A Cost-Benefit Analysis of the St. Louis City Adult Felony Drug Court

provided to the

St. Louis City Adult Felony Drug Court
City of St. Louis
22nd Judicial Circuit

by the

Institute of Applied Research
St. Louis, Missouri
2004

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Table of Contents

Highlights of Findings v
Executive Summary vii

Chapter

1 Introduction.....1

2 Costs and Benefits of Drug Court.....11

Reference 31

Appendix

A Experimental and Control Group Characteristics.....33

B Technical Details of Cost and Benefit Calculations 35

C Early Termination from Drug Court.....53

Highlights of Findings

The St. Louis Adult Felony Drug Court in the City of St. Louis is a pre-plea drug court that began in April 1997 and accepts individuals charged with drug crimes shortly after arrest. The program is voluntary. Participants must submit to regular breath testing for alcohol and urinalysis for drugs, make regular court appearances, find and maintain employment, and participate in prescribed drug and alcohol treatment. If they successfully complete the program, which averages nearly a year and a half in length, their original charges are dismissed.

- The study was a cost-benefit analysis that compared the first 219 drug court graduates, who had completed drug court before 2001, with a carefully matched control group of 219 individuals charged with a drug crime who had pleaded guilty, had entered probation during the same period, were not offered drug court, and had successfully completed probation.

- The control group contained no individuals who were sentenced to prison. For this reason, the estimates of this study are conservative since drug court graduates with class A and class B felonies and those who are prior and persistent offenders would most likely have been sentenced to prison terms had they not been accepted into Drug Court.

- **The study collected consistent data on costs and benefits from a wide variety of data sources at the state and local level**. These included: wages, welfare, Medicaid, drug and alcohol treatment, mental health treatment, criminal arrests, criminal convictions, time in jail, prison sentences, court hearings and other court activities, administration and supervision in drug court and probation programs, and births of drug-exposed infants.

- **The overall costs of drug court exceeded those of probation.** Adding together costs of administration, supervision, drug and alcohol treatment, court hearings, urinalysis, and pretrial detention, it cost an average of $7,793 for a drug court graduate to successfully complete drug court compared to an average of $6,344 for an individual to successfully complete probation. The excess costs of drug court averaged $1,449 per person.

- **Various benefits (cost savings) were found for drug court graduates compared to probationers** during and after drug court and probation.

  - ✓ Costs of *jail time* were less overall for drug court graduates

  - ✓ *Costs of pretrial detention* were dramatically less for drug court graduates.

  - ✓ *Wages* of drug court graduates were higher during and after drug court.

- ✓ Drug court graduates also averaged significantly more months working than probationers. This led to:
  - ➢ Higher taxes and FICA paid by graduates of drug court.
  - ➢ Lower TANF and food stamps utilized by drug court graduates.
- ✓ *Health care costs and mental health services* were significantly lower for drug court graduates after drug court.
- ✓ Drug court graduates who were incarcerated were *incarcerated for shorter periods* after graduation with reduced incarceration costs.
- ✓ *Costs to the criminal justice system and costs to victims of crime* were lower for drug court graduates compared to probation completers.
- ✓ The number of *infants who were born drug-exposed* and the consequent costs were greater for probation completers than for drug court graduates.

o Comparing the excess costs of drug court with the benefits after drug court:

- ✓ **A net savings of $2,615 per graduate was found during the first 24 months after drug court compared to probation completers.**
- ✓ **A total of $2.80 in outcome savings was realized for Missouri citizens for every $1.00 in additional costs of drug court during the first 24 months after drug court or probation**.

Overall Costs and Benefits. By projecting all follow-up costs and benefits for an additional 24-month period, calculations of costs and benefits were possible over a four-year period.

- ✓ **Net savings <u>over four years after drug court or probation</u> amounted to $7,707 per drug court participant. This represents the expenses that would have been incurred by the taxpayer had these drug court clients attended regular probation.**
- ✓ **For every dollar in additional costs for drug court for the 219 drug court graduates, taxpayers realized a savings of $6.32 over the four-year period.**

Gross Savings over Four years: The total cost of drug court for the 219 graduates was $1,706,775 or $7,793 per graduate. The benefits during the four-year period after drug court amounted $2,005,274 for all 219 graduates or $9,156 per graduate:

- ✓ **After four years the benefits exceeded the <u>total drug court cost</u> associated with graduating 219 individuals by $298,399 or $1,362 per drug court graduate.**

Executive Summary

The St. Louis Adult Felony Drug Court in the City of St. Louis is a pre-plea drug court that accepts individuals charged with drug crimes shortly after arrest. The program is voluntary. Participants must submit to regular breath testing for alcohol and urinalysis for drugs, make regular court appearances, find and maintain employment, and participate in prescribed drug and alcohol treatment. If they successfully complete the program, which averages nearly a year and a half in length, their original charges are dismissed.

The St. Louis Adult Felony Drug Court began operating on April 7, 1997 in the City of St. Louis (22nd Judicial Circuit). The graduates selected for this study were the first 219 to successfully complete the program. A number of reforms, including a special program for youthful defendants, have been introduced since that time that are designed to enhance drug court outcomes. This group of graduates predates most of those reforms.

Research indicating the benefits of drug courts has accumulated during the previous decade. However, there have been few *controlled* studies designed to demonstrate whether the value of those benefits to the community offset the costs of operating the programs. The primary goal of the present study was a cost-benefit analysis of the St. Louis Adult Felony Drug Court that compared the first 219 drug court graduates, who had completed drug court before 2001, with a carefully matched group of other individuals charged with drug crimes who were not offered drug court but completed probation.

Selecting the Control Group. The study employed an experimental design. The control group was composed of individuals selected from probation records that had pleaded guilty to drug crimes, had entered probation during the same period and had successfully completed probation. A probation completer was identified that was the best match to each drug court graduate on criminal charge (primarily drug offenses), prior criminal convictions, age, race, gender and residential zip code, and had entered probation at approximately the same time the graduate had entered drug court. Like drug court participants, none had criminal charges indicating violence. All probation completers were assessed to have drug or alcohol problems, although none had been offered to participate in drug court.

The control group contained no individuals who were sentenced to prison. For this reason, the estimates of this study are conservative since drug court graduates with class A and class B felonies and those who are prior and persistent offenders would most likely have been sentenced to prison terms had they not been accepted into Drug Court.

The Approach to Costs and Benefits: The Taxpayers Perspective. The primary perspective or viewpoint assumed in this study is that of the ordinary citizen, the Missouri "taxpayer." Under this perspective any relative increase in government expenditures, such as for welfare or publicly supported treatment, or decrease in taxes

paid by drug court defendants would be considered a cost while a corresponding decrease in expenditures or an increase in taxes paid by defendants would be considered a benefit. Similarly, relative reduction in costs to taxpayers directly (such as a reduction in victim costs of crime) would be considered a benefit.

Improved Methods. The present study improved on previous drug court studies in several ways:

1. Limiting the control group to "probation completers" was a conservative measure designed to *avoid comparing success in drug court with failure in other criminal justice settings*. In this way the highest possible standard was set for the cost-benefit study.

2. Although control group members would have been eligible for drug court, none had applied for drug court and, consequently, none had been rejected from drug court.

3. Data on costs and benefits were collected for the two-year period *preceding* drug court or probation, the period of participation, and the two-year period *after* completion. This approach permitted the performance of individuals in the study to be adjusted based on their past history. By collecting data during drug court and probation, costs and benefits could be assessed from the day participants entered. Data from the two years after drug court or probation permitted an assessment of longer-term cost and benefit outcomes.

4. The study collected consistent data on costs and benefits from a wide variety of objective data sources at the state and local level. These included: wages, welfare, Medicaid, drug and alcohol treatment, mental health treatment, criminal arrests, criminal convictions, time in jail, prison sentences, court hearings and other court activities, administration and supervision in drug court and probation programs, and births of drug-exposed infants.

Administrative, Supervision and Treatment Costs of Drug Court versus Probation. While offenders were in the drug court and probation programs, the costs of drug court overall were somewhat higher than the costs of maintaining offenders in probation.

- *Administrative costs* averaged $429 per drug court graduate compared to an estimated $195 per probation completer.

- *Supervision* was primarily the responsibility of regular probation officers for members of the control group, while probation officers specially assigned to the drug court (called diversion mangers) supervised drug court graduates. Supervision averaged $81 per completer and $62 per graduate primarily because probation completers spent about three months more in probation than graduates spent in drug court.

- The average cost of *urinalysis* for graduates was $651 compared to $40 for probation completers.

- All drug court graduates participated in alcohol and drug treatment, the costs of which averaged $147 per graduate. Only a minority of probation completers was assigned to such treatment averaging $41 per completer. The costs of court hearings were calculated to be $504 per drug court graduate compared to $237 per probation completer.

Other Costs and Benefits. Certain benefits, including increased taxes paid and reduced costs of public programs of drug court graduates, began to accrue during the program. These continued to increase during the follow-up period after graduation. By the end of the entire follow-up period of four years (two years of collected data and two years of projected data), the relative benefits of drug court substantially outweighed those of probation.

- Costs of *jail time* were greater for drug court participants while they were in drug court because jail-time was a sanction individually applied by the drug court judge. During the period of drug court and probation participation, costs of jail time averaged $795 per drug court graduate and $359 per probation completer. The situation was reversed during the two years after completion: $264 per graduate and $497 per completer. Pretrial detention (prior to the original drug charge) was essentially zero for drug court graduates since they were placed on personal recognizance (rather than remaining in jail or paying bail) and were immediately diverted to drug court. Some probation completers, however had jail time prior to bond or recognizance release. These costs were $0 for drug court graduates but averaged $2,737 per probation completer.

- Average monthly *wages* of drug court graduates were higher during drug court ($639) than probationers during probation ($614). This trend continued after drug court and probation: a 24-month average of $18,251 for drug court graduates compared to $16,822 for probation completers. These differences were in part attributable to longer periods of employment for graduates.

- Federal, state and local *taxes and FICA* were about equivalent during the drug court probation period: the monthly average for drug court graduates was $106 and for probation completers was $107. However after completion of drug court or probation the 24-month average was greater for graduates ($5,234) than for completers ($4,782).

- Reception of welfare (*AFDC/TANF and food stamps*) reflected the difference in wages and time working. Monthly combined averages during drug court/probation were $56 per graduate compared to $59 per completer. The 24-month averages after graduation or completion were $1,291 per graduate and $1,468 per completer.

- *Health care costs and mental health services* were significantly different for the two groups. Other research has shown that a substantial benefit of drug and alcohol treatment is reduced health care costs. This was the finding of this study as well, since only a minority of probationers received alcohol and drug treatment services. While monthly Medicaid costs were about the same for graduates and completers ($75 versus $84, respectively), 24-month costs after the program were substantially lower for graduates ($1,062) compared to completers ($1,520). Mental health service costs averaged $3 per month for graduates and $7 per month for completers while they were in drug court or probation. But afterward the 24-month averages were $12 for drug court graduates versus $71 for probation completers.

- Other variables tracked included the costs of subsequent *arrests* and *incarcerations*. Graduates were incarcerated for shorter periods after graduation with costs averaging $104 per graduate compared to $214 per completer.

- *Costs to victims* and other *costs to the criminal justice system* of later crimes were estimated based on the type of crime and costing methods used in other studies. Later crimes of probation completers more often involved crimes against persons, such as assault and robbery, while the later crimes of graduates were almost exclusively drug crimes. Consequently, 24-month averages were $104 in tangible costs per graduate versus $212 per completer and $376 in intangible costs per graduates versus $1,572 per completer.

- Finally, the costs associated with *infants who were born drug-exposed* were greater for completers than graduates. Among babies born to probation completers in the control group, six were identified as drug exposed leading to an average 24-month cost of $789 per completer. One drug-exposed infant was found among graduates for an average 24-month cost of $132.

Costs and Benefits during Drug Court and Probation and during the 24 Months afterward. These were calculated directly based on data collected for each study participant over two years.

- **Program Costs:** Costs computed for the two programs consisted of administration, supervision, urinalysis, pretrial detention, jail sanctions (and new arrests), court activities, court fees, drug and alcohol treatment services and mental health services. The costs of drug court for the 219 graduates totaled $1,706,775 while the costs of probation for the 219 probation completers were $1,389,460. The average costs per participant, therefore, were:

  - ✓ Average per drug court graduate: $7,793
  - ✓ Average per probation completer: $6,344
  - ✓ Difference (excess cost of drug court): $1,449

- **Benefits associated with Outcomes:** Adding costs of participation in later programs and subtracting savings from payment of taxes and FICA, the total dollars associated with outcomes were calculated for the first 24 months after drug court or probation. For drug court these were a positive $172,053 while for probation the total was negative $717,908. These resulted when costs of public programs, cost of probation supervision for later offenses, jail for later offenses, TANF, food stamps, Medicaid expenses, psychiatric payments by the state, later drug and alcohol treatment services, prison terms for later offenses, costs to victims of crime, and costs of drug-exposed infants born to graduates and completers) were subtracted from taxes and FICA paid. The averages per participant were:

  - ✓ Average benefits (cost offsets – costs) per drug court grad: $3,278
  - ✓ Average benefits (cost offsets – costs) per probation completer: $(786)
  - ✓ Difference (in favor drug court): $4,064

- **Net Savings over Two years:** The net savings for the first 24 months after drug court or probation may be calculated by subtracting the differences in program costs from the difference in benefits ($889,961 - $317,315). The savings attributable to drug court totaled $572,646 for the entire group of 219 graduates.

  - ✓ **There was an average saving of $2,615 per graduate for the first 24 months after drug court. This represents the expenses that would have been incurred by the taxpayer over the first two years after drug court or probation had the drug court clients attended regular probation.**

- **Ratio of Costs to Benefits over Two years.** The cost-benefit ratio is obtained by dividing differences in benefits by differences in program costs ($889,961 / $317,315): This amounted to:

  - ✓ **A total of $2.80 in outcome savings was realized for Missouri citizens for every $1.00 in additional costs of drug court during the first 24 months after drug court or probation**.

Overall Costs and Benefits. Follow-up costs and benefits were projected for an additional 24 months primarily through trend analyses. Projections were validated by comparing results to extended data (beyond 24 months) that was available for individuals who had entered drug court or probation during its earliest days. By adding two years of projected values to measured values for the first two years after drug court or probation, four-year costs and benefits were calculated.

- **Net Savings over Four Years:** The net savings attributable to drug court totaled $1,687,859 for the entire group of 219 graduates.

  - ✓ **Net savings of over four years after drug court or probation amounted to $7,707 per drug court participant. This represents the expenses that**

would have been incurred by the taxpayer over a four year period had the drug court clients attended regular probation.

- **Ratio of Costs to Benefits over Four years:** It costs about $317,315 more to put these 219 individuals through drug court than sending them through probation. However, the relative savings associated with better outcomes of drug court compared to probation was $2,005,174 over four years. Thus:

  - ✓ **For every dollar in added costs for drug court for the 219 drug court graduates, taxpayers realized a savings of $6.32 over four years.**

- **Gross Savings over Four years:** The total cost of drug court for the 219 graduates was $1,706,775 or $7,793 per graduate. The benefits during the four-year period after drug court amounted $2,005,274 for all 219 graduates or $9,156 per graduate:

  - ✓ **After four years the benefits exceeded the total drug court cost associated with graduating 219 individuals by $298,399 or $1,362 per drug court graduate.**

1. Introduction

This is the final report of the cost-benefit analysis of the St. Louis Adult Felony Drug Court in the City of St. Louis. The drug court is a voluntary program designed to provide drug treatment and other services to individuals charged with felony drug or drug-related offenses within a program that involves close supervision and monitoring by drug court officials. The primary focus of the report is a comparison in monetary terms of the costs of such services with the benefits to participants who successfully complete the program and to the community as a whole.

Since the mid-1970's, many state and local criminal justice systems have been inundated with felony drug cases. Court dockets have become overloaded with drug cases and drug-involved offenders, leaving fewer resources available to adjudicate serious, violent felonies. During this same period, it has become increasingly clear that incarceration in and of itself does little to break the cycle of illegal drug use and crime, and offenders sentenced to incarceration for substance-related offenses exhibit a high rate of recidivism once they are released. It has also been demonstrated that science-based drug abuse treatment is demonstrably effective in reducing both drug addiction, drug-related crime, and a variety of other tax supported human services while increasing employment and taxes paid.

Beginning in the late 1980's, a few jurisdictions reconsidered their approach to handling defendants charged with drug and drug-related offenses and have developed "drug courts" for nonviolent offenders whose involvement with the criminal justice system is due, primarily, to their drug abuse and addiction. Defendants eligible for the drug court program are identified as soon as possible after arrest and, if accepted into the program, are referred immediately to a multiphase drug court with out-patient treatment entailing multiple weekly (often daily) contacts with the treatment provider for counseling, therapy and education; frequent urinalysis (usually at least weekly), frequent status hearings before the drug court judge (bi-weekly and more often at first); and a rehabilitation program entailing vocational, educational, family, medical, and other support services.

Research indicating the benefits of drug courts has accumulated during the previous decade (see Belenko, 1998, 2001). However, there have been few controlled studies designed to demonstrate whether the value of those benefits to the community offset the costs of operating the programs or that these programs are more successful than probation.

The St. Louis City Drug Court

The St. Louis Adult Felony Drug Court began operating on April 7, 1997 in the City of St. Louis (22nd Judicial Circuit) initially through awards of funds from the City of St. Louis' Local Law Enforcement Block Grant and from the United States Department of Justice through its discretionary grant program. Since 1997, the 22nd Judicial Circuit has

added a Juvenile and a Family Drug Court. Current funding is provided from City of St. Louis General Funds through the Circuit's annual budget request, Local Law Enforcement Block Grant through the city, the Missouri Division of Youth Services, and the Missouri Office of the State Courts Administrator. The drug court maintains an active caseload of approximately 350 defendants charged with drug related crimes in the adult felony drug court.

There are currently 35 adult drug courts operating in Missouri, with many others in the planning stages. Over half of these involve pre-plea diversion of defendants from regular court to drug court. The St. Louis Adult Felony Drug Court follows this model. Individuals are diverted from the normal criminal court process shortly after arrest on drug charges in most cases. They must voluntarily waive their rights to a preliminary hearing and certain other legal rights and must agree to the terms and conditions of participation in drug court. They are promised that upon successful completion of the drug court program the charges against them will be dismissed. If they drop out of the drug court program they must return to the normal court process.

A drug court team, under the direction of the Drug Court Commissioner, administers the St. Louis Drug Court. This team consists of the prosecutor, defense attorney, diversion managers, a treatment specialist, the administrator, the court clerk and the deputy sheriffs. All candidates are chosen by the Circuit Attorney, based on a set of guidelines, and approved by the drug court team. Individuals who choose to participate in this program are required to sign a contract stating that they will comply with program requirements and rules. These include: regular court appearances, drug testing, meetings with diversion managers, counseling (individual and group) and attendance at self-help meetings. Other services such as assistance with education, vocational training, job placement and mental health assessments, may also be offered.

A treatment team assesses each drug court participant and develops a treatment plan based on the individual's needs. Substance abuse treatment and counseling are provided through either a residential treatment program or an outpatient program. The participant must complete drug tests on randomly assigned days throughout the week, at least once per week. In addition, every participant must attend self-help meetings (e.g., Alcoholics Anonymous) at least twice per week throughout the entire program. Through these programs, each participant identifies a sponsor who assists him/her with sobriety, personal and other issues. A final requirement for graduation is the payment of a $250 drug court fee, by each participant.

A diversion manager (from the Office of Probation and Parole) is assigned to each participant to monitor his/her treatment in drug court. This individual meets regularly with the participant and makes home visits, checks in with a participant's work place, school, physician, counselors and other persons involved in the drug court treatment. The diversion manager and treatment program representatives also provide continuous updates on the participant's progress to the team, and to the drug court commissioner—during the participant's scheduled court appearances. These court appearances are mandatory, and failure to appear is considered a crime, which can result in a warrant

being issued for the participant's arrest. During these appearances, the commissioner discusses the reports with the client and provides either incentives (praise, movie tickets, credits towards court fees, etc) or sanctions (community service, jail time, journaling, increased treatment, termination, etc).

There are three Paths in the drug court program, which must all be completed before a participant can graduate. Path I is the "Pre-treatment" program, in which participants are oriented to the rules and requirements of the program and to primary treatment. This Path lasts a minimum of three weeks. Path II is the primary treatment path and lasts a minimum of four months. After completing these two paths a participant enters Path III, which is an aftercare path. This final Path is designed to address the participant's ongoing recovery needs, including maintaining total abstinence from all drugs and returning to the community as a productive, responsible person. This Path lasts a minimum of 6 months, of which at least the last 12 weeks must be free of drug use and without major sanctions. The entire program length varies from one individual to another, but is at least 11 months and is mainly determined by the participant's progress. Upon graduation from the drug court program, the Circuit Attorney dismisses the charges against the successful "graduate."

Previous Research

Two studies are directly comparable to the present research. Michael Finigan (1998) conducted an outcome evaluation of the drug court program in Multnomah County, Oregon that included a cost and cost-avoidance analysis. Finigan's study was and has remained a benchmark for outcome and cost-benefit studies of drug court because of the care taken in selecting a comparison (control) group within an experimental design. The basic design of Finigan's study was emulated and hopefully improved in the present research.

Finigan's study sample consisted of 150 individuals who were enrolled in drug court and successfully graduated from the program. For comparison purposes, 150 individuals were selected from among arrestees for drug offenses in the same county that, as a group, closely matched the drug court graduates on gender, age, race/ethnicity and prior criminal history. A comparison group of similar individuals who were not exposed to drug court and had never applied for drug court is an advance over designs that use individuals who were rejected for drug court participation, were offered drug court but declined to enter or entered but did not complete drug court. A critical difference, however, between Finigan's study and the present research was that bench warrants had been issued for most members of the comparison group, since this was the primary reason drug crime arrestees failed to enter drug court in Multnomah County. This may have introduced a bias into the control group. In the present research no control group members had absconded and all had successfully completed probation during one continuous supervision episode.

Finigan collected data on arrests, probation supervision, alcohol and drug treatment entry and exit characteristics and public assistance from state data systems.

There were significantly fewer subsequent arrests of various kinds, convictions, parole violations of drug court graduates and they had better adjustment to the community while under supervision. In the present research a wider variety of state and local sources were available and were utilized to collect cost and outcome data on program participants.

Finigan compared criminal justice system costs, victim losses, theft losses, health care service utilization and public assistance costs for drug court participants and for the comparison group. From the viewpoint of the non-substance abusing citizens, $5,629 in costs were avoided per drug court program participant. Assuming 440 clients were admitted during a program year, the total savings for Multnomah County was $2,476,795.

The Washington D.C. Superior Court Drug Intervention Programs Evaluation (Harrell, Cavanaugh and Roman, 1999 and 2000) compared defendants arrested for drug-related crimes assigned to two experimental tracks in drug court with defendants on the standard docket. The experimental programs were 1) a treatment docket consisting of testing and participation in day treatment and 2) a sanctions docket, which offered a program of graduated sanctions along with testing, treatment referrals and judicial monitoring of drug use. A primary strength of the evaluation lay in the prospective experimental method of random assignment of defendants to the three conditions. Participation in the two experimental groups was voluntary, however, with 40 percent of those assigned to treatment program and 66 percent of those assigned to the sanctions program actually participating. Defendants who chose not to participate were treated like individuals in the standard docket. Comparisons were made with the standard docket using the entire assigned memberships of each experimental group as well as the portion of each that actually chose to participate. Significant positive outcomes occurred in all four sets of comparisons. The cost analysis compared a variety of categories of benefits of drug court, including reductions in costs to victims, reduced costs of arrests, prosecution and incarceration. When the additional costs of the drug program were deducted the analysis showed a return of nearly $2 for every $1 spent.

A very helpful product of this project was a detailed manual describing a methodology for measuring costs and benefits in drug court programs in which experimental and quasi-experimental designs are used (Roman, et al., 1998).

The Design

The St. Louis, Missouri cost-benefit study employed an experimental design. The experimental group was composed of drug court participants who had successfully completed the program during the period from April 1997, the month the St. Louis City Drug Court began operation, through November 2000. The cutoff date of November 2000 was chosen to permit collection of follow-up data on each study subject for 24 months after graduation. These individuals will be called *drug court graduates* or simply *graduates*. (Under this approach, the graduates selected were the first 219 to successfully complete the program. A number of reforms, including a special program for youthful defendants, have been introduced since that time designed to enhance the drug court. This group of graduates predates most of those reforms.)

As indicated, the St. Louis Drug Court is technically a diversion program. Graduates were assigned to drug court shortly after arrest and first court appearance. A control group was selected of individuals on regular probation with similar characteristics who had not been considered for or participated in the drug court. All control group members were assigned to probation during the same period and had successfully completed probation. They will be referred to as *probation completers* or simply *completers* in the remainder of this report. Analogous to the graduates, individuals eligible for inclusion in the control group had all been assigned to probation prior to trial, that is, through a guilty plea.

Relevant data on costs and benefits were selected for the 24-month period preceding participation in probation or drug court, for the period of participation itself, and the 24-month period following completion. The before and after periods were specific to each study subject, that is, the particular 24-month period prior to each individual's entry to probation or drug court and the similar period after completion or graduation. The starting and ending points varied in each case. The length of the period during drug court or probation also varied for each subject. While the study design did not involve random assignment of subjects to experimental and control conditions, the inclusion of data collection from a before period for each subject permitted further equalization of the two groups through the use of statistical controls in many analyses.

A third group was also selected in the study consisting of drug court participants who had *not* successfully completed nor graduated from the drug court program. These are referred to as *Early Terminators*. A non-experimental analysis was conducted of this group (see Appendix C).

Control Group Assignment. Pair matching was used to select the control group. A large pool of individuals assigned to probation was obtained along with relevant demographic and criminal data from the Missouri Department of Corrections (MDOC), as indicated above. Pair matching was used as a method to achieve *matched groups*. The object of matching was not to conduct matched-pair analyses but to create comparable groups. With a sufficiently large control selection pool, this technique can result in a control group that is nearly identical to the experimental on the variables utilized for matching as well as on other related variables. It does not, however, insure experimental-control group similarity on other variables unrelated or weakly related to the matching variables. This weakness of the design points to the need for statistical controls.

There were 219 drug court graduates during the target period. The control assignment task consisted of selecting the most similar set of 219 individuals from the pool of probation completers. To make the cost-benefit analysis as convincing as possible, the strictest and most conservative criteria possible were applied in selecting matching cases.

The initial pool of probation completers included 4,373 individuals who were on probation in St. Louis City or St. Louis County at some time during the period from

January 1997 through December 2000 and who pleaded guilty and who were placed on probation with suspended imposition of sentence. No individuals were matched who were assigned to probation after a criminal trial. This may have been *too strict* a criterion, however: while drug court graduates were diverted to drug court very quickly after the initial arrest, some might not have pled guilty had there been no drug court. None of the control group members went to prison in response to the drug charges for which they were initially arrested. Yet, some drug court graduates might have been found guilty in a subsequent proceeding and been sentenced to prison had they not been selected for drug court.

Needs assessments are conducted at or near the beginning of entry to probation, at which time probationers must undergo a urine test for drug use. Individuals who were retained in the pool had 1) received a needs assessment during this four-year period with substance abuse indicated *and* 2) had a drug or DWI charge. An additional pool of individuals with substance abuse indicated but with a burglary or stealing charge was also created to permit selection of matches for the handful of drug court graduates with these as their major charge.

Individuals who had any charge (usually a major charge) indicating violence were also eliminated from the pool. Such charges ranged from homicide to first-degree burglary (Missouri charge codes: 10021 to 14010). This left a small set of individuals with a secondary charge of 3rd degree assault, but because at least one drug court graduate also had such a charge, these individuals were retained in the control selection pool. However, the matching process controlled for similarity in charge.

Because the experimental group was composed of graduates of drug court, that is, individuals who had successfully completed drug court, successful completion of probation was considered a necessary characteristic of individuals in the control group pool. Only individuals with a code indicating "discharge upon successful completion" of probation were retained in the control group selection pool. As indicated, this was a major difference between the present analysis and that of Finigan (1998). By limiting the control group pool to "probation completers" the study *avoided comparing success in drug court with failure in other criminal justice settings*.

These steps resulted in a final pool of 1,469 individuals, 33.6 percent of the original group of 4,373. This provided an average of 6.7 potential-matches among probation completers for each of the 219 drug court graduates.

A customized matching program was employed to select from this pool. For each drug court graduate, <u>all</u> individuals in the pool, who were not yet matched, were examined to determine the person that matched most closely on the following variables:

1. Gender
2. Race
3. Date of birth (plus or minus three years of the graduate's date of birth)
4. Prior convictions (no prior convictions versus any prior convictions)

5. Same major charge, or if no one with the same major charge, any match within the following categories:
   - Any drug charge or DWI (Charge codes: 32320 to 32999, 47410 to 47460)
   - Burglary second degree (14020)
   - Stealing (15010 to 15999)
6. Same zip code, if any, within the control pool

Matching on the final two variables involved the application of temporary weights to each potential match with the highest weighted individual selected as the final match.

Comparisons the graduate and completer groups were made (see Appendix A for tables). No statistically significant differences were found for mean age or proportion individuals with prior convictions—two of the matching variables. In addition, no significant difference was found for the mean number of dependents—a variable not used in matching. The average household incomes of zip codes areas in St. Louis City and County vary significantly. For this reason, it was thought to be important to select matching cases from the same or similar zip code areas. This process was successful as well (Appendix A). An exact match was achieved for gender and a nearly exact match for race. Regarding major charge, slightly more graduates were charged with possession of a controlled substance. Slightly more completers were charged with distribution of drugs. The precise charge, however, depends on the circumstances of the arrest and evidence available. Many subjects in this study who were charged with possession were, in fact, selling drugs.

It was logistically impossible to request before and after data for the entire pool of probation completers. Otherwise it might have been possible to refine the matching process utilizing data on *prior* wages, drug treatment, welfare participation, arrests and other relevant variables that were also to be utilized for outcome measures *after* probation/drug court completion. Notwithstanding the similarities that were achieved on variables used in matching, after all data were collected and assembled certain differences were found between the previous history of graduates and completers. This had been anticipated and was the primary reason for the before-after design in which variables from each individual's previous history could be introduced as statistical controls.

Variables, Data Sources, and the Nature of Data Collected. The preferred method in cost-benefit studies is to measure outcomes and costs directly for study subjects. This was possible for a number of the cost measures utilized in this study. For example, wage and welfare data were collected for each graduate and completer. Some other measures were derived. For instance, it turned out to be prohibitively expensive to obtain aggregated tax data from the Missouri Department of Revenue on taxes paid, and in any event, 438 specific court orders would have been necessary under Missouri law—one for each study subject—in order to link identifying information to tax records. The fallback position was to estimate taxes and FICA based on wages received and individual characteristics. Similarly, victim costs were estimated rather than measured directly. All

monetary values for the following variables, whether directly measured or derived, were adjusted for inflation to 2002 dollars.

The data sources included a variety of state and local agencies. Confidentiality was assured in all cases, and in most cases, formal agreements were drafted between the agency, the evaluators and the St. Louis Adult Felony Drug Court. In addition, a confidentiality agreement, including provisions for protection of identifying information and later destruction of identifying information, was established between the evaluator (IAR) and the drug court.

Drug Court Database. The drug court has maintained data in its own management information system since its inception. In addition, the individual who was the Drug Court Commissioner at the beginning of this study had maintained information in a separate database that supplemented the MIS and permitted better identification of drug court clients in state databases.

Probation and Corrections. The Missouri Department of Corrections (MDOC) provided extractions for individuals assigned to probation in St. Louis City and County during the target period along with probation and corrections data for these individuals during the period from January 1995 through December 2002. This included demographic data, episodes of probation supervision, periodic needs assessments, warrants issued, and convictions and incarcerations under the Department of Corrections.

Arrests. The Missouri Highway Patrol (MHP) provided statewide arrest data. This included Missouri state criminal identifiers, arrest date, and crime code for the period 1995 through 2002.

Days in Jail. Jail data were available through the resources of the City of St. Louis Criminal Justice Center. Statistics were provided for the period while individuals were participating in drug court or probation and for the two-year period afterward. Jail data were not available for the period prior to drug court/probation.

Quarterly Wages. Under the Unemployment Insurance system, employers submit wage reports for each of their employees to the Division of Employment Security of the Missouri Department of Labor and Industrial Relations. With the exception of a small proportion of employers, chiefly nonprofit agencies that are exempt from reporting, most formal wages and salaries are reported. Quarterly wage reports do not, of course, include unreported cash payments, unreported earnings from self-employment or illegal earnings. The assumption made in this study was that such unreported earnings were essentially equivalent for drug court and control subjects. Wage records include wages paid during the previous calendar quarter, the social security number of the employee and identification of the employer. Only the quarterly amounts and social security numbers were requested. All quarterly wage records were obtained for all participants from the 1995 through 2002. As noted, the before, during and after periods varied for each person within this seven-year period and only those records were utilized.

AFDC/TANF, Food Stamps and Medicaid. The Division of Family Services (DFS) of the Missouri Department of Social Services (MDSS) operates the Food stamps and TANF (formerly AFDC) programs. The department maintains records of all individuals enrolled in these programs throughout the state. Monthly records of participation in AFDC and TANF, as well as the food stamp program, were obtained for both study groups for the period 1995 through 2002, through the Research and Evaluation Unit of the department. Similarly, the Medicaid program is operated under the Division of Medical Services within the same department. Medicaid payments for the same period were also obtained from the R&E Unit. Finally, data from the Children Services Division of DFS on removal and placement of children were obtained.

Alcohol and Drug Abuse Treatment and Psychiatric Services. The Division of Alcohol and Drug Abuse of the Missouri Department of Mental Health (MDMH) is responsible for alcohol and drug treatment, through state and federally funded programs. The division maintains contracts with local providers and operates its own local programs throughout the state. Similarly, the Division of Comprehensive Psychiatric Services of MDMH provides various mental health and psychiatric services throughout the state. Client-specific payment records are maintained at the state level. The department provided records for the 1995-2002 period for study participants.

Court Appearances. Information on court appearances of drug court participants was available in the drug court database. Comparable information was not available for completers. Permission was obtained to review certain information from the case files of completer group members—but only for a sample of cases. Information obtained from sample case reviews was used to develop estimates of measures associated with court appearances.

Analytic Approach. The problem in a study utilizing outcomes at various points in time before and after program participation is how to utilize the before data, that is the previous history of outcomes, to inform comparisons of outcomes after participation is concluded. This design, called a "two group pre and post," admits of several different analytic approaches. The simplest approach would be to calculate a gain score (post-outcome minus pre-outcomes) and to compare the means or proportions. The weakness of this approach is the assumption that each unit of difference in pre-outcomes will produce a constant difference in post-outcome (McNeil, Newman and Kelly, 1996). If a person earned $100 before and $1,000 after his or her gain score would be treated as equivalent to a person who earned $50,100 before and $51,000 after. A better approach is to use the pre-outcomes as covariates and estimate marginal means for comparisons. The emphasis in a cost-benefit analysis utilizing this method is not so much on whether the differences were statistically significant but whether the cost and benefit outcome measures take into account the previous performance or history of subjects in each group. This is the analytic approach taken in this study for all variables in which pre-outcome measures were available. In addition, age is directly related to many of the variables considered. Many drug court graduates and probation completers were quite young during the 24 months preceding participation, and while the groups were closely matched by age, it was believed wise to control for age as well in these analyses.

The same method was applied for outcomes during drug court or probation. The complicating factor in these analyses was variation in length of time that individuals were involved. Drug court graduates spent an average of 16.4 months participating in drug court while probation completers spent an average of 19.7 months on probation. Analyses were conducted using monthly averages, but for cost comparisons the monthly averages were expanded to costs of participation. The operation deflated values for graduates and inflated values for completers. The method is a two-edged sword. For example, the mean earnings and taxes of graduates were higher during drug court, but because they spent fewer months participating, their total earnings while in drug court were less. However, in some other cases, such as welfare reception, a slight deflation in values played to the advantage of graduates. The primary reason for integrating program time in the study, however, was that the shorter length of drug court was regarded as a programmatic outcome, that is, drug court reduced the length of time that graduates were involved in the court system in comparison to standard probation. It was assumed that graduates would have spent as long time under supervision as completers had no drug court program been available.

The length of the follow-up period (24 months) was dictated by the need to have a sufficiently large sample of cases for the study. Lengthening this period would have required a corresponding reduction in the number of graduates that could be included in the study. The major program costs of drug court (and probation) are time limited, that is, expenditures cease after graduation or completion. If benefits accrue afterward a *breakeven point* exists in which benefits are equivalent to costs. That point, if it exists, cannot be predicted in advance but must be learned through empirical study. To compensate for this, cost-benefit analyses often utilize trend data to determine benefits and costs beyond the end of data collection. The data for several of the variables in this study, which consisted of quarterly or monthly values over a two-year period for each of the 438 study subjects, lent themselves well to this kind of analysis. Two-year projections were possible for some variables to obtain a full four years of comparative figures. When trend data were not available, a flat line or status quo assumption was made that performance for the first 24 months after graduation or completion would be duplicated during the second 24 months. In addition, this method was crosschecked and validated using third-year data, which were available for over half the study subjects.

Cost-Benefit Perspective. Costs and benefits are relative. One group's cost may be another's benefit. Like most cost studies of drug courts, the primary perspective or viewpoint assumed in this study is that of the ordinary citizen, the Missouri "taxpayer." Under this perspective any relative increase in government expenditures, such as for welfare or publicly supported treatment, or decrease in taxes would be considered a cost while a corresponding decrease in expenditures or an increase in taxes would be considered a benefit. Similarly, relative reduction in costs to taxpayers directly (such as the victim costs of crime) would be considered a benefit.

2. Costs and Benefits of Drug Court

In this chapter each category of costs and benefits is outlined and discussed for the two primary groups. More detailed discussions and certain technical issues involved in calculations are contained in Appendix B. Values are expressed as means per person per month for the variable drug court/probation periods. They are expressed simply as means per person for the entire 24-month follow-up period and for the subsequent projection period. At the conclusion of the chapter summed values are used to provide an understanding of the magnitude of the costs and benefits for a group of 219 individuals. Net and gross savings are shown as well as the ratio of benefits to costs.

Individuals who attend drug court incur certain costs. The diversion managers and other personnel of the drug court must be paid. There are administrative costs. The drug and alcohol treatment services and other services provided to participants all cost money. Expenses accrue from regular attendance at drug court hearings. At the same time, keeping people on probation is not free. They too must be supervised. Probationers have court hearings and other appearances. Many individuals who plead guilty and receive probation for drug crimes participate in treatment programs and receive other kinds of services. *The critical thing to understand in this is that if the drug court did not exist all of the drug court participants would have, at best, been placed on probation and that some might have ended up in prison.* Consequently, the focus in a study of costs and benefits must be based not simply on costs but on *differences in cost*. Did drug court cost more or less than regular probation? A similar approach must be taken to outcomes that may have resulted from drug court participation. Some defendants are employed. Others receive welfare. Because most are low income they may receive Medicaid or publicly supported mental health services. These and other outcomes occur for members of both groups *during and after* drug court or probation. Again, the focus is not simply on two separate sets of outcomes but on the differences between them. Is the financial value of such outcomes greater or less for drug court graduates or for probation completers? These are the questions that are addressed in the remainder of this chapter.

Administrative Costs of Drug Court

The primary danger in assessing costs in studies that focus on program evaluation is that a great deal more is generally known about program participants than about comparison or control groups, particularly when data collection is retrospective in nature, as is the case in this evaluation. In the present study, it was known that all graduates entered the drug court and participated in the process on a regular basis as they passed through the program. Comparable activities by probation completers are known only indirectly and for that reason incompletely. As will be evident in the next section, many participated in drug treatment programs as a condition of their probation. Any rehabilitation or treatment program expenses that were over and above recoverable costs of services for completers were not known and had to be estimated. It was known, for example, that MDOC had contracts with various treatment providers—many of the same providers in St. Louis City and County utilized by the drug court—and that these contracts were primarily for administrative costs associated with services to individuals

on probation. In addition, administrative costs were incurred in other programs partially funded by MDOC (e.g., special offender programs to assist offenders in finding and maintaining employment).

Drug court administrative costs were calculated as daily costs per client based on daily administrative costs and average daily drug court caseloads. Using these methods the mean administrative cost per drug court graduate was calculated as $429 (see Appendix B). The most reasonable index for calculating comparable administrative costs on the probation side was the total psychiatric and drug/alcohol treatment service costs during probation. The proportion of these costs to comparable costs for graduates was utilized to calculate the administrative cost of $195 for probation completers.

Drug and Alcohol Treatment

Drug courts require an intensive drug and alcohol treatment regimen for each participant. In the St. Louis City drug court, both outpatient and inpatient treatment was available. The bulk of the treatment was handled through programs funded by the Division of Alcohol and Drug Abuse of the Missouri Department of Mental Health. Treatment programs for individuals charged with crimes, particularly drug and alcohol crimes, are not confined to individuals in drug court. Participation in alcohol and drug treatment is sometimes required under the terms of probation. The primary differences are that treatment in drug court is a requirement for *all* participants and that treatment is more closely supervised and monitored than treatment on probation.

The rates and amounts of drug and alcohol treatment before and after participation were relatively low for both groups. The average monthly cost of alcohol and drug treatment was three and half times higher for drug court graduates than probation completers while they were participating in drug court or probation (monthly mean of $147 per drug court graduate and $41 per probation completers). This difference was mitigated somewhat by the comparatively shorter span of time that graduates spent in the program, as will be evident below. Not surprisingly, this difference was statistically significant ($p < .001$). Graduates continued to have slightly higher participation in drug treatment after drug court, although the difference was not statistically significant. (Mean per drug court graduate for 24 months amounted to $210 compared to $157 per probation completer).

The relative low amounts of treatment provided on average after program participation made a trend analysis unwise. A *status quo* assumption was made that assumed that drug court costs during years three and four would be the same as those during the first two years of follow-up. To determine whether this assumption was reasonable, a special *third-year analysis* was conducted. Because data were obtained on all study participants through the end of the 2002, three years of follow-up data were available for over half of each group who graduated or completed by December 1999 (120 graduates and 133 completers). That analysis showed that the status quo assumptions were indeed conservative, since later treatment costs were *higher* for this subset of completers than for drug court graduates. This type of analysis was used, where

possible to confirm projections from trends or status quo assumptions and is discussed in the following sections.

Finally, aftercare costs were calculated. This came to an average of $1,878 per drug court graduate compared to $854 for probation completers.

Supervision of Drug Court and Probation

Missouri Department of Corrections (MDOC) has developed standard estimates based on time studies of the average hours per month that probation officers must spend in supervising cases of varying intensity. Diversion managers in the St. Louis City Drug Court are MDOC probation officers that have been assigned to the program by the state. An Office of Probation supervisor manages them, and all are paid employees of the State of Missouri. The average cost to supervise a drug court graduate during drug court was $1,253 per graduate while the average cost to supervise a probation completer while on probation was $1,072 per probation completer. Supervision of drug court graduates, while more intense than probation completers, was only slightly more expensive for two reasons: 1) these completers were in the enhanced or intensive status for a portion of the time they were on probation and 2) the period of probation (19.7 months on average) was longer than the period in drug court (16.4 months on average). By inference this would be true of probationers generally because this group of probation completers was composed of the most "successful" individuals on probation. The implication is that drug court supervision generally in St. Louis is only slightly more expensive than regular probation supervision.

Only 9.1 percent of drug court graduates and 11.4 percent of probation completers had supervision episodes afterwards, and while the total number of days of probation completers was greater, the difference in mean cost of supervision was small: an average of $81 for completers and $62 for graduates. Projections were based on the status quo assumptions (that days on probation would continue at the same level), since the number of probation entries was too small to determine trends.

Urinalysis and Breath Testing. Regular urinalysis testing for drugs and breath testing for alcohol use are essential features of the drug court program. However, urinalyses are also ordered from time to time, as part of the regular needs assessments of individuals on probation. The graduates averaged 67 tests during their tenure in drug court resulting in an average cost for urinalysis of $651 per graduate through drug court tenure. Probation completers in drug cases averaged 5 *known* tests each during the time they were in active probation cases. Probation completers averaged $40 for urinalysis testing during their probation tenures.

Court Activity

Court activity for drug court clients refers to time that clients spend involved in regular drug court hearings. Court activity for probation completers refers to the time associated with all the court activities associated with their case after the initial complaint

is filed, such as arraignment, grand jury hearings, preliminary hearings, filings by the court and by defense attorneys, guilty pleas, and pre-sentence investigations. Costs of court activities were calculated based on *minimum* times required as reported by knowledgeable participants and on mid-range 2002 salaries of officials who are always present at such hearings. Drug court graduates attended a mean of 23.6 hearings each costing a mean $504 per graduate. Probation completers had varying combinations of the other court activities that together averaged to $237 per completer.

Court Costs. Probation completers were required to pay court costs in many cases but all drug court graduates were required to pay up to $250 to defray court costs during their tenure in drug court. The average estimated value of court payments for probation completers was $109 compared to $209 for drug court. This is a cost offset or a benefit in program cost calculations.

Jail Time

Information was available on days in jail *after assignment* to drug court or probation. According to city records drug court graduates were in jail for longer periods than probation completers after they began participating in drug court or were assigned to probation supervision. Drug court graduates were in jail for an average 6.7 days during drug court and probation completers for an average of 3.0 days during probation. Part of this difference can be explained through sanctions applied to graduates by the drug court judge. Based upon a sample record review of drug court cases, such sanctions averaged 3.4 days per graduate. The remainder may be attributed to arrests for other charges. Jail time for probation completers is presumably attributable to later arrests for other charges. The estimated cost per completer during probation was $359, and per graduate during drug court, was $795. The pattern was reversed for individuals during the two-year follow-up period. Drug court graduates were in jail for an average 2.2 days at a cost per graduate of $264 and completers for an average of 4.2 days at a cost per completer of $497. No trend analysis was possible because only counts of days in jail during the two periods were provided for this data set. Jail costs for the two years following drug court or probation were based on the assumption of the same rates of incarceration in jail.

Pretrial Detention. Pretrial detention for drug court participants prior to entering drug court is minimal since they are placed on personal recognizance (rather than remaining in jail or paying bail) and are immediately diverted to drug court. Pretrial detention for probation completers varied significantly. Approximately half of completers paid bond or were released on recognizance at the time the complaint was filed with the court. The other half of completers had jail time prior to bond or recognizance release. The estimated mean pretrial detention of all 219 probation completers (including those with zero or minimal detention) was 23.1 days. This represents a significant time in jail for probation completers that was avoided for drug court graduates, who as indicated were released on personal recognizance very close to the time of arrest and application to drug court. The cost of pretrial detention per completer was $2,737.

Wages and Taxes

Drug court graduates showed a relative increase in average monthly wages while participating in drug court and in average wages after completing drug court compared to earnings before drug court/probation. The differences were consistent but modest in size, and for this reason, were not statistically significant. Mean monthly wages for drug court graduates during drug court were $639 compared to $614 for probation completers while they were on probation. Average wages for the two years after drug court amounted to $18,251 for graduates compared to $16,822 for probation completers during the comparable period.

Wages for months 24 through 48 were calculated through projections of quarterly wage values during the two-year period after graduation or completion. Both groups showed increasing wages during the period and both groups experienced wage gains when compared to the period before drug court or probation (drug court graduates: $22,045; probation completers: $20,056) This was expected and reflects the normal increase in wages associated with maturation of individuals in both groups, some of whom were teens before and during drug court or probation. Linear regression was used to measure trends in wages. This projection was found to be conservative when compared to actual wages data during the third year after drug court/probation (for details, see Appendix B).

Extent of Employment. The observed differences in quarterly wages were in the predicted direction but were not statistically significant. However, differences in the *amount* of employment were significant. Drug court graduates earned slightly less before drug court than probation completers earned before probation, yet they worked slightly more (graduates: mean of 4.1 quarters; completers mean of 3.8 quarters). Neither of these differences was statistically significant. Graduates worked during drug court an average of 3.8 quarters. Completers also worked an average of 3.8 quarters during probation, but because drug court graduates were in the program for fewer months than completers, they were employed significantly longer (mean of 63.3 percent of quarters participating in drug court) than completers (mean of 51.9 percent of quarters assigned to probation) ($p = .001$). After drug court and probation the difference continued. Of the eight quarters following probation, completers were employed for a mean of 4.4 quarters while graduates were employed a mean 5.1 quarters after drug court ($p = .016$). The latter values represent means derived from an analysis of covariance analogous to that conducted for wages above.

Taxes and FICA. Taxes were estimated for each person in the study for each year before, during and after participation in drug court or probation. All the individuals in the study were residents of St. Louis City, which has a one percent local income tax. State and federal taxes were calculated utilizing tax tables and tax calculation formulas for each of the years 1995 through 2002. Marital status and the number of dependents were derived from Missouri Department of Corrections records. Projected taxes were estimated based on the percent increase in projected wages. FICA was calculated as a standard percent of gross wages including the worker and employer contributions within

the upper income limit set for social security. The results generally follow the pattern of earnings.

AFDC/TANF and Food Stamps

Welfare data for this study includes cash payments under AFDC/TANF and Food Stamps and administrative costs. The mean total welfare payments during the two-year period before participation were virtually identical for the two groups (graduates: $866; completers: $857). The values were small (about $36 per month on average) because women (the usual recipients of AFDC/TANF) were in the minority in both groups and many participants were in their teens.

Reception of welfare increased for both groups during participation and the average monthly values remained similar (graduate: $56; completers: $59). Monthly receptions (primarily food stamps) remained at about the same level during the two years following participation. A *relative* reduction in reception was observed for graduates, although the difference was not statistically significant. Welfare reception declined slightly for both groups during the two years after participation (graduates: $1,291; completers: $1,468). The mean values during the months 25 to 48 reflect this pattern (graduates: $1,218; completers: $1,325). No significant difference was found in the months of food stamp reception, the program most frequently utilized by both groups. During the after period approximately 34 percent of each group participated in the food stamp program for at least one month.

Health Care and Psychiatric/Mental Health Services

Medicaid and Psychiatric/Mental Health records were available for all clients in the study. An abundant literature exists showing substantial reductions in health care costs after drug and alcohol treatment. To cite a few of many example studies, a study of Federal Employees (National Institute on Alcohol Abuse and Alcoholism, 1985) showed that total health care costs of alcoholics dropped significantly after they had begun treatment and declined after treatment reaching a monthly average 2½ to 3 years later that was 58 percent lower than pretreatment costs. Holder and Blose (1992) demonstrated in a 14-year longitudinal study that the costs of health care services for treated alcoholics were 24 percent lower after treatment than costs for untreated alcoholics. A statewide California assessment found that hospitalizations for over 1,800 individuals who received substance abuse treatment were reduced by approximately one-third (Gerstein, et al., 1994). The National Treatment Improvement Evaluation Study of over 6,000 clients (SAMHSA, 1999) showed that after substance abuse treatment alcohol- and drug-related medical visits declined by 53 percent, inpatient mental health visits declined by 28 percent, and the percent with reported ("bothered by") mental health problems declined by 35 percent. In a study in Washington state that looked at patients discharged from a residential chemical dependency program, Maynard et al. (2000) found a 29 percent reduction in medical and psychiatric costs when costs before and after admission were compared. Partasarthey et al. (2003) in randomized trials showed that integrated

substance abuse treatment and primary care reduced subsequent health care costs among patients with substance abuse-related medical conditions.

Similar findings occurred in this study. Greater Medicaid and psychiatric costs were found for completers both during (monthly mean per drug court graduate: $75; per probation completer: $84) and after participation (two-year means per graduate: $1,062; per completer: $1,520).

The costs of Medicaid declined steadily for drug court graduates after graduation. However, costs spiked during the second year after probation for completers and remained about twice as high as those for graduates through the end of data. Third-year analysis of this data showed that third-year Medicaid costs were 113 percent greater for probation completers than for drug court graduates, confirming the continuing increase in health care costs suggested by the trends during the first two years. Based on these findings projected two-year means were $406 per graduate and $2,509 per completer.

Similarly, mental health costs recorded by the DMH Division of Comprehensive Psychiatric Services were higher for probation completers than drug court graduates. Average monthly costs of psychiatric services during the program were $3 for graduates versus $7 for completers. After-graduation/completion two-year mean costs were $71 for completers and $12 for graduates. Projected costs were the same, although psychiatric costs for completers for who third-year data were available were 244 percent higher than graduates during the third year.

Arrests

Arrest data were available from records of the Missouri Highway Patrol (MHP). The St. Louis Metropolitan Police Department (SLMPD) does not routinely estimate the average cost of arrests. The approach taken in the study was to calculate a cost of arrest based on an estimate of hours involved in conducting an arrest and processing paperwork by police officers (see Appendix B).

Completers averaged 2.1 felony arrests prior to probation compared to 1.7 for drug court graduates. Subsequent arrest averages were adjusted based on each person's arrest history during the two years preceding drug court or probation. After adjustment, there were .175 felony arrests per graduate during the program and .373 felony arrests per probation completer during probation. Similarly, there were .062 misdemeanor arrests per drug court graduate compared to .184 misdemeanor arrests per probation completer. The differences for both types of arrests during participation were statistically significant. Average monthly mean costs of arrests (misdemeanors and felonies) for graduates were $2 and $4; for completers they were $4 and $8

Without focusing on types of crimes, counts of arrests after drug court and probation were only slightly lower for drug court graduates. The differences were not statistically significant for either type of charge. Average two-year mean costs of arrests (misdemeanors and felonies) for graduates were $128 and $181; for completers they were

$132 and $189. As will be evident under convictions, however, completers were convicted more often for crimes against persons. Trends in arrests were assumed to be status quo because there were too few later arrests to permit reliable trend analysis. Third-year analysis confirmed the conservative nature of this assumption by showing slightly higher continuing arrests for completers than graduates.

Subsequent Incarceration

Neither group had extensive or consistent prison experience prior to participation in drug court or probation. The cost of prison before drug court/probation was considered to be zero, and the methodology for this variable involved after-comparison only. Incarceration costs were calculated using 2001 estimates provided by the Missouri Department of Corrections (MDOC, 2002). Only one drug court graduate entered prison during the two years following graduation compared to four probation completers. Two-year incarceration costs per graduate were $104 while similar costs were $214 for completers.

Costs to Victims and Criminal Justice System Costs

Costs for victims of crime and the criminal justice system of crime were considered by focusing on convictions *after drug court graduation or probation completion only*. Dates of later convictions were included in MDOC file extractions provided for this study. It was, of course, impossible to follow up on each conviction to determine directly costs to victims and to the criminal justice system. The alternative was to use costs estimates developed by others for this purpose. The primary reference utilized was the work of Rajkumar and French (1997), which focused on crime costs as related to drug abuse and drug treatment (see Appendix B for details).

One drug court graduate was later convicted of robbery (2nd degree) while two probation completers were convicted of robbery (1st degree). One drug court graduate was convicted of assault compared to five probation completers. Because assault is the most costly of all crimes to victims both in costs of illness and in pain and suffering, the total costs of crime were higher for the completer group. Later convictions in most cases were for drug possession or trafficking crimes. Mean tangible costs per person for the 24-month period following drug court/probation were $104 for drug court graduates versus $212 probation completers. Mean intangible costs were, respectively, $376 for graduates and $1,572 for completers.

Prenatal Drug Exposure of Infants

Although some drug court programs have cited the percentage of drug free babies born to drug court participants as a positive gain for drug court programs, a better measure of gain and consequent financial savings is possible through an experimental study. The approach of the present study was not to count the number of drug free infants and to assume that they would have been born drug exposed in the absence of the

drug court but to count the number of actual drug-exposed infants born to drug court graduates and probation completers.

The Missouri Division of Family Services (DFS) receives reports via a statewide hotline system from hospitals concerning newborn children that have been determined to be drug- or alcohol-exposed. Over one-fifth of the individuals in this study were female closely matched on age. Seven drug-exposed infants were identified. Six were born to women in the control group, and all of these children were born at least one year after the mother had entered probation.

Cocaine is the likely drug that babies are exposed to in St. Louis City (Loman and Sherburne, 2000). Studies in other jurisdictions have shown the costs of cocaine exposure to be significant. Studies by Phibbs (1991, citing a GAO study: GAO, 1990), Phibbs, Bateman and Schwartz (1991), Budden (1996), Kalotra (2002) show added hospital costs that averaged about $9,600 when adjusted for inflation to 2002 values. Based on costs of low birth-weight babies in Missouri, this average was regarded as reasonable (see Appendix B for details).

Later costs may equal or exceed this cost during the first year of life and in subsequent years. Not all drug-exposed infants are removed and placed immediately. Those that are not symptomatic may remain with their families but usually under an open child protection case involving home visitation and monitoring. For example, Sagatun-Edwards et al. (1995) found that while about two-thirds of children of these types of reports were removed only 42 percent were actually placed in foster care. However, if such infants are followed for several years those that were not initially removed (and/or their siblings) are sometimes later removed for other types of child abuse and neglect. In another study of chronic neglect of children in St. Louis City that included drug-exposed infants (Loman, 2002), over 56 percent of families with initial drug/alcohol-exposed infant reports were reported again one or more times over a six-year period, most often for lack of supervision or failure to provide for children's basic needs. In addition, *28 percent of individuals with a drug-exposed infant had another drug-exposed infant report during the subsequent six-year period*. Costs of such recurrences are not generally included when calculating the costs of drug-exposed babies, and will not be included in this analysis, but this indicates that the lifetime costs of drug-exposure of children might well be more accurately determined by focusing not on particular children but on entire families of children and their parents.

Children who are drug or alcohol exposed at birth are more likely to be developmentally delayed, to have learning disabilities, and to have later behavioral problems. Such children are at higher risk of later child abuse and neglect. At least 25 percent of the children generally on active DFS caseloads in St. Louis City are also clients of the Missouri Department of Mental Health for mental retardation, developmental disabilities and delays, and mental illness. Dual diagnoses of drug-exposed infants can be expected to be at least this high and probably higher.

Costs for drug exposed children overall during the first 18 years of life including health care, special education, child protection costs, foster and institutional care, mental health services, and miscellaneous other costs has been variously estimated to range from $750,000 to $1,000,000 (see Kalotra, 2002) or a yearly average of approximately $41,000 to $55,000 per child. In most cases these are costs to the taxpayer. Reducing the number of drug-exposed infants, therefore, has the potential to produce significant public savings.

The difference between the particular mothers in this study and the general population of mothers with hospital reports of drug-exposed infants is that all had been arrested and on probation for drug offenses. The criminal history and current status of the mother are significant considerations for DFS workers, juvenile officers, and the Family Court judge in determining initial removal of the child, placement in protective custody and foster care and reunification of the child and mother.

Costs included DFS worker and administrative costs for open cases on the child protection caseload, costs of the initial investigation, costs of foster care, and initial medical costs (see Appendix B for details). Averaging these costs across all graduates and completers the mean initial 24-month value per graduate was $132 compared to $789 per completer. Projected means for months 24 through 48 were $88 per graduate and $526 per completer.

Costs and Benefits of Drug Court

Total costs and benefits were computed by determining first the total costs for the entire group of drug court graduates and probation completers during 1) drug court or probation, 2) the two-year follow-up period after participation, and 3) the two years after the follow-up period. Then, costs were categorized as program costs versus outcome costs and benefits. Tables of these values can be seen in Appendix B: Table B.10 through B.13)

The approach in following analyses was to determine total costs that could reasonably be associated with the drug court and probation programs. Secondly, total cost reductions and benefits associated with outcomes were calculated. These formed the based of the cost-benefit summary measures.

Costs During Drug Court and Probation. Values that were presented as means per drug court graduate or probation completer in previous sections of this chapter are shown as total dollars in the following chart (Figure 2.1). The chart contains all the expenses while individuals were in drug court or probation that could reasonably be considered to be associated with the programs themselves or to be an immediate outcome associated with behavior while individual were participating (for example, jail costs). The same costs are also shown in Table B.11 in Appendix B.

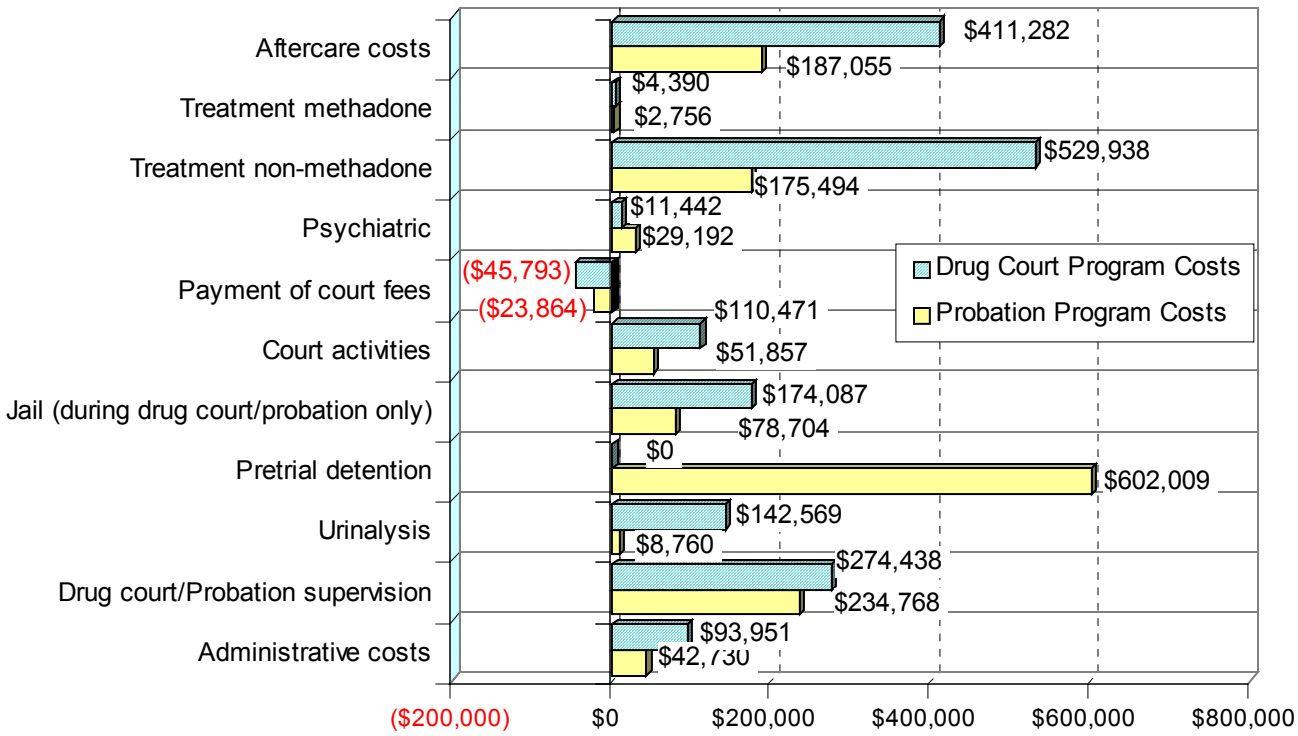

Figure 2.1 Program Costs of Probation and Drug Court

The overall differences in cost during the drug court or probation tended to favor probation. Drug court indeed is somewhat more expensive than probation, during the time that individuals are participating. Costs of administration, supervision, hearings, urinalysis, and treatment were all greater for drug court clients. This was not unexpected. However, the costs of drug court are mitigated by the corresponding costs of probation. It may be surprising to some that drug and alcohol treatment costs (non-methadone) of probation completers ($147,494) while they were on probation was 29 percent of similar drug court treatment costs ($529,938) while graduates were attending drug court. As noted at the beginning of this chapter, the object of the analysis is the *difference* in these and other costs.

Payments of court fees are shown as negative values because they offset other costs. Drug court graduates paid more in court fees than probation completers. This is an example of a kind of benefit to the taxpayer of drug court participation. Another example is the cost of pretrial detention. As explained above in the section on jail time, this expense is much higher for probationers because drug court participants are immediately released on their own recognizance.

The only ambiguous category in Figure 2.1 is jail expenses, some of which is associated with sanctioning in the two programs but other portions represent costs associated with new arrests. Court fee payments represent dollars paid by graduates and completers as a condition of drug court and probation and were subtracted from total costs. The figure points up the value of a truly comparative study because it shows that while drug court is an expensive program (costing $7,794 per graduate), probation is not free but is also quite expensive (costing $6,345 per probation completer).

Benefits During the Two-Year Period after Drug Court or Probation. Most of the outcomes, such as taxes and FICA (based on wages), welfare, Medicaid, mental health and psychiatric services, arrests, prison, victimization, and drug-exposed infants favored drug court graduates. Comparative figures are shown in Figure 2.2. These are two-year figures based either on costs directly measures (such as welfare) or calculated from direct measures (such as the cost of arrests).

The bars that are shown positively (extending to the right) represent cost offsets—costs incurred by the public that were lower for drug court graduates than for probation completers. Taxes and FICA were a direct benefit to the public. They are shown as negative values that extend to the left in the figure. Many of the differences are modest by themselves, but all except drug and alcohol treatment were in the same direction, and it is the cumulative difference that is considered in the final cost-benefit summary measures. The dollar figures shown in this graph can also be found in Table B.12 in Appendix B.

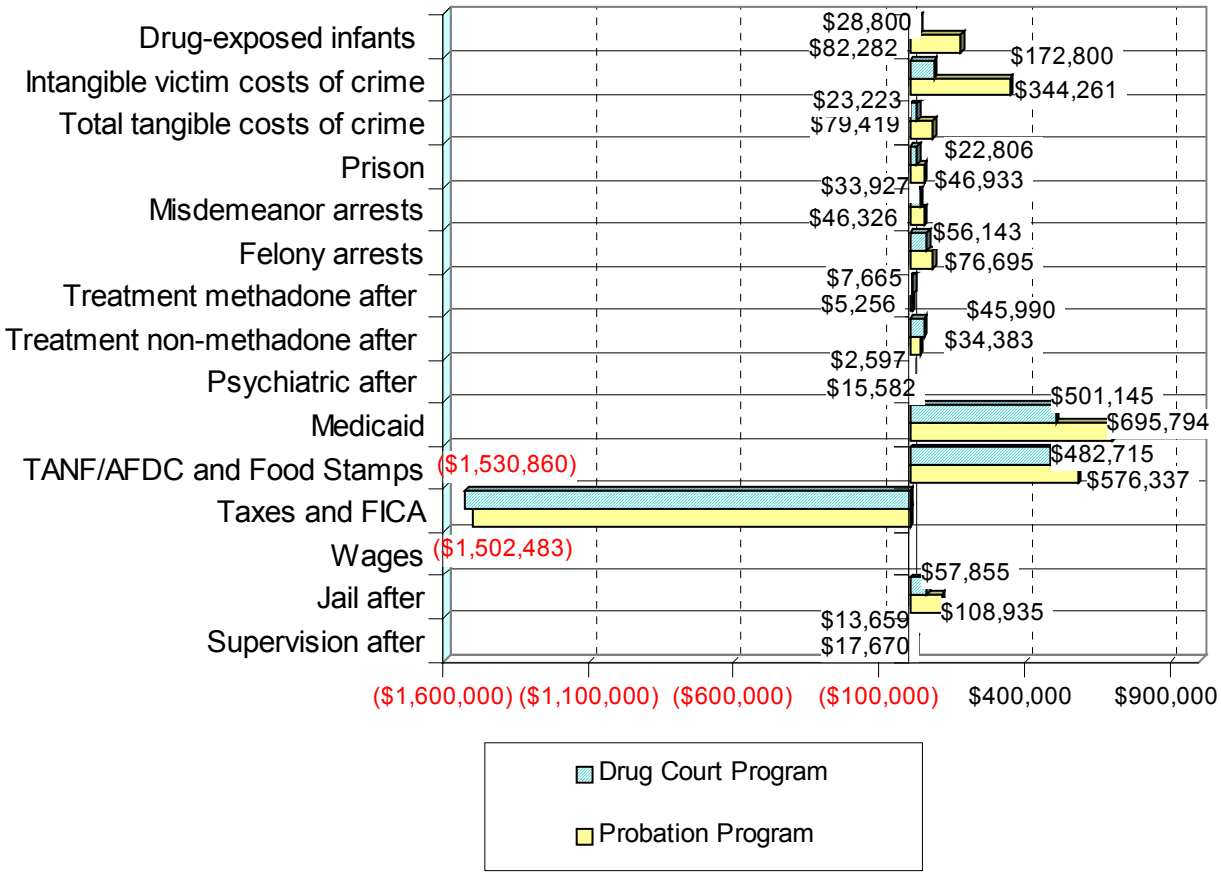

Figure 2.2 Outcome Benefits of Probation and Drug Court during the First 24-Months after Drug Court Graduation or Probation Completion

Benefits for the Four-Year Period after Drug Court or Probation. By combining the costs and benefit during the first two-years after drug court graduation or probation completion with projected costs and benefits for months 24 through 48, four-year estimates were obtained. These are illustrated in Figure 2.3. The patterns are the same as the previous figure. Again, the dollar figures shown in this graph can also be found in Table B.13 in Appendix B.

The variables that admitted of trend analysis (wages and estimated taxes, welfare and Medicaid) showed a growing difference in favor of drug court graduates, suggesting lasting beneficial effects of the drug court program. In addition, trend and status quo projections were supported by analyses of third-year data available on the majority of study participants. The approach was considered to be conservative. For example, the large jump in health care costs of probation completers during the second year after finishing probation could be expected to have negative consequences on wages and taxes paid during the following years, but the analysis did *not* make this assumption.

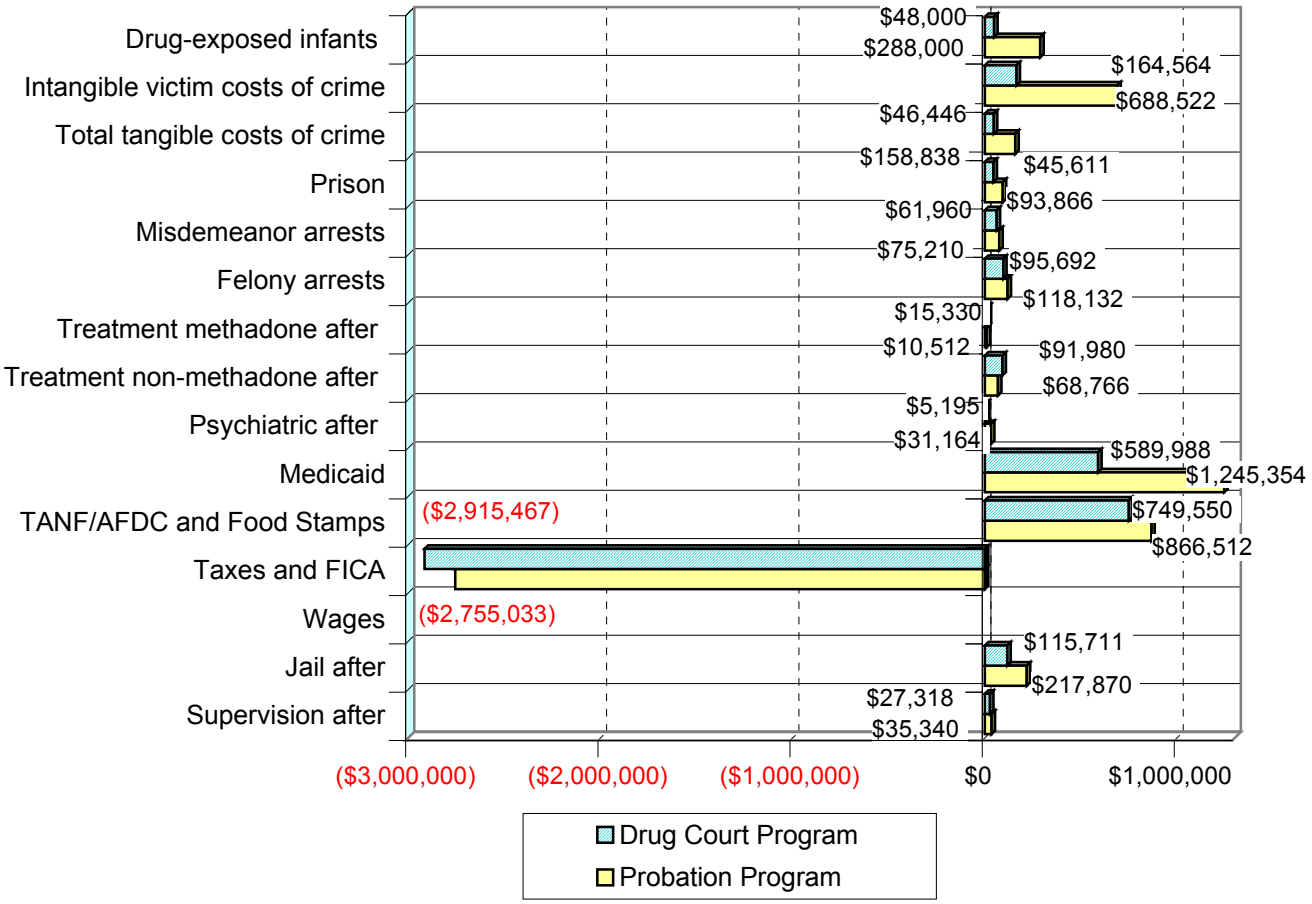

Figure 2.3 Outcome Benefits of Probation and Drug Court during the First 48 Months after Drug Court Graduation or Probation Completion

Total Costs and Benefits of Drug Court and Probation. By summing the values shown in the three previous figures (2.1 through 2.3) for drug court and probation it is possible to see the cumulative costs and benefits of drug court compared to probation. These are shown in Figure 2.4. The bars during participation (left side of the figure) represent the cumulative costs of putting an individual through drug court or probation. As indicated in the discussion of Figure 2.1, drug court is more expensive. The total cost for probation was $1,386,460 for all 219 probation completers compared to $1,706,775 for drug court graduates. The additional cost for drug court, therefore, amounted to a total of $317,315 or $1,449 per graduate (illustrated by the bracket at the top). Probation is expensive but drug court is slightly more expensive.

The question is whether the additional investment in drug court graduates has a payoff *after graduation*? This can be determined by examining the other two sets of bars in the figure. After two years, probationers are in the hole by over $700,000 rising to over $1.1 million after an additional two years. The taxes paid by probations were not

enough to offset the increased costs of programs (treatment, arrests, prisons) for this group. On the other hand, the costs of the same programs were reduced and taxes paid were higher showing positive values at the two-year and four-year marks.

The proper figure to examine, however, is the difference (illustrated by the brackets in the figure). After two years the difference amounted to $889,961 or an average of $4,064 per graduate. After four years the differences had risen to $2,005,174 or $9,156 per graduate. One way to understand this is to consider that the (solid, yellow) negative bars of the probationers represent *what would have happened to drug court graduates if the St. Louis Adult Felony Drug Court had not existed.* The (striped, green) positive bars represent *what actually did occur as a result of the drug court.*

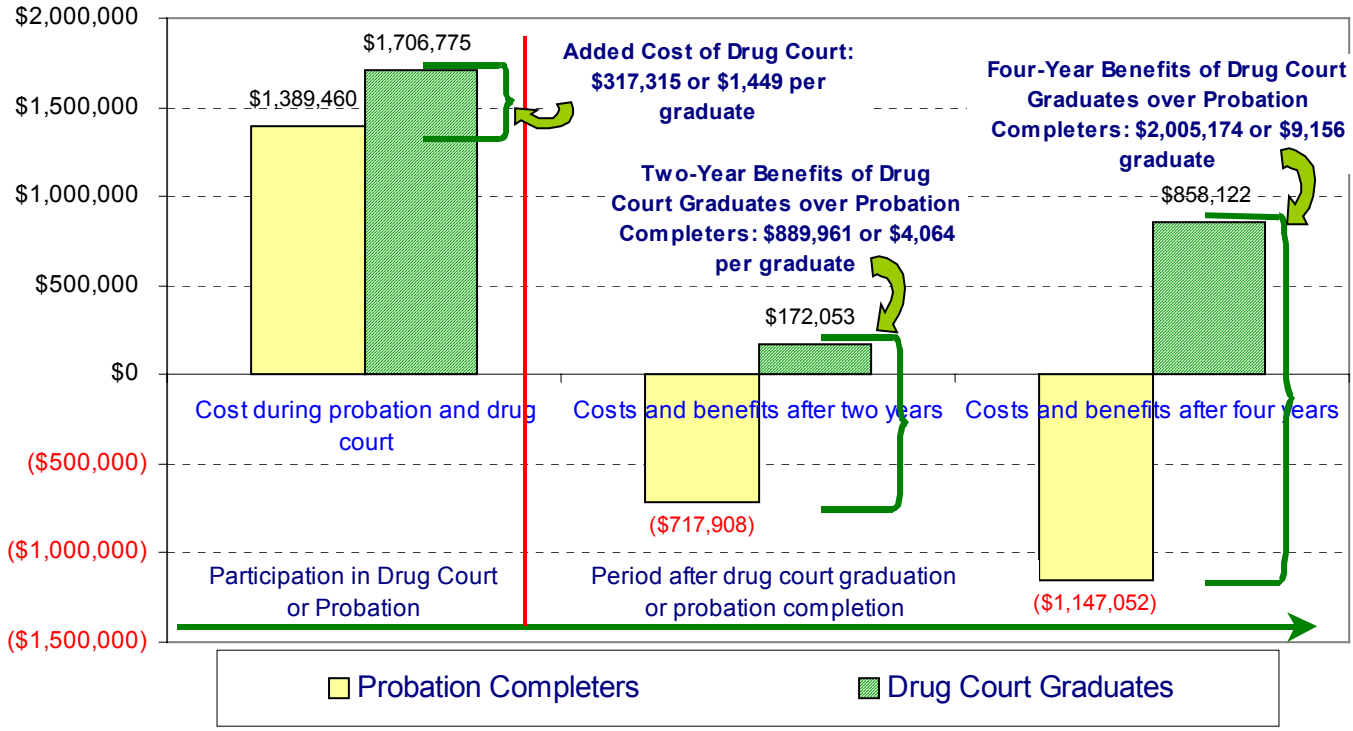

Figure 2.4 Relative Costs and Benefits of Probation and Drug Court during Participation and for the Two-year and Four-year Periods following Participation

Summary Measures of Costs and Benefits. Based on these totals, three kinds of comparisons will be considered: 1) net savings, 2) cost-benefit ratios and 3) gross savings.

Net Savings: Difference between Drug Court Benefits and Additional Drug Court Costs. This is the difference between 1) added costs and 2) benefits. Net savings are illustrated graphically in Figure 2.5 using the amounts (and bracket illustrations) shown in Figure 2.4. The net savings difference works out to $572,646 after two years and $1,687,859 after four years. The two-year net savings was $2,615 per drug court

graduate. The four-year net savings were $7,707 per graduate. This can be understood as follows: after two years the public had not only gained back the added costs of drug court ($1,449) but had gained an additional $2,615 per graduate. After four years the public had gained back the additional costs and had gained $7,707 per graduate. In Figure 2.5 this is shown by the remainder in the large benefits brackets after the amount in the smaller added cost bracket is taken away.

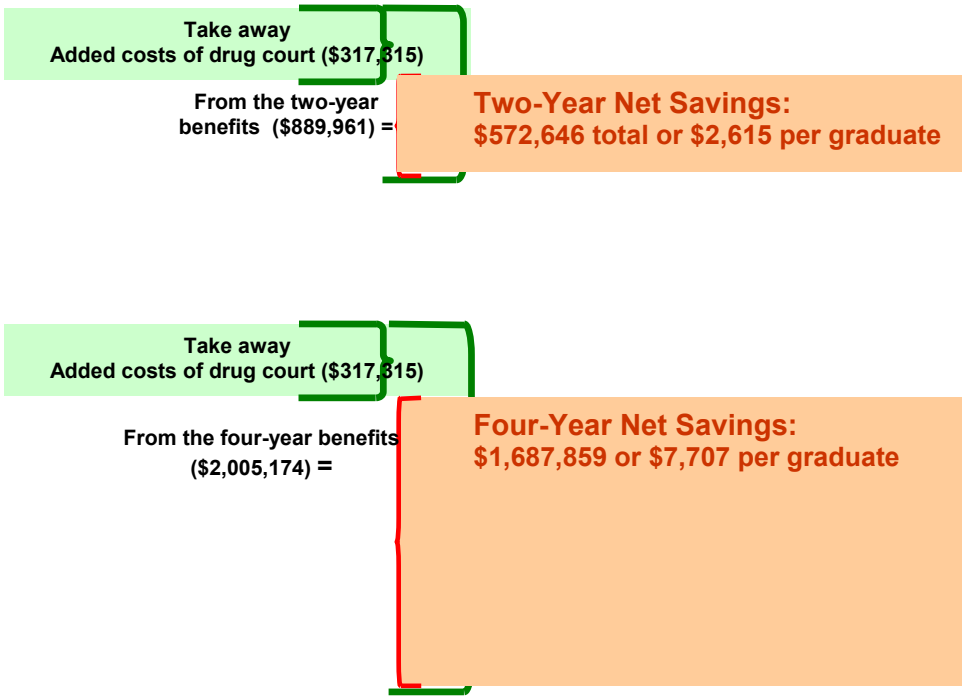

Figure 2.5 Net Savings of Drug Court Over Two Years and Four Years after Drug Court Graduation

Cost-Benefit Ratio. A more familiar summary measure in cost-benefit studies is the cost-benefit ratio. This is determined by dividing 1) drug court benefits by 2) the added costs of the drug court. The cost-benefit ratio is illustrated in Figure 2.6, again using the brackets from Figure 2.4.

The cost-benefit ratio (or the ratio of benefits to costs) is expressed in dollars gained for dollars invested. The two-year ratio was $2.80 and the four-year ratio was $6.32. This tells us that for every $1.00 that drug court costs over and above regular probation the public realizes $2.80 in savings within a two-year period and $6.32 in savings after four years.

The question in this study was: Does the added cost of drug court programs pay off in benefits for public? It can be answered affirmatively. The benefits are positive by a ratio of $6.32 in benefits over four years to $1.00 in additional costs during participation in drug court.

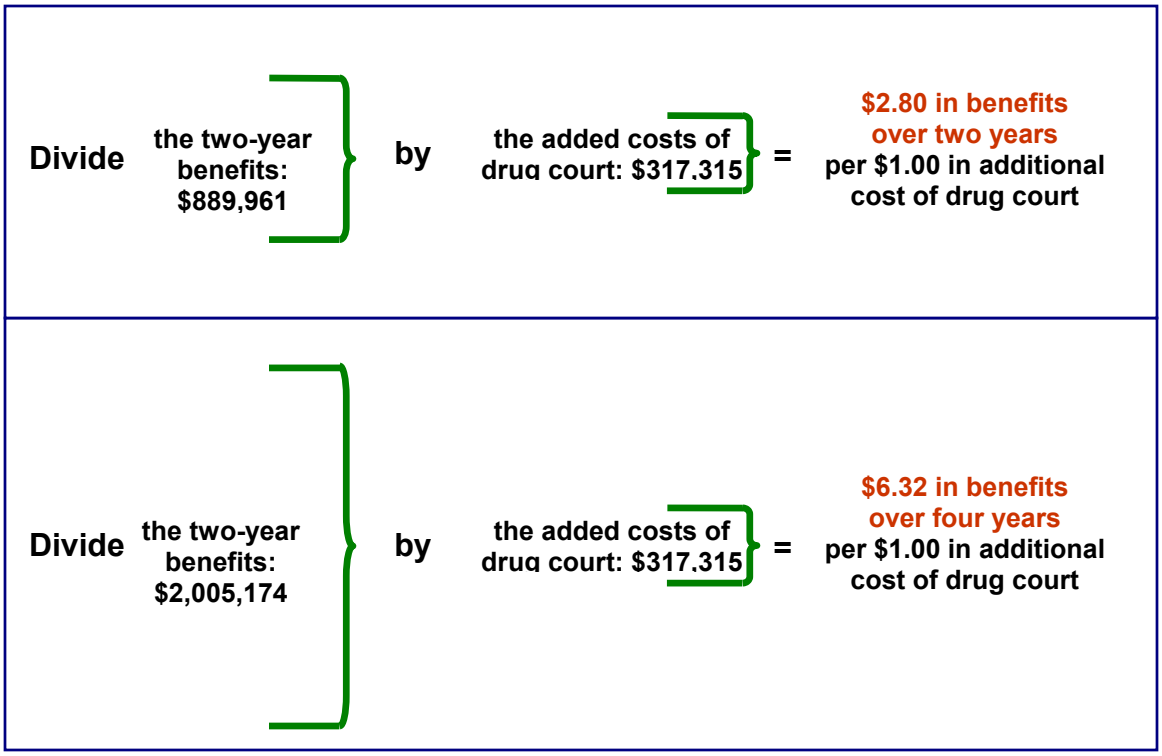

Figure 2.6 Ratio of Benefits to Cost Over Two Years and Four Years after Drug Court Graduation

Gross Benefits: Difference between Benefits and Total Program Costs. The net savings and cost-benefit ratios are based *additional* costs of the drug court program beyond what would have been spent on standard probation. When the long-term benefits are proportionately large, as they are in this analysis, the question can also be asked: Do the benefits ever equal the *total* cost of the program. Referring back to Figure 2.4, it can be seen that the total cost of drug court for the 219 graduates was $1,706,775 or $7,793 per graduate. The benefits during the four-year period after drug court amounted $2,005,274 for all 219 graduates or $9,156 per graduate. The comparison of these values is illustrated in Figure 2.7.

In Figure 2.7, costs of drug court are shown accumulating on the left. These costs reach their maximum value at graduation from drug court and thereafter are shown as a flat line. Benefits are shown as beginning after graduation. (This is a simplification since some benefits actually begin to accrue during drug court.) Benefits grow over the four-year period. During the fourth year benefits exceed the entire cost of drug court for

this group of graduates. This comparison emphasizes a critical point. This study collected data on graduates for a two-year period after graduation. The trends were increasing over this period, and this is reflected in the projections during the third and fourth years. After four years the benefits exceeded the total drug court costs associated with graduating 219 individuals by $298,399 or $1,362 per drug court graduate.

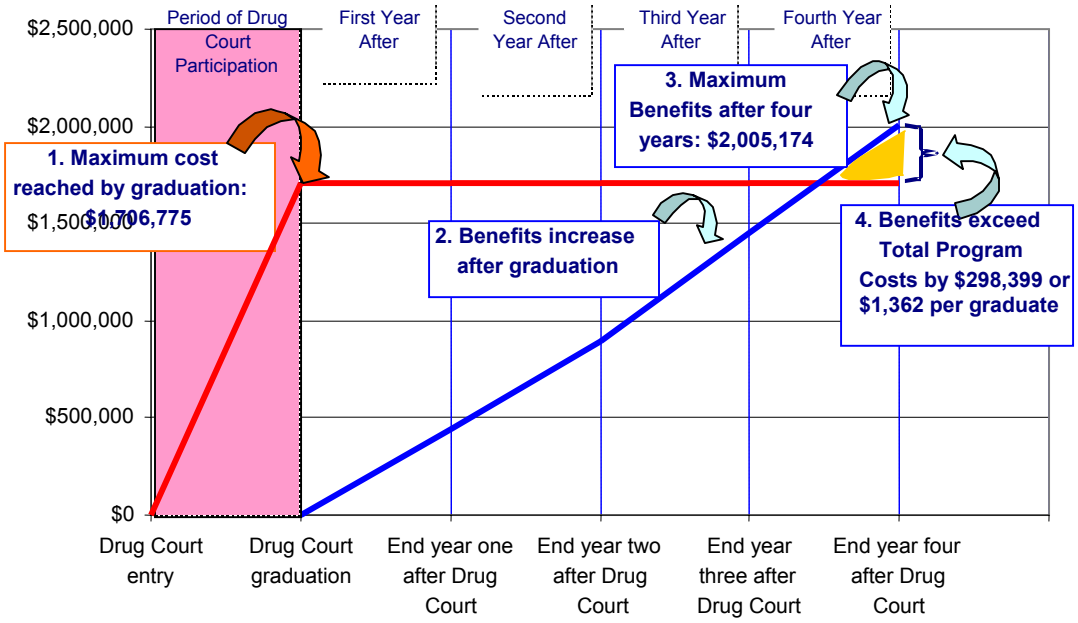

Figure 2.7 Gross Savings Over Two Years and Four Years after Drug Court Graduation

The findings of this chapter and the summary measures illustrated in Figure 2.4 through 2.7 were in brief:

- **Program Costs:** Costs computed for the two programs consisted of administration, supervision, urinalysis, pretrial detention, jail sanctions (and new arrests), court activities, court fees, drug and alcohol treatment services and mental health services. The costs of drug court for the 219 graduates totaled $1,706,775 while the costs of probation for the 219 probation completers were $1,389,460. The average costs per participant, therefore, were:

  - ✓ Average per drug court graduate: $7,793
  - ✓ Average per probation completer: $6,344
  - ✓ Difference (excess cost of drug court): $1,449

- **Benefits associated with Outcomes:** Adding costs of participation in later programs and subtracting savings from payment of taxes and FICA, the total dollars associated with outcomes were calculated for the first 24 months after drug court or probation. For drug court these were a positive $172,053 while for probation the total

was negative $717,908. These resulted when costs of public programs, cost of probation supervision for later offenses, jail for later offenses, TANF, food stamps, Medicaid expenses, psychiatric payments by the state, later drug and alcohol treatment services, prison terms for later offenses, costs to victims of crime, and costs of drug-exposed infants born to graduates and completers) were subtracted from taxes and FICA paid. The averages per participant were:

- ✓ Average benefits (cost offsets – costs) per drug court grad: $3,278
- ✓ Average benefits (cost offsets – costs) per probation completer: $(786)
- ✓ Difference (in favor drug court): $4,064

- **Net Savings over Two years:** The net savings for the first 24 months after drug court or probation may be calculated by subtracting the differences in program costs from the difference in benefits ($889,961 - $317,315). The savings attributable to drug court totaled $572,646 for the entire group of 219 graduates.

  - ✓ **There was an average saving of $2,615 per graduate for the first 24 months after drug court. This represents the expenses that would have been incurred by the taxpayer over the first two years after drug court or probation had the drug court clients attended regular probation.**

- **Ratio of Costs to Benefits over Two years.** The cost-benefit ratio is obtained by dividing differences in benefits by differences in program costs ($889,961 / $317,315): This amounted to:

  - ✓ **A total of $2.80 in outcome savings was realized for Missouri citizens for every $1.00 in additional costs of drug court during the first 24 months after drug court or probation**.

Overall Costs and Benefits. Follow-up costs and benefits were projected for an additional 24 months primarily through trend analyses. Projections were validated by comparing results to extended data (beyond 24 months) that was available for individuals who had entered drug court or probation during its earliest days. By adding two years of projected values to measured values for the first two years after drug court or probation, four-year costs and benefits were calculated.

- **Net Savings over Four Years:** The net savings attributable to drug court totaled $1,687,859 for the entire group of 219 graduates.

  - ✓ **Net savings of over four years after drug court or probation amounted to $7,707 per drug court participant. This represents the expenses that would have been incurred by the taxpayer over a four year period had the drug court clients attended regular probation.**

- **Ratio of Costs to Benefits over Four years:** It costs about $317,315 more to put these 219 individuals through drug court than sending them through probation.

However, the relative savings associated with better outcomes of drug court compared to probation was $2,005,174 over four years. Thus:

- ✓ **For every dollar in added costs for drug court for the 219 drug court graduates, taxpayers realized a savings of $6.32 over four years.**

- **Gross Savings over Four years:** The total cost of drug court for the 219 graduates was $1,706,775 or $7,793 per graduate. The benefits during the four-year period after drug court amounted $2,005,274 for all 219 graduates or $9,156 per graduate:

  - ✓ **After four years the benefits exceeded the total drug court cost associated with graduating 219 individuals by $298,399 or $1,362 per drug court graduate.**

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Appendix A

Experimental and Control Group Characteristics

Table A.1 Age, Dependents and Prior Convictions of Drug Court Graduates and Probation Completers

Study Group	*Mean age at Start of drug court of probation*	*Mean number of dependents*	*Proportion with any prior convictions*
Probation Completers	30.7	.78	.29
Drug Court Graduates	31.1	.53	.23

Table A.2. Home Zip Codes of Probation Completers and Drug Court Graduates

Zip Code	*Probation Completer*	*Drug Court Graduate*	*Zip Code*	*Probation Completer*	*Drug Court Graduate*
Unknown	6	4	63113	10	14
61605	1		63114	2	3
62203	1		63115	17	16
63011	2	2	63116	9	7
63021		1	63117		1
63031	1	1	63118	25	25
63033	1	1	63120	7	10
63042	1	1	63121	4	2
63044	2	2	63122		1
63049	1	2	63123	1	2
63051		2	63125	1	2
63052	1		63127		1
63088	1		63129	1	4
63101	2	7	63130		4
63102		1	63132	1	
63103	4	5	63133	3	1
63104	8	9	63134	3	
63105	2	1	63135	2	1
63106	7	10	63136	13	10
63107	17	10	63137	2	3
63108	12	10	63138	1	3
63109		1	63139	1	2
63110	10	8	63143	3	2
63111	10	10	63147	4	3
63112	10	10	Error	8	4
			Total	219	219

Table A.3. Gender and Race of Drug Court Graduates and Probation Completers

Gender	*Probation Completer*	*Drug Court Graduate*
Female	20.5%	20.5%
Male	79.5%	79.5%
Race		
Asian		.9%
African American	77.2%	77.2%
White	22.8%	21.9%

Table A.4. Major Criminal Charges of Drug Court Graduates and Probation Completers

Missouri 5-Digit Charge Code	*Charge*	*Probation Completer*	*Drug Court Graduate*
14020	Burglary - 2nd degree	5	5
15010	Stealing	5	5
26031	Nonsupport in each of six individual months within any twelve-month period in excess of $5,000	1	1
32448	Possession of a controlled substance, except 35 grams or less marijuana - persistent offender	5	6
32449	Possession of a controlled substance, except 35 grams or less marijuana - prior offender		2
32450	Possession of a controlled substance, except 35 grams or less of marijuana	140	129
32455	Possession of up to 35 grams of marijuana	1	1
32463	Distribute / deliver / manufacture / produce or attempt to distribute / deliver / manufacture / produce a controlled substance or to possess with intent to distribute / deliver / manufacture / produce a controlled substance - prior / persistent offender	2	
32465	Distribute / deliver / manufacture / produce or attempt to distribute / deliver / manufacture / produce a controlled substance or to possess with intent to distribute / deliver / manufacture / produce a controlled substance	21	30
32470	Distribute or deliver (sell) not more than 5 grams of marijuana		1
32475	Distribute a controlled substance to a minor		1
32485	Distribution of a controlled substance near schools		3
32486	Distribution of a controlled substance near public housing or other governmental assisted housing	2	2
32490	Trafficking in drugs in the first degree	1	1
32495	Trafficking in drugs in the second degree (class A felony)	23	22
32500	Trafficking in drugs in the second degree (class B felony)	9	8
32525	Advertise to promote the sale of drug paraphernalia or distribution of imitation controlled substance	1	
47410	DWI – alcohol intoxication - persistent offender	3	2
Total	Total	219	219

Appendix B

Technical Details of Cost and Benefit Calculations

This appendix includes a more detailed discussion of the cost and benefit calculations and certain technical details.[1]

Administrative Costs of Drug Court and Probation

Drug court administrative costs were calculated as daily costs per client based on daily administrative costs and average daily drug court caseloads. These were then applied to each drug court graduate for his or her tenure in drug court. The method involved determining: a) the daily administrative cost for the entire program per year adjusted for inflation, b) the average yearly enrollment as an average of end of month enrollments, c) the daily administrative cost per client (c=a/b), and d) the cost per client tenure (d=days in program x c). Administrative costs did not include the costs for diversion managers or their supervisors who were probation officers employed by MDOC. Recoverable costs associated with these are considered below where the relative costs of drug court and probation supervision are analyzed. The judges and other personnel in the drug court courtroom were employees of the St. Louis Circuit Court, the Circuit Court Clerk, and the Public Defenders Office. Other administrative costs and facility costs were assumed to be equivalent in this case, since the probation completers were defendants in the same Circuit Court. The only unique administrative cost for this drug court was the salary of the drug court administrator.

Alcohol and Drug Treatment.

The rates and amounts of drug and alcohol treatment before and after participation were relatively low for both groups. However, one type of treatment can be separated from others: methadone programs. Only a handful of graduates and completers utilized methadone treatment under a state funded program during and after participation, but because the costs of daily treatment can be quite high when considered over periods of months or years, total costs for individuals participating in these programs can be much higher than other programs. Statistically, individuals with such costs were "outliers" or extreme values that skewed the full graduate and completer treatment-cost distributions. On the other hand, methadone treatment has been shown to bring positive consequences, such as improved employment and earnings. More drug court graduates received methadone treatment services after drug court than probation completers.

Aftercare Costs. During most of the period under consideration (4/1997 to 12/2000), the drug court maintained a separate contract for aftercare of drug court participants. This contract came to $279,562 per year of which an estimated $219,500 was used each year (dollars are 1997 to 1999). Assuming the drug court grads participated in this equally, costs came to $1,878 per drug court graduate. MDOC also maintains contracts in the St. Louis area for treatment aftercare and program administrative costs for individuals on probation and parole. Because many of the probation completers were also involved in drug treatment programs, they participated in

[1] Questions may be addressed to the author at tloman@iarstl.org. I will try my best to answer them in a timely manner.

aftercare services under this contract. Actual data on participation or costs per client of MDOC aftercare services were not available. To estimate these costs the method discussed above was used (see administrative costs): The proportion of total drug/alcohol and psychiatric treatment service costs during probation to comparable costs for graduates was utilized to estimate an aftercare cost of $854 for probation completers.

Table B.1. Changes in Alcohol and Drug Abuse Treatment Associated with Drug Court Participation

*Mean monthly AD treatment received during drug court/probation**	*Mean AD Treatment*	*Mean Methadone*
Completers	$41	$1
Graduates	$147	$1
Mean AD treatment during the 24 months after drug court/probation		
Completers	$157	$24
Graduates	$210	$35
Mean AD treatment for months 25 to 48 after drug court/probation		
Completers	$157	$24
Graduates	$210	$35

* Estimated marginal means were derived from a GLM analysis of covariance. Trends were not reliable because of small numbers participating during the two-year after period. Values represent a steady state assumption.

Supervision of Drug Court and Probation

Missouri Department of Corrections (MDOC) has developed standard estimates based on time studies of the average hours per month that probation officers must spend in supervising cases of varying intensity. The intensity of supervision is based on periodic assessments of risk and needs that are conducted with probation clients. Officers will spend .59 hours *per month* with individuals needing minimal supervision (risk/needs scores of 6 or less), 2.54 hours for regular supervision (risk/needs scores of 7 to 8), 4.68 hours for enhanced supervision (risk/needs scores of 9 or more) and 6.78 hours per month for intensive supervision (individuals with special needs). The risk/needs assessment scores were consistently available for probation completers during the initial probation period along with information on supervisory overrides (for financial problems, drug treatment, etc.). Costs of supervision were calculated based on 2002 values of a mid-range salary of a Probation and Parole Officer 1. The hourly value was $16.50, based on a 173-hour month. Diversion managers in the St. Louis City Drug Court are MDOC probation officers that have been assigned to the program by the state. An Office of Probation supervisor supervises them and all are paid employees of the State of Missouri. MDOC analysts have determined that all drug court supervision is at the enhanced level. This assumption implies that diversion managers can handle a caseload of up to 25 drug court defendants, and indeed, this corresponds closely to actual caseloads.

The number of individuals in either group with probation episodes before drug court or probation was too small (10 individuals total) to permit the use of pre-participation data to adjust later outcomes. The approach taken was to calculate the difference in values during and after the program. The average cost to supervise a drug court graduate during drug court was $1,253 per graduate while the average cost to supervise a probation completer while on probation was $1,072 per probation completer. Supervision of drug court graduates, while more intense than probation completers, was only slightly more expensive for two reasons: 1) these completers were in the enhanced or intensive status for a portion of the time they were on probation and 2) the period of probation (19.7 months on average) was longer than the period in drug court (16.4

months on average). By inference this would be true of probationers generally because this group of probation completers was composed of the most "successful" individuals on probation. The implication is that drug court supervision generally in St. Louis is only slightly more expensive than regular probation supervision.

Only 9.1 percent of drug court graduates and 11.4 percent of probation completers had supervision episodes afterwards, and while the total number of days of probation completers was greater, the difference in mean cost of supervision was small: an average of $81 for completers and $62 for graduates. Projections were based on the status quo assumptions (that days on probation would continue at the same level), since the number of probation entries was too small to determine trends.

Urinalysis and Breath Testing. Regular urinalysis testing for drugs and breath testing for alcohol use are essential features of the drug court program. However, urinalyses are also ordered from time to time, as part of the regular needs assessments of individuals on probation. Testing in drug court was handled by a central source under a contract. All activities associated with collection of samples and production of test results were handled by the contractor. Urinalysis for the completer group was more complex. Probation officers ordered these as a part of periodic needs assessments. In some cases the probation officer collected the urine sample but in some St. Louis offices a half-time urinalysis coordinator was employed to collect urine samples and transfer them for testing. One of the offices in St. Louis City has its own toxicology lab for testing; otherwise samples were transferred to the state lab in Fulton, Missouri.

Testing is conducted on a regular basis and at least one time per week, according to a random lottery system. Costs were $9.00 per test under the contract that existed during this period. Adjusted for inflation to 2002 values (from 1999 values) this comes to $9.72 per test. The graduates averaged 67 tests during their tenure in drug court resulting in an average cost for urinanalysis of $651 per graduate through drug court tenure. Probation completers in drug cases averaged 5 *known* tests each during the time they were in active probation cases. The count includes only counts associated with the probation visits and does not include analyses that may have been required as part of inpatient stays, detoxification, or outpatient programs. The average cost of urinanalysis at the state toxicology lab was $6.08 for salaries of technicians, materials for collection and processing, and reagents in the lab. As noted, MDOC maintains a number of half-time workers specifically to assist probation officers with lab tests. This and mailing costs raised the cost by an additional $2.00 to $8.08. The estimate used was 10 minutes for a half-time worker to collect, label, and package the urine sample for approximately one-half of the urine tests in the St. Louis City. The other half are conducted by probation officers and this work is presumably covered under supervision costs. Administrative costs were not considered in this calculation. Probation completers averaged $40 for urinanalysis testing during their probation tenures.

Court Activity

Court activity for drug court clients refers to time that clients spend involved in regular drug court hearings. Court activity for probation completers refers to the time associated with all the court activities associated with their case after the initial complaint is filed, such as arraignment, grand jury hearings, preliminary hearings, filings by the court and by defense attorneys, guilty pleas, and pre-sentence investigations. Costs of court activities were calculated based on *minimum* times required as reported by knowledgeable participants and on mid-range 2002 salaries of officials who are always present at such hearings. Costs did not include facilities

costs, nor costs of transportation, nor (for probation completers) administrative overhead. Estimating full costs of court activities for individuals on probation would require observation and analysis of a relatively large sample of such cases, and would doubtless reveal expenses to the public beyond those considered here. Such an analysis was beyond the plan and scope of the present study. The following minimum costs were estimated for each activity per defendant:

Drug Court hearings: $21.37
Charges read, preliminary hearing, continuance Issued: $13.36 (with private attorney: $11.52)
Arraignment: $26.72 (with private attorney: $23.04)
Guilty plea: $80.15 (with private attorney: $69.12)
Sentence hearing: $40.08 (with private attorney: $34.56)
Pre-sentence investigation by probation officer: $260.98 (based on 15.54 hours of PO time)
Order of probation and extension of probation filings: $2.05
Filings of motions, requests, replies, orders, payments: $1.02
Grand jury hearing: $37.66

Drug court graduates attended a mean of 23.6 hearings each costing a mean $504 per graduate. Hearing data for probation completers was obtained from "minutes" of case files. Evaluators were permitted to view such minutes without client names and for a random sample of 35 cases. Minutes contain all significant events and outcomes in court by date. All court activities were coded and costs were attached using the cost values shown. Probation completers had varying combinations of the other court activities that together averaged to $237 per completer.

Costs: Jail Time

Information was available on days in jail after assignment to drug court or probation. This data did not include the initial tenure in jail prior to drug court or probation (see below). According to city records drug court graduates were in jail for longer periods than probation completers after they began participating in drug court or were assigned to probation supervision. Drug court graduates were in jail for an average 6.7 days during drug court and probation completers for an average of 3.0 days during probation. These averages were derived from data on 198 graduates and 181 completers that were available in jail records. Part of this difference can be explained through sanctions applied to graduates by the drug court judge. Based upon a sample record review of drug court cases, such sanctions averaged 3.4 days per graduate. The remainder may be attributed to arrests for other charges. Jail time for probation completers is presumably attributable to later arrests for other charges. City officials estimated a day in incarceration in St. Louis City (at the City Jail or Workhouse) costs $119 per inmate. The estimated cost per completer during probation was $359, and per graduate during drug court, was $795. The pattern was reversed for individuals during the two-year follow-up period. Drug court graduates were in jail for an average 2.2 days at a cost per graduate of $264 and completers for an average of 4.2 days at a cost per completer of $497. No trend analysis was possible because only counts of days in jail during the two periods were provided for this data set (see discussion under wages below). Jail costs for the two years following drug court or probation were based on the assumption of the same rates of incarceration in jail.

Pretrial detention for drug court participants prior to entering drug court is minimal since they are placed on personal recognizance (rather than remaining in jail or paying bail) and are immediately diverted to drug court. Pretrial detention for probation completers varied significantly. These estimates were based on the random sample of case records of 35 probation completers that was used in the previous section to determine the level of court activity. Approximately half of completers paid bond or were released on recognizance at the time the

complaint was filed with the court. Days in detention prior to the complaint or prior to drug court were considered to be equivalent for the two groups. The other half of completers had jail time prior to bond or recognizance release. The estimated mean pretrial detention of all 219 probation completers (including those with zero or minimal detention in the calculation of the mean) was 23.1 days. This represents a significant time in jail of probation completers that was avoided for drug court graduates, who as indicated were released on personal recognizance very close to the time of arrest and application to drug court. The cost of pretrial detention per completer was $2,737.

Individuals convicted of misdemeanors may serve sentences in the St. Louis Medium Security Institution (also called the City Workhouse). Drug court graduates who were sanctioned to longer terms (up to 60 days in length) were assigned to this institution. Drug court graduates spent an average of 13.2 days each in a special boot camp program at the Institution. This was based on record reviews of a sample of 40 drug court graduates. A critical gap in data collection occurred in that no comparable data on boot camp assignment or city workhouse sentences of probation completers were obtained. Evaluators were assured by several sources that the most reliable source was the actual case files of probation completers. Since these files were confidential, access was provided only to the minutes of the files for a sample of cases (see discussion above under court hearings). However, no records of sentences beyond the initial probation were found in these documents, and because of extensive delays in obtaining these records, it was too late to seek other sources of data on such assignments. The average cost per drug court graduate for boot camp sanctions was $1,571. It is known that probation completers who violate their probation received workhouse sentence. MDOC data showed that the 219 probation completers had a total of 344 probation violations of various kinds while they were being supervised. How many of these violations led to jail or boot camp was not contained in MDOC records (since the St. Louis Medium Security Institution is a city agency and MDOC is a state agency). However, this number of violations could have led to as many or more days in the workhouse than was the case for drug court graduates. For this reason evaluators felt that these data could not be used in the experimental comparisons.

Wages and Taxes

An indicator of the relative comparability of the graduates and completers is earnings during the 24 months preceding participation. Probation completers actually earned slightly more, an average of $11,946, compared to $11,135 for drug court graduates, although this difference was not statistically significant. The relative low averages result from individuals who worked only sporadically and had no earnings during some yearly quarters. Drug court graduates showed a relative increase in average monthly wages while participating in drug court and in average wages after completing drug court (Table B.2). The differences were consistent but modest in size, and for this reason, were not statistically significant.

Wages for months 24 through 48 were calculated through projections of quarterly wage values during the two-year period after graduation or completion. Both groups showed increasing wages during the period and both groups experienced wage gains when compared to the period before drug court or probation. This was expected and reflects the normal increase in wages associated with maturation of individuals in both groups, some of whom were teens before and during drug court or probation. Linear regression was used to measure trends in wages. The method is illustrated in Figure B.1, which shows total (rather than mean) quarterly wages for drug court graduates and probation completers. In certain calendar quarters, wages were virtually identical. When differences were found, they were in favor of the graduate group. The

regression trend lines track the relative increase in wages evident for graduates during the initial 24-month period. The third-year analysis (described above) for the subset of cases, for which earnings data during a third year were available, revealed that this projection was conservative. The values in Table B.2 for months 25 to 48 suggest an overall gain of 9.9 percent for graduates. The third-year analysis indicated a 17.7 percent gain of graduates over completers.

Table B.2. Wage Changes Associated with Drug Court Participation (2002 Dollars)

*Mean monthly wages during drug court/probation**	*Total*
Completers	$614
Graduates	$639
Mean 24-month wages per person after drug court/probation	
Completers	$16,822
Graduates	$18,251
Mean wages per person for months 25 to 48 after drug court/probation	
Completers	$20,056
Graduates	$22,045

* Estimated marginal means were derived from a GLM analysis of covariance. Trends were based on linear regression of values during the two years following participation.

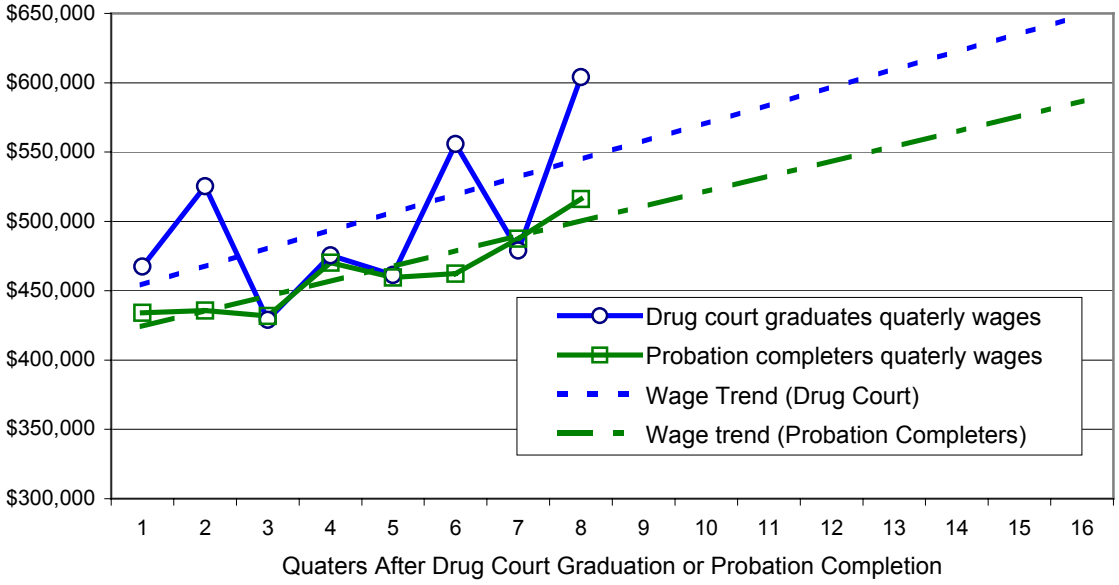


Figure B.1 Trends in Wages of Drug Court Graduates and Probation Completers

Taxes and FICA. Taxes were estimated for each person in the study for each year before, during and after participation in drug court or probation. All the individuals in the study were residents of St. Louis City, which has a one percent local income tax. State and federal taxes were calculated utilizing tax tables and tax calculation formulas for each of the years 1995 through 2002. Marital status and the number of dependents were derived from Missouri Department of Corrections records. Projected taxes were estimated based on the percent increase in projected wages. FICA was calculated as a standard percent of gross wages including the worker and employer contributions within the upper income limit set for social security. The results (Table B.3) generally follow the pattern of earnings.

Table B.3. Changes in Taxes and FICA Paid Associated with Drug Court Participation (2002 Dollars)

Mean monthly taxes/FICA per person during drug court/probation	*Total*
Completers	$106
Graduates	$107
Mean taxes/FICA per person for 24 months after drug court/probation	
Completers	$4,782
Graduates	$5,234
Mean taxes/FICA per person for months 25 to 48 after drug court/probation	
Completers	$5,701
Graduates	$6,322

AFDC/TANF and Food Stamps

Welfare data for this study includes cash payments under AFDC/TANF and Food Stamps and administrative costs. The mean total welfare payments during the period before participation were virtually identical for the two groups (graduates: $866; completers: $857) for the entire two-year period. The values were small (about $36 per month on average) because women (the usual recipients of AFDC/TANF) were in the minority in both groups and many participants were in their teens.

Table B.4. Changes in Welfare (AFCD/TANF and Food Stamps combined) Associated with Drug Court Participation (2002 Dollars)

*Mean monthly welfare received during drug court/probation**	*Mean*
Completers	$59
Graduates	$56
Mean welfare per person during the 24 months after drug court/probation	
Completers	$1,468
Graduates	$1,291
Mean welfare per person for months 25 to 48 after drug court/probation	
Completers	$1,325
Graduates	$1,218

* Estimated marginal means were derived from a GLM analysis of covariance. Trends were based on linear regression of values during the two years following participation.

Reception of welfare increased for both groups during participation and the average monthly values remained similar (Table B.4). The differences were not statistically significant. Monthly receptions (primarily food stamps) remained at about the same level during the two years following participation. A *relative* reduction in reception was observed for graduates, as can be seen in the table, although because the sample sizes (n = 219) were relatively small, the difference was not statistically significant. Welfare reception declined slightly for both groups during the two years after participation. The mean values during the following period reflect this pattern.

No significant difference was found in the months of food stamp reception, the program most frequently utilized by both groups. During the after period approximately 34 percent of each group participated in the food stamp program for at least one month.

Health Care and Psychiatric/Mental Health Services

Greater Medicaid and psychiatric costs were found for completers both during and after participation. Average differences in costs of Medicaid during and after drug court/probation are shown in Table B.5. Monthly Medicaid payments were lower for graduates during the program and substantially lower after the program was completed.

The projected difference in Medicaid expenses after two years resulted from differences in the patterns of monthly Medicaid reception for graduates and completers. These are illustrated in Figure B.2. Third-year analysis (described above) of this data showed that third-year Medicaid costs were 113 percent greater for probation completers than for drug court graduates, confirming the continuing increase in health care costs suggested by the trends during the first two years.

Table B.5. Changes in Medicaid Associated with Drug Court Participation
(2002 Dollars)

*Mean monthly Medicaid during drug court/probation**	*Mean*
Completers	$84
Graduates	$75
Mean Medicaid per person during the 24 months after drug court/probation	
Completers	$1,520
Graduates	$1,062
Mean Medicaid per person for months 25 to 48 after drug court/probation	
Completers	$2,509
Graduates	$406

* Estimated marginal means were derived from a GLM analysis of covariance. Trends were based on linear regression of values during the two years following participation.

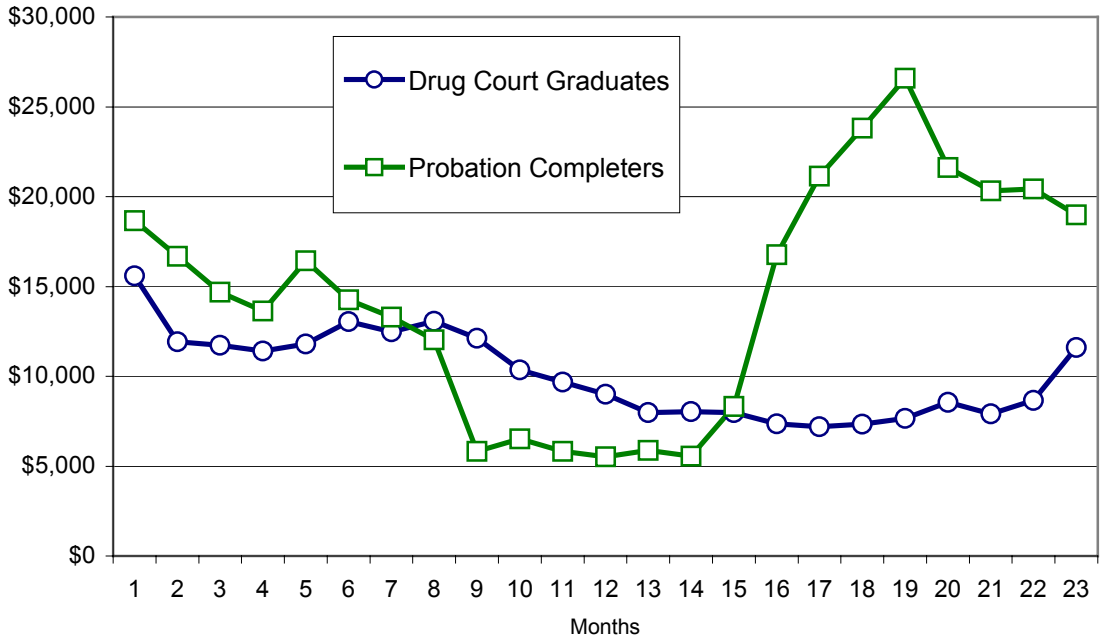


Figure B.2 Trends in Medicaid Costs of Drug Court Graduates and Probation Completers

Similarly, mental health costs recorded by the DMH Division of Comprehensive Psychiatric Services were higher for probation completers than drug court graduates. Average monthly costs of psychiatric services during the program were $3 for graduates versus $7 for completers. After-graduation/completion two-year mean costs were $71 for completers and $12 for graduates. Like drug treatment costs the numbers were too small to attempt a statistical projection, and the assumption of status quo was applied to these costs as well. This was also shown to be conservative by the third-year analysis. Psychiatric costs of this group of completers were 244 percent higher than graduates during the third year for study participants for whom data were available.

Arrests

Arrest data were available from records of the Missouri Highway Patrol (MHP). This agency collects and compiles data on arrests from jurisdictions throughout Missouri. Arrest data were consistently available for drug court graduates and probation completers for the period of the program (considered below) and for the two years before and after. Arrest dates, criminal codes of charges at the time of arrest, and type of charge (felony or misdemeanor) were provided for each study participant.

The advantage to using MHP data is that is represents an assembly of arrest information submitted by jurisdictions throughout Missouri. MHP also collects data on convictions, but that data is not as complete according to sources. In addition, MHP will not release data on cases with suspended imposition of sentence (SIS), which become confidential at the end of the period of probation. Consequently, the MHP data could be used to document arrests but was not useful for determining criminal justice activities following arrests. For this reason, costs were limited to activities associated with arrests only.

The St. Louis Metropolitan Police Department (SLMPD) does not routinely estimate the average cost of arrests. The approach taken in the study was to calculate a cost of arrest based on an estimate of hours involved in conducting an arrest and processing paperwork by police officers. Drug-related arrests involve analysis of substances in the SLMPD drug chemistry laboratory. Lab personnel provided the average number of substances tested per drug arrest and the length of time for paperwork and chemical analysis. Based on these time estimates, and a mid-range pay of personnel, along with administrative overhead, an average cost per arrest was generated of $431. Estimates of arrests were $406 based on 4 hours of officer time and 1 hour of supervisor time. Drug chemistry work was determined to be $75 ($56 per test averaging 1.1 test per drug arrest plus court appearance to testify in 20 percent of arrests at 4 hours per appearance). Estimates included administrative overhead by using a multiplier of .4427, the federally approved percentage utilized by SLMPD. Because drug arrests were consistently one-third of all arrests for both the graduate and completer groups, the final arrest cost of $431 could be applied to each arrest.

Completers averaged 2.1 felony arrests prior to probation compared to 1.7 for drug court graduates. Subsequent arrest averages were adjusted based on each person's arrest history during the two years preceding drug court or probation. After adjustment, there were .175 felony arrests per graduate during the program and .373 felony arrests per probation completer during probation. Similarly, there were .062 misdemeanor arrests per drug court graduate compared to .184 misdemeanor arrests per probation completer. The differences for both types of arrests during participation were statistically significant. The mean monthly costs associated with arrests are shown in Table B.6.

Without focusing on types of crimes, counts of arrests after drug court and probation were only slightly lower for drug court graduates (Table B.6). The differences were not statistically significant for either type of charge. Third-year analysis confirmed the conservative nature of this assumption by showing slightly higher continuing arrests for completers than graduates.

Table B.6. Costs of Arrests with Drug Court Participation (2002 Dollars)

*Mean monthly cost of arrests during drug court/probation**	*Misdemeanors*	*Felonies*
Completers	$4	$8
Graduates	$2	$5
Mean arrest costs per person during the 24 months after drug court/probation		
Completers	$132	$189
Graduates	$128	$181
Mean arrest per person costs for months 25 to 48 after drug court/probation		
Completers	$132	$189
Graduates	$128	$181

* Estimated marginal means were derived from a GLM analysis of covariance. Trends were not reliable because of small numbers of arrests during the two-year after period. Values represent a steady state assumption.

Subsequent Incarceration

Neither group had extensive or consistent prison experience prior to participation in drug court or probation. The cost of prison before drug court/probation was considered to be zero, and the methodology for this variable involved after-comparison only. Incarceration costs were calculated using 2001 per-diem ($35.52) and meal costs ($2.21) provided by the Missouri Department of Corrections (MDOC, 2002).

Only one drug court graduate entered prison during the two years following graduation compared to four probation completers. Differences in incarceration costs per person are shown in Table B.7. Because the number who went to prison was quite small the differences were not statistically significant. Trends were assumed to be status quo as in some previous analyses.

Table B.7. Prison Costs after Drug Court/Probation Participation
(2002 Dollars)

Mean costs per person during the 24 months after drug court/probation	
Completers	$214
Graduates	$104
Mean costs per person for months 25 to 48 after drug court/probation	
Completers	$214
Graduates	$104

Costs to Victims and Criminal Justice System Costs

Costs for victims of crime and the criminal justice system of crime were considered by focusing on convictions *after drug court graduation or probation completion only*. Dates of later convictions were included in MDOC file extractions provided for this study.

The primary reference utilized was the work of Rajkumar and French (1997), which focused on crime costs as related to drug abuse and drug treatment. The authors utilized a combination of two different methods to determine both the tangible and intangible costs of crime. Tangible costs were based on the cost of illness method that utilizes national survey data of short-term economic losses to victims. Intangible costs (pain and suffering costs) were based on the jury-compensation method, which is in turn based on the relationship between a plaintiff's observable economic expenses and jury awards. As the authors indicate, that relationship has tended to be a stable one across studies. Both tangible and intangible costs vary significantly by the type of crime, however. Tangible costs to victims (and to the criminal justice system) of crimes like aggravated assault and robbery are substantially greater than those for burglary and theft, and these in turn are higher than most other crimes including violations of drug law. Intangible costs can be calculated only for robbery and assault because nonviolent or nonpredatory crimes rarely result in physical injury and no data is available on their psychological impact of other types of crimes. Total costs to victims and to the criminal justice system for each assault was estimated to be over $50,000 and for each robbery was estimated to be $22,000 (in 1992 dollars). In the present study all costs were adjusted to 2002 values.

One drug court graduate was later convicted of robbery (2nd degree) while two probation completers were convicted of robbery (1st degree). One drug court graduate was convicted of assault compared to five probation completers. Because assault is the most costly of all crimes to victims both in costs of illness and in pain and suffering, the total costs of crime were higher for the completer group. Later convictions in most cases were for drug possession or trafficking crimes. Costs per person for the 24-month period following drug court/probation are shown in Table B.8. Following the practice in other costs categories where trend analysis was not possible, the estimate for the next two years assumed a continuation of the same types of convictions at the same level.

Table B.8. Costs to Victims and Criminal Justice System of Later Convictions (2002 Dollars)

Mean arrest costs per person during the 24 months after drug court/probation	*Tangible Costs*	*Intangible Costs*
Completers	$212	$1,572
Graduates	$104	$376
Mean costs per person for months 25 to 48 after drug court/probation		
Completers	$212	$1,572
Graduates	$104	$376

Prenatal Drug Exposure of Infants

The approach of the present study is not to count the number of drug free infants and to assume that they would have been born drug exposed in the absence of the drug court but to count the number of actual drug-exposed infants born to drug court graduates and probation completers. A more comprehensive approach would have been to determine all births and to calculate the percent of infants born drug-exposed and drug-free. While this might have been possible for drug court graduates based on drug court records, comparable data could only have been obtained for probation completers by accessing vital records, a data source that was not included in planning the present study.

The Missouri Division of Family Services (DFS) receives reports via a statewide hotline system from hospitals concerning newborn children that have been determined to be drug- or

alcohol-exposed. While regular CPS (Child Protection Services) workers investigate these reports in smaller counties, in larger urban counties, like St. Louis City and St. Louis County, specialized investigators are utilized. In St. Louis City, the focus of this study, drug exposed infants may be removed at the discretion of the physician and put in temporary custody of the St. Louis City Family Court. Non-symptomatic infants may be permitted to leave the hospital with their mothers in St. Louis City. DFS workers investigate all reported cases.

Over one-fifth of the individuals in this study were female closely matched on age. Each case was linked to the DFS child abuse and neglect information system to determine whether reports had been received of drug-exposed infants. Seven drug-exposed infants were identified using this method. Six were born to women in the control group, and all of these children were born at least one year after the mother had entered probation. Infants born drug-exposed after this length of time are indicative of continuing drug use after entry to probation. In four cases the birth occurred slightly before probation completion while the other two occurred after completion. One drug-exposed infant was born to a drug court graduate. The baby was born approximately three months after the mother began attending drug court. Approximately one month before the birth the mother had had an auto accident and had relapsed (as determined by a positive urinalysis and her own admission). The mother was drug free for the remainder of her tenure in drug court. This infant was not removed from her custody.

In a previous study (Loman and Sherburne, 2000) of a sample of 43 drug-exposed infants in St. Louis City, 91 percent of the experimental group infants had been exposed to cocaine. Secondary exposure to Alcohol and marijuana were found in a minority of cases. There were no studies of costs associated with cocaine-exposed infants in St. Louis or in Missouri. However, studies in other jurisdictions have shown the costs to be significant. Phibbs (1991) citing a GAO study (GAO, 1990) reported an increased median cost of initial higher cost of hospital care of $4,100 (in 1989 dollars) per cocaine-exposed infant. She believes that cost might actually have been higher because some infants may have been misclassified. Another study by Phibbs, Bateman and Schwartz (1991) based on 1985-86 data from Harlem Hospital found mean added hospital costs of $5,200 per infant, excluding physician costs. Budden (1996) cited a study in Oregon showing a total cost differential (based on averages) of labor, delivery, postpartum care and neonatal care of $12,386 for cocaine-exposed infants over matched drug-free control cases. Budden cites another study in Oregon that estimated $8,000 to 10,000 to care for a drug-exposed child during the first year of life. Kalotra (2002) cites these and other studies conducted at different times and focusing on slightly different sets of costs. When averaged and adjusted for inflation to 2002 values, the average cost increase for a cocaine-exposed infant came to $9,600 for birth, delivery, postpartum and neonatal care. Most drug-exposed infants have low-birth weights. While there is no Missouri estimate for drug-exposed infants, the Missouri Department of Health indicates that a typical hospital stay for low birth-weight baby costs $6,200 versus $1,900 for a normal birth weight infant. If the drug-exposed infant is symptomatic the costs are likely to be significantly higher. Thus, $9,600 may be regarded as a fairly reasonable estimate of cost differential.

Later costs may equal or exceed this cost during the first year of life and in subsequent years. Not all drug-exposed infants are removed and placed immediately. Those that are not symptomatic may remain with their families but usually under an open child protection case involving home visitation and monitoring. For example, Sagatun-Edwards et al. (1995) found that while about two-thirds of children of these types of reports were removed only 42 percent were actually placed in foster care. However, if such infants are followed for several years those that were not initially removed (and/or their siblings) are sometimes later removed for other types of child abuse and neglect. In another study of chronic neglect of children in St. Louis City that

included drug-exposed infants (Loman, 2002), over 56 percent of families with initial drug/alcohol-exposed infant reports were reported again one or more times over a six-year period, most often for lack of supervision or failure to provide for children's basic needs. In addition, *28 percent of individuals with a drug-exposed infant had another drug-exposed infant report during the subsequent six-year period*. Costs of such recurrences are not generally included when calculating the costs of drug-exposed babies, and will not be included in this analysis, but this indicates that the lifetime costs of drug-exposure of children might well be more accurately determined by focusing not on particular children but on entire families of children.

Children who are drug or alcohol exposed at birth are more likely to be developmentally delayed, to have learning disabilities, and to have later behavioral problems. Such children are at higher risk of later child abuse and neglect. At least 25 percent of the children generally on active DFS caseloads in St. Louis City are also clients of the Missouri Department of Mental Health for mental retardation, developmental disabilities and delays, and mental illness. Dual diagnoses of drug-exposed infants can be expected to be at least this high and probably higher.

Costs for drug exposed children overall during the first 18 years of life including health care, special education, child protection costs, foster and institutional care, mental health services, and miscellaneous other costs has been variously estimated to range from $750,000 to $1,000,000 (see Kalotra, 2002) or a yearly average of approximately $41,000 to $55,000 per child. In most cases these are costs to the taxpayer. Reducing the number of drug-exposed infants, therefore, has the potential to produce significant public savings.

The difference between the particular mothers in this study and the general population of mothers with hospital reports of drug-exposed infants is that all had been arrested and on probation for drug offenses. The criminal history and current status of the mother are significant considerations for DFS workers, juvenile officers, and the Family Court judge in determining initial removal of the child, placement in protective custody and foster care and reunification of the child and mother.

The data set available to identify these births and subsequent actions of DFS was valid only through late 1991. Thus, the births counted could well be underestimates. Other records, including case openings and placements of children were similarly incomplete. However, records were found for some cases. A service case was opened for the drug court graduate that lasted a little short of one year (to the end of her tenure in drug court). Records were found on open cases of four of the six completer children and at least one child was removed and was in out-of-home placement for at least one year (until the end of the data set). Costs for the open cases for these four mothers and their children were estimated to be $27,825. These families totaled 1,113 days as active cases. The total was based on DFS estimates of the cost of worker time per case at $25 per day. The comparable cost for the drug court graduate was $8,175. All mothers had an initial investigation that averaged 30 days in length for total worker costs of $3,000 for the completer children and $750 for the graduate child. The cost of foster care for children less than one year of age averaged $8,100 per year in St. Louis during 2001. (Calculations were based on average cost per day of children under one year of age actually in care in St. Louis City from data files provided by DFS.) The cost of foster care for the one child of a probation completer for which data were found was $8,477, creating a total *known* cost derived from DFS data files of $39,302 for four children of completers or $9,826 per child. The comparable cost for the child of the one graduate was $8,925. Assuming an initial medical cost differential of $9,600, reasonably estimated medical costs surrounding birth and known child welfare costs together were $19,200 per child for these five children. This can be regarded as roughly the cost during the first year of life. Excluding birth costs, a conservative second year cost might take the average of $9,600 for

DFS costs, yielding a total two-year cost of $28,800. Not included are DFS administrative costs, transportation clothing and other special services included within DFS, nor costs of family court hearings, salaries of juvenile officers associated with each court-involved case, expenses associated with court appointed special advocates and guardians ad litem and special investigators. And as indicated above, costs of health services and mental health and MRDD services during preschool years are not included. In this light, the figures cited above of $41,000 and more cited by Kolotra do not sound unreasonable. Nonetheless, the conservative figures were applied in this study, yielding the following averages (across all 219 graduates and completers). Continuing costs of $9,600 per year during the third and fourth years are also shown.

Table B.9. Costs of Drug Exposed Infants

Mean costs per person during the 24 months after drug court/probation	
Completers	$789
Graduates	$132
Mean costs per person for months 25 to 48 after drug court/probation	
Completers	$526
Graduates	$88

Costs and Benefits of Drug Court

Total costs and benefits were computed by determining first the total costs for the entire group of drug court graduates and probation completers during 1) drug court or probation, 2) the two-year follow-up period after participation, and 3) the two years after the follow-up period (Table B.10). Second, costs were categorized into program costs versus outcome costs and benefits. This permitted a comparison of program costs (Table B.11) and outcome costs and benefits for the first 24 months (Table B.12) and the first 48 months (Table B.13).

The first step was to take the expense categories from Table B.10 that are associated with participation in drug court or probation. These are shown in Table B.11. As can be seen, drug court is more expensive across the board, but particularly in alcohol and drug treatment costs and urinalysis costs. These are somewhat offset by greater pretrial detention costs of probation participants. The costs are shown as positive values in this table for purposes of illustration and the one benefit (payment of court fees) is shown as a negative value (because it reduces the total program costs)

Costs and benefits associated with the first 24 months after completion of drug court or probation are shown in Table B.12. Again for illustration purposes, the costs in this table are shown as negative values and the one large benefit category (taxes and FICA) is shown as positive.

Table B.10. Costs and Benefits Totals for the Entire Groups of 219 Drug Court Graduates and 219 Probation Completers During and After Participation

Cost-Benefit Category	*During Probation*	*During Drug Court*	*After Probation*	*After Drug Court*	*Projected Probation*	*Projected Drug Court*	*Total Probation*	*Total Drug Court*
Administrative costs	$42,730	$93,951	$0	$0	$0	$0	$42,730	$93,951
Drug court/Probation supervision	$234,768	$274,438	$17,670	$13,659	$17,670	$13,659	$270,108	$301,756
Urinalysis	$8,760	$142,569	$0	$0	$0	$0	$8,760	$142,569
Pretrial detention	$602,009	$0	$0	$0	$0	$0	$602,009	$0
Jail	$78,704	$174,087	$108,935	$57,855	$108,935	$57,855	$296,574	$289,798
Court activities	$51,857	$110,471	$0	$0	$0	$0	$51,857	$110,471
Payment of court fees	$23,864	$45,793	$0	$0	$0	$0	$23,864	$45,793
Wages	$2,643,602	$2,299,231	$3,684,018	$3,996,969	$4,392,332	$4,827,764	$10,719,952	$11,123,964
Taxes and FICA	$455,276	$384,526	$1,047,207	$1,146,334	$1,248,550	$1,384,607	$2,755,033	$2,915,467
TANF/AFDC and Food Stamps	$254,845	$199,986	$321,492	$282,729	$290,175	$266,835	$866,512	$749,550
Medicaid	$362,914	$268,567	$332,880	$232,578	$549,560	$88,843	$1,245,354	$589,988
Psychiatric	$29,192	$11,442	$15,582	$2,597	$15,582	$2,597	$60,355	$16,637
Treatment non-methadone	$175,494	$529,938	$34,383	$45,990	$34,383	$45,990	$244,260	$621,918
Treatment methadone	$2,756	$4,390	$5,256	$7,665	$5,256	$7,665	$13,268	$19,720
Aftercare costs	$187,055	$411,282	$0	$0	$0	$0	$187,055	$411,282
Felony arrests	$35,258	$16,594	$41,437	$39,549	$41,437	$39,549	$118,132	$95,692
Misdemeanor arrests	$17,443	$5,893	$28,883	$28,034	$28,883	$28,034	$75,210	$61,960
Prison	$0	$0	$46,933	$22,806	$46,933	$22,806	$93,866	$45,611
Total tangible costs of crime	$0	$0	$79,419	$23,223	$79,419	$23,223	$158,838	$46,446
Intangible victim costs of crime	$0	$0	$344,261	$82,282	$344,261	$82,282	$688,522	$164,564
Drug-exposed infants	$0	$0	$172,800	$28,800	$115,200	$19,200	$288,000	$48,000

Table B.11. Program Costs of Probation and Drug Court for 219 Drug Court Graduates and 219 Probation Completers

	Probation Program Costs	Drug Court Program Costs
Administrative costs	$42,730	$93,951
Drug court/Probation supervision	$234,768	$274,438
Urinalysis	$8,760	$142,569
Pretrial detention	$602,009	$0
Jail ***during drug court/probation only***	$78,704	$174,087
Court activities	$51,857	$110,471
Payment of court fees	($23,864)	($45,793)
Wages		
Taxes and FICA		
TANF/AFDC and Food Stamps		
Medicaid		
Psychiatric	$29,192	$11,442
Treatment non-methadone	$175,494	$529,938
Treatment methadone	$2,756	$4,390
Aftercare costs	$187,055	$411,282
Felony arrests		
Misdemeanor arrests		
Prison		
Total tangible costs of crime		
Intangible victim costs of crime		
Drug-exposed infants		
Total	$1,389,460	$1,706,775

Table B.12. Outcome Benefits of Probation and Drug Court for 219 Drug Court Graduates and 219 Probation Completers (First 24 months after Graduation/Completion)

	Probation Program	Drug Court Program
Administrative costs	$0	$0
Drug court/Probation supervision ***after only***	($17,670)	($13,659)
Urinalysis	$0	$0
Pretrial detention	$0	$0
Jail ***after only***	($108,935)	($57,855)
Court activities	$0	$0
Payment of court fees	$0	$0
Wages		
Taxes and FICA	$1,502,483)	$1,530,860)
TANF/AFDC and Food Stamps	($576,337)	($482,715)
Medicaid	($695,794)	($501,145)
Psychiatric ***after only***	($15,582)	($2,597)
Treatment non-methadone ***after only***	($34,383)	($45,990)
Treatment methadone ***after only***	($5,256)	($7,665)
Aftercare costs	$0	$0
Felony arrests	($76,695)	($56,143)
Misdemeanor arrests	($46,326)	($33,927)
Prison	($46,933)	($22,806)
Total tangible costs of crime	($79,419)	($23,223)
Intangible victim costs of crime	($344,261)	($82,282)
Drug-exposed infants	($172,800)	($28,800)
Total	($717,908)	$172,053

Costs and benefits for the four-year period following drug court or probation are shown in Table B.13.

Table B.13. Outcome Benefits of Probation and Drug Court for 219 Drug Court Graduates and 219 Probation Completers (First 48-months after Graduation/Completion)

	Probation Program	Drug Court Program
Administrative costs		
Drug court/Probation supervision ***after only***	($35,340)	($27,318)
Urinalysis		
Pretrial detention		
Jail ***after only***	($217,870)	($115,711)
Court activities		
Payment of court fees		
Wages	------	------
Taxes and FICA	$2,755,033	$2,915,467
TANF/AFDC and Food Stamps	($866,512)	($749,550)
Medicaid	($1,245,354)	($589,988)
Psychiatric ***after only***	($31,164)	($5,195)
Treatment non-methadone ***after only***	($68,766)	($91,980)
Treatment methadone ***after only***	($10,512)	($15,330)
Aftercare costs		
Felony arrests	($118,132)	($95,692)
Misdemeanor arrests	($75,210)	($61,960)
Prison	($93,866)	($45,611)
Total tangible costs of crime	($158,838)	($46,446)
Intangible victim costs of crime	($688,522)	($164,564)
Drug-exposed infants	($288,000)	($48,000)
Total	($1,147,052)	$858,122

Comparing the totals of measured benefits during the first 24 months after graduation/completion with projected benefits for months 24 through 48, it can be seen that benefits associated with probation completers continued to decline and those of drug court graduates continued to increase. While probation completers at 24 months were $.7 million down, at 48 months they have dropped further the $1.15 million. By contrast, graduates were in the black by $.17 million at 24 months but at 48 months those totals have increased to $.86 million.

Appendix C

Early Termination from Drug Court

The focus of the analysis to this point has been on individuals who successfully completed drug court. Drug court involves an admittedly difficult regimen and many individuals who begin the drug court process find that they cannot or do not want to continue. We will refer to these individuals as *early terminators* or simply *terminators*. Some leave after very short periods in drug court. This analysis does not consider terminators who were in drug court for 60 days or less. Out of 445 terminations from drug court during the period from April 1997 through December 2000, 67 were in drug court for 60 days or less. Others abscond, that is, they simply stop coming to court and cannot be located, just as individuals on probation stop meeting with their probation officer and disappear. In these cases a capias warrant is issued for their arrest. In some instances, individuals who absconded returned to drug court and were readmitted to continue the treatment process. Absconding was a relatively frequent reason for termination from the drug court program during the period being considered. Of the same 445 terminations, 145 (32.6 percent) absconded. The average length of participation of these individuals was slightly over one year (376 days). There was little overlap (8) between the absconder group and the 60 days or less group. The number of individuals who absconded was limited in this analysis as well. The primary focus is on individuals who left for other reasons.

A group of 224 individuals was selected from among drug court participants during the same period (4/97 to 12/00), which represented most individuals that terminated for other reasons. Table C.1 shows the number of such individuals, their average age and the mean number of days they were in the program. The most frequent reasons were because of a new criminal case, noncompliance with program rules or treatment program, and a voluntary decision to leave the program.

Table C.1. Early Terminators: Mean Age and Time in Program

Reason Terminated	Number	Mean age at program entry	Mean number of days in program
New/existing criminal case, arrest or behavior	73	24	247
Poor treatment participation or noncompliance	48	25	401
Voluntarily left program	46	28	302
Drug use continued	18	35	405
Absconded	13	31	127
Mental illness/deficiency	8	35	175
Physical impairment	5	31	359
Other	13	30	361
Total	224	27	303

The average age in these three categories was under 30 years and the two largest groups were on average 25 years old or less. The difficulty in retaining youths in this program (ages 17 to 24) is the subject of a companion report of this project on a new track for young persons that began after the period being considered in this report.

The average number of days in the program varied significantly. Individuals who left for noncompliance and poor treatment participation or because they continued to use drugs were in the program for the longest periods. None of these groups were in drug court for as long as graduates, who participated on average for around 500 days. This analysis focuses on the number of days in the program, the age of participants at the time they entered the program and the reasons for leaving the program.

Drug court graduates were taken as the standard or primary comparison group. Because no control group existed or could practically have been created (see discussion below) against which to compare early terminators, pre-existing differences is an alternative explanation of any differences in subsequent outcomes. The outcomes considered were wages and employment, welfare, Medicaid, substance abuse treatment and arrests.

Other Characteristics of Early Terminators

Selection of a control or comparison group for early terminators was considered and rejected. Most of these individuals passed from the drug court program, which was a probation diversion program in Missouri, back into regularly supervised probation. They share in the characteristics of both groups considered in this report, and for this reason, no clear-cut criteria were available for selection from the probation pool utilized in the cost-benefit study. Failure at probation was not the same as failure at drug court and demographic variables alone were not adequate criteria. Nonetheless, it is possible to consider how they differed from drug court graduates.

The mean age of early terminators was 26.8 years while that of graduates was 30.6 years, a statistically significant difference ($p < .001$). This is evident in Figure C.1. Many more individuals in the 18 to 21-year groups were early terminators. There were more graduates among the 22 to 27-year age groups. Significantly more ($p = .048$) early terminators were African Americans (85.3 percent) compared to graduates (77.2 percent).

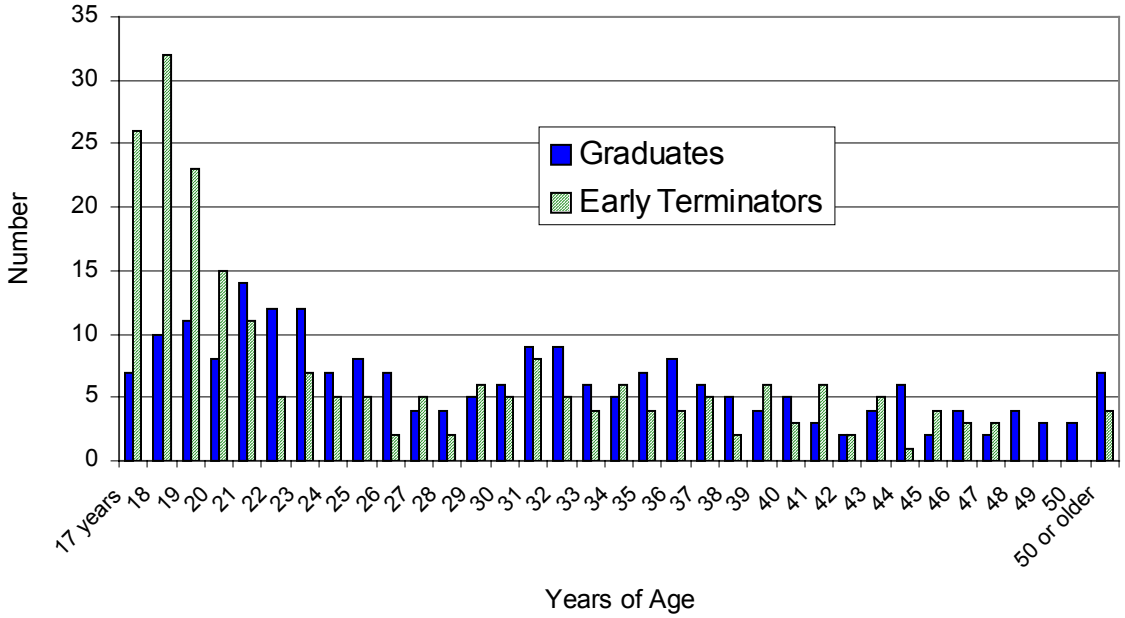


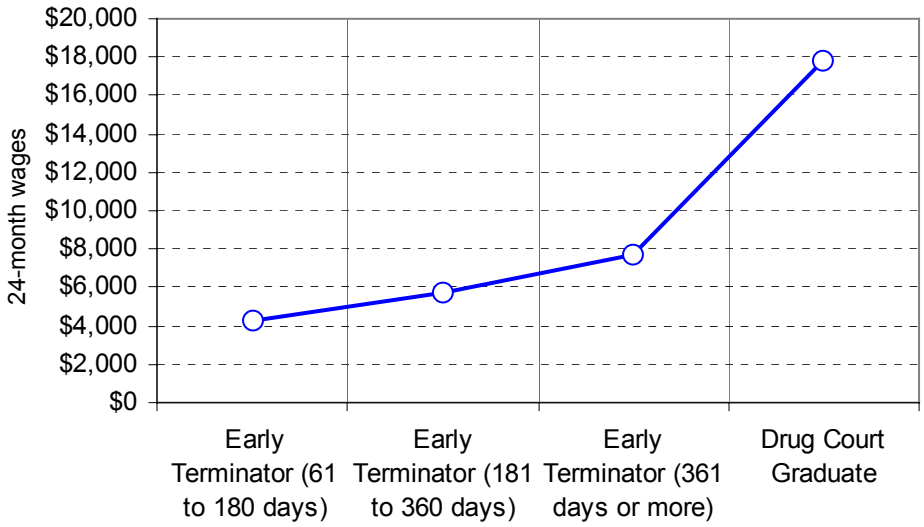
Figure C.1. Number of Drug Court Graduates and Early Terminators by Age

Early terminators had significantly ($p < .001$) more dependents than graduates. One or more dependents were listed for 42.9 percent of early terminators compared to 20.7 percent of graduates. More early terminators were listed as single.

While early terminators were spread across the full spectrum of participants who began drug court, a significantly greater proportion were very young, African American individuals who had dependent children but were unmarried. Slightly more early terminators than graduates were male but the difference was not significant (terminators: 82.6 percent, graduates: 79.5 percent).

Compared to drug court graduates, early terminators did more poorly on each of the outcome measures. Terminators were divided into three groups by their tenure in drug court: 1) 61 to 180 days, 2) 181 to 360 days 3) 361 days or longer. This divided the groups fairly evenly into 75, 78, and 71 individuals, respectively. The analyses in this case focused strictly on data during the 24-month follow-up period.

Wages and employment are shown in Figure C.2.



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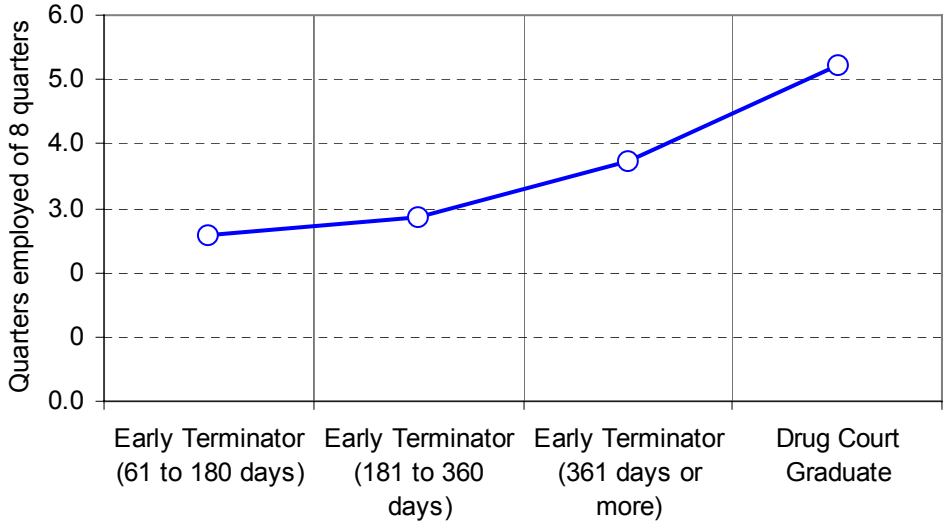

Figure C.2. Mean Earnings and Employment of Drug Court Graduates and Early Terminators

As can be seen in Figure C.2 there is a direct relationship between these outcomes. Visually the relationship appears to be related to length of time in drug court. The differences were statistically significant in both cases ($p < .001$). However, it was the difference between graduates and all early terminators that produced the significant result. Among early terminators considered alone, there was a positive correlation between length of time in program and wages ($r = .07$) and quarters worked ($r = .12$), with the latter being a statistical trend ($p = .07$).

The pattern of Medicaid reception (Figure C.3) is similar to that observed between probation completers and drug court graduates. In this case individuals with relative short stays in drug court (less than one year) had significantly higher Medicaid costs during the follow-up period than individuals who stayed in drug court for a year or longer or who graduated from drug court. This supports the findings of previous research of the strong correlation between alcohol and drug treatment and later health costs. Internal examination of these differences revealed that the highest health care costs were among the oldest early terminators. These individuals more often terminated because of continued drug use, mental deficiencies or physical problems (see Table C.1). There was much less variation in alcohol and drug treatment after leaving the program, although the overall difference between the groups was statistically significant.

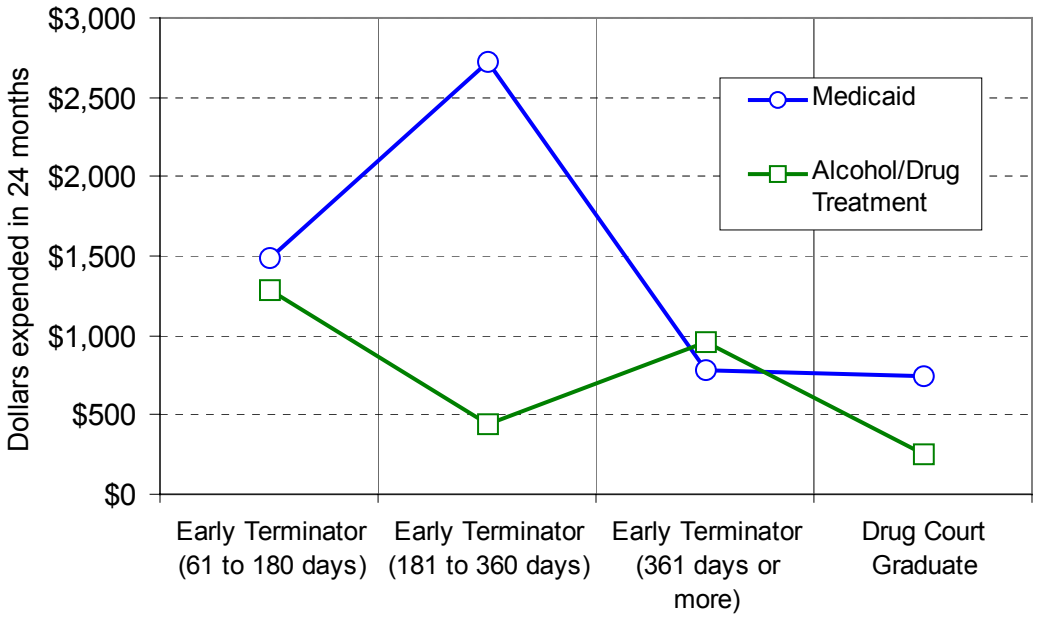

Figure C.3. Mean Medicaid and Alcohol/Drug Treatment Reception of Drug Court Graduates and Early Terminators during Follow-Up

Felony arrests for the groups was directly correlated with length of time in program, apart from whether individuals graduated or not ($r = -.20$, $p < .01$). The difference between the four groups was also significant ($p < .001$) with graduates having the lowest percentage of felony arrests during the follow-up period. Indeed the earliest terminators (61-180 days) averaged two such arrests during the 24 months after and the second group (181 to 360 days) averaged one felony arrest each. Early terminators with a year or more in the program had the lowest rates of arrests with .7 per participant.

While, as Table C.1 indicates, the reasons for leaving were age-related outcomes were typically not correlated with age. There was indication that older terminators had higher health

care costs, although this may have been explained by the reasons for leaving the program. Wages were directly related to age at the time of entry with older individuals and graduates having the highest wages. This was likely related to the normal maturation process, as indicated in the last chapter. The nearer defendants are to their teen years the lower the wages generally. The one outcome that was strongly correlated with age was later arrests. The youngest group—those 21 years old or less at the time of entry to drug court—had significantly more felony ($p < .001$) and misdemeanor ($p = .008$) arrests after termination from drug court.