NEW SOUTH WALES DRUG COURT EVALUATION: COST-EFFECTIVENESS

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PREFACE

The present report is one of a series of studies conducted by the NSW Bureau of Crime Statistics and Research evaluating the NSW Drug Court trial. Other reports in this series monitor key aspects of the Court's operation and investigate changes in the health and social functioning of Drug Court participants.

In this report we examine an issue central to the creation of the NSW Drug Court: namely its cost-effectiveness, compared with conventional sanctions, in reducing drug-related crime. We were particularly fortunate in undertaking this evaluation, to receive the support and cooperation of the Drug Court and the Attorney General in evaluating the Drug Court using a randomised controlled trial. Randomised controlled trials, in which individuals are randomly allocated to 'treatment' and 'control' groups are recognised as being the 'gold standard' when it comes to outcome evaluation. They provide more assurance of control over extraneous factors which might otherwise bias an evaluation than any other form of research design. To our knowledge, this is the first occasion on which a criminal justice program in Australia has been evaluated using a randomised control design.

The evaluation is a first in one other way as well. Very few evaluations of criminal justice or crime prevention programs (either in Australia or overseas) pay much heed to the cost of the program. This greatly hampers the capacity of Government to make rational decisions about the allocation of scarce resources across competing programs. Of course, decisions on programs which affect the liberty of citizens cannot, and should not, be made on the grounds of cost-effectiveness alone. Nevertheless it is to be hoped that our efforts will convince others of the feasibility and value of introducing cost-effectiveness analyses into criminal justice evaluation.

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EXECUTIVE SUMMARY

A group of 309 participants in the NSW Drug Court program (i.e. treated subjects) were compared with a randomised control group of 191 offenders deemed eligible for the program but sanctioned in the usual way (which, for the most part, meant imprisonment). The object of the comparison was to assess both the effectiveness and cost-effectiveness of the Drug Court in reducing recidivism.

Recidivism was measured in terms of the time to the first drug-related offence (which was dealt with in court), and the frequency of such offences, after referral to the Drug Court program.

The average lengths of the follow-up periods for the two groups were 369 days for the treated subjects and 294 days for the control subjects. The recidivism measures were calculated both in terms of 'free time' (time spent out of custody) and 'elapsed time' (time from referral to the end of the observation period).

The offence categories examined included break, enter and steal; fraud; larceny by shop stealing; other larceny; unlawful possession (of stolen goods); possess/use opiates; possess/use cannabis; possess/use other drug; and deal/traffic opiates. Combinations of these offence groups were also examined. Robbery was not included because persons charged with violent offences are not eligible to enter the Drug Court program.

In the 'free time' analysis treated subjects were found to take significantly longer than the control group to their first shop stealing and their first drug offence. Treated subjects also outperformed the control group in having lower rates of offending for most catgegories of offence. It should be noted, however, that the differences between the groups for these offences were only significant for drug offences.

In the 'elapsed time' analysis the treatment and control groups performed equally well for all offences but, as with the 'free time' analysis, the treated subjects were found to have longer elapsed times for their first drug offence. Treated subjects, on the other hand, were found to have significantly higher rates of fraud offences than the control group.

A second set of analyses was conducted, comparing time to the first offence (dealt with in court) and frequency of offending, among those retained on the Drug Court program, those rejected from the program (after placement on it), and those placed in the control group. These analyses controlled for factors which might have biased the outcome of the comparisons (e.g. differences between the groups in terms of age, gender, prior criminal record and prior imprisonment).

In this second set of analyses, non-terminated Drug Court participants performed better than treated subjects whose program had been terminated, and better than control group subjects, in terms of both free time to the first offence and offending frequency (per unit of free time) for shop stealing, other larceny, and unlawful possession. Non-terminated Drug Court participants also performed better than terminated treated subjects on both of the free time recidivism measures for break, enter and steal.

Similar results to those described above were obtained for elapsed time. Non-terminated treated subjects took longer than terminated treated subjects to the first theft or drug offence dealt with in court. They also had lower overall rates of theft and drug offences.

The estimated total cost of the Drug Court program for the 309 participants who formed part of the cost-effectiveness analysis was $13,495,727. More than half of this amount ($8,805,146) was expended on individuals who were terminated from the Drug Court program.

Although health care treatment ($3,352,341) and court attendances ($2,846,362) were the single most important contributors to the overall cost of the Drug Court program, the cost of sanctioning those placed on the program ($1,417,677) was also significant.

The cost per day for an individual placed on the Drug Court program ($143.87) was slightly less than the cost per day for offenders placed in the control group and sanctioned by conventional means ($151.72).

There was little difference between the Drug Court and conventional sanctions in terms of their cost-effectiveness in increasing the time to the first offence. There was a larger difference between the alternatives in terms of the cost-effectiveness of reducing the rate of offending. It cost nearly $5,000 more for each shop stealing offence averted using conventional sanctions, and additional $19,000 for each possess/use opiates offence averted, than it cost using the Drug Court program.

Future efforts to improve the cost-effectiveness of the NSW Drug Court should seek to (a) improve its ability to identify offenders who will benefit from the program (b) terminate the Drug Court involvement of those unsuited to the program at an earlier point in time (c) improve the match between offenders and treatment programs (d) develop more realistic graduation criteria and (e) improve the level of coordination between agencies involved in the program.

ABBREVIATIONS

AGD	NSW Attorney General's Department
AHS	Area Health Service
CHS	Corrections Health Service
CSO	Community Service Order
DCS	NSW Department of Corrective Services
DPP	Office of the (NSW) Director of Public Prosecutions
MRRC	Metropolitan Reception and Remand Centre
NSW	New South Wales
P&P	Probation and Parole
SWAHS	South Western Sydney Area Health Service
US	United States of America
WAHS	Wentworth Area Health Service
WSAHS	Western Sydney Area Health Service

INTRODUCTION

This is the final report in a series of six evaluating the NSW Drug Court (hereafter 'Drug Court') program. The first report (Freeman, Karski & Doak 2000) provided summary data on the operation of the Court during its first twelve months of operation. The second report (Briscoe & Coumarelos 2000) extended the analysis of program flows and participant characteristics into the first 17 months of the Court's operation. The third report (Freeman 2001) provided interim findings from a study into changes in the health and social functioning of Drug Court participants. The fourth report (Freeman 2002) completes the analysis of changes in health and social functioning. The fifth report (Taplin 2002) presents a process evaluation of the Drug Court. The present report examines the cost-effectiveness of the Drug Court.

The stated aim of the NSW Drug Court is to 'reduce the level of criminal activity that results from drug dependency' (*NSW Drug Court Act 1998*, s.3). The effectiveness of the Drug Court program in reducing crime is therefore clearly central to any assessment of whether the Act is achieving its stated purpose. The Drug Court program is specifically designed to provide a new sentencing alternative for those whose crime is drug-related. For this reason it makes sense to judge the success of the Drug Court by comparing it, in terms of cost-effectiveness, with conventional sentencing alternatives. The present study does this by comparing the cost-effectiveness of the Drug Court in reducing re-offending with that of a randomised control group deemed eligible for the Drug Court program but, due to a shortage of places on the program, sanctioned in the conventional way.

The report is divided into four main sections. In the remainder of this chapter we review the literature on the effectiveness and cost of drug courts in reducing crime and describe the structure and operation of the NSW Drug Court program. In the chapter which follows we provide a detailed account of the methods used to evaluate the cost and effectiveness of the NSW Drug Court in comparison with traditional sanctions. In the third chapter we present the results of our evaluation, first in terms of effectiveness and then in terms of cost-effectiveness. In the final chapter we summarise our findings and discuss their policy implications.

PREVIOUS RESEARCH

Effectiveness

Drug courts emerged in the United States (US) in response to the rapid growth in arrests and build up in court backlogs which followed the US 'War on Drugs'. Between 1984 and 1999, the number of defendants charged with a drug offence in US Federal courts rose from 11,854 to 29,306. This growth in the number of people prosecuted and imprisoned for a drug offence might have been enough on its own to force a rethink of the cost-effectiveness of conventional sanctions in managing drug-related crime. As it happened, the rapid growth in prisoner numbers coincided with rising bureaucratic and political scepticism about the effectiveness of prison in dealing with drug offenders (US Department of Justice 1997, p. 6).

Drug courts proved to be an extremely popular solution to this problem. The first drug court was established in Dade County in Florida in 1989. By 1994 there were 41 drug courts operating in the US. By the end of 1995 that figure had doubled. By the end of 1997 it had doubled again (General Accounting Office 1997). Estimates vary but by 1998 there

were somewhere between 200 and 420 drug courts operating in the United States (Inciardi, McBride & Rivers 1996; General Accounting Office 1997) and several other countries have since followed the US lead. The United Kingdom passed the Crime and Disorder Act in 1998, creating scope for the introduction of a drug court program in that country. Drug courts are also being established in Ireland and Canada (Freiberg 2000). At the time of writing, New South Wales, Victoria, Queensland, Western Australia and South Australia have all either introduced or are introducing some form of drug court (Freiberg 2000; Makkai 1998).

Drug court programs are a form of 'coerced treatment'. Coerced treatment is not a new development (see Hall 1997). Courts in the US (and elsewhere) have been referring offenders with alcohol and drug problems to treatment for decades, whether as a condition of bail or on the promise of less severe punishment. Drug court programs differ from other forms of coerced treatment in that participants in such programs are typically supervised by a team of people (usually the defendant's legal representative as well as representatives from the prosecution, probation and treatment services), led by the sentencing judge. They are subjected to very intensive supervision, often including frequent and/or random urine checks. Non-compliance with program rules is usually attended by some form of immediate sanction. Progress in achieving program goals is also often explicitly rewarded.

There are good reasons for expecting drug courts to be effective in reducing drug-related crime. Research has shown strong direct and indirect links between drug use and frequency of offending (Blumstein, Cohen, Roth & Visher 1986). Treatment has been shown to be effective in reducing drug consumption and crime (Hall 1996; Hall 1997). Retention rates appear to be higher in coerced than in voluntary treatment (Belenko 1998, p. 19) The intensive supervision, clear rules and sanctions and rewards which characterise drug courts would seem to maximise the likelihood of retention in treatment. Research has shown that treatment outcomes are generally better, the longer drug users are retained in treatment (Anglin 1988 cited in Belenko 1998). It seems reasonable to suppose, then, that coercing drug users into treatment should reduce their drug use and thereby reduce their levels of criminal activity.

The proliferation of drug courts has been accompanied by a burgeoning research literature on their effectiveness. Before reviewing this literature it should be pointed out that the political impetus for the creation of drug courts in Australia has had far more to do with widespread public concern over drug-related crime than with public, political or judicial concern over the effect of drug arrests or drug laws on court congestion. Thus while many US evaluations of drug courts have examined their impact on court efficiency, in what follows, we deal solely with research into the effectiveness or cost-effectiveness of drug courts in reducing drug use and drug-related crime.

A number of reviews of the drug courts have been conducted (e.g. Prendergast & Maugh 1995; Bean 1996; Brown 1997), however the leading reviews have been conducted by Belenko (1998; 2001). In his first review Belenko (1998) examined some 30 evaluations covering 24 drug courts. On the basis of this review Belenko (1998, p. 27) concluded that drug courts are effective in reducing drug use and criminal behaviour while participants remain on the program (Belenko 1998, p. 33). In his follow-up report (Belenko 2001) Belenko reviewed evaluations published between June 1999 (the cut-off date for his first report) and April 2001, and reached essentially similar conclusions. As he himself points out, however, many evaluations of drug courts are marred by serious methodological weaknesses. Those which do suffer from these weaknesses, do not uniformly produce encouraging findings. In what follows we restrict ourselves to evaluations published in refereed journal articles.

Goldkamp (1994), for example, found that participants in Miami's drug court had lower recidivism rates than individuals prosecuted for non-drug felony offences and individuals prosecuted for felony drug offences not dealt with by the drug court. That study, however, made no allowance for differences between the groups in time over which they were followed up. Nor was there any report of efforts to control for pre-existing differences between the groups in risk of re-offending.

Gottfredson, Coblentz & Harmon (1997) reported lower recidivism rates among participants in the Baltimore Drug Court program than among a group of defendants whose offences were known to have drug or alcohol problems and who were matched with the Drug Court group in terms of offence, age, gender and follow-up period. However, although Gottfredson et al. acknowledge the existence of numerous other differences between participants in the Drug Court program and regular probationers (Gottfredson et al., 1997, p. 35) no attempt was made to control for these differences in analysing the recidivism data.

Vito and Tewksbury (1999) reported lower recidivism rates among participants in Kentucky's drug court program than among those deemed eligible for the program but who elected not to participate in it. But the lower recidivism rate among Drug Court participants may simply reflect the fact that those who elected to participate in the program were more motivated to reduce their drug use and criminal activity than those who elected not to participate in it.

Applegate and Santana (2000) evaluated the effect of Orange County's Juvenile Drug Court program by comparing recidivism rates among those who participated in the program and were not breached with those who were placed on the program but later expelled from it. Re-offending rates were lower among Drug Court participants than among those who were rejected from the program. Drug Court participants also took longer, on average to re-offend. Given that re-offending may be one of the reasons for expulsion from the program, however, these results are hardly surprising.

The better conducted studies have produced more mixed results, but many of these studies also have design problems.

Granfield, Eby & Brewster (1998) evaluated the Denver Drug Court program. This program involved seven different treatment levels, each representing progressively stricter treatment regimes. Level 1 involved no treatment other than 'normal' supervision. The seventh level was reserved for offenders who are judged to be at extremely high risk of offending and who showed evidence of psychopathology. Standardised tests were employed on entry to allocate offenders to appropriate treatment levels. For the purposes of the evaluation participants in the Denver Drug Court program were treated as one group although no participants were included who had been placed on treatment level seven. For reasons not explained by Granfield et al. these individuals are not monitored by the Denver Drug Court after their treatment assignment.

To evaluate the program Granfield et al. compared parole revocations and rearrest rates among a random sample of drug court defendants and two random samples of defendants charged with narcotic offences in Denver prior to the establishment of the drug court. The two comparison samples differed only in that one was drawn from court filings during 1992-93 and the other was drawn from court filings during 1993-94. No significant differences between the treatment group and the comparison groups were found in relation to gender, age or previous criminal history. Offenders were followed up for a period of twelve months.

The results of this evaluation revealed no significant differences between the treatment group and either of the two comparison groups in terms of the frequency of parole revocation, time to first revocation, proportion rearrested or frequency of rearrest. However the authors of the evaluation claim that the Denver drug court produced monetary savings of between $360.00 and $840.00 per offender because of the relatively shorter periods of pre-sentence custody experienced by those placed on the drug court program (in comparison with those in either of the two control groups).

Miethe, Lu and Reese (2000) evaluated the Las Vegas Drug Court. To conduct their evaluation they examined court re-appearance rates during 1997 for a group of 301 individuals placed on the Drug Court program during 1995 and a control group of 'equivalent' size drawn from persons charged with drug offences during that year and dealt with in the 'general district' courts. Court re-appearance rates were not examined during 1996 because some of the comparison group were imprisoned in that year. To control for this differential exposure to risk of re-offending, court re-appearance rates during 1996 were employed as a control variable, along with other factors likely to bias the outcome of the comparison (e.g. gender, race, age, prior convictions and number and nature of charges).

A subsequent regression analysis of differences between the two groups in the proportions who had had one or more court appearances during 1997 revealed that Drug Court participants were significantly and substantially more likely to re-appear in court than members of the comparison group. Superficially, such a result suggests that some form of selection bias may have been operating in which those more likely to re-offend were more likely to obtain a placement on the Drug Court program. Miethe, Lu and Reese dismiss this explanation on the grounds that their analysis 'controlled' for pre-existing differences between experimental and control groups in risk of re-offending. Instead, they ascribe their findings to the 'stigmatic' nature of the Drug Court program, invoking Braithwaite's (1988) theory of reintegrative shaming in defence of this explanation.

Whatever the merits of this explanation it remains possible that some form of selection bias is the explanation for their surprising findings. The variable they employed to control for prior criminal record was a dichotomous one, simply indicating whether or not the defendant had a prior criminal record. This measure may not have been adequate to control for differences in the length or seriousness of prior criminal history among treatment and control subjects. Their somewhat curious decision to control for differences in re-offending during 1996 (i.e. when some of the control group were imprisoned) may also have resulted in those with a higher risk of re-offending being mistakenly treated as at lower risk. This would have distorted the between-group comparison for 1997.

Brewster (2001) examined the Chester County Drug Court program in South Eastern Pennsylvania comparing 184 Drug Court participants with a sample of 84 similar offenders 'who would have been participants had the program been in existence when they were prosecuted' (Brewster 2001, p. 181). This study is noteworthy for the detail provided by the author on characteristics of the treatment and control groups. Unfortunately important demographic data were missing for many subjects. The demographic data they were able to collect suggested that both groups were fairly comparable. However the Drug Court sample had a lower unemployment rate at intake than the control group and also included a larger proportion of defendants with prior convictions for non-violent crimes.

The study results showed that the Drug Court sample had lower annualised arrest rates and spent a smaller proportion of the follow-up time in prison compared with the control group. Rates of positive drug tests were also lower for the Drug Court sample than for the control group although, as Brewster herself notes (p. 188), this could be because members

of the control group were only tested when they were suspected of using illegal drugs. Overall, the results are consistent with the hypothesis that Drug Courts are a more effective means of reducing drug use and drug-related offending than regular probation. Once again, however, the possibility remains that pre-existing differences between treatment and control groups were responsible for the findings.

Deschenes, Turner and Greenwood (1995) conducted one of the first genuinely experimental evaluations of a drug court. They evaluated the Maricopa County First Time Drug Offender (FTDO) program for defendants recording their first conviction for possession of drugs or drug paraphernalia. The program lasted between six and twelve months and featured social skills training, drug education, training in relapse prevention and group therapy. Participants were subjected to random (urine) drug testing and could earn points for clean urine and completion of particular program components. Based on the point total, participants could receive rewards, including a reduction in their probation sentence, deferred 'gaol' time and graduation to the next phase of the program. Failure to accumulate sufficient points could result in participants having to repeat a treatment phase or receive sanctions, including a custodial sanction.

Eligibility for the program was determined by the sentencing judge on the basis of referrals and advice from the Maricopa County Probation Service. To evaluate the program Deschenes et al. randomly allocated 639 defendants deemed eligible by the sentencing judge for the program to one of four 'tracks' (groups). The first three tracks were standard twelve-month probation sentences varying only in the intensity of the drug testing schedule. The fourth track was the FTDO program. In their analysis of the data Deschenes et al. only report the comparison between the 176 individuals placed on the FTDO program and the 454 placed on probation. Their primary outcome measures were the percentage of subjects testing positive for drug use and the proportion rearrested for a new offence in the first twelve months.

Almost half of all probationers in both the FTDO program and those on regular probation, tested positive to at least one substance during the twelve-month follow-up. Members of the FTDO group were less likely than the probation group to test positive for heroin or cocaine but were more likely to test positive for cannabis. There were no significant differences between the FTDO group and the probation group in terms of arrest rates, but members of the FTDO group had committed fewer technical violations of their sentencing orders than those in the probation group. They were also found to be less likely to be reimprisoned for a further offence.

Breckenridge, Winfree, Maupin and Clason (2000) also conducted an experimental evaluation of a Drug Court program. They examined the effectiveness of a single municipal court program in New Mexico designed to reduce recidivism among first-time drink-drivers. Specially trained court personnel screened convicted offenders for symptoms of alcoholism. Those designated as alcoholics on the basis of this screening were placed at random into a treatment (*n*=39) or control group (*n*=36). A third comparison group was also created by taking a random sample of those deemed non-alcoholic (*n*=77). The reconviction rates of all three groups were then determined over a minimum of 15 and a maximum of 24 months. The study findings indicated that alcoholics placed in the treatment group were less likely than those placed in the control group to be reconvicted for an alcohol-related or serious offence.

Peters and Murrin (2000) evaluated the Escambia and Okaloosa County Drug Court programs in Florida. Separate groups of 168 Drug Court participants from the Escambia program and 58 participants from the Okaloosa program were identified for inclusion in the outcome study. Untreated comparison groups were formed from persons sentenced to

probation and placed in the community because of drug-related charges. Each Drug Court participant from the two programs was matched to a non Drug Court probationer on the basis of county of residence, gender, race/ethnicity and type of offence. Although the samples were quite similar on the major demographic variables, the Drug Court groups generally had more arrests than the comparison groups over the preceding twelve months.

The results of the Peters and Murrin study indicated that, controlling for differences in prior criminal history, the two Drug Court groups were significantly less likely to be re-arrested and had fewer arrests than the control group in equivalent follow-up periods. Survival analysis also indicated that those arrested generally took longer to be arrested than members of the control group. Those who remained on the program also took longer to be re-arrested than those who failed and were removed from the program. While Peters and Murrin speculate that the results may have come about because Drug Court group members were more motivated to reduce their drug use and crime, the results of their study (and that of Deschenes, Turner and Greenwood discussed above) provide some of the clearest evidence, to date, that Drug Court programs can be effective in reducing drug-related crime.

Spohn, Piper, Martin and Frenzel (2001) conducted an equally rigorous evaluation of the Nebraksa Drug Court program but obtained somewhat different results. They compared a group of Drug Court program participants with a group of felony drug offenders assigned to a different Pre-Trial Drug Diversion program (involving less intensive supervision than the Drug Court) and a group of traditionally adjudicated individuals convicted of drug offences. Offenders in all three groups were matched on most serious offence, gender and race/ethnicity, but it proved impossible to match them on prior criminal record. Traditionally adjudicated offenders had more serious prior criminal records and diversion group offenders had less serious prior criminal records than participants on the Nebraska Drug Court program. The proportion re-arrested, the frequency of rearrest and the time to first arrest were examined for all three groups over a follow-up period of twelve months.

Spohn et al. found that Drug Court participants were significantly less likely than traditionally adjudicated offenders to be arrested during the follow-up period, even after the offender's age, race/ethnicity and prior criminal record were taken into consideration. The same analysis, however, revealed that members of the Drug Diversion program performed better than members of the Drug Court group although, when a special measure of prior risk of offending was included as a covariate in the analysis, this difference disappeared. This measure of prior risk was not available for traditionally adjudicated offenders. However, when the analysis was restricted to non-felony drug offenders, Drug Court participants still performed better than traditionally adjudicated offenders on all three recidivism measures. Overall, Spohn et al.'s analysis suggests that the Nebraska Drug Court may have been more effective in reducing drug-related crime than traditional sanctions but was not demonstrably more effective than the other Drug Diversion program they examined.

Cost

To date, there has been no reported cost-effectiveness analysis of a drug court, either in Australia or overseas. Some evaluations have obtained cost information but all of them were conducted in the US. Belenko (2001) provides the most thorough review of this material and, since the material he reviewed is not contained in published reports, we draw heavily on his work in what follows. It should be noted, however, that US estimates

of the cost of a drug court relative to conventional sanctions are of limited value in the Australian context for two reasons. Firstly, Australian courts are generally far less punitive than US courts in their response to people arrested for drug and drug-related offences. Secondly, whereas most drug court treatment regimes in the US are abstinence-based, the NSW Drug Court makes substantial use of pharmacotherapies such as methadone maintenance treatment, which have been shown to be successful in reducing recidivism by drug-dependent offenders (Hall 1996). These kinds of treatment are generally more expensive than abstinence-based therapies.

Belenko lists five evaluations providing information on the cost of processing offenders through a drug court (see Belenko 2001, pp. 41-43). The first estimated the cost of drug court processing at $21.55 per case but obtained this figure simply by dividing the total drug court budget by the number of clients admitted. As Belenko (2001, p. 41) points out, this would have greatly underestimated the cost of drug court processing because it excluded the cost of gaol sanctions and may also have excluded the cost of treatment. The second evaluation estimated the cost of a processing a drug court defendant at $3,900 compared with $6,950 in gaol costs alone for similar offenders who had been imprisoned. The third estimated the total criminal justice and treatment cost per case of drug court processing at $4,352, compared with $8,358 for traditional adjudication and $808 for diversion. The fourth estimated the cost of drug court processing (including both criminal justice and treatment costs) at $30,423 compared with $40, 678 for a group of offenders traditionally adjudicated. The last attempted a cost benefit analysis of drug court processing and concluded that each drug court defendant processed by the drug court resulted a net saving of $5,557.

While these results might seem to suggest that (at least in the US) it may be less expensive to deal with offenders though a drug court regime than through conventional sanctions, no confidence can be placed in this conclusion. According to Belenko (2001) existing studies providing cost information generally do not provide much detail about the sources of cost information. It is therefore difficult to judge which cost components have been included and which excluded. Yet the relative costs of drug court processing and conventional sanctions clearly depend upon the level and type of treatment and supervision provided by the drug court and the severity of the conventional sanctions. They also depend upon the relative effectiveness of drug courts and conventional sanctions in reducing recidivism. These can vary widely from court to court.

THE NSW DRUG COURT

The NSW Drug Court commenced in February 1999 as a pilot program with a randomised control study design. The first participant commenced on 8 February. Although the program is continuing, for the purposes of this evaluation the last participant included in the trial was accepted on 30 June 2000. The Drug Court operates in western Sydney and is fed by referrals from western Sydney's 11 Local and 4 District Courts. The NSW Drug Court Act 1998 and accompanying regulations govern conditions of entry, conduct and termination from the program.

The trial was established to address the question of whether the Drug Court is more effective and cost-effective in reducing crime among drug-dependent criminal offenders than the conventional sanctions.

Under section 5 of the Drug Court Act, in order to participate in the Drug Court trial an individual must:

- be charged with an offence under the jurisdictions of the Local and District courts, excluding charges of physical violence, sexual assault or drug trafficking;

- be dependent on illicit drugs;

- be willing to plead guilty to the offence with which they have been charged;

- be highly likely to be sentenced to full time imprisonment;

- be willing to participate in the Drug Court;

- be a resident of the area in which the Drug Court operates; and

- not be suffering from any mental condition that could prevent or restrict the person's active participation in the program.

Overall, the process a participant goes through in the Drug Court is a complex one, depicted in Figure 1. This process is discussed in more detail in the remainder of this section.

Court referrals and the conventional judicial process

Referrals to the Drug Court may be made from either Local or District Courts in the catchment area. Matters referred to the Drug Court are then dealt with by that court, provided that the individual meets the eligibility criteria and is accepted onto the program. Matters for persons not accepted onto the program may be dealt with by the Drug Court but are usually referred back to the originating court for dispensation.

The process of referral to and from the Drug Court is outlined in Figure 2. For the purpose of evaluating cost-effectiveness, it is important to understand the referral process because it determines where participants who were part of the trial used resources outside of the Drug Court. For example, a person meeting the eligibility criteria but not accepted onto the Drug Court program is likely to have had their original charge heard in the Local Court from which they were referred. In that instance there is an additional occasion of court use which must be included in estimating resource use. Understanding the process of referrals is therefore an important aspect of ensuring that all resource use is captured.

Participant classification in the trial

As indicated in Figure 1 and Figure 2, there are a number of points at which participants could be either included or excluded from the Drug Court trial program.

After referral to the Drug Court individuals are given a preliminary health assessment to determine their eligibility for the program. Those found to be eligible must then undergo detoxification before formally entering the Drug Court program. The number of available places in detoxification limits the number of persons who can be accepted into the Drug Court program at any one time. During the Drug Court trial, allocation to the program was therefore based on the number of detoxification places available at the time of assessment. If there were sufficient places available for all the potential participants appearing before the court, then all were accepted into detoxification. If, however, there were more potential participants than available detoxification places, eligible individuals were randomly allocated to the available detoxification places.

Figure 1: The NSW Drug Court process


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Referred          Drug Court      No position or ineligible    Local / District              Not guilty
from              assessment                                    Court
Local/District                    Matter may be finalised
Court                             in Drug Court

     │                 │                                             │                           
     │                 ▼                                             ▼
              Detoxification                                   Sentencing
              Treatment plan
                       │                                ┌──────────┴──────────┐
                       ▼                                ▼                     ▼
              Drug Court -                        Gaol sentence        No gaol sentence
              sentencing
                       │
                       ▼
              Drug Court visits:
              progress reports,
              monitoring and
              reports back to court
              Treatment:
              community, residential
              rehabilitation treatment
              day programs
              Monitoring:
              urinalysis - frequency
              depends on phase; visits by
              Probation and Parole case
              workers
              Counselling:
              employment, vocational
                       │                                     │                     │
                       ▼                                     ▼                     ▼
              Sanctions -                              Released              Probation / bond
              for non-compliance with                  from gaol
              conditions of the Drug Court
              ┌────────┴────────┐
              ▼                 ▼
         Graduation     Not graduated -
                        left program;
                        terminated
                        Potential time in gaol
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Follow-up

During the detoxification stage an assessment of each individual's treatment needs is conducted and, where possible, a suitable treatment plan is formulated. After detoxification, those individuals who remain willing to enter the program and for whom a suitable treatment plan is formulated, then enter the Drug Court program. The program formally starts when the individual appears before the Drug Court, enters a guilty plea, receives a sentence that is suspended, and signs an undertaking to abide by his or her treatment conditions. If the participant's involvement with the program ceases, either because the individual voluntarily withdraws from the program or because the

Figure 2: Court referrals and the judical process

Summary matters

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                         ┌──────────────┐
                         │    Police    │
                         └──────┬───────┘
                                │
                                ▼
                         ┌──────────────┐
                         │  Local Court │
                         └──┬───────────┘
                            │        Referral
              ┌─────────────┘              └──────────┐
              ▼                                        ▼
    ┌──────────────┐   Not accepted to Drug Court -  ┌──────────────┐
    │ Local Court -│◄──  Matter may be finalised    ─│  Drug Court  │
    │Matter dealt  │        in Drug Court            └──────┬───────┘
    │    with      │                                        │
    └──────────────┘                   Accepted to Drug Court
                                                            ▼
                                                 ┌──────────────┐
                                                 │  Drug Court  │
                                                 │   program    │
                                                 └──────────────┘
```

Indictable matters

```
                         ┌──────────────┐
                         │    Police    │
                         └──────┬───────┘
                                │
                                ▼
                         ┌──────────────┐
                         │ Local Court -│
                         │  Committal   │
                         └──┬───────────┘
                            │        Referral
              ┌─────────────┘              └──────────┐
              ▼                                        ▼
    ┌──────────────┐      Referral          ┌──────────────┐
    │District Court│──────────────────────►│  Drug Court  │
    └──────┬───────┘                        └──────┬───────┘
           │          Not accepted to Drug Court -        Accepted to Drug Court
           │            Matter may be finalised                  │
           ▼               in Drug Court                         ▼
    ┌──────────────┐                               ┌──────────────┐
    │District Court│◄──                            │  Drug Court  │
    │- Matter dealt│                               │   program    │
    │   with       │                               └──────────────┘
    └──────────────┘
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participant's program is terminated by the Drug Court, the Drug Court Judge reassesses the sentence and the participant may be required to serve any remaining portion of that sentence deemed appropriate by the Drug Court Judge.

Figure 3: Pathway for determining Drug Court participation
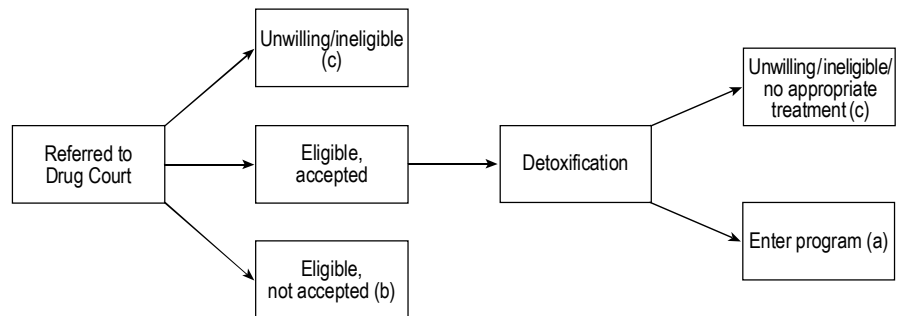
a = Treatment group (313)
b = Control group (201)
c = Excluded from trial (172)

Figure 3 illustrates the pathway to determining whether or not a person referred to the Drug Court actually enters the program.

For the purposes of measuring costs in this evaluation, participants can be classified into three groups:

- the treatment group (denoted by (a) in Figure 3) – these are participants who met all the eligibility criteria, underwent detoxification and were allocated a place on the program;

- the control group – those individuals who met the criteria, and were willing to accept the treatment but for whom there was no place available in detoxification (denoted by (b)); and

- individuals referred to the Drug Court but who were assessed to be unwilling / ineligible either before or after detoxification, or those for whom there was either no treatment position available, or no suitable treatment plan available, following detoxification (denoted by (c)).

Resource and service flows[1]

The multi-disciplinary nature of the Drug Court adds to the complexity of the evaluation. Understanding the structure of the Drug Court is important in the context of the economic evaluation in that it identifies potential sources of resource use and it provides an opportunity to identify where changes have occurred in the structure of the Drug Court and in the combination of services provided as the court has evolved. A detailed description of the structure of the NSW Drug Court, its components and the roles of its various players can be found in the first report by the Drug Court of NSW Review Committee (1999). This structure is summarised in Figure 4.

Figure 4: Structure of Drug Court resource flows and services
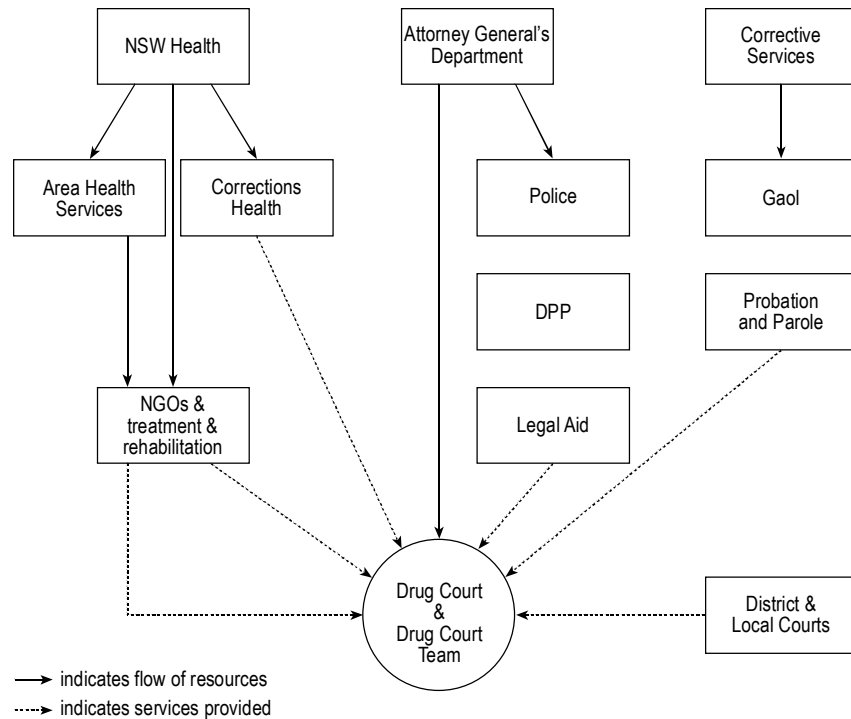
At the highest aggregate level, all funding for the conduct of the Drug Court program is provided by the NSW Treasury. Participants in the program are not directly charged, nor do they contribute directly to funding of the program.

Several of the key agencies within the program were provided with funding specifically for the conduct of the program, while others funded services to the Drug Court from their own budgets. For some agencies funding was from a combination of sources. The Attorney General's Department (AGD), Probation and Parole (P&P), the Office of the NSW Director of Public Prosecutions (DPP), and Legal Aid services were provided with funds for the Drug Court. The Department of Corrective Services (DCS) received some funds for additional custodial staff but the majority of expenditures for incarceration and transport services were funded from existing budget allocations.

During the evaluation period the NSW Department of Health (NSW Health) was not provided with funding specifically for the conduct of treatment for Drug Court participants. Funding for health care services and treatment has thus been provided from within existing NSW Health budgets. Within that structure, the Area Health Services (including the Corrections Health Service), who are responsible for the actual provision and coordination of health care services, are provided a Drug Court budget from the Department. This is allocated for the provision of counselling services, day programs, dispensing of pharmaceutical products, diagnostic services and, in some instances, the provision of housing services to Drug Court participants. Residential rehabilitation services are provided by a number of non-government organisations. These services are funded by NSW Health on an occasion-of-service basis.

METHOD

ECONOMIC EVALUATION

Economic evaluation can be defined as the systematic comparison of both the costs (i.e. resource inputs) and the consequences (i.e. outputs or benefits) of alternative courses of action (Drummond, O'Brien, Stoddart & Torrance 1997). One form of economic evaluation, cost-effectiveness analysis, is frequently used to evaluate health and other services. Unlike cost-benefit analysis – in which the consequences are valued in monetary terms – in cost-effectiveness analysis the consequences of health programs are measured in the most appropriate natural or physical units (such as 'years of life gained', 'deaths prevented', or 'cases detected'). Although cost-effectiveness analyses traditionally consider a single measure of output, increasingly they use a range of output measures. It is then left to the decision-maker to form their own view about the relative importance of the different outcome measures.

An important implication of this is that a single program or treatment cannot be judged as 'cost-effective' in its own right. Instead, the results of cost-effectiveness analyses allow explicit statements to be made about *the relative cost-effectiveness of specified alternatives*: at the simplest level for example, that they are more or less costly than each other, and that they are more or less effective. Also, in those situations where a particular health program is shown to be both *more costly and more effective* (than a particular alternative), it is possible to calculate how much more it costs per *additional* unit of effectiveness in choosing the more effective program. (This is what health economists call an 'incremental analysis'.)

It should be stressed that cost-effectiveness analyses, on their own, rarely produce 'an answer' in terms of indicating the most cost-effective course of action. Their results are intended to be decision-informing, rather than decision-making (Russell, Gold, Siegel, Daniels & Weinstein 1996). Ultimately the choice between alternatives requires some decision rule based on either maximising effectiveness for a known fixed budget, or minimising the costs of achieving a certain target level of effectiveness. For example, in a particular health or legal system, interventions which cost under $50,000 per life-year saved or per further offence avoided might be regarded as 'worth paying for', whereas interventions which cost more than $100,000 per life-year saved or further offence avoided might be regarded as not worth paying for. Another very good reason for viewing cost-effectiveness analysis as a decision-informing rather than decision-making policy tool, is that the method only generates data about the *average efficiency* of alternatives. It therefore says nothing about the alternative programs in terms of their impact on equity, feasibility, and other criteria which policy makers need to consider.

In this project, the costs of both treatment and control groups are calculated and the relative cost-effectiveness of the Drug Court (i.e. the differences between treatment and control groups in terms of costs and rate of recidivism) are estimated. Two measures of recidivism are used: the average number of offences per unit of time and the average time to first offence. Each measure is calculated for two selected offence types, shop stealing and possess/use opiates. These offence types were selected as marker offences for the drug-related offences targeted by the Drug Court program.

It is important to make the perspective taken in an economic evaluation explicit. The choice of perspective determines what costs and effects to count and how to value them.

The broadest perspective is a social perspective, which includes all costs and effects regardless of who incurs the costs and who obtains the effect (Gold, Siegel, Russell & Weinstein 1996). In terms of the Drug Court program, this might include all costs incurred by the participant in health, justice, police, social services and all the costs of crime. In theory, given the impact of drug addiction on partners, parents, children and victims of crime, it might also include health and social services costs incurred by these groups. At the other end of the spectrum, the perspective of a single provider of services might be chosen, where, for example, only the costs directly incurred by the Drug Court itself were captured.

A 'provider' perspective was adopted for this study where the 'provider' is that of Government and the service being provided is that of 'treatment' (the Drug Court program being the 'treatment'). A societal perspective was not taken in this study for several reasons. The first was that, in a cost-effectiveness analysis, it is difficult to select an outcome measure that captures all benefits to society. Second, the objectives of the commissioning organisation and the resource use data available to conduct the study meant that costs pertaining to the use of police resources, crimes committed and other societal costs were not available.

EFFECTIVENESS

Subjects included in the study

The subjects included in the effectiveness part of this study[2] include all persons who were admitted to the Drug Court program in the period 8 February 1999 to 30 June 2000 and all persons randomly allocated to a control group during this same time period. All persons referred to the Drug Court were assessed for eligibility to enter the treatment program. Allocation to the treatment or control group occurred after this assessment was completed and only for those found to meet the eligibility criteria.

Random allocation to the treatment and control groups was feasible because the number of treatment places available at any one time was limited by the number of available beds in the detoxification units. (Detoxification was required as an initial stage before formal entry to the Drug Court program.) Whenever more persons were found eligible to enter the program than there were available detoxification places, the available places were filled by random selection. The random selection was conducted in the court using calculator-generated random numbers.

It should be noted that one potential source of bias in this allocation process was that there was another opportunity to exclude people from the Drug Court program after the random allocation. A more comprehensive assessment of eligibility for the program was undertaken during the detoxification stage which occurred before formal entry to the program. About 10 per cent of those who went through detoxification did not enter the program for one of the following reasons: (1) they were found ineligible, or (2) they were no longer willing to participate, or (3) no highly suitable treatment program was available. This last group, in some cases, included those for whom no suitable accommodation could be found.

The aim was to recruit at least 300 subjects to the treatment group and at least 200 to the control group. It was originally anticipated that these targets would be achieved in the first twelve months of the Drug Court's operation but recruitment to both groups proved to be slower than anticipated. The period of recruitment of subjects for evaluation was therefore extended to 30 June 2000.

Between 8 February 1999 and 30 June 2000, 313 persons entered the Drug Court program and 201 entered the control group (see Figure 3). However, these counts do not represent unique individuals because there were nine persons who were referred to the Drug Court on two separate occasions. Two of these persons were actually admitted to the Drug Court program twice, that is, they entered the program, then after a period of time had their involvement with the program terminated, and then at a later point were referred a second time and were re-admitted to the program. These two persons were excluded from the study (reducing the number of treated subjects by four). There were three persons who were referred to the Drug Court on two occasions but were assigned to the control group on both occasions. These three persons were also excluded from the study (reducing the number of control subjects by six). The remaining four persons who were referred to the Drug Court program twice were assigned to the control group on the first occasion and were admitted to the program on the second occasion. These four persons were included in the study as treated subjects but not as control subjects. In total, therefore, the study included 309 treated subjects and 191 control subjects, a total sample of 500 subjects.

The earliest date of entry to the Drug Court program for subjects in the treated group was 16 February 1999 and the latest was 28 June 2000. (The dates of preliminary health assessment for these two subjects were 10 February 1999 and 8 June 2000, respectively.) The earliest date of recruitment to the control group was 4 March 1999 and the latest was 28 June 2000.

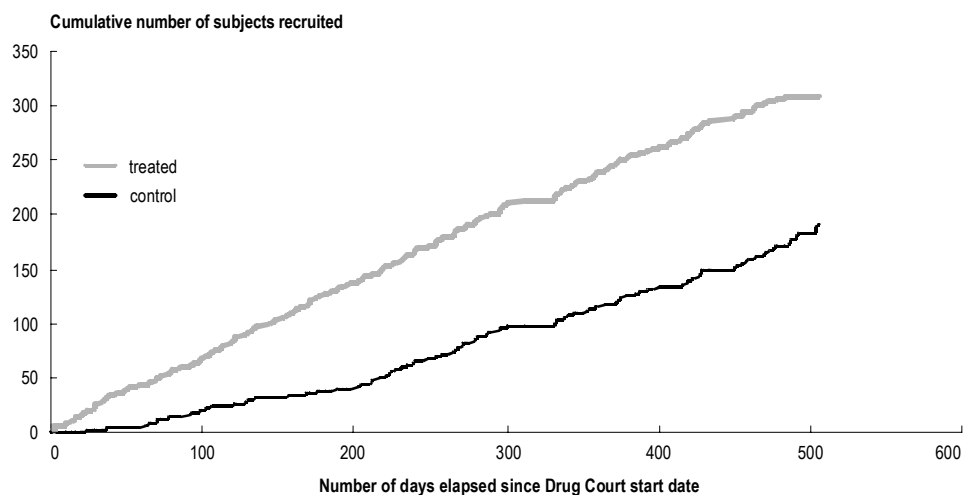**Figure 5: Recruitment of treated and control subjects over time from 8 February 1999 to 30 June 2000**

Figure 5 shows the recruitment of treated and control subjects over time from the start of the Drug Court's operation. The total numbers of persons recruited to date are plotted against the number of days since 8 February 1999, the date the Drug Court began operation. It is clear that, although recruitment to the control group began slowly, after the first couple of months (about 60 days) the rate of recruitment to both groups was reasonably constant over time.

Measures of effectiveness

As earlier noted, two measures of effectiveness were examined, both relating to offences which were committed during the follow-up period and which were dealt with at a court appearance. These measures were the time to the first offence and offending frequency per unit time. These measures of offending, while fairly standard in Drug Court evaluations (see *Introduction*), cannot be regarded as ideal. In essence the measures assume that any differences between treatment and control groups in actual offending will manifest themselves in terms of differences in offences for which the subjects are prosecuted in court. The variation in numbers of offences brought to court may be substantially less than the variation in the number of offences actually committed. To some extent, therefore, our measures of recidivism provide a fairly conservative test of the effectiveness of the Drug Court in reducing crime by Drug Court participants.

The follow-up period for each subject started at the time of the subject's referral to the Drug Court and ended on 30 September 2000. Each person referred to the Drug Court underwent a preliminary health assessment as part of the procedure for assessing eligibility to enter the program. The date of this preliminary health assessment was used as the start date for each person's follow-up period.

Most subjects spent some time in custody during the follow-up period. Indeed, because detoxification was carried out in prison, all of the treated subjects spent at least some time in custody. Because there is no opportunity for a person to offend while incarcerated we considered both total elapsed time and what we call 'free' time (that is, time out of custody) in the follow-up period. The analysis based on total elapsed time takes into account the incapacitation effect of prison, whereas the analysis based on free time provides a direct comparison of the treatment and control groups assuming that they have equal opportunities to offend.

Both measures of effectiveness were calculated for each type of offence considered. Because the aim of the Drug Court is to reduce drug-related crime, theft offences and drug offences were the only offence types examined in this study. The specific theft offences examined were break, enter and steal; fraud; larceny by shop stealing; other larceny; unlawful possession; and motor vehicle theft. Robbery was not included as one of the theft offences because persons charged with violent offences were not eligible to enter the Drug Court program. The specific drug offences examined were possess/use opiates; possess/use cannabis; possess/use other drug; and deal/traffic opiates.

Sources of data

There were three sources of data used for this study. The primary source of data was the Drug Court database, a database maintained by Drug Court staff. This database was the source of information on gender, date of birth, previous imprisonment and prior conviction episodes. All of this information was recorded by Drug Court staff for each person referred to the Court.

Time spent in custody was determined from data provided by staff from the NSW Department of Corrective Services, who used the personal identifying details from the Drug Court database to match with their own records. They provided the dates of entry and exit from gaol for every episode of imprisonment for the matched individuals.

Data on offences committed during the follow-up period were drawn from the database of criminal matters dealt with by the NSW Local Court, a database maintained by the

Bureau of Crime Statistics and Research. An offence was counted for each Drug Court participant and each control subject if:

- the person was a defendant in the Local Court, charged with the offence (regardless of whether the outcome was a conviction or not), and the matter was finalised on or before 31 December 2000;

- the date of offence fell in the follow-up period, that is, it occurred between the date of preliminary health assessment and 30 September 2000; and

- the offence type was a theft or drug offence.

If more than one offence of the same type occurred on the same day it was counted only once. This rule was adopted because police can charge persons with more than one offence relating to the same incident.

The Drug Court database was also used as a source of information on offences during the follow-up period because the Drug Court dealt with some of the offences committed by participants during their program.

Some offences may have been dealt with in the NSW District Court rather than the Local Court. However, it was not feasible to use this data source, firstly because many months can elapse before a matter is finalised in the District Court and, secondly, because date of offence is not recorded in the District Court database. At least 95 per cent of criminal prosecutions in NSW are dealt with in the Local Court. Hence the impact of excluding offences dealt with in the District Court is likely to be negligible.

COSTS AND COST-EFFECTIVENESS

The evaluation process

The purpose of the evaluation of the costs and consequences of the NSW Drug Court is to answer the question of whether it is more cost-effective in terms of reducing recidivism among drug-dependent offenders than the conventional system.

In this project, the costs of both treatment and control groups were calculated and the relative cost-effectiveness of the Drug Court (i.e. the differences between treatment and control groups in terms of costs and rate of recidivism) was estimated. In addition, the costs of treatment were compared with the judicial and incarceration costs that would have been incurred by the treatment group had they served their original sentence rather than enter the Drug Court program.

While it is recognised that the cost of recidivism is important (and may be substantial), it has not been included in the costs for the cost-effectiveness measure because recidivism is the outcome measure. Including the costs of recidivism in the numerator would be double counting (Gold et al. 1996, p. 306).

As discussed earlier, the evaluation is conducted from a provider perspective. Costs included were those incurred by the NSW Attorney General's Department (AGD), the Western Sydney Area Health Service (WSAHS), the Wentworth Area Health Service (WAHS), the South Western Sydney Area Health Service (SWAHS), the Corrections Health Service (CHS), the Office of the NSW Director of Public Prosecutions (DPP), Legal Aid, Police (direct contribution to Drug Court), and the NSW Department of Corrective Services (DCS) including Probation and Parole (P&P). Cost savings, such as reduced law enforcement costs due to lower recidivism rates, productivity changes, or downstream changes in court costs were not included. In addition, this evaluation did not attempt to estimate the cost of crime itself (property, welfare transfers and insurance costs).

Costs for both the treatment and control groups were estimated from the time a participant was first assessed for inclusion in the Drug Court program to the time they completed the program or until 31 December 2000 (if a participant was still in the program). It should be noted that the completion of the program was defined as the end of any sentence for the offence(s) for which the participant was assessed for the Drug Court program. For the treatment group this was the final sentence following termination or graduation from the Drug Court, and for the control group it was the original sentence. Out of pocket costs to program participants – including transport costs, time off work, child care expenses, medical expenditures and other expenditures as a result of meeting program requirements were not estimated for the purposes of this evaluation.

Within economic evaluations, the appropriate notion of cost is opportunity cost, that is, the value of the alternatives forgone. Identifying real resources used is therefore important. Simply using budget and accounting information may not capture true opportunity costs. Different methods of allocating fixed and overhead costs may further complicate the process of estimating costs.

The approach used in this evaluation follows standard costing techniques used for economic evaluations: identify the activities to be costed; identify the types of resources used in those activities; measure in physical units the volume of resources used and, finally, apply a standard unit cost to those resources to estimate a value for resource use. In each of these steps there is a trade-off between precision, generalisability and cost of data acquisition.

There are a number of methods by which costs can be calculated. They range from micro costing (in which resource use is costed at the level at which resource use occurs) to macro costing (in which budget allocations are divided amongst the use of resources). The former is potentially time consuming and costly to undertake, while the latter may only provide an estimate of the average cost per case and may not provide any indication of the fixed and variable costs of service provision. This can result in inaccurate estimates of the costs of expanding or contracting a service.

A combination of micro and macro costing methods were used to estimate costs for the Drug Court. Where possible, resource use per participant on specific activities, such as the conduct of urinalysis was collected. Where individual based information was not available, global expenditures were allocated to the individual level using an algorithm of time on the program and frequency of contact. At each level, cost estimation was based on an understanding of the activities of the program and how they relate to individual

participants. Activities, and therefore resources, related to both health care and the judiciary were estimated. The broad activity categories and sub-activities are listed in Table 1. The table is not comprehensive but provides an illustration of the types of activities that drive resource use within the Drug Court.

Table 1: Activity classifications

Activity classification	Sub-activity
Court (Drug Court and conventional)	Administration, management and planning
	Court sitting
	Court facility and infrastructure costs
	Custodial/sheriff services – Drug Court
Assessment and detoxification	Initial referral/ assessment by Drug Court – includes assessment by health care practitioner, parole officers, and the legal aid officer
	Incarceration between assessment and court appearance
	Detoxification for Drug Court participants – MRRC and Mulawa
	Capital costs for detoxification (MRRC)
Treatment	Clinical/pharmaceutical treatment
	Treatment infrastructure and equipment (AHS based)
	Abstinence treatment, residential rehabilitation
	Participant treatment plans
	Participant treatment management
	NSW Health departmental support
	Drug Court participant counselling
Monitoring	Urinalysis of participants
	Participant monitoring – including reports back to court
Incarceration	Custodial sanctions – in gaol
	Conventional gaol

A cost per participant in treatment on the trial was calculated by summing the resources used in each of these activities for each participant over their period in the trial. Thus, data collected on frequency of participant activity were combined with expenditure data to arrive at a cost per participant.

Costs for the control group were estimated using a similar method with a smaller set of activities. These include the cost of initial Drug Court assessment, subsequent court costs and the cost of incarceration (based on the sentence served and a per diem cost).

For both treatment and control groups, law enforcement and police costs (other than those incurred by the police officer assigned to the Drug Court team) were not included. It should also be noted that the costs of gaol were estimated as though members of both groups served their sentences in full.

Underlying these analyses is the knowledge that program activities have not been static throughout the period of the Drug Court trial. Numerous changes have been made to the conduct of the program, including the way sanctions are enforced, the taking of urine samples for testing and how the key providers interact. For this analysis, costs were estimated on the basis of actual program expenditures. Where data were available on the impact on expenditure of any particular program change, sensitivity analysis was conducted to investigate the impact on total expenditure of those changes.

Finally, the cost and effectiveness measure were combined to arrive at a cost-effectiveness ratio (Equation 1).

Equation 1

$$ICER = \left.\left(C_T - C_C\right)\middle/\left(\mathit{Eff}_T - \mathit{Eff}_C\right)\right.$$

where *ICER* is the incremental cost-effectiveness ratio; *C* is cost; *Eff* is the time to first offence (or frequency of offending); subscript '$_T$' denotes the treatment arm of the Drug Court trial, and subscript '$_C$' denotes the control arm of the Drug Court trial. This ratio expresses the additional cost of the Drug Court over the conventional system for a given change in recidivism.

Data collection

As part of the data collection process, key stakeholders from agencies and departments involved in the Drug Court (see Figure 4), including representative members of the Drug Court team, were interviewed. The aim of the interviews was two-fold: to develop an understanding of the functions of the Drug Court program, changes to date and issues; and to identify key data needs and potential sources for those data.

Broadly speaking, in order to fully capture resource use, information was requested on Drug Court activities and related expenditures, both for staff employed by the Drug Court and for staff not employed by or charged to the Drug Court. Agencies were also asked to outline where staff employed by the Drug Court were being used to carry out non Drug Court related activities for which the Drug Court is not being reimbursed (giving some idea of cross subsidies from the Drug Court to other programs/areas of expenditure and vice versa).

Collection of resource data for the analysis has incorporated a three-pronged approach – primary data collection, key informant estimation of time spent on different activities and the use of published data. Data types, sources and issues are summarised in Table 2.

Table 2: Data types and sources for treatment and control groups

Category	Data on activity	Sources
NSW Drug Court	Administration, management and planning Court – team meetings, reports back to court, sentencing, termination hearings and graduations	AGD; DPP; Legal Aid; CHS, DCS; P&P Drug Court team staff – data forms Drug Court database Observation of Court activity
Assessment and detoxification	Referral/assessment by Drug Court Detoxification	Drug Court team staff – data forms Drug Court database CHS DCS; Legal Aid; P&P
Treatment	Clinical treatment Abstinence treatment Residential rehabilitation Treatment plans and management	SWSAHS, WAHS and WSAHS; NSW Health CHS Bureau of Crime Statistics and Research database
Monitoring	Urinalysis Reports back to court Probation and parole	Drug Court database AGD financial data Drug Court team - data forms DCS
Incarceration	Custodial/sheriffs Sanctions Gaol	Drug Court database DCS Local Court data District Court data
Sentencing	Activity, timing and salaries	Parramatta Court Registry; Legal Aid, AGD

As for the evaluation of effectiveness, a key source of information for the evaluation of the cost-effectiveness of the Drug Court was the Drug Court database. Information contained in this database included dates of assessment, detoxification, start date on Drug Court program, court appearances and urine drug screens. Other variables, such as transition dates between stages of the Drug Court, were not able to be used for the purposes of this evaluation. Thus, administrative data on which services were provided were used in determining actual resource use.

For the purposes of the evaluation, Drug Court team staff time was apportioned broadly to the activities described above. Information was obtained from a survey of staff activity which Drug Court team members were asked to complete. The survey requested information spent on activity for a period of five consecutive working days. Copies of the survey forms are in Appendix 1.

In addition, members of the research team observed the court proceedings on a number of occasions to measure the time taken to deal with report back sessions, termination hearings and sentencing matters. The purpose of this activity was to arrive at an average time per matter. These averages have been used to allocate Drug Court staff and court costs to individual participants per appearance in court for report back or sentencing.

In any study where data collected for administrative purposes are subsequently used in economic analyses, a process of cleaning and/or manipulation is necessary. The process of data cleaning undertaken for this evaluation revealed a number of important issues and, in order to use these data a number of assumptions were made. Many of these issues and assumptions are detailed in the following sections that discuss the methods of determining resource use and apportioning costs across the treatment and control groups.

Estimating costs for the treatment group

The two key objectives of the costing activity were to document the resource use (costs) of the Drug Court and to conduct a cost-effectiveness analysis. To meet the first objective, all resources used in running the Drug Court were identified, whether these resources were used by the treatment group, the control group or by those who were unwilling or ineligible or by those for whom there was no place available in treatment following detoxification. For the purpose of the cost-effectiveness analysis resources used by members of the treatment and control groups needs to be estimated and, as for the analysis of effectiveness, resource use was only identified for those individuals who were allocated to either the treatment or control group on or before 30 June 2000.

Unless otherwise noted, expenditures considered in this evaluation included all Drug Court resources for the financial years 1998/99, 1999/2000 and the first six months of 2000/01. With respect to resource use in 2000/01, only that incurred by individuals entering the program prior to 30 June 2000 was included in the cost-effectiveness analysis.

The unit of analysis for the economic evaluation is the average cost per day. For the treatment group this includes resource use incurred while in the Drug Court program and any incarceration following the Drug Court program that is related to the offence(s) which initiated involvement in the Drug Court. The following formula illustrates how the average cost per day was calculated.

Equation 2

Average cost per person =
    (average assessment costs)
      + (average cost per day in detoxification * days in detoxification)
      + (average cost of sentencing)
      + (average costs per report back to court* number of reports back to court)
      + (urine cost * number of urine samples)
      + (probation and parole costs * number of days available)
      + (cost of sanction * days in sanction)
      + (average treatment costs * days available for treatment)
      + (average court cost for termination and graduation appearances)
      + (incarceration costs * days incarcerated)

Average cost per day = Total cost/total days

The following sections provide descriptions of how resource use and costs were captured for each of the types. The assumptions made about and the limitations of some of the data used in the evaluation are also discussed.

Drug Court expenditures

The allocation of Drug Court expenditures meant first ensuring that all expenditures were obtained. This includes salaries for all team members (Judges, DPP, Probation and Parole, CHS, Legal Aid, Registry staff, court reporter, court attendant and security staff) and all overheads, including rental costs, costs of supplies and other consumables. Also included were on-costs for all and estimates of corporate overheads from the appropriate departments. For example, some overhead costs of the corporate office for Legal Aid were included in the cost of the Drug Court. Once all costs for each of the study years were obtained they were categorised into one of three categories: 1) the Drug Court team; 2) court reporter, court attendant and security; or 3) Registry staff and overhead as per Table 3.

Table 3: Drug Court expenditures

Data categories	Year 1 (5 months)	Year 2 (12 months)	Year 3 (6 months)
Drug Court team	$574,024	$1,268,131	$668,186
Court reporter/attendant /security	$27,000	$46,000	$22,000
Registry/overhead*	$195,200	$483,400	$233,600

* costs of urinalysis excluded

Using information from key informant surveys, it was estimated that approximately 45 per cent of team members' activities related to team meetings or court sessions (referred to as court activities). From the surveys it was determined that all of the time of the court reporter, attendant and security officer activities (as paid by the Drug Court program) were directly court related (see Table 4). Approximately 7 per cent of the registry time was reported as directly related to the Court. These proportions were then used to estimate the direct costs related to Court time and team meetings. Once obtained, these costs were apportioned over the total number of weighted Court appearances during the same time period (see Table 5). The weights used for the court appearances were the average number of minutes for each type of appearance. The information on each type of appearance was derived from data collected by the research team on each visit to the Drug Court.

To simplify this process, only three types of appearances were used: pre-program, program, and final appearance (this includes termination hearings, sentencing and graduations). The outcome of this process is that average costs for pre-program, program and sentencing appearances have been estimated. These costs were applied to the number of each type of appearance made by each study participant. The advantage of this method is that it allows the allocation of costs to all three groups: study and control groups as well as those who were excluded from the study.

Table 4: Distribution of time by activity type

Type of activity	Court activities	Client related (non court)	Administrative/ overhead
Drug Court team	45%	30%	25%
Court reporter/attendant/security	100%	0%	0%
Registry/overhead	7%	27%	66%

Table 5: Appearances at Drug Court (8 February 1999 - 31 December 2000)

Type of appearance	Frequency	Average minutes per appearance	Total time (minutes)
Pre-program (includes assessment)	1,787	10	17,870
On program	9,591	3	28,773
Sentencing/terminations/graduations	470	25	11,750

Information from the key informant survey was also used to estimate the time team members spent managing participant-related aspects of the Drug Court outside the court setting (either directly or indirectly). For example, during the assessment phase, team members such as the Nurse, the Legal Aid Solicitor, and the Police Officer were involved in assessing participants and preparing for the initial appearance, or if a participant were terminated from the Drug Court the team members from DPP and Legal Aid would spend time preparing the case. The survey indicated that approximately 30 per cent of the team's time and 27 per cent of Registry staff's time was spent on these activities (Table 4). As detailed above, these percentages were applied to the relevant cost categories and then apportioned over the number of appearances of that type.

Overhead costs (excluding costs of urine drug screens), 66 per cent of registry staff salaries and on-costs, and 25 per cent of other Drug Court team members' salaries and on-costs were apportioned equally across the total number of Drug Court appearances. This resulted in an overhead cost per appearance that is constant across all types of appearances.

Once these three steps were completed, the components were summed to obtain an average cost for each type of appearance (see Table 6).

Table 6: Estimated cost per appearance (includes all overheads)

Type of appearance	Court activities	Client related (non court)	Administrative/ overhead	Average cost per appearance
Pre-program (includes assessment)	$265.82	$79.04	$91.86	**$436.72**
On program	$79.75	$79.55	$91.86	**$251.16**
Sentencing/terminations/ graduations	$664.54	$79.55	$91.86	**$835.96**

Treatment costs

As discussed elsewhere, treatment for heroin addiction is a major part of the Drug Court program. In this program, treatment was primarily provided by units in each of the three Area Health Services included in the study area (Western Sydney, South Western Sydney and Wentworth Area Health Services), and by residential rehabilitation programs. Initial detoxification and treatment in gaol was managed by Corrections Health Service and the costs of this are discussed in the section below on detoxification/treatment planning costs.

As in other key areas, financial data on the provision of the Drug Court program were obtained. Each of the Area Health Services provided expenditure information on salaries, operating expenses and overhead costs incurred by staff employed on the Drug Court program, as well as any expenditure incurred by non Drug Court staff. Corporate overhead expenditures for NSW Health were also included. Adjustments were made for over- or under-expenditure of budgets. The financial data from each of the Area Health Services appeared to be complete and, although provided in a slightly different format, the categories were comparable and did not impede the analysis. In addition to the expenditures provided, estimates of rental costs were included, based on reported use of space at each of the Area Health Services.

Residential rehabilitation to Drug Court participants was provided by a number of treatment centres with each facility being paid directly by NSW Health. The daily fee for residential rehabilitation was $100 (this project did not undertake a costing of the treatment provided at the residential rehabilitation centres). NSW Health provided information on the total number of days in each year for which they paid for residential rehabilitation but were not able to provide information at an individual level (e.g. according to Drug Court identification number). Thus we were unable to apportion the cost of rehabilitation to those individuals who received treatment in residential rehabilitation facilities.

In a program such as the Drug Court where resource use is expected to be higher in the early phases of treatment, it is important for planning purposes to apportion resource use where or when it actually occurs. Potentially, this could be undertaken using the phases of the program. However, when data from the Drug Court and treatment providers regarding phases of treatment were compared, they were neither complete nor compatible. In addition, as mentioned above, information that would have enabled the costs of residential rehabilitation to be attributed on an individual basis was not available. In addition, it was not possible to obtain information regarding resource use by participants moving between Area Health Services as data collected about this occurrence were inconsistent.

Therefore, a pragmatic approach to apportioning expenditure was used. First, all expenditures for the three years involved were obtained. This included NSW Health overhead costs, Area Health Services expenditures and the costs of residential rehabilitation. Second, all possible days available for treatment were counted and used to generate a cost per treatment day available. Third, this cost was applied to each individual based on the number of days available for treatment. An assumption was made that a person who was available for treatment actually received it. This assumption means that for some individuals the cost of treatment is over-estimated and for others it is under-estimated.

This method does not account for differences in resource use between participants receiving methadone, naltrexone or abstinence treatments although we did (unsuccessfully) attempt to count the numbers of participants receiving these treatments. The costs of maintaining a person on methadone might be expected to be lower than residential rehabilitation or treatment using naltrexone. However, the available data indicate that many participants used different types of treatment. The cost per available day in treatment for each fiscal year of the study are $127.50 in 1998/99; $39.93 for 1999/00 and $23.85 for the first six months of 2000/01. It is of note that there is a considerable difference between the costs in the first year and the remaining two years. There are a number of probable reasons for this. One reason is the cost of start-up, that is, the setting up of the program and the development of protocols and procedures, most of which would have been incurred during the first year of the program. In addition, the program would not have had a full caseload from the beginning. While an attempt was made to set aside costs designated as 'start-up costs' the first year costs still remained considerably higher.

Urine screens

Counts, by participant, of urine drug screens sent to a laboratory for testing were available from the Drug Court database but the number of urine tests done at the Drug Court was not available. The cost for each urine sample tested at a laboratory is also unknown, as the cost per screen varies depending upon the specific tests undertaken. An average cost of $18.36 per urine test was estimated using total reported expenditure on urine drug screens, costs of gloves for handling urine samples and urine containers divided by the total number of urine tests sent to the laboratories. This average was then applied to each identified urine screen. No information was available on the number or costs of urine tests done on-site (i.e. at the court). Thus, these costs are included in the Drug Court overhead costs and were apportioned with other Court overheads. It should be noted that the cost of $18.36 is somewhat lower than the average cost of $20 per unit for urinalysis and the $175 to $320 per toxicity print out. This is one area where sensitivity analysis has been used to provide some additional information.

Detoxification/treatment planning costs

As part of the treatment process each participant was involved in an assessment and treatment and detoxification program if necessary at either Metropolitan Remand and Reception Centre (MRRC) for men or Mulawa (for women). Data obtained from Corrections Health Service (CHS) included financial data, the number of inmates and average length of stay for both Drug Court and non Drug Court individuals at MRRC. It appears that most CHS-type expenditures allocated to CHS are actually consumed at MRRC, with Mulawa 'getting visits when the staff have the opportunity'. Although this may overestimate the costs of detoxification for men and underestimate the costs for women, all the Drug Court expenditures were apportioned to MRRC, and, using the overall occupancy of the detoxification unit, a cost per day in detoxification was estimated. The marginal costs of being in gaol were added to this to generate a cost per day in detoxification in MRRC. The cost for Mulawa was the cost of a day in Mulawa, plus the generic cost of CHS for the overall facility. The costs obtained were $243 for men and $235 for women. These figures were then multiplied by the number of days per individual in detoxification (as obtained from the Drug Court database). The average length of stay in the detoxification units was 16.8 days.

Department of Corrective Services (DCS) costs

Information on resource use from DCS was included in the analysis of total costs. Key resource use occasions include: sanctions, detoxification (provided in part by CHS) if the participant was in a Corrections facility, time in gaol when the Drug Court program terminated or concluded, time in the cells at the initial point of assessment, home detention costs and costs of time on probation and parole. Probation and parole costs are discussed separately below.

Time in Parramatta Court cells prior to assessment has not been included in the cost-effectiveness analysis. This is because the analysis begins at a point when the participant was being assessed for inclusion in the Drug Court program and before she or he was selected into the Drug Court program, placed in the control group or determined to be ineligible. Thus, expenditures incurred by either group would be equal. However, the introduction of the Drug Court appears to have had a significant impact on resource use at Parramatta Court cells. For example, it has been necessary to expand the hours of the facility and provide additional security due to the movement of one of the Parramatta Courts to another location (to facilitate the placement of the Drug Court in the Parramatta Courthouse) and because, initially, Drug Court sanctions were served at Parramatta Court cells.

Resources from DCS used by Drug Court participants were not captured by the data collection established for the evaluation of this project and unit costs for many of the activities were not available. Following discussion with senior staff and key individuals in DCS, requests were made for specific financial information. Although much of the information requested was not available some useful data were obtained. For the purposes of this study we have used a cost per day as provided by DCS for three facilities: Parramatta Correctional Centre, Mulawa and MRRC (see Table 7) we were also provided with an estimate of the cost of court security at Parramatta Court, motor vehicle running costs per kilometre (for transporting inmates) and the cost per day for CHS. Costs and throughput for the Parramatta Court cells were not made available. As the costs per inmate per day for the various facilities are fully absorbed costs, a decision was made to use these daily costs alone, to avoid double counting expenditures and then to add the relevant expenditures by the CHS. Specific expenditures not measured include additional costs of assessment by staff of DCS and the CHS each time a participant was sanctioned. This was mentioned as a key area where resource use increased with the inception of the Drug Court, especially early in the Drug Court program when sanctions were short and frequent. We understand that practice has changed with respect to assessments but we have no way of quantifying these changes.

On entering the Drug Court program, each participant is sentenced and these sentences are then suspended for the duration of the time the participant spends in the program. When a participant either graduates or is terminated from the program, his or her progress and sentence are reviewed and a final sentence, which may involve gaol time, community service, or recognisance (with or without supervision), is handed down. As data were available from the Drug Court database on the sentence given to Drug Court participants, this information was used to determine possible days in gaol. To convert this to expenditure data the cost per day in gaol for an appropriate gaol was used (MRRC for men and Mulawa for women). This may have overestimated costs if an individual was subsequently transferred to a lower security facility or if he or she was released from gaol earlier.

However, the same issues apply to the control group and data were not available on when and if individuals were transferred between facilities. Costs for non-incarceration sentences, such as home detention and recognisance with supervision, were obtained from Probation and Parole. On their advice these non-incarceration sentences were truncated at 6 months.

The costs per inmate per day used in the study are shown in Table 7.

Table 7: Costs used for DCS activities

Facility	Cost per inmate per day excluding CHS	Purpose
MRRC	$158.78	Used for final sentence (detoxification costs estimated elsewhere)
Mulawa	$210.99	Detoxification for women, sanctions and final sentence
Parramatta Correctional Centre	$107.59	Sanctions
Cost per day CHS (not detoxification)	$12.04	Added to cost of sanction, detoxification for women, and final sentence cost per day

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Costs incurred by DCS for Sheriffs' Officers for the Drug Court are included in the cost of the Drug Court.

Sanctions

Information on the frequency and number of sanctions was obtained from the Drug Court database. A number of issues regarding the cost of sanctions warrant discussion. As noted earlier, the method of serving sanctions imposed by the Drug Court changed over the period of the study. In the early phases of the Drug Court, sanctions were often served in the Parramatta Court cells. Later participants served their sanctions primarily at Parramatta Correctional Centre. The data do not indicate when this change occurred. In addition, it was not possible to cost a stay at the Parramatta Court cells. Therefore, whenever a sanction involved at least one overnight stay, the cost of a day in Parramatta Correctional Centre (for men) or of a day in Mulawa Correctional Centre (for women) was used as the cost per day and the total cost calculated by multiplying this cost by the number of days of a sanction.

Another change in how sanctions were dealt with was the introduction of a sanction accrual system. In the early stages of the Drug Court's operation, custodial sanctions were served when they were imposed. This led to a situation where many participants were serving very short periods in custody. To avoid the administrative cost and inconvenience associated with this arrangement the Drug Court began allowing participants to accumulate days of imprisonment until they reached approximately seven days, when the sanction days would then be served. The court also allowed sanction days to be deducted from an offender's 'sanction balance', as a reward. Consequently, participants could accumulate sanction days of seven or more (in some cases up to 12 days of sanctions were accumulated) but then be rewarded by losing these sanction days.

The number of sanctions served was used to estimate transport costs to and from the Court to the appropriate gaol (the cost of running a prisoner transport truck per km split over its carrying capacity was used as the basis for these calculations). Using Parramatta Correctional Centre costs, rather than the Court cells costs, may have over- or under-estimated the costs to the program. However, the impact this had on the final results is not clear. In the early stages of the program sanctioned participants were sent to the cells for a few hours, or were told to sit in the court until the session was complete. Some of these sanctions are recorded in the data, but we are unable to determine which actually occurred. Therefore, a decision was made not to allocate a cost to this activity as it was difficult to decide where the cost of a person sitting in a courtroom for a number of hours falls.

Probation and Parole services

Financial data were provided by the Probation and Parole service as requested. The data included expenditures charged against Drug Court cost centres, expenditures within other cost centres to provide services to the Drug Court, and a share of corporate support services. These expenditures were classified into employee-related, overhead and support activities and offender development expenditures. As it was not possible to apportion the expenditures by type of activity, and phase of treatment, total expenditures were apportioned across participants based on the length of time each person spent in the Drug Court program. The assumption is thus made that individuals in the Drug Court use an equal amount of Probation and Parole resources on each occasion, with the only variation being the length of time in the program.

Salary and on-costs for the Probation and Parole employee who worked as part of the Drug Court team have been included in the Drug Court costs. Comparative costs for other community programs (including a share of corporate overheads) were provided by Probation and Parole.

Estimating costs for the control group

General methodology

As outlined earlier, the control group consists of individuals referred to and eligible for entry into the Drug Court but for whom a position in detoxification was not available. Members of the control group were subsequently referred back to a Local Court or, in some cases, a District Court for sentencing.

Table 8 provides a breakdown of the control group. The initial cohort contained 201 members. Ten control IDs were deleted from the cohort because they were allowed to enter the control group twice or because they entered the control group as well as the treatment group on separate occasions. One hundred and nine controls were sentenced within a Local Court. Another 29 were sentenced within a District Court. The Bureau of Crime Statistics and Research was unable to find sentencing records for the remaining 53 of the original control group members. Without data on which penalty these 53 control group members received it was not possible to cost the penalties of this cohort. Therefore, they were removed from the evaluation, reducing the number in the control group for the costing analysis to 138. Thus, the size of the control group used in the costing analysis differs from that of the control group used in the effectiveness analysis which contained 191 individuals.

Table 8: Breakdown of control group	
Cohort	**Size**
Initial cohort	201
Duplicates (entered control group twice or control group and treatment group)	10
Subjects with missing sentence data	53
Final cohort for costing analysis	138

The cost of the control group is separated into three components: assessment for eligibility into the Drug Court; sentencing within the conventional court system; and the cost of the penalty imposed. A bottom up approach was used to estimate the cost of the control group. That is, the cost of each of the three components was estimated on an individual basis. A total cost for each individual was obtained by summing over the component costs. By further aggregating the individual total costs, a grand total cost of the control group was reached. Finally, an average cost per day was calculated using the following formula:

Equation 3

Total cost per person =
>   (Average assessment costs)
>   + (Average cost of court appearance in 'conventional' court)
>   + (Incarceration cost per diem * days incarcerated)
>   + (Community Service Order cost per diem * days on Community Service Order)
>   + (Home detention cost per diem * days in home detention)
>   + (Periodic detention cost per diem * days in home detention)
>   + (Probation cost per diem * days in recognisance with probation)

Average cost per day on program = Total cost/total days on the program

Assessment costs

The costs associated with assessment of potential participants for eligibility for entry into the Drug Court comprise two key components: the costs associated with the Drug Court team making the assessment, and the appearance in the Drug Court. The cost of assessment is the same across both the treatment and control group, namely $436.72 per person.

Sentencing costs

All sentencing of the control group occurred in the conventional court system despite the option for control group members to be sentenced within the Drug Court. One hundred and nine of the control group were sentenced in a Local Court while 29 were sentenced in a District Court. The cost for each of these sub-groups was calculated separately.

The method used to estimate the costs involved in the court appearance(s) relating to sentencing of the control group once they were referred back to a Local Court involved the calculation of both direct and indirect costs. The former refers to those costs directly related to the sentencing, while the latter refers to costs involved in operating a Local Court system not directly related to any one case, namely corporate overheads and other operating expenses.

Calculation of the direct costs involved three stages. First, the activities involved in sentencing an average case were identified, as was the level of personnel who performed

these tasks and their salaries. Second, the time taken to perform these activities was estimated and finally the activities were valued using the appropriate salaries.

In order to quantify an 'average' Local Court sentencing case, Parramatta Local Court Registry staff examined the data for control group members referred back to that Court. From these, two representative cases were chosen: one with one court appearance and another with a number of adjournments. The average times involved in sentencing were calculated on the basis of these two cases.

The activities involved in sentencing have been broken into three components: those that occur prior to the actual court appearance; the court appearance; and those activities that occur after the court appearance. They have also been classified by the level of personnel involved, that is: Registry staff, Magistrate, court attendant and monitor, Legal Aid and the police prosecutor.

Advice on the activities performed by Local Court Registry staff and the time involved in such tasks were provided by the Parramatta Local Court Registry. This information was used together with salary and on-cost information for each staff classification level provided by Financial Services within the AGD. This allowed us to obtain a direct cost per minute of staff time for staff at different classification levels. Local Court corporate overheads ($12,167,122) and other operating expenses ($19,003,677) were also obtained from Financial Services within AGD. These figures were apportioned over the 968 registry staff in NSW to obtain an overhead cost per registry staff per annum. This indirect cost was then reduced to a per minute figure and combined with the per minute direct cost figure in order to obtain an overall cost per minute by staff classification level.

The Magistrate, court monitor and attendant were assumed to only spend court time on a sentencing case. Salary information for these personnel was obtained from Financial Services within AGD and was used to obtain a cost per minute. Total Corporate Overheads and Other Operating Expenses had already been allocated over registry staff and thus were not apportioned to the Magistrate, court monitor or court attendant.[3]

Advice on the activities and time spent on an average sentencing case was also provided by Legal Aid, broken down by pre-court appearance, court appearance and post-court appearance activities. Ninety-one people (80.5%) in the control group sentenced in a Local Court had legal representation. Therefore, the time estimate provided by Legal Aid was weighted by 0.805 to take account of this. This activity information was combined with salary and on-cost data including corporate overheads. Similar information was obtained from the DPP and combined in the same manner.

The cost per minute of each of the personnel involved was multiplied by the number of minutes he or she spent on a sentencing case to obtain a cost per sentence in a Local Court of $200.23.

A similar methodology could not be used to calculate the cost per sentence in a District Court due to a lack of data. In order to overcome this problem, the average cost per sentence in a District Court was calculated using data obtained from Financial Services within AGD regarding the ratio of the cost of a day in a Local and District Court. In particular, the ratio between the cost of a day in a Local Court and the cost of a day in a District Court was calculated to be 1:1.6. Thus the cost per sentence in a Local Court ($200.23) was multiplied by 1.6 to obtain a cost per sentence in a District Court of $320.38.

Matters dealt with in the District Court pertaining to control group members included sentencing and appeals. Advice was sought from Parramatta Court Registry regarding how many court appearances made up an average appeal case over and above the original sentencing case. Using this expert advice, the cost of sentencing for those controls who appealed their sentence (severity or not guilty appeals) was multiplied by 1.5.

Penalty costs

The types of penalty imposed on the control group members are listed in Table 9.

Table 9: Penalties imposed

Penalty type

Imprisonment
Home detention
Periodic detention
Suspended sentence with supervision
Community Service Order
Recognisance/bond with supervision*
Recognisance/bond without conviction*
Fine
Licence disqualification
Compensation
Nominal sentence (sentenced until rising of court)
No conviction recorded

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* A change in legislation in April 2000 replaced the word 'recognisance' with the word 'bond'.

Of the sentences listed in Table 9, only those involving a direct cost to Government were costed for the purposes of this study. Thus, costs were estimated for incarceration, periodic detention, community service, home detention, recognisance and probation and suspended sentence with recognisance. The cost per day of each form of penalty is outlined in Table 10.

Table 10: Cost per day by penalty type*

Penalty	Cost used	Cost per day
Imprisonment males	MRRC Correctional Centre per diem	$170.82
Imprisonment females	Mulawa Correctional Centre per diem	$223.03
Home detention	Home detention per diem	$56.43
Periodic detention	Parramatta Correctional Centre per diem	$119.63
Suspended sentence with supervision	Probation per diem	$3.01
Community Service Orders	CSO per diem	$2.63
Recognisance with supervision	Probation per diem	$3.01

* Source: Corrective Services

A cost of $12.04 was added to the imprisonment costs per day at MRRC, Mulawa and Parramatta Correctional Centres in order to take account of the cost of CHS provision. This amount was excluded from the original per diem costs.

The cost of the penalties imposed was estimated by first identifying which penalty was imposed and the duration of the penalty in days for each individual and then multiplying this by the appropriate per diem cost listed in Table 10. In the case of concurrent sentences,

the principal sentence was costed. For members of the control group sentenced in the Local Court who did not receive bail, the time between referral to the Drug Court and the date their sentence was determined and was costed at the appropriate per diem gaol cost. Information was not available for those in the control group sentenced in a District Court regarding whether or not they were granted bail. As such, the same proportion of those who received bail in the Local Court was used in order to cost the non time spent in gaol on remand for people later sentenced in a District Court. Since this method of costing the penalty resulted in a different cost for each control group member, individual costs are not reported here.

Total cost and average cost per day for the Drug Court control group

A bottom up approach was used to obtain the average cost per control group member as follows. A total cost per participant was obtained by summing over the component costs for that individual. A summation of the total cost for each of the 138 individuals in the control group resulted in a total cost of the control group of $4,898,497.73. Division by the 32,286 days for the 138 controls provided an average cost per day of $151.72.

Key issues in the cost of the control group

Due to data limitations a number of assumptions were made in this calculation. First, the costs of sentencing control group members in a Local Court were based on advice from Local Court staff with regard to the time and staff involved in two 'average' sentencing cases rather than the cost of each individual cohort member. This was because Parramatta Local Court Registry was unable to supply timing and activity data for more than two cases. The small number of cases is a limitation of this analysis; however the Local Court Registry staff advised that the two cases used were representative of the general control group.

Furthermore, the timing of and personnel involved in a sentencing case were based on activities undertaken in the Parramatta Local Court. This estimate thus assumes that other Local Courts to which control group members are referred are similar to Parramatta Local Court in terms of tasks undertaken and time taken to perform them.

The cost of an average sentencing case in the District Court was not calculated in the same manner as that used for the cost of sentencing in a Local Court, due to the lack of appropriate data. Instead, the District Court cost was calculated using the ratio of the cost of a day in a Local Court and the cost of a day in the District Court provided by Financial Services within AGD, multiplied by the average cost of a sentencing case in a Local Court. Due to the uncertainty around this figure, sensitivity analysis has been undertaken on the cost and on the assumption regarding the number of court appearances associated with an appeal case heard in the District Court.

The cost of sentencing is based on the activities and time involved in a non-defended case; that is, if the defendant pleads guilty. A defended hearing clearly takes longer and involves more resources than a non-defended hearing. While control group members have the option to change their plea from guilty to not guilty on referral back to the conventional court system, only 2 of the 138 control group members choose to do so. Therefore, all sentencing cases were costed on the basis on a non-defended case.

Another limitation of the costing is that members of the control group who were incarcerated may or may not have received detoxification or treatment while in prison. As data were not available to distinguish whether control group members received treatment while in prison, all sentences were costed at the standard per diem rate.

The duration of the sentence was used to cost the penalties imposed on the control group.

Summary of cost components used for treatment and control groups

Table 11 below provides a summary of the data presented in the earlier sections of the report and includes the key costs included in the report.

Table 11: Summary of cost estimates for various components of the NSW Drug Court

Variable	Cost	Notes	Source of data
Urine drug screen	$18.36	Estimated from total costs and total number of screens provided with cost = $25; overestimated total expenditures	AGD – for expenditures Drug Court database for counts of urine screens
Court – Pre-program appearance	$436.72	Derived from Drug Court expenditure, staff information, Drug Court data	Drug Court expenditures Drug Court database for utilisation Staff survey
Court - On program appearance	$251.16	Derived from Drug Court expenditure, staff information, Drug Court data	Drug Court expenditures Drug Court database for utilisation Staff survey
Court – termination, graduation or sentencing appearance	$835.96	Derived from Drug Court expenditures, staff information, Drug Court data	Drug Court expenditures Drug Court database for utilisation Staff survey
Cost per day in residential rehabilitation	$100.00		NSW Health
Cost per available day in treatment 1998/99	$127.50	Includes start-up costs Based on all days available and all treatment costs	NSW Health, WSAHS, SWAHS, WAHS
Cost per available day in treatment 1999/00	$39.93	Based on all days available and all treatment costs	NSW Health
Cost per available day in treatment 2000/01	$23.85	Based on all days available and all treatment costs	NSW Health
Cost per day in detoxification – men	$243.00	CHS costs and marginal costs from DCS	CHS, DCS
Cost per day in detoxification – women	$235.00	MRRC costs and daily cost of CHS	CHS, DCS
Parramatta Correctional Centre	$119.63	Cost per diem	DCS
MRRC	$170.82	Cost per diem	DCS
Mulawa	$223.03	Cost per diem	DCS
CHS (not detoxification)	$12.04	Cost per diem	DCS
Community Service Orders	$2.63	CSO per diem	P&P
Home detention	$56.43	Home detention per diem	P&P
Recognisance with supervision	$3.01	Probation per diem	P&P
Suspended sentence with supervision	$3.01	Probation per diem	P&P
Sentencing Local Court	$200.23	Average per person of sentence – all guilty pleas, 85% Legal Aid (15% no legal representation), includes court and non-court costs	AGD, Drug Court, Parramatta Local Court

RESULTS

EFFECTIVENESS

Description of the sample

The sample employed in measuring the effectiveness of the Drug Court consisted of 309 treated subjects (participants in the Drug Court program) and 191 control subjects.

At 30 September 2000, the end of the follow-up period, 12 (4%) of the 309 treated subjects had graduated from the Drug Court program, 133 (43%) had had their involvement with the program terminated as a result of non-compliance with their program conditions, 17 (6%) had voluntarily withdrawn from the program and 147 (48%) were still participating in the program.

The treated subjects included 254 males and 55 females whereas the control subjects included 172 males and 19 females. There were significantly more males in the control group (90%) than in the treated group (82%) (X^2=5.8, 1 df, p=0.016).

At the time of referral to the Drug Court, the average age of the treated subjects was 27, compared with 26 for the control subjects. Table 12 shows the frequency distribution for the age of the two groups. There is no significant difference between these age distributions (X^2=6.8, 5 df, p=0.238).

Table 12: Age distribution of treated and control subjects

Age group	Treated		Control	
	Number	%	Number	%
18-24	126	40.8	88	46.1
25-29	85	27.5	57	29.8
30-34	53	17.2	30	15.7
35-39	32	10.4	8	4.2
40-44	10	3.2	6	3.1
45+	3	1.0	2	1.0
Total	**309**	**100.0**	**191**	**100.0**

The Drug Court recorded information on previous imprisonment and prior conviction episodes for persons referred to the Court. Information on previous imprisonment was missing for 10 treated subjects and 28 control subjects. Based on the records where the information was known, 75 per cent of the treated subjects and 70 per cent of the control subjects had been to prison prior to their Drug Court referral. There was no significant difference in prior imprisonment between the two groups (X^2=5.8, 1 df, p=0.280).

Information on the number of prior conviction episodes was available for 297 treated subjects and 162 control subjects. The average number of prior conviction episodes was 14.9 for the treated subjects and 16.6 for the control subjects. Table 13 shows the frequency distribution of these prior conviction episodes. There is no significant difference between the groups on their prior conviction history (X^2=5.9, 5 df, p=0.314).

Table 13: Prior conviction distribution of treated and control subjects

Number of prior conviction episodes	Treated		Control	
	Number	%	Number	%
0	1	0.3	2	1.2
1-9	118	39.7	54	33.3
10-19	103	34.7	53	32.7
20-29	47	15.8	30	18.5
30-39	15	5.1	15	9.3
40+	13	4.4	8	4.9
Total	**297**	**100.0**	**162**	**100.0**

In summary, then, the treated and control subjects were found to be quite similar in terms of age, previous imprisonment and prior convictions. The only significant difference was that there were proportionally more males in the control group than in the treated group.

The follow-up period

For each subject the follow-up period began on the date of preliminary health assessment (conducted by the Drug Court on referral) and ended on 30 September 2000. The average length of the follow-up period was 369 days for the treated subjects and 294 days for the control subjects.

On average, the treated subjects spent 34 per cent of their follow-up period in custody, whereas the control subjects spent an average of 54 per cent of their follow-up period in custody. It should be remembered, however, that the amount of time spent in custody includes time spent serving a sentence for the treated subjects whose Drug Court program was terminated. In fact, those whose program was terminated spent an average of 53 per cent of their follow-up period in custody, a proportion very similar to that of the control subjects. By comparison, those whose program was not terminated spent an average of 20 per cent of their follow-up time in custody.

Much of our analysis is based on free time, that is, time out of custody, so it is of interest to present some statistics on the amount of free time in the follow-up period. The average number of free days in the follow-up period was 243 days for the treated subjects and 145 days for the control subjects.

Table 14 shows the frequency distribution of the number of free days for both groups.

Table 14: Frequency distribution of number of free days in follow-up period				
	Treated		*Control*	
Number of free days in follow-up period	*Number*	*%*	*Number*	*%*
0-100	57	18.4	89	46.6
101-200	81	26.2	44	23.0
201-300	64	20.7	26	13.6
301-400	52	16.8	23	12.0
401-500	45	14.6	5	2.6
501-600	10	3.2	4	2.1
Total	**309**	**100.0**	**191**	**100.0**

It can be seen that more than 80 per cent of the treated subjects and more than 50 per cent of the control subjects were out of custody for at least 100 days of their follow-up period.

Time to first offence

The first measure of effectiveness we examine is the time to the first offence (dealt with either by the Drug Court or a Local Court). Survival analysis techniques were used to analyse the data because the data were censored (that is, a person may not have committed an offence by the end of the follow-up period) and the follow-up periods were of different durations for each person.

The figures in this section show the plotted Kaplan-Meier survival functions for the treated and control subjects. Each figure deals with a specific offence type. The survival function shows the proportion of the sample 'surviving', that is, the proportion of the sample who had not yet committed an offence of the specified type, plotted against the number of days in the follow-up period. In each case a log-rank test was conducted to test the hypothesis of equality of the two survival functions.

We deal first with free time in the follow-up period, that is, time spent out of custody. One of the Drug Court participants and 31 of the control subjects spent their entire follow-up period in custody. These 32 subjects were excluded from the survival analysis for free time to the first offence, reducing the sample to 308 treated subjects and 160 control subjects, a total of 468 subjects.

Figure 6 shows the survival functions for a drug-related offence of any type (i.e. any theft or drug offence). The log-rank test of equality of the two survival functions was close to significance (*p*=0.055), giving some indication that there is a difference in the survival functions, with the time to the first offence generally being longer for the treated group. For example, after 365 days (out of custody) an estimated 49 per cent of the treated subjects had not committed any theft or drug offence whereas for the control subjects the estimate was 44 per cent. The mean time to the first offence was 325 free days for the treated group and 279 free days for the control group.

Figure 7 shows the survival function for a theft offence of any type and Figures 8 to 13 show survival functions for each of the specific theft offences, namely break, enter and steal; fraud; larceny by shop stealing; other larceny; unlawful possession; and motor vehicle theft; respectively. Note that the scale of the vertical axis varies from figure to figure, because for some offences there were very few persons found to have committed the offence in the follow-up period. For example, only ten treated subjects and one of the control subjects committed a fraud offence. For this offence therefore there were at least 85 per cent in both groups who had not committed an offence by the end of the study. To present these data graphically it was necessary to show only the range 0.8 to 1.0 on the vertical scale.

**Figure 6: Any theft or drug offence**
Survival function based on free time
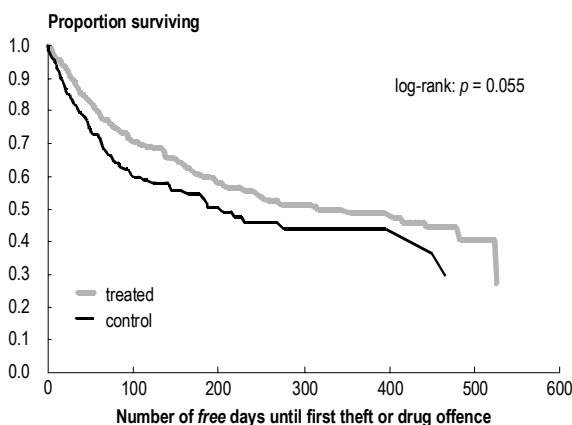
Figure 7: Any theft offence
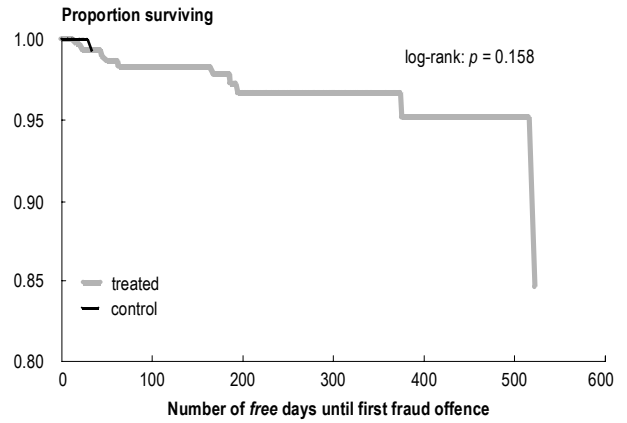**Survival function based on free time**
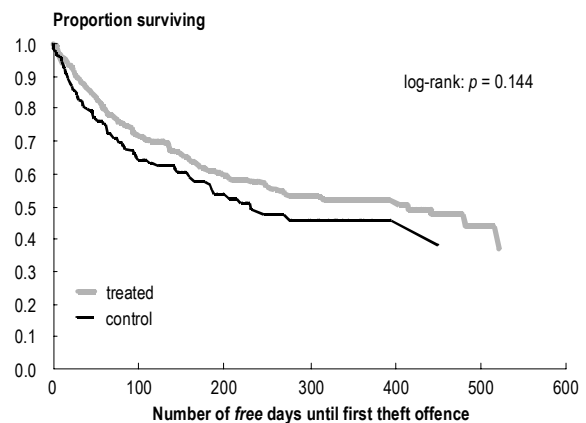
There was no significant difference between the treated and control groups in the time to the first theft offence (of any type). The *p*-value for the log-rank test for this comparison was 0.144 (see Figure 7). Figures 8 to 13 show the survival functions for specific theft offences. Shop stealing is the only specific theft offence for which there was a significant difference between the treated and control groups (*p*=0.016). From Figure 10 it can be seen that, 250 free days after referral to the Drug Court, an estimated 91 per cent of the treated group and an estimated 80 per cent of the control group had not yet committed a shop stealing offence. Another way of stating this fact is that, after about 8 months of time spent out of custody, an estimated 9 per cent of the those who were admitted to the Drug Court program had committed a shop stealing offence, compared with 20 per cent of the control group. The mean time to the first shop stealing offence was 537 free days for the treated group and 469 free days for the control group.

Figure 8:   Break, enter and steal
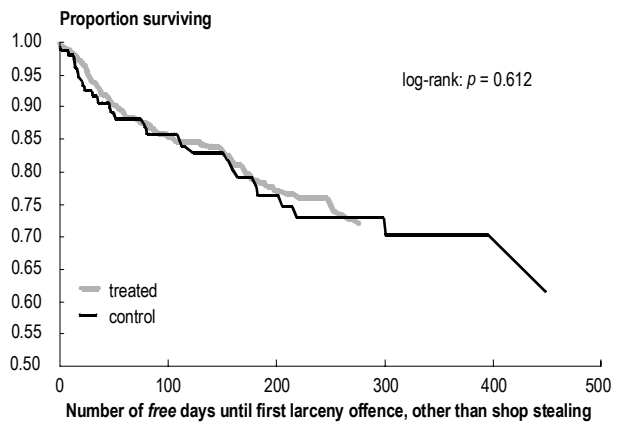**Survival function based on free time**
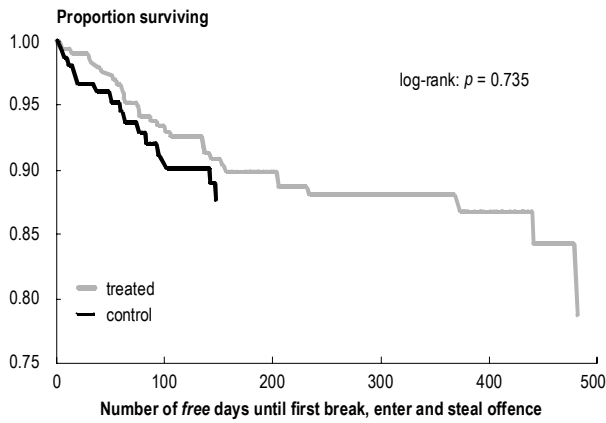
Figure 9:   Fraud
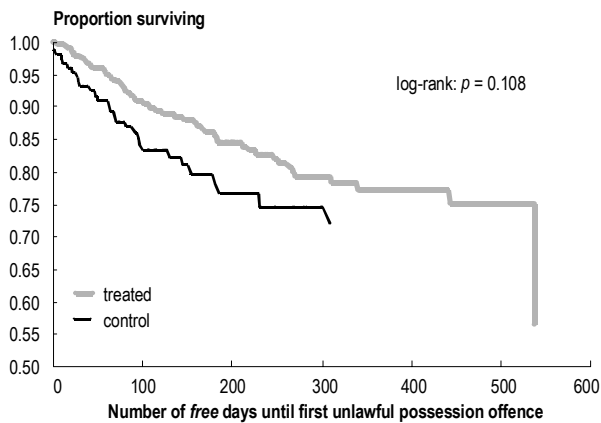**Survival function based on free time**

Figure 10: Shop stealing
Survival function based on free time

Figure 11: Larceny other than shop stealing
Survival function based on free time

Figure 12: Unlawful possession
Survival function based on free time

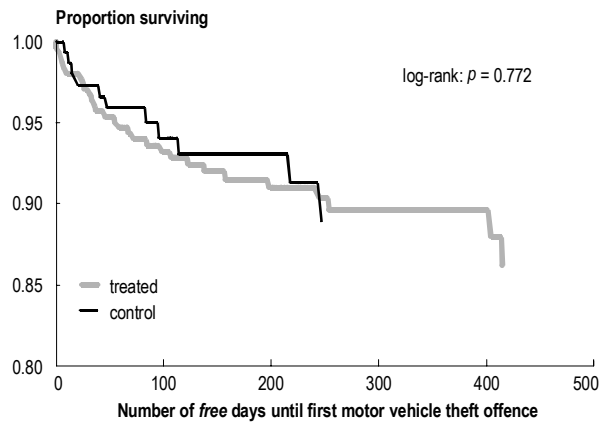**Figure 13: Motor vehicle theft**
Survival function based on free time

Figure 14 shows the survival functions for a drug offence of any type. The survival functions are significantly different (p=0.005). Only a small proportion of the subjects committed a drug offence (i.e. committed a drug offence which was dealt with either by the Drug Court or a Local Court). Only 25 per cent of both groups had committed a drug offence by the time their follow-up period ended. However, the time to the first offence was longer for the treated group. For example, after 300 free days only an estimated 8 per cent of the treated group, compared with 15 per cent of the control group, had committed a drug offence. The mean time to the first drug offence was 544 free days for the treated group and 485 free days for the control group.

Figures 15 to 18 show the survival functions for the specific drug offences, namely, possess/use opiates; possess/use cannabis; possess/use other drug; and deal/traffic opiates. The only specific drug offence for which there was a significant difference between the survival functions for the treated and control groups was possess/use opiates, with a p-value of 0.022. After 300 free days only an estimated 3 per cent of the treated group, compared with an estimated 10 per cent of the control group had committed a possess/use opiates offence (for which they were prosecuted). The mean time to the first drug offence was 561 free days for the treated group and 511 free days for the control group.

In summary, amongst the specific theft and drug offences examined, only for shop stealing and possess/use opiates was there a significant difference between the survival functions. It is worth noting, however, that for all offences, with the exception of motor vehicle theft and larceny other than shop stealing, the survival curve for the treated group was above the curve for the control group, indicating that the time to the first offence was longer for the treated group than for the control group.

We now consider the total *elapsed* time to the first offence. The survival function curves based on elapsed time in the follow-up period (whether spent in or out of custody) are shown in Figures 19 to 31. A drug offence of any type is the only offence for which there is a significant difference between the survival curves for the treated and control groups. The elapsed time from being referred to the Drug Court to committing the first drug offence (of any of the types studied) was significantly longer for the treated group than for the control group. For example, one year (365 days) after being referred to the Drug Court, only 6 per cent of the treated subjects, compared with 13 per cent of the control subjects, had committed a drug offence (i.e. committed a drug offence which was dealt with either by the Drug Court or a Local Court). The mean elapsed time to the first drug offence was 569 days for the treated subjects and 516 for the control subjects.
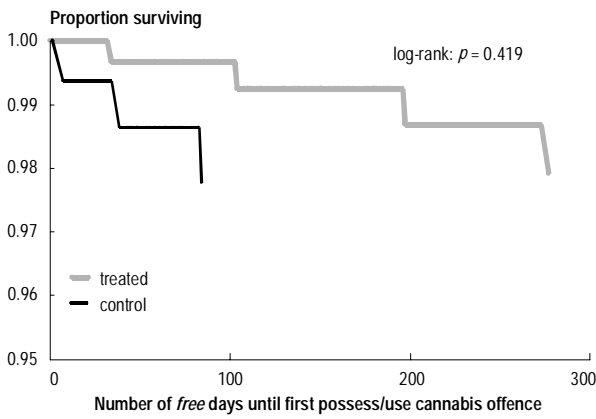
Figure 14: Any drug offence
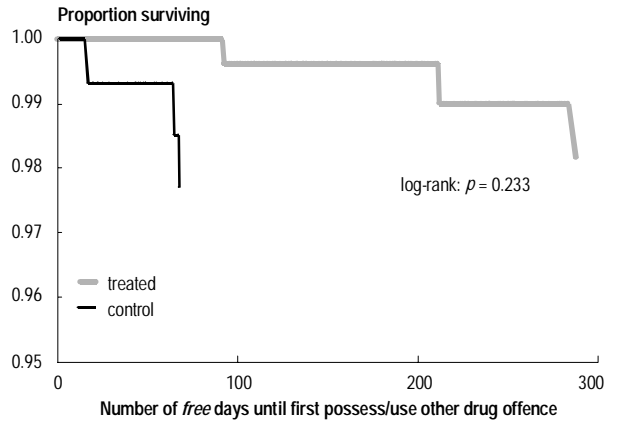**Survival function based on free time**
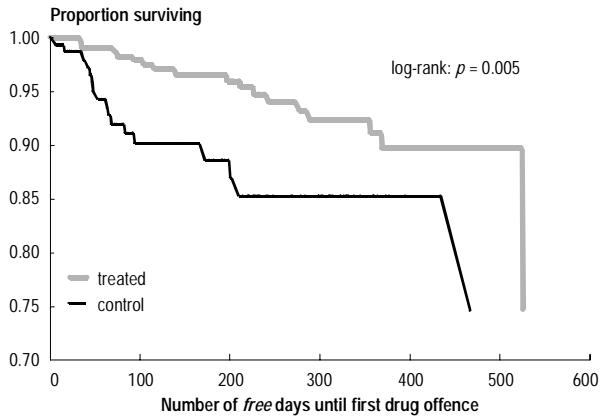
Figure 15: Possess/use opiates,
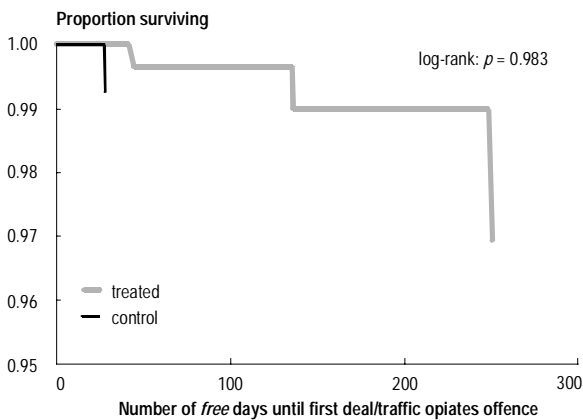**Survival function based on free time**
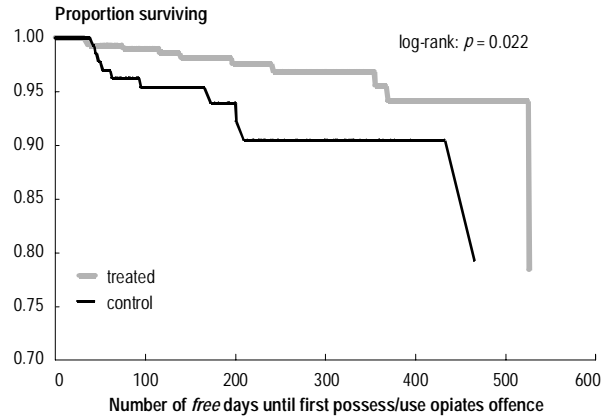
Figure 16: Possess/use cannabis
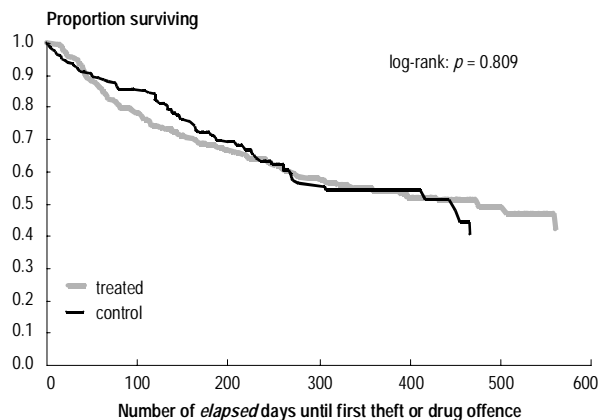**Survival function based on free time**

Figure 17: Possess/use other drug
Survival function based on free time

Figure 18: Deal/traffic opiates
Survival function based on free time

Figure 19: Any theft or drug offence
Survival function based on elapsed time

41

Figure 20: Any theft offence
Survival function based on elapsed time
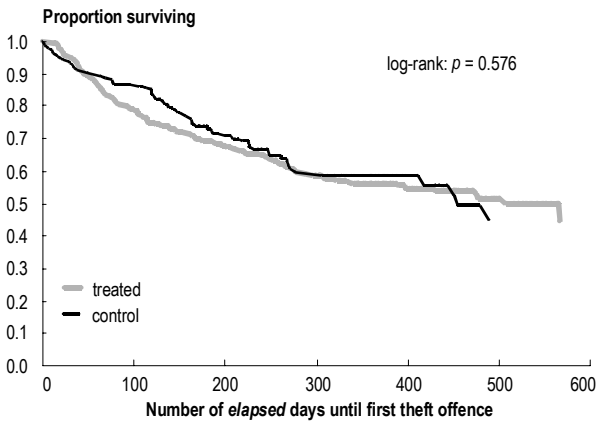
Figure 21: Break, enter and steal
Survival function based on elapsed time
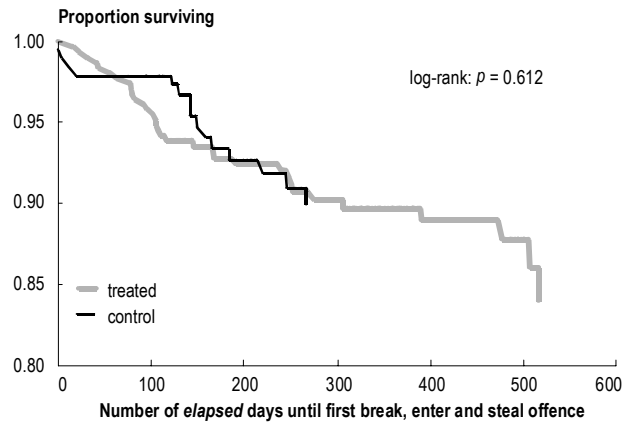
Figure 22: Fraud
Survival function based on elapsed time
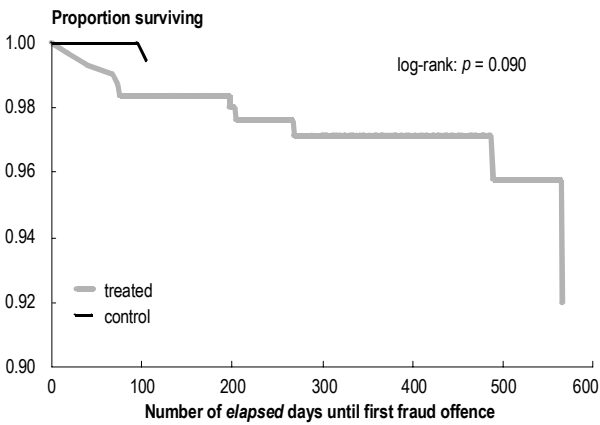
Figure 23: Shop stealing
Survival function based on elapsed time
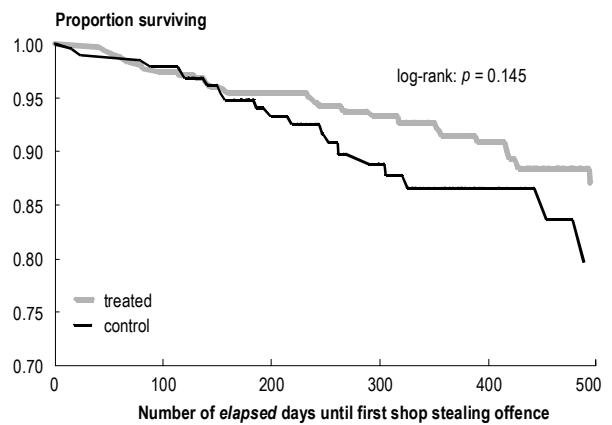
Figure 24: Larceny other than shop stealing
Survival function based on elapsed time
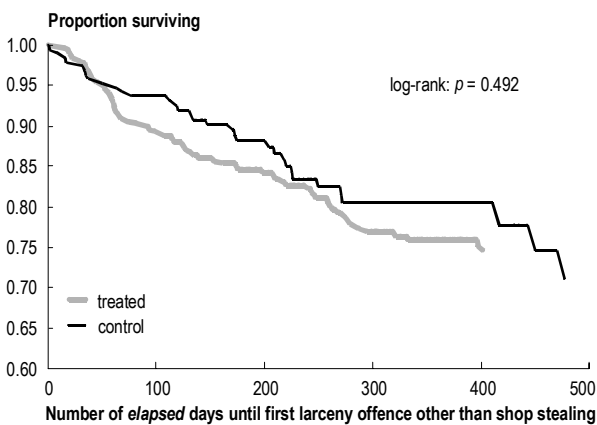
Figure 25: Unlawful possession
Survival function based on elapsed time
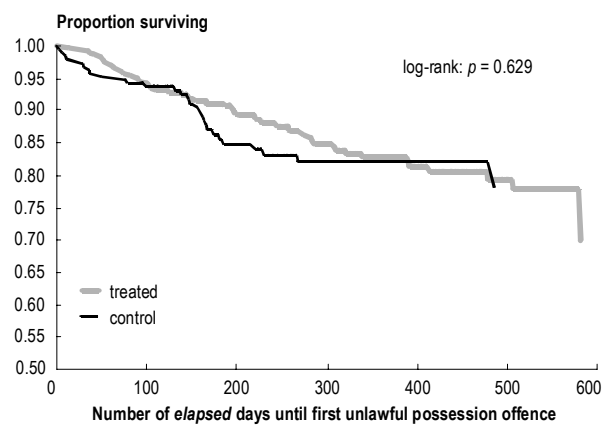
Figure 26: Motor vehicle theft
Survival function based on elapsed time
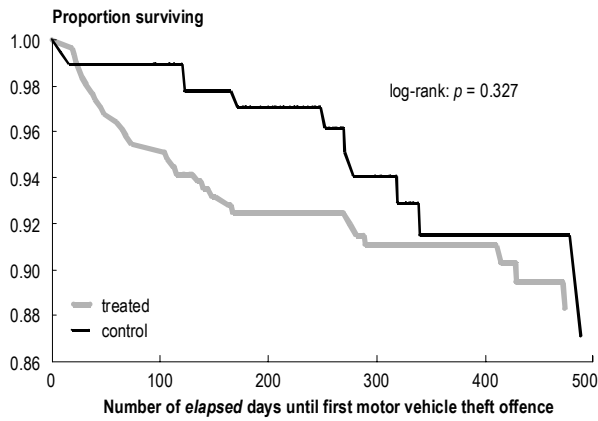
Figure 27: Any drug offence
Survival function based on elapsed time
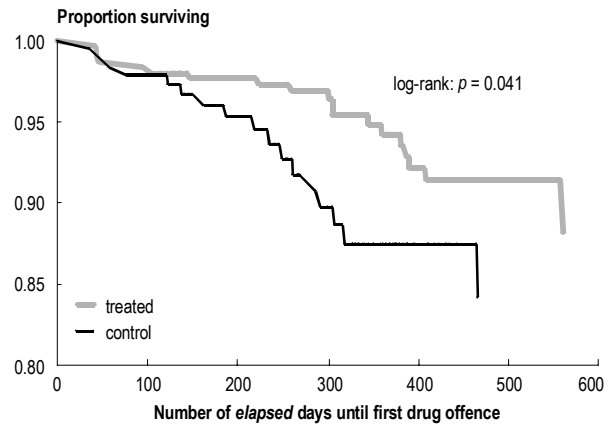
Figure 28: Possess/use opiates
Survival function based on elapsed time
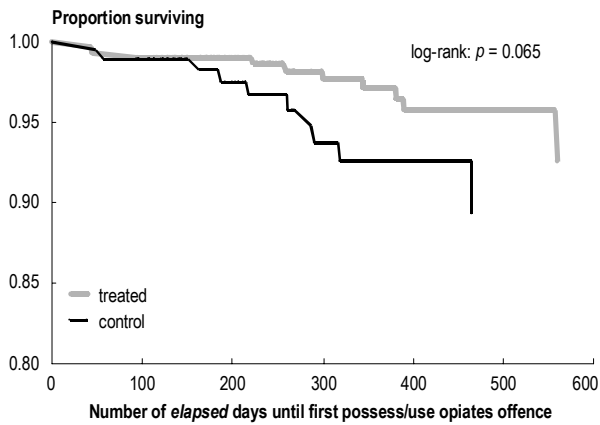
Figure 29: Possess/use cannabis
Survival function based on elapsed time

**Figure 30: Possess/use other drug**
Survival function based on elapsed time

**Figure 31: Deal/traffic opiates**
Survival function based on elapsed time

Offending frequency
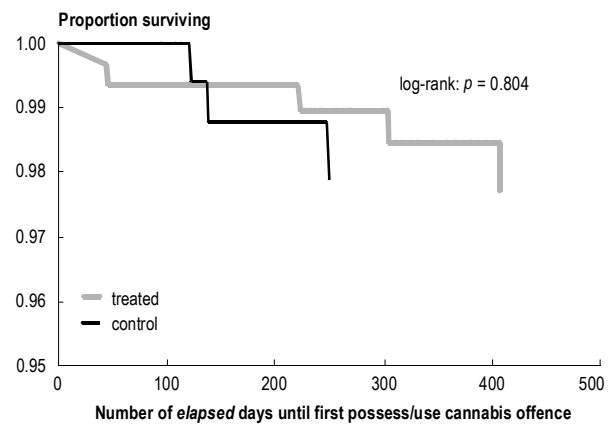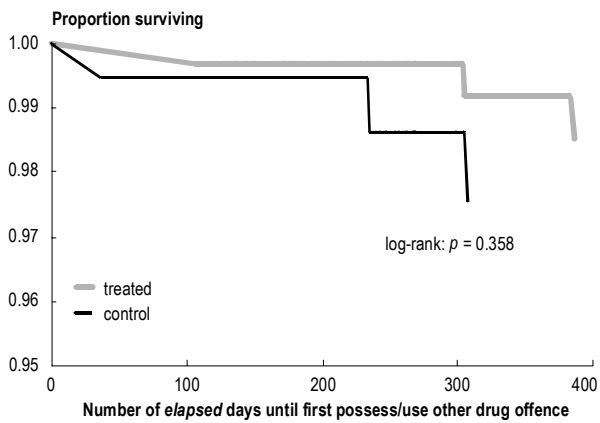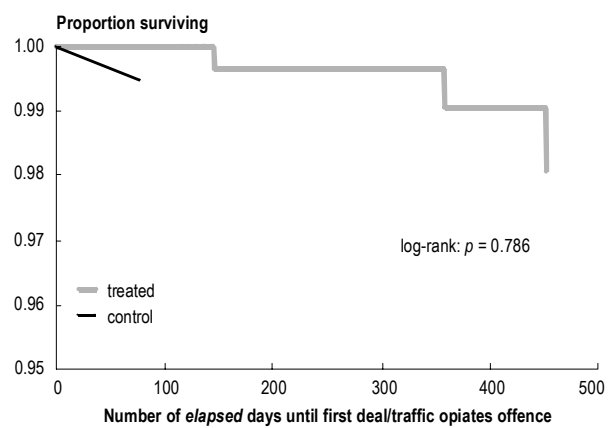
Offending frequency is measured as the number of offences committed (and dealt with by the Drug Court or a Local Court) per unit time. Because the numbers of offences were small, a reasonably large unit of time was chosen. For convenience, the time unit was set at 365 days, so the offending frequency measures are offences per 'year'.

The Wilcoxon two-sample test was used to test for offending frequency differences between the treated and control subjects. As with the time to first offence we examined offending rates on the basis of both free time (time out of custody) and elapsed time.

The 32 subjects (one treated, 31 control) who spent no time out of custody during the follow-up period are again excluded from the analysis based on free time. Table 15 shows the average offending rates (offences per 365 free days) for all the offence types studied. The final column of the table shows the p-value for the Wilcoxon test.

Table 15: Offending frequency based on free days

Offence type	Average number of offences per 365 free days		p-value (Wilcoxon)
	Treated (n=308)	Control (n=160)	
Theft or drug offence	3.16	4.66	0.30
Theft offence	3.07	4.04	0.61
Break enter & steal	0.35	0.78	0.70
Fraud	0.09	0.07	0.08
Shop stealing	0.22	0.80	0.12
Other larceny	1.26	1.24	0.70
Unlawful possession	0.45	0.70	0.62
Motor vehicle theft	0.70	0.44	0.37
Drug offence	0.08	0.62	0.04
Possess/use opiates	0.04	0.19	0.11
Possess/use cannabis	0.02	0.36	0.62
Possess/use other drug	0.01	0.04	0.40
Deal/traffic opiates	0.01	0.03	0.70

Only for drug offences was there a significant difference between the treated and control subjects. However, the offending frequency was very low, less than one offence per year of free time. (It should be remembered that these are offences dealt with by a court; the actual number of offences committed is certain to be underestimated by these data.) Nevertheless for all offence types except fraud, larceny other than shop stealing, and motor vehicle theft, the offending frequency for control subjects was greater than that for treated subjects.

Table 16 shows the results for offending rates based on total elapsed time. The only significant difference is for fraud (the p-value is 0.045, just under 0.05). In this case it is the treated subjects who have the higher offending rate.

Table 16: Offending frequency based on elapsed days

Offence type	Average number of offences per 365 elapsed days		p-value (Wilcoxon)
	Treated (n=309)	Control (n=191)	
Theft or drug offence	1.07	1.02	0.32
Theft offence	1.01	0.90	0.19
Break enter & steal	0.15	0.09	0.32
Fraud	0.05	0.01	0.05
Shop stealing	0.11	0.18	0.46
Other larceny	0.37	0.33	0.22
Unlawful possession	0.22	0.23	0.69
Motor vehicle theft	0.11	0.06	0.14
Drug offence	0.06	0.11	0.22
Possess/use opiates	0.03	0.07	0.25
Possess/use cannabis	0.02	0.02	0.97
Possess/use other drug	0.01	0.01	0.55
Deal/traffic opiates	0.01	0.01	0.59

The 'termination' effect

Our analysis so far has shown little difference in effectiveness in reducing theft and drug offences between the Drug Court and the traditional court system. It is important to remember that there was a high rate of termination from the Drug Court program. By the end of the follow-up period 43 per cent of the treated subjects included in our study had had their program involvement terminated because of non-compliance with program conditions. It is of interest to assess whether those whose involvement with the program was terminated differ from those who remained on the program. The latter group includes graduates and voluntary withdrawals from the program as well as those continuing on the program at the end of the follow-up period.

We therefore conducted a further analysis of both the time to the first offence and offending frequency, separating the treated subjects into two sub-groups: 'terminated' and 'not terminated'. Of the 309 treated subjects, 133 had had their involvement with the Drug Court program terminated by the end of the follow-up period; the remaining 176 had either voluntarily withdrawn or graduated, or were still on the program at the end of the follow-up period.

Because of the random allocation to the treatment and control groups we did not control for other factors in our comparison of the treatment and control groups. However, within the treated group, there may have been differences between those whose program involvement was terminated and those who remained on the program. It was therefore necessary to control for other factors which may have affected recidivism when comparing these two groups. Hence regression methods were used for the analyses reported in this section.

To analyse the time to the first offence, a proportional hazards model was fitted to the data. Such models are commonly used for analysing failure time data. In the proportional hazards model the risk of failure (in our case, committing an offence) is dependent not only on time but on the values of other predictor variables.

For the analysis of offending frequency we could not use standard linear regression methods because there were a large number of zero observations resulting from the fact that many of the subjects did not commit an offence (which was dealt with in court). Poisson regression methods are suitable for dealing with rare event data but there is almost always 'overdispersion' in Poisson models fitted to crime data; that is, the residual variance usually exceeds the variance that would be expected under the assumption of a Poisson distribution (where the variance is equal to the distribution mean). The negative binomial regression model is a Poisson-based regression model which has the advantage of including an additional parameter which caters for this overdispersion. We therefore analysed the effect of termination on offending frequency by fitting negative binomial regression models.

For both the proportional hazards models and the negative binomial regression models the predictor variables were as follows:

- group (a dichotomous variable taking the value 1 for treated subjects and 0 for control subjects)

- termination (a dichotomous variable taking the value 1 for 'terminated' subjects and 0 for all other subjects)

- age at referral to the Drug Court (a continuous variable, calculated as the difference between the date of preliminary health assessment and the date of birth, divided by 365.25)

- gender (a dichotomous variable taking the value 1 for male and 0 for female)

- prior imprisonment (a dichotomous variable taking the value 1 if the subject had been to prison previously and 0 otherwise)

- prior convictions (a discrete variable giving a count of the number of prior conviction episodes).

The regression models reported in this section were based on 432 subjects for analyses based on free time and on 459 subjects for analyses based on elapsed time. The subjects excluded from the free time regression models include 32 subjects who spent no time out of custody (i.e. had no free days) in the follow-up period and a further 36 subjects for whom data were missing for one or more of the predictor variables. There were 41 subjects with missing data who were excluded from the elapsed time regression models.

We present the details of the fitted models only for the two general offence types, theft offence and drug offence, but provide summary results for the models fitted to the specific offence types.

Free time to first offence

Table 17 shows the results from fitting a proportional hazards model to the free time to the first theft offence of any type.

Table 17: Proportional hazards model for free time to first theft offence

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Group (treated v. control)	1	-0.762	0.200	14.48	0.0001
Termination	1	1.098	0.184	35.50	<0.0001
Age	1	-0.024	0.014	3.04	0.0812
Gender	1	-0.194	0.205	0.90	0.3428
Prior imprisonment	1	-0.180	0.198	0.83	0.3636
Previous convictions	1	0.019	0.007	7.66	0.0056

Number of observations = 432

It is clear from Table 17 that there is a significant effect for both group and termination, indicating that the treated subjects differ from the control subjects and the 'terminated' subjects differ from all other subjects. The mean times to the first theft offence for each type of subject are:

treated subjects whose program was terminated (*n*=132):   216 free days
control subjects (*n*=160):   299 free days
treated subjects whose program was not terminated (*n*=176):   427 free days.

Those whose Drug Court program was terminated had a shorter time to the first theft offence than both the other treated subjects and the control subjects. The treated subjects whose program was not terminated had the longest time to the first theft offence.

Table 18 shows the results from fitting a proportional hazards model to the free time to the first drug offence of any type.

Table 18: Proportional hazards model for free time to first drug offence

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Group (treated v. control)	1	-1.610	0.542	8.81	0.0030
Termination	1	1.604	0.541	8.78	0.0031
Age	1	-0.037	0.032	1.32	0.2509
Gender	1	-0.311	0.497	0.39	0.5313
Prior imprisonment	1	-1.061	0.579	3.36	0.0667
Previous convictions	1	0.015	0.016	0.80	0.3705

Number of observations = 432

Again there is a significant effect for both group and termination, indicating that the treated subjects differ from the control subjects and the 'terminated' subjects differ from other subjects. The mean times to the first drug offence for each type of subject are:

treated subjects whose program was terminated (n=132):	433 free days
control subjects (n=160):	485 free days
treated subjects whose program was not terminated (n=176):	567 free days.

The pattern for the time to the first drug offence is similar to that for the time to the first theft offence. The shortest time is for those whose Drug Court program was terminated whereas the longest time is for those whose program was not terminated.

Table 19 summarises the results of fitting proportional hazards models for free time to the first offence for all offence types studied. The *p*-value columns show the significance of the group and termination effects in the fitted models. The last three columns show the mean survival times to the first offence, for the three types of subjects. Note that no model results are shown for possess/use other drug or for deal/traffic opiates as there were no offences of these types for the 'not terminated' subjects.

Table 19: Summary results from fitting proportional hazards models for free time to first offence

	p-value		Mean time to first offence (free days)		
Offence type	Group	Termination	Terminated (n=132)	Not terminated (n=176)	Control (n=160)
Theft or drug offence	<0.0001	<0.0001	192	408	279
Theft offence	0.0001	<0.0001	216	427	299
Break, enter and steal	0.0933	0.0076	443	548	502
Fraud	0.3602	0.3186	501	576	559
Shop stealing	0.0003	<0.0001	430	581	469
Other larceny	0.0055	<0.0001	342	517	420
Unlawful possession	0.0003	<0.0001	363	550	438
Motor vehicle theft	0.4092	0.0671	469	551	514
Drug offence	0.0030	0.0031	433	567	485
Possess/use opiates	0.0502	0.0944	464	570	511
Possess/use cannabis	0.1592	0.1803	528	588	551
Possess/use other	–	–	525	–	551
Deal/traffic opiates	–	–	522	–	559

Table 19 shows there are significant group and termination effects for shop stealing, other larceny, and unlawful possession, and a significant termination effect for break, enter and steal. The pattern in the mean time to the first offence is consistent for all types of theft offence, with the 'not terminated' group of treated subjects having the longest times and the 'terminated' group having the shortest. A similar pattern occurs for drug offence survival times although for specific types of drug offence the group and termination effects are not significant at the 5 per cent level.

Elapsed time to first offence

Table 20 shows the results from fitting a proportional hazards model to the elapsed time to the first theft offence of any type.

Table 20: Proportional hazards model for elapsed time to first theft offence

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Group (treated v. control)	1	-0.319	0.198	2.60	0.1070
Termination	1	0.846	0.182	21.57	<0.0001
Age	1	-0.018	0.013	1.88	0.1707
Gender	1	-0.342	0.202	2.87	0.0900
Prior imprisonment	1	-0.151	0.197	0.59	0.4441
Previous convictions	1	0.011	0.007	2.65	0.1033

Number of observations = 459

There is a significant termination effect. Treated subjects whose Drug Court program was terminated have a shorter mean time to the first theft offence (303 elapsed days) than both the control subjects (375 elapsed days) and other treated subjects (447 elapsed days).

Table 21 shows the results from fitting a proportional hazards model to the elapsed time to the first drug offence of any type. Neither the group nor the termination effect is significant at the 5 per cent level (although for both effects the p-value is close to significance).

Table 21: Proportional hazards model for elapsed time to first drug offence

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Group (treated v. control)	1	-1.041	0.538	3.75	0.0528
Termination	1	0.960	0.525	3.34	0.0674
Age	1	-0.026	0.033	0.63	0.4269
Gender	1	-0.561	0.458	1.50	0.2201
Prior imprisonment	1	-0.825	0.577	2.04	0.1529
Previous convictions	1	0.012	0.016	0.55	0.4604

Number of observations = 459

Table 22 presents a summary of the results of fitting proportional hazards models for elapsed time to the first offence for all offence types studied. As in Table 19, the *p*-value columns show the significance of the group and termination effects in the fitted models. The last three columns show the mean survival times to the first offence for the three types of subjects. There are no model results shown for possess/use other drug or for deal/traffic opiates as there were no offences of theses types for the 'not terminated' subjects.

Table 22: Summary results from fitting proportional hazards models for elapsed time to first offence

| | p-value | | Mean time to first offence (elapsed days) | | |
Offence type	Group	Termination	Terminated (n=133)	Not terminated (n=176)	Control (n=191)
Theft or drug offence	0.0652	<0.0001	291	436	358
Theft offence	0.1070	<0.0001	303	447	375
Break, enter and steal	0.6389	0.1132	520	560	533
Fraud	0.2094	0.8874	583	583	573
Shop stealing	0.0046	0.0007	521	588	508
Other larceny	0.1684	0.0003	437	529	480
Unlawful possession	0.0198	<0.0001	463	561	493
Motor vehicle theft	0.7748	0.3631	534	561	531
Drug offence	0.0528	0.0674	553	582	516
Possess/use opiates	0.2729	0.6490	579	585	547
Possess/use cannabis	0.2875	0.2002	584	595	568
Possess/use other	–	–	589	–	555
Deal/traffic opiates	–	–	590	–	573

For both shop stealing and unlawful possession there are significant group and termination effects, indicating that the treated subjects differ from the control subjects and the 'terminated' subjects differ from other subjects. There is also a significant termination effect for other larceny. For these three types of theft offence the mean survival time is longest for the group of Drug Court participants who stayed on the program, that is, those who did not have their program involvement terminated. Note though, that the shortest survival time is not necessarily for the 'terminated' subjects; in the case of shop stealing it is the control subjects who have the shortest elapsed time to the first offence.

Offending frequency based on free time

We now examine the effect of termination on offending frequency. Table 23 shows the results of fitting a negative binomial regression model for the theft offending rate based on free time.

Table 23: Negative binomial regression model for theft offending frequency rate based on free time

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Intercept	1	-4.310	0.571	56.93	<0.0001
Group (treated v. control)	1	-1.119	0.235	22.70	<0.0001
Termination	1	1.525	0.220	48.16	<0.0001
Age	1	-0.025	0.017	2.13	0.1446
Gender	1	-0.237	0.263	0.81	0.3673
Prior imprisonment	1	-0.388	0.235	2.74	0.0980
Previous convictions	1	0.020	0.008	6.82	0.0090
Dispersion	1	1.929	0.275	–	–

Number of observations = 432   Deviance = 394.4,   425 df

Clearly there is a strong effect for both group and termination. The mean offending frequencies per 365 free days for theft offences are:

treated subjects whose program was terminated (n=132):	5.8 offences
control subjects (n=160):	4.0 offences
treated subjects whose program was not terminated (n=176):	1.0 offence.

The pattern is similar to that already seen for free time to the first offence, in that the control subjects fall between the 'terminated' and 'not terminated' treated subjects, with the 'not terminated' having the lowest offending frequency and the 'terminated' having the highest offending frequency.

Table 24 shows the results of fitting a negative binomial regression model for the offending rate for any drug offence, based on free time.

Table 24: Negative binomial regression model for drug offending frequency rate based on free time

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Intercept	1	-6.341	1.138	31.04	<0.0001
Group (treated v. control)	1	-1.583	0.529	8.95	0.0028
Termination	1	1.440	0.512	7.90	0.0050
Age	1	-0.034	0.035	0.96	0.3272
Gender	1	-0.096	0.547	0.03	0.8601
Prior imprisonment	1	-0.963	0.556	3.00	0.0833
Previous convictions	1	0.012	0.018	0.47	0.4915
Dispersion	1	1.598	1.255	–	–

Number of observations = 432   Deviance = 131.3,   425 df

Again there are significant effects for both group and termination, indicating that there are differences between the treated and control subjects, and between the 'terminated' and all other subjects. The mean offending frequencies per 365 free days for drug offences are:

treated subjects whose program was terminated (*n*=132):	0.15 offences
control subjects (*n*=160):	0.62 offences
treated subjects whose program was not terminated (*n*=176):	0.04 offences.

The offending frequency results for drug offences show a different pattern to that observed for theft offending. For drug offences the control subjects had the highest offending frequency. The treated subjects whose program was not terminated had the lowest frequency of offending.

Table 25 presents a summary of the results of fitting negative binomial regression models for offending frequency based on free time for all offence types studied. The *p*-value columns show the significance of the group and termination effects in the fitted models. The last three columns show the average offending frequencies. Note that, because there was zero offending frequency for the 'not terminated' subjects for possess/use other drug and deal/traffic opiates, models were not fitted for these offences.

Table 25: Summary results from fitting negative binomial regression models for offending frequency based on free time

	p-value		Number of offences per 365 free days		
Offence type	Group	Termination	Terminated (n=132)	Not terminated (n=176)	Control (n=160)
Theft or drug offence	<0.0001	<0.0001	5.98	1.04	4.66
Theft offence	<0.0001	<0.0001	5.83	1.00	4.04
Break, enter and steal	0.2411	0.0305	0.54	0.20	0.78
Fraud	0.6087	0.1956	0.16	0.04	0.07
Shop stealing	0.0001	<0.0001	0.48	0.03	0.80
Other larceny	0.0005	<0.0001	2.43	0.38	1.24
Unlawful possession	0.0003	<0.0001	0.84	0.15	0.70
Motor vehicle theft	0.1462	0.0128	1.38	0.20	0.44
Drug offence	0.0028	0.0050	0.15	0.04	0.62
Possess/use opiates	0.0623	0.2574	0.05	0.03	0.19
Possess/use cannabis	0.0908	0.1056	0.05	0.01	0.36
Possess/use other	–	–	0.02	zero	0.04
Deal/traffic opiates	–	–	0.02	zero	0.03

There are significant termination effects for each type of theft offence except fraud and significant group effects for shop stealing, other larceny and unlawful possession. The Drug Court participants who remained on the program had the lowest offending frequency for each type of offence.

Offending frequency based on elapsed time

Table 26 shows the results of fitting a negative binomial regression model for the theft offending rate based on elapsed time.

Table 26: Negative binomial regression model for theft offending frequency rate based on elapsed time

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Intercept	1	-5.497	0.485	128.34	<0.0001
Group (treated v. control)	1	-0.357	0.203	3.09	0.0787
Termination	1	0.926	0.195	22.69	<0.0001
Age	1	-0.019	0.015	1.68	0.1950
Gender	1	-0.237	0.225	1.10	0.2932
Prior imprisonment	1	-0.172	0.206	0.69	0.4056
Previous convictions	1	0.013	0.007	3.57	0.0590
Dispersion	1	1.440	0.224	–	–

Number of observations = 459   Deviance = 400.1,   452 df

There is a strong termination effect. The Drug Court participants who remained on the program had an average theft offending frequency of 0.6 offences per 365 elapsed days, compared with 1.5 offences per 365 elapsed days for those whose program was terminated.

Table 27: Negative binomial regression model for drug offending frequency rate based on elapsed time

Parameter	DF	Parameter estimate	Standard error	Chi-square	p
Intercept	1	-7.210	1.091	43.68	<0.0001
Group (treated v. control)	1	-0.955	0.525	3.31	0.0687
Termination	1	0.975	0.509	3.67	0.0555
Age	1	-0.023	0.034	0.45	0.5038
Gender	1	-0.318	0.512	0.39	0.5344
Prior imprisonment	1	-0.771	0.552	1.95	0.1626
Previous convictions	1	0.005	0.017	0.09	0.7605
Dispersion	1	1.980	1.409	–	–

Number of observations = 459   Deviance = 133.5,   452 df

Table 27 shows the results of fitting a negative binomial regression model for the offending rate for any drug offence, based on elapsed time. None of the explanatory variables is significant at the 5 per cent level of significance.

Table 28 presents a summary of the results of fitting negative binomial regression models for offending frequency based on elapsed time for all offence types studied. The p-value columns show the significance of the group and termination effects in the fitted models. The last three columns show the average offending frequencies. Models were not fitted for possess/use other drug and deal/traffic opiates because the 'not terminated' group of subjects had zero offending frequency for these offences.

Table 28: Summary results from fitting negative binomial regression models for offending frequency based on elapsed time

	p-value		Number of offences per 365 elapsed days		
Type of offence	Group	Termination	Terminated (n=133)	Not terminated (n=176)	Control (n=191)
Theft or drug offence	0.0349	<0.0001	1.65	0.64	1.02
Theft offence	0.0787	<0.0001	1.55	0.61	0.90
Break, enter and steal	0.5773	0.5646	0.17	0.12	0.09
Fraud	0.2462	0.4378	0.08	0.03	0.01
Shop stealing	0.0039	0.0003	0.23	0.02	0.18
Other larceny	0.0813	0.0004	0.55	0.23	0.33
Unlawful possession	0.0471	<0.0001	0.38	0.09	0.23
Motor vehicle theft	0.9887	0.3618	0.13	0.10	0.06
Drug offence	0.0687	0.0555	0.11	0.03	0.11
Possess/use opiates	0.3856	0.8564	0.03	0.03	0.07
Possess/use cannabis	0.2231	0.1460	0.04	0.01	0.02
Possess/use other	–	–	0.02	zero	0.01
Deal/traffic opiates	–	–	0.02	zero	0.01

There are significant termination effects for shop stealing, other larceny and unlawful possession. Again, for these offences, those who remained on the Drug Court program had lower offending frequencies than those whose program was terminated.

In summary, for both time to the first offence and offending frequency there are significant differences between the Drug Court participants who remained on the program and the participants whose program was terminated for non-compliance with program conditions. On both a free time and an elapsed time basis these effects are evident for theft offences. There are also significant effects for drug offences on a free time basis. In each case it is the 'terminated' subjects who perform more poorly.

ECONOMIC EVALUATION

Costs

We now turn to the central question of the evaluation; namely that of whether the Drug Court is more cost-effective in reducing drug-related crime than conventional sanctions. The data shown below in Table 29 represent the total expenditures for each of the categories listed. This includes all expenditures directly related to the operation of the Drug Court for a period of 23 months. Included is any expenditure related to the members of the treatment group, expenditure on the control group while being assessed for eligibility for the Drug Court program, expenditure on those who were excluded from Drug Court after assessment or detoxification and expenditure on anyone who used the Drug Court up to 31 December 2000 but were not included in the study group. As described in the methods section, these data include expenditures on salary, on-costs, overhead and corporate support for the provision of the Drug Court program.

Table 29: Total expenditures by agency on the NSW Drug Court program

Agency	1998/99 (five months)	1999/00 (twelve months)	2000/01 (six months)	Total for 23 months
NSW Drug Court	$842,891	$1,916,531	$1,036,786	**$3,796,207**
NSW Health (including Corrections Health)	$1,159,777	$2,716,127	$1,242,670	**$5,118,574**
Probation and Parole	$161,999	$929,197	$510,631	**$1,601,827**
Total by year	**$2,164,667**	**$5,561,855**	**$2,790,087**	**$10,516,608**

Not included in Table 29 are expenditures by DCS on incarceration or sanctions because these expenditures were only estimated for those who remained in the analysis. Total expenditures on sanctions for the 23 months for the treatment group was estimated to be $1,379,884 and expenditures on other incarceration up to and including 31 December for the treatment group was estimated at $2,954,867.

The total costs were apportioned across individuals based on their length of stay in the Drug Court program (treatment, and probation and parole); in detoxification (detoxification unit); number and type of appearances (Drug Court costs); number of urine screens; time in gaol (length and frequency of sanction, length of sentences up to 31 December 2000).

Once the costs were apportioned on an individual basis, resources consumed by individuals who were not included in the study, because they entered the control group or treatment group twice, or entered both the control and treatment groups, or entered the Drug Court program after the study time was completed, were excluded.

Table 30 contains a summary of expenditures by various categories. These costs only apply to individuals who were included in the cost-effectiveness portion of the study (*n*=309) and are presented separately for those who graduated within the 23 months, for those who were terminated from the Drug Court program, and for those who were still continuing in the treatment portion of the program as of 31 December 2000. The final row presents the total over the whole 23-month period.

Table 30: Total costs for the treatment group

Category	Continuing group (n=91)	Graduated group (n=23)	Terminated group (n=195)	All Drug Court participants (n=309)
Treatment	$1,160,790	$375,684	$1,815,868	$3,352,341
Probation and parole	$564,430	$165,146	$742,861	$1,472,437
Detoxification	$398,238	$84,982	$774,928	$1,258,148
Court attendances	$1,055,444	$246,989	$1,543,929	$2,846,362
Urine tests	$91,317	$23,848	$78,741	$193,905
Sanctions	$471,528	$16,426	$929,723	$1,417,677
Sentencing	$20,707	$15,053	$2,919,096	$2,954,857
Grand total	**$3,762,452**	**$928,128**	**$8,805,146**	**$13,495,727**

The unit of measurement for the cost portion of the cost-effectiveness analysis is the average cost per day. As described in the method section, this was estimated by first obtaining a cost for each individual in the treatment group and then determining the average cost per day per person. The results are presented below in Table 31, and while the average cost per day is presented for each of the groups, only the overall average is used in the cost-effectiveness analysis. It is however, worth examining the data in Table 31. Of note is the higher average cost per day for the terminated group. This is primarily driven by the higher costs of gaol for most of this group (both in sanctions and after termination). The average daily cost for the group who graduated is the lowest, reflecting the fact that this group of participants tended to have lower costs for sanctions and other incarceration and, as their time in the Drug Court continued, the frequency with which they reported to the Court would have decreased.

Table 31: Average costs and length of stay

Average	Treatment group			
	Continuing (n=91)	Graduated (n=23)	Terminated (n=195)	All participants (n=309)
Average number of days excluding final sentence	358	384	196	258
Average number of days including final sentence	365	509	252	321
Average cost per day (Drug Court and sentence)	$113	$79	$180	$144
	Control group (n=138)			
Average cost per day	$151			
Average number of days including final sentence	234			

The average length of stay includes, for the treatment group, all days from the initial assessment for the program to the completion of any sentence which results at the end of the program, termination, graduation, or 31 December 2000.

For the control group, the length of stay is from the initial assessment to the completion of any sentence or 31 December 2000. It is important to note that, although the numbers of individuals included in the cost-effectiveness analysis differs from that used in the analysis of effectiveness, the results are still valid because the unit of analysis used was the cost per participant per day.

What if the Drug Court did not exist?

As noted earlier, at the end of the study period, 309 people had entered the treatment group and data were available for 138 of the control group. Conventionally, comparison of the costs incurred by members of both groups is used to answer the question: *what resources would the treatment group have consumed if the treatment program had not been available?* Another way of understanding what resources would have been consumed by the treatment group had the Drug Court program not been available is to calculate the cost of the original sentence handed down by the Drug Court to members of the treatment group. This assumes that this sentence is the one which would have otherwise been determined and served in its entirety. The estimated total costs for the treatment group (*n*=309) of serving their sentence in the absence of the Drug Court program are $12,954,541. The costs include costs of the original hearing as well as incarceration costs. In estimating these costs it was assumed that there would be a distribution of guilty and not guilty pleas. However, such data could not be used to undertake a cost-effectiveness analysis as there are no outcome data for the comparator.

Cost-effectiveness analyses

Four outcome measures were selected. They were the free time to the first offence and the offending frequency per unit free time, for each of two selected offences, a theft offence and a drug offence. The selected offences were shop stealing and possess/use opiates. These two offences were selected (1) because they are reasonable marker offences for the drug-related offences which the Drug Court program is targeted at reducing and (2) because there were significant differences in effectiveness for these two offences (for one of the effectiveness measures). These outcome measures are limited in that they do not incorporate a measure of health and/or well-being of the participant – the methods and perspective of the economic evaluation limit the type of outcome chosen. The measures are also limited in their ability to capture the full extent of recidivism because they only include offences which were dealt with at court.

Table 32 shows the costs and outcomes for each of the cost-effectiveness ratios calculated. (For convenience the equation is repeated below the table.) For both selected offence types, the results for the outcome measures are positive for the Drug Court in that the treatment group took longer to re-offend and committed fewer offences than the control group.

Table 32: Data for the cost-effectiveness analysis

	Treatment group (T)	Control group (C)
Cost per day	$143.87	$151.72
Outcome (1): Mean time (days) to first shop stealing offence	537.3	469.2
Outcome (2): Average number of shop stealing offences per day	0.000607	0.002202
Outcome (3): Mean time (days) to first possess/use opiates offence	560.9	510.8
Outcome (4): Average number of possess/use opiates offences per day	0.000107	0.000519
ICER 1	-$0.12	
ICER 2	$4,921.78	
ICER 3	-$0.16	
ICER 4	$19,040.48	

The incremental cost-effectiveness equation is:

$$ICER = \frac{(C_T - C_C)}{(Eff_T - Eff_C)}$$

The ICER for outcome measure (1) is -$0.12, the interpretation of which is that it costs an additional $0.12 to achieve an additional shop stealing free day in the control group. However it is unlikely that the small additional cost incurred by the control group represents a real difference in costs between the two groups, so it would be more realistic to conclude that Drug Court and conventional sanctions were equally cost-effective in reducing the time taken by participants to commit a shop stealing offence. The result for outcome measure (3) shows a similar result for the selected drug offence, possess/use opiates.

The ICER for outcome measure (2) (the average number of shop stealing offences per day), is $4,921.78 per additional offence prevented. This result indicates that, using conventional sanctions, it costs an additional $4,921.78 to prevent one additional shop stealing offence. Here it is clearer that the Drug Court can be regarded as cost-effective relative to the conventional court system. For possess/use opiates, the ICER for outcome measure (4) is even greater: it costs an additional $19,040.48 to prevent one additional offence. This last result should be treated with some caution. Drug Court participants were not always prosecuted for possess/use opiate offences which came to the attention of the Drug Court team. This may have biased this measure of offending toward the Drug Court. Note, however, that there are also countervailing considerations. Firstly, Drug Court participants would have been under closer scrutiny in relation to drug use than their counterparts in the control group. Secondly, many of those in the control group caught by police for illicit drug use/possession are likely to have escaped prosecution (Weatherburn, Lind & Forsythe 1999, p.40).

These results should be viewed in the context of the overall evaluation of the effectiveness of the Drug Court. Of a large number of outcomes measured, most did not show a statistically significant difference between the treatment and control groups.

Sensitivity analysis

Sensitivity analysis is a tool used by economists to test the robustness of results and assumptions made. It is applied when there is uncertainty in estimating either the quantity of resources used or the price attached to those resources. As has been detailed, in this project there are a number of areas where the capturing of resources and the price attached to those resources were difficult to estimate. The results of the sensitivity analysis are summarised in Table 33.

Table 33: Sensitivity analysis – Treatment group and control group

Cost category	Description of variation	Cost per day	Percentage difference from original
Treatment group		**$143.87**	
Urinalysis	Cost per urine screen to:		
	$15	$143.49	-0.26%
	$25	$144.61	0.52%
	$35	$145.73	1.30%
	$100	$153.02	6.36%
Treatment	Cost per day to an average of the 1999 & 2000 = $33.58	$136.56	-5.08%
Appearance costs	Cost per appearance:		
	decreased by 20%	$137.80	-4.22%
	increased by 20%	$149.93	4.22%
Sentence	Assume 66% of gaol sentence served, that is reduce gaol time by 34%	$127.15	-11.62%
Control group		**$151.72**	
Sentence	Assume 66% of gaol sentence served, that is reduce gaol time by 34%	$120.64	-20.49%
Appearances	Increase number of appearances in Local Court by 100%	$151.89	0.11%
	Increase number of non-appeal appearances in District Court by 100%	$151.77	0.03%
	Increase number of appeal appearances in District Court	$152.06	0.23%
District court costs	Cost per appearance:		
	increased by 20%	$151.80	0.05%
	decreased by 20%	$151.64	-0.05%

For the treatment group, sensitivity analysis was undertaken on the cost of the urine screens, treatment, court appearances and days in gaol. The price for the urine screens was obtained by dividing the total payment for urine screens, gloves and containers by the number of urine screens recorded on the Drug Court database. The resulting price was $18.36 but advice provided to the researchers suggested that the average cost was $25.00. In addition, the cost of gloves and containers would need to be included. Thus, for the purposes of sensitivity analysis an average of $35.00 and $100.00 per test was used. At an average cost of $35.00 for each urine sample sent, the total cost per day would increase by 1.30 per cent and, at $100.00 per urine sent, the costs would increase by 6.36 per cent. These results suggest that even if the number and costs of urine tests were underestimated this did not have a significant impact on the result.

Treatment costs were based on total expenditures divided by the total days available for treatment for each year of the study. Due to the start-up costs and slower than expected initial uptake in the Drug Court program, the cost per day during the first year ($127.50) was considerably higher than for the other two years ($39.93 and $23.85 per available day in treatment). While these costs may be a true representation of what actually occurred, sensitivity analysis was conducted using the average cost per day in treatment over the last two years of the study ($33.58) as one way of trying to understand the impact of the high costs related to start-up and learning. The impact over the whole period of the study was to decrease the costs per day by 5.08 per cent. Although we were unable to demonstrate changes in costs over time for the other areas of the treatment program (i.e. DCS and P&P), it is quite likely that these areas also experienced a similar start-up impact on their costs.

To assess the impact of a difference in sentence length we decreased the time in gaol by 34 per cent for both groups, as part of the sensitivity analysis. The impact was an overall decrease in costs (11.62 per cent for the treatment group and 20.49 per cent for the control group). The overall effect of decreasing time in gaol was to bring the costs closer together.

In addition, the costs of the Drug Court itself were increased and decreased by 20 per cent resulting in an overall change in costs of 4.22 per cent. In neither case did the cost per day in the Drug Court program equal the cost per day of the control group.

With respect to the control group, significant uncertainty was attached to the costs of the District Court and to the number of appearances for both Local and District Courts. For the District Court, the number of appearances and the cost per appearance were varied. Varying the cost of an appearance in a District Court by 20 per cent only affected the average cost per day by 0.05 per cent and varying the number of court appearances for sentencing or trials by 100 per cent had a 0.03 per cent impact on the overall cost per day (this was because there were very few of these in the data). Similarly, varying the number of appearances for appeals by 100 per cent only affected the cost per day by 0.23 per cent. It can be seen from the sensitivity analysis on the control group that varying the assumptions made regarding the sentencing makes very little difference to the final costs. This suggests that the costs of the control group are being driven by the penalty costs, primarily the time spent in gaol.

Start-up costs

As this was a new program in NSW it is to be expected that start-up costs would be significant. Start-up costs include costs related to the development of the Drug Court program and any procedures and protocols developed. Key informants were requested to identify start-up costs as part of the original request for financial data. Unfortunately

most agencies were unable to identify start-up costs separately. However, using the available data, some evidence of the size of these costs can be estimated for health care services and court appearances. Some start-up costs were identified for NSW Health, specifically the renovation costs of the detoxification unit at MRRC and some staff time costs during the initial period of the Drug Court. The cost per available treatment day is shown in first line of the treatment costs in Table 34. These data show that the exclusion of start-up costs made only a small difference to the cost per available day in treatment.

Although there is variation across years in the estimate of the cost of court appearances, the interpretation of this is not straightforward, as costs decrease in the second year and rise again in the third year of the program. The purpose of presenting these costs is to illustrate that, although start-up costs of the program were unable to be identified separately, they appeared to be substantial. Thus, while programs implemented elsewhere would be able to learn from the experience of the NSW Drug Court program they should also expect to incur significant costs during the initial phases of the program.

Table 34: Estimates of cost variation over the three years

	1998/99	1999/00	2000
Court appearances			
Pre program (includes assessment)	$780.69	$366.13	$555.17
On program	$632.20	$219.93	$262.10
Sentencing/terminations/ graduations	$1,611.10	$689.14	$958.17
Treatment			
Cost of treatment per day (excluding identified start-up costs)	$120.65	$41.89	$25.28
Cost of treatment per day	$135.76	$41.89	$25.28

DCS also incurred costs for the renovation of some facilities prior to Drug Court. Renovation costs incurred in 1998/99 related to Parramatta Correctional Centre, Parramatta Court cells and the MRRC Detoxification Unit.

The costs shown in Table 35 were not allocated in their entirety to the Drug Court program as inmates not in the Drug Court program also use facilities provided by these renovations. For example, six of the 16 beds at MRRC were allocated to non Drug Court inmates and will be available to the general population should the Drug Court program cease.

Table 35: Start-up costs for DCS activities

Location	Amount	Purpose
MRRC	$350,000	Detoxification Unit
Parramatta Correctional Centre	$36,000	Partitioning, furnishings
Parramatta Court cells	Unavailable	Holding area, clinic

DISCUSSION

This study is the first assessment of the cost and cost-effectiveness of a drug court in Australia. While a number of assessments of the costs of similar programs have been published overseas (mainly in the US), drug courts have not by and large been subjected to much systematic economic evaluation. The present study therefore represents a landmark in terms of rigorous appraisal of an existing drug court program.

The NSW Drug Court program is not a single service designed to deal with a defined problem shared by all receivers of the service. It is a complex intervention designed to benefit people with a range of different problems, all of which have resulted in drug dependence and drug-related crime. Such interventions pose unique problems for evaluators (MRC Health Services Research Board 2000; Godber, Robinson, & Steiner 1997; Coast, Hensher, Mulligan, Shepperd & Jones 2000). In the present case these problems included the fact that not all participating agencies collected data in ways which were suitable for the identification of resource use or the calculation of costs. This was complicated by some inadvertent errors in implementing the trial as a research process: some individuals originally allocated to the control group were subsequently allocated a place in the treatment group and two were allowed to enter the program a second time, after having their first program terminated.

Data that would have enabled a more detailed economic evaluation were often of poor quality or simply not available. For example, tracking the days in residential rehabilitation by Drug Court identification number would have made the allocation of these costs more accurate. The quality of the data able to be used to estimate individual resource use has been affected by a number of factors such as incomplete data on participants. In addition, inadequate documentation of changes in treatment protocols made it difficult to be confident of the accuracy of the cost estimates. Further, computer-based records of program phase and treatment used for individuals were over-written which compounds the potential for costs to be inaccurate. Subsequent evaluations of drug court or similar programs would benefit from all agencies involved being consistent in documenting resources used by participants by individual identification numbers and by agreeing that individual-level data would be made available for the purposes of assessing costs.

Ideally, the average cost per episode of treatment would have been compared with the average cost of sanctioning someone in the control group. The results of such a calculation for the NSW Drug Court are $46,224 for the treatment group and $35,334 for the control group. This suggests that the Drug Court was more expensive than conventional sanctions. However, such a comparison must be approached with caution. Because the graduation rate was much lower than expected our estimates of the cost per treatment episode are not very reliable. To get around this problem we have calculated an average daily cost of maintaining someone on the Drug Court program and compared that to the average daily cost of sanctioning someone in the conventional way.

The results of this calculation reveal that, for the 23-month period of the evaluation, the Drug Court was as cost-effective as conventional sanctions in delaying the time to the first offence and cost-effective in reducing the frequency of offending. Sensitivity analysis indicates that these conclusions are robust under a range of plausible variations in the parameter values that underpin the costing. The relative cost-effectiveness of the Drug Court is encouraging considering its highly experimental nature and the lack of experience in Australia in establishing and running Drug Court programs. It is all the more notable because, although we had no alternative to the use of official records to measure drug-related crime, changes in offences dealt with by court are arguably a fairly crude and insensitive measure of changes in criminal activity.

It is also worth bearing in mind that the costing perspective which informs this study was limited to the measurement of costs that could be called treatment costs within the Drug Court program and the control group. We have ignored the broader societal benefits that may flow from the Drug Court program. These include reduced demand (over the long term) on health services and the criminal justice system, reduced insurance claims, reduced social security outlays and reduced pain and suffering as a result of criminal victimisation. We have also ignored some of the costs associated with conventional sanctions. These include the personal cost to offenders and the families when the former are deprived of their liberty and any social and public health costs that might flow from imprisonment (e.g. reduced offender employment prospects, higher rates of Hepatitis C and HIV-AIDS). Had it been possible to quantify these benefits and costs, the gap between the Drug Court and conventional sanctions in terms of cost-effectiveness may well have been larger.

This said, there are areas where the cost-effectiveness of the NSW Drug Court has been and could potentially be further improved. One of the major cost drivers for both treatment and control groups is the cost of imprisonment. In the case of the control group this is hardly surprising, since the majority were imprisoned. In the case of the Drug Court program imprisonment costs stem partly from the fact that prison is frequently used as a sanction for non-compliance with program conditions and partly from the fact that a large number of participants who were terminated from the program were sentenced to time in gaol. An important efficiency gain the Court has already made to its own functioning stems from its decision to introduce suspended sanctions and permit participants to reduce these sanctions through good behaviour. This policy has two advantages. Firstly it reduces the 'churning' of offenders through the prison system which was feature of the Drug Court when program breaches were being punished with periods in custody as short as a day. This reduction in 'churning' of offenders through the prison system reduces the cost of the Drug Court relative to conventional sanctions. Secondly, because it introduces loss of prison time as a reward, it potentially increases the effectiveness of the Drug Court program.

There are a number of other potential avenues of improvement to the cost-effectiveness of the Drug Court program. These are better targeting of offenders, earlier termination of program participants who make insufficient progress in reducing drug use and criminal activity, more realistic program graduation criteria, optimisation of treatment, and improvements in cross-Departmental cooperation in relation to the program. We will deal with each of these in turn.

The results of the effectiveness evaluation (see Tables 19-28) show that those who remain on the Drug Court program commit significantly fewer offences and take longer to commit their first offence than either those rejected from the program or those sanctioned in the conventional way. The problem for the Drug Court is that it is difficult to tell, upon entry to the program, who will succeed on it and who will fail. As a result, to reap the benefits of the program a large number of people have to be placed on it who will subsequently fail. Forty-three per cent of the subjects who entered the Drug Court program in our study were later removed from it for further offences or non-compliance with program conditions. This high termination rate increases the cost of the Drug Court program, while at the same time lowering its measured effectiveness. If it were possible more clearly to identify those who are more likely to succeed on the program, and thereby reduce the program termination rate, the cost-effectiveness of the Drug Court program could be increased.

How might the Drug Court improve its targeting of offenders? To get a comprehensive answer to this question it would be necessary to undertake a systematic statistical analysis of the factors (e.g. age, gender, period of heroin use, marital status etc.) which distinguish those who remain on the program from those who are removed from it. Due to the limited amount of background data collected on Drug Court participants and changes in the

Drug Court program it would not be advisable to conduct such an analysis retrospectively (i.e. on the basis of extant data). It would not be difficult, however, to set up a prospective study of the predictors of program retention. In the meantime it is worth noting that Freeman (2002) found the Drug Court program retention rate to be twice as high for offenders facing sentences of six months or more compared with offenders given sentences of less than six months. One immediate way of improving the targeting of the Drug Court program, therefore, might be to reduce the number of offenders accepted onto the program who are facing relatively short prison terms.

Predicting those who will succeed on the Drug Court program will always be an uncertain science. Given that the program is targeted at recidivist drug-dependent offenders one should expect a relatively high program failure rate. At the same time, those who remain on the program, but do not reduce their drug consumption or criminal activity, consume Drug Court resources while contributing nothing to the Drug Court's effectiveness. This resource consumption is not insignificant because participants are often removed from the program some months after entering it. Another way in which to improve the cost-effectiveness of the Drug Court, then, would be to identify those who are not likely to succeed on the program and remove them at an earlier point in time. This suggestion should not be taken to mean that people should be removed from the program at the first positive drug test or for the first infraction of program rules. It is unrealistic to expect recidivist drug-dependent offenders to cease all use of drugs abruptly upon entering the program. The point is rather that it would be better to remove those who do not show reasonable signs of progress at a fairly early stage than to persevere with them in the hope that they will eventually respond to treatment.

One of the problems faced by the Drug Court in pursuing this course of action is that the legislative threshold for program termination requires the Court to be satisfied on the balance of probabilities 'that there is no useful purpose to be served in the drug offender's further participation in the program' (NSW Drug Court Act 1998, s.10(1)(b)). This is a high threshold for termination since, in any individual case, it will always be difficult to say that no useful purpose is served by keeping an offender on the program. Such a threshold might be understandable if the benefits of continuation on the program were large relative to its costs, but it is doubtful that they are. The opportunity costs of keeping someone on the program who shows no significant sign of improvement include the fact that other potentially more motivated offenders are deprived of an opportunity to participate in the program and the fact that the community has to bear the cost of further criminal victimisation. Keeping someone on the Drug Court program who persistently fails to meet program conditions may also exert a corrosive effect on the willingness of other participants to abide by the conditions of their Drug Court program.

Instead of removing an offender from the program only at the point when 'no useful purpose' is served by keeping them on, it might be better to change the threshold so that offenders are removed when, in the judgement of the Court, the benefits to the offender are outweighed by the risk and cost to the community. This would give greater weight both to community protection and to the need to ensure that the benefits of public investment in the Drug Court program are fully optimised. A change of this nature has already been suggested by one member of the Drug Court team, several of whom have expressed discontent with the termination provisions in the Drug Court Act (Taplin, 2002, p. 57).

Improvements might also be made to the cost-effectiveness of the Drug Court in relation to the criteria for program graduation. The Drug Court Act itself does not stipulate any such criteria. Instead it simply states that 'successful completion' of the program is one basis on which an offender's program might be terminated. It has been left to the Court itself to

define the requirements for 'successful' program completion. The Court has taken a fairly stringent view of these requirements (Milson 2002), with the result that participants in its program are taking much longer to graduate than anticipated. To graduate, an offender must, over a period of six months, remain drug and crime 'free', accept a 'drug and crime free' lifestyle, stabilise their social and domestic environment, either gain employment or be employment 'ready' and be fiscally responsible. Over the past year these requirements have been relaxed in two respects. Firstly, an offender who relapses during the last (third) phase of their program is only required to meet the conditions described above for a further three-month period. Secondly, the requirement in relation to employment has been modified to include home duties.

It may ultimately be a matter for judgment whether these are reasonable criteria on which to release an offender of their legal obligations to the community. But it is easy to see circumstances in which an offender might cease all predatory criminal activity without completely giving up all use of illicit drugs. One common response on the part of those struggling to reduce their consumption of an addictive drug, such as heroin, seems to be a switch to other less addictive and less expensive drugs such as cannabis (Weatherburn, Jones, Freeman & Makkai 2001). The switch to less expensive, less addictive drugs may be accompanied by a substantial reduction or even cessation of criminal activity. As things stand, however, a Drug Court program participant testing positive for cannabis cannot be expected to graduate from the program, even if their predatory criminal activity has ceased altogether. Considering that the principal aim of the Drug Court is to reduce drug-related crime, and that most drug-related crime stems from cocaine or heroin dependence, it could be argued that program completion would be warranted once a person has ceased offending and substantially reduced their use of illicit drugs, particularly heroin or cocaine.

It would enhance the cost-effectiveness of the intervention if more were known about which health care intervention or combination of interventions were successful in improving the health and social outcomes of offenders. Again, a comprehensive answer would require a systematic analysis of the factors, both offender-related and treatment-related, which distinguish successful interventions from others. Some information may be available from studies already undertaken in Australia but it is important that any analysis be conducted in a similar context to that of the Drug Court.

A final area where improvements might be made is in the area of service coordination. In discussions with the various stakeholders involved in the Drug Court Program it became apparent that many were of the opinion that communication, treatment planning and case coordination could be improved (see Taplin 2002). Examples mentioned to some of the authors of this report include:

- differences of opinion regarding the withholding of counselling and educational programs during sanctions;
- there appeared to be some uncertainty whether all participants who absconded from treatment were reported immediately to the Drug Court resulting in delays to warrants being issued.

There is no documented evidence that resolution of these and other administration and organisational issues would improve the outcomes and/or the costs but often common sense would suggest that gains would be made.

CONCLUSION

The principal object of the NSW Drug Court was to provide an alternative and more cost-effective means of reducing drug-related crime than conventional sanctions. For most offence categories Drug Court participants took less time to offend and exhibited lower rates of offending than control group members who had been sanctioned in the conventional way. However, the differences were statistiically significant only for a limited number of the offence types examined.

When those who were retained on the program were compared with those rejected from it or placed in the control group, the lower rates of crime among Drug Court participants were much more evident. This result held up even in the presence of controls for other pre-existing factors (e.g. differences in prior criminal record) which might have explained the better performance of Drug Court participants.

Although it is more effective for some indicators, the Drug Court is not much less expensive than conventional sanctions. It proved impossible to obtain reliable estimates of the total cost per episode of placement on a Drug Court program but the estimated cost per day ($144) is only about ten dollars less than the cost per day of conventional sanctions ($152). Although this difference is small, the Drug Court appears to be at least as cost-effective as conventional sanctions. In terms of cost-effectiveness in increasing the time to the first offence, the two methods of disposition are essentially equivalent. In terms of preventing additional offences, the Drug Court appears to be more cost-effective than conventional sanctions, at least for the two marker offence types we selected, namely shop stealing and possess/use opiates. There is a greater cost to prevent each additional offence for these offence types for those conventionally sactioned than for those placed on the Drug Court program.

There is scope for cost savings and effectiveness improvements within the NSW Drug Court. The Court itself has already made significant progress in this regard by introducing a system of suspended sanctions for program non-compliance. Future efforts to reduce the cost of the Drug Court program should focus on improving its ability to identify those who will respond favourably to the program, ensuring that those who will not respond are removed sooner, identifying which treatment regimes are most effective, adopting a more realistic set of graduation criteria and securing better cooperation amongst those involved in the Drug Court program.

NOTES

1 Note that it is not the intent of this section to comment on the adequacy of resource flows, but rather to outline the nature of those flows.

2 For reasons explained later (see section entitled *Estimating costs for the control group*) the number of persons included in the cost-effectiveness analysis differed slightly from the number included in the effectiveness analysis.

3 These expenses could alternatively have been allocated over the total number of Magistrates in NSW rather than over Registry staff.

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APPENDIX: DATA COLLECTION FORMS

NSW Drug Court Data Collection Form - Registry Staff

The purpose of this form is to collect information on the time spent on different matters for the NSW Drug Court over the course of a week. Please complete one form for each day this week.

DC Registry Staff Designation: (please write down your position in the registry)

_____

Date: _____

Total Time – *please record the total time you spent on these activities today.*

Functions:	Total Time (Minutes)
Administrative Duties (non-participant administration)	
Court	
Drug Court Policy/Planning	
Management Duties (non-participant management)	

Participant Specific Functions – *please record the average time per participant you spent today on activities devoted specifically to participants' Drug Court programs outside of court time and team meetings.*

Function:	Non-Contact Time (avg in minutes)	Contact Time (avg in mins)
Case History/Outstanding Matters		
Entry of Court Data for:		
New Matters		
Report Backs		
Sanctions		
Unrinalysis Results		
Warrants		
Other (specify below)		
Graduation Matters (per month)		
Issuing Warrants/Orders		
Participant Liaison		
Treatment Provider Liaison		
Other_____		

Number of Clients Today: _____

Non-contact time includes time spent on participant specific matters that did not involve direct contact with either participants, treatment providers or corrections staff.

Contact time includes time spent liaising with either participants, treatment providers or corrections staff. It includes face to face and telephone contact.

Comments (restrict to comments about activity, not about participant per se)

_____

_____

_____

NSW Drug Court Data Collection Form

The purpose of this form is to collect information on the time spent on different matters for NSW Drug Court participants over the course of a week. Please complete one form for each day this week.

DC Team Member (please tick appropriate box)

☐ Judge   ☐ Legal Aid Solicitor   ☐ Public Prosecutor   ☐ Other_____

☐ Health Officer   ☐ Probation and Parole   ☐ Court Reporter   ☐ Sheriffs Officer

Date: _____

Total Time – *please record the total time you spent on these activities today.*

Functions:	Total Time (Minutes)
Administrative Duties (non-participant administration)	
Court	
Drug Court Policy/Planning	
Management Duties (non-participant management)	
Team meeting	

Participant Specific Functions – *please record the average time per participant you spent today on activities devoted specifically to participants' Drug Court programs outside of court time and team meetings.*

Function:	Non-Contact Time (avg in minutes)	Contact Time (avg in mins)
Assessment		
Case History/Research/Preparation		
Liaison		
Case Manager		
Participant		
Treatment Provider		
Other_____		
Counselling		
Monitoring		
Treatment Plan		
Other_____		

Number of Clients Today: _____

Non-contact time includes time spent on participant specific matters that did not involve direct contact with either participants, treatment providers or corrections staff.

Contact time includes time spent liaising with either participants, treatment providers or corrections staff. It includes face to face and telephone contact.

Comments (restrict to comments about activity, not about participant per se)

_____

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