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The Probabilities of Sex Offender Rearrest

Roderic Broadhurst¹ and Nini Loh²

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1. Associate Professor, Department of Sociology, (Centre for Criminology), University of Hong Kong: e-mail broadie@hkucc.hku.hk; fax (852) 2559 8044. 2. Research Officer, Crime Research Centre, University of Western Australia. The authors gratefully acknowledge the assistance of Maxwell Maller in data preparation, the co-operation of the Western Australian Police Service and the comments of the anonymous reviewers.

Abstract

Estimates of the probabilities of rearrest for sex offenders apprehended (n=2,785) in Western Australia between 1984 and 1994 are reported. Subjects on average were followed up for 5.7 years and assessed by criminal record, Aboriginality, bail status, age, occupation and penal intervention. Three criteria, rearrest for *any*, *repeat sex* or a *violent* offence are used to summarise the 'careers' of sex offenders. Overall ultimate probabilities of rearrest for *any* offence were 0.61, for a *repeat sex* offence 0.33 and for a *violent* offence 0.51. Probabilities of rearrest for non-Aboriginal offenders were lower for all definitions. Younger offenders, Aborigines and those with prior arrest for non-sex offences had higher probabilities for *any* or *violent* rearrest but older offenders tended to have higher probabilities of *repeat sex* offending. Community supervision and imprisonment significantly reduced the 'rate' or speed of rearrest. The utility of actuarial risk assessment for low probability high consequence events such as dangerous recidivism and the evaluation of penal interventions for criminal justice policy are discussed.

Key words: sex offenders, recidivism, longitudinal study, actuarial risk assessment.

Introduction

Sex offending contributes disproportionately to the level of fear of crime in the community. Sex offenders are associated with 'dangerousness' and are often assumed to be at greater risk of repeated and more serious offending. Consequently sex offenders are considered an especially important group to predict their likely risks of re-offending. Repetitive arrest and conviction for sex and violent offences attracts strong public disapproval, and is a major source of demands for increased punishment (Floud 1982). Punitive approaches, such as 'three strikes' mandatory incapacitation, community notification, compulsory treatment and other 'get tough' methods have become popular and have been applied more readily to sex offenders than to other offenders. Many studies show lower risks of reconviction for sex offenders as compared with other offenders, but the degree of harm as well as 'risk' factors need to be considered. However, the assessment of risk and prediction of dangerousness, especially of a specific form such as sex offending, are subject to high error rates. Actuarial estimates of the risk of recidivism offer a useful basis for supporting clinical and judicial judgement of risk and dangerousness. In addition, they provide 'base rate' estimates of the general probabilities of events for a given population and thus enable the effects of interventions and individual factors to be examined. As court data was not available and only prison or community based corrections orders were known we focused on the risk of rearrest for sex offenders. Survival analysis was used to estimate the recidivism of those arrested for their first sex offence between 1984 and 1994 in Western Australia (WA).

Estimates of risk based on known sex offenders are criticised because the vast majority of offenders remain undetected (Koss 1996). While this position is a cogent one, it neglects long-standing evidence that many known sex offenders self-report high rates of sex and other offending, often involving dozens or even hundreds of victims and events (Radzinowicz 1957; Groth et al. 1982; Abel & Rouleau 1990). The gap (or 'dark figure') between undetected and detected sex offenders maybe significant but, known sex offenders remain a useful, if imperfect, group for assessing future risk and the effect of interventions on sex and dangerous offending behaviour.

Previous studies

In Australia, few estimates of the recidivism of sex offenders are available and none are known to measure rearrest. Of the few studies available (Burgoyne 1979; Broadhurst & Loh 1993; Thompson 1995; Lee et al. 1995), only two control for prior record or other covariates, and recidivism rates varied depending on the follow-up time, fail criterion (reconviction or re-imprisonment) and subgroup (summarised in Table I). In Broadhurst & Loh (1993) only the raw rate was calculated for a repeat sex offence, and 9.6% of sexual assault prisoners (57/595) had returned to prison, whereas for all sex offences (including incest, wilful exposure and carnal knowledge) 8.5% (68/796) of offenders had returned by the cut-off date. Aborigines and those with prior imprisonment and younger offenders had increased risks of returning or did so more quickly. Thompson (1995) found that those offending against adults were more at risk than those offending against children, and that those with prior imprisonment had higher risks of recidivism for violent crime than those released for the first time. Lee et al. (1995) report one-year reconviction rates (based on a nationwide search of conviction records) of 12% for those who participated in a 35-week community-based 'Psychosexual Treatment Programme'. Lee et al. (1995) observe that subjects who 'dropped out' of treatment had higher risks of reconviction. The higher risk of recidivism for those who failed to complete treatment is also one of the more robust findings of Hanson & Bussiere (1998).

The nature or type of sex offence has been regarded as a key determinant of the risks of re-offending and in the choice of penal intervention or treatment modality (see Blackburn 1994: 280 ff.). Underlying this approach is the presumption that sex offenders tend to specialise (repeat similar offences) because of the causal role of deviant sexual preferences. However, a number of studies both of sex offenders (Hood et al. 2002, Soothill & Francis et al. 2000; Hanson & Bussiere 1998; Broadhurst & Maller 1992; Abel & Rouleau 1990; Grunfeld & Noriek 1986; Romero & Williams 1985) and of offenders generally (Farrington 1994; Blumstein et al. 1986; Van der Werff 1989; Weiner 1989) have shown limited evidence of offender specialisation. Nonetheless, longer criminal careers show some clustering around personal injury or violent offences and modest increases in offence seriousness has been observed 'amid extensive diversification' (Weiner 1989: 93). For the whole WA arrest population, broad categories of all types of offences proved significant in varying risks at first rearrest but accounted for a relatively minor amount of variation when compared to the effect of Aboriginality,

sex, age or the cardinality of the arrest event. However, the type of offence was not significant in varying probabilities at subsequent rearrest (Broadhurst & Loh 1995; Maller et al. 1997) and nor was the type of sex offence significant in distinguishing differences in the probabilities of re-imprisonment (Broadhurst & Maller 1992; Broadhurst & Loh 1993).

Table I: Australian Studies of Sex Offender Recidivism

<i>Study</i>	<i>Sample</i>	<i>Follow-up</i>	<i>Recidivism</i>
Burgoyne 1979 Victoria	115 rapists released from prisons in 1971–72	5 years	58% any reconviction; 31.3% sex or violent reconviction
Broadhurst & Loh 1993 WA	595 sex assaulters released from prisons 1975–90	6 years	0.48 re-imprison any offence; 0.35 re-imprison sex or violent offence
Thompson 1995 New South Wales	263 sex offenders released from prison 1990–91	2 years	11% re-imprison any offence; 3% re-imprison sex or violent offence
Lee et al. 1995 Victoria	58 community treated sex offenders 1989–91	1 year	12.1% reconvicted of a sex offence

Hanson & Bussiere's (1998) meta-analysis of 61 studies revealed an average sex offence recidivism rate of 13.4%, 12.2% for non-sex violent offences (25.6% sex or violence) and 36.3% for any offence with a follow-up period of 4–5 years. Offenders classified as rapists had higher recidivism than child molesters and were more likely to re-offend with a non-sex violent offence. In this meta-analysis, both criminal history and measures of sexual deviancy were the strongest predictors of sex offence recidivism. A diverse criminal history, age (young), marital status (unmarried) and minority race that predicted non-sex violent offending also predicted general recidivism (see also reviews by Grubin & Wingate 1996; Prentky 1994; Furphy et al. 1989).

Basic questions about the impact of penal interventions such as arrest, imprisonment or community-based treatment on offending are crucial. Usually recidivism measured by the reconviction or re-imprisonment of offenders provides guidance about the utility of

different penal interventions. In addition whether sex offender risks are different from other offenders and if some factors can predict sex offence recidivism are re-examined for subjects who meet the criteria for arrest and court appearance. This also enables the risks of recidivism (defined as rearrest) for penal (custodial or community based) interventions to be compared with less intrusive measures such as fines or acquittal.

Population, Data and Method

The data comprise apprehension records of the WA Police Service from April 1, 1984 to December 31, 1994. In all 870 239 charges were found involving 597 640 arrest events and 226 704 distinct persons. As the task of this research was to estimate probabilities of rearrest, it was important to establish the order and timing of arrest events, from the time of first arrest. Thus, based on fingerprint identification the sample was refined to exclude all cases that had an arrest record (for any offence) prior to our start date of April 1, 1984. Consequently 62 238 cases were excluded, leaving 164 466 distinct persons (116 151 males) who were arrested for the *first* time between April 1 1984 and December 31 1994. Except for 43 females, all cases found in the database with at least one sex offence were males (n=2 785) who comprised a small fraction (2.4%) of all arrested males¹. As an arrest for a sex offence may occur at any point during the follow-up period some 44.5% of subjects were arrested for other offences prior to their first arrest for a sex offence (the signal offence). Cases arrested in 1984 could be followed for a maximum of 10.75 years; those arrested in 1985 for 9.75 years, and so on until the cut-off date. Subjects, on average, were followed up for 5.7 years and their ages ranged from 13 to 80 years.

Survival analysis employed by Broadhurst & Maller (1992), Broadhurst & Loh (1995) and Maller & Zhou (1996) is used to estimate the ultimate probability of rearrest. An important feature of this method is that it takes account of the bias produced by censored follow-up times. The data is censored, since, in some cases, insufficient time had elapsed between arrest and the chances of rearrest. Treating such cases as long-term successes would seriously bias estimates of rearrest. In Maller & Zhou (1996) the method, involved

¹ Of the 43 females found with a sex offence, none had been rearrested for a further sex offence, but four had been rearrested for a violent offence by the cut-off date. Females were apprehended for a variety of offences but most were consent proscribed sexual penetration offences, indecent assault and indecent dealing offences involving children and juveniles (of either sex but mostly female victims) or 'other' sex offences. However, five cases of aggravated sex assault, one of sodomy and four of wilful exposure by female non-Aborigines were found. Due to the small number of females involved, no further analysis was conducted.

fitting a Weibull distribution to the follow-up time to re-arrest and using the Kaplan-Meier estimator (Kaplan & Meier 1958) to describe them, and then extended to include 'covariates', enabling statistical comparisons to be made between subgroups via a likelihood ratio test². Covariates are vectors associated with each subject, containing information of interest such as the type of sex offence, race, age and so on.

Definitions and variables

Static variables such as Aboriginality, age, bail status, associated prison or community correction event, occupation, offence and offence count were available for every arrest event, while dynamic factors (e.g. mental health, family support and drug or alcohol use) were not available. The definition of recidivism was varied to include not only the probability of rearrest for *any* offence (given at least one sex offence), or for a *repeat sex* (i.e. another sex offence of any kind) offence but also for another 'against the person' or *violent* offence (i.e. homicide, assault, any sex offence, kidnap and abduction, robbery/extortion and others). The latter criteria constitute a broad classification of dangerous or violent offending. Rudimentary distinctions in the types of sex offence were also important because it is known that some offenders prefer certain victims and/or conduct. We classified offences based on the original police charge; however, legal definitions had changed over the collection period due to the adoption of gender-neutral terminology and other changes. Thus a distinction based on the sex of the victim could not be made for offences against minors³. The ultimate probabilities and rates of rearrest, as measured by lambda, are examined for the available covariates and according to the three definitions of recidivism. As data is sparse only the main effects of covariates can be described and, except for prior arrest, only for non-Aborigines.

The availability of correctional records associated with each arrest event also enabled us to compare prison and community-based interventions with fines or no penal sanctions or interventions. Time spent in prison is excluded from the calculation of time to re-arrest

² The model used is a mixture of the Weibull model for the failure time (T) and a parameter representing the probability of ultimate failure. The failure time is assumed to have distribution function:

$\text{Prob} \{T < t\} = P [1 - \exp(-(\lambda t)^\alpha)]$ $t \geq 0$. Where P gives an estimate of the probability of ultimate or long-term failure, lambda (which is inversely proportional to the median of Weibull) measures the rate of failure and alpha ($\alpha > 0$) specifies the 'shape' of the Weibull. The data is illustrated in Figure I and II by showing the Kaplan-Meier estimator of the cumulative distribution of the actual time to re-arrest (as shown by the dotted line) and the fitted Weibull mixture model (the solid line).

³ Offender typologies based only on legal categories are inadequate and no attempt is made here to address problems of sex-offender classification (see Barbaree et al., 1994, Knight & Prentky 1993).

because we measure only exposure to the risk of re-offending. Over two-thirds of sex offenders (68.6%) had no associated penal intervention at their first arrest for a sex offence. In the absence of court records we were unable to identify arrest events that did not lead to a conviction. From court summary statistics we note that up to a third of apprehended sex offenders are acquitted, or if convicted are dealt with by a fine or good behaviour bond. Almost all wilful exposure (18% of the sex-arrest population) and gross indecency offenders if convicted, are usually dealt with by fine or bond (Ferrante & Loh 1996)⁴.

The number of subjects and their censored recidivism 'rates' described by Aboriginality, prior arrest and type of offence (including subjects who had been rearrested for any offence, a repeat sex or violent offence) are shown in the appendix. The raw data shows that at the cut-off date, 173 cases (6.2%) were rearrested for the same sex offence, 273 (9.8%) for any sex offence, 551 (19.8%) for a violent offence (including a sex offence), and 1149 (41.3%) were rearrested for any offence. Sex offences were classified for analysis as follows; sex offences involving adult females, children (under 13 years of age), or juveniles (under 16 years but over 13 years of age), incest, wilful exposure and 'other' sex. The latter combined small numbers of offences by guardians against handicapped or incapable victims, indecency between males, and various other sex offences⁵.

⁴ For a rare discussion of the probably higher rates of recidivism of acquitted rape defendants see Soothill et al. (1980).

⁵ The categories used to classify sex offenders but re-grouped for analysis are described as follows: Sex assault of 'adult' females (over 16 years of age): comprised just over 50% of offenders but nearly three-quarters of all Aboriginal offenders and includes all sexual assault, indecent assault, sexual penetration and indecent dealing offences. Sex offences against children: 15% of offences involved victims under the age of 13 years of either sex. Sex offences against juveniles: about 10% of cases involved victims aged over 13 and under 16 years of either sex, although mostly girls. Many are pre-1990 criminal code carnal knowledge offences, which forbid 'consent' by the victim and often involve young offenders. Incest (about 3%): incest and attempted incest involving sexual relations with lineal relatives. Although the offence is not based on the victim's age or sex all involved female children or juveniles and all offenders, except one, were non-Aborigines. Wilful Exposure: 18% of offenders were charged with exposure of sexual organs in a public place - an offence similar to exhibitionism, and a distinct sexual behaviour. Sexual relations with 'minors' by guardians and teachers or employers: four male non-Aborigines were grouped with 'other' sex because the age of female victims (under 17 or 21 years of age depending on the relevant law) was over 16 years and consent is not a defence. Offences against handicapped or 'incapable' persons (usually intoxicated or drugged victims): most cases (n=9) refer to offences against handicapped victims and age not legally relevant and the sex or age of the victim was unknown. Gross Indecency (n= 58): procure a male for sex, sexual conduct contrary to nature and carnal knowledge of the same sex and latter categories were grouped with 'other' sex. In WA consenting sex between adult males was legalised in 1990 and most offences refer to offences recorded prior to this reform. Assumptions about violence or non-consent are problematic and no Aborigines were identified. Other sex offences: the majority of the 27 cases relate to unclassifiable sexual offences but includes 3 cases of sex assault of a male and some cases of unspecified (sex or age) indecent dealings.

Results

Findings of the survival analysis are summarised in Table II for selected covariates by their ultimate probabilities and rate of rearrest for the three 'risk' criteria or definitions of recidivism. Overall probabilities for any offence were much higher and rearrests occurred more rapidly than for repeat sex or violence. Estimates of the risk of arrest for another sex offence were higher than in previous research. Aboriginality, prior non-sex offence, age, occupational status and type of penal sanction or intervention varied the probabilities and/or the rate of rearrest. Age varied the probabilities but not the rate; interventions varied the rate but not the probabilities; while race and prior record varied both the rate and probabilities of rearrest. For repeat sex, there was little variation except for age and Aboriginality and the nature of the sex offence varied only general rather than repeat sex or violent rearrest.

Race and prior non-sex offence

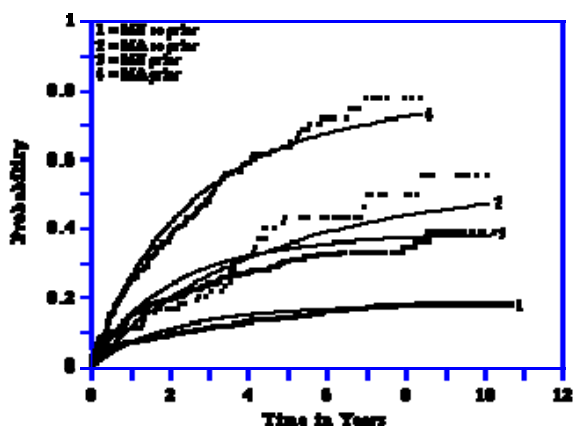
Although a 'race' descriptor is a poor guide to ethnicity, previous research has shown the importance of distinguishing between Aborigines and non-Aborigines⁶ in studies of recidivism for Australian populations (Broadhurst & Maller 1990; Broadhurst & Loh 1995). Table II showed very significant differences in P and lambda between Aborigines and non-Aborigines, with Aborigines experiencing more rapid and much higher probabilities of rearrest, irrespective of the definition of recidivism applied. Figure I illustrate the significant role of both prior arrests and Aboriginality in overall probabilities of violent recidivism.

Compared to those who had at least one prior arrest, non-Aborigines whose first arrest was a sex offence had lower probabilities of rearrest for *any* offence (0.51 compared to 0.78), and they also took longer to be rearrested. For *violent* rearrest, non-Aborigines with prior arrest had higher probabilities (0.50 compared with 0.23) than those whose first arrest was a sex offence. For Aborigines the probabilities of rearrest for *any* offence was virtually certain, irrespective of their prior record status, but those with prior arrests were rearrested at a faster rate. Due to small numbers we were unable to fit the model for *repeat sex*, yet, the Kaplan-Meier estimator (KME) revealed significant differences for

⁶ Although non-Aborigines are predominately of European origin but includes a small number of other origin.

Aborigines, with a maximum KME of 0.42 for those with prior arrests compared to 0.18 for those without.

Figure I: Cumulative distribution of re-arrest for a *violent* offence by prior non-sex offences and Aboriginality.



LEGEND: dotted line = Kaplan-Meier estimator; solid line = fitted Weibull model; MA = male aborigine; MN = male non-aborigine; prior = non-sex offence arrest before the first arrest for a sex offence.

Age

Older non-Aboriginal offenders (those over 30 years) had generally much lower probabilities of rearrest for *any* and *violent* offences, but age did not significantly vary the rate or rapidity of rearrest. However, for *repeat sex* older offenders had higher probabilities of rearrest but again age had no influence on their times to re-arrest. Very young offenders had probabilities of rearrest for *any* offence of 0.89, while those over 50 years had much lower probabilities of 0.23. For *violent* rearrest, those under 16 had the highest probability (0.56), while those over 50 years had the lowest (0.28). Thus, in general, juvenile offenders had higher probabilities of rearrest except for a *repeat sex* offence. This was because the majority of juvenile sex offenders are charged with sex offences in which consent was irrelevant to the legal definition of sex offending. Victims of juvenile sex offending were often (in about 25% of cases involving minors) in the same age group or a little younger than the offenders themselves. For example, 69% (n=77) of non-Aborigines charged with carnal knowledge of a girl under sixteen were

themselves under 21 and 37% were also under the age of 16. Nearly half (49%, n=29) of those arrested for carnal knowledge of a girl under 13 were also under 16 years of age.

Arrest for a sex offence, especially in the age group 16–18, may signal risk-taking behaviour rather than the commencement of sex offending careers. As in other studies, young offenders had higher risks irrespective of the type of sex offence and initiation of offending at a young age (less than 16 years of age) increased the probabilities of rearrest for violent offending (Hagan & Gust-Brey 2000; Hanson & Bussiere 1998; Hagan et al. 1994; Knight & Prentky 1993)⁷.

Occupation

Many non-Aborigines (44%) were classified in ‘blue-collar’ work, 29% were ‘unknown’ (including those ‘unemployed’), 19% were in ‘white-collar’ jobs and 7% were classified as students, pensioners and others not in the workforce (NIW). Occupation varied the probabilities and the rate of rearrest for *any* offence, but varied only the rate of *violent* rearrest. Those in ‘unknown’ (0.60) or ‘blue-collar’ (0.62) occupations had higher probabilities of rearrest for *any* offence than ‘white collar’ (0.47) or ‘NIW’ (0.37) and both the ‘unknown’ and ‘NIW’ groups failed faster. For *violent* rearrest the ‘unknown’ and ‘NIW’ groups were more quickly rearrested than those in the other occupational groups. Occupational status showed no significant difference in either the probability or rate of *repeat sex* rearrest.

Table II: Probability of rearrest for selected covariates by definition of recidivism

Covariate	n	<i>Any offence</i>			<i>Repeat sex</i>			<i>Violent offence</i>		
		P ¹	λ	n-fail	P ¹	λ	n-fail	P ¹	λ	n-fail
All	2785	0.61	0.42	1149	0.33	0.03	273	0.51	0.09	551
Aborigines	360	0.97	0.71	266	0.27	0.06	45	0.70	0.13	160
No Prior	110	0.98 ^{ns}	0.28	67	0.18 ²	—	14	0.75	0.18	38
Prior Record	250	0.99 ^{ns}	1.02	199	0.42 ²	—	31	0.91	0.18	122

⁷ For Aborigines, analysis of those under the age of 24 years and over 24 years showed that young Aboriginal offenders were almost certain to be rearrested (P = 0.99) while only two-thirds of those over 24 years were rearrested (P = 0.64) for *any* offence. However, no differences were observed in the probabilities or rates for *repeat sex* while the probabilities for a *violent* rearrest were similar to those for *any* offence.

Sex Offender Re-arrest

Non-Aborigines	2425	0.56	0.36	883	0.19	0.15	228	0.29	0.24	391
No Prior	1635	0.51	0.18	432	0.14 ²	—	157	0.23	0.18	203
Prior Record	790	0.78	0.66	451	0.12 ²	—	71	0.50	0.18	188
Sex Offence										
Adult Female	1132	0.58	0.36	387	0.11 ²	—	87	0.41 ^{ns}	0.09	167
Child	397	0.51	0.36	142	0.20 ²	—	58	0.45 ^{ns}	0.09	79
Juvenile	246	0.73	0.36	124	0.05 ²	—	9	0.37 ^{ns}	0.09	40
Incest	75	0.35	0.36	15	0.13 ²	—	6	0.30 ^{ns}	0.09	8
Exposure	476	0.55	0.36	187	0.17 ²	—	60	0.40 ^{ns}	0.09	86
Other	99	0.42	0.36	28	0.09 ²	—	8	0.26 ^{ns}	0.09	11
Age Group										
<16	187	0.89	0.42	120	0.20	0.07	16	0.56	0.10	49
16-18	223	0.82	0.42	145	0.12	0.07	12	0.40	0.10	44
18-24	541	0.71	0.42	275	0.22	0.07	48	0.43	0.10	103
24-30	310	0.52	0.42	108	0.28	0.07	33	0.40	0.10	52
30-40	473	0.37	0.42	110	0.24	0.07	41	0.33	0.10	60
40-50	346	0.33	0.42	72	0.33	0.07	41	0.32	0.10	43
50+	344	0.23	0.42	53	0.28	0.07	37	0.28	0.10	40
All ³	2424	0.56	0.36	883	0.25	0.06	228	0.31	0.07	391
Penal Intervention										
CBC ⁴	267	0.46 ^{ns}	0.20	66	0.12 ²	—	13	0.36 ^{ns}	0.07	22
Prison	375	0.39 ^{ns}	0.28	69	0.14 ²	—	21	0.27 ^{ns}	0.19	36
None	956	0.47 ^{ns}	0.73	335	0.15 ²	—	111	0.23 ^{ns}	0.88	122
All ⁵	1598	0.49 ^{ns}	0.33	470	0.17 ²	—	145	0.30 ^{ns}	0.13	223

LEGEND: number of cases (n), ultimate probability of rearrest (P), lambda (λ) or 'rate', and number of cases failing by the cut-off date (n-fail). When insufficient failures occur, the Kaplan-Meier estimator (KME) at the maximum failure time is substituted. NOTES 1. All P values are significant at the $p < 0.01$ level unless indicated by 'ns' or if iterations are bounded. 2. Iteration bounded and KME reported. 3. One case of unknown age is excluded. 4. CBC = community based corrections (probation and community service orders). 5. Wilful exposure and juvenile offenders are excluded.

Sex Offence Type

The type of sex offence varied the probabilities of rearrest for *any* offence, but there was little difference in respect of *violent* rearrest, although incest and 'other' sex offences tended to have lower probabilities than offences against minors, wilful exposure, and sex assault against adult females. Offenders arrested for offences involving juvenile victims had the highest probability of rearrest for *any* offence (this was also due to the generally younger age of the offenders), while those arrested for incest had the lowest but.

Although insufficient cases of *repeat sex* rendered estimates imprecise, the maximum

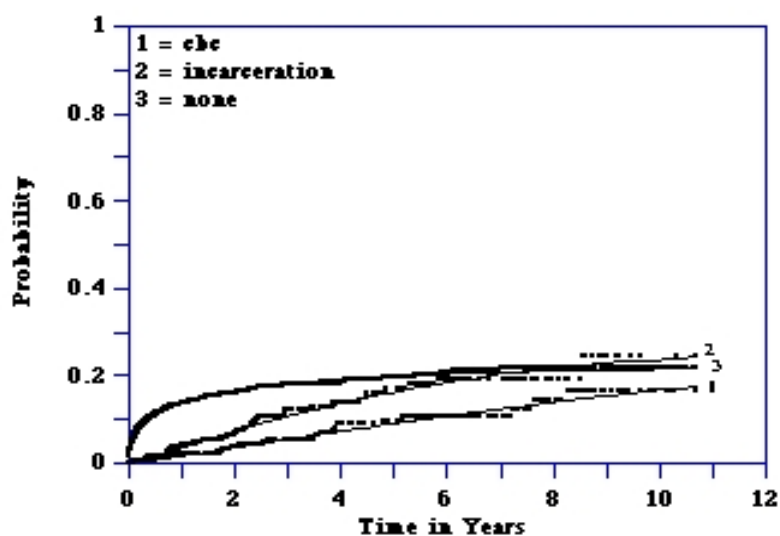
KME indicated that exhibitionism and offences involving children had the highest probabilities of *repeat sex* at 0.17 and 0.20 respectively. Thus, as in previous studies, extra-familial child molesters had higher risks of another sex offence than incest offenders (Hood et al. 2002; Soothill et al. 2000; Hanson & Bussiere 1998; Quinsey et al. 1995; Gibbons et al. 1978; Soothill et al. 1976).

Penal intervention

The majority of cases (70%) were bailed following arrest, 21% were detained pending trial, and only 9%, mostly minor offences such as wilful exposure, were dealt with by summons. Detention awaiting trial provided an indication of the relative risks and gravity of the alleged offence. Those detained were more quickly rearrested than those released on bail or dealt with by summons except for *repeat sex*, however, no differences between the probabilities of arrest was observed.

Actual sanctions or formal penal interventions subsequent to arrest for a sex offence were next examined. Since penal sanctions in respect of juvenile offenders (under age 18) had been under-counted, we excluded them from further analysis. Including them would bias the 'no-intervention' group because some received juvenile detention, probation or community service but were unknown due to incomplete linking of juvenile records. In addition, we excluded all wilful exposure cases since if convicted for the first time, they are, with few exceptions, dealt with by a fine and/or bond and including them would also bias any comparison. Because of the subsequent loss in cases it was necessary to resort to the basic categories of community-based corrections (16.7%), imprisonment (23.5%), and no intervention (59.8%) for the adjusted sample.

Figure II: Cumulative distribution of rearrest of adult non-Aborigines for *violent* offences by penal intervention



LEGEND: dotted line = Kaplan-Meier estimator; solid line = fitted Weibull model; 1= cbc (community based corrections); 2= incarceration (prison custody); 3 = none (arrest followed by acquittal, no prosecution, fine or good behaviour bond).

No significant differences between the interventions were observed for *repeat sex* although again numbers were too small to fit the model. Differences were observed for *any* and *violent* rearrest, but were significant only for the rapidity of rearrest. Those with ‘no intervention’ failed much faster than those imprisoned or under community supervision. In turn, those in prison failed faster than offenders under community supervision. The analysis demonstrates that interventions significantly impede recidivism, even if they do not ultimately lower the risks. Although a treatment effect may be relevant, evaluations of such programmes for sex offenders have not shown consistent or significant impacts on reducing risks of recidivism (Barbaree & Seto 1999; Hanson & Bussiere 1998; Quinsey et al. 1993; Furby et al. 1989). Figure II illustrate the differences for the risk of another ‘dangerous’ offence and adjusts for the time in prison for those incarcerated, so only exposure or time at risk is calculated.

Discussion

Absent or incomplete data on ‘static’ variables, imprecise definitions of different types of sex offending (especially victim status), and the absence of ‘dynamic’ variables that index behaviour on release limited the guidance these estimates provide in describing the risks of rearrest. In addition, the relatively short follow-up time and sparse data indicated the need for longer follow-up and larger samples if more accurate estimates are to be made. Too few cases of repeat sex (the usual trigger for special penal interventions) were available to permit accurate estimates or account for interactions of covariates. Finally, it should be recalled that our data is based on arrests and included some cases who had been acquitted of a sex offence or for whom charges were abandoned. Nevertheless, it is possible to estimate the ultimate risk of rearrest for another sex or ‘dangerous offence’ for sex offenders. Risks of rearrest are not randomised so it was possible, in the crude way provided by static variables, to identify those groups with higher probabilities of general, homologous or ‘dangerous’ offending.

For *repeat sex*, there was little evidence of variation except for age and Aboriginality, covariates that had also been found to differentiate probabilities for the entire arrest cohort regardless of signal offence (Maller et al. 1997). Although other factors such as prior record might also vary the risks of repeated sex offending, differences are undetected because of sparse datum. Aboriginality, age, prior record and their likely interactions must be basic controls in evaluation of treatment or interventions as these covariates significantly differentiate the probabilities of rearrest. It was also useful to distinguish different criteria for recidivism since this also had a significant bearing on the probabilities of rearrest and enabled specialisation and escalation to be studied.

Although the type of sex offence varied probabilities for *any* rearrest, there was little evidence of differences in specialisation or escalation, but again attempts at joint analysis foundered because of sparse data. Our results partially support a recent study comparing child molesters with non-sex offenders in which it was argued that a prior sex offence was a good predictor of sex offence reconviction (Hanson et al. 1996). In our study, offenders arrested for sex offences involving children appear to have greater risks of repeat sex or violent rearrest, but the differences were not significant—at least when compared with other types of sex offenders. It is also noted that those arrested for sex offences against juvenile victims had very high probabilities of rearrest except for another sex offence. This is because most offenders in this category are young offenders who had

higher probabilities irrespective of the type of sex offence. A significant relationship between type of sex offence and risks of repetition or violent recidivism was therefore not found.

Recidivism research, used here, as a way of summarising the complex ‘careers’ of sex offenders, showed that specialisation, if strictly defined, was uncommon. General risk-taking, offence diversity and escalating profiles were more characteristic of such careers, but regardless of how recidivism was defined or the ‘career’ summarised, desistance was substantial. About two-fifths of those arrested were never rearrested, half were never arrested for another ‘dangerous’ offence, and two-thirds were never rearrested for another sex offence. It is therefore difficult to sustain the proposition that sex offenders are driven by sexual deviance, given the high probabilities of rearrest these offenders had for crime in general. If sexual deviance were the dominant factor it would be reasonable to expect higher rates of repeated sex offending than in fact observed. Although generally a third were estimated to repeat some type of sex offence, only one in five non-Aborigines were estimated to do so. However, because we estimate *ultimate probabilities of re-arrest*, the levels of recidivism are higher than the meta-analysis reported by Hansen & Bussiere (1998) and other researchers. Our results accord with the observation by Leib et al. (1998: 100) that ‘the separation of sexual from violent offending makes it more difficult to identify dangerous persons. If the legal concern is only the prediction of sexual offending, the probability of such an event over a particular time will be lower for any given offender than if the probability of either a violent or sexual offence is at issue’.

It was also observed that the groups most likely to have higher probabilities of rearrest, especially for further violence, were those from the most marginal socio-economic groups: Aborigines, juveniles, blue-collar workers, the unemployed, and those with a prior arrest. This suggested that sex offending, especially by young offenders, may be linked with peripheral ‘hyper-masculinity’ where low status, chronic and multiple adversity, and risk-taking were more implicated than sexual deviance in aggressive behaviour (Knight & Prentky 1993; Richardson et al. 1995; Graves et al. 1996).

Sex offender risk and penal policy

Correctional and mental health authorities have the unenviable task of managing risk in an environment where zero risk cannot be achieved but is usually expected. Actuarial

estimates of the relative risks of recidivism are important reflexive tools for agencies that manage these offenders. Knowing the actuarial risk of different groups can allow better prioritisation of resources and improve the assessment of risk for low probability but high consequence events such as repeated sex offending (Hood et al. 2002; Barbaree et al. 2001; Broadhurst 2000). From our standpoint, actuarial methods have greatly improved the accuracy and reliability of recidivism estimates, but they remain entirely captured by institutional sources of data that are often inadequate for the demands of risk prediction. In the Australian context improvement can only be realised if State and Commonwealth agencies link data across States and pool resources for evaluation.

As for policy, punishment and treatment remain the only responses to sex offenders, albeit with some attention to prevention through community education of both potential victims and offenders. Our findings suggested that penal interventions, including community supervision, were relatively more effective than is commonly supposed (see Hedderman & Sugg 1996). The slower rate of rearrest found for offenders under community supervision accords with previous evaluations (see Polvi & Pease 1991)—namely, that supervision at least delays recidivism and may offer a less costly context for managing and treating sex offenders. Thus custodial or community interventions were salutary in delaying, if not in preventing the ultimate risks of re-arrest. However, effective evaluation is crucial if there is to be any substantial shift to restorative and less punitive approaches.

Dixon (1996) suggested there was resistance to evaluation based solely on measures of recidivism since improvements in offenders' general functioning, including reductions in the severity and frequency of recidivism, may be ignored when a only a single outcome measure is used. Blackburn (1994: 404) also noted the 'success' criterion problem in programme evaluation, especially 'all-or-none' measures of recidivism. As many researchers are aware, small and diverse samples, limited data, short follow-up, varied methods and definitions, and inattention to the frequency and seriousness of recidivism are products of little or no investment in research. Consequently, incremental gains in knowledge about sex offenders are sources of dispute, not clarity, and are thus relegated to the margin of policy. Low commitment to outcome research may also reflect a preference to protect the symbolic and political functions of treatment over the uncertain

benefits of evaluation, especially if programmes are cost-sensitive areas of public expenditure (Kear-Colwell 1996).

The absence of well-defined, well-executed and replicated recidivism studies continues to inhibit the development of effective interventions for sex and other offenders. Since the efficacy of treatment in the reduction of sex offender recidivism is controversial and clinical evaluation has failed to identify satisfactory programmes, actuarial approaches are instructive (Serin et al. 2000; Grubin 1997, Monahan 1996; Quinsey et al. 1995, Quinsey et al. 1993)⁸. Random assignment of subjects to treatments and controls although the most efficacious method of assessing interventions is usually impractical. Adequately conducted actuarial studies that include multiple 'success' criteria sensitive to the timing of events and including static and dynamic covariates may overcome these problems. The claim that actuarial risk assessment cannot help in assessing treatments for sex offenders (Marshall 1996: 163) cannot be sustained because many of the technical problems in analysing censored populations are solved and the vexed question of sufficient follow-up addressed. Moreover, attention to desistance and the identification of 'immunes' are now stressed (Maller & Zhou 1996).

Grubin & Wingate (1996: 357) suggested that in order to be relevant, actuarial studies of sex offender recidivism must 'contribute to risk assessment in specific cases, help formulate treatment needs', and avoid 'blind reliance on variables for their own sake'. Clinical evaluations would also benefit by applying the latest methods for dealing with time-event data precisely defining both the time parameter) and the criteria for 'failure' since this at least allows individual life history to be judged against the experience of the most similar relevant group. Actuarial risk assessments provide a base line for the important qualitative decisions correctional agencies and clinicians are frequently required to make in managing risk. They also have the virtue of making the criteria for decision-making more explicit and go some way towards addressing concerns about fairness, and consistency in the identification and management of high-risk sex offenders.

⁸ The unreliability of phallometric discrimination of sexual preference (once a key theoretical construct) in the assessment of treatment outcomes has now also been acknowledged (Marshall 1996; Lanaud 1994; Proulx et al. 1994; Castonguay et al. 1993).

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Appendix: Sex offence by race, prior non-sex offence and rearrest type by cut-off date 31.12.1994

Offence	Cases	Repeat Same Sex	Other sex	Violent offence	Any offence
Aborigines					
<i>No prior arrest</i>					
Adult female	71	9	1	22	43
Against child	18	1	1	5	12
Against juvenile	9	-	-	4	5
Incest	-	-	-	-	-
Wilful exposure	11	-	2	7	7
By guardian	-	-	-	-	-
Against 'imbecile'	1	-	-	-	-
Gross indecency	-	-	-	-	-
Other	-	-	-	-	-
<i>Prior arrest</i>					
Adult female	197	21	4	97	158
Against child	15	-	2	4	10
Against juvenile	23	-	1	11	17
Incest	1	-	-	-	-
Wilful exposure	14	1	2	10	14
By guardian	-	-	-	-	-
Against imbecile	-	-	-	-	-
Gross indecency	-	-	-	-	-
Other	-	-	-	-	-
All Aborigines	360	32	13	160	266
Non-Aborigines					
<i>No prior arrest</i>					
Adult female	724	37	16	73	165
Against child	311	23	24	54	90
Against juvenile	142	2	4	14	49
Incest	55	1	5	6	11
Wilful exposure	318	26	11	48	98
By guardian	4	-	-	-	-
Against 'imbecile'	10	-	1	1	2
Gross indecency	49	-	5	5	13
Other	22	1	1	2	4
<i>Prior arrest</i>					
Adult female	408	24	10	94	222
Against child	86	6	5	25	52
Against juvenile	104	1	2	26	75
Incest	20	-	-	2	4
Wilful exposure	158	20	3	38	89
By guardian	-	-	-	-	-
Against imbecile	-	-	-	-	-
Gross indecency	9	-	-	2	6
Other	5	-	-	1	3
All non-Aborigines	2425	141	87	391	883
All cases	2785	173	100	551	1149