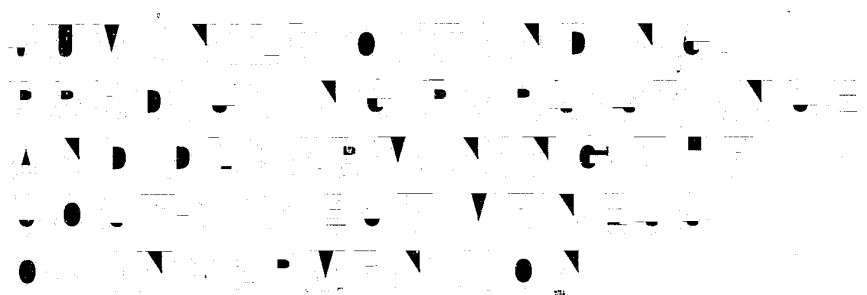


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**JUVENILE OFFENDING:
PREDICTING PERSISTENCE
AND DETERMINING THE
COST-EFFECTIVENESS OF
INTERVENTIONS**

Christine Coumarelos

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**U.S. Department of Justice
National Institute of Justice**

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PREFACE

Juvenile justice policy, both in Australia and overseas, has been dominated by the idea that young offenders should be diverted, as far as possible, away from formal contact with the criminal justice system. The impetus for diversion comes partly from the labelling theory thesis that bringing young offenders to court only tends to stigmatize them and therefore amplifies the deviance it is meant to prevent. It also comes partly from a recognition that well-meaning attempts in the past to change the behaviour of young offenders sometimes amounted to a form of punishment out of all proportion to the seriousness of the offence.

There are good empirical reasons for doubting the central thesis of labelling theory that formal intervention increases the risk of re-offending. Whether or not one accepts this thesis, however, diversion is not a politically sustainable policy for juveniles who repeatedly commit serious offences. For these offenders, the choice is between a policy which seeks to do no more than punish each offender and a policy which (also) seeks to reduce the likelihood of recidivism. If the second course of action is chosen, the question then arises as to the most cost-effective point to intervene in order to reduce the likelihood of recidivism.

The present report is an attempt to address this issue by analyzing patterns of recidivism among a sample of 33,900 juvenile offenders brought before the New South Wales Children's Court between 1982 and 1986. The analysis is conducted in two parts. The first part examines the question of whether it is possible to identify, in advance, those young offenders who are likely to re-appear in court numerous times rather than just a few times. The second part attempts to identify the most cost-effective point in a juvenile criminal career at which to introduce strategies designed to reduce the likelihood of recidivism.

Two findings emerge from the analysis which are of particular significance for the development of juvenile justice policy. Contrary to popular opinion, the vast majority of young offenders brought to court have only one 'brush' with the law before apparently desisting from further offending. Secondly, and perhaps surprisingly, it is therefore more cost-effective to intervene after a juvenile has had several court appearances than early on in a criminal 'career'. In fact, the less effective an intervention is in reducing the rate of reappearance in court, the later it must be introduced in order to be cost-effective.

Dr Don Weatherburn
Director

March 1994

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1. INTRODUCTION

1.1 JUVENILE JUSTICE IN NSW

According to NSW law, a 'child' is any person under the age of 18 years. The Children's Court in NSW has jurisdiction over children who have reached the age of criminal responsibility, namely 10 years of age. It is presumed by the law that children under 10 years cannot be liable for an act by way of criminal proceedings. Generally, to come under the jurisdiction of the Children's Court, a person must have been at least 10 years of age and under 18 years of age at the time of allegedly committing an offence, and under the age of 21 when brought before the Children's Court. Under some circumstances, the Children's Court may choose to hear a charge against an adult who was aged between 18 and 21 years at the time of allegedly committing an offence. These circumstances arise when the charge was laid jointly against an adult and one or more children who were less than three years younger than the adult.

In May 1987 the NSW government passed five Acts relating to child welfare and juvenile justice.¹ One of these Acts, the *Children's Court Act 1987*, provided for the Children's Court as a single entity within the court system, despite sittings being held in many locations.

The Children's Court does not operate under a judge-and-jury system, but rather, like the Local Courts for adults, is presided over by a magistrate. The Children's Court has the jurisdiction to determine verdicts and sentencing for all summary offences.² In the case of what are deemed 'serious indictable offences',³ the Children's Court cannot determine verdict but must conduct a preliminary or 'committal' hearing. If a prima facie case is established at the committal hearing, the case is then referred or 'committed' to a Higher Court for the determination of verdict, usually in front of a judge and jury. For the remaining indictable offences (i.e. those not deemed 'serious'), the Children's Court may either determine verdict or conduct a committal hearing.

The principles of the Children's Court contained in the 1987 legislation were based largely on the United Nations' Declaration of the Rights of the Child (Blackmore 1988). These principles stated, inter alia, that children have rights and freedoms before the law that are equal to those of adults; that children require guidance and assistance despite bearing responsibility for their actions; that, wherever possible, children should be allowed to proceed with their education and employment without interruption, and to reside in their own home; and that penalties imposed on children should be no greater than those imposed on adults.

The new legislation also introduced a sharp distinction between criminal matters, which were dealt with in the *Children (Criminal Proceedings) Act 1987*, and welfare matters, which were dealt with in the *Children (Care and Protection) Act 1987*.

Further information about juvenile justice in NSW is provided in Blackmore (1989) and NSW Bureau of Crime Statistics and Research (1990).

1.2 JUVENILE RE-OFFENDING AND CRIMINAL CAREERS

Although interest in 'habitual' or 'chronic' offenders dates back 100 years, it was greatly stimulated by a landmark study by Wolfgang, Figlio and Sellin in 1972. This study

reported that over half the arrests recorded by age eighteen for a cohort of 9,945 boys born in Philadelphia were accounted for by only 627 boys. The 627 boys represented six per cent of the cohort and 18 per cent of those in the cohort who had been arrested by age eighteen. Since 1972, the finding that relatively few offenders account for a disproportionately large number of offences, arrests and convictions has been repeated many times (e.g. Farrington 1983; Polk, Alder, Bazemore, Blake, Cordroy, Coventry, Galvin & Temple 1981; Shannon 1981).

The Wolfgang, Figlio and Sellin study led not only to a specific interest in 'chronic offenders' or 'career criminals', but also to a more general interest in aspects of 'criminal careers'. Blumstein and his co-workers have argued that an understanding of the dimensions of a criminal's career, such as offending frequency, career duration and offence severity, is an important adjunct to knowledge of the number of persons currently involved in crime - the prevalence or participation rate (Blumstein, Cohen & Farrington 1988a, 1988b; Blumstein, Cohen, Roth & Visher 1986; Blumstein, Farrington & Moitra 1985). Their research shows that while fewer people are actively involved in crime with age, the offending frequency and the offence severity of those actively involved remains stable.

Blumstein and co-workers argue that criminal career dimensions are useful in understanding crime trends and the causes of crime, and in identifying crime control strategies. For example, changes in crime rates may be due to changes in the number of persons actively involved in crime (prevalence) or in the various career dimensions of those involved in crime, such as offending frequency or duration. Similarly, crime control strategies may operate by reducing the number of persons who become involved in crime or the number of offences committed by those involved or the career lengths of those involved.

1.3 JUVENILE CRIME CONTROL STRATEGIES

Crime control strategies fall into three main groups: prevention strategies, which aim to reduce the number of people that become involved in crime; intervention strategies, which aim to reduce the frequency, duration and/or seriousness of involvement of known offenders; and incapacitation strategies, which aim to reduce crime by removing known offenders from society for some portion of their criminal careers (Blumstein, Cohen, Roth & Visher 1986).

Whereas both intervention and incapacitation strategies are directly concerned with reducing the re-offending of known offenders, only intervention strategies are particularly concerned with rehabilitation.

Incapacitation strategies, even when applied to adult rather than juvenile offenders, have received considerable criticism on ethical grounds. These strategies generally involve predicting career criminals in advance of their criminal careers so that incapacitation can be used to prevent them from realizing these careers. Objections on ethical grounds have included the inevitable misclassification of some persons as career criminals; the inappropriateness of punishment for crimes that are yet to be committed; and the inappropriateness of predictive considerations in the choice of justice sanctions (Blumstein, Cohen, Roth & Visher 1986; Cohen 1984; Gottfredson & Hirschi 1986). In keeping with such ethical considerations, incapacitation strategies are generally not used in NSW in an attempt to reduce juvenile offending.

By contrast, as long as intervention strategies do not result in more onerous treatment of an offender than is warranted by the facts of the offence, such strategies are not vulnerable to the ethical criticisms levelled at incapacitation strategies. Despite this, the concentration of legislative emphasis in NSW since 1987 on protecting the rights of juveniles charged with criminal offences has tended to draw attention away from the question of how juvenile repeat offenders might be rehabilitated. Most of the emphasis in juvenile crime control has been on juvenile crime prevention. To the extent that rehabilitation has been considered at all, the focus of interest has been mainly on dealing with first time juvenile offenders.

The recent Green Paper on juvenile justice (Juvenile Justice Advisory Council of NSW 1993), for example, discusses crime control strategies, but it concentrates on the importance of identifying and exploiting opportunities for situational crime prevention. The programs directed at offenders discussed in the Green Paper are generally predicated on the assumption that the less formal contact a juvenile has with the justice system in NSW, the lower the probability of re-offending. For this reason, the Green Paper suggests community alternatives to court processing such as Community Aid Panels. Community Aid Panels are directed at providing 'an opportunity for first offenders to make restitution to the community by participating in community projects, or by undertaking skills or living courses to remedy personal difficulties which may have led to the offence' (NSW Police Service 1991).

Another recent initiative in NSW which has been used as an alternative to formal court processing is Family Group Conferencing. Family Group Conferencing was first trialed in Australia in the NSW city of Wagga Wagga in 1991. It involves convening a conference between the offender and the victim (and their families or support persons) in order to provide the offender with the opportunity to apologize to the victim and to recognize the effect of the offence on the victim. Like Community Aid Panels, however, Family Group Conferencing primarily targets first time juvenile offenders (Moore 1993).

Although Community Aid Panels and Family Group Conferencing appear promising for rehabilitating first time juvenile offenders, neither of these programs has as yet been comprehensively evaluated (Bargen 1992; Moore 1993). Furthermore, even if such programs proved to be quite successful with first offenders, it is likely that a significant number of juveniles would continue offending, and as a result, would continue appearing before the court and being placed in the care of the Department of Juvenile Justice. Although strategies aimed at crime prevention or at the rehabilitation of first offenders certainly have merit in principle, it would seem unduly restrictive to rely solely on such strategies to curb juvenile offending in general. Rather, in addition to such strategies, it would seem desirable to continue the search for intervention programs directed at repeat juvenile offenders for the express purpose of rehabilitating them.

Rehabilitation has fallen out of favour somewhat since the landmark review of rehabilitation studies by Lipton, Martinson and Wilks (1975), widely cited as showing that 'nothing works'. Lipton, Martinson and Wilks did not in fact show that 'nothing works'. They showed only that there was no particular formula which consistently reduced re-offending (Sechrest, White & Brown 1979). Thus, it would seem premature to ignore the possibility of developing intervention programs that would rehabilitate repeat juvenile offenders in NSW, and as a result, reduce the level of juvenile re-offending.

1.4 AIM AND OUTLINE

The aim of this report is to stimulate interest in the feasibility of rehabilitation by analyzing patterns of re-offending among juveniles and showing how intervention strategies are likely to influence rates of return to court.

The report begins by describing some general aspects of criminal appearances in the Children's Court, namely, age at first proven criminal appearance, number of appearances per juvenile, the duration of 'Children's Court careers', the most serious criminal offence dealt with at each appearance and the pattern of most serious offences across appearances.

The report then examines various issues pertaining to the reduction of juvenile re-offending. Firstly, it examines whether it is possible to identify juveniles who are likely to have many re-appearances before the Children's Court. Three possible predictors of re-appearances are examined, namely, age at first proven criminal appearance, most serious offence dealt with at first proven criminal appearance and number of criminal appearances to date. Secondly, it examines the savings in Children's Court appearances that would be expected to result from successful intervention strategies implemented at different stages in a juvenile's contact with the Children's Court. Both savings in the overall number of criminal appearances and savings in the average number of criminal appearances per juvenile are addressed. The point at which interventions become cost-effective and the time taken to retrieve the net savings from interventions are also discussed.

2. METHODOLOGY

2.1 DESCRIPTION OF DATA

All the data presented in the report are based on *final* appearances for *criminal* matters in the Children's Court between the beginning of 1982 and the end of June 1992.⁴ All *final* appearances for *welfare* matters are excluded. Each set of criminal charges laid against a juvenile (relating to one or more offences committed on a particular occasion) may result in the juvenile appearing before the Children's Court a number of times in relation to that set of charges. The present data are based on the *final* appearance in the Children's Court for each set of criminal charges laid against each juvenile. In this way, each appearance counted in the database relates to a unique set of charges.

A final criminal appearance in the Children's Court involves either a hearing where a verdict and sentencing are handed down or a committal hearing. Although all data in the report are based only on final criminal appearances, for convenience 'final criminal appearances' are referred to throughout the report as 'criminal appearances'.

Criminal appearances in the Children's Court are used to estimate the criminal career dimensions of offending frequency, career duration and offence severity for juveniles.

2.2 DESCRIPTION OF THE SAMPLE

The data examined in the present report are based on all juveniles in NSW who met both of the following conditions: (i) they had first been convicted of one or more criminal charges in the NSW Children's Court between the beginning of 1982 and the end of 1986,⁵ and (ii) they had reached the age of 18 years by the end of the study period, namely the end of June 1992, and thus, were likely to have completed their contact with the Children's Court.⁶ These criteria resulted in the selection of 33,900 juveniles of whom 27,469 (81.0%) were male and 6,431 (19.0%) were female.

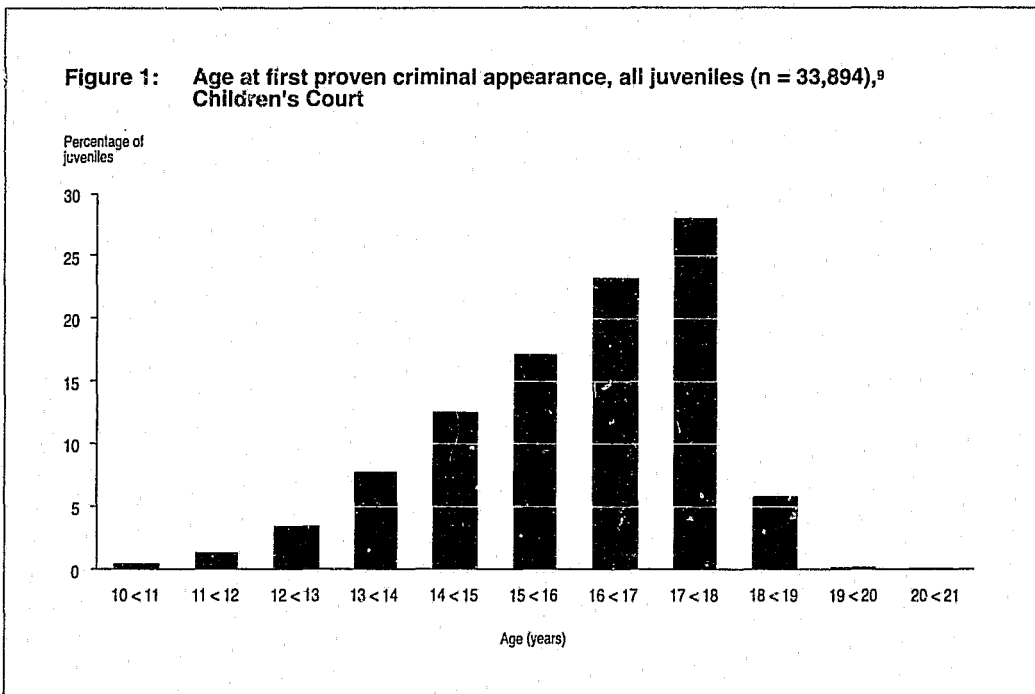
The data for each juvenile start from the juvenile's first *proven* criminal appearance and include all subsequent criminal appearances up to the end of June 1992, whether proven or not. Unproven criminal appearances before the first proven criminal appearance are excluded. Thus, throughout the report, the 'first criminal appearance' refers to the first proven criminal appearance; the 'second criminal appearance' refers to the first criminal appearance, whether proven or not, subsequent to the first proven criminal appearance; the 'third criminal appearance' refers to the second criminal appearance, whether proven or not, subsequent to the first proven criminal appearance; etc.

3. RESULTS

3.1 SAMPLE CHARACTERISTICS

3.1.1 Age at first proven criminal appearance

Figure 1 presents the ages of the juveniles at the time of their first proven criminal appearance.⁷ It can be seen that about two-thirds of the sample (68.4%) were between 15 and 18 years at the time of their first proven criminal appearance. Only 5.2 per cent of the sample were under 13 years of age at the time of their first proven criminal appearance. The mean age at first proven criminal appearance was 16.0 years (SD = 1.6 years).⁸



3.1.2 Number of criminal appearances per juvenile

Table 1 presents the number of criminal appearances per juvenile over the juvenile's career, starting from, and including, each juvenile's first proven criminal appearance. The majority of juveniles in the sample (69.7%) had a single 'brush' with the Children's Court in that they had only one proven criminal appearance and no subsequent criminal appearances (proven or unproven). Only 15.4 per cent had more than two criminal appearances, that is at least two criminal appearances subsequent to their first proven

criminal appearance (see the column labelled '% remaining juveniles'). Only 9.7 per cent had more than three criminal appearances (i.e. at least three criminal appearances subsequent to their first proven criminal appearance).

Consistent with previous research, a disproportionately large percentage of criminal appearances were accounted for by a small percentage of juveniles. This can be seen in Table 1 from the columns labelled '% remaining juveniles' and '% remaining CAs'. For example, almost half of the appearances (45.4%) were accounted for by the 15.4 per cent of juveniles who each had more than two appearances. Over one-third of the appearances (36.0%) were accounted for by the 9.7 per cent of juveniles who each had more than three appearances.

Table 1: Number of criminal appearances (CAs) per juvenile (starting from first proven CA), all juveniles (n = 33,900), Children's Court

No. of CAs	No. of juveniles	% of juveniles	Cumul. no. of juveniles	Cumul. % of juveniles	% remaining juveniles *	Cumul. no. of CAs	Cumul. % of CAs	% remaining CAs **
1	23,614	69.7	23,614	69.7	30.3	23,614	38.2	61.8
2	5,063	14.9	28,677	84.6	15.4	33,740	54.6	45.4
3	1,929	5.7	30,606	90.3	9.7	39,527	64.0	36.0
4	1,110	3.3	31,716	93.6	6.4	43,967	71.2	28.8
5	625	1.8	32,341	95.4	4.6	47,092	76.3	23.7
6	406	1.2	32,747	96.6	3.4	49,528	80.2	19.8
7	297	0.9	33,044	97.5	2.5	51,607	83.6	16.4
8	208	0.6	33,252	98.1	1.9	53,271	85.3	13.7
9	138	0.4	33,390	98.5	1.5	54,513	88.3	11.7
10	102	0.3	33,492	98.8	1.2	55,533	89.9	10.1
11	99	0.3	33,591	99.1	0.9	56,622	91.7	8.3
12	69	0.2	33,660	99.3	0.7	57,450	93.0	7.0
13	36	0.1	33,696	99.4	0.6	57,918	93.8	6.2
14	35	0.1	33,731	99.5	0.5	58,408	94.6	5.4
15-19	100	0.3	33,831	99.8	0.2	60,085	97.3	2.7
20-24	46	0.1	33,877	99.9	0.1	61,073	98.9	1.1
25-29	14	0.0	33,891	100.0	0.0	61,448	99.5	0.5
30-34	8	0.0	33,899	100.0	0.0	61,702	99.9	0.1
39	1	0.0	33,900	100.0	0.0	61,741	100.0	0.0

* (= 100% - cumulative % of juveniles)

** (= 100% - cumulative % of CAs)

3.1.3 Children's Court career duration

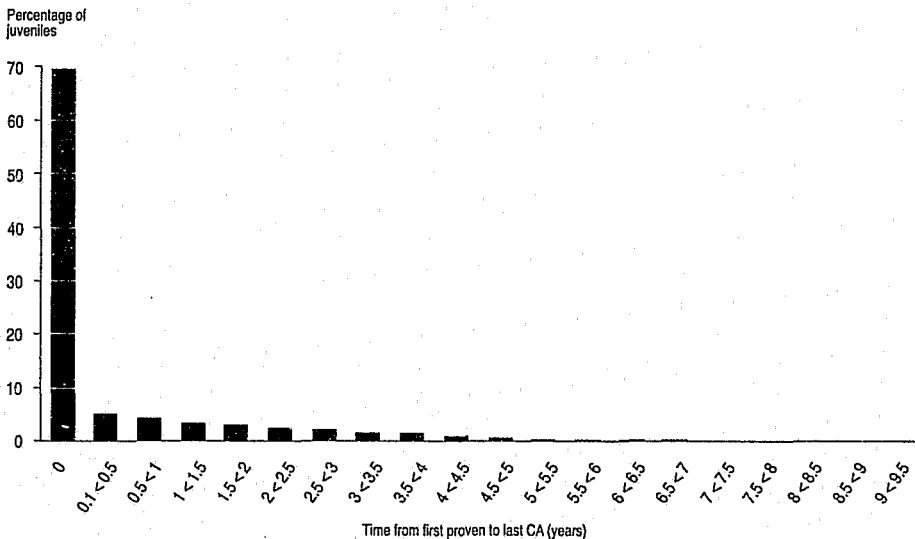
The mean age at first proven appearance, namely 16 years, and the finding that the majority of juveniles do not re-appear in the Children's Court after their first proven appearance suggest a relatively short period of involvement in crime for the majority of juveniles. Indeed, the mean number of years between the first proven criminal

appearance and the last criminal appearance in the Children's Court for the present sample was 0.63 (S.D. = 1.3). This mean includes the 69.7 per cent of juveniles who did not re-appear after their first proven criminal appearance (and therefore had 0 years between their first proven and last appearance). When these juveniles are excluded, the mean increases to 2.1 years. Contrary to popular opinion, juvenile involvement in crime appears to be extremely transitory.

Figure 2 presents the frequency distribution for the number of years between first proven and last criminal appearance for the present sample. It can be seen that about four-fifths (79.6%) of the present sample had criminal careers of less than one year duration. Only six per cent of the present sample had criminal careers of three or more years.

It is important to acknowledge, however, that the data presented above may underestimate the actual duration of 'juvenile criminal careers' for two reasons. Firstly, some juveniles in the present sample may have started their criminal careers a considerable time before they had their first proven appearance in the Children's Court. Secondly, some juveniles in the present sample may have continued offending after their last appearance in the Children's Court and before turning 18 years of age.

Figure 2: Years between first proven and last criminal appearance (CA), all juveniles (n = 33,900), Children's Court



3.1.4 Type of offence at each criminal appearance

A criminal appearance may deal with one or more counts of one or more offences. The Draft Australian National Classification of Offences (DANCO) was used to code offences

(Australian Bureau of Statistics 1980).¹⁰ Table 2 is based on all criminal appearances across juveniles and presents the frequency distribution for the 'most serious' offence dealt with at each criminal appearance.¹¹ Offences are listed in the table in order of decreasing frequency.

Table 2: 'Most serious' offence dealt with at each criminal appearance (CA), all juveniles (n = 33900), Children's Court

<i>DANCO code</i>	<i>Offence</i>	<i>No. of CAs</i>	<i>% of CAs</i>	<i>Cumulative % of CAs</i>
343 - 344	Stealing/theft ¹²	13,247	21.5	21.5
531 - 564	Offence against good order ¹³	9,752	15.8	37.3
311 - 313	Break and enter ¹⁴	9,659	15.6	52.9
341	Motor vehicle theft	8,040	13.0	65.9
411 - 422	Property damage ¹⁵	3,106	5.0	70.9
611 - 632	Drug offence	2,820	4.6	75.5
712 - 731	Driving/traffic offence	2,708	4.4	79.9
331 - 332	Receive/possession	2,563	4.2	84.1
123	Other assault	2,504	4.1	88.1
711	Driving under the influence/proscribed concentration of alcohol	2,086	3.4	91.5
511 - 522	Justice offence	1,756	2.8	94.3
321 - 322	Fraud/misappropriation	1,326	2.1	96.5
121 - 122	Serious assault	1,022	1.7	98.1
211 - 221	Robbery/extortion	568	0.9	99.1
131 - 135	Sexual offence	390	0.6	99.7
141 - 143	Other offence against the person ¹⁶	120	0.2	99.9
111 - 115	Homicide	32	0.1	99.9
811	Any other offence	42	0.1	100.0
	Total	61,741		

It can be seen that for approximately two-thirds (65.9%) of all criminal appearances, the most serious offence was either (i) a theft offence involving stealing/theft, break and enter, or motor vehicle theft, or (ii) an offence against good order. The category of stealing/theft included shoplifting, which was the most serious offence in 6.0 per cent of appearances. The category of against good order included offences such as offensive behaviour/language (2.4%), trespassing/vagrancy (2.0%), possession/use of a weapon (1.1%) and liquor/licence offence (1.0%).

Thus, the majority of criminal appearances in the Children's Court are not for serious offences such as homicide, aggravated assault and aggravated sexual assault.

Interestingly, Mukherjee (1986), who examined youth crime in Australia between 1964

and 1983, found that, compared with adults, youths were under-represented in arrests for serious violent offences such as homicide and serious assault and over-represented in arrests for burglary and motor vehicle theft.

3.1.5 Pattern of offences across a juvenile's criminal appearances

One area of debate concerning offence patterns over criminal careers has been the degree to which offenders specialize in certain crimes rather than committing a variety of crimes. In particular, it has been claimed that there is some specialization by broad offence types such as violent offences against the person and theft/property offences (Hirschi 1988; Pertisilia 1980). A related area of interest concerning offence patterns has been whether offenders begin their careers with less serious offences and progress to more serious offences (Pertisilia 1980; Smith, Smith & Noma 1984).

For the purposes of examining the issue of specialization, three broad offence categories are considered in the present report: offences against the person, theft offences and all other offences. The 18 offence types presented earlier (see Table 2) were categorized as follows into these three broad categories: homicide, serious assault, other assault, sexual offence, robbery/extortion and other offence against the person were categorized as offences against the person; stealing/theft, break and enter, motor vehicle theft, receive/possession and fraud/misappropriation were categorized as theft offences; offence against good order, property damage, justice offence, drug offence, driving under the influence/proscribed concentration of alcohol, driving/traffic offence and any other offence were categorized as all other offences.

Table 3 examines the extent to which juveniles tended to specialize in each of the three broad offence categories defined above. It presents the percentage of juveniles who had

Table 3: Percentage of juveniles who had the same broad offence category as their most serious offence at two-thirds or more of their criminal appearances (CAs) by most serious offence at first proven CA, juveniles with at least two CAs (n = 10,286),¹⁷ Children's Court

<i>Most serious offence at first proven CA</i>	<i>No. of juveniles</i>	<i>% (and no.) of juveniles whose most serious offence at two-thirds or more of their CAs was:</i>		
		<i>Against the person</i>	<i>Theft</i>	<i>Other</i>
Against the person	619	24.6% (152)	7.4% (46)	5.0% (31)
Theft	7,154	0.7% (52)	59.6% (4,267)	4.5% (323)
Other	2,513	0.7% (17)	7.4% (185)	58.4% (1,467)
Irrespective of most serious offence at first proven CA	10,286	2.1% (221)	43.7% (4,497)	17.6% (1,815)

the same broad offence category as their most serious offence at two-thirds or more of their criminal appearances.¹⁸ Table 3 suggests that few of the juveniles whose most serious offence at first proven appearance was an offence against the person tended to specialize in such offences over their juvenile criminal careers. Only 24.6 per cent of juveniles whose most serious offence at first proven appearance was an offence against the person had an offence against the person as the most serious offence at two-thirds or more of their appearances. On the other hand, a substantial percentage of juveniles whose most serious offence at first proven appearance was a theft offence tended to specialize in theft offences over their juvenile criminal careers. More than half (59.6%) of the juveniles whose most serious offence at first proven appearance was a theft offence had a theft offence as the most serious offence at two-thirds or more of their appearances.

Furthermore, when most serious offence at first proven appearance is not considered, Table 3 shows that a large percentage of juveniles tend to re-appear for theft offences. About 44 per cent of juveniles who re-appeared in the Children's Court had a theft offence as the most serious offence at two-thirds or more of their appearances. Similarly, Challinger (1975), who examined recidivist youths appearing before the Victorian Children's Court in 1972, found that the majority of offences committed by these youths were property/theft offences.

It is relevant to note here that the likelihood of apprehension for an offence varies according to offence type. Generally, perpetrators of offences against the person are much more likely to be apprehended by the police than perpetrators of theft offences. The greater risk of detection associated with offences against the person results largely from the fact that there are more likely to be witnesses who can identify the offender (e.g. the victim). In 1992, 56.7 per cent of the offences against the person recorded by NSW Police were cleared in the same year compared with only 15.1 per cent of the recorded theft offences (NSW Bureau of Crime Statistics and Research 1993).¹⁹

The lower clear-up percentage for theft offences compared with offences against the person is intriguing in the context of the present results. The lower clear-up percentage for theft offences suggests that the specialization in theft offences for many juveniles may be even greater than is indicated by court re-appearances for theft offences. That is, given that offenders are generally not apprehended for the majority of thefts they commit, juveniles who re-appear in the Children's Court for theft offences are likely to have also committed a considerable number of theft offences for which they were not apprehended. Conversely, given the higher clear-up percentage for offences against the person, juveniles re-appearing in the Children's Court for such offences are unlikely to have committed a large number of additional offences against the person for which they were not apprehended.

3.2 POSSIBLE PREDICTORS OF RE-APPEARANCE

The cost-effectiveness of a strategy which aims to reduce re-offending depends partly on the extent to which the strategy is targeted at persons who, in the absence of any intervention, would be likely to persist offending. There is little point allocating resources and time to reducing the offending of persons who are likely to desist in the near future of their own accord.

As a result, an important question is whether factors can be identified early in an offender's career that predict the frequency of subsequent re-offending. The identification of predictors of re-offending is useful for two reasons. Firstly, some of these predictors

may actually be causal factors of re-offending which could be directly manipulated by some intervention strategy in order to reduce re-offending. Secondly, even if known predictors of re-offending do not cause re-offending, they would nonetheless be useful in the early identification of 'chronic offenders' who could then become the focus of appropriate intervention strategies.

The present data cover criminal appearances over the entire period when the offender is considered a 'child' according to the law. Thus, the present data can be used to examine the predictors of 'chronic *juvenile* offending'. However, because the present data are censored in that they do not cover criminal appearances in adulthood, they cannot be used to examine the predictors of 'chronic *adult* offending' or 'chronic *lifetime* offending'.

Probably the first realistic opportunity for targeting known offenders for intervention is at the time of the first conviction. As a result, it would be particularly useful if variables known at the time of the first conviction could be used to predict those juveniles who are destined to become chronic offenders (Blumstein, Farrington & Moitra 1985). The report examines the predictive ability of two such variables: age at first proven criminal appearance in the Children's Court and most serious offence at first proven criminal appearance in the Children's Court. In addition, the report examines whether juvenile offending frequency can be predicted by a variable not known at the time of the first proven criminal appearance in the Children's Court, namely, number of criminal appearances to date.

3.2.1 Age at first proven criminal appearance

A consistent finding in the literature is that the younger persons are when they commit their first crime, the more likely they are to become 'chronic offenders'. This result has been found both with official records of first arrests and first convictions, and with self-report data on the commission of first offences (Blumstein, Cohen, Roth & Visher 1986; Farrington, Loeber, Elliott, Hawkins, Kandel, Klein, McCord, Rowe & Tremblay 1990).

The present data can be used to evaluate whether there is a relationship between age at first proven criminal appearance and number of re-appearances. However, the censored nature of the present data affects the evaluation of this relationship in two ways. Firstly, although the data can be used to comment on the frequency of criminal appearances while a person is a child, they cannot be used to comment on the frequency of criminal appearances over a lifetime (including adulthood).

Secondly, because the exposure period for re-appearance in the Children's Court depends on age at first proven criminal appearance, it would be misleading to simply examine whether the total number of criminal appearances in the Children's Court for juveniles is related to age at first proven criminal appearance. Persons who first appear at a younger age have a longer period within which to re-appear. Consequently, in order to examine whether age at first proven criminal appearance predicts re-appearance in the Children's Court, it is important to compare juveniles over the same length of time.

In the present instance, juveniles were compared over the two-year period following their first proven criminal appearance. In choosing two years as the length of the follow-up period, two considerations were taken into account. Firstly, the period was long enough to ensure that the majority of juveniles who did re-appear after their first proven criminal appearance did so within the follow-up period.²⁰ Secondly, the period was short enough to ensure that data for the length of the period were available for a large

percentage of juveniles in the sample, namely, for all juveniles who were under 16 years of age at their first proven criminal appearance. Figure 3 presents the cumulative percentage of juveniles from each age group who had re-appeared in the Children's Court at various points within the two-year period following their first proven criminal appearance.²¹

As shown in Figure 3, there was very little difference in the percentage of juveniles who re-appeared over a two-year period according to age. Approximately 20 per cent of each age group re-appeared at least once within one year of their first proven criminal appearance. Approximately 30 per cent of each age group re-appeared at least once within two years of their first proven criminal appearance.

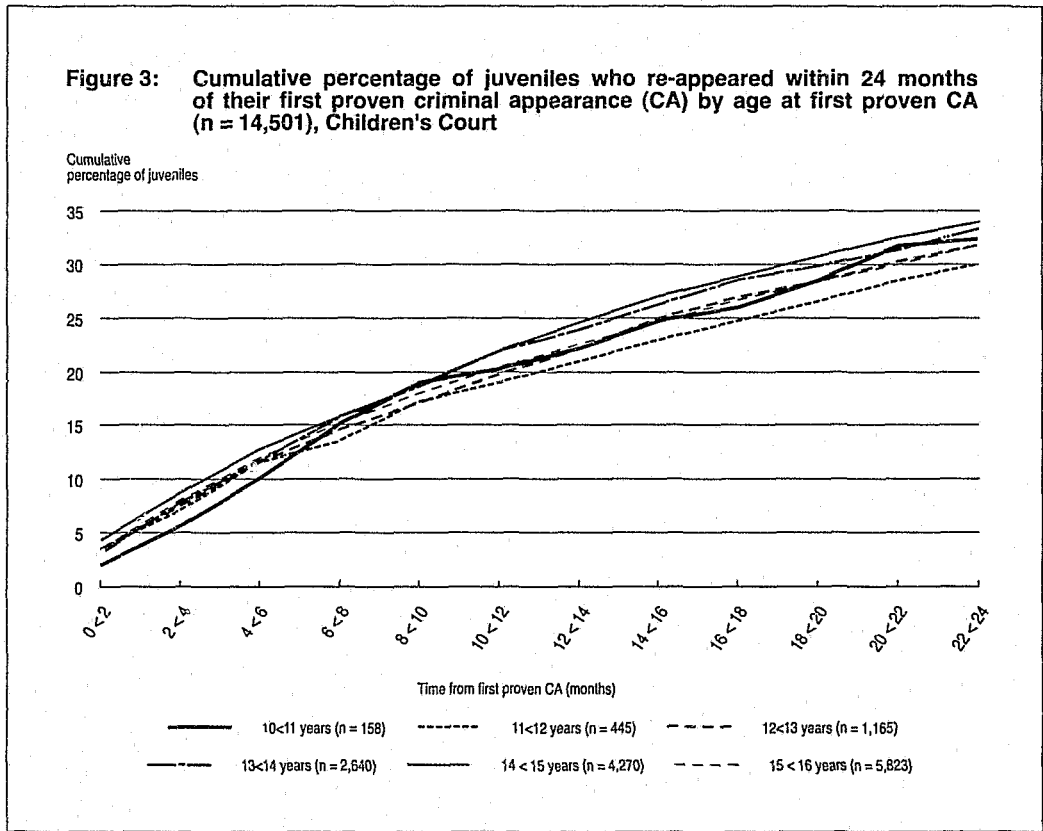


Table 4 presents the mean number of re-appearances within two years of the first proven criminal appearance by age at first proven criminal appearance.²² A t-test was used to determine whether there was a significant linear relationship in either direction between age at first proven appearance and mean number of re-appearances. The linear trend was not significant ($t = -0.40$; $df = 14,495$; $p > 0.05$).²³ Thus, the mean number of re-appearances neither increased nor decreased as age at first proven appearance increased.

Table 4: Mean number of re-appearances per juvenile within two years of first proven criminal appearance (CA) by age at first proven CA (n = 14,501), Children's Court

<i>Age at first proven CA (years)</i>	<i>No. of juveniles</i>	<i>Mean no. of re-appearances</i>	<i>Standard deviation</i>
10 < 11	158	0.72	1.36
11 < 12	445	0.62	1.23
12 < 13	1,165	0.62	1.21
13 < 14	2,640	0.68	1.37
14 < 15	4,270	0.69	1.36
15 < 16	5,823	0.62	1.26

The mean number of re-appearances within two years of first proven criminal appearance fell within the narrow range of 0.62 to 0.72 for all age groups examined.

The data indicating that age at first proven criminal appearance is not a predictor of appearance frequency contrast to previous findings. One possible explanation for the discrepancy between past and present findings is that the present data are based on Australian offenders whereas most previous data are based on offenders in the United States (see, for example, Blumstein, Cohen, Roth & Visher 1986).

A more likely explanation of this discrepancy is that the follow-up period used in the present instance was shorter than that used in previous studies. Generally, conclusions in the literature tend to be based on average annual rates over more than two years (cf. Blumstein, Cohen, Roth & Visher 1986). It is possible that although age at first proven criminal appearance does not predict re-appearance over two years, it does predict re-appearance over a longer period. In order to examine this possibility, a follow-up period of four years was examined for those juveniles in the present sample who were under 14 years of age at their first proven criminal appearance.

Figure 4 presents the cumulative percentage of juveniles from each age group who had re-appeared in the Children's Court at various points within the four-year period following their first proven criminal appearance.²⁴ Again there was little apparent difference in the percentage of juveniles who re-appeared over a four-year period according to age at first proven appearance. Approximately 40 per cent of juveniles from each age group re-appeared at least once within three years of their first proven criminal appearance. Approximately 48 per cent of each age group re-appeared at least once within four years of their first proven criminal appearance.

Table 5 presents the mean number of re-appearances within four years of the first proven criminal appearance by age at first proven criminal appearance.²⁵ With the exception of juveniles who were 13 but less than 14 years at their first proven criminal appearance, there was a tendency for the mean number of re-appearances within four years to decrease as age at first proven appearance increased. A t-test revealed that the decrease in mean number of re-appearances with increasing age at first proven appearance was

Figure 4: Cumulative percentage of juveniles who re-appeared within 48 months of their first proven criminal appearance (CA) by age at first proven CA (n = 4,408), Children's Court

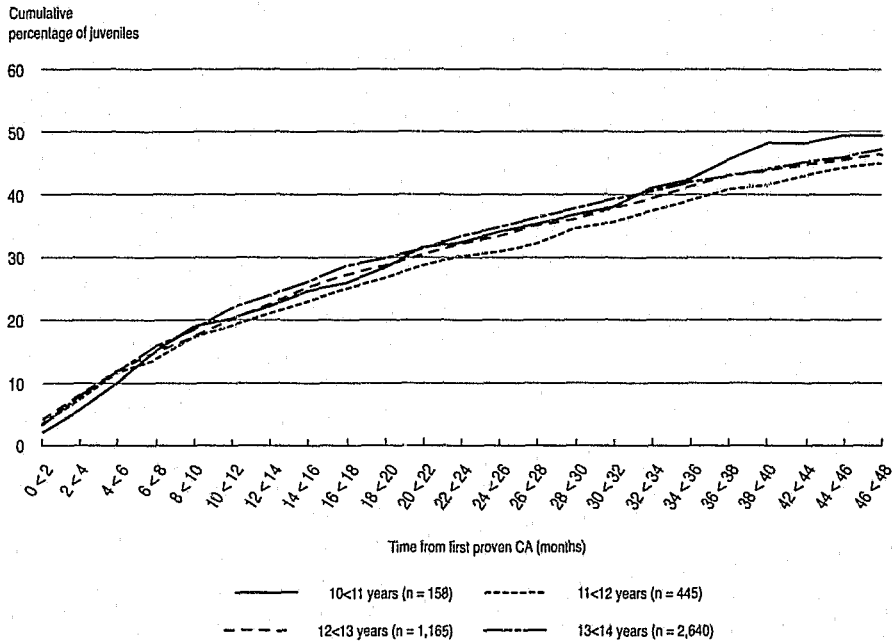


Table 5: Mean number of re-appearances per juvenile within four years of first proven criminal appearance (CA) by age at first proven CA (n = 4,408), Children's Court

Age at first proven CA (years)	No. of juveniles	Mean no. of re-appearances	Standard deviation
10 < 11	158	1.84	3.18
11 < 12	445	1.71	3.08
12 < 13	1,165	1.58	2.71
13 < 14	2,640	1.62	2.89

significant ($t = 4.33$; $df = 4,404$; $p < 0.05$).²⁶

In summary, the present data suggest that age at first proven criminal appearance is a predictor of number of appearances in the Children's Court, but only over a relatively

long follow-up period such as four years. Age at first proven appearance is not related to the number of re-appearances within two years. The present data suggest that age at first proven appearance may be useful in identifying 'chronic juvenile offenders'. Furthermore, previous studies indicate that age at first offence, arrest and conviction is useful in identifying chronic offenders over a longer period of time than childhood. As a result, it may be useful to consider age at first conviction when deciding which juveniles to target for intervention.

3.2.2 Most serious offence at first proven criminal appearance

Figure 5 presents the percentage of juveniles who re-appeared in the Children's Court within two years of their first proven criminal appearance by most serious offence at first proven criminal appearance.²⁷ Juveniles were most likely to re-appear within two years of their first proven criminal appearance if their most serious offence at first proven criminal appearance was robbery/extortion. About 49 per cent of these juveniles had re-appeared at least once within two years. The offence categories with the next highest percentages were motor vehicle theft (44.0%), driving/traffic offence (43.3%) and break and enter (38.6%). The offence categories with the lowest percentages of juveniles re-appearing within two years were fraud/misappropriation (19.3%), offence against good order (22.7%) and stealing/theft (26.3%).

Thus, these data suggest that the type of most serious offence at first proven criminal appearance is related to the number of re-appearances in the Children's Court.

Figure 5: Cumulative percentage of juveniles who re-appeared within 24 months of their first proven criminal appearance (CA) by type of most serious offence at first proven CA (n = 14,332), Children's Court

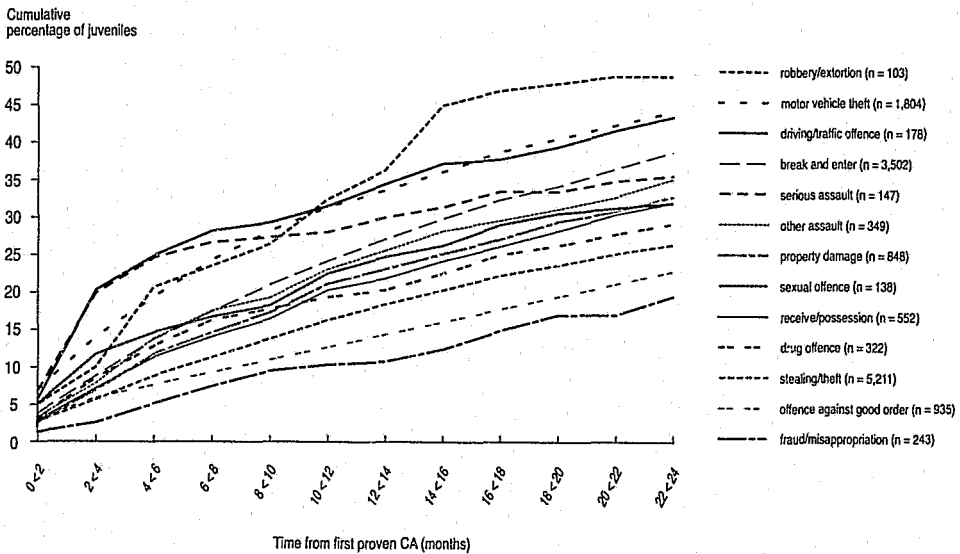


Table 6 presents the mean number of re-appearances within two years of first proven criminal appearance by most serious offence at first proven criminal appearance.²⁸ Offences in the table are listed in decreasing size of mean number of re-appearances.

Table 6: Mean number of re-appearances per juvenile within two years of first proven criminal appearance (CA) by type of most serious offence at first proven CA (n = 14,332), Children's Court

<i>Most serious offence at first proven CA</i>				
<i>DANCO code</i>	<i>Offence</i>	<i>No. of juveniles</i>	<i>Mean no. of re-appearances</i>	<i>Standard deviation</i>
211 - 221	Robbery/extortion	103	1.23	1.98
341	Motor vehicle theft	1,804	1.01	1.67
123	Other assault	349	0.77	1.64
311 - 313	Break and enter ²⁹	502	0.75	1.33
712 - 731	Driving/traffic offence	178	0.70	1.11
121 - 122	Serious assault	147	0.66	1.15
331 - 332	Receive/possession	552	0.63	1.36
411 - 422	Property damage ³⁰	848	0.63	1.32
611 - 632	Drug offence	322	0.57	1.35
131 - 135	Sexual offence	136	0.54	0.98
343 - 344	Stealing/theft ³¹	5,211	0.50	1.12
531 - 564	Offence against good order ³²	935	0.43	1.06
321 - 322	Fraud/misappropriation	243	0.34	0.83

The picture presented by the data in Table 6 is comparable to that presented by Figure 5 in that the rankings for offences were similar. Again, robbery/extortion was ranked highest, exhibiting a mean of 1.23 re-appearances within two years. Furthermore, once again, motor vehicle theft and break and enter featured in the top four rankings, exhibiting means of 1.01 and 0.75, respectively. Driving/traffic offence again had a high ranking although it dropped from third highest to fifth highest, exhibiting a mean of 0.70 re-appearances within two years. The ranking for other assault increased from sixth highest to third highest, exhibiting a mean of 0.77 re-appearances within two years. Once again, fraud/misappropriation, offence against good order and stealing/theft had the lowest rankings, exhibiting means of 0.34, 0.43 and 0.50, respectively.

Given the suggestive differences in the mean re-appearance rate according to offence type, a Scheffé test was performed to determine whether these differences are significant (see, for example, Snedecor & Cochran 1989).³³ The test revealed that some, but not all, of the differences between means were significant ($p < 0.05$).

It was decided to concentrate significance testing on the five most common offences at first proven appearance, namely, motor vehicle theft (n = 1,804), break and enter

(n = 3,502), property damage (n = 848), stealing/theft (n = 5,211) and offence against good order (n = 935). Concentrating on these offences is sensible from an intervention point of view. Potentially, the greatest savings in number of Children's Court appearances would result from reducing offences for which juveniles are frequently brought before the Children's Court.³⁴

The following differences in mean re-appearance rates for the five most common offences were significant. The mean for motor vehicle theft was significantly higher than each of the means for break and enter, property damage, stealing/theft and offence against good order ($F_{12, 14319} = 6.94, 7.06, 14.44, 11.13$, respectively; $p < 0.05$). The mean for break and enter was significantly higher than the mean for stealing/theft and the mean for offence against good order ($F_{12, 14319} = 8.85, 6.72$, respectively; $p < 0.05$).

The remaining comparisons between the five most common offences at first proven appearance were not significant ($F_{12, 14319} = 2.43$ for break and enter versus property damage; $F_{12, 14319} = 2.72$ for property damage versus stealing/theft; $F_{12, 14319} = 3.26$ for property damage versus offence against good order; $F_{12, 14319} = 1.52$ for stealing/theft versus offence against good order; in all cases $p > 0.05$).

The average of the means for motor vehicle theft and break and enter was also significantly greater than the average of the means for property damage, stealing/theft and offence against good order ($F_{12, 14319} = 12.69$; $p < 0.05$).

The significant differences in re-appearance associated with different offences cannot be explained in terms of differences in the likelihood of apprehension for these offences. For example, in 1992, motor vehicle theft and break and enter, offences with relatively high re-appearance rates, had lower single year clear-up percentages (8.7% and 6.2%, respectively) than did property damage or stealing/theft (14.6% and 14.0%, respectively: NSW Bureau of Crime Statistics and Research 1993).

If one were specifically interested in saving criminal appearances it would be irrelevant whether the number of re-appearances in court is a good estimate of actual re-offending rates. The present data suggest that, from the point of view of saving criminal appearances, it may be useful to take into account the most serious offence at first proven appearance when determining which juveniles to target for intervention. For example, the present results suggest that targeting juveniles whose most serious offence at first proven appearance was motor vehicle theft may be considerably useful in reducing criminal appearance numbers. It should be noted, however, that offending frequency is not the only dimension of potential interest when targeting offenders for intervention. For example, offence severity is also of potential interest. Indeed, reducing less frequent but more severe offences such as homicide may well be considered more important than reducing offences such as motor vehicle theft.

The present results contrast with those of an earlier study which found that type of offence at first conviction did not discriminate in any way between a group of chronic offenders and a group of non-chronic offenders (Blumstein, Farrington & Moitra 1985). The discrepancy in results is probably due to the differences in method between the two studies. Firstly, the earlier study used a much broader categorization of offences than did the present study: the earlier study simply divided offences into two groups, burglary/violence and other offences. Secondly, whereas the present study examined chronicity of offending by age eighteen, the earlier study examined chronicity of offending by age twenty-five. Thirdly, unlike the present study which used

appearances (proven or unproven) as the unit for estimating chronicity, the earlier study used convictions.

3.2.3 Number of criminal appearances to date

The question of whether the number of criminal appearances to date in the Children's Court predicts re-appearance is important from the point of view of intervention. If re-appearance probabilities depend on the number of criminal appearances to date, then the cost-effectiveness of an intervention will depend on the point at which it is instituted in the court appearance chain. Conversely, if the re-appearance probabilities do not depend on the number of criminal appearances to date, then cost-effectiveness will not depend on the point of intervention and, as a result, the earlier re-offending is targeted, the better.

The probability, p_x , of re-appearing in the Children's Court for an x th criminal appearance (CA), given $x-1$ appearances to date was estimated as follows:

$$p_x = \frac{\text{no. of juveniles with at least } x \text{ CAs}}{\text{no. of juveniles with at least } x-1 \text{ CAs}} \quad (1)$$

The number of juveniles with at least x criminal appearances is simply equal to:

$$\text{total no. of juveniles} - \text{no. of juveniles with less than } x \text{ CAs.}$$

The number of juveniles with less than x criminal appearances is equal to the cumulative frequency of juveniles with $x-1$ criminal appearances. These cumulative frequencies have been presented in Table 1.

Table 7 presents these same cumulative frequencies and shows how the number of juveniles with at least x criminal appearances are derived from these cumulative frequencies. Finally, Table 7 presents the probability associated with a second appearance given one appearance through to the probability associated with a fourteenth appearance given 13 appearances. Table 7 also shows how these probabilities are derived from equation (1). For example, the probability of re-appearing for a third criminal appearance after having appeared twice is:

$$\begin{aligned} p_3 &= \frac{\text{no. of juveniles with at least 3 CAs}}{\text{no. of juveniles with at least 2 CAs}} \\ &= \frac{5,223}{10,286} = 0.51. \end{aligned}$$

Table 7 shows that although the probability of re-appearing in the Children's Court after a first proven criminal appearance is quite low at 0.30, it generally increases as the number of appearances increases. About half of those who had two appearances returned for a third ($p_3 = 0.51$) and about three-quarters of those who had six appearances returned for

a seventh ($p_7 = 0.74$). The proportion of juveniles who return after each appearance subsequent to the sixth appearance remains high at about three-quarters or more.

Table 7: Probability (p_x) of re-appearing in the Children's Court for an x th criminal appearance given $x-1$ CAs to date³⁵

x	No. of CAs to date ($x-1$)	No. of juveniles with less than x CAs	No. of juveniles with at least x CAs*	Probability of re-appearing for an x th CA**
1	0	0	33,900	—
2	1	23,614	10,286	$p_2 = 0.30$
3	2	28,677	5,223	$p_3 = 0.51$
4	3	30,606	3,294	$p_4 = 0.63$
5	4	31,716	2,184	$p_5 = 0.66$
6	5	32,341	1,559	$p_6 = 0.71$
7	6	32,747	1,153	$p_7 = 0.74$
8	7	33,044	856	$p_8 = 0.74$
9	8	33,252	648	$p_9 = 0.76$
10	9	33,390	510	$p_{10} = 0.79$
11	10	33,492	408	$p_{11} = 0.80$
12	11	33,591	309	$p_{12} = 0.76$
13	12	33,660	240	$p_{13} = 0.78$
14	13	33,696	204	$p_{14} = 0.85$

* (= 33,900 - No. of juveniles with less than x CAs)

** ($= p_x = \frac{\text{No. of juveniles with at least } x \text{ CAs}}{\text{No. of juveniles with at least } x-1 \text{ CAs}}$)

Thus, the present data suggest that desisting from offending is not random. Rather, the probability of re-appearing in the Children's Court tends to increase as the number of appearances increases, at first rapidly and then more gradually.

The present results are in keeping with those of previous studies. For example, research conducted with adult offenders in Western Australia by Broadhurst and Maller (1991) produced a similar pattern of re-offending probabilities. They followed up adult offenders who were released from prison in Western Australia between July 1975 and June 1987. Their results showed that the probability of return to prison depended on the number of prison terms to date. Furthermore, they found that the probability of return to prison increased strongly as the number of prison terms to date increased from one to six but then levelled off.

Similarly, the landmark study conducted by Wolfgang, Figlio and Sellin (1972) in the United States showed that juvenile re-offending probabilities increase as juveniles progress through their careers. They found that, while the probability of re-arrest was 0.54 after the first arrest, it increased to 0.65 after the second arrest and levelled off after the third arrest.

The present findings and those of previous studies suggest that the cost-effectiveness of

interventions aimed at reducing re-offending depends on the point at which known offenders are targeted in their criminal careers. In particular, present and previous results suggest that it is not particularly cost-effective to institute intervention strategies at an early point in a criminal career, such as after the first arrest or the first conviction, given that a large percentage of offenders desist offending after this point.

Wolfgang, Figlio and Sellin (1972) not only suggest that an intervention instituted after the first arrest would not be particularly cost-effective but that 'a major and expensive treatment program at this point would appear to be wasteful'. Furthermore, they 'suggest that an intervention be held in abeyance until the commission of the third offence ... [when] ... the desistance probabilities level off' (p. 254).

However, suggesting that an intervention would be 'wasteful' if it was instituted early on in the offending chain is somewhat premature. It would be more instructive to examine what it would take for interventions instituted at various points in the offending chain to be cost-effective. The following section examines the savings resulting from the introduction of interventions at various points in the court appearance chain. Both savings in the overall number of criminal appearances and savings in the number of criminal appearances per juvenile targeted are examined.

3.3 SAVINGS RESULTING FROM INTRODUCING INTERVENTIONS AT VARIOUS POINTS IN THE COURT APPEARANCE CHAIN

A reduction in the general level of crime would result in savings in a number of areas, such as the judicial system, the correctional system and the community at large. Savings to the judicial system include savings resulting from a reduced number of appearances in the Children's, Local and Higher Courts. Savings to the correctional system include savings resulting from fewer supervised orders and fewer incarcerations. Savings to the community include savings resulting from reductions in the financial costs associated with crime (e.g. property crimes) and reductions in the medical costs associated with crime (e.g. violent crimes).

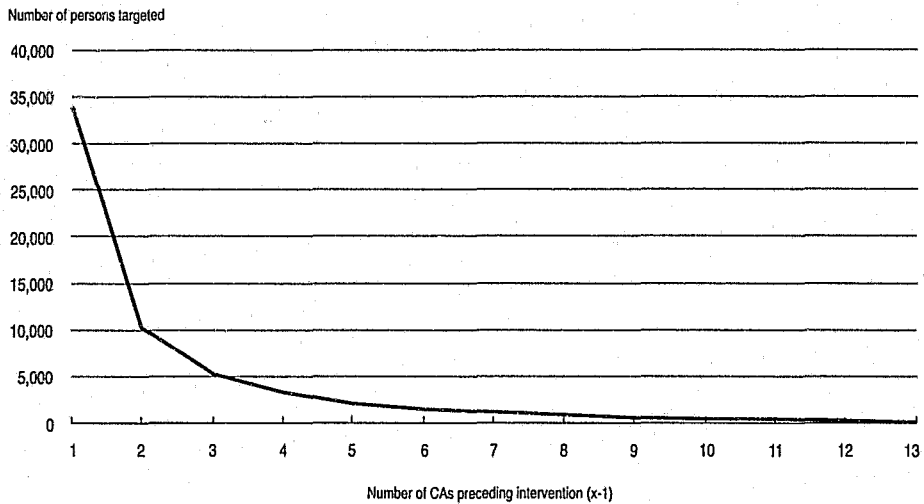
3.3.1 Savings in overall number of criminal appearances

The present data can be used to estimate the cost-effectiveness of intervention strategies instituted at various points in the 'careers' of the present sample of known juvenile offenders. To provide such an estimate it is necessary to determine the number of juveniles who would be targeted by a given intervention because this number would affect the total cost of the intervention. Furthermore, in order to calculate the savings resulting from the intervention it is also necessary to examine the effectiveness of the intervention because the more effective an intervention, the greater the savings.

The number of juveniles that would be targeted by an intervention depends on the point at which juveniles would be targeted during their 'career' of appearances in the Children's Court. The numbers of juveniles that would have been targeted in the present sample had an intervention been instituted after various numbers of appearances are presented in Table 7 (see column entitled 'No. of juveniles with at least x CAs'). They are also presented graphically in Figure 6.

It can be seen from Table 7 and Figure 6 that the number of juveniles that would have been targeted decreases dramatically as the point of intervention moves from being after the first proven appearance to after the fifth appearance. For example, targeting an intervention at juveniles who had at least one proven criminal appearance in the

Figure 6: Number of juveniles targeted by an intervention instituted after various numbers of criminal appearances (CAs), Children's Court



Children's Court would have resulted in the targeting of the entire sample of 33,900 juveniles; targeting an intervention at juveniles in the sample who had at least two appearances would have resulted in the targeting of 10,286 juveniles, and targeting an intervention at juveniles in the sample who had at least five appearances would have resulted in the targeting of 2,184 juveniles. The decrease in number of persons targeted is more gradual for appearances subsequent to the fifth.

Given that the number of juveniles that would be targeted drops off dramatically as the number of appearances increases from one to five, it was decided to compare the savings resulting from interventions targeted at juveniles with one, two, three, four and five appearances.

The effectiveness of an intervention can be gauged by the resulting reduction in recidivism, such as the percentage reduction in the probability of re-appearance in the Children's Court. The present report examines savings in criminal appearance numbers for fairly small reductions in the re-appearance probabilities, namely, 5, 10 and 20 per cent reductions. It was decided to examine the effect of small reductions because, as discussed earlier, reviews of the literature on intervention strategies with juvenile offenders suggest only modest reductions in offending. Indeed, it is not uncommon for reviews to conclude that no specific intervention emerges as being consistently effective for all groups of offenders (Blumstein, Cohen, Roth & Visher 1986; Lipton, Martinson & Wilks 1975; Sechrest, White & Brown 1979). Nonetheless, a common qualifying conclusion is that some interventions may be effective for specific groups of offenders (Blumstein, Cohen, Roth & Visher 1986; Sechrest, White & Brown 1979). Further reason for pursuing the possibility of rehabilitation may be found in the fact that many past

intervention studies suffered from poor design (Blumstein, Cohen, Roth & Visher 1986; Sechrest, White & Brown 1979).

To summarize, the number of criminal appearances saved was calculated for each of 5, 10 and 20 per cent reductions in each of p_2 , p_3 , p_4 , p_5 and p_6 . That is, the number of criminal appearances saved resulting from instituting interventions after each of the first five appearances was calculated for interventions which produce 5, 10 or 20 per cent reductions in the re-appearance rate.

The overall number of criminal appearances saved in each case was calculated using the steps outlined below. To illustrate the process, the case of a 5 per cent reduction in p_2 is used (i.e. a 5 per cent reduction in the proportion of juveniles who returned for a second appearance as a result of an intervention targeted at all juveniles who had at least one proven appearance).

1. The new p_x value, corresponding to the reduction in the re-appearance rate resulting from the intervention, is calculated.

$$\text{New } p_2 = \text{original } p_2 \times 0.95 = 0.30 \times 0.95 = 0.29.$$

It should be noted that the remaining p_x values for subsequent criminal appearances (i.e. p_3 to p_6 in the example case) are not altered. Leaving the remaining p_x values unchanged involves the conservative assumption that the intervention would not affect these probabilities. There is at present no way of estimating whether an intervention which is successful in reducing the likelihood of one re-appearance would also reduce the likelihood of more than one re-appearance.

2. A new cumulative frequency distribution is constructed for the present sample using the new p_x value.

The no. of juveniles with at least one CA remains at 33,900;

the no. of juveniles with at least two CAs becomes

$$33,900 \times \text{new } p_2 = 33,900 \times 0.29 = 9,771.7;$$

the no. of juveniles with at least three CAs becomes

$$9,771.7 \times \text{original } p_3 = 9,771.7 \times 0.51 = 4,961.9;$$

and so on for the remaining p_x values.

3. A frequency distribution corresponding to the cumulative frequency distribution is then constructed.

The no. of juveniles with exactly one CA becomes

the no. of juveniles with at least one CA - the no. of juveniles with at least two CAs

$$= 33,900 - 9,771.7 = 24,128.3;$$

the no. of juveniles with exactly two CAs becomes

the no. of juveniles with at least two CAs - the no. of juveniles with at least three CAs

$$= 9,771.7 - 4,961.9 = 4,809.8;$$

and so on for the remaining frequencies.

4. The total number of criminal appearances in the Children's Court is calculated for the new p_x value using the frequency distribution.

$$\begin{aligned} &\text{New total no. of CAs} \\ &= \sum (\text{exact no. of CAs} \times \text{frequency of juveniles with that no. of CAs}) = 60,349. \end{aligned}$$

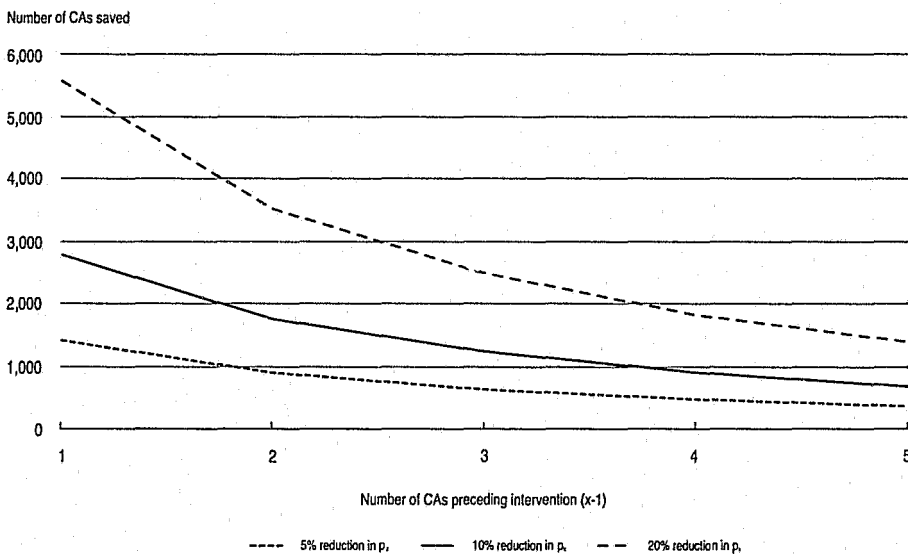
5. Finally, the savings in Children's Court criminal appearances is calculated.

$$\begin{aligned} &\text{Savings in no. of CAs} \\ &= \text{old total no. of CAs} - \text{new total no. of CAs} \\ &= 61,741 - 60,349 = 1,392. \end{aligned}$$

The five steps above were used to determine the savings resulting from interventions producing 5, 10 and 20 per cent reductions in each of p_2 to p_6 . Figure 7 presents the overall number of criminal appearances saved in each case.

Figure 7 shows that the larger savings in overall number of appearances occur when juveniles are targeted earlier on in their court appearance 'careers'. That is, savings in overall number of appearances were largest for interventions instituted after the first proven appearance and smallest for interventions instituted after the fifth appearance.

Figure 7: Overall number of criminal appearances (CAs) saved for each of 5, 10 and 20 per cent reductions in the probability of juveniles re-appearing at least once as a result of an intervention instituted after each of the first proven to fifth CAs, Children's Court



This finding occurs because there are more juveniles to target earlier on in the court appearance chain (see Figure 6).

3.3.2 Savings in number of criminal appearances per juvenile targeted

Average number of criminal appearances saved per juvenile

The average number of criminal appearances saved per juvenile targeted depends on both the number of juveniles targeted (see, for example, Figure 6) and the overall number of criminal appearances (CAs) saved (see, for example, Figure 7). That is:

$$\text{average no. of CAs saved per juvenile} = \frac{\text{total no. of CAs saved}}{\text{total no. of juveniles targeted}} \quad (2)$$

Equation (2) was used to calculate the average number of criminal appearances saved *per juvenile targeted* for interventions resulting in 5, 10 and 20 per cent reductions in each of p_2 to p_6 (as a result of the intervention occurring after one, two, three, four and five appearances, respectively).

Table 8 presents these average savings per juvenile and shows the data used to derive these average savings, namely, the total number of juveniles targeted (also shown in Table 7 and Figure 6) and the overall number of appearances saved (also shown in Figure 7).

It can be seen from Table 8 that there is an *increase* in the cost-effectiveness of an intervention in terms of number of criminal appearances saved *per juvenile targeted* when juveniles are targeted later in their court appearance 'careers'. This increase in average savings per juvenile is shown quite dramatically when the data are graphed. Figure 8 presents these data on average number of criminal appearances saved per juvenile.

Table 8: Total number of persons targeted, overall number of criminal appearances (CAs) saved and average number of CAs saved per person targeted as a result of an intervention resulting in 5, 10 and 20 per cent reductions in each of p_2 to p_6 , Children's Court

No. of CAs preceding intervention (x-1)	No. of persons targeted	5% reduction in p_x		10% reduction in p_x		20% reduction in p_x	
		No. of CAs saved	No. of CAs saved / person	No. of CAs saved	No. of CAs saved / person	No. of CAs saved	No. of CAs saved / person
1	33,900	1,392	0.04	2,784	0.08	5,568	0.16
2	10,286	878	0.09	1,755	0.17	3,510	0.34
3	5,223	617	0.12	1,233	0.24	2,466	0.47
4	3,294	452	0.14	904	0.27	1,808	0.55
5	2,184	343	0.16	685	0.31	1,371	0.63

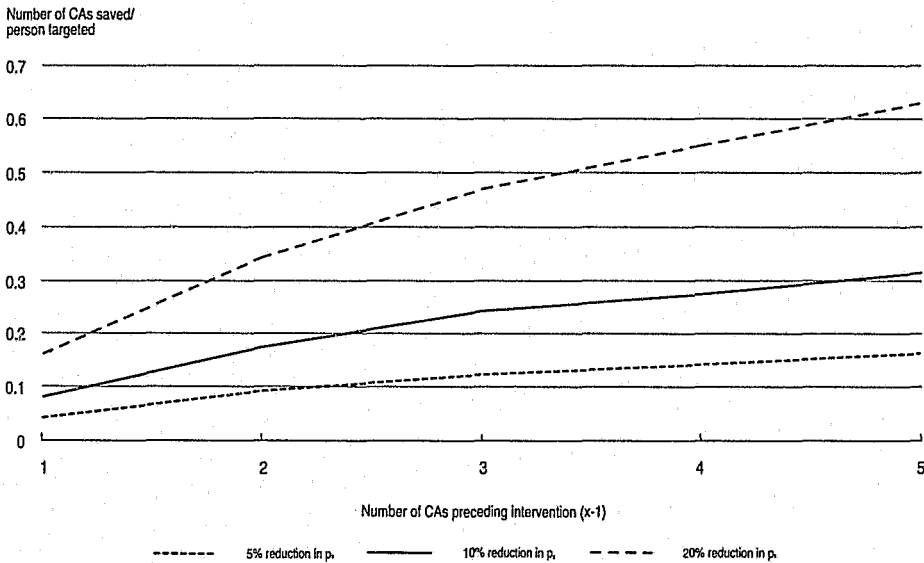
The *increase* in the average number of criminal appearances saved *per juvenile* as juveniles are targeted later in their careers (shown in Figure 8 and Table 8) contrasts to the *decrease* in the *overall* number of criminal appearances saved as juveniles are targeted later in their careers (shown in Figure 7 and Table 8).

The difference in the trends displayed in Figures 7 and 8 occurs because the overall number of criminal appearances saved decreases much more gradually than does the number of persons that would be targeted as an intervention is instituted later and later in the court appearance chain (compare, for example, Figure 7 with Figure 6).

Thus, the greater the overall savings in appearances, the smaller the savings in appearances per person. For example, an intervention strategy that resulted in a 10 per cent reduction in re-appearance probabilities would, if targeted at juveniles in the present sample after their first proven appearance, have resulted in an average saving of only 0.08 appearances per person targeted although it would have saved a total of 2,784 appearances. The same intervention would, if targeted at juveniles after their fifth appearance, have saved an average of 0.31 appearances per person targeted although it would only have saved a total of 685 appearances.

The next section shows that average savings per person rather than overall savings are relevant when calculating the cost-effectiveness of interventions. As a result, because the average savings per person increase the later interventions are instituted, the cost-effectiveness of interventions also increase the later they are instituted.

Figure 8: Average number of criminal appearances (CAs) saved per juvenile targeted for each of 5, 10 and 20 per cent reductions in the probability of juveniles re-appearing at least once as a result of an intervention instituted after each of the first proven to fifth CAs, Children's Court



The point at which an intervention becomes cost-effective

The average savings per person in Table 8 can be used as a guide for calculating the point at which a given intervention will become cost-effective. An intervention would be cost-effective at the point where the savings resulting from the intervention outweighed the cost of the intervention. It should be noted, however, that the only cost taken into consideration in the present calculation is the cost of a Children's Court appearance. As noted earlier, there are additional costs of crime including those associated with the court system for adults, the correctional system and the community at large. Taking any of these additional costs into account would increase the estimated cost-effectiveness of any intervention.

In the present case, an intervention (I) would be cost-effective in terms of criminal appearances saved when:

$$\text{cost}_I \text{ per person} < \text{cost}_{CA} \text{ per person} \times \text{average no. of CAs saved per person.} \quad (3)$$

Or, in other words when:

$$\text{average no. of CAs saved per person} > \frac{\text{cost}_I \text{ per person}}{\text{cost}_{CA} \text{ per person}} \quad (4)$$

For example, if the cost of an intervention per person is \$200 and the cost of a criminal appearance per person is \$1,000 then the intervention would be cost-effective (in terms of criminal appearance savings) only if the number of appearances saved per person was greater than 200/1,000 or 0.20. Table 8 reveals that this particular intervention would be cost-effective in terms of criminal appearance savings if (i) it produced a 10 per cent reduction in re-appearance rate and was instituted after the third appearance, or (ii) it produced a 20 per cent reduction in re-appearance rate and was instituted after the second appearance. Table 8 also reveals that such an intervention would not be cost-effective if it produced only a 5 per cent reduction in re-appearance rate and it was instituted after any of the first five criminal appearances. This is because the number of criminal appearances saved per person is less than 0.20 for interventions resulting in a 5 per cent reduction in p_x if they are instituted after any of the first five appearances.

Let us now consider two intervention strategies currently being used with juvenile offenders in NSW, namely, Community Aid Panels and Family Group Conferences. These two strategies are typically targeted at first offenders at the time of first contact with the juvenile justice system (Bargen 1992; NSW Police Service 1991).

According to the present data, targeting juveniles at the time of their first conviction is less cost-effective in terms of criminal appearance savings per juvenile than is targeting juveniles later in their careers. The present data show that about 70 per cent of juveniles do not return to the Children's Court after their first proven criminal appearance. The present data do not suggest, however, that targeting first offenders is never cost-effective in terms of criminal appearance savings per person. Unfortunately, at present, neither the cost of Community Aid Panels and Family Group Conferences nor their effectiveness in reducing the rate of court re-appearance has been determined conclusively (Bargen 1992; Moore 1993).

Nonetheless, a consideration of Table 8 together with equation (4) allows us to examine the point at which such interventions would become cost-effective in the event that they are capable of 5, 10 or 20 per cent reductions in the rate of re-appearance. Such interventions, if instituted after the first proven appearance, would be cost-effective if:

- (i) they produced a 5 per cent reduction in re-appearance rate and their cost per person divided by the cost of a criminal appearance per person was less than 0.04 (i.e. their cost per person was less than 4% of the cost of a criminal appearance per person);
- (ii) they produced a 10 per cent reduction in re-appearance rate and their cost per person divided by the cost of a criminal appearance per person was less than 0.08 (i.e. their cost per person was less than 8% of the cost of a criminal appearance per person);
- (iii) they produced a 20 per cent reduction in re-appearance rate and their cost per person divided by the cost of a criminal appearance per person was less than 0.16 (i.e. their cost per person was less than 16% of the cost of a criminal appearance per person).

The period over which net savings would be gained

The net gain resulting from an intervention (I), if only criminal appearance savings were considered, would be:

$$\text{total savings in cost}_{CA} - \text{total cost}_I.$$

In general, the period over which the net gain would be effected would be a maximum of eight years because eight years is usually the maximum time over which juveniles appear in the Children's Court. However, given that most juveniles spend less than eight years in the Children's Court system because their first appearance occurs when they are older than 10 years, the majority of the net gain would often be effected in less than eight years.

The present data can be used to estimate the time that would be taken to recover the net gain from interventions instituted after a given number of Children's Court appearances. The discussion below concentrates on interventions instituted after each of the first five appearances.

The period over which net savings would be gained as a result of an intervention instituted after the first proven criminal appearance

Let us first consider the time to recover the net gain from an intervention targeting all juveniles after their first proven appearance. Such an intervention would have targeted the entire present sample of 33,900, including those 23,614 juveniles who would not have re-appeared after their first proven appearance in the absence of the intervention (see Table 7). Any savings in criminal appearances resulting from the intervention would be recoverable only from the group of 10,286 (i.e. 33,900 - 23,614) who would have re-appeared for a second appearance had the intervention not taken place. The cost expended on the 23,614 juveniles who would not have re-appeared anyway would not be recoverable from saved criminal appearances for these juveniles.

By examining the time between first proven and second appearance for those individuals who would have re-appeared for a second appearance in the absence of the intervention (i.e. the 10,286 juveniles), it is possible to estimate the time taken to recover the net gain

for the intervention. Table 9 presents the time between first proven and second appearance for all those juveniles who would have had at least two appearances in the absence of the intervention.

Table 9 shows that all of the juveniles who re-appear after their first proven appearance do so within eight years. Thus, the *total* net gain in saved second appearances resulting from an intervention instituted after the first proven appearance would have been recovered within eight years.

Table 9: Time between first proven and second criminal appearance (CA) for juveniles with at least two CAs (n = 10,286), Children's Court

<i>Time between first proven and second CA (years)</i>	<i>Frequency of juveniles</i>	<i>% of juveniles</i>	<i>Cumulative % juveniles</i>
0 < 1	5,968	58.0	58.0
1 < 2	2,374	23.1	81.1
2 < 3	1,165	11.3	92.4
3 < 4	475	4.6	97.0
4 < 5	201	2.0	99.0
5 < 6	72	0.7	99.7
6 < 7	26	0.3	100.0
7 < 8	5	0.0	100.0

The data in Table 9 can also be used to estimate the *proportion* of the net gain that would be recovered within a given time period *if* the effect of the intervention does not depend on the length of time that juveniles would have taken to re-appear in the absence of the intervention. That is, in this event, the proportion of re-appearance savings in a given time period would be equal to the proportion of juveniles that would have re-appeared in that time period in the absence of the intervention. In the case of an intervention instituted after the first proven appearance, this would mean that about four-fifths of the net gain would have been recovered within two years given that 81.1 per cent of the juveniles who re-appeared for a second appearance did so within two years (see Table 9). Similarly, virtually all of the net gain would have been recovered within five years given that 99.0 per cent of the juveniles who re-appeared for a second appearance did so within five years.

Using the same method and assumptions, the time taken to recover the net savings from interventions instituted after each of the second, third, fourth and fifth appearances is examined below.

The period over which net savings would be gained as a result of an intervention instituted after the second criminal appearance

An intervention instituted after the second appearance would have targeted 10,286

juveniles in the present sample (see Table 8). Of these targeted juveniles, 5,223 (see Table 7) would have returned for a third appearance had the intervention not taken place. The period over which the net savings in criminal appearances would be gained can be estimated from the time taken for these 5,223 juveniles to return for a third appearance.

It can be seen from Table 10 that all of the juveniles who returned for a third appearance did so within seven years of their second appearance. Thus, the *total* net gain in saved third appearances resulting from an intervention instituted after the second appearance would have been recovered within seven years.

Table 10: Time between second and third criminal appearance (CA) for juveniles with at least three CAs (n = 5,223), Children's Court

<i>Time between second and third CA (years)</i>	<i>Frequency of juveniles</i>	<i>% of juveniles</i>	<i>Cumulative % juveniles</i>
0 < 1	3,825	73.2	73.2
1 < 2	949	18.2	91.4
2 < 3	325	6.2	97.6
3 < 4	86	1.6	99.3
4 < 5	24	0.5	99.7
5 < 6	13	0.2	100.0
6 < 7	1	0.0	100.0

Furthermore, almost three-quarters of the net savings would have been recovered within one year given that 73.2 per cent of juveniles who returned for a third appearance did so within one year. Virtually all of the net savings would have been recovered within four years given that 99.3 per cent of juveniles who returned for a third appearance did so within four years.

The period over which net savings would be gained as a result of an intervention instituted after the third criminal appearance

An intervention instituted after the third appearance would have targeted 5,223 juveniles in the present sample (see Table 8). Of these targeted juveniles, 3,294 (see Table 7) would have returned for a fourth appearance had the intervention not taken place.

Proceeding in the usual way, Table 11 suggests that the *total* net gain in saved fourth appearances resulting from an intervention instituted after the third appearance would have been recovered within six years. It also suggests that about four-fifths (81.9%) of the net savings would have been recovered within one year and virtually all (99.1%) of the net savings would have been recovered within three years.

Table 11: Time between third and fourth criminal appearance (CA) for juveniles with at least four CAs (n = 3,294), Children's Court

<i>Time between third and fourth CA (years)</i>	<i>Frequency of juveniles</i>	<i>% of juveniles</i>	<i>Cumulative % juveniles</i>
0 < 1	2,698	81.9	81.9
1 < 2	450	13.7	95.6
2 < 3	116	3.5	99.1
3 < 4	22	0.7	99.8
4 < 5	6	0.2	99.9
5 < 6	2	0.1	100.0

The period over which net savings would be gained as a result of an intervention instituted after the fourth criminal appearance

An intervention instituted after the fourth appearance would have targeted 3,294 juveniles in the present sample (see Table 8). Of these targeted juveniles, 2,184 (see Table 7) would have returned for a fifth appearance had the intervention not taken place.

Table 12 suggests that the *total* net gain in saved fifth appearances resulting from an intervention instituted after the fourth appearance would have been recovered within five years. Furthermore, more than four-fifths (86.8%) of the net savings would have been recovered within one year and virtually all (99.4%) of the net savings would have been recovered within three years.

Table 12: Time between fourth and fifth criminal appearance (CA) for juveniles with at least five CAs (n = 2,184), Children's Court

<i>Time between fourth and fifth CA (years)</i>	<i>Frequency of juveniles</i>	<i>% of juveniles</i>	<i>Cumulative % juveniles</i>
0 < 1	1,895	86.8	86.8
1 < 2	236	10.8	97.6
2 < 3	40	1.8	99.4
3 < 4	9	0.4	99.8
4 < 5	4	0.2	100.0

The period over which net savings would be gained as a result of an intervention instituted after the fifth criminal appearance

An intervention instituted after the fifth appearance would have targeted 2,184 juveniles

in the present sample (see Table 8). Of these targeted juveniles, 1,559 (see Table 7) would have returned for a sixth appearance had the intervention not taken place.

Table 13 suggests that the *total* net gain in saved sixth appearances resulting from an intervention instituted after the fifth appearance would have been recovered within four years. Furthermore, about nine-tenths (91.1%) of the net savings would have been recovered within one year and virtually all (98.8%) of the net savings would have been recovered within two years.

Table 13: Time between fifth and sixth criminal appearance (CA) for juveniles with at least six CAs (n = 1,559), Children's Court

<i>Time between fifth and sixth CA (years)</i>	<i>Frequency of juveniles</i>	<i>% of juveniles</i>	<i>Cumulative % juveniles</i>
0 < 1	1,421	91.1	91.1
1 < 2	119	7.6	98.8
2 < 3	14	0.9	99.7
3 < 4	5	0.3	100.0

In summary, Tables 9 to 13 reveal that the length of time between appearances decreases as a juvenile progresses through the court appearance chain. Thus, Tables 9 to 13 show that the time taken to recover the net gain from an intervention decreases the later the intervention is instituted in the court appearance chain. The total net gain would be recovered after eight years if the intervention was instituted after the first proven appearance but after only four years if the intervention was instituted after the fifth appearance.

A follow-up of 978 of the 9,945 juveniles from the Philadelphian birth cohort studied by Wolfgang, Figlio and Sellin (1972) similarly showed that the time between arrests is longest after the first arrest, decreasing after subsequent arrests (Wolfgang, Thornberry & Figlio 1987).

4. DISCUSSION

The present results showed that the majority of juveniles (69.7%) *desist* offending in so far as they do not re-appear in the Children's Court after their first proven appearance. There is, however, a small group of juveniles who *persist* offending, appearing in the Children's Court numerous times. For example, 1.5 per cent of the juveniles in the present sample had at least 10 criminal appearances in the Children's Court.

According to the present results, theft offences are more common amongst juveniles than are offences against the person. Furthermore, almost half of the juveniles who re-appear in the Children's Court tend to re-appear primarily for theft offences.

The present study identified three factors that predict re-appearance in the Children's Court. As a result, these factors may prove useful in identifying repeat juvenile offenders and hence, identifying which juveniles could be targeted to reduce repeat offending.

The three predictors of re-appearance were as follows. Firstly age at first proven appearance predicted number of re-appearances within a four-year period.

Another predictor of re-appearance was the most serious offence at first proven appearance. It was found, for example, that juveniles whose most serious offence at first proven appearance was motor vehicle theft re-appeared more frequently than juveniles whose most serious offence at first proven appearance was stealing/theft or an offence against good order.

It was also found that the probability of re-appearance in the Children's Court can be predicted by the number of appearances to date. This finding is in keeping with numerous findings that those with extensive criminal histories are more likely to commit offences in the future (Blumstein, Farrington & Moitra 1985; Nagin & Paternoster 1991; Wolfgang, Figlio & Sellin 1972).

There are two main types of explanations for this consistent finding. Firstly, many authors present what has been called a population heterogeneity interpretation (Blumstein, Cohen, Roth & Visher 1986; Gottfredson & Hirschi 1990). That is, they argue that individuals differ in their criminal propensity: some are destined to be *innocents* who live a crime-free life, others are destined to be *desisters* who commit crime for a short while, and the remainder are destined to be *persisters* who make long careers out of crime.

The proponents of the heterogeneity position do not necessarily agree about the cause of individual differences in criminal propensity. For example, Gottfredson and Hirschi (1990) argue that individuals who lack self-control, being, for example, impulsive, risk-taking, short-sighted and insensitive, tend to engage in more crime. Others, such as Blumstein and his co-workers, do not present a specific theory about the cause of individual differences in criminal propensity but rather, provide data which are consistent with the heterogeneity position. They argue that the stability of the offending frequency and the offence severity of those individuals who remain actively involved in crime suggest that these individuals have a high criminal propensity (Blumstein, Cohen, Roth & Visher 1986).

The second type of explanation for the finding that individuals with extensive criminal histories are more likely to commit crime in the future has been called the state-

dependence interpretation. Proponents of this interpretation argue that individuals who commit a crime are altered by their experience in a way which makes them more likely to offend in the future. Again, proponents of this interpretation disagree about the specific cause of the increased probability of crime involvement. For example, it has been argued that criminal experience may increase the probability of crime involvement by: resulting in labelling as a criminal which in turn results in adjustment problems; weakening social bonds to conventionality; increasing the affinity with other criminals; and decreasing the deterrent capacity of punishment (Nagin & Paternoster 1991).

Both heterogeneity and state-dependence interpretations require further theoretical formulation. For example, heterogeneity interpretations require a clearer delineation of the factors which produce individual differences in criminal propensity. Similarly, the state-dependence interpretations generally do not clearly delineate the state-dependent variables responsible for persons desisting and those responsible for persons persisting. Furthermore, state-dependence interpretations do not address the issue of which individuals will become involved in crime in the first instance.

As Nagin and Paternoster (1991) point out, heterogeneity and state-dependence explanations are not mutually exclusive. The issue of criminal involvement is likely to be a complex one that involves both heterogeneity and state-dependence factors. To date, very little research has attempted to determine the relative contribution of these two types of factors. The empirical work of Nagin and Paternoster (1991) was the first to examine the issue of relative contribution. Their work suggests that both heterogeneity and state-dependence factors play some role and that state-dependence factors may be relatively more important. However, they caution that their results are suggestive rather than definitive given that their analyses were exploratory and correlational in nature.

The present results showed that the cost-effectiveness of intervention strategies with known juvenile offenders depends on the proportion of the targeted group who are persisters. Specifically, the cost-effectiveness of interventions per juvenile targeted increased as the proportion of the targeted group who were chronic offenders increased. That is, cost-effectiveness *increased the later* the intervention was instituted in the court appearance chain. It is *least* cost-effective to target juveniles after their *first* proven appearance given that this group accounts for the largest proportion of juveniles who do not re-appear in the Children's Court (69.7%).

The present results also showed that it will take less time to recover the total net gain from an intervention the later the intervention is instituted in the court appearance chain.

NOTES

- 1 The 1987 Community Welfare legislation contained the following five Acts relating to children: the *Children's Court Act 1987*, the *Children (Care and Protection) Act 1987*, the *Children (Criminal Proceedings) Act 1987*, the *Children (Community Service Orders) Act 1987* and the *Children (Detention Centres) Act 1987*. The 1987 legislation also contained the *Community Welfare Act 1987* and the *Miscellaneous Acts (Community Welfare) Repeal and Amendment Act 1987*.
- 2 Summary offences are relatively minor offences, which, when committed by an adult, are dealt with by magistrates in the Local Courts, and usually cannot attract a penalty greater than a term of two years imprisonment or a fine of \$10,000.
- 3 Indictable offences as a group are more serious than summary offences. When an indictable offence is committed by an adult, the case is usually tried by a judge and jury in a Higher Court, that is, in either the District or Supreme Court. Indictable offences can result in penalties of greater than two years imprisonment or \$10,000.

The Children (Criminal Proceedings) Act 1987 makes a distinction between 'serious indictable offences' and other indictable offences. 'Serious indictable offences' means (a) homicide; (b) an offence punishable by penal servitude for life; (c) an offence arising under s. 61B of the Crimes Act 1900; (d) the offence of attempting to commit an offence arising under s. 61B of the Crimes Act; or (e) an indictable offence prescribed by the regulations as a serious indictable offence for the purposes of the Act.
- 4 All the data used in the present report were obtained from the Juvenile Court Index (JCI) System maintained by the Department of Juvenile Justice, Roden Cutler House, 24 Campbell St, Sydney 2000.
- 5 The variable used to exclude juveniles who had proven criminal appearances prior to 1982 did not discriminate between proven appearances for criminal matters and proven appearances for welfare matters. As a result, it is possible that juveniles who had a proven appearance for a welfare matter but not for a criminal matter prior to 1982 were excluded from the present sample.
- 6 A small percentage of juveniles (e.g. six per cent of the present sample) appear before the Children's Court after they have turned 18 years of age.
- 7 Age at first criminal appearance was missing for six juveniles. Most of the persons in the sample aged 18 years or more at the time of their first proven appearance would have committed the offence(s) in question before 18 years. It is possible that some of the persons aged at least 18 years at their first appearance committed the offence(s) in question when they were at least 18 years, jointly with one or more children.
- 8 Because of the restriction that juveniles were included in the sample only if they had reached 18 years of age by the end of June 1992, the age distribution presented in Figure 1 is a biased distribution of the ages of juveniles at first conviction. The restriction resulted in the exclusion of a higher percentage of younger rather than older juveniles at first conviction. However, a comparison of the age distribution for the whole sample (shown in Figure 1) with an unbiased distribution drawn from a subset of the sample reveals that the bias against younger juveniles is only small. The unbiased distribution was based on the subset of juveniles who had first been convicted before the end of June 1984 ($n = 16,242$), and hence, had reached 18 years by the end of June 1992. The mean age at first proven appearance for the entire sample, 16.0 years ($SD = 1.6$ years), was very similar to that for the subset, 15.7 years ($SD = 1.7$ years). Furthermore, the percentages of juveniles falling into each age bracket are comparable for the entire sample and the subset, as shown below.

Age at first proven appearance (years)	% of entire sample (n = 33,894)	% of subset (n = 16,242)
10 < 11	0.5	0.8
11 < 12	1.3	1.9
12 < 13	3.4	4.5
13 < 14	7.8	9.6
14 < 15	12.6	14.2
15 < 16	17.2	19.0
16 < 17	23.2	23.4
17 < 18	28.0	22.5
18 < 19	5.9	4.0
19 < 20	0.1	0.1
20 < 21	0.0	0.0

9 See note 7.

10 DANCO is the draft version of the current ABS classification of offences, namely ANCO (see Australian Bureau of Statistics 1985). DANCO is compatible with ANCO. The database uses DANCO because ANCO was not available at the time the database was begun.

11 The offence recorded as the 'most serious' for a given appearance was the proven offence with the 'most serious' outcome. Generally, outcome types were arranged in the following order from the most to least serious: prison sentences, control orders, community service orders, supervised probations, unsupervised probations, supervised recognizances, unsupervised recognizances, fines, dismissals, unproven outcomes. If the most serious type was shared by two different offences, the severity of the outcomes was used to determine the 'most serious' offence (e.g. a six-month control order is more serious than a two-month control order).

If two proven offences both had the 'most serious' outcome, the more serious offence type was deemed to be the one with the lower DANCO code (see previous note).

If there were no proven offences for a given appearance, the 'most serious' offence was deemed to be the unproven offence with the lowest DANCO code.

12 Also included in this offence category is steal from person.

13 Also included in this offence category are offensive behaviour or language, alarm and affront, fare evasion, liquor/carriage offences, possess break-in implements.

14 Also included in this offence category is unlawful entry.

15 Also included in this offence category are pollution and environmental offences.

16 Also included in this offence category is driving causing harm.

17 It was not appropriate to include the 23,614 juveniles who had exactly one appearance.

18 The same broad offence category at *two-thirds or more* of a juvenile's criminal appearances was chosen as one possible index of specialization. Where two-thirds of a juvenile's appearances was a non-integer number (e.g. 2.67 is two-thirds of 4 appearances), the next highest integer number (e.g. 3 in the case of 4 appearances) was taken to represent at least two-thirds.

19 A cleared offence is one where an arrest has been made, but is occasionally one where the police have been unable to make an arrest despite having sufficient evidence to support a charge against at least one identified person (e.g. because the person has died or has been committed to a psychiatric institution indefinitely or has diplomatic immunity, etc.). The single year clear-up percentage for offences against the person is based on the percentages for homicide, assault, sexual offences, robbery, extortion/blackmail and abduction/kidnapping in the Bureau publication. The single year clear-up percentage for theft offences is based on all offences under the category of theft in the Bureau publication, namely, break and enter - dwelling, break and enter - non-dwelling, fraud, receiving, goods in custody, motor vehicle theft and stealing.

- 20 It should be remembered here that 69.7 per cent of the sample did not re-appear after their first proven appearance. However, the majority of the 30.3 per cent who did re-appear did so within two years of their first proven appearance.
- 21 Re-appearance data over a two-year period are based on all juveniles in the present sample except those who were 16 years or older at the time of their first proven appearance ($n = 14,501$). That is, juveniles were excluded if they would have been 18 years or older, and therefore generally no longer under the jurisdiction of the Children's Court, by the end of the two-year period.
- 22 See previous note.
- 23 The t-test examined the linear trend contrast across the six age groups.
- 24 Re-appearance data over a four-year period are based on all juveniles in the present sample except those who were 14 years or older at the time of their first proven appearance ($n = 4,408$). That is, juveniles were excluded if they would have been 18 years or older, and therefore generally no longer under the jurisdiction of the Children's Court, by the end of the four-year period.
- 25 See previous note.
- 26 The t-test examined the linear trend contrast across the four age groups.
- 27 Two-year follow-up data were only available for juveniles aged less than 16 years at their first proven criminal appearance ($n = 14,501$). The following offence categories were excluded from the figure because, in each case, too few juveniles aged less than 16 years at their first criminal appearance had the offence category as their 'most serious' offence at their first proven criminal appearance: justice offence ($n = 85$), driving under the influence / proscribed concentration of alcohol ($n = 44$), other offence against the person ($n = 21$), any other offence ($n = 13$) and homicide ($n = 6$). As a result, the figure is based on 14,332 juveniles.
- 28 See previous note.
- 29 Also included in this offence category is unlawful entry.
- 30 Also included in this offence category are pollution and environmental offences.
- 31 Also included in this offence category is steal from person.
- 32 Also included in this offence category are offensive behaviour or language, alarm and affront, fare evasion, liquor/carriage offences, possess break-in implements.
- 33 The Scheffé test is an F test that controls the experimentwise error rate and allows the testing of an unlimited number of contrasts chosen on a post hoc basis. It is robust for situations where there are an unequal number of subjects in different groups. In the present instance, the experimentwise error rate was controlled at the traditional value of 0.05.
- 34 Concentrating on the most frequent offences at first proven appearance is also sensible given that limitations in the sample sizes for some offences may result in the failure of the statistical test to detect real differences between offences due to low power.
- 35 Probabilities p_{15} to p_{39} are not presented because few juveniles have 15 or more criminal appearances in the Children's Court. In the present sample, 169 juveniles out of 33,900 (0.5%) had 15 or more appearances (see Table 1).

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