obtained from the commissioner. The average cost per UA test per participant is $11.25.

Jail Sanctions are provided by Jackson County Corrections. Using budget and average daily population information obtained online, the cost per person per day of jail was calculated to be $58.14 in 2016. Using the Consumer Price Index, this was updated to fiscal 2018 dollars, or $60.23.

JCATC participants pay a Program Fee to Division 50. NPC was able to obtain data on the actual amount paid by participants, so the program fee included in this cost analysis is the average amount per participant paid by the participants in each group.

[30] 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.

Program Costs

Table 16 displays the unit cost per program related event (or "transaction"), and the average cost per individual for each of the JCATC events for all participants who *exited* the program as well as for each of the quadrants.[31] The sum of these events or transactions is the total per participant cost of the JCATC program. The table includes the average for all JCATC participants (*N* = 352), all participants in Q1 (*N* = 144), all participants in Q2 (*N* = 24), all participants in Q3 (*N* = 103), and all participants in Q4 (*N* = 81), regardless of their status upon program exit. That is, the participants included in the cost analysis are all participant who exited the program, both graduates and non-graduates (participants who were terminated/unsuccessfully discharged). 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 16. Program Costs per Participant Post-4-Track Implementation by Transaction

Transaction	Unit Cost	Avg. Cost per Participant All JCATC	Avg. Cost per Participant Q1 (HR/HN)	Avg. Cost per Participant Q2 (LR/HN)	Avg. Cost per Participant Q3 (HR/LN)	Avg. Cost per Participant Q4 (LR/LN)
Case Management Days	$6.02	$2,125	$2,233	$2,149	$2,143	$1,981
Court Appearances	$43.86	$554	$582	$611	$524	$522
Treatment[a]	N/A	$2,087	$2,322	$3,117	$1,977	$1,504
Drug Tests	$11.25	$755	$740	$858	$648	$876
Jail Sanctions	$60.23	$56	$81	$28	$44	$34
Program Fees[b]	N/A	($277)	($304)	($190)	($280)	($269)
TOTAL		**$5,300**	**$5,654**	**$6,573**	**$5,056**	**$4,648**

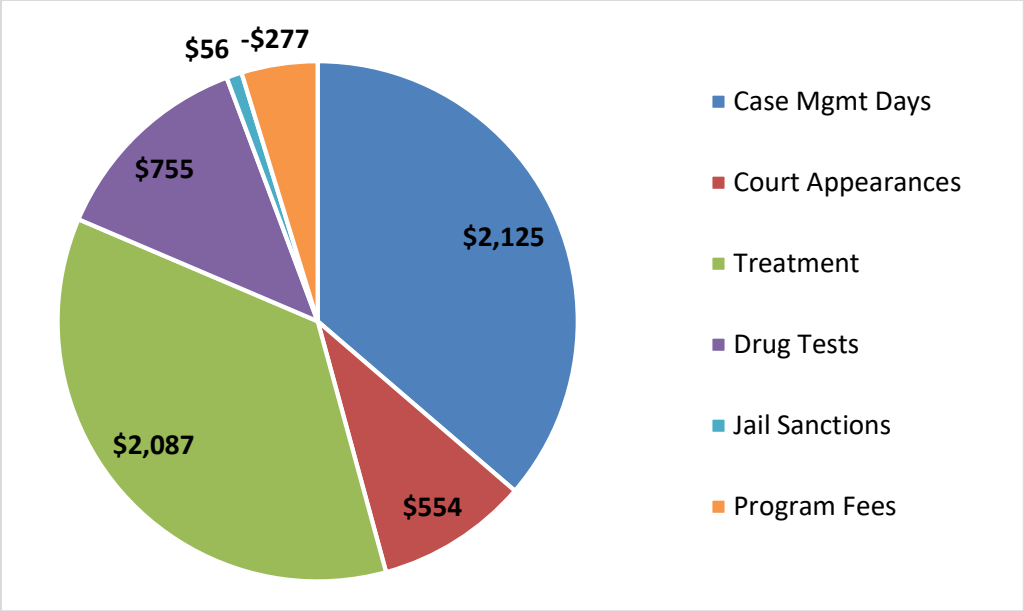
[a] Unit costs or the number of events for treatment were not included in this table due to the wide range of treatment modalities. The treatment services provided can be found in Table 12 earlier in this report, and treatment costs by agency are displayed in Table 17. [b] The amount of fees actually paid varies by group, so the amount of program fees differs by column.

[31] Program participants included in the program cost analysis are those who had sufficient time to complete the program and who exited the program either through graduation or termination. Active participants were not included in the analysis as they were still using program services so did not represent the cost of the full program from entry to exit.

The unit cost multiplied by the number of events per person results in the cost per person for each transaction during the course of the program. When the costs of the transactions are summed the result is a total JCATC program cost (on average across quadrants) of $5,300 per participant. The cost per graduate is $6,119. Note that the graduates cost more than the participants in general, as graduates are typically in the program longer than non-graduates and use more resources.

When program costs are examined by quadrant, the costs do not vary widely from one quadrant to the next. Q4 has the lowest program cost per participant, and Q2 has the highest cost per participant, with Q1 and Q3 falling in between Q2 and Q4. The surprising outcome is Q2 having a higher program cost per participant than Q1, mainly due to more treatment. If the 4-track model was implemented following RNR, the Q1 participants should have the largest cost due to more intensive supervision to match the risk level as well as high treatment cost for the substance use or mental health disorder.

Figure 11. Program Cost per Participant by Transaction



As illustrated in Figure 11, the bulk of JCATC program costs are due to case management and treatment, which is to be expected in any treatment court.

Another useful way to examine program costs is by the amount contributed by each agency involved in the program. Table 17 displays the cost per participant by agency for all participants as well as by agency for each quadrant.

Table 17. Program Costs per Participant Post-4-Track Implementation by Agency

Agency	Avg. Cost per Participant All JCATC	Avg. Cost per Participant Q1	Avg. Cost per Participant Q2	Avg. Cost per Participant Q3	Avg. Cost per Participant Q4
Circuit Court	$210	$221	$232	$199	$198
Division 50[32]	$1,303	$1,302	$1,508	$1,195	$1,376
Public Defender	$71	$75	$79	$67	$67
Prosecuting Attorney	$77	$81	$85	$73	$73
Heartland Center for Behavioral Change	$2,252	$2,495	$3,291	$2,138	$1,659
Department of Corrections-Probation and Parole	$1,331	$1,399	$1,350	$1,340	$1,241
County Corrections	$56	$81	$28	$44	$34
TOTAL	**$5,300**	**$5,654**	**$6,573**	**$5,056**	**$4,648**

Both Figure 12 and Table 17 demonstrate that the costs accruing to Heartland Center (staffing, court sessions, case management and treatment) account for 42% of the total program cost per participant, which is appropriate given that Heartland Center for Behavioral Change does all treatment for participants. The next largest cost (25%) is for Probation and Parole, followed by Division 50 (25%).

[32] The program fee was included in Division 50's total as participants pay the fee to Division 50.

Figure 12. Program Cost per Participant by Agency

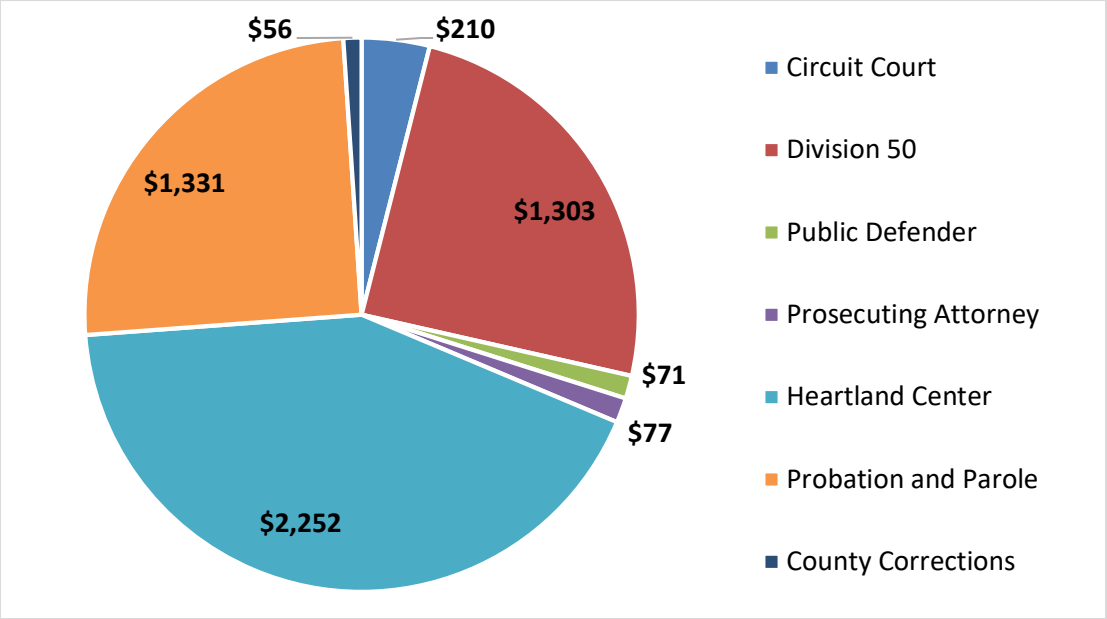
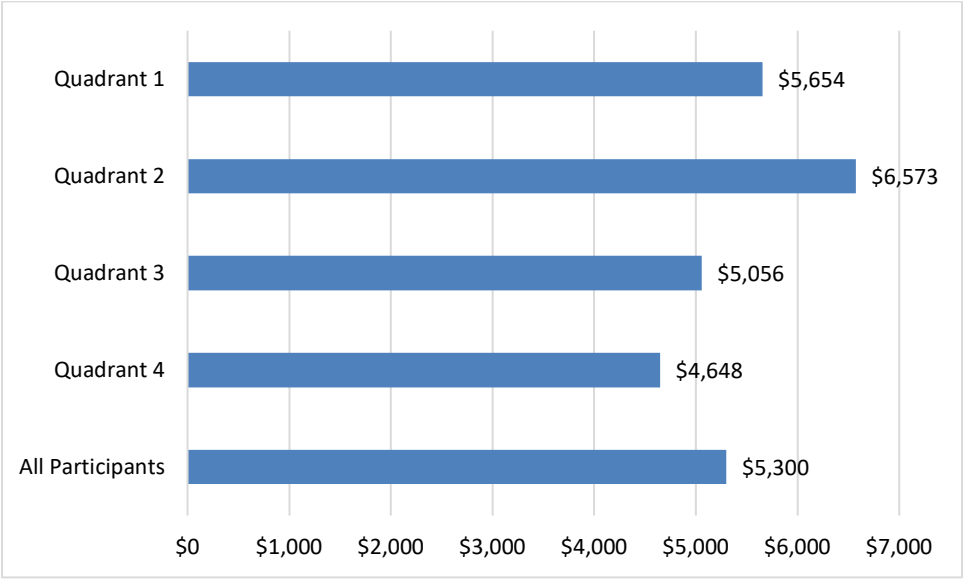


Figure 13 illustrates the program costs per quadrant post 4-track implementation. As presented in the earlier tables, the cost per participant is highest in Q2, followed in order by Q1, Q3 and Q4 with the two high-need quadrants (Q1 and Q2) with higher costs than the two low-need quadrants (Q3 and Q4).[33] The overall average cost per participant ($5,300) is relatively low due to unusually low treatment costs.

Figure 13. Program Cost per Participant by Quadrant



[33] The average cost per participant in all quadrants is lower than the cost per participant NPC found in Greene County, due mainly to lower treatment costs, and lower court session and case management costs.

STUDY QUESTION #5: WERE THERE ANY COST SAVINGS OR OFFSETS DUE TO IMPROVED PARTICIPANT OUTCOMES AFTER 4-TRACK IMPLEMENTATION?

Outcome Cost Methods and Transactions

Outcome costs include any events (transactions) that occur after program entry that are not related to program activities. For this study, only criminal justice system related events are included in the cost analyses. These events include arrests, court cases, days incarcerated (jail and prison), and time on probation and/or parole.

The cost per Arrest incorporates the time of the law enforcement positions involved in making an arrest, law enforcement salaries and benefits, support costs and overhead costs. Costs were obtained directly from the Jackson County Sheriff's Office and a proxy was developed for the Independence Police Department that used financial information from the Independence Police Department and time estimates from the Columbia Police Department. The average cost of a single arrest by the Jackson County Sheriff's Office is $83.91 and the average cost of a single arrest by the Independence Police Department is $106.68. The arrest cost at each law enforcement agency was averaged to calculate the final "cost per arrest" in the outcome analysis of $95.30.

Court Cases include those cases that are dismissed as well as those cases that result in conviction. Because they are the main agencies involved, court case costs in this analysis are shared among the 16th Judicial Circuit Court, Jackson County Prosecuting Attorney's Office, and Missouri Public Defender's Office. Using budget and caseload information from each agency, the cost of a Circuit Court Case is $2,053.03.

Jail costs are provided by Jackson County Corrections. Using budget and average daily population information obtained online, the cost per person per day of jail was calculated to be $58.14 in 2016. Using the Consumer Price Index, this was updated to fiscal 2018 dollars, or $60.23.

Probation and Parole costs were obtained through online information from the Missouri Reentry Process (a program within the Missouri Department of Corrections). The average cost of probation and parole was $6.04 per day in 2016. Using the Consumer Price Index, this was updated to fiscal 2018 dollars, or $6.26.

Prison costs were obtained through online information from the Missouri Reentry Process (a program within the Missouri Department of Corrections). The statewide cost per person per day of prison was $57.76 in 2016. Using the Consumer Price Index, this was updated to fiscal 2018 dollars, or $59.84.

Victimizations were calculated from the National Institute of Justice's Victim Costs and Consequences: A New Look (1996).[34] The costs were updated to fiscal 2018 dollars using the Consumer Price Index. Property crimes are $14,224.83 per event and person crimes are $46,081.54 per event.

[34] The costs for victimizations were based on the National Institute of Justice's *Victim Costs and Consequences: A New Look (1996).* This study documents estimates of costs and consequences of personal crimes and documents losses per criminal victimization, including attempts, in a number of categories, including fatal crimes, child abuse, rape and sexual assault, other assaults, robbery, drunk driving, arson, larceny, burglary, and motor vehicle theft. The reported costs include lost productivity, medical care, mental health care, police and fire services, victim services, property loss and damage, and quality of life. In our study, arrest charges were categorized as violent or property crimes, and therefore costs from the victimization study were averaged for rape and sexual assault, other assaults, and robbery and attempted robbery to create an estimated cost for violent crimes, arson, larceny and attempted larceny, burglary and attempted burglary, and motor vehicle theft for an estimated property crime cost. All costs were updated to fiscal 2018 dollars using the consumer price index (CPI).

The outcome cost analyses were based on a cohort of adults who participated in the JCATC pre-4-track implementation and post-4-track implementation, and a matched comparison group of individuals who were eligible for the JCATC program but who did not attend the program (there are two comparison groups—one for pre-4-track and one for post-4-track). These individuals were tracked through administrative data for 2 years post program entry (and a similar time period for the comparison group). This study compares recidivism costs for the two groups over 2 years, as well as the costs by agency.

The 2-year follow-up period was selected because the number of post-4-track participants who entered the program at least 2 years from the time of the final data download in April 2016 was too small to be a valid representation of the overall program.

The outcome costs experienced by JCATC graduates are also included in the text below, but not in the tables or graphs. Costs for graduates are included for informational purposes but should not be directly compared to the comparison group. If the comparison group members had entered the program, some may have graduated while others would have terminated. The JCATC graduates as a group are not the same as a group made up of both potential graduates and potential non-graduates.

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 data and cost information on both the JCATC and comparison group from the same sources. However, we believe that the costs represent the majority of criminal justice system costs.

Finally, note that some possible costs or cost savings related to the program are not considered in this study. These include the number of drug-free babies born, health care expenses, and JCATC participants legally employed and paying taxes. The gathering of this kind of information is generally quite difficult due to HIPAA confidentiality laws and due to the fact that much of the data related to this information are not collected in any one place, or collected at all. Although NPC examined the possibility of obtaining this kind of data, it was not feasible within the time frame or budget for this study. In addition, the cost results that follow do not take into account other less tangible outcomes for participants, such as improved relationships with their families and improved quality of life. Although these are important outcomes to the individual participants and their families, it is not possible to assign a cost to this kind of outcome, (it is priceless). Other studies performed by NPC have taken into account health care and employment costs. For example, Finigan (1998) performed a cost study in the Portland, Oregon, adult drug court which found that for every dollar spent on the drug court program, $10 was saved due to decreased criminal justice recidivism, lower health care costs and increased employment.

Outcome Cost Results

Table 18 shows the average number of recidivism-related events per individual for all JCATC participants (regardless of graduation status) and the comparison group over 2 years, for both the pre-4-track and post-4-track time periods. These events are counted from the time of program entry.

Table 18. Average Number of Recidivism Events per Person over 2 Years from JCATC Entry

	Pre-4-Track		Post-4-Track	
Recidivism Related Events	**JCATC Per Person (*n* = 1009)**	**Comparison Per Person (*n* = 1115)**	**JCATC Per Person (*n* = 259)**	**Comparison Per Person (*n* = 409)**
Rearrests	0.22	0.32	0.16	0.45
Circuit Court Cases	0.22	0.32	0.16	0.45
Probation and Parole Days	83.41	236.79	51.29	194.20
Jail Days	9.05	11.27	15.84	21.13
Prison Days	4.69	65.67	11.67	55.30
Property Victimizations	0.05	0.08	0.04	0.07
Person Victimizations	0.02	0.04	0.02	0.03

Overall, as demonstrated in Table 18, JCATC participants have fewer of every event than the comparison group, both in the pre-4-track and post-4-track group. Comparing JCATC participants pre to post-4-track, there are fewer of every event.

Table 19 presents the outcome costs for each transaction for all JCATC participants (graduates and terminated participants combined) and the comparison group, for both the pre-4-track and post-4-track time periods. The first subtotal in Table 19 displays the costs associated with outcomes that occurred in the 2 years after program entry for the JCATC group and the comparison group (an estimated "program entry date" was calculated for the comparison group to ensure an equivalent time period between groups) not including victimizations. Because victimizations were not calculated using the TICA methodology, the costs for these events are presented separately, with the final total providing the total costs for all events from program entry to 2 years after program entry.

Table 19. Outcome Costs per Person over 2 Years – Pre- and Post-4-Track Implementation

		Pre-4-Track		Post-4-Track	
Transaction	**Unit Costs**	**JCATC Per Person (*n* = 1009)**	**Comparison Per Person (*n* = 1115)**	**JCATC Per Person (*n* = 259)**	**Comparison Per Person (*n* = 409)**
Rearrests	$95.30	$21	$30	$15	$43
Circuit Court Cases	$2,053.03	$452	$657	$328	$924
Probation and Parole Days	$6.26	$522	$1,482	$321	$1,216
Jail Days	$60.23	$545	$679	$954	$1,273
Prison Days	$59.84	$281	$3,930	$698	$3,309
SUBTOTAL		**$1,821**	**$6,778**	**$2,316**	**$6,765**
Property Victimizations	$14,224.83	$711	$1,138	$569	$996
Person Victimizations	$46,081.54	$922	$1,843	$922	$1,382
TOTAL		**$3,454**	**$9,759**	**$3,807**	**$9,143**

Table 19 shows that the costs of criminal justice outcomes for both the pre- and post-4-track JCATC participants is less than the cost for their respective comparison groups, indicating a benefit, or savings, related to program participation in both time periods. When the difference in total costs, including victimization costs, is calculated between the JCATC participants and their comparison groups, the benefit for pre-4-track JCATC participants comes to $6,305 per participant and the benefit for post-4-track participants comes to $5,336 per participant. This difference shows that the benefit due to JCATC participation post-4-track implementation, with victimization costs are included, is slightly lower than it was pre-4-track, mainly due to post-4-track participants spending slightly more time incarcerated. The increased incarceration time may be related to the post-4-track group having a more criminal prior arrest history (see Table 6). However, there is still a substantial savings related to participation in the JCATC program, and significantly lower numbers of rearrests for post-4-track

participants compared to pre-4-track participants indicate that public safety is better protected post-4-track implementation.

Graduates of the program show substantial savings compared to the comparison group (a savings of $9,113 for the pre-4-track group and a savings of $7,982 in the post-4-track group, when victimizations are included); however, a comparison of graduates to the comparison group is not valid as the two groups are not equivalent. Some of the comparison group is made up of people who would have terminated prior to graduation.

Table 20 presents the costs related to participant outcomes by quadrant. Q1 participants have the highest outcome costs ($6,039 per participant when victimizations are included) due to more time spent in incarcerated and more person victimizations (person charges), while Q2 has the lowest outcome costs ($1,606) over 2 years primarily due to less time incarcerated. It is interesting to note that outcome costs for Q3 participants are half of the cost of Q1, in spite of the fact that both quadrants are high-risk. This indicates that there is a benefit of the multi-track treatment court model on high-risk individuals, even without a substance use disorder.

Table 20. Outcome Costs per Participant by Quadrant over 2 Years

Transaction	Unit Costs	Q1 (HR/HN) Per Person (*n* = 110)	Q2 (LR/HN) Per Person (*n* = 19)	Q3 (HR/LN) Per Person (*n* = 65)	Q4 (LR/LN) Per Person (*n* = 60)
Rearrests	$95.30	$16	$16	$21	$8
Circuit Court Cases	$2,053.03	$349	$349	$452	$164
Probation and Parole Days	$6.26	$392	$241	$443	$110
Jail Days	$60.23	$1,420	$17	$1,317	$54
Prison Days	$59.84	$1,166	$130	$160	$681
SUBTOTAL		**$3,343**	**$753**	**$2,393**	**$1,017**
Property Victimizations	$14,224.83	$853	$853	$711	$0
Person Victimizations	$46,081.54	$1,843	$0	$0	$922
TOTAL		**$6,039**	**$1,606**	**$3,104**	**$1,939**

Outcome Costs per Agency

These same outcome costs were also examined by agency to determine the relative cost to each agency that contributes resources to the JCATC program. The transactions shown above are provided by one or more agencies. If one specific agency provides a service or transaction (for example, the Missouri Department of Corrections [DOC] provides prison days), all costs for that transaction accrue to that specific agency. If several agencies all participate in providing a service or transaction (for example, the Circuit Court, Prosecuting Attorney, and Public Defender are all involved in Circuit Court cases), costs are split proportionately amongst the agencies involved based on their level of participation. Table 21 provides the cost for each agency for pre-4-track and for post-4-track JCATC participants and comparison groups. Table 21 shows that for each agency the JCATC participants cost less than the comparison group both pre and post-4-track implementation, though post-4-track participants cost each agency less than pre-4-track participants with the exception of the DOC.

Table 21. Outcome Costs per Person by Agency over 2 Years from Program Entry

	Pre-4-Track		Post-4-Track	
Agency	**JCATC per person**	**Comparison per person**	**JCATC per person**	**Comparison per person**
Circuit Court	$50	$73	$36	$102
Prosecuting Attorney	$241	$350	$175	$493
Public Defender	$161	$234	$117	$329
Law Enforcement	$566	$709	$969	$1,316
Department of Corrections	$803	$5,412	$1,019	$4,525
SUBTOTAL	**$1,821**	**$6,778**	**$2,316**	**$6,765**
Victimizations*	$1,633	$2,981	$1,491	$2,378
TOTAL	**$3,454**	**$9,759**	**$3,807**	**$9,143**

*These costs accrue to a combination of many different entities including the individual, medical care, etc. and therefore cannot be attributed to any particular agency above.

Table 22 illustrates that pre- and post-4-track implementation, every agency has a benefit, or savings, associated with the JCATC program due to JCATC participants having fewer rearrests, court cases, probation and parole days, prison days, and victimizations than comparison group members. In the post-4-track time period, every agency has a bigger benefit, or savings, than during the pre-4-track time period with the exception of the DOC. However, in both time periods, DOC sees the biggest benefit compared to the other agencies due to less time incarcerated for JCATC participants. The savings to criminal justice system agencies is $4,957 per participant in the pre-4-track time period and $4,449 in the post-4-track time period.

Table 22. Benefit Accrued to Each Agency per Participant over 2 Years from Program Entry

Agency	Pre-4-track Benefit/Savings	Post-4-track Benefit/Savings
Circuit Court	$23	$66
Prosecuting Attorney	$109	$318
Public Defender	$73	$212
Law Enforcement	$143	$347
Department of Corrections	$4,609	$3,506
SUBTOTAL (No victimizations)	**$4,957**	**$4,449**

Table 23 (like Table 20) shows that Q1 participants have by far the highest outcome costs, and the bulk of those costs accrue to DOC for prison days and to victimizations.

Table 23. Outcome Costs per Person by Agency for Each Quadrant over 2 Years from Program Entry

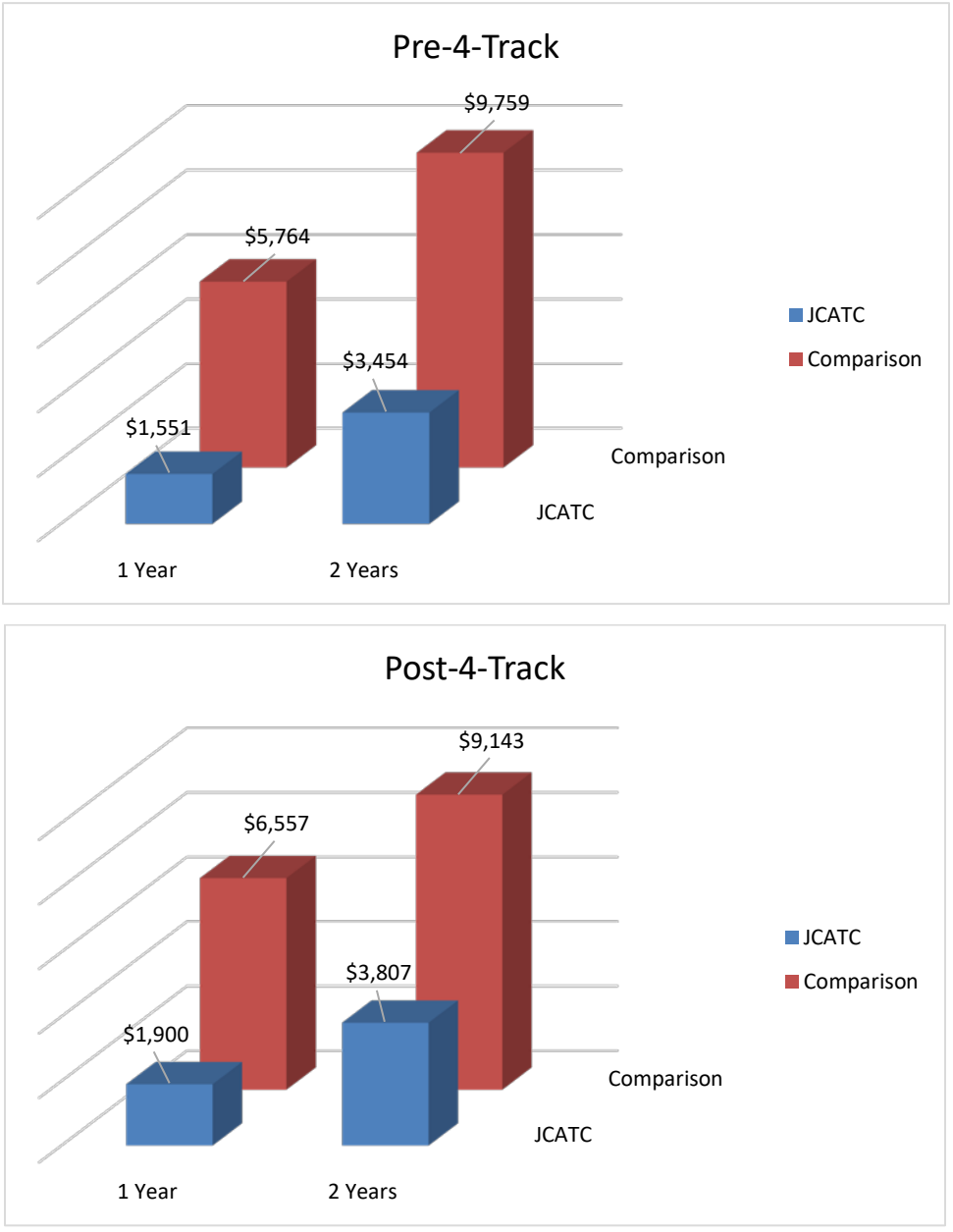
Agency	Q1 (HR/HN) per person	Q2 (LR/HN) per person	Q3 (HR/LN) per person	Q4 (LR/LN) per person
Circuit Court	$39	$39	$50	$18
Prosecuting Attorney	$186	$186	$241	$88
Public Defender	$124	$124	$161	$58
Law Enforcement	$1,436	$33	$1,338	$62
Department of Corrections	$1,558	$371	$603	$791
SUBTOTAL (No victimizations)	**$3,343**	**$753**	**$2,393**	**$1,017**

Q3 participants have high DOC and victimization costs, as is expected from high-risk participants. The highest per participant costs for the Circuit Court, Prosecuting Attorney, and Public Defender are also Q3 participants due to their higher number of court cases, while the highest per participant costs for law enforcement and DOC are Q1 participants due to more days in jail and especially more days in prison.

Cost-Benefit Analysis

Figure 14 demonstrates the benefit (or savings) each year, cumulative, over 2 years. The JCATC program, both pre- and post-4-track implementation, showed lower costs for the program participants each year, demonstrating increasing cost savings every year.

Figure 14. Criminal Justice Recidivism Cost Consequences per Person: Pre- and Post-4-Track Implementation over 2 Years after Program Entry



Over time, the JCATC 4-track model results in significant cost savings and a return on taxpayer investment in the program. The program investment cost is $5,300 per JCATC participant. When the cost difference in outcomes between post-4-track JCATC participants (as the program currently operates) and comparison group members is calculated, the benefit due to reduced recidivism for JCATC participants over the 2 years included in this cost-benefit analysis came to $5,336. This amount results in a positive return on the investment in the 2 years after program entry. If we make the assumption that the cost savings will continue to accrue over time as has been shown in long-term drug court studies (e.g., Finigan, Carey, & Cox, 2008), the return on investment will increase over time as the outcome savings continue to accumulate. At 5 years the estimated return increases to $13,340

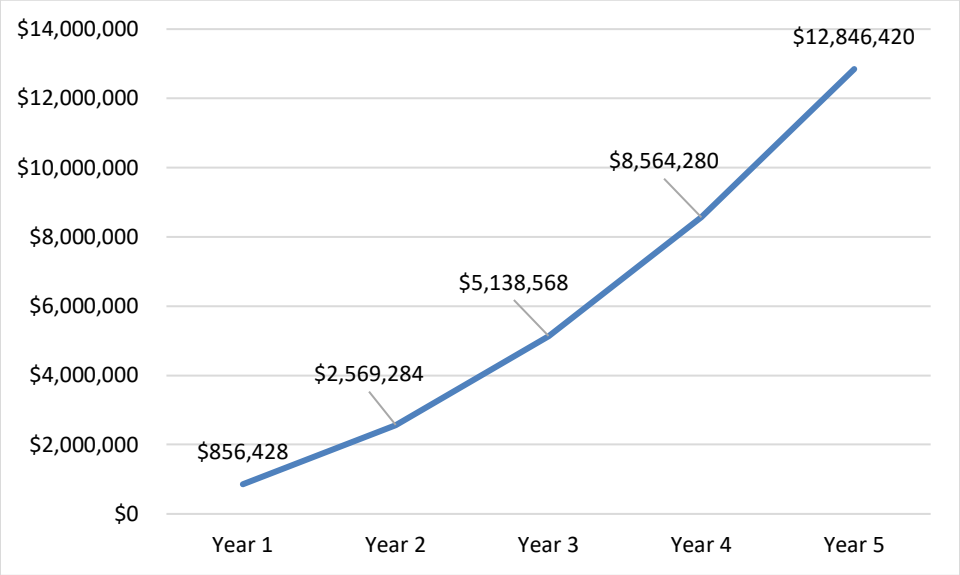
per participant and the cost-benefit ratio comes to 1:2.52. These are criminal justice system savings only. If other system costs, such as health care were included, studies have shown that an even higher return on investment can be expected, up to $10 saved per $1 invested in the program (Finigan, 1998).

Cost Conclusion

Figure 15 provides a graph of the outcome costs for all pre-4-track and all post-4-track JCATC participants and the comparison groups over 2 years, including victimizations. The cost savings illustrated in Figure 16 are those that have accrued through 2 years after program entry. Many of these savings are due to positive outcomes while the participant is still in the program.

These savings will also continue to grow with the number of new participants that enter the program each year. If the JCATC program serves a cohort of 321 new participants annually, the savings of $5,336 per participant (including victimizations) over 2 years from program entry results in a combined savings of $856,428 per cohort per year, which can then be multiplied by the number of years the program remains in operation and for additional cohorts per year. After 5 years, the accumulated savings come to almost **$13 million**.

Figure 15. Growth in Cost Savings Due to Positive Criminal Justice Outcomes for Post-4-Track JCATC over 5 Years



If JCATC participants have more positive outcomes in subsequent years, then these cost savings can be expected to continue to accrue over time, repaying the program investment costs and providing further savings in the form of opportunity resources to public agencies. These findings indicate that JCATC is both beneficial to participants and beneficial to Jackson County and Missouri taxpayers.

LIMITATIONS

There were two key limitations to this study. One is that, although the treatment services appear to be adjusted according to participant needs, the court and case management requirements do not appear to be adjusted for any of the quadrants according to differential participant risks and criminogenic needs. The second limitation is that there is some indication, based on criminal history and demographics of the participants, that some participants may have been assigned to an inappropriate quadrant and track.

However, even with these limitations, there was enough adjustment of services according to quadrant to expect an impact on participant outcomes, and the findings, particularly the analyses showing a significant interaction for time period and 4-track implementation, support the hypothesis that the 4-track model is beneficial for participant outcomes as well as for the taxpayer.

SUMMARY AND POLICY IMPLICATIONS

The results of this study showed that the JCATC implemented the 4-track model with fairly good fidelity, particularly with regard to treatment services provided, although some program requirements (such as court sessions) did not vary across participants in the different quadrants. Also, there was some irregularity in Q2 participants in that they had a more extensive criminal history than some participants classified as high-risk. The cost of the program did not vary greatly between quadrants, though high-need participants did cost more which was expected with more treatment costs. LR/HN participants had the highest program cost ($6,573 per participant) and lowest for LR/LN participants ($4,648), demonstrating an appropriate allocation of funds to participants with the highest treatment service needs.

The outcome and cost analyses demonstrated that implementation of the 4-track model resulted in substantially improved participant outcomes. Specifically, after the 4-track model, JCATC participants:

- Graduated at higher rates (68% post-4-track versus 45% pre-4-track)
- Had lower rearrest rates compared to their matched comparison group
    - 181% reduction in number of rearrests post-4-track versus 45% pre-4-track
    - 6 times fewer drug rearrests post-4-track versus 2 times fewer pre-4-track
    - 120% reduction in felony arrests post-4-track versus 100% pre-4-track
- Had lower reincarceration rates
    - A 171% lower rate of reincarceration post-4-track versus 59% lower for the pre-4-track participants

Savings due to lower use of criminal justice resources and fewer victimizations resulted total savings of $5,336 per 4-track participant over 3 years. If the JCATC program serves a cohort of 321 new participants annually, the savings of $5,336 per participant (including victimizations) over 2 years from program entry results in a combined savings of $856,428 per cohort per year, which can then be multiplied by the number of years the

program remains in operation and for additional cohorts per year. After 5 years, the accumulated savings come to almost **$13 million**.

These findings indicate that using RNR in a drug court setting through implementing separate tracks and providing supervision and services based on each participants individualized risk and need results in increased public safety due to lower criminal recidivism as well as substantial cost savings to the taxpayer.

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APPENDIX A: STATISTICAL DATA ANALYSES METHODS

Once all data were gathered on the study participants, researchers cleaned and moved the data into SPSS 23.0 for statistical analysis. The analyses used to answer specific questions are described below.

Mahalanobis Distance Matching was performed using a tool developed in R used in conjunction with SPSS (Rubin, 1980).

RESEARCH QUESTION #1: DID THE PROGRAM TAILOR THE TREATMENT COURT REQUIREMENTS AND SERVICES TO EACH OF THE FOUR QUADRANTS? THAT IS, DID THE PROGRAM PROVIDE SERVICES DIFFERENTLY IN EACH OF THE FOUR TRACKS?

The total level of program activities and treatment services received were summed for each participant in post-4-track JCATC participants. Means of program activities and treatment services were calculated for all post-4-track JCATC participants by client. Treatment services received were defined by the number of units of treatment received by each participants with a treatment unit usually corresponding to 15-minute intervals except for residential or day treatment. Means of program activities and treatment services are then compared across quadrants.

RESEARCH QUESTION #2: DID GRADUATION RATES DIFFER BEFORE AND AFTER 4-TRACK IMPLEMENTATION?

Graduation rates for JCATC participants were calculated using program data. Graduation rates were calculated using 1) using all JCATC participants that entered the program, including those that were currently active at the time of the study, and 2) using all JCATC participants that had successfully completed the program or were terminated, which excludes those that were active, transferred, medically discharged, or those that became deceased during the program. Graduation rates by year are calculated using the year of program entry of each participant. Graduation rates by quadrant are calculated only for participants that had at least 12 months from program entry to the time of data collection, allowing for ample time to complete the program.

RESEARCH QUESTION #3: DID PLACING PARTICIPANTS INTO THE 4-TRACKS ACCORDING TO ASSESSED RISK AND NEED RESULT IN REDUCED RECIDIVISM INCLUDING REARRESTS AND REINCARCERATION COMPARED TO TRADITIONAL DRUG COURT AND COMPARED TO INDIVIDUALS WHO WERE ELIGIBLE FOR THE TREATMENT COURT BUT WHO DID NOT PARTICIPATE?

Comparison pool members were identified from Jackson County jail records using JCATC eligibility requirements. After comparison pool members were identified, Mahalanobis Distance Matching (Rubin, 1980) was used to create a matched comparison group that were similar to JCATC participants according to race, sex, age, and prior criminal history, defined as the number of arrests (total and by type and level). Pre-4-track JCATC participants and post-4-track JCATC participants were each matched separately, thus two comparison groups were identified corresponding to each time period. A pseudo “program entry” date was calculated for each comparison group member using the average time from arrest to entry in each corresponding JCATC group while also using a random standard error to account for the non-uniform time from eligible arrest to program entry.

Outcomes looked at the percent and average number of arrests, and the percent and average length of reincarceration 1 and 2 years after program entry, or the equivalent date for the comparison group.[35] For outcomes that were continuous (number of arrests, length of incarceration) a negative binomial regression to account for the nonnormal distribution of these outcomes. For outcomes that were categorical (percent rearrested or percent incarcerated), a logistic regression was conducted. Models did not include any demographic or prior criminal history covariates as JCATC participants and each comparison group were well matched after Mahalanobis Distance Matching. All participants and comparison group members were included with the weights provided from Mahalanobis Distance Matching. Each model included time (pre-4-track implementation and post-4-track implementation) and group (JCATC participants and comparison group) as between-subjects variables, as well as the interaction between these two variables. Incident Rate Ratios for negative binomial regressions and Odds Ratios for logistic regression were provided.

[35] Analyses that examine outcome time periods greater than 1 year include only participants who have the full outcome time available. For example, analyses that examine outcomes 2 years from JCATC entry will only include individuals that have 2 full years of outcome time available. Outcomes are based upon program entry date (or a similarly assigned date for the comparison group).