



THE UNIVERSITY OF
WESTERN AUSTRALIA

**PATHWAYS THROUGH JUSTICE:
A Statistical Analysis of Offender Contact
With the WA Juvenile Justice System**

FINAL REPORT



Anna Ferrante, Nini Loh and Max Maller

31 July 2004

CONTENTS

1. Background	1
2. Data sources.....	1
3. Access to and integration of datasets	1
4. Study period	2
5. Objectives of the project.....	2
6. Definitions and counting rules.....	3
6.1 Defining ‘contact’ points	3
6.2 Counting rules.....	4
7. Composition of ‘contacts’ and profiles of juvenile offenders	6
7.1 Total contacts with the juvenile justice system.....	6
7.2 First contact/entry with the juvenile justice system.....	7
8. Trends over time	14
9. Patterns and Pathways	21
9.1 Construction of criminal career patterns	21
10. ‘Crude’ measures of recidivism.....	26
10.1 Comparison of 1995 and 2000 cohorts	26
10.2 Analysis of fixed follow-up group	35
11. Recidivism using survival analysis	40
11.1 Basic recidivism estimates	40
11.2 Progression to what?	49
11.3 Weibull plots.....	50
12. Summary and Discussion	52
12.1 Utilisation & initiation.....	52
12.2 Trends.....	53
12.3 Net-widening.....	53
12.4 Recidivism	54
12.5 Patterns and pathways	55
12.6 Pathways to detention	56
13 Implications & future directions	57
13.1 Informing policy development.....	57
13.2 Baseline estimates of recidivism.....	57
13.3 Data issues.....	57
13.4 Returns to court.....	58
References.....	59
Appendix A: Re-finalised court appearances.....	60

1. Background

The following report has been compiled by the Crime Research Centre, University of Western Australia, for the WA Department of Justice as part of a contract to provide juvenile justice data to inform the development of a Juvenile Justice Strategy (DOJ Contract 2068/2004).

The project began in March, 2004 and was completed by the end of July, 2004.

2. Data sources

The data for this project have been sourced from administrative records held by the WA Police Service and the WA Department of Justice. Specifically, the following datasets have been accessed:

- i) Formal juvenile cautions, as recorded by the WA Police Service since 1991;
- ii) Referrals to juvenile justice teams by the WA Police, recorded since 1995; and
- iii) Records of final appearances in the Children's Court of Western Australia (including referrals to juvenile justice teams made by the Court), as recorded by the WA Department of Justice in the CHIPS system since 1994.

Information about subsequent offending by juveniles *as adults* has been derived from the WA Police Service Apprehension System (P18), which records details of all persons apprehended and charged by the police (including those summonsed) in WA. Apprehensions of juveniles aged 10 years and over are included in this collection.

Information about *prior* offending has been obtained from archival records of the now defunct Department of Community Service. The Department maintained a database of Children's Court convictions until the end of 1993, after which responsibility for juvenile justice transferred to the Ministry of Justice (now Department of Justice).

Data obtained from the WA Police Service are subject to a number of caveats. The release and use of police data are subject to a number of caveats (see http://www.crc.law.uwa.edu.au/police_caveats.html).

3. Access to and integration of datasets

This study was possible because of the availability of and access to integrated, longitudinal databases about offenders in Western Australia. These databases have been created and maintained by the Crime Research Centre, University of Western Australia, and are based on de-identified data which is routinely supplied to the Centre by the WA Police Service and Department of Justice. Arrangements for the provision of criminal justice data for research are long-standing and described in various MoUs (Memoranda of Understanding) and related documents.

The integrated nature of the Centre's databases, which allows this and other studies to track offenders from one part of the justice system to another, has been achieved through the operation of the INOIS data-linking system (Ferrante, 1993).

The integration of datasets from various sources through INOIS provides additional benefits through improved data quality. In particular, it has been possible to derive information about the Indigenous status of offenders from alternative sources where this information was found to be otherwise missing or unreliable. Improvements to the quality and completeness of Indigenous status in juvenile court records have been substantial (Fernandez and Loh, 2003, p.111).

4. Study period

The study period commenced on 1 January 1995 and ending on 31 December 2002. The study start date concurs with the introduction of the *Young Offenders Act 1994*, which took effect in March 1995 and formally established the diversionary elements of the juvenile justice system in Western Australia (comprising formal cautioning and referrals to Juvenile Justice Teams).

The study period has a maximum follow-up time of eight-years, allowing one cohort of children (those who turned 10 in 1995) the greatest exposure to the juvenile justice system (post *Young Offenders Act 1994*) before moving into the adult sphere of justice.

5. Objectives of the project

The specific objectives of the project were to provide data relating to the following:

Stage One

- 1.1 Identification and description of the composition of offenders at each 'entry' point into the juvenile justice system
- 1.2 A description of how entry to the juvenile justice system may have changed over time (1995-2002)
- 1.3 A description of how juveniles move through and across these stages and progress further into the system
- 1.4 Survival/failure rate analysis of re-offending by offender groups at each 'entry' point.
- 1.5 An interpretation of the survival/failure analysis (K-M estimates of failure within 2 years). This will provide information on success rates of various strategies: cautioning, juvenile justice teams, community orders and detention.
- 1.6 A description of the time taken to progress from first entry to a conditional release order (CRO) or detention.

Stage Two

- 2.1 Further analysis of geographical differences
- 2.2 A description of the progression process (pathways) from first entry to a conditional release order (CRO) or detention.
- 2.3 Further analysis by age of first offending

Exploring differences between Indigenous and non-Indigenous experiences of the juvenile justice system was of primary interest in all stages of the analysis.

Another focus of analysis was exploring differences in offending patterns between juvenile offenders in the Perth metropolitan area, those in other urban/regional centres and others located in more rural/remote settings.

6. Definitions and counting rules

6.1 Defining 'contact' points

For the purposes of this study, the following 'contact' or 'entry' points into the juvenile justice system were defined and then ranked in order of increasing severity, as reflected in the *Young Offenders Act (YOA)*:

- Formal **caution** (diversion, level 1)
- **Referral to juvenile justice teams (JJTs) by police** (diversion, level 2)
- Charge/attendance at court (includes charges laid by the police and other authorities, eg railways)

Charge/attendance at court, was subsequently sub-divided into:

- Matters **referred to JJTs by court** (diversion, level 3)
- Matters dealt with by the court (not diverted)

Matters dealt with by the court (not diverted) were then ranked according to the severity of outcome or disposition, that is:

- Outcomes of **dismissal** or conviction without penalty (such as those stipulated in *YOA s.66* and *s.67*)
- Guilty outcome, with most serious penalty being a **fine**
- Guilty outcome, with most serious penalty being a **community-based order (CBO)**
- Guilty outcome, with most serious penalty being a **conditional release order (CRO) or detention.**

6.2 Counting rules

The basic unit of measure used throughout the report is 'a contact'. A 'contact' was counted for every event in which a juvenile was cautioned or referred to a JJT, irrespective of the number of offences for which the caution or referral was made. Similarly, the final appearance of an offender in court on a series of related charges constituted a single 'contact', irrespective of the number of charges dealt with by the court on that occasion.

A final court appearance was defined on the basis of the date of sentence (if offenders were convicted) or the final hearing date for offenders dealt with in other ways (eg referral by the court to a JJT). Only the most serious court outcome/penalty is described for each final appearance. Penalties are ranked in severity, the most severe being imprisonment, followed by community orders, fines, loss of driver's licence, restitution, etc. In the case of dismissals or where no penalty is imposed, the most serious offence is determined by a seriousness index (see Fernandez & Loh (2003), Appendix B for a fuller description).

There are occasions when charges which have already been finalised are reactivated by the court, for example, when offenders fail to comply with the conditions of community orders. For this study, however, 're-finalised' court appearances were excluded from analysis.¹

The referral process and over-counting effects

Juvenile justice teams work on a restorative justice model, that is, they attempt to resolve matters between the offender and the victim(s) through negotiations at family group conferences. Under the *Young Offenders Act*, juveniles who fail to comply with the terms specified by the teams are dealt with by the original referring agency. Under some circumstances, the teams may reject a referral. Generally, these are instances where either the offence or the circumstances of the offence are considered too minor, or the juvenile is a first-offender and a caution is considered more appropriate, or the juvenile no longer acknowledges the offence or chooses to have the matter dealt with by some other means, or the juvenile simply does not make contact with the teams.

The referral process by police is such that when a matter is referred, the related charges are considered to be 'pending'. In the event of a successful resolution, no charges are laid against the offender. However, if the teams are unable to negotiate a solution or if the juvenile fails to complete the terms specified by the teams, the matter is returned to the police where decisions are made as to whether to lay charges and bring the matter to court, caution the juvenile or proceed by some other means. If charges are laid and the matter is subsequently dealt with by the court or if the juvenile is formally cautioned, then additional 'contact' records are created in police data systems. However, none of these records are linked and consequently it is not possible to distinguish whether, for example, a police referral and a subsequent caution might relate to the same offences committed by a single offender. Thus, when

¹ The nature and extent of re-activated and re-finalised cases are described in Appendix A.

aggregated for analysis, these contact events will over-count the true level of offending committed by some offenders.

The referral process by the courts is different, however. When a matter originally referred to the teams is returned to court (for various reasons, including failure to appear at conferences or for breaching the terms of the settlement), the same individual and the same set of offences can be identified within the court data systems and counted accordingly. However, through the use of counting rules (see above), the over-counting of offences described above is averted.

7. Composition of ‘contacts’ and profiles of juvenile offenders

7.1 Total contacts with the juvenile justice system

Table 1 describes the total number of contacts made with the juvenile justice system, at each of the contact/entry points described above, for the period from 1 January 1995 to 31 December 2002. Cautions comprised the majority of contacts (55%), referrals to JJTs accounted for 18%, while juveniles dealt with by the courts (not diverted) accounted for 26%.

Table 1 also provides a breakdown of juvenile justice contacts by Indigenous status. Excluding 3,587 contacts involving juveniles of unknown Indigenous status, contacts by Indigenous offenders comprised 28%, and contacts by non-Indigenous offenders 72%, of all contacts over the period.

Table 1: Total number of ‘contacts’ with the juvenile justice system by type of contact, 1995–2002.

Type of contact	Total		Indigenous		Non-Indigenous		Unknown	
	n	%	n	%	n	%	n	%
Cautioned	79,828	55.0	17,167	43.2	62,555	61.5	106	3.0
Referred to JJTs								
by Police	15,509	10.7	4,489	11.3	11,000	10.8	20	0.6
by Court	11,278	7.8	3,068	7.7	7,608	7.5	602	16.8
	<u>26,787</u>	<u>18.5</u>	<u>7,557</u>	<u>19.0</u>	<u>18,608</u>	<u>18.3</u>	<u>622</u>	<u>17.3</u>
Dealt with by Court								
Dism/No penalty	9,587	6.6	4,153	10.4	4,629	4.6	805	22.4
Fine	8,555	5.9	1,910	4.8	5,477	5.4	1,168	32.6
CBO	15,691	10.8	6,399	16.1	8,580	8.4	712	19.8
Detention	4,590	3.2	2,565	6.5	1,851	1.8	174	4.9
	<u>38,423</u>	<u>26.5</u>	<u>15,027</u>	<u>37.8</u>	<u>20,537</u>	<u>20.2</u>	<u>2,859</u>	<u>79.7</u>
Grand Total	145,038	100.0	39,751	100.0	101,700	100.0	3,587	100.0

7.2 First contact/entry with the juvenile justice system

In this section, our attention shifts from examining *all contacts* with the system to a closer examination of juveniles *at initial contact* with the juvenile justice system. This is because a component of the study is to examine progression or pathways through the justice system. Thus it is necessary to track offenders from first point of entry to subsequent contacts.

Of total contacts over the study period, ‘initiations’ (that is, juveniles *first entering*) accounted for 42% (22% of Indigenous contacts; 48% of non-Indigenous contacts and 73% of those involving unknown Indigenous status).

More than half (58%) of all cautions and 29% of all referrals in the period were of first offenders. 16% of all court contacts in the period were of first offenders.

Table 2 provides a more detailed breakdown of initiations, by type of (first) contact and Indigenous status of offender. Three quarters (77%) of all initiations were by way of cautions and 13% were via referrals. In other words, 90% of all first contacts were dealt with by the diversionary elements of the justice system, while the remaining 10% were not diverted but left to be dealt with by the Court.

Table 2: Total number of juveniles first entering the juvenile justice system, by type of contact, 1995-2002.

Type of contact	Total		Indigenous		Non-Indigenous		Unknown	
	n	%	n	%	n	%	n	%
Cautioned	46,478	76.8	7,143	80.5	39,301	80.1	34	1.3
Referred to JJTs								
by Police	4,360	7.2	574	6.5	3,784	7.7	2	0.1
by Court	3,402	5.6	421	4.7	2,449	5.0	532	20.4
	<u>7,762</u>	<u>12.8</u>	<u>995</u>	<u>11.2</u>	<u>6,233</u>	<u>12.7</u>	<u>534</u>	<u>20.5</u>
Dealt with by Court								
Dism/No penalty	1,611	2.7	266	3.0	718	1.5	627	24.0
Fine	2,743	4.5	149	1.7	1,619	3.3	975	37.4
CBO	1,764	2.9	290	3.3	1,089	2.2	385	14.8
Detention	176	0.3	31	0.3	91	0.2	54	2.1
	<u>6,294</u>	<u>10.4</u>	<u>736</u>	<u>8.3</u>	<u>3,517</u>	<u>7.2</u>	<u>2,041</u>	<u>78.2</u>
Grand Total	60,534	100.0	8,874	100.0	49,051	100.0	2,609	100.0

Differences between Indigenous and non-Indigenous initiations are also shown in Table 2. Ignoring offenders with unknown Indigenous status, similar proportions of both Indigenous and non-Indigenous groups entered the system via cautioning (80%); however, there were slightly *less* initiations via referrals for Indigenous offenders (11.2%) than non-Indigenous offenders (12.7%). Indigenous offenders had a slightly *higher* proportion of initiations via court (not diverted) than non-Indigenous offenders (compare 8.3% with 7.2%).

Offenders with unknown Indigenous status comprised only 4.3% of total initiations. However, it is notable that their distribution in the data was not random. Rather, they were situated almost exclusively in the courts domain. (In other words, at the more serious end of the juvenile justice spectrum!) Indeed, one-third (2,041 out of 6,294) initiations occurring via the courts (and not diverted) were offenders whose Indigenous status was not known and, of these, 54 received custodial sentences.²

7.2.1 Initiations via cautions

In this section, we provide a profile of juveniles entering the justice system via cautions.

Table 3 describes various characteristics of these offenders, including demographic details (sex, Indigenous status and mean age at entry), urban location (currently only split between Perth metropolitan area and the remainder of the state) and offence type (most serious offence at first contact).

Table 3: Profile of juveniles entering the justice system by way of cautioning, 1995-2002.

Characteristic	Indigenous		Non-Indigenous	
	n	%	n	%
<i>Sex</i>				
Male	4,330	61.1	28,048	71.7
Female	2,762	38.9	11,046	28.3
<i>Urban location</i>				
Perth	2,225	34.5	26,779	75.4
Outside	4,224	65.5	8,732	24.6
<i>Mean age at entry</i>				
	13.0		14.5	
Male	12.8		14.5	
Female	13.4		14.5	
Perth	13.2		14.6	
Outside	13.0		14.4	
<i>Offence(s) at entry</i>				
Against person	546	7.6	2,001	5.1
Drugs	228	3.2	5,214	13.3
Property	4,529	63.4	19,333	49.2
Good order	759	10.6	2,867	7.3
Driving/Vehicle	392	5.5	6,265	15.9
Other	689	9.6	3,621	9.2

Note: Unknowns have been excluded from the table.

² Stated differently: Of the 10% of juveniles who entered the system through the courts (not diverted), we know the Indigenous status of one-third of these cases. In the case of the 176 juveniles who entered the system through the courts and were sentenced to detention (at their first contact), we do not know the Indigenous status of 54 of them.

Key observations from the table are:

- Indigenous boys were less likely to enter via cautioning than non-Indigenous boys (compare 61% with 72%).
- Indigenous offenders were more likely to be cautioned outside the Perth metropolitan area than in it, by a factor of 2:1. The situation was the reverse for non-Indigenous offenders.
- Indigenous offenders were significantly younger than non-Indigenous offenders at time of first caution.
- For Indigenous offenders, boys were first cautioned at a younger age than girls.
- For Indigenous offenders, first cautions were issued predominantly for property offences (63%) and good order offences (11%). For non-Indigenous offenders, first cautions were issued for property offences (49%), driving (16%) and drug offences (13%).

7.2.2 Initiations via referrals

Table 4 profiles juveniles entering the justice system via referrals. Police and court referrals are described separately.

Key observations from the table are:

- As with cautioning, Indigenous boys were less likely to enter the system via referrals than non-Indigenous boys.
- As with cautioning, Indigenous offenders were significantly younger than non-Indigenous offenders at initial referral, with boys generally being referred at a younger age than girls.
- Offenders referred by the police were younger than those referred by the courts.
- For Indigenous offenders, initial referrals by the police were more likely to occur outside the Perth metropolitan area than in it (by a factor of 3:1). However, initial referrals by the courts occurred as frequently in Perth as outside the metropolitan area.
- There were too many unknown offence types in police referrals to make any reliable conclusions. However, with regards to court referrals, most initial referrals of Indigenous offenders were for property offences (68%) and good order offences (14%), while most initial referrals of non-Indigenous offenders were for property (40%) and driving offences (16%).

Table 4: Profile of juveniles entering the justice system by way of referrals, 1995-2002.

Characteristic	Indigenous		Non-Indigenous	
	n	%	n	%
POLICE REFERRALS				
<i>Sex</i>				
Male	397	69.5	2,831	75.2
Female	174	30.5	932	24.8
<i>Urban location</i>				
Perth	108	22.6	1,959	67.3
Outside	369	77.4	950	32.7
<i>Mean age at entry</i>				
	13.8		15.6	
Male	13.6		15.5	
Female	14.1		15.9	
Perth	14.2		15.7	
Outside	13.7		15.2	
<i>Offence(s) at entry</i>				
Against person	29	5.1	89	2.4
Drugs	6	1.0	113	3.0
Property	150	26.1	715	18.9
Good order	12	2.1	41	1.1
Driving/Vehicle	12	2.1	815	21.5
Other	11	1.9	35	0.9
Unknown	354	61.7	1,978	52.2
COURT REFERRALS				
<i>Sex</i>				
Male	283	67.7	1,928	79.8
Female	135	32.3	487	20.2
<i>Urban location</i>				
Perth	219	52.0	2,127	86.9
Outside	202	48.0	322	13.1
<i>Mean age at entry</i>				
	14.4		15.9	
Male	14.3		15.9	
Female	14.6		16.0	
Perth	14.4		16.0	
Outside	14.4		15.5	
<i>Offence(s) at entry</i>				
Against person	37	8.8	107	4.4
Drugs	10	2.4	158	6.5
Property	287	68.2	983	40.1
Good order	61	14.5	256	10.5
Driving/Vehicle	20	4.8	900	36.7
Other	6	1.4	45	1.8

Note: Unknowns have been excluded from the table.

6.3.2 Initiations via the Court (not diverted)

Table 5 describes the profiles of juveniles entering the justice system via the courts. Separate profiles have been prepared for first offenders in each of the disposition categories (Dismissed/No penalty; Fine; Community orders and Detention).

Note that due to the large proportion of court cases with unknown Indigenous status (refer earlier discussion), an additional column describing this group has been included in the table.

Key observations from the table are:

- Many of the same patterns noted in other profiles are repeated (that is, sex, age and urban location differences)
- Offenders who are dismissed or given no penalty at first contact tend to be much younger than others.
- Offenders who are fined at first contact tend to be much older than others.
- About half of all first offenders, who were given community orders or sent to detention at first contact, were in court for violent offences.
- Offenders of unknown Indigenous status are probably mostly non-Indigenous, given the similarity of their profile(s) to non-Indigenous offenders.

Table 5: Profile of juveniles entering the justice system and dealt with by the Court (that is, not diverted), by first disposition, 1995-2002.

Characteristic	Indigenous		Non-Indigenous		Unknown	
	n	%	n	%	n	%
OUTCOME = Dismissed/No penalty						
<i>Sex</i>						
Male	154	59.0	540	77.9	408	71.6
Female	107	41.0	153	22.1	162	28.4
<i>Urban location</i>						
Perth	54	20.3	491	68.4	442	70.5
Outside	212	79.7	227	31.6	185	29.5
<i>Mean age at entry</i>						
	14.6		15.5		16.0	
Male	14.3		15.6		16.0	
Female	14.9		15.3		15.9	
Perth	14.9		15.5		16.2	
Outside	14.5		15.5		15.5	
<i>Offence(s) at entry</i>						
Against person	53	19.9	194	27.0	30	4.8
Drugs	5	1.9	104	14.5	16	2.6
Property	84	31.6	118	16.4	67	10.7
Good order	58	21.8	63	8.8	67	10.7
Driving/Vehicle	14	5.3	174	24.2	166	26.5
Other	52	19.5	65	9.1	281	44.8
OUTCOME = Fine						
<i>Sex</i>						
Male	90	61.2	1,326	83.0	664	71.2
Female	57	38.8	272	17.0	268	28.8
<i>Urban location</i>						
Perth	34	22.8	883	54.5	564	57.8
Outside	115	77.2	736	45.5	411	42.2
<i>Mean age at entry</i>						
	16.2		16.9		16.8	
Male	16.3		16.8		16.8	
Female	15.9		16.9		16.8	
Perth	16.1		16.9		16.9	
Outside	16.2		16.8		16.7	
<i>Offence(s) at entry</i>						
Against person	8	5.4	47	2.9	31	3.2
Drugs	3	2.0	36	2.2	18	1.8
Property	31	20.8	66	4.1	42	4.3
Good order	33	22.1	50	3.1	145	14.9
Driving/Vehicle	61	40.9	1,412	87.2	694	71.2
Other	13	8.7	8	0.5	45	4.6

Note: Some unknowns have been excluded from the table.

Table 5: ...continued...

Characteristic	Indigenous		Non-Indigenous		Unknown	
	n	%	n	%	n	%
OUTCOME = Community-based orders						
<i>Sex</i>						
Male	198	68.8	868	81.5	284	78.0
Female	90	31.3	197	18.5	80	22.0
<i>Urban location</i>						
Perth	83	28.6	776	71.3	232	60.3
Outside	207	71.4	313	28.7	153	39.7
<i>Mean age at entry</i>						
	15.0		16.1		16.1	
Male	15.0		16.1		16.0	
Female	15.1		15.9		16.3	
Perth	15.2		16.1		16.4	
Outside	15.0		16.1		15.6	
<i>Offence(s) at entry</i>						
Against person	93	32.1	335	30.8	76	19.7
Drugs	7	2.4	66	6.1	13	3.4
Property	137	47.2	261	24.0	142	36.9
Good order	23	7.9	45	4.1	30	7.8
Driving/Vehicle	25	8.6	364	33.4	115	29.9
Other	5	1.7	18	1.7	9	2.3
OUTCOME = Detention						
<i>Sex</i>						
Male	25	83.3	82	91.1	49	94.2
Female	5	16.7	8	8.9	3	5.8
<i>Urban location</i>						
Perth	13	41.9	55	60.4	29	53.7
Outside	18	58.1	36	39.6	25	46.3
<i>Mean age at entry</i>						
	15.5		16.1		16.0	
Male	15.6		16.1		16.0	
Female	15.2		15.9		15.5	
Perth	15.8		16.2		16.0	
Outside	15.2		15.9		16.0	
<i>Offence(s) at entry</i>						
Against person	15	48.4	45	49.5	14	25.9
Drugs	0	0.0	7	7.7	0	0.0
Property	15	48.4	24	26.4	31	57.4
Good order	1	3.2	1	1.1	5	9.3
Driving/Vehicle	0	0.0	1	1.1	0	0.0
Other	0	0.0	13	14.3	4	7.4

Note: Some unknowns have been excluded from the table.

8. Trends over time

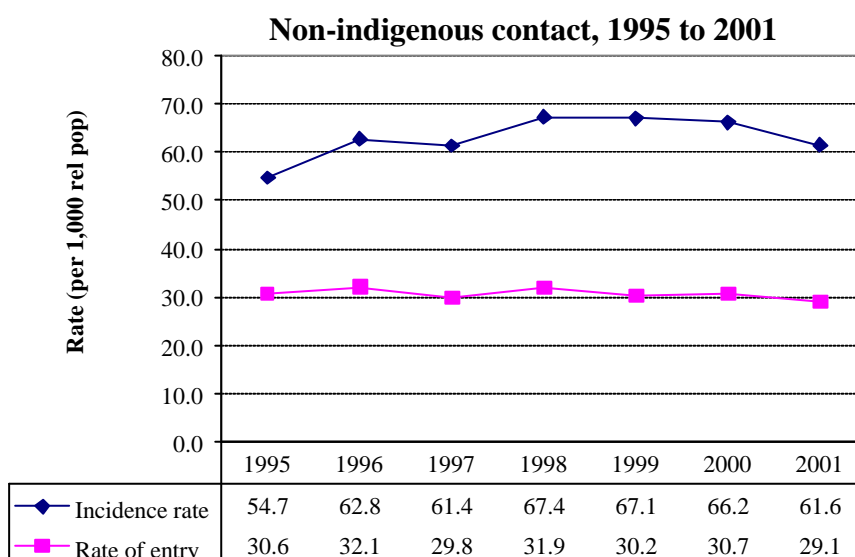
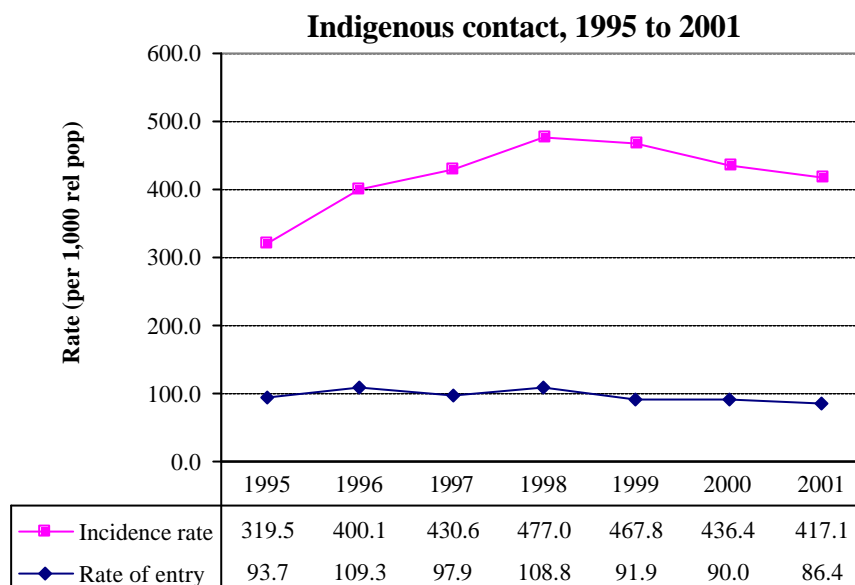
In this section we examine how patterns of contact with, and entry into, the juvenile justice system have changed over time. Rates of contact have been estimated using ABS estimated resident population figures (10-17 year olds) and are provided for Indigenous and non-Indigenous juvenile groups for each year from 1995 to 2001 (reference ABS Cat No. 3201.0). Population figures for 2002 were not available at the time of writing, hence rates for that year are not provided.

Table 6: Annual incidence rates of contact with and rates of entry into, the WA juvenile justice system, by Indigenous status.

	1995	1996	1997	1998	1999	2000	2001	2002
Indigenous								
First contacts (entry)	908	1,112	1,056	1,248	1,107	1,143	1,145	1,155
Contacts by recidivists	2,188	2,957	3,587	4,221	4,525	4,401	4,383	4,615
Total contacts	3,096	4,069	4,643	5,469	5,632	5,544	5,528	5,770
Contact rate (incidence)	319.5	400.1	430.6	477.0	467.8	436.4	417.1	na
Entry rate	93.7	109.3	97.9	108.8	91.9	90.0	86.4	na
Non-Indigenous								
First contacts (entry)	6,029	6,429	6,013	6,514	6,252	6,416	6,129	5,269
Contacts by recidivists	4,759	6,130	6,386	7,255	7,628	7,417	6,858	6,216
Total contacts	10,788	12,559	12,399	13,769	13,880	13,833	12,987	11,485
Contact rate (incidence)	54.7	62.8	61.4	67.4	67.1	66.2	61.6	na
Entry rate	30.6	32.1	29.8	31.9	30.2	30.7	29.1	na
Total								
First contacts (entry)	7,271	8,187	7,416	8,066	7,657	7,811	7,480	6,646
Contacts by recidivists	7,182	9,311	10,161	11,608	12,222	11,879	11,262	10,879
Total contacts	14,453	17,498	17,577	19,674	19,879	19,690	18,742	17,525
Contact rate (incidence)	69.9	83.2	82.6	91.2	90.9	88.8	83.6	na
Entry rate	35.2	38.9	34.9	37.4	35.0	35.2	33.4	na
Indig:non-Indig ratio								
Contact rate	5.8	6.4	7.0	7.1	7.0	6.6	6.8	na
Entry rate	3.1	3.4	3.3	3.4	3.0	2.9	3.0	na

Note: Total includes offenders of unknown Indigenous status;
 Rates calculated per 1,000 relevant population

Figure 1: Annual incidence rates of contact with and rates of entry into, the WA juvenile justice system, by Indigenous status.



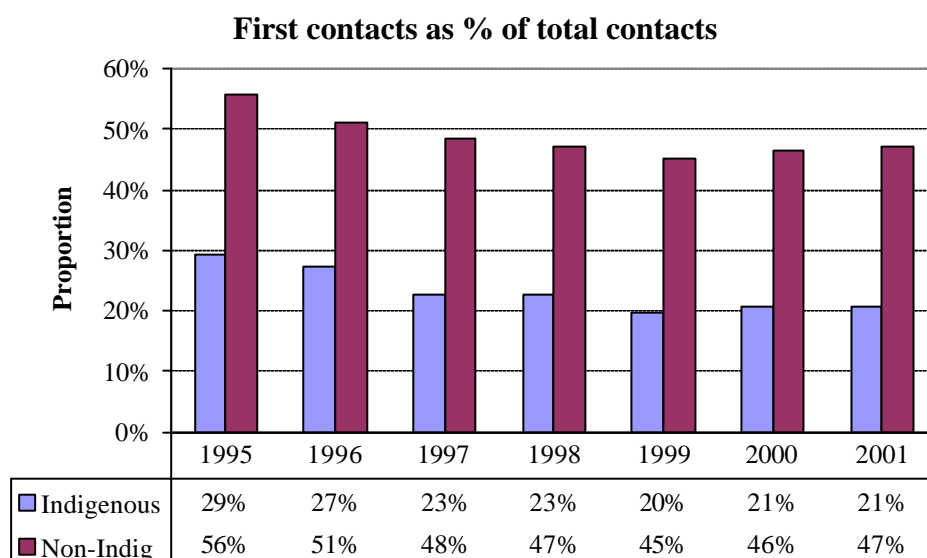
As Table 6 and Figure 1 show, the rate of contact between Indigenous offenders and the juvenile justice system increased between 1995 and 1998, from 319.5 contacts per 1,000 juveniles to 477.0 contacts per 1,000. However, since 1998, the incidence rate of Indigenous juvenile contact decreased and, in 2001, it was 417.1 per 1,000 juveniles. The rate of contact between non-Indigenous offenders and the justice system also increased between 1995 and 1998 and declined thereafter. In all years, the contact (incidence) rate of Indigenous offenders was significantly higher than the non-Indigenous contact rate. In 2001, the Indigenous contact rate was 6.8 times greater than the non-Indigenous contact rate.

For both racial groups, the rates of entry into the system (by first offenders) have remained stable over the study period. This provides evidence that, for Indigenous

and non-Indigenous groups, net-widening³ has not taken place but rather that changes in contact rates have related to dealings with repeat offenders.

The constitution of juvenile contacts varies significantly between racial groups (Figure 2). In the case of Indigenous contacts, the proportion of total contacts comprising first contacts has remained relatively stable at about 20%. In other words, one in every five Indigenous juvenile contacts each year involved a first offender, while the remaining four contacts involved repeat offenders. However, in the case of non-Indigenous contacts, first contacts accounted for slightly less than half (45%) of contacts. In other words, almost one in every two non-Indigenous contacts each year involved a first offender, while repeat offenders accounted for the remaining half.

Figure 2: Proportion of total contacts accounted for by first offenders, by Indigenous status and year.



In the remainder of this section, we look more closely at trends in first contacts.

³ In this instance, the term ‘net-widening’ is used in its narrowest sense, that is, that no more *new* people have been recruited into the system. However, as Austin and Krisberg (1981) first noted, the potential exists for criminal justice reform to result in ‘wider, stronger and different nets’. See Section 12 for further discussion on this point.

Figure 3 illustrates how first contacts (or ‘entry points’) are distributed at a geographic level – contacts occurring in the Perth metropolitan area are distinguished from those occurring in the remainder of the state. In the case of Indigenous offenders, 64.6% of first contacts in 2002 occurred outside the Perth metropolitan area (up from 56.2% in 1995). For non-Indigenous offenders, only 25.3% of first contacts in 2002 occurred in Perth (up from 20.4% in 1995). In general, these proportions reflect the distribution of Indigenous and non-Indigenous populations in Western Australia. However, it is worth noting that, *for both racial groups, the proportion of first contacts occurring outside the Perth metropolitan area has increased since 1995.*

Figure 3: Urban location of first contacts (entry points), by Indigenous status and year.

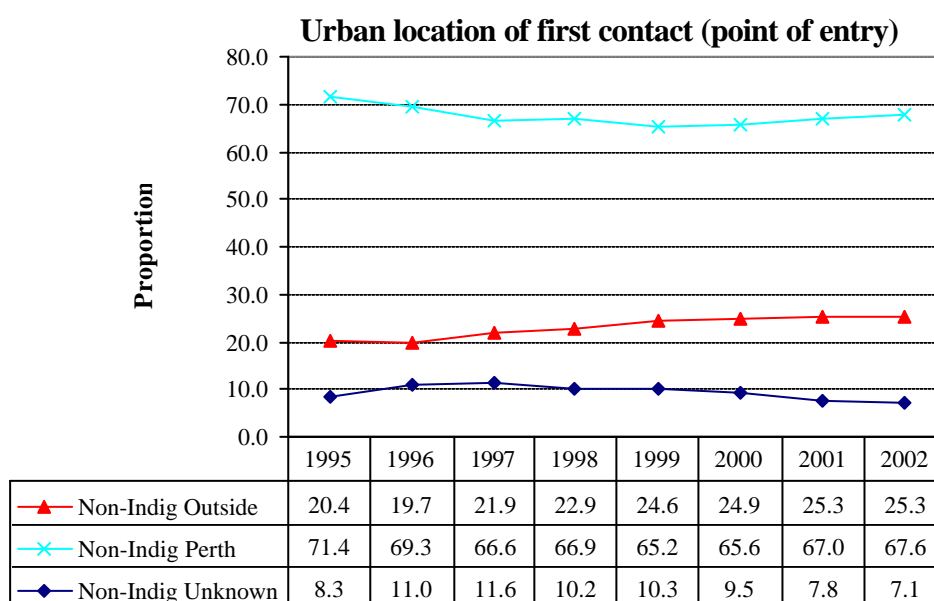
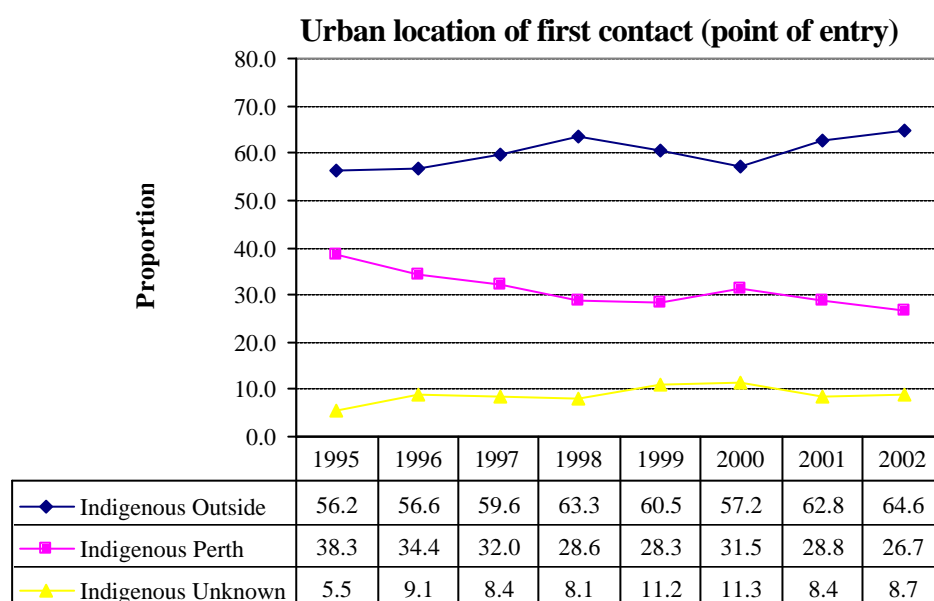


Figure 4 presents rates of first contact with (that is, rates of ‘entry’ into) the juvenile justice system, broken down by race and sex. The ‘entry’ rate for Indigenous boys exceeds that of all other sex-race groups. Since 1995, the entry rates for Indigenous and non-Indigenous boys show signs of decline, while entry rates for girls show signs of increase.

Levels of over-representation of Indigenous juveniles (males and females), calculated as ratios of Indigenous to non-Indigenous entry rates, are displayed in Table 7. In 2001, Indigenous girls were 4.2 times more likely than non-Indigenous girls to enter the juvenile justice system; Indigenous boys were 2.5 times more likely than non-Indigenous boys to enter the system. Overall, Indigenous juveniles were 3.0 times more likely than non-Indigenous juveniles to enter the justice system.

Figure 4: Rate of entry (first contact), by Indigenous status and sex.

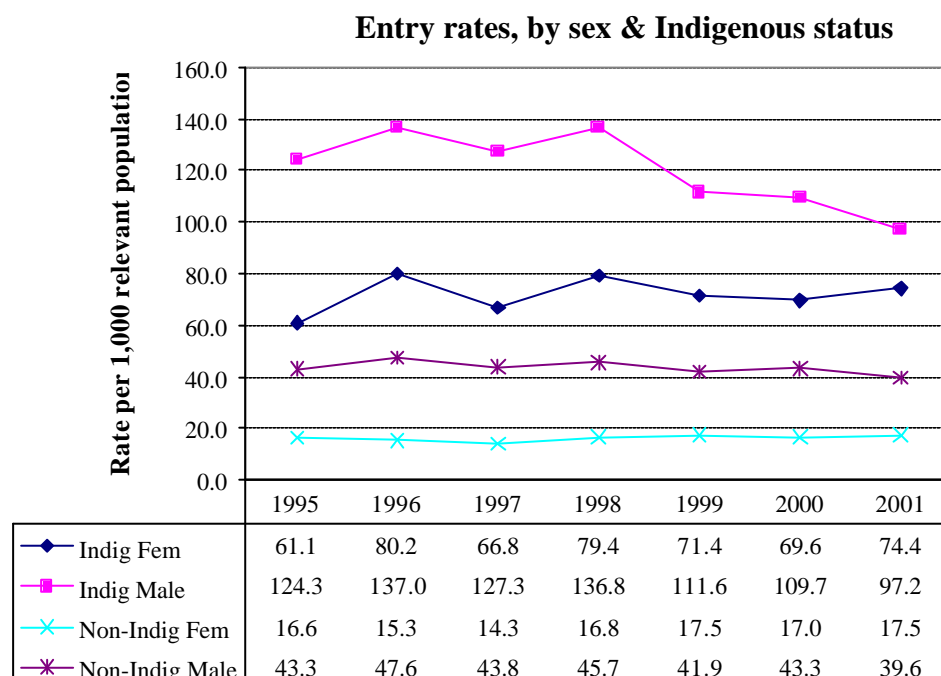


Table 7: Indigenous over-representation in first contact (entry) rates, by sex, 1995-2001

Sex	Ratio of Indigenous:Non-Indigenous entry rates						2001
	1995	1996	1997	1998	1999	2000	
Female	3.7	5.2	4.7	4.7	4.1	4.1	4.2
Male	2.9	2.9	2.9	3.0	2.7	2.5	2.5
Total	3.1	3.4	3.3	3.4	3.0	2.9	3.0

Figure 5 presents rates of first contact (rates of ‘entry’) with the juvenile justice system, broken down by race and age group. Indigenous juveniles aged between 13 and 15 years have had the highest rate of entry since 1995, although rates have declined in more recent years. Entry rates for Indigenous juveniles in other age

groups (10-12 years & 16-17 years) have been comparable, however, since 1999, the entry rate of the youngest group (10-12 years) has exceeded that of the older group.

In contrast, the entry rates of non-Indigenous juveniles have changed only slightly since 1995. Non-Indigenous juveniles in the oldest age group (16-17 years) experienced the highest rate of entry, while those in the youngest age group (10-12 years) experienced the lowest rate of entry.

Table 8 describes the level of Indigenous over-representation in entry rates at each age level. In 2001, Indigenous juveniles in the youngest age group (10-12 years) were 10.5 times more likely than their non-Indigenous counterparts to enter the justice system. In the 13-15 year category, Indigenous juveniles were 2.5 times more likely than non-Indigenous juveniles, while in the oldest age group (16-17 years) Indigenous juveniles were 1.6 times more likely to enter the justice system than their non-Indigenous counterparts.

Figure 5: Rate of entry (first contact), by Indigenous status and age.

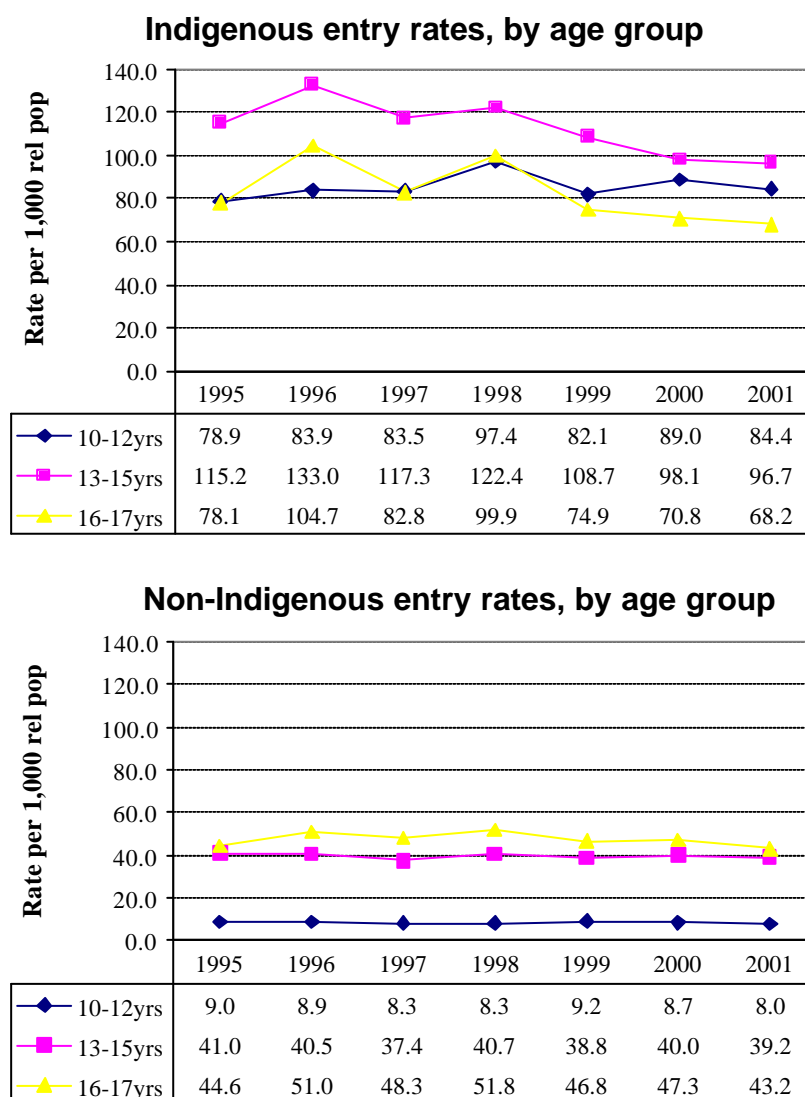
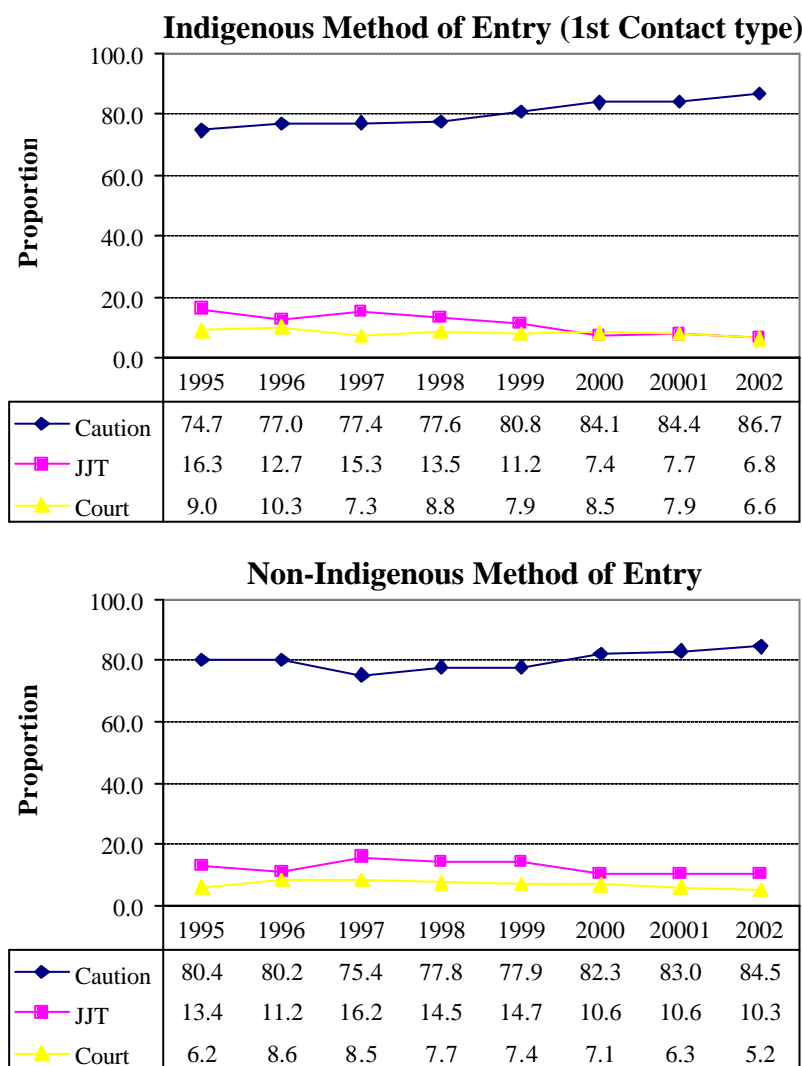


Table 8: Indigenous over-representation in first contact (entry) rates, by age, 1995-2001

Age-group	Ratio of Indigenous:Non-Indigenous entry rates						
	1995	1996	1997	1998	1999	2000	2001
10-12yrs	8.7	9.4	10.0	11.8	8.9	10.2	10.5
13-15yrs	2.8	3.3	3.1	3.0	2.8	2.5	2.5
16-17yrs	1.8	2.1	1.7	1.9	1.6	1.5	1.6

Figure 6 presents rates of entry for Indigenous and non-Indigenous juveniles, by method of entry (that is, type of first contact), since 1995. Entry via cautioning has increased since 1995 for both Indigenous and non-Indigenous groups, while rates of entry via juvenile justice teams have declined over the period. Entry rates via the courts (that is, juveniles not diverted) have also declined slightly over the period for both racial groups.

Figure 6: Rate of entry (first contact), by Indigenous status and method of entry



9. Patterns and Pathways

In this section we describe how juveniles move through and across the various contact points in the juvenile justice system and gauge the extent to which they progress to more serious levels of intervention.

Once again, we focus only on those juveniles whose full ‘career’ of contact with the justice system was known (that is, first contact occurring between 1 January 1995 and the study cut-off date 31 December 2002). This group comprised 60,536 juveniles - 8,874 Indigenous and 49,051 non-Indigenous offenders (Table 9).

As all juveniles entering the justice system for the first time during the study period were included, follow-up time for the group varied. For some (for example, those entering in 1995) the follow-up period extended to more than seven years, while for others (for example, those entering in December 2002) follow-up was less than one month. This meant that the opportunity to make contact with the system and, thus, establish a criminal ‘career’ (and, additionally, the extent of that criminal career) varied within the group. Data problems of this nature are problematic and are usually resolved in one of two ways - either by restricting analysis to a subset of the data (eg cohort) with a fixed follow-up period or by using statistical techniques which adjust for varying follow-times (eg survival analysis). In the first instance, we examine patterns and pathways for the entire group. However, in later analyses, we examine subsets of the data (ie 1995 and 2000 cohorts and a cohort of juveniles with a fixed 2-year follow-up). Later still, we undertake survival analysis of the data.

9.1 Construction of criminal career patterns

For each juvenile in the group, we constructed a string pattern depicting their criminal career. For every individual, each contact with the system was represented by a single character - ‘C’ indicating a caution, ‘J’ indicating a referral to juvenile justice teams (either by police or the court), ‘K’ indicating a court appearance (not diversion) which did **not** result in detention, ‘D’ indicating a period of detention and ‘A’ signalling a police apprehension occurring within the study period but subsequent to all other juvenile justice interventions. Thus, for example, a pattern of ‘CJKD’ indicates a career made up of 4 contacts with the justice system, beginning with a caution, followed by a referral to a juvenile justice team, then followed by a court appearance with an outcome which was not detention (or a CRO), followed by another court appearance with **did** result in a period of detention (or CRO). Each unique string pattern was considered a career ‘pathway’ through the justice system.

After constructing the career patterns of 60,536 juveniles, 3,685 *unique* pathways through the system emerged (Table 9). In total, the top 10 unique patterns or pathways accounted for 77% of all career paths taken by juveniles. The average number of contacts in a career was 2.3.

The career paths of Indigenous juveniles were considerably more variegated than those of their non-Indigenous counterparts (Table 9). 8,874 Indigenous offenders generated 1,894 unique pathways - almost as many as those generated by 49,051 non-

Indigenous offenders! For Indigenous juveniles, the top 10 pathways accounted for fewer (58%) possible pathways taken by the group. In contrast, the top 10 pathways identified from non-Indigenous offenders accounted for 80% of all pathways taken by that group. In addition, the average number of contacts in Indigenous careers (3.9) was greater than the average number in a non-Indigenous career (1.6).

Table 9: Summary of juvenile career paths (full careers only, from 1995 to 2002)

All juvenile career paths	Indigenous			Non-Indigenous			Total		
No. of juveniles tracked	8,874			49,051			60,536		
No. of distinct career paths	1,894			2,255			3,685		
Top 10 career paths	pattern	freq	%	pattern	freq	%	pattern	freq	%
	C	2,768	31.2%	C	23,686	48.3%	C	26,461	43.7%
	CC	788	8.9%	CC	3,838	7.8%	CC	4,635	7.7%
	CA	323	3.6%	J	3,200	6.5%	J	3,921	6.5%
	CCC	276	3.1%	CA	2,427	4.9%	K	3,572	5.9%
	J	251	2.8%	K	1,630	3.3%	CA	2,750	4.5%
	K	201	2.3%	CCC	1,014	2.1%	CCC	1,292	2.1%
	CJ	191	2.2%	CJ	994	2.0%	CJ	1,186	2.0%
	CCA	111	1.3%	KA	865	1.8%	KA	983	1.6%
	CCJ	107	1.2%	JA	795	1.6%	JA	879	1.5%
	KA	106	1.2%	CCA	580	1.2%	CCA	692	1.1%
% of career paths accounted for by Top 10 pathways	57.7%			79.6%			76.6%		
Ave no of contacts in career (4 event types only: C/J/K/D)	3.9			1.6			2.3		

For illustration, the top 10 career paths for all offenders (as described in Table 9) are presented in Figure 7. Repetitions of the same contact type (as in ‘CC’ - a caution followed by another caution) are indicated by loops in the figure. Post-juvenile justice system arrests are also indicated⁴.

In considering whether juveniles progress to more serious offences/interventions, we filtered repetitions of the same contact type from individual career patterns. Having done this, the number of unique paths reduced considerably (see Table 10): the total number of distinct career paths reduced from 3,685 to 1,099 and the top 10 patterns accounted for 86.9% of all career paths. Significantly, for both Indigenous and non-Indigenous offenders, the most common progression path was one that did *not* progress beyond police cautioning.

Career paths leading to detention were also examined and findings are summarised in Table 11. There were 677 unique pathways to first detention. Of these, the 10 most common paths to first detention accounted for 29.6% of all pathways to detention. However, Indigenous offenders once again exhibited variety in career paths. Of the 614 Indigenous offenders examined, 428 unique pathways to first detention were identified. Overall, the top 10 Indigenous pathways to detention accounted for only 17.8% of all possible pathways into custody.

⁴ Post-juvenile justice arrests refer to police apprehensions occurring after any other juvenile justice contact but before the end of the follow-up period. In the majority of cases, these were juveniles who had ‘aged out’ of the juvenile justice system and ‘aged into’ the adult system.

The top 10 pathways to first detention by all offenders are graphically illustrated in Figure 8.

Table 12 summarises some important additional information about career paths leading to detention. Careers with detention were generally longer than other types of careers. The average number of contacts in a detention career was 11.0 (as compared to 2.3 for all careers). The average number of contacts before the *first* period of detention was 6.1 (7.6 for Indigenous offenders and 5.4 for non-Indigenous offenders). Of note is the position of the first detention relative to the whole career. This was estimated at 0.6 for both Indigenous and non-Indigenous offenders. In other words, the *first* period of detention occurred slightly more than half way along a criminal career – for both Indigenous and non-Indigenous juveniles alike.

Figure 7: Top 10 career paths of juveniles entering the justice system between 1995 and 2002

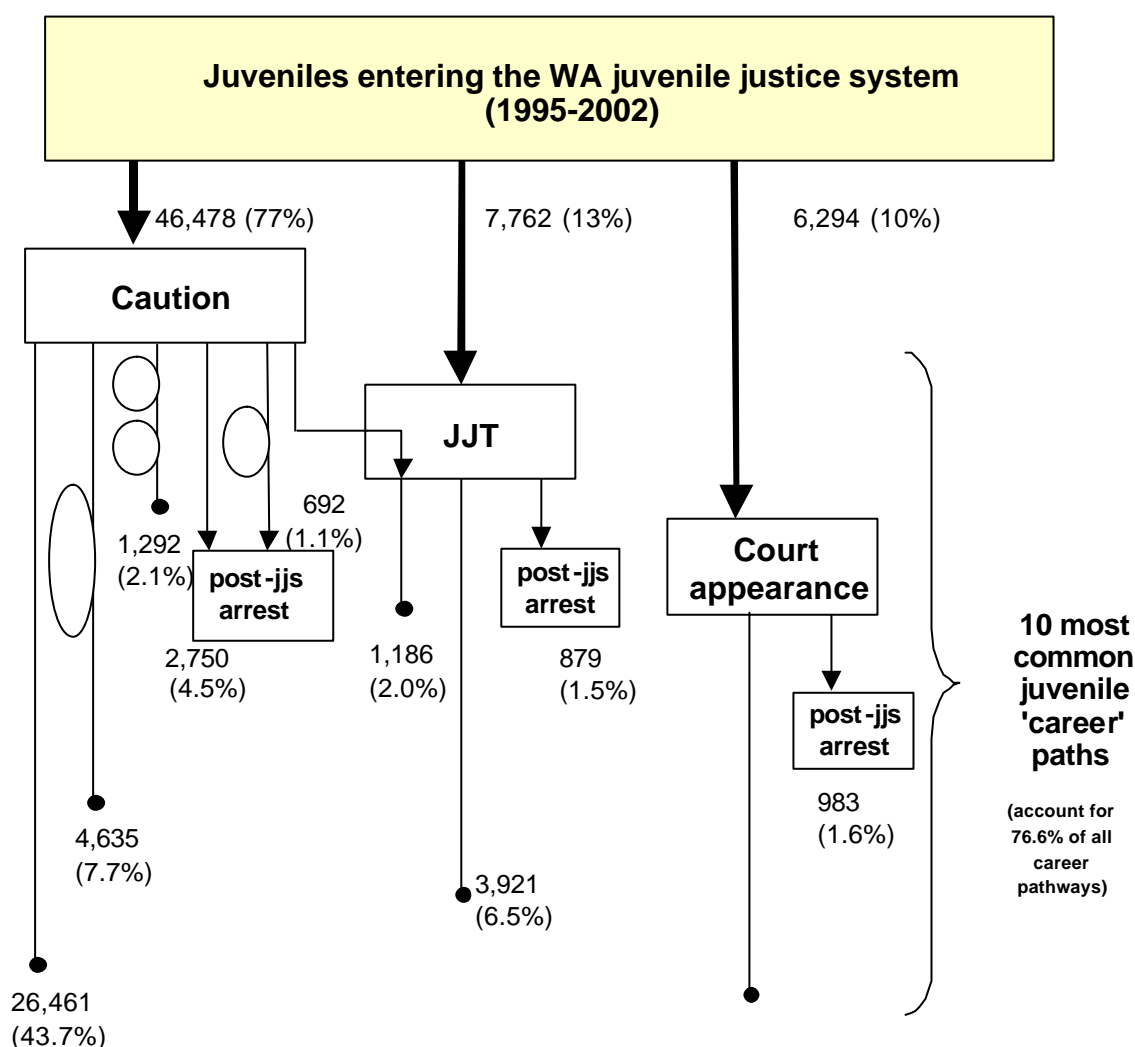


Table 10: Summary of juvenile progression paths (that is, where repetitions of the same type contact have been removed), from 1995 to 2002

Progression pathways	Indigenous			Non-Indigenous			Total		
No. of juveniles tracked	8,874			49,051			60,536		
No. of distinct progressive paths	715			652			1,099		
Top 10 progression paths	pattern	freq	%	pattern	freq	%	pattern	freq	%
	C	4,001	45.1%	C	28,952	59.0%	C	32,974	54.5%
	CJ	553	6.2%	J	3,497	7.1%	J	4,295	7.1%
	CA	506	5.7%	CA	3,293	6.7%	K	4,085	6.7%
	J	317	3.6%	CJ	2,000	4.1%	CA	3,800	6.3%
	K	310	3.5%	K	1,849	3.8%	CJ	2,559	4.2%
	CJC	188	2.1%	KA	1,087	2.2%	KA	1,275	2.1%
	CK	178	2.0%	JA	927	1.9%	CK	1,074	1.8%
	KA	176	2.0%	CK	895	1.8%	JA	1,041	1.7%
	CJA	141	1.6%	CJA	598	1.2%	CJA	739	1.2%
	CJK	140	1.6%	CJC	547	1.1%	CJC	737	1.2%
% of progression paths accounted for by top 10	73.4%			89.0%			86.9%		

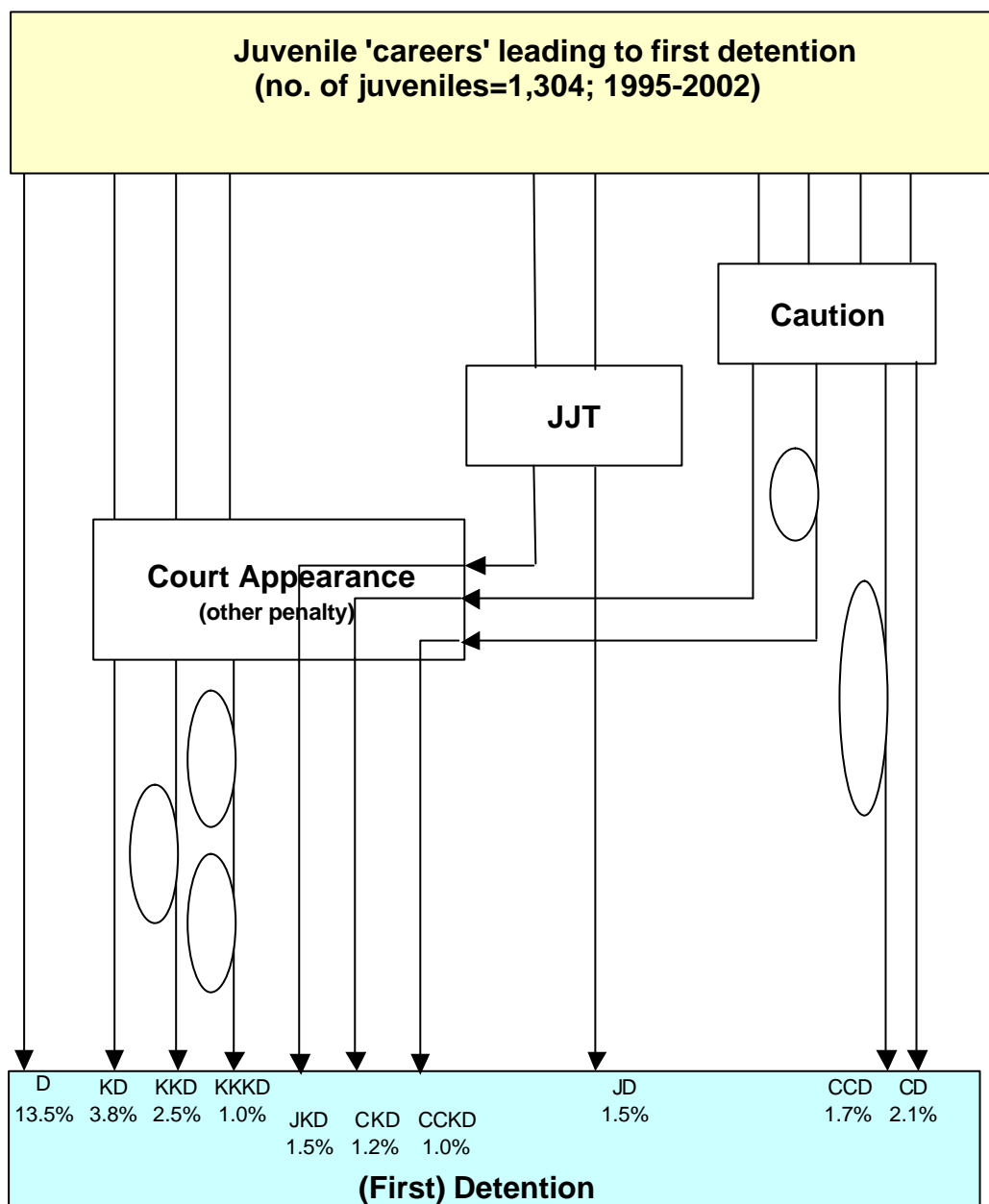
Table 11: Summary of juvenile career paths leading to first detention (full careers only, from 1995 to 2002)

Pathways to FIRST Detention	Indigenous			Non-Indigenous			Total		
No. of juveniles tracked	614			604			1,304		
No. of distinct career paths	428			320			677		
Top 10 paths to 1st detention	pattern	freq	%	pattern	freq	%	pattern	freq	%
	D	31	5.0%	D	91	15.1%	D	176	13.5%
	KKD	16	2.6%	KD	23	3.8%	KD	49	3.8%
	KD	15	2.4%	CD	21	3.5%	KKD	32	2.5%
	JKD	8	1.3%	CCD	15	2.5%	CD	27	2.1%
	CCD	7	1.1%	JD	11	1.8%	CCD	22	1.7%
	CCKD	7	1.1%	CKD	9	1.5%	JKD	20	1.5%
	KKKKD	7	1.1%	JKD	9	1.5%	JD	19	1.5%
	CCJCJD	6	1.0%	KKD	9	1.5%	CKD	15	1.2%
	CD	6	1.0%	CCCD	6	1.0%	KKKD	13	1.0%
	CJD	6	1.0%	CCCJD	6	1.0%	CCKD	13	1.0%
% of paths to 1st detention accounted for by Top 10 pathways	17.8%			33.1%			29.6%		

Table 12: Additional information about careers leading to detention

	Indigenous	Non-Indigenous	Total
Ave no. of contacts in career with detention (4 types of contact defined: C/J/K/D)	13.3	9.8	11.0
Ave no. contacts prior to 1st detention	7.6	5.4	6.1
Rel. position of 1st detention in career	0.6	0.6	0.6

Figure 8: Top 10 most common pathways to first detention, 1995-2002



**10 most common pathways to first detention
(accounting for 29.6% of all pathways to detention)**

10. 'Crude' measures of recidivism

In this section, we investigate re-offending and present 'crude' measures of recidivism – that is, for a number of cohorts, we simply calculate the proportion of the group who re-offended before the end of the study or follow-up period. Other dimensions of recidivism, such as transitions from first to second contacts and progression to more serious ('worse') contacts/interventions, including detention, are also described.

Three cohorts were defined for analysis:

- juveniles first entering the justice system in 1995 (referred to as the '1995 cohort')
- juveniles first entering the system in 2000 (the '2000 cohort')
- all juveniles who entered the system for the first time between 1995 and 2002 and followed up for *exactly* two years (labelled, the 'fixed-follow-up group').

In the case of the 1995 cohort, the follow-up time for the group was between seven and eight years (mean=7.5 years), while for the 2000 cohort, the follow-up time was between two and three years (mean 2.5 years). A longer follow-up period for the 1995 cohort allowed the group a greater opportunity to re-offend, thus recidivism estimates for this group tend to be greater than for all others. Moreover, for those who did re-offend in this group, transitions from one contact to another and progression to 'worse' interventions were more established.

We begin by comparing the recidivism patterns of 1995 and 2000 cohorts. Later, we examine the fixed-follow-up group and report on differences between Indigenous and non-Indigenous recidivism rates. More sophisticated estimates of recidivism, which take into account all cases and which control for varying follow-up time, are contained in Section 11 of this report.

10.1 Comparison of 1995 and 2000 cohorts

The 2000 cohort was slightly larger in size than the 1995 cohort (Table 13). The 1995 cohort had a higher recidivism rate (54.4%, compared with 41.1%) – to be expected given the longer follow-up time for the group. For both cohorts, recidivism rates were found to vary by type of first contact – offenders who entered the system via cautioning had the lowest recidivism rate, while those entering via referrals to juvenile justice teams had the highest rate.

Table 13: Description of the 1995 and 2000 cohorts

	1995 cohort		2000 cohort	
No of offenders	7,271		7,811	
No re-offended	3,958	(54.4%)	3,214	(41.1%)
Re-offenders by type of 1st contact				
Caution	2,954	(53.4%)	2,536	(40.6%)
Referral	624	(61.1%)	369	(44.0%)
Court	380	(53.4%)	309	(42.3%)

Table 14 provides a finer level of detail for contact type and disaggregates recidivism rates by Indigenous status. Recidivism rates varied significantly by race - for the 1995 cohort, almost three quarters (73.9%) of Indigenous juveniles had re-offended by the end of 2002, as compared with half (53.1%) of non-Indigenous juveniles.

For non-Indigenous offenders in the cohort, those who were initially cautioned had the lowest recidivism rate (51%), while those initially dealt with by the courts (and not sentenced to detention) had the highest rates (67%). Note that those sentenced to detention were too small and, thus, the recidivism rates for these categories are unreliable.

For Indigenous offenders, those who were initially cautioned had the lowest recidivism rates (72%), while those initially dismissed or given no penalty and those given community orders had the highest rates (92% and 85% respectively). Note that recidivism rates for those sentenced to detention and those fined were calculated, however, these are based on small numbers and are therefore unreliable.

Table 14: 1995 & 2000 cohorts, by Indigenous status and type of first contact

Cohort & type of initial contact	No. of juveniles in cohort			Recidivists						
	I	NI	Total	I		NI		Total		
	n			n	%	n	%	n	%	
1995	Caution	678	4,846	5,537	487	71.8	2,456	50.7	2,954	53.4
	JJT referral	148	808	1,022	114	77.0	493	61.0	624	61.1
	Dism/no penalty	26	108	230	24	92.3	72	66.7	113	49.1
	Fine	7	70	132	5	71.4	47	67.1	62	47.0
	CBO	46	186	313	39	84.8	125	67.2	189	60.4
	Detention	3	11	37	2	66.7	6	54.5	16	43.2
	TOTAL	908	6,029	7,271	671	73.9	3,199	53.1	3,958	54.4
2000	Caution	961	5,282	6,243	560	58.3	1,762	33.4	2,536	40.6
	JJT ref (police)	64	541	605	45	70.3	179	33.1	274	45.3
	JJT ref (court)	21	136	233	15	71.4	48	35.3	95	40.8
	Dism/no penalty	27	83	147	17	63.0	38	45.8	71	48.3
	Fine	18	260	387	9	50.0	38	14.6	143	37.0
	CBO	46	104	178	25	54.3	30	28.8	88	49.4
	Detention	6	10	18	3	50.0	1	10.0	7	38.9
	TOTAL	1,143	6,416	7,811	674	59.0	2,096	32.7	3,214	41.1

Note: Totals include juveniles of unknown Indigenous status

Recidivism rates for the 2000 cohort were generally lower than for the 1995 cohort. Two-thirds (59%) of Indigenous first offenders and 33% of non-Indigenous first offenders in this cohort had re-offended by the end of 2002.

Recidivism rates in the 2000 cohort were lowest for those initially cautioned or given fines (for both racial groups) and highest for those initially dismissed by the court or given community orders. Note, however, that the number of cases in some categories was small (eg detention and fine) and, thus, the recidivism rates for these categories are unreliable.

Table 15 provides some summary statistics (average number of contacts with the *juvenile* justice system⁵) for the recidivists identified in the 1995 and 2000 cohorts. Indigenous offenders in the 1995 cohort accumulated an average of 7.0 contacts over the follow-up period (comprising 2.4 cautions, 0.6 JJT police referrals, 0.7 JJT court referrals, 1.4 dismissals, 0.5 fines, 0.6 CBOs and 0.8 detentions), while non-Indigenous offenders in the same cohort accumulated 4.0 contacts.

In the 2000 cohort, Indigenous offenders accumulated an average of 4.5 contacts with the juvenile justice system, while non-Indigenous offenders accumulated an average of 3.2 contacts.

Table 15: Average number of contacts with *juvenile* justice system for recidivists, 1995 and 2000 cohorts, by Indigenous status.

Cohort & type of contact		Mean no. of contacts by recidivist offenders	
		Indigenous	Non-Indigenous
1995	Cautions	2.4	2.0
	JJT referrals (police)	0.6	0.3
	JJT referrals (court)	0.7	0.5
	Dism/no pen	1.4	0.6
	Fine	0.5	0.2
	CBOs	0.6	0.1
	Detention	0.8	0.3
	TOTAL	7.0	4.0
2000	Cautions	2.4	2.1
	JJT referrals (police)	0.7	0.5
	JJT referrals (court)	0.3	0.2
	Dism/no pen	0.5	0.2
	Fine	0.1	0.1
	CBOs	0.1	0.0
	Detention	0.4	0.1
	TOTAL	4.5	3.2

Criminal career researchers have often used transition matrices to represent how offenders switch from one offence type to another and to assess whether offenders specialise in particular crime types or escalate in seriousness in the course of their offending careers (Blumstein et al. 1988). We use the same techniques here to examine whether offenders progress to more serious types of contact/intervention with the juvenile justice system in the course of their ‘careers’.

Table 16 presents, for both cohorts, the number of juveniles who re-offend by type of initial *and* next (2nd) contact. Also shown in the table are juveniles who had only one contact (that is, those who did *not* re-offend after initial contact during the entire follow-up period). From this table, transition probabilities have been computed (Table 17).

⁵ Note that contacts with other parts of the justice system that may have occurred during the study period but *subsequent* to any juvenile justice intervention (eg police apprehension as an adult) are not counted here. Thus these summary statistics undercount the true number of contacts that individual had with the *whole* justice system during the period.

Table 16: Transition matrices – number of juveniles in each cohort, by type of contact at first and second contact.

1995	1st contact	Did not re-offend	Re-offended (2nd contact)				Grand Total	
			Caution	Referral	Court	Arrest*		Total
	Caution	2,583	1,646	429	236	643	2,954	5,537
	Referral	398	142	141	181	160	624	1,022
	Court	332	35	40	197	108	380	712
	Total	3,313	1,823	610	614	911	3,958	7,271

2000	1st contact	Did not re-offend	Re-offended (2nd contact)				Grand Total	
			Caution	Referral	Court	Arrest*		Total
	Caution	3,707	1,684	445	193	214	2,536	6,243
	Referral	469	119	107	66	77	369	838
	Court	421	51	27	98	133	309	730
	Total	4,597	1,854	579	357	424	3,214	7,811

* Arrest refers to any post-juvenile justice system police apprehension occurring before the end of the follow-up period

Transition probabilities can be interpreted as follows: For the 1995 cohort, *of those offenders who were first cautioned and then re-offended*, the majority (56%) had another caution, 15% had a referral and 8% appeared in court (not diverted). One in five (22%) were apprehended by the police (during the follow-up period), most likely because were adults at that time. *Of offenders who were first referred and then re-offended*, 29% appeared in court on second contact, while 23% were cautioned, 23% were referred (again) to teams and 26% were apprehended by the police. *Of those whose first contact was an appearance in court and then re-offended*, 52% re-appeared in court on second contact, while the police apprehended 28%.

Transition probabilities for the 2000 cohort show some differences compared to the 1995 cohort. For example, more of those who were cautioned initially were cautioned again at second contact, while far fewer were apprehended by the police at second contact. Most likely this was because these juveniles were younger at first contact and, given the short time between first contact and the end of the follow-up period, there was little opportunity for them to age into the adult justice system.

Table 17: Transition probabilities - probabilities of re-offending to different types of contact

1995	1st contact	Re-offended (2nd contact)			
		Caution	Referral	Court	Arrest*
	Caution	0.56	0.15	0.08	0.22
	Referral	0.23	0.23	0.29	0.26
	Court	0.09	0.11	0.52	0.28

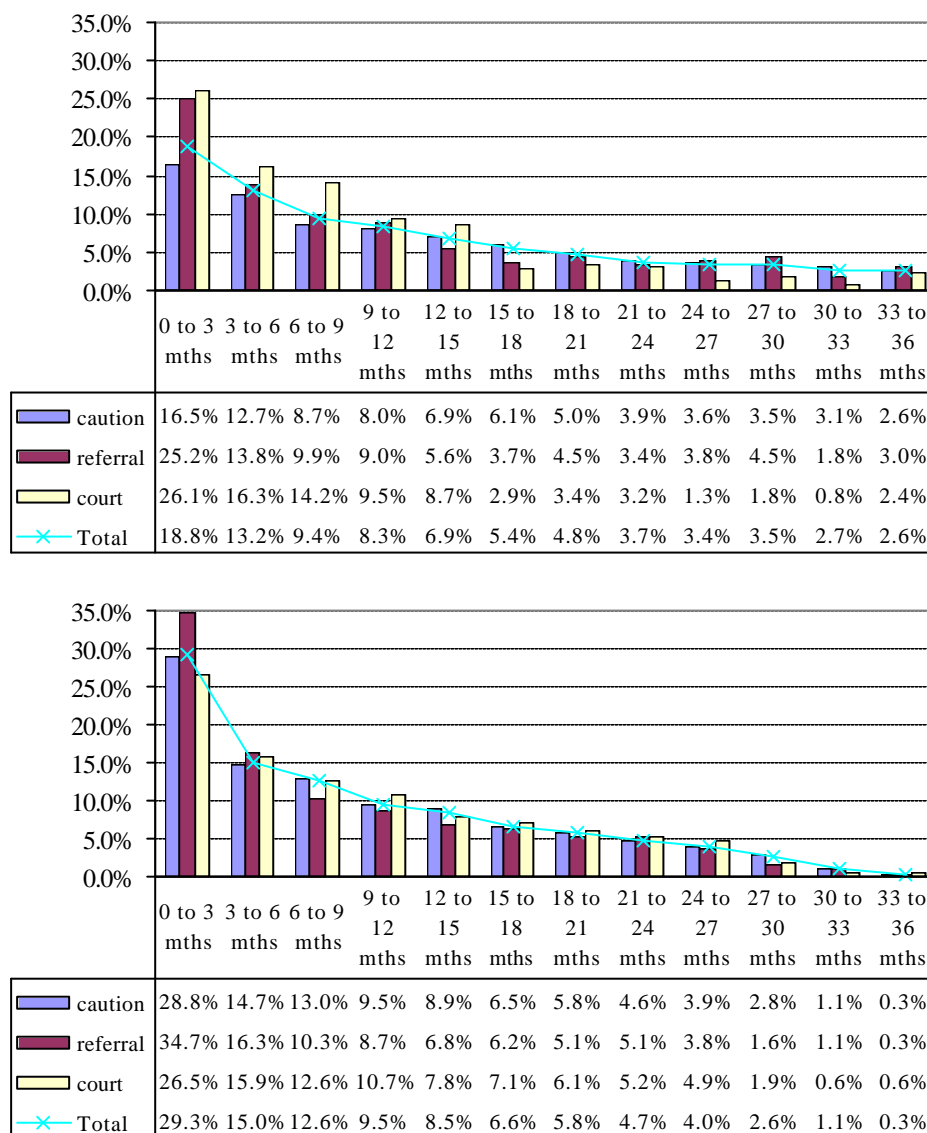
2000	1st contact	Re-offended (2nd contact)			
		Caution	Referral	Court	Arrest*
	Caution	0.66	0.18	0.08	0.08
	Referral	0.32	0.29	0.18	0.21
	Court	0.17	0.09	0.32	0.43

* Arrest refers to any post-juvenile justice system police apprehension occurring before the end of the follow-up period

Overall, the patterns which emerged from both cohorts suggest that, for those who were cautioned initially and then re-offended, there was little *immediate* progression to more serious contacts. However, for those who were initially dealt with by referral to juvenile justice teams, the picture was less clear. Evidence from the 1995 cohort suggests that a greater proportion progressed to more serious contact/intervention on second contact. However, data from the 2000 cohort suggest that most juvenile who re-offended either regressed to a less serious intervention (cautioning) or remained static and received another referral.

While transition matrices are useful in informing how juveniles switch from one type of contact to another, they provide little information about how quickly transitions occur. Figure 9 provides some data on the time taken to move from first contact to second contact. One fifth (18.8%) of recidivists from the 1995 cohort had re-offended within 3 months of their first contact. Recidivists whose first contact had either been a referral or a court appearance were more likely to re-offend *earlier* than those initially dealt with via caution. However, from the 2000 cohort, 29.3% of recidivists re-offended within 3 months. As with the 1995 cohort, recidivists whose first contact was a referral tended to re-offend more quickly than others.

Figure 9: Time taken to progress from first to second contact, 1995 and 2000 cohorts respectively.



To date, our analysis of re-offending has focussed on the transition from first to second contact. However, when considering progression to more serious contacts/interventions, a more relevant question might be whether this happens *at all* during a juvenile career. Table 18 attempts to answer this question for both cohorts. About 46% of recidivists in the 1995 cohort and 43% of recidivists in the 2000 cohort did progress to more serious ('worse') contact *at some point in their career*. It is notable that the proportion progressing to worse contact in the 1995 cohort was not substantially greater than that in the 2000 cohort, despite the longer follow-up time. Perhaps this is a reflection of the 'aging out' phenomenon, that is, that juveniles turn 18 years of age and move into the adult justice system *before* progression can occur.

Table 18: Number and proportion of recidivists who re-offend to a more serious contact (at any stage), 1995 and 2000 cohort.

1st contact type	1995 cohort				2000 cohort			
	Re-offended to worse?				Re-offended to worse?			
	N	Y	(%)	Total	N	Y	(%)	Total
Caution	1,549	1,405	(47.6%)	2,954	1,340	1,196	(47.2%)	2,536
JJT	309	315	(50.5%)	624	245	124	(33.6%)	369
Dism/No pen	63	50	(44.2%)	113	39	32	(45.1%)	71
Fine	48	14	(22.6%)	62	134	9	(6.3%)	143
CBO	160	29	(15.3%)	189	78	10	(11.4%)	88
Detention	16	0	(0.0%)	16	7		(0.0%)	7
Total	2,145	1,813	(45.8%)	3,958	1,843	1,371	(42.7%)	3,214

For offenders who *did* re-offend to a more serious type of contact/intervention, additional information about the nature of that intervention is provided in Table 19. Not surprisingly, most offenders who were initially cautioned and progressed tended to progress to referrals. Of those who were initially referred and then progressed, most progressed to CBOs. Of those who initially appeared in court and were fined or dismissed or given no penalty and then progressed, most went to CBOs, and, of those who started with a CBO and progressed, all (naturally) progressed to detention.

Table 19: Type of contact/intervention experienced by recidivists who progressed to a more serious contact, 1995 and 2000 cohort.

1995 1st contact type	Worse intervention					
	JJT (Pol)	JJT (Court)	Dism/No pen	Fine	CBOs	Detention
Caution	613	351	82	150	191	18
JJT			71	64	166	14
Dism/No pen				13	34	3
Fine					14	0
CBO						29

2000 1st contact type	Worse intervention					
	JJT (Pol)	JJT (Court)	Dism/No pen	Fine	CBOs	Detention
Caution	700	195	97	100	93	11
JJT (Police)			25	27	28	3
JJT (Court)			14	6	20	1
Dism/No pen				7	21	4
Fine					9	0
CBO						10

Related to considerations of whether juveniles progress to more serious contacts/interventions *at any stage* of their offending ‘career’ is the issue of whether juveniles progress to detention. As Table 20 shows, 6.9% of recidivists in the 1995 cohort and 2.5% of recidivists in the 2000 cohort progressed to detention.

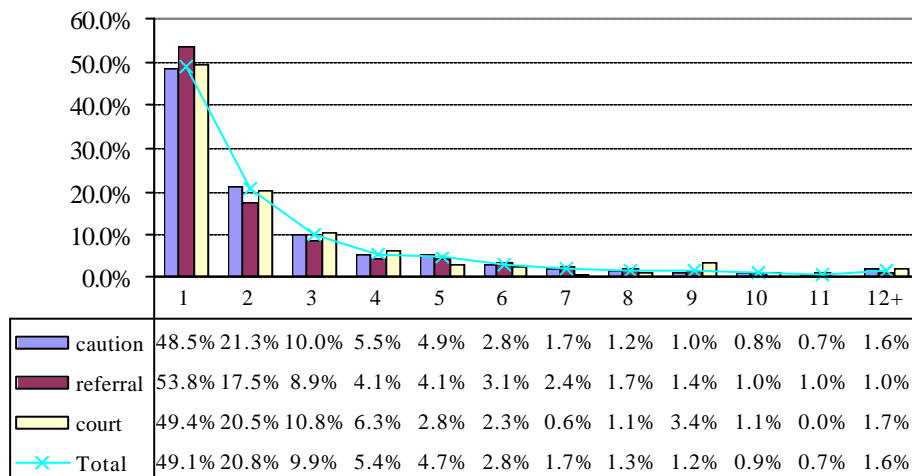
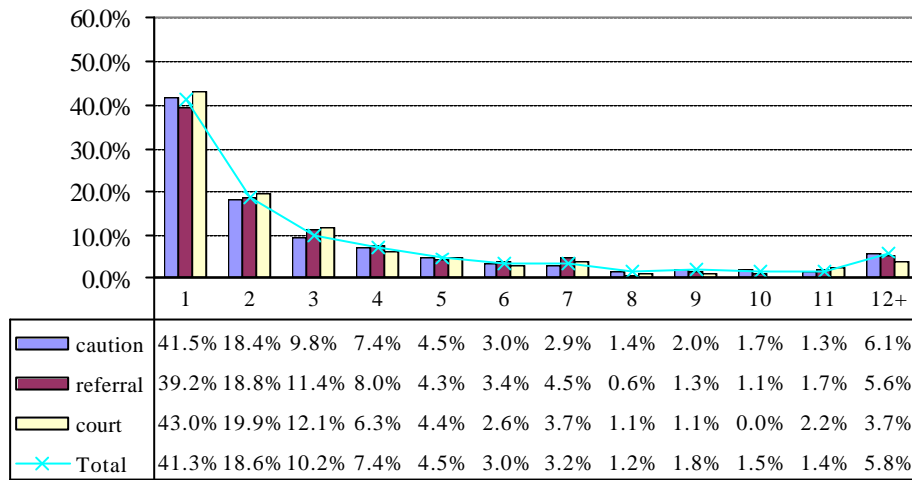
Table 20: Number and proportion of recidivists who progress to detention (at any stage), 1995 and 2000 cohort.

1st contact type	1995 cohort				2000 cohort			
	Progress to detention			Total	Progress to detention			Total
	N	Y			N	Y		
Caution	2,795	159	(5.4%)	2,954	2,481	55	(2.2%)	2,536
JJT	564	60	(9.6%)	624	360	9	(2.4%)	369
Dism/No pen	100	13	(11.5%)	113	65	6	(8.5%)	71
Fine	60	2	(3.2%)	62	143	0	(0.0%)	143
CBO	160	29	(15.3%)	189	78	10	(11.4%)	88
Detention	7	9	(56.3%)	16	6	1	(14.3%)	7
Total	3,686	272	(6.9%)	3,958	3,133	81	(2.5%)	3,214

Finally, we consider (briefly) the extent or size of the overall offending careers of recidivist juvenile offenders. Figure 10 plots the distribution the total number of subsequent (additional) contacts made by juvenile recidivists, by type of first contact, for both cohorts.

Two fifths (41.3%) of recidivists from the 1995 cohort had just one more contact with the juvenile justice system (total of 2 contacts), while 5.8% had 12 or more additional contacts before the end of the study period. In comparison, 49.1% of recidivists from the 2000 cohort had an additional contact and 1.6% had 12 or more additional contacts before the end of the study period. There were some variations by type of first contact.

Figure 10: Distribution of the number of subsequent contacts with juvenile justice system experienced by recidivist offenders, by initial contact type, 1995 & 2000 cohorts respectively



10.2 Analysis of fixed follow-up group

In this section, we analyse all offenders who entered the system at any time between 1995 and 2002 and who were followed up *for exactly two years*. This group comprised 46,410 offenders, of which 14.2% (6,574) were Indigenous (Table 21).

The two-year recidivism rate for the group was 38.5%; however, rates varied with Indigenous status and by type of first contact. For Indigenous offenders, the overall two-year recidivism rate was 58.9%, compared with 36.4% for non-Indigenous offenders. *Within each racial group*, offenders who had initially been cautioned had the lowest recidivism rate (55.9% for Indigenous; 34.4% for non-Indigenous), while those initially dealt with by the court had the highest rate (70.5% for Indigenous; 45.8% for non-Indigenous).

Recidivism rates were also found to vary *within* categories of (initial) contact. For example, Indigenous offenders referred by police were found to have a higher recidivism rate than those referred by the court (cf. 72.4% with 66.7%). However, the opposite effect was noted for non-Indigenous offenders (cf. 40.4% with 45.4%). Within the category of court contact, offenders who were fined initially had the lowest recidivism rates, while those sentenced to detention or given a CRO had the highest rates. These patterns accord with those found earlier for the 1995 and 2000 cohorts.

Table 21: Composition of the two year fixed follow up group, by Indigenous status

	Indigenous	Non-Indigenous	Total
No of offenders	6,574	37,653	46,410
No re-offended	3,872 (58.9%)	13,701 (36.4%)	17,888 (38.5%)
Re-offenders by type of 1st contact			
Caution	2,893 (55.9%)	10,249 (34.4%)	13,165 (37.6%)
Referral	578 (69.7%)	2,143 (42.5%)	2,779 (43.9%)
<i>JJT ref (pol)</i>	322 (72.4%)	1,165 (40.4%)	1,489 (44.7%)
<i>JJT ref (court)</i>	256 (66.7%)	978 (45.4%)	1,290 (43.1%)
Court	401 (70.5%)	1,309 (45.8%)	1,944 (38.0%)
<i>Dism/no penalty</i>	131 (70.8%)	281 (48.8%)	479 (36.1%)
<i>Fine</i>	78 (64.5%)	521 (40.9%)	673 (31.6%)
<i>CBO</i>	171 (72.8%)	464 (49.8%)	712 (47.2%)
<i>Detention</i>	21 (75.0%)	43 (57.3%)	80 (51.9%)

Transition matrices showing how many offenders re-offended *and the type of intervention experienced at second contact* are shown in Table 22. From this table, transition probabilities have been computed and are presented in Table 23. For offenders who are initially cautioned, the transition pattern from initial caution to subsequent contact do not vary significantly between racial groups. For Indigenous offenders, about 68% (p=0.68) of recidivists re-offend to another caution, 21% are referred and 6% are dealt with by the courts. A further 5% ‘age out’ of the juvenile justice system and are charged as adults by the police. For non-Indigenous offenders, proportions are similar (64%,19%,8%,9%).

However, for offenders who are initially referred, transition patterns vary, with Indigenous recidivists much more likely than non-Indigenous recidivists to be referred again at second contact (cf. 42% with 29%). For offenders who are initially dealt with by the courts (usually the more serious offenders), Indigenous recidivists are more likely to re-appear before the courts at second contact. For non-Indigenous recidivists, the most likely intervention at second contact is either court re-appearance or police arrest. The latter finding may be symptomatic of the later starting age of non-Indigenous offenders and their consequential ‘aging out’ of the juvenile justice system as they re-offend.

Table 22: Transition matrices – number of Indigenous and non-Indigenous offenders in the fixed-follow up group, by type of contact at first and second contact.

INDIGENOUS 1st contact	Did not re-offend	Re-offended (2nd contact)					Grand Total
		Caution	Referral	Court	Arrest*	Total	
Caution	2,283	1,959	614	170	150	2,893	5,176
Referral	251	158	240	138	42	578	829
Court	168	57	48	229	67	401	569
Total	2,702	2,174	902	537	259	3,872	6,574

NON-INDIG 1st contact	Did not re-offend	Re-offended (2nd contact)					Grand Total
		Caution	Referral	Court	Arrest*	Total	
Caution	19,510	6,605	1,904	798	942	10,249	29,759
Referral	2,895	670	632	461	380	2,143	5,038
Court	1,547	180	129	502	498	1,309	2,856
Total	23,952	7,455	2,665	1,761	1,820	13,701	37,653

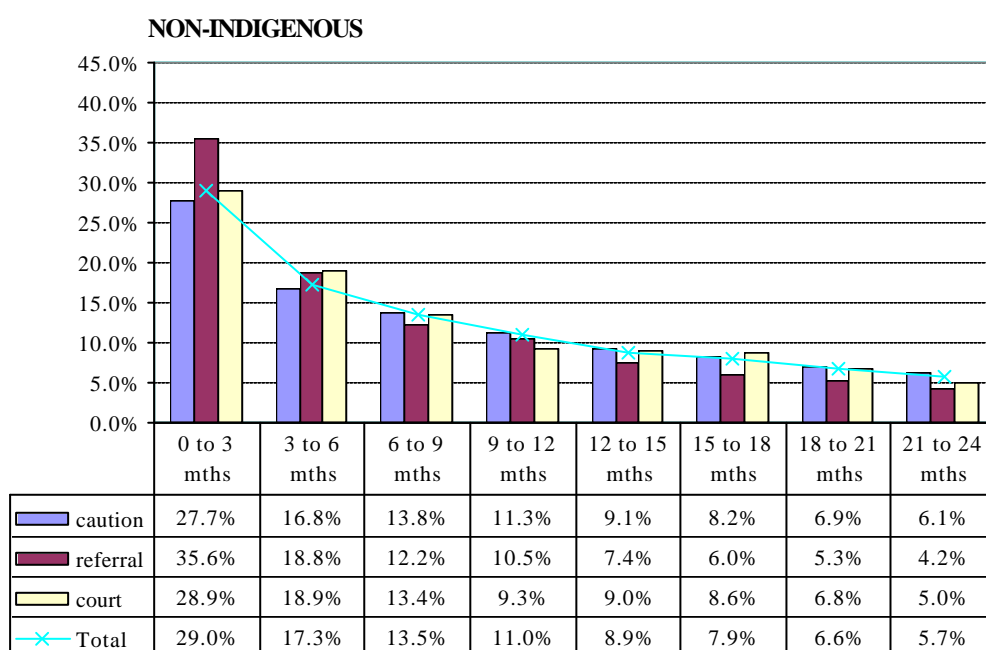
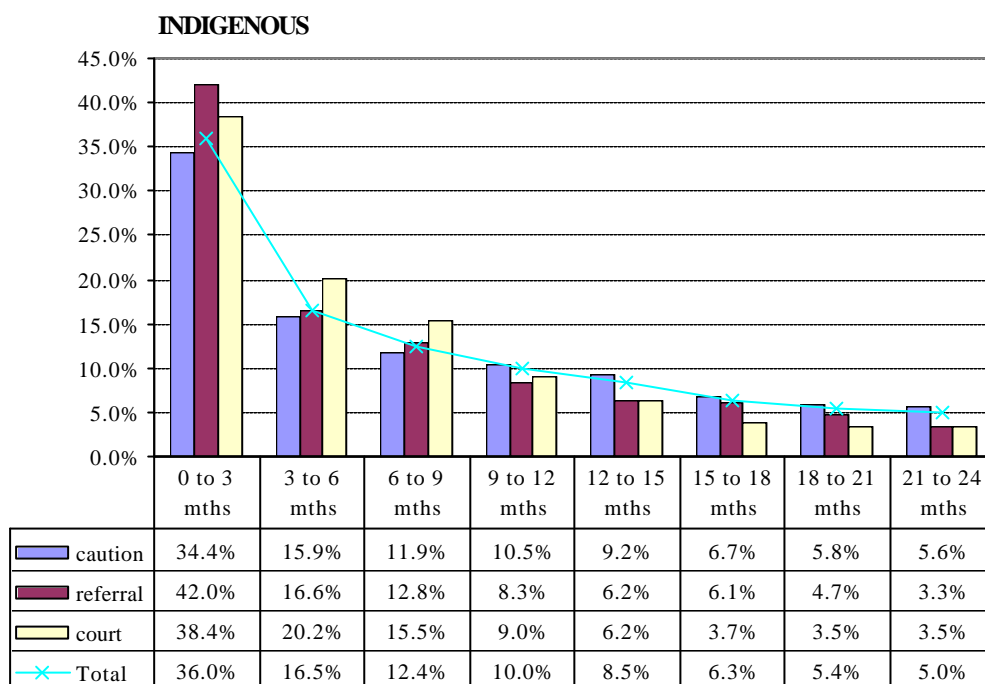
Table 23: Transition probabilities - likelihood of re-offending to different types of intervention at second contact, Indigenous and non-Indigenous offenders in the fixed follow up cohort.

INDIGENOUS 1st contact	Re-offended (2nd contact)			
	Caution	Referral	Court	Arrest*
Caution	0.68	0.21	0.06	0.05
Referral	0.27	0.42	0.24	0.07
Court	0.14	0.12	0.57	0.17

NON-INDIG 1st contact	Re-offended (2nd contact)			
	Caution	Referral	Court	Arrest*
Caution	0.64	0.19	0.08	0.09
Referral	0.31	0.29	0.22	0.18
Court	0.14	0.10	0.38	0.38

Figure 11 provides some data on the time taken to move from first contact to second contact for Indigenous and non-Indigenous offenders. More than one third (36%) of Indigenous recidivists and 29% of non-Indigenous recidivists re-offended within three months of their first contact. For both racial groups, recidivists who had initially been cautioned had the slowest rate of re-offending.

Figure 11: Time taken to progress from first to second contact, Indigenous and non-Indigenous offenders in fixed-follow up cohort.



The number and proportion of recidivists who progressed to more serious contact with the justice system within two years of initial contact are described in Table 24. Overall *and within each contact category*, a greater proportion of Indigenous (overall: 64.3%) than non-Indigenous (overall: 46.8%) recidivists progressed more serious intervention. For offenders who *did* progress to a more serious type of contact/intervention, additional information about the nature of that intervention is provided in Table 25. Further discussion about the progression patterns of recidivist offenders is provided in Section 11 of this report.

Table 24: Number and proportion of Indigenous and non-Indigenous recidivists in the fixed-follow up cohort who progressed to more serious contact.

1st contact type	Indigenous				Non-Indigenous			
	Re-offended to worse?			Total	Re-offended to worse?			Total
N	Y	(%)	N		Y	(%)		
Caution	926	1,967	(68.0%)	2,893	4,941	5,308	(51.8%)	10,249
JJT	202	376	(65.1%)	578	1,242	901	(42.0%)	2,143
Dism/No pen	58	73	(55.7%)	131	170	111	(39.5%)	281
Fine	54	24	(30.8%)	78	471	50	(9.6%)	521
CBO	121	50	(29.2%)	171	425	39	(8.4%)	464
Detention	21	0	(0.0%)	21	43	0	(0.0%)	43
Total	1,382	2,490	(64.3%)	3,872	7,292	6,409	(46.8%)	13,701

Table 25: Type of contact/intervention experienced by Indigenous and non-Indigenous recidivists in the fixed follow up cohort who progressed to more serious contact.

INDIG	1st contact type	Worse intervention					
		JJT (Pol)	JJT (Court)	Dism/No pen	Fine	CBOs	Detention
	Caution	1222	322	164	45	200	14
	JJT (Police)			57	23	89	4
	JJT (Court)			72	19	102	10
	Dism/No pen				15	51	7
	Fine					23	1
	CBO						50
NON-INDIG	1st contact type	Worse intervention					
		JJT (Pol)	JJT (Court)	Dism/No pen	Fine	CBOs	Detention
	Caution	2953	970	316	550	479	40
	JJT (Police)			84	136	149	12
	JJT (Court)			138	108	259	15
	Dism/No pen				37	62	12
	Fine					48	2
	CBO						39

The number and proportion of Indigenous and non-Indigenous recidivists who progressed to detention within two years of initial contact are described in Table 26. The difference between racial groups was marked: 14.3% of Indigenous recidivists progressed to detention, as compared with 3.6% of non-Indigenous recidivists. For both racial groups, however, the likelihood of progression generally increased in line with the severity of initial contact (with the exception of fines).

Table 26: Number and proportion of Indigenous and non-Indigenous recidivists who progress to detention in the fixed follow up cohort.

1st contact type	Indigenous			Non-Indigenous		
	Progress to detention			Progress to detention		
	N	Y	Total	N	Y	Total
Caution	2,529	364 (12.6%)	2,893	9,954	295 (2.9%)	10,249
JJT	479	99 (17.1%)	578	2,029	114 (2.4%)	2,143
Dism/No pen	103	28 (21.4%)	131	261	20 (7.1%)	281
Fine	75	3 (3.8%)	78	516	5 (1.0%)	521
CBO	121	50 (29.2%)	171	425	39 (8.4%)	464
Detention	11	10 (47.6%)	21	29	14 (32.6%)	43
Total	3,318	554 (14.3%)	3,872	13,214	487 (3.6%)	13,701

11. Recidivism using survival analysis

In this section, we describe the recidivism patterns of juvenile offenders using survival analysis techniques. Survival analysis is a statistical method for analyzing data when there are censored observations (that is, when the outcome for some individuals is not known at the end of a study period) and/or when the follow-up period varies from one individual to another in the study group. Survival analysis focuses on how long individuals persist (survive) in a given state. In criminological research, terminology may vary and survival analysis can sometimes be referred to as failure analysis, since the focus is on the 'failure' of individuals (through re-offending). The techniques used for failure analysis are identical to those used in survival analysis. For this study, the Kaplan-Meier Estimator (KME) has been used, with probability estimates calculated at 2 years from first contact. The KME is a non-parametric estimate of the cumulative distribution function of time to failure (often referred to as the failure distribution).

There are a number of important advantages in using survival analysis techniques and KM estimates of recidivism rather than the cruder measures used in Section 9:

- i) all cases in the dataset are included in the analysis, not just those who are observed to have 'failed' or re-offended within a two year follow-up period;
- ii) the techniques are able to control for varying follow-up time, with probability estimates adjusted accordingly;
- iii) the likelihood (or probability) of failure *and the rate at which that failure occurs* can both be estimated.

11.1 Basic recidivism estimates

A range of KM estimates at 2 years from initial contact (KME2) were calculated for each of the four sex-race groups (male non-Indigenous, male Indigenous, female non-Indigenous, female Indigenous) and by type of initial contact. Recidivism estimates comprised:

- i) estimates of the probability of *any* further contact with the justice system
- ii) estimates of the probability of *more serious* ('worse') contact with the justice system (referred to as progression estimates), and
- iii) estimates of the probability of *progressing to detention (or CRO)*.

Estimates varied significantly by sex-race group and by type of initial contact (Table 27).

Table 27: Various KME2 probabilities, for the four sex-race groups, by type of initial contact

SEX-RACE GROUP	Type of initial contact						
	Cautious	JJT	JJT	Dism/No	Fine	CBO	Detn
	(Police)	(Court)	penalty				
Male, Non-Indigenous							
Probability of reoffending (<i>any further contact</i>)	0.390	0.460	0.480	0.510	0.440	0.520	0.550
Probability of progressing to worse contact	0.171	0.124	0.226	0.190	0.043	0.033	-
<i>Age group</i>							
10 - 14	0.172	0.126	0.315	0.161	*	*	-
15 - 17	0.170	0.125	0.249	0.230	0.050	0.034	-
<i>Offence type</i>							
Ag. Person	0.194	0.228	0.207	0.210	*	0.050	-
Property	0.174	0.154	0.313	0.358	*	0.055	-
Other	0.166	0.095	0.166	0.146	0.035	*	-
<i>Location</i>							
Perth	0.169	0.117	0.229	0.201	0.033	0.038	-
Other urban	0.177	0.162	0.208	0.164	0.066	*	-
Other	0.155	0.182	0.173	0.169	*	*	-
Probability of progressing to detention	0.005	0.007	0.026	0.030	*	0.033	-
Male, Indigenous							
Probability of reoffending (<i>any further contact</i>)	0.610	0.750	0.690	0.700	0.680	0.780	0.750
Probability of progressing to worse contact	0.360	0.314	0.464	0.347	0.215	0.201	-
<i>Age group</i>							
10 - 14	0.383	0.369	0.491	0.392	*	0.320	-
15 - 17	0.278	0.223	0.462	0.343	0.228	0.155	-
<i>Offence type</i>							
Ag. Person	0.431	0.394	0.345	*	*	0.198	-
Property	0.373	0.337	0.476	0.380	*	0.231	-
Other	0.316	*	0.450	0.373	0.176	*	-
<i>Location</i>							
Perth	0.349	0.173	0.507	0.422	*	0.143	-
Other urban	0.382	0.385	0.411	0.357	*	0.265	-
Other	0.336	0.215	0.455	0.311	0.217	0.172	-
Probability of progressing to detention	0.026	0.034	0.098	0.099	*	0.201	-
Female, Non-Indigenous							
Probability of reoffending (<i>any further contact</i>)	0.220	0.270	0.350	0.360	0.220	0.360	*
Probability of progressing to worse contact	0.088	0.065	0.179	0.137	*	*	-
<i>Age group</i>							
10 - 14	0.096	0.056	0.300	*	*	*	-
15 - 17	0.080	0.067	0.188	0.128	*	*	-
<i>Offence type</i>							
Ag. Person	0.170	*	*	*	*	*	-
Property	0.081	0.083	0.245	*	*	*	-
Other	0.089	0.053	0.109	0.144	*	*	-
<i>Location</i>							
Perth	0.083	0.071	0.184	0.155	*	*	-
Other urban	0.092	0.079	0.168	*	*	*	-
Other	0.103	*	*	*	*	*	-
Probability of progressing to detention	0.003	*	*	*	*	*	-
Female, Indigenous							
Probability of reoffending (<i>any further contact</i>)	0.490	0.650	0.660	0.690	0.560	0.590	*
Probability of progressing to worse contact	0.236	0.223	0.495	0.204	*	*	-
<i>Age group</i>							
10 - 14	0.258	0.256	0.587	0.199	*	*	-
15 - 17	0.188	0.159	0.422	0.207	*	*	-
<i>Offence type</i>							
Ag. Person	0.301	*	*	*	*	*	-
Property	0.231	0.205	0.605	0.260	*	*	-
Other	0.229	*	0.432	0.205	*	*	-
<i>Location</i>							
Perth	0.278	0.183	0.546	*	*	*	-
Other urban	0.215	0.306	0.438	*	*	*	-
Other	0.190	0.161	*	0.161	*	*	-
Probability of progressing to detention	0.009	*	0.092	*	*	*	-

* denotes insufficient cases to estimate probability

Non-Indigenous males (MNs)

The probability of any further contact/offending by non-Indigenous males (MNs) who were initially cautioned was estimated at 0.39. In other words, about 39% of non-Indigenous males who were initially cautioned were likely to have further contact with the justice system. For MNs who were initially referred to juvenile justice teams, the likelihood of further contact was higher ($p=0.46$ for those referred by the police and $p=0.48$ for those referred by the courts). For MNs whose first contact was more serious (that is, they had been dealt with by the courts), the likelihood of further contact with the system was higher again ($p=0.51$ for those dismissed or receiving no penalty, $p=0.52$ for those given community orders and $p=0.55$ for those sentenced to detention or given conditional release orders). In other words, more than half of MNs initially dealt with by the courts were likely to have further contact with the justice system. Note, however, that MNs who were initially fined by the courts had a substantially lower probability of further contact ($p=0.44$) than others dealt with by the courts.

Estimates of the probability of more serious (or 'worse') contact with the justice system were found to be substantially lower for MNs, and, indeed, for all other sex-race groups. For MNs initially cautioned, the probability of 'worse' contact was estimated at 0.17. In other words, about 17% of all MNs initially cautioned were likely to progress to 'worse' contact with the justice system. [Thus, about half ($0.17/0.39$) of those who have further contact actually progressed to something worse. The remainder committed offences resulting in the same or less serious types of contact.]

For MNs initially referred by the police, the probability of 'worse' contact was 0.12, however, for those referred by the courts, the probability of 'worse' contact was almost double ($p=0.23$). Thus, those initially referred to teams by the courts were twice as likely as those referred by police to progress to 'worse' contact with the justice system. Note, however, that MNs who were initially dealt with by the courts, particularly those fined or given community orders, had lower probabilities of progressing to 'worse' contact. In part, this is a consequence of there being fewer types of 'worse' interventions to progress to this end of the system.

Through the use of covariates, the influence of additional factors such as age, offence type and urban location, on the likelihood of progressing to 'worse' contact with the justice system were explored for each sex-race group.

As to the effect of age on recidivism estimates, literature on criminal career research posits that an earlier age of onset is generally predictive of a longer, more intense (higher frequency) and more serious criminal career. Thus, it was anticipated that offenders initiating at a younger age would have higher probabilities of progression than those initiating later. However, for MNs, age at initial contact had only a marginal influence on the likelihood of progression. Only for those initially referred to teams by the courts was the probability of progression significantly higher for younger offenders (compare $p=0.32$ for those aged 10-14 years with $p=0.25$ for those aged 15-17 years).

KME2 estimates of the probability of progressing to detention were also calculated (see Table 27). For MNs, these estimates were generally low: of those who were initially cautioned, less than 0.5% (p=0.005) progressed to detention within two years of initial contact. However, the likelihood of progression to detention varied with the severity of initial contact. Thus, for MNs initially given community orders, a higher proportion (3.3%) progressed to detention. Of those initially sentenced to detention (or given a CRO), 17.5% subsequently returned to custody.

Indigenous males (MIs)

Overall, the likelihood of (any) further contact with the justice system was substantially higher for Indigenous males (MIs) than non-Indigenous males (MNs). Probability estimates for MIs exceeded those of MNs by a factor of about 1.5 (see Table 27). However, like MNs, the same pattern of increasing probability depending on type of initial contact was observed. For MIs initially cautioned, the probability of further involvement in the justice system was 0.61, while for those initially sentenced to detention, the probability was greater at 0.75.

Figure 12: KME2 probability estimates of any further contact with the justice system, by initial contact type, for each sex-race group.

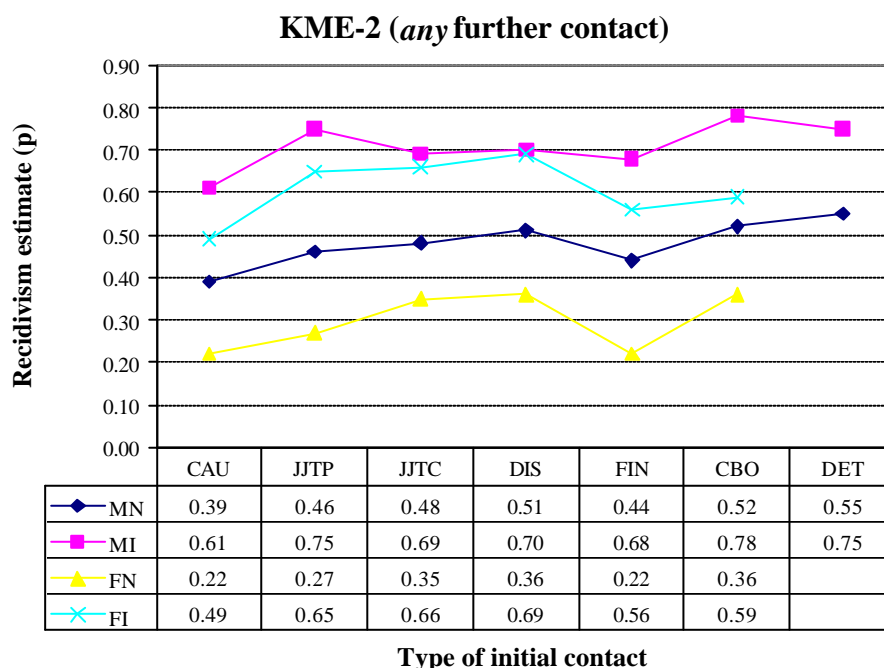


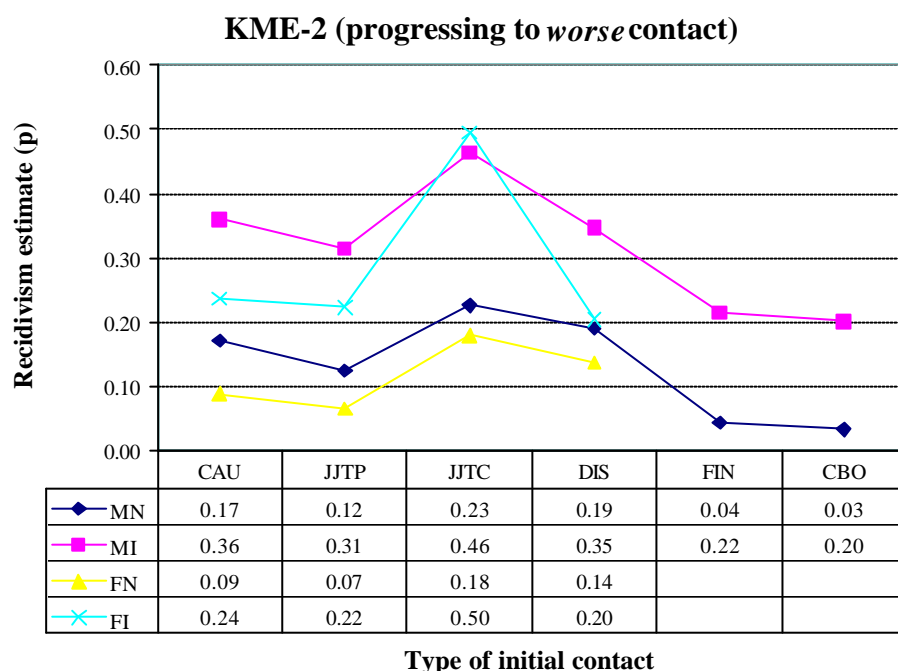
Figure 12 compares probability estimates for the four sex-race groups. Estimates of the likelihood of further contact with the justice system were highest for Indigenous males and lowest for non-Indigenous females. Of note is that estimates for Indigenous females exceeded estimates for non-Indigenous males in all categories of contact.

As with MNs and as might be expected, estimates of the likelihood of MIs progressing to ‘worse’ contact with the justice system were lower than estimates of any type of further contact with the system (Table 27). For example, the likelihood of progression for MNs who had initially been cautioned was estimated at 0.36. In other

words, about 36% of cautioned MNs progressed to worse contact within two years. [Thus, more than half (0.36/0.61) of those who have further contact actually progressed to something worse.] MIs who had been initially referred by the courts had the greatest likelihood of progressing to worse contact. Of these, 46% were estimated to have progressed to worse contact within 2 years of initiation.

Compared with MNs, progression estimates for MIs were significantly higher, irrespective of type of initial contact – by a factor of at least two. These are illustrated in Figure 13.

Figure 13: KME2 probability estimates of progressing to worse contact, by type of initial contact, for each sex-race group.



Variations in progression estimates on the basis of age, offence type and urban location were also explored for Indigenous offenders. As to age, a more typical age-recidivism pattern was observed: the likelihood of progression was higher for MIs who initiated at a younger age (10-14 years) than those initiating later (15-17 years). This was the case in all categories of initial contact. For example, of MIs who had been initially cautioned, about 38% of those aged 10-14 years progressed to worse contact, as compared with 28% of those aged 15-17 years at initiation.

Figure 14: Probability estimates of progressing to worse contact, by initial contact type, Indigenous status and age group.

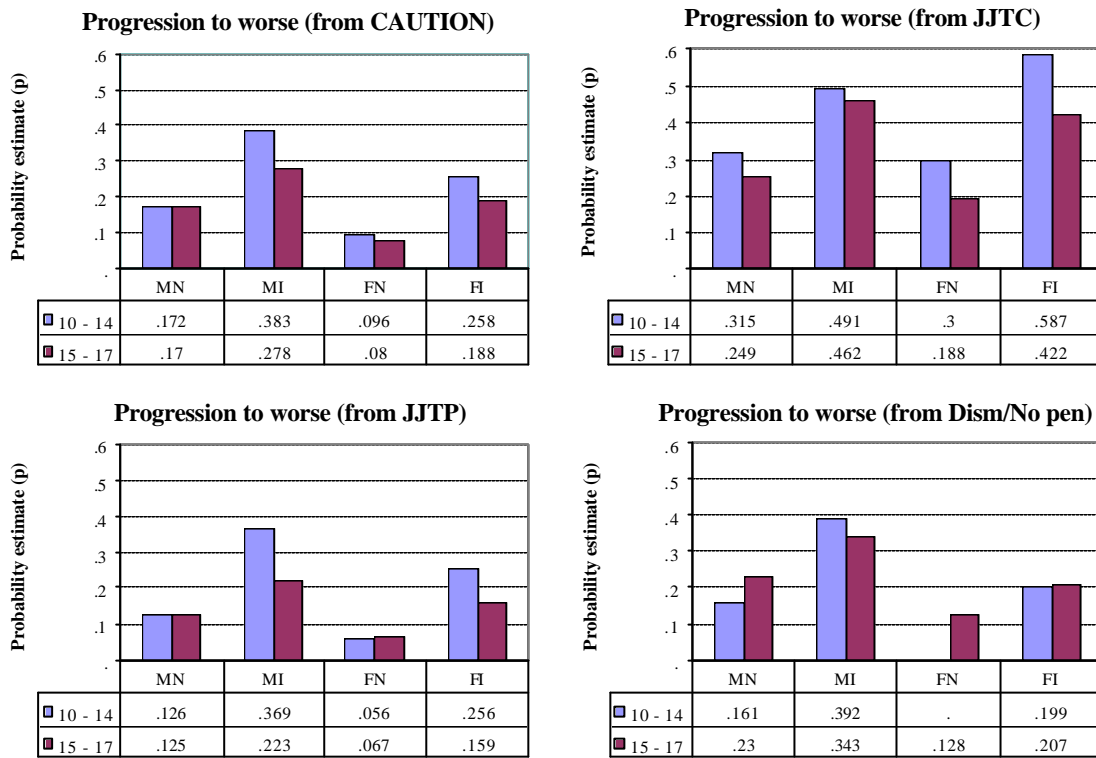
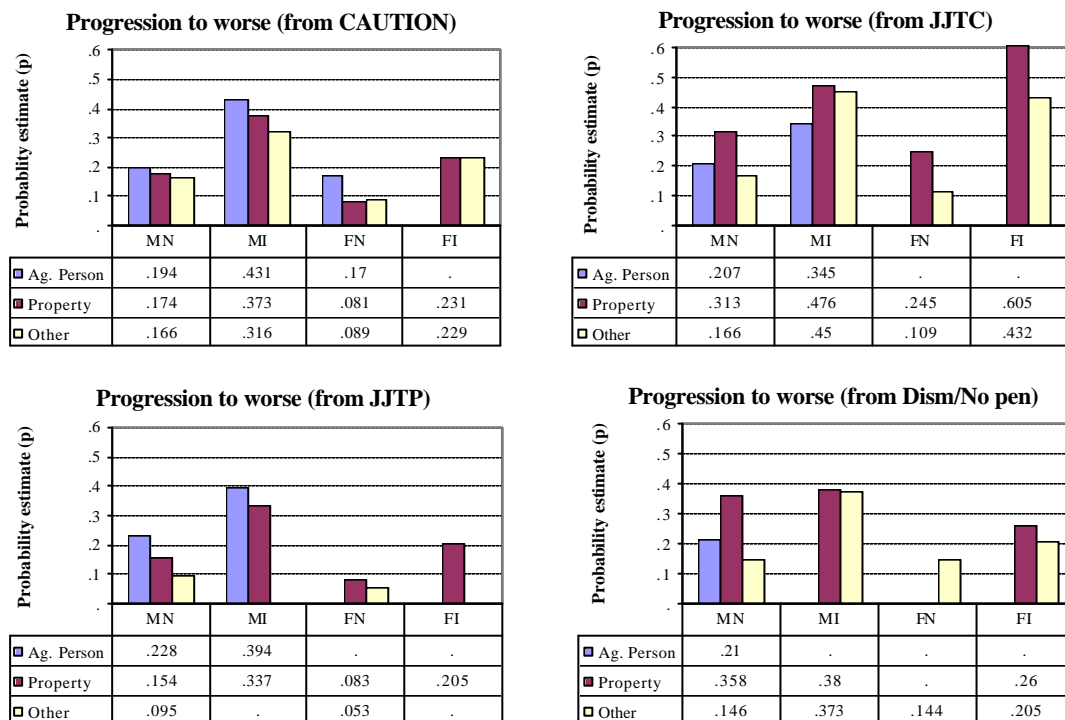


Figure 14 illustrates this age effect for each of the sex-race groups. The age effect is more pronounced for Indigenous males (MIs) and females (FIs) than for either of the non-Indigenous sex groups. (Note that progression is shown only for selected contact types. More serious types of initial contact such as fines were omitted as there were insufficient cases in these categories to permit the accurate estimation of probabilities.)

Offence type at initial contact also had some effect on progression estimates (see Figure 15). Progression estimates from cautioning and police referrals show that the more serious the initial offence type, the greater the likelihood of progression to more serious contact/intervention. These effects were observed for all sex-race groups. However, the influence of offence type on progression for offenders initially dealt with by the courts was less evident.⁶

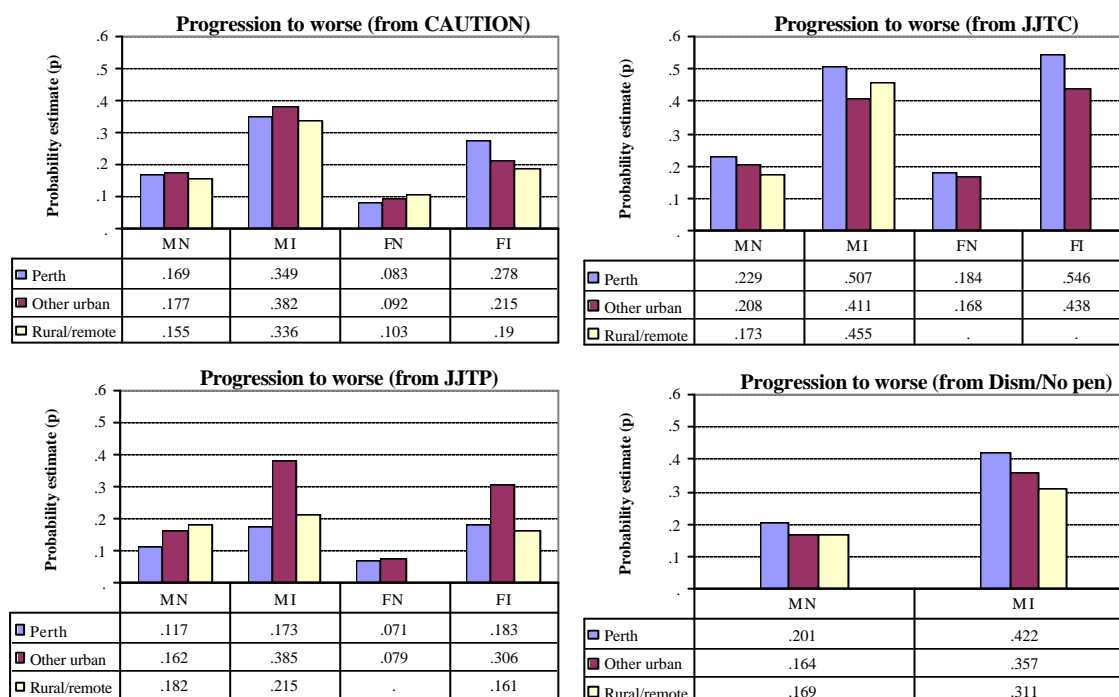
Figure 15: Probability estimates of progressing to worse contact, by initial contact type, Indigenous status and offence type.



⁶ Note, however, that categories of offences were very broad. Only three categories were used: against person offences, property offences and all other offences. Categories were not further disaggregated because of the impact of depleted numbers. As is evident from Table 27 and the related figures, there were a number of instances where progression estimates could not be computed because of reduced or insufficient cases in the relevant group.

Figure 16 relates urban location (at initial contact) with progression, for each sex-race group. Results varied. For offenders first dealt with by police (especially those referred), progression estimates were highest for offenders located in regional centres located.⁷ However, for offenders initially dealt with by the courts (including those referred to teams by the courts), those located in the Perth metropolitan area had the greater likelihood of progressing to more serious contact with the justice system. No immediate explanation for these results can be provided.

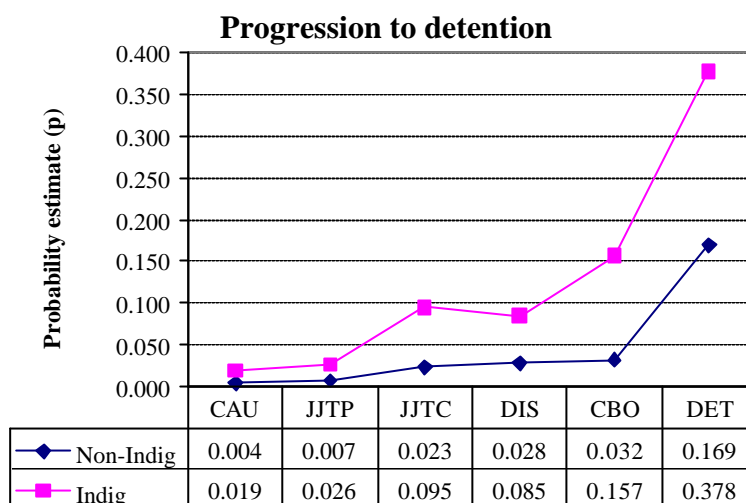
Figure 16: Probability estimates of progressing to worse contact, by initial contact type, Indigenous status and urban location.



Progression to detention was also more likely for Indigenous offenders than non-Indigenous offenders (see Table 27 and Figure 17). For Indigenous and non-Indigenous offenders alike, the likelihood of progression to detention increased with severity of initial contact: offenders whose initial contact was more serious were more likely to progress to detention within two years of initiation. The differential risks between the racial groups are also illustrated in Figure 17. The greatest difference in risk was in the CBO category where the progression estimate for Indigenous offenders was 4.9 times greater than that of non-Indigenous offenders. The smallest difference in risk was in the detention category where the progression estimate for Indigenous offenders was 2.2 greater than that of non-Indigenous offenders.

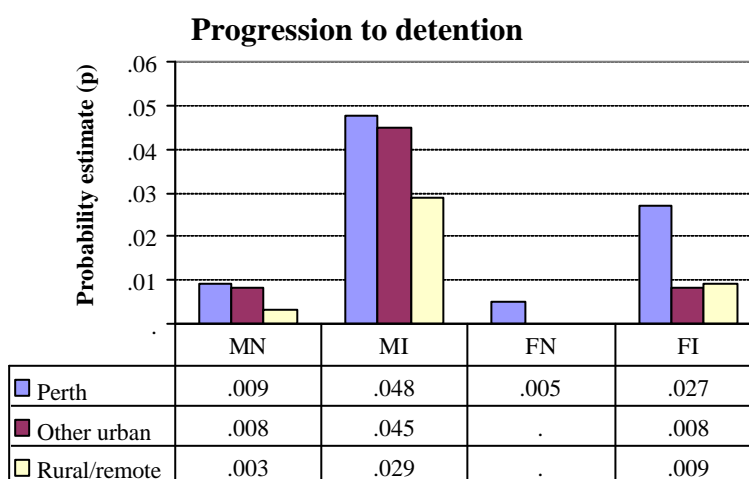
⁷ 'Other urban' locations refer to Western Australian towns having resident populations in excess of 2,000 people. Smaller towns and communities were classified as 'Rural/remote' locations.

Figure 17: Probability of progressing to detention, by type of initial contact and Indigenous status



The influence of urban location on progression to detention was also explored (Figure 18). There were insufficient cases to estimate probabilities for non-Indigenous females, however, for all other sex-race groups, the likelihood of progressing to detention was greatest for those living in the Perth metropolitan area and least for those living in rural/remote areas.

Figure 18: Probability of progressing to detention, by Indigenous status and urban location



11.2 Progression to what?

To date, our exploration of progression has centred on the question of whether offenders progress to more serious contact with the justice system (or not). For those that *do* progress, the next question posed is: *What do they progress to?* This will depend largely on where offenders start.

As has been shown earlier, most offenders (about 77%, see Table 2) initiate contact with the justice system through cautioning. For all sex-race groups, the most likely progression path from cautioning is to police referral (JJTP) (Table 28).

Approximately one third (29.5% or $p=0.295$) of Indigenous males, 16.3% of Indigenous females, 10.9% of non-Indigenous males and 5.4% of non-Indigenous females progress from an initial caution to police referral within two years of initiation. Note that for all sex-race groups but especially for MIs, progression to police referral is much more likely than progression to court referral.

From police referral, progression paths vary somewhat according to sex-race group. For Indigenous males, the most likely progression path is to community orders. However, for non-Indigenous males and females, fines and/or community orders are almost equal alternatives. For Indigenous females, community order and/or dismissal/no penalty are almost equal alternatives.

Table 28: Probabilities of progressing to worse contact, by type of initial contact and type of worse contact, for each sex-race group

Racial group & initial contact type	Probability of reoffending to worse contact											
	JJTP	JJTC	DIS	FIN	CBO	DET	JJTP	JJTC	DIS	FIN	CBO	DET
Indigenous	<i>Male</i>						<i>Female</i>					
Caution	0.295	0.088	0.045	0.013	0.049	0.005	0.163	0.058	0.034	0.007	0.029	*
JJT (Police)			0.147	0.057	0.213	*			0.112	*	0.129	*
JJT (Court)			0.223	0.091	0.356	*			0.322	*	0.290	*
Dism/No Penalty				0.090	0.295	*				*	0.138	*
Fine					0.206	*					*	*
CBO						0.201						*
Non-Indigenous	<i>Male</i>						<i>Female</i>					
Caution	0.109	0.036	0.012	0.023	0.018	0.002	0.054	0.018	0.007	0.005	0.010	*
JJT (Police)			0.034	0.051	0.050	0.004			0.017	0.023	0.027	*
JJT (Court)			0.067	0.066	0.130	0.009			0.097	0.028	0.072	*
Dism/No Penalty				0.074	0.119	0.024				*	0.099	*
Fine					0.042	*					*	*
CBO						0.033						*

* denotes insufficient number of cases to permit accurate estimation of probability

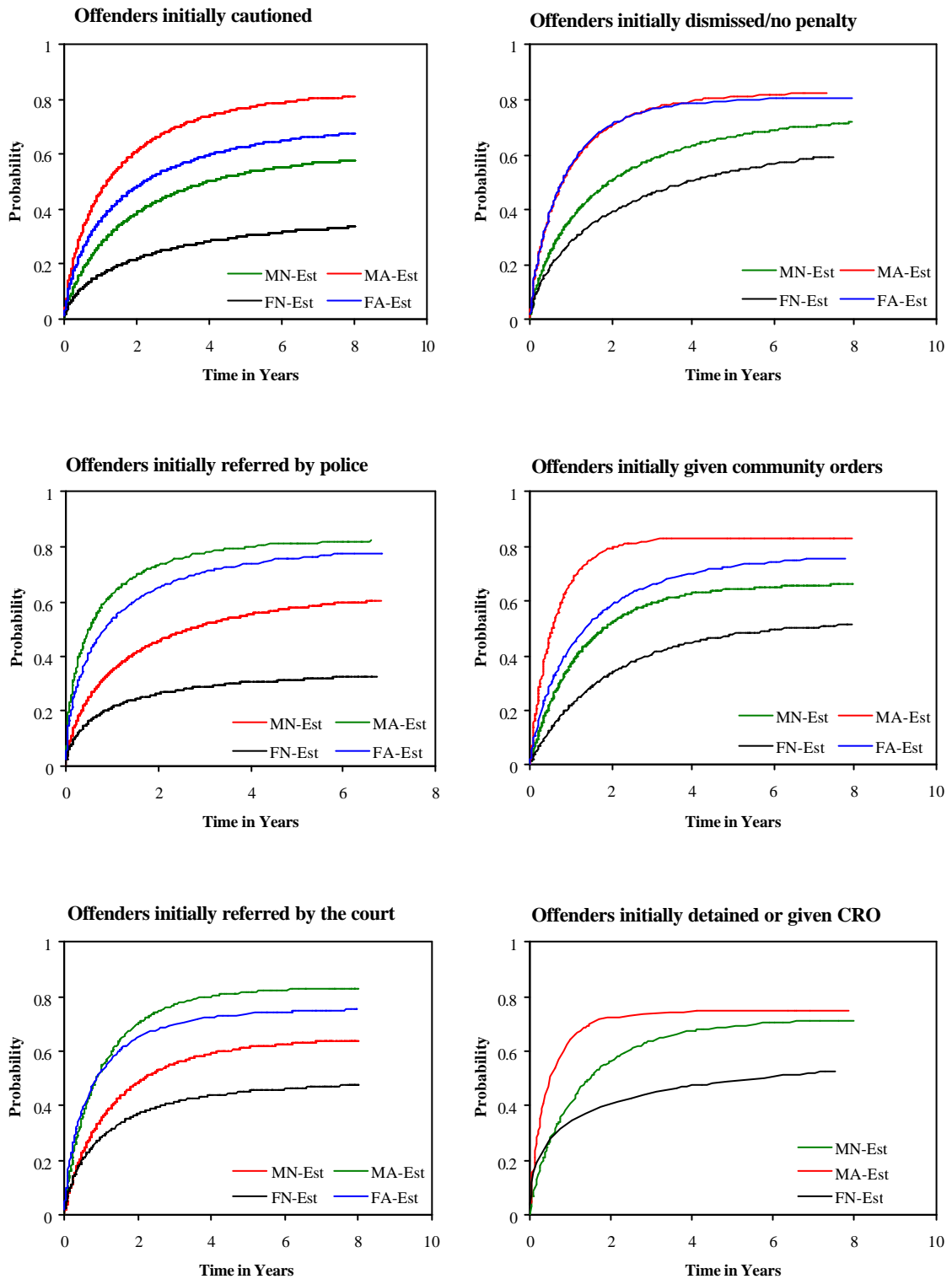
11.3 Weibull plots

Finally, a Weibull model was fitted, with good results, to the Kaplan-Meier failure estimates for the various sex-race/initial contact groups in the study. Fitting a curve to the data provides a simple and useful graphical plot of recidivism rates over an extended time period that can be read and understood by a range of 'non-statistical' users.

Weibull plots for each sex-race group within each category of (initial) contact type are displayed in Figure 19. For any sex-race/initial contact group, estimates of the likelihood (probability) of re-offending within any time from 0 to 8 years can be read from the relevant plot. The *rate* of re-offending can be estimated from the *slope* of each curve. The steeper the curve, the higher the rate of failure/offending at that point.

As the plots show, in each initial contact category, the rates of failure are greatest in the first two years after initiation. Moreover, in almost all categories of initial contact, the curve (probability estimate) for Indigenous males (MA) is greater than that of Indigenous females (FA), which in turn is greater than that of non-Indigenous males (MN), which in turn exceeds that of non-Indigenous females.

Figure 19: Weibull plots fitted to KME (KME not shown) for various sex-race & initial contact groups.



12. Summary and Discussion

12.1 Utilisation & initiation

Arguably the most important outcome of this research is the provision of basic data about how the juvenile justice system is utilised in WA. The study found that the system operates on a 55:19:26 split, that is, 55% of juvenile contacts are cautions, 19% are referrals and 26% are dealings with the Children's Court. This split varies with Indigenous status, however. The non-Indigenous split being 62:18:20, while the Indigenous split being 43:19:38, suggesting that on the whole non-Indigenous juveniles are more likely to be cautioned and less likely to go to court than Indigenous juveniles.

The study found that contact rates with the system peaked in 1998, for both Indigenous and non-Indigenous offenders. However, in all years, the contact rate of Indigenous offenders was significantly higher than the non-Indigenous rate. In 2001, the contact rate of Indigenous juveniles was 6.8 times greater than that of non-Indigenous juveniles.

The study explored how juveniles *enter* the justice system. *First contacts* with the justice system were distributed in a 77:13:10 split, meaning that 77% of all *first offenders* are cautioned, 13% are referred to teams and 10% are dealt with by the Children's Court. Thus, nine out of every ten first offenders are dealt with by the diversionary elements of the system.

Notably, the initiation split did not vary substantially with Indigenous status (compare Indigenous 80:11:8 and non-Indigenous 80:13:7).⁸ However, although the *type* of initial contact did not vary much between racial groups, the *level* of contact varied considerably. In all years, the initiation rate of Indigenous juveniles exceeded that of non-Indigenous juveniles by a factor of about three.

Moreover, Indigenous offenders were more likely to start at a younger age (average age of 13 years, compared with 14.4 years for non-Indigenous offenders). Indeed, Indigenous juveniles aged 10-12 years were 10.5 times more likely than their non-Indigenous counterparts to enter the justice system, although the initiation of older Indigenous offenders (aged 13 years and over) showed signs of decline over time. Generally, age and contact type at initiation were related: the younger the offender, the less serious the type of intervention at first contact.

Indigenous offenders were also more likely to enter the system for slightly different offences (property and good order offences, compared with property, drugs and driving for non-Indigenous offenders).

⁸ Total first contacts included a proportion of offenders with unknown Indigenous status. See Table 2.

12.2 Trends

Over time, initiation levels have been relatively stable (but unequal) for both racial groups: in the case of Indigenous offenders, about 1 in every 5 contacts is by a first-time offender, while for non-Indigenous offenders, 1 in every 2 contacts is by a first-timer. Changing patterns of initiation over time were observed: irrespective of race, the participation of girls in offending has increased, as has the participation of offenders located outside the Perth metropolitan area. Moreover, initiations via cautioning have increased, at the expense of referrals and formal court proceedings.

12.3 Net-widening

Sarre (1999) argued that a constant danger with diversionary programs is that people who come into contact with justice agencies are more often “diverted into a less formal – destructured – bureaucratic apparatus rather than away from the system entirely” (p.260). Quoting Cohen (1985), Sarre highlights the potential for diversionary services to result in wider nets (more people in the system), denser nets (increased intensity of intervention) and different nets (new services supplementing rather than replacing existing services).⁹

This study found that the rate at which ‘new’ or first-time offenders are drawn into the juvenile justice system has not changed substantially since 1995. Thus, one could conclude that no ‘net-widening’ has occurred. Note, however, that the study did *not* examine data prior to 1995, so any assessment of whether any net widening occurred *as a result of the introduction of the new system* was not and could not be made.

In terms of the ‘density’ of net, the study found that, for both Indigenous and non-Indigenous offenders, overall contact levels rose between 1995 and 1998 as a result of increased contact/intervention with recidivist offenders. Thus, the density of the net *did* increase over that period. Since then, however, contact rates have declined slightly.

The study also found that, although initiation rates were stable over the study period, initiations via cautioning rose at the expense of referrals and formal court processing, suggesting that the ‘net’ has changed and is different to that initially established in 1995. Thus, on the evidence, one could conclude that although the juvenile justice ‘net’ in 2002 is no wider, it is somewhat denser and different to that initially established in 1995.

⁹ Austin and Krisberg (1981) first used these terms in *Wider, Stronger and Different Nets: The Dialectics of Criminal Justice Reform*, Journal of Research in Crime and Delinquency, 18, pp 165-196.

12.4 Recidivism

An important finding emerging from this research is that the majority of juvenile offenders do not re-offend. Based on 'crude' recidivism estimates and fixed two-year follow up of cases, about 38% of offenders initially cautioned re-offended within two years. Thus, 62% did not. Of offenders initially referred to juvenile justice teams, 44% re-offended within 2 years (thus, 56% did not). And of offenders initially dealt with by courts, 38% re-offended within two years (thus, 62% did not). Thus, overall, about 39% of all juvenile offenders who entered the system between 1995 and 2002 re-offended within two years. Or, conversely, 61% of juveniles entering the system had no further contact with it after two years.

Re-offending rates were found to vary with sex and Indigenous status. Using survival analysis techniques, Kaplan-Meier estimates of recidivism (at two years) were computed for each of the four sex-race groups (Indigenous males, non-Indigenous males, Indigenous females and non-Indigenous females). Recidivism estimates were highest for Indigenous males ($p=0.61$, for cautions), next highest for Indigenous females ($p=0.49$, cautions), then followed by non-Indigenous males ($p=0.39$, cautions) and, finally, non-Indigenous females ($p=0.22$, cautions). Recidivism estimates were also found to vary with initial contact type: those initially cautioned were less likely to re-offend than those referred to teams and those dealt with by the court (see Table 27 for details).

However, beyond cautioning, differences in the recidivism rates of referrals and court outcomes, by sex and Indigenous status, were not always apparent or significant, which, in turn, made interpretation challenging. For example, the study found that for Indigenous males, the recidivism rate of those initially referred by police was higher than the rate for those referred by the courts. The opposite result emerged for non-Indigenous males. No immediate explanation for the differing results could be provided.

Progression to more serious intervention/contact was also explored. Once again, based on 'crude' progression estimates and a fixed two-year follow up of cases, about 21% of offenders initially cautioned progressed to a more serious contact /intervention. Thus, 79% did not. And, of offenders initially referred to teams, 22% progressed to a more serious contact/intervention within two years (thus, 78% did not).

Based on survival analysis, progression estimates were computed for the four sex-race groups. As previously, estimates were highest for Indigenous males ($p=0.36$, for cautions), next highest for Indigenous females ($p=0.24$, cautions), then for non-Indigenous males ($p=0.17$, cautions) and, finally, for non-Indigenous females ($p=0.09$, cautions). In simple terms, these findings indicate that 36% of Indigenous males progressed beyond an initial caution, as did 24% of Indigenous females, 17% of non-Indigenous males and 9% of non-Indigenous females. Thus, for the majority of offenders (64% of Indigenous boys, 76% of Indigenous girls, 83% of non-Indigenous boys, 91% of non-Indigenous girls), contact with the juvenile justice system does *not* progress beyond than an initial caution.

Progression estimates varied with age and offence type. Offenders initiating at a younger age were more likely to progress to more serious contact than those initiating later. However, this effect was more pronounced for Indigenous offenders than non-Indigenous offenders. Also, the more serious the initial offence type, the greater the likelihood of progression. However, the influence of offence type on progression for offenders initially dealt with by the court was less evident.

The effect of urban location on progression was also examined but results were equivocal. For offenders initially dealt with by the courts, those located in the Perth metropolitan area were more likely to progress to worse contact than offenders located in regional or remote areas. However, for offenders initially dealt with by the police (especially those referred rather than cautioned), those most likely to progress to worse contact lived in regional centres. No explanation for these results could be provided.

When it did occur, progression did not happen immediately (that is, *not* the next contact) but within a two year period. The general tendency was for cautions to progress to referrals, for referrals to progress to community orders and for community orders to progress to detention.

12.5 Patterns and pathways

The research provided novel insight into the career patterns of juvenile offenders. The patterns or sequence of contacts by Indigenous offenders were more variegated than those of non-Indigenous offenders. The 10 most common career patterns identified for non-Indigenous offenders accounted for 80% of all pathways taken by that group. In contrast, the 'top 10' patterns accounted for only 58% of all Indigenous pathways.

When repeating contacts of the same type were removed, the remnant sequence or pattern (dubbed the 'progression path') showed less variation. Fewer than 10 distinct progression paths described almost 90% of all non-Indigenous pathways and 73% of Indigenous pathways. Notably, the most common progression path involved no progression at all, merely a series of one or more cautions (this pattern accounted for 45% of Indigenous and 59% of non-Indigenous progression patterns).

The higher recidivism rate or intensity of contact of Indigenous offenders was evident in their career patterns. On the whole, Indigenous careers comprised more contacts (compare an average of 3.9 contacts, with 1.6 for non-Indigenous offenders). These contacts were across *all* areas of the juvenile system. For example, statistics from the 2000 cohort showed that Indigenous offenders accumulated more cautions, more referrals (by police and by the courts) *and* more court appearances (*and* each type of court disposition) than their non-Indigenous counterparts (Table 15).

The intensity of contact/intervention was also evident in career patterns leading to detention. The careers of offenders who (eventually) were placed in detention were generally longer than those of offenders who never went to detention (Table 12). For example, the average number of contacts of Indigenous offenders ever placed into juvenile detention was 13.3 (compared with 3.9 for those never in detention). For these offenders, the average number of contacts prior to first detention was 7.6, thus

the first period of detention occurred 60% along their juvenile career path. Significantly, for non-Indigenous offenders, the total number of contacts and the number of contacts prior to detention were fewer than for Indigenous offenders but *the relative position of their first period of detention was the same* (at 60%).

12.6 Pathways to detention

Progression or pathways to detention was a recurring theme in the study. Few offenders progressed to detention but the difference between Indigenous and non-Indigenous proportions was significant (compare 14.3% of Indigenous offenders with 3.6% of non-Indigenous offenders (Table 26)).

So, even though (first) detention occurs at the same relative point in Indigenous and non-Indigenous careers (as discussed earlier), a greater proportion of Indigenous offenders eventually progressed to this form of intervention. This result is in many respects not surprising given the earlier initiation into, and more intense contact with, the juvenile system by Indigenous offenders. An earlier 'onset' provides a greater opportunity to have more contact with the system before 'aging out' of the juvenile system. A higher frequency of contact provides more opportunity to experience (and, perhaps, exhaust?) other forms of intervention within the available timeframe for juvenile offending. Thus, the overall likelihood of progression to the most serious intervention – detention – is increased.

In addition to Indigenous status, the likelihood of progression to detention was also found to vary with severity of initial contact (offenders whose initial contact was more serious were more likely to progress to detention) and with urbanisation (those in Perth more likely to progress to detention than those in regional and remote areas).

13 Implications & future directions

13.1 Informing policy development

The results of this study provide a detailed picture of the nature and extent of juvenile contact with the Western Australian juvenile justice system. They provide the evidence upon which to base current juvenile justice policies and set directions for the future.

The study highlights a number of areas of concern. These include:

- Earlier contact with the juvenile justice system by Indigenous offenders
- Higher recidivism rates of Indigenous offenders
- Variations in recidivism rates, based on urbanisation
- Greater levels of progression to detention by Indigenous offenders

Each of these areas warrants closer investigation and action.

The results of the study also provide an opportunity to review the operation of the current system and reassess the role of the diversionary and restorative justice components of the model.

13.2 Baseline estimates of recidivism

The study provides baseline estimates of the re-offending rates associated with the various interventions which constitute the WA juvenile justice system. The impact of changes to these interventions can now be assessed. Evaluations of the (relative) effectiveness of interventions can also be undertaken, with appropriate consideration given to selection and population differences and associated effects.

13.3 Data issues

The study relied on the integration of disparate datasets and was achieved through the use of a unique, common offender identifier (the INOIS number) and the availability of de-identified, research datasets. Future research of this nature will require the continued linkage or integration of datasets (through the INOIS project or some other means of identifying offenders throughout the justice system) and the establishment of protocols to allow proper and timely access to data for research purposes. Both of these issues require appropriate resourcing and advancement within government.

Other aspects of data quality also require attention: the collection and recording of Indigenous status by computerised court management systems need improvement, as does the recording of offence type in police caution/referral systems.

13.4 Returns to court

In the process of organising the data for analysis, the study was required to define and apply counting rules. This process, in turn, revealed that many matters finalised at court are subsequently re-activated. Further research is required to understand the circumstances under which re-activations take place, the nature of such cases and the impact that such cases have on work flow, the effectiveness of various interventions and estimates of recidivism such as those provided in this report.

References

Blumstein A, Cohen J, Das S and Moitra S (1988) Specialisation and Seriousness During Adult Criminal Careers. *Journal of Quantitative Criminology* 4 (4), 1988.

Cohen S (1985) *Visions of Social Control*, Polity Press, Cambridge.

Fernandez J and Loh N (2003) *Crime and Justice Statistics for Western Australia: 2002*. Crime Research Centre, University of Western Australia.

Ferrante A (1993) Developing an Offender-based Tracking System: The Western Australian INOIS System. *Australian and New Zealand Journal of Criminology*.

Sarre R (1999) Deconstructing and Criminal Justice Reforms: Rescuing Diversionary Ideas from the Waste-paper Basket. *Current Issues in Criminal Justice* 10(3):259-272.

Appendix A: Re-finalised court appearances

The following tables quantify the nature and extent of finalised cases that were re-activated by the Children’s Court between 1 January 1997 and 31 December 2002. There are various reasons why matters are returned to court. These include failure to attend JJT conferences, failure to meet the conditions of community orders, as well as applications to amend or discharge community orders (as per *Young Offenders Act s.80*).

As Table A1 shows, about 15.4% of all final appearances between 1997 and 2002 were subsequently re-activated and re-finalised by the Children’s Court. One in five Indigenous final appearances (20.7%) were returned to court, as compared with 12.6% of non-Indigenous cases.

Table A1: Number of final appearances and re-finalised cases, by Indigenous status of offender and initial court outcome, 1997-2002

Indigenous status & Initial outcome	Total final appearances	Re-finalised cases	
	n	n	%
Total			
JJT (Court)	7,896	1,172	14.8%
OTH	7,184	143	2.0%
Fine	7,091	647	9.1%
CBO	11,260	2,865	25.4%
Detention	3,341	845	25.3%
Unknown	40	6	15.0%
TOTAL	36,812	5,678	15.4%
Indigenous			
JJT (Court)	2,372	576	24.3%
OTH	3,463	76	2.2%
Fine	1,621	273	16.8%
CBO	4,947	1,536	31.0%
Detention	1,948	512	26.3%
Unknown	16	3	18.8%
TOTAL	14,367	2,976	20.7%
Non-Indigenous			
JJT (Court)	5,107	567	11.1%
OTH	3,358	55	1.6%
Fine	4,615	347	7.5%
CBO	5,946	1,272	21.4%
Detention	1,330	321	24.1%
Unknown	22	3	13.6%
TOTAL	20,378	2,565	12.6%

Note: Detention includes conditional release orders (CRO)

Any changes in court outcome arising from re-finalisation of cases are shown in Table A2. For example, of the 1,172 referrals to teams that were reactivated, 745 (64%) were dismissed or not given a penalty and 40 (3.4%) were placed in detention. Overall, the effect of re-finalisation on the distribution of final dispositions was minimal and a closer analysis was thus excluded from the project.

Table A2: Changed outcomes arising from re-finalised cases.

Subsequent (refinalised) outcome	Initial outcome							
	JJT (Court)		Fine		CBO		Detention	
	n	%	n	%	n	%	n	%
Dismissed/No penalty	745	63.6%	250	38.6%	981	34.2%	244	28.9%
Fine	54	4.6%	234	36.2%	263	9.2%	3	0.4%
CBO	333	28.4%	134	20.7%	1,034	36.1%	88	10.4%
Detention	40	3.4%	19	2.9%	568	19.8%	506	59.9%
Unknown	0	0.0%	10	1.5%	19	0.7%	4	0.5%
TOTAL	<i>1,172</i>	<i>100.0%</i>	<i>647</i>	<i>100.0%</i>	<i>2,865</i>	<i>100.0%</i>	<i>845</i>	<i>100.0%</i>

Note: Detention includes conditional release orders (CRO)