

Can child protection data improve the prediction of re-offending in young persons?

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Aim: To determine whether the inclusion of child protection data improves the ability to predict re-offending in young persons with few prior formal contacts with the criminal justice system.

Method: A cohort of young persons who had their first, second or third formal contact with the criminal justice system (i.e., police caution, youth justice conference, or court appearance) in 2011 or 2012 were identified in the Re-offending Database maintained by the NSW Bureau of Crime Statistics and Research. For these young persons, NSW Department of Family and Community Services provided data relating to risk of significant harm (ROSH) reports and out-of-home-care (OOHC). Models predicting re-offending using demographic and criminal history variables were developed and compared with models that also included child protection information. Separate models were developed for males and females, as well as for the subgroup of young persons having their first contact with the criminal justice system.

Results: While some variables relating to ROSH reports and OOHC data were significant predictors of re-offending, the inclusion of child protection data did little to improve the ability to predict re-offending within 12 months in young persons with few prior formal contacts. Models with and without child protection data were similarly poor at predicting those who would go on to re-offend.

Conclusion: Early identification of young persons at risk of re-offending using administrative data sources remains a challenge.

Keywords: juveniles, offenders, re-offending, screening, young persons

INTRODUCTION

The strong relationship between age and offending is widely accepted. For many types of offences, the likelihood of being proceeded against by police peaks in adolescence and declines in early adulthood. However, despite high rates of crime among young persons, the majority of young persons never come into formal contact with the criminal justice system (Allard et al., 2010; Hua, Baker, & Poynton, 2006).¹ Nevertheless, of those who do, many will re-offend, with a large proportion offending into adulthood. Chen, Matruglio, Weatherburn, and Hua (2005) investigated the re-offending behavior of a cohort of young persons who appeared in the New South Wales Children's Court for the first time in 1995 and found that 68 per cent of the cohort reappeared at least once in a Children's or adult criminal court in the 8 years following their first appearance, with 57 per cent having a subsequent appearance in an adult criminal court, and 13 per cent of the cohort imprisoned by an adult court within 8 years of their first Children's Court appearance. Indeed, Indig et al. (2010) reported that 38 per cent of those incarcerated as an

adult had been in juvenile detention, suggesting that the majority of those incarcerated would have first come into contact with the criminal justice system in their youth.

Given the high likelihood of re-offending of those who offend as a young person, and the potential life-long impacts on the individual and society, there is a strong argument for intervention with young offenders at an early stage (assuming that available programs are effective in reducing re-offending). Ideally, within a context of finite resources, intervention programs would be targeted at those young offenders who have an elevated risk of re-offending. This prompts the question: how can those most likely to re-offend be identified? Ideally a tool could be used to discriminate those at low risk of re-offending from those at high risk of re-offending, with minimal classification error.

Over the years, many instruments have been developed with the aim of predicting an offender's risk of re-offending. Common risk factors in risk assessment instruments developed specifically for juveniles include demographic and offending characteristics as well as substance abuse, family problems, peer delinquency,

and school-related problems (Schwalbe, 2008; Thompson & Stewart, 2006). Some instruments are limited to prediction and classification of risk to flag areas for more in-depth assessment and inform sanctioning and supervision levels (e.g., The Model Risk Assessment, Howell, 1995). Other instruments (e.g., YLS/CMI, Hoge & Andrews, 2002), have a more expansive scope and can also be used to support treatment planning (Schwalbe, 2008). However, in terms of risk classification, more comprehensive instruments do not necessarily result in more accurate classification of those at risk of re-offending (Ringland, 2011), and any benefit may be offset by the additional time and resources involved in administering the instrument. In using an instrument as a screening tool in a population of offenders, in addition to correctly identifying those who are and are not at increased risk of re-offending, it is important that the instrument can be used with relative ease, and that it is not costly or resource-intensive to administer. Administrative data potentially lends itself to this purpose, enabling large numbers of offenders to be screened efficiently.

While criminal history is generally a good predictor of future offending and forms the basis of many risk assessment instruments (see Thompson & Stewart, 2006 for a review of assessment tools), information relating to prior offending is somewhat less useful in the early identification of those at high risk of re-offending; that is, when an individual has had few, if any, formal contacts with the criminal justice system. Furthermore, while demographic characteristics such as age, sex and Indigenous status are significant predictors of re-offending (Lind, 2011; Smith & Jones, 2008; Vignaendra & Fitzgerald, 2006), these factors alone do not provide enough information to accurately classify those at risk of re-offending. Therefore, in order to be able to readily and accurately identify those at risk of re-offending at an early stage, information from additional administrative data sources may be useful. This information could, for example, relate to education, such as levels of school attendance/truancy, or suspension or expulsion, which have been found to be significant predictors of re-offending (Baglivio, 2009; Weatherburn, Cush, & Saunders, 2007).

Another potential source of administrative data that may be useful in predicting the risk of re-offending is information relating to child protection. There is much evidence to support links between childhood abuse and neglect and delinquency or offending. For example, in a sample of underprivileged adolescents, Mersky, Topitzes, and Reynolds (2012), found that rates of overall delinquency, along with violent, drug and property offending, were higher among those who had been maltreated in childhood or adolescence, in comparison with those who had not been maltreated. Many studies have examined the relationships between specific types of abuse and/or specific types of offending, with mixed findings. For example, Maas, Herrenkohl, and Sousa (2008) reported an association between physical abuse and violent offending, while Yun, Ball, and Lim (2011) found that physical abuse was not associated with future violent delinquency, whereas sexual abuse and neglect were. Forsman and Långström (2012) conducted a population-based

study of twins to examine the relationship between childhood maltreatment and adult violent offending and found no significant difference between maltreated children and their non-maltreated twins with respect to violent offending as an adult.

As well as the type of abuse or maltreatment, the timing of abuse and neglect has been examined. For example, in Australia, Stewart, Livingston, and Dennison (2008) examined the timing of maltreatment and found that children whose maltreatment started or extended into adolescence were more likely to offend as a young person than those whose maltreatment occurred prior to, but not during, adolescence. Similarly, studies have investigated out-of-home-care (OOHC) placements and found that young persons who were older at placement were more likely to be arrested for violent and non-violent crimes than younger youth (Baskin & Sommers, 2011). However, it is less clear whether OOHC generally increases or helps reduce the risk of young person's involvement in the justice system. While OOHC may protect abused and neglected children from more serious long-term consequences, OOHC may also exacerbate the stress of children from abusive and neglectful families (Widom, 1991). Studies have suggested that the influence of OOHC on criminal involvement might depend on individual and contextual factors, such as gender, the reasons for placement, and placement instability (Baskin & Sommers, 2011; DeGue & Widom, 2009; Ryan & Testa, 2005).

While many studies have examined the relationship between child protection and offending, fewer have examined the effect of child protection factors on re-offending, and the findings from these have been somewhat inconclusive. Ryan, Williams, and Courtney (2013) focused on neglect and re-offending (young persons with a substantiated history of physical or sexual abuse were excluded) and found that young persons with an ongoing case relating to neglect were more likely to continue offending as compared with those with no official history of neglect. Baglivio (2009) found no significant association between either a history of physical abuse or a history of sexual abuse and re-offending, for males or females. Further, Huang, Ryan, and Herz (2012), found no association between contact with the child welfare system or being in OOHC and re-offending. In New South Wales, Weatherburn et al. (2007) examined re-offending amongst a sample of young offenders previously given a supervised community-based court order and also reported that having a previous placement in OOHC and previous neglect/abuse were not independently associated with re-offending.

While findings from studies examining the effect of child protection on re-offending have been mixed, studies have shown the importance of examining risk factors separately for males and females. For example, Baglivio (2009) reported that histories of drug use, having antisocial peer relationships, inadequate parental supervision and a greater history of school suspensions or expulsions were predictive of male re-offending, whereas having a greater history of running away and less relationships with pro-social adults were predictive of female re-offending. Similarly, van der Put et al. (2014) found that the most important

risk factors for re-offending for females involved the family domain, such as abuse, out-of-home care, running away from home, and substance abuse by parents, whereas the most important risk factors for males involved school, friends and use of free time.

In NSW, with the exception of the work by Weatherburn et al. (2007), research examining the relationship between child protection and re-offending is limited. However, it is known that children in OOHC are over-represented in the New South Wales juvenile justice system (McFarlane, 2010). Kenny and Nelson (2007) reported that 24 per cent of young offenders on community orders and 28 per cent of offenders in custody had a history of having been placed in care, at a time when children in care comprised 0.6 per cent of the general NSW population. Kenny and Nelson (2007) also found that 74 per cent of young offenders on community orders reported some form of abuse or neglect, with higher rates of reporting in females. While a significant proportion of young persons in the juvenile justice system have been in OOHC, or have been abused or neglected, it is not clear what role child protection related factors might have in predicting future re-offending, and whether or not such information could be used to identify at-risk young offenders for intervention at an early stage (i.e., before offending has become entrenched).

AIM

The aim of this study was to examine whether the inclusion of routinely collected child protection data would improve models developed to determine whether young offenders having their first, second or third formal contact with the criminal justice system will go on to re-offend.

Models with demographic and offending characteristics were compared with models which also included child protection related characteristics. A range of child protection related factors (held by the NSW Department of Family and Community Services) were examined, including the number, type and length of OOHC placements, and the number of risk of significant harm reports, and types of issues reported. Variables are described in detail in the Method section that follows. As previous research has identified different risk factors for re-offending for males and females (Baglivio, 2009; van der Put et al., 2014), models were developed and examined separately for males and females. Further, separate models were developed for those with no prior contacts with the criminal justice system (i.e., those having their first contact), to explore whether the inclusion of child protection data would result in greater improvement in the performance of re-offending models at an earlier stage.

METHOD

DATA SOURCES

Data for the study came from the Re-Offending Database (ROD), maintained by the NSW Bureau of Crime Statistics and Research (BOCSAR), and from the Key Information and Directory System

(KiDS) managed by the NSW Department of Family and Community Services (FACS).

ROD includes records of all court matters finalised in NSW since 1994 (in Children's, Local, District and Supreme Courts), and police cautions and youth justice conferences since the introduction of the Young Offenders Act 1997 in 1998.² Data relating to custodial episodes in juvenile and adult correctional centres are also included in ROD.

KiDS is the electronic system FACS has used for keeping records of its child protection clients since October 2003. KiDS includes records of children and young persons reported to FACS who are assessed at Risk of Significant Harm (ROSH; 2010–present) and/or Risk of Harm reports referred for a response (2003–2010).³ ROSH reports are made to the Child Protection Helpline when a person (including mandatory reporters and community members) has reasonable grounds to suspect that a child or young person is at risk of significant harm and has current concerns about the safety, welfare or wellbeing of the child or young person. A child is considered to be at ROSH if the circumstances that are causing concern for the safety, welfare or wellbeing of the child are present to a significant extent to warrant a response by a statutory authority, irrespective of a family's consent. Prior to 2010, Risk of Harm reports were referred to a Community Services Centre or Joint Investigation Response Team for further assessment to confirm if a child or young person met the Risk of Harm (Actual Harm) reporting threshold – these "referred" reports (from October 2003) were included in the data provided by FACS.⁴

KiDS also includes data relating to OOHC - the care of a child or young person under 18 years of age at a place other than their usual home, by a person who is not their parent. OOHC placements can be emergency, short term or long term. Placements include foster care, as well as relative and Aboriginal kinship care, supported accommodation, independent living, and residential care.

For the purposes of this study, OOHC data is available for all years (i.e., prior to and since the introduction of KiDS), while Risk of Significant Harm (ROSH) and Risk of Harm (referred) data is available from October 2003 onwards (i.e., since the introduction of KiDS).⁵

SAMPLE

A cohort of young persons (10–17 years of age) was identified using ROD. The cohort included those who had their first, second or third formal criminal justice system (CJS) contact (caution, youth justice conference or finalised court appearance) in 2011 or 2012 (n = 18,459).

Personal identifiers of those in the cohort (first, middle and last names, including aliases, and date of birth and gender), as well as a ROD person number, were provided to FACS to be linked to information in KiDS. Linking the cohort to information in KiDS was deterministic and involved numerous "passes", whereby records were matched on different combinations of personal

identifiers, allowing for some variation in name and date of birth. In the first pass exact matching was used to identify those individuals in KiDS who had the exact same last name, first name, gender and date of birth as young persons in the cohort. Of those individuals identified as being in KiDS, over 80 per cent of the children matched were achieved using this method. Subsequent passes allowed for variations in identifiers, such as in the spelling of the first name, or in the date of birth, and also allowed for matching on aliases. Further details and outcomes of the various matching strategies conducted by FACS are included in Table A1 in the Appendix.

Following linkage, child protection data relating to OOHC placements and Risk of Significant Harm and Risk of Harm - (referred) reports were extracted and provided to BOCSAR.⁶ A list of the data variables FACS provided to BOCSAR is included in Appendix Table A2.

After BOCSAR received the data from FACS, further refinements to the cohort were made. The linkage of records was reviewed and corrected (including combining records for those who FACS identified as relating to the same person), and in some cases records were excluded ($n = 111$). In addition, young persons with a postcode of residence outside New South Wales (i.e., young persons from interstate and overseas) were excluded ($n = 270$). Following these revisions, the cohort was reduced to 17,638.

MODELS OF RE-OFFENDING

The focus of the study was on the development of models to predict re-offending following formal contact with the CJS. Models were developed for those with no prior formal contacts (i.e., cautions, youth justice conferences, court appearances), as well as those with few (up to two) prior formal contacts. Of particular interest was re-offending within 12 months of CJS contact.

A re-offence was defined as an offence that occurred after a CJS contact and resulted in a caution or youth justice conference, or was proven in court.^{7,8} Breaches of justice orders were not included as re-offences, nor were regulatory driving offences, as the recorded rate of these offences depends heavily on policing policy and resources. At the time of initial cohort identification, ROD data were available up until March 31, 2014. Thus, to be included in the study, a re-offence must have occurred within 12 months of the index contact and been finalised by way of caution, youth justice conference or court proceeding before April 1, 2014.⁹

Where a young person had multiple contacts in the period 2011–2012, their first contact in the period was selected as the "index" contact and included in the analyses.

Explanatory factors

The cohort was described according to a range of demographic, offending, and child protection related characteristics. These factors were examined with respect to their relationship with re-offending. Further descriptions are provided below.

Demographic characteristics

- Sex: whether the young person was recorded in ROD as male or female.
- Age at index contact: the age of the young person at the index CJS contact was derived from the date of birth of the young person and the date of the caution, youth justice conference or finalised court appearance.
- Indigenous status: recorded in ROD as "Indigenous" if the young person had ever identified as being of Aboriginal or Torres Strait Islander descent, otherwise "non-Indigenous" if they had ever identified as not being of Aboriginal or Torres Strait Islander descent, or "unknown" otherwise. For the purpose of modelling re-offending, those whose Indigenous status was unknown were combined with those who were non-Indigenous.
- Remoteness of residence: based on applying the Accessibility Remoteness Index of Australia (ARIA+; Australian Bureau of Statistics (ABS), 2011a) postcode-to-ARIA+ concordance table to the postcode in which the offender lived at the time of their index contact, with areas categorised as major cities (0.00–0.20), inner regional (0.21–2.40), outer regional (2.41–5.92), remote (5.921–10.53), and very remote (10.531–15.00). Remote and very remote categories were combined into one category when modelling re-offending, due to low numbers, and those with unknown postcodes were combined with "major cities".
- Socio-Economic Index for Areas (SEIFA) disadvantage score of residence (ABS, 2011b): residential postcodes were grouped in terms of quartiles. A small number of records were missing SEIFA scores and were combined with the three most disadvantaged quartiles.

Offending & index contact characteristics

- Jurisdiction of CJS contact: whether the index CJS contact resulted in a police caution, police-referred youth justice conference, or court-referred conference or court appearance (in the Children's Court, Local or District Court). Court-related contacts were combined into one category when examining re-offending.
- Number of offences at the index contact: the number of offences relating to the contact, regardless of whether they were proven (1–5+).
- Type/s of offence/s: whether the index contact related to an offence classified, according to the Australian and New Zealand Standard Offence Classification (ANZSOC; ABS, 2011c) as:
 - ◆ violent – ANZSOC divisions 01 (homicide and related offences), 02 (acts intended to cause injury), 03 (sexual assault and related offences) and 06 (robbery, extortion and related offences);
 - ◆ property/ fraud – ANZSOC divisions 07 (break and enter), 08 (theft and related offences), 09 (fraud, deception and related offences);

- ◆ drug – ANZSOC division 10 (illicit drug offences);
- ◆ property damage – ANZSOC division 12 (property damage and environmental pollution);
- ◆ public order – ANZSOC division 13 (public order offences);
- ◆ traffic/driving – ANZSOC division 14 (traffic and vehicle regulatory offences) and subdivision 041 (dangerous or negligent operation of a vehicle);
- ◆ breach of violence order – ANZSOC group 1531 (breach of violence order);
- ◆ domestic violence related – according to law part codes identifying domestic violent offences under the *Crimes (Domestic and Personal Violence) Act 2007*.
- Number of prior formal contacts: the number of cautions, youth justice conferences and court finalisations prior to the index contact, separately and in total (0–2 contacts).
- Prior juvenile justice supervision: whether the young person had previously been supervised by Juvenile Justice NSW, based on whether they had previously been in a juvenile correctional centre or had received a supervised order.
- Type/s of prior offence/s: offences finalised prior to the index contact were classified as per offences at the index contact.

Risk of significant harm (ROSH) reports

The following variables were derived from data relating to ROSH reports (or equivalent):

- ROSH report in 5 years prior: whether the young person had been the subject of a ROSH report and/or referred report in the 5 years prior to the index CJS contact.
- Number of ROSH reports in 5 years prior: the number of ROSH and/or referred reports recorded in the 5 years prior to the index CJS contact.
- ROSH report in 12 months prior: whether the young person was the subject of a ROSH and/or referred report in the 12 months prior to the CJS contact.
- Whether the young person had been the subject of a ROSH and/or referred report in the 5 years prior, where the following were reported as issues:¹⁰
 - ◆ Domestic violence;
 - ◆ Drug or alcohol use by the carer;
 - ◆ Drug or alcohol use by the child or young person;
 - ◆ Emotional abuse;
 - ◆ Inappropriate sexual behaviour of child or young person;
 - ◆ Mental health of the carer;
 - ◆ Neglect;
 - ◆ Other issues of the carer;
 - ◆ Physical abuse;

- ◆ Prenatal report;
- ◆ Runaway child or young person;
- ◆ Sexual abuse;
- ◆ Suicide risk for child or young person.

A full list of reported issues for each category is included in Table A3 in the Appendix.

Out-of-home-care (OOHC) placements

The following variables were derived from the OOHC data:

- OOHC prior: whether the child or young person had ever been in OOHC prior to the CJS contact.¹¹
- Number of OOHC placements: the number of OOHC placements commenced prior to the CJS contact.
- Total time spent in OOHC: the length of time (in years) spent in OOHC prior to the CJS contact.
- Type of OOHC placement: whether the child or young person had ever been in:
 - ◆ Foster care;
 - ◆ Kinship care;
 - ◆ Residential care;
 - ◆ Other care.
- OOHC prior to 10 years of age: whether the child or young person had been in OOHC prior to 10 years of age.
- OOHC in 12 months prior: whether the child or young person had been in OOHC in the 12 months prior to the CJS contact.
- OOHC current: whether the child or young person was in OOHC at the time of the index CJS contact.

Statistical analysis

Model development & comparison

Whether or not a re-offence occurred within 12 months of the index CJS contact was examined using logistic regression. Models were developed separately for males and females (for those with no prior CJS contacts as well as those with up to two prior CJS contacts). In the first instance only demographic and offending characteristics (from ROD) were used to predict re-offending; child protection related data were then added. The final models included only those variables that remained independently associated with re-offending in the presence of other variables.

The performance of the models were assessed and compared in terms of their ability to correctly identify those who did and did not re-offend within 12 months. Key measures used to compare the models include the area under the curve, as well as the sensitivity, specificity and positive predictive values. These terms are described in Box 1. For each model, Hosmer-Lemeshow test statistics, as well as the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) are also provided.

Box 1. Measures used to compare re-offending models**Area under the curve**

The area under the receiver operating characteristic curve (AUC) can be used to measure a model's predictive accuracy. The AUC represents the probability that a score (based on the model) of a randomly selected case from one group (in this case, those who do re-offend) will be higher than the score of a randomly selected case from an alternate group (in this case, those who do not re-offend). A value of 0.5 indicates that a model does not discriminate between groups at all and 1.0 indicates the model discriminates perfectly. Several guidelines exist for interpreting an AUC between 0.5 and 1.0. For example, Hosmer and Lemeshow (2004) suggest the following: 0.7–0.8 = “acceptable” discrimination, 0.8–0.9 = “excellent” discrimination, 0.9–1.0 = “outstanding” discrimination.

Sensitivity (true positive rate)

The sensitivity of the model relates to a model's ability to correctly identify someone who will re-offend. It is calculated as the proportion of those who go on to re-offend who were identified as being at risk according to the model and the threshold applied.

Specificity (true negative rate)

The specificity of the model relates to a model's ability to correctly identify someone who will not re-offend. It is calculated as the proportion of those who will not go on to re-offend who were identified as not being at risk according to the model and the threshold applied.

Positive predictive value (precision)

The positive predictive value of a model is calculated as the proportion of those identified as being at risk of re-offending according to the model and the threshold applied, who go on to re-offend.

In addition to developing separate models for males and females, models were developed with two sets of demographic and offending characteristics: one set included a restricted range of variables (age, Indigenous status, the jurisdiction of the index contact, and the number of prior formal contacts) as per previous screening tools developed by BOCSAR; the other considered a more extensive range of demographic and offending characteristics.

RESULTS**CHARACTERISTICS OF THE COHORT**

The cohort included 17,638 young persons in NSW who had their first, second or third formal contact with the CJS in 2011 or 2012. Seventy per cent of these young persons were male and 30 per cent were female. Almost three-quarters of those included in the cohort (71.4% of males and 76.6% of females) had no prior contact with the criminal justice system. Demographic, offending and child protection related characteristics of the whole cohort, as well as the characteristics of the subgroup of young persons with no prior contact with the criminal justice system (i.e., those having their first contact) are presented in Table A4 in the Appendix. In terms of child protection related factors:

- approximately one in ten young persons (9.1% of males and 12.5% of females) in the cohort had been in OOHC prior to their index CJS contact, with 5 per cent (4.4% of males and 6.1% of females) in OOHC at the time of their index contact; 6 per cent (5.8% of males and 7.2% of females) had been in OOHC prior to 10 years of age;
- almost half of the cohort (45 per cent; 40.1% of males and 54.8% of females) had been the subject of a ROSH and/or referred report in the 5 years prior to their index CJS contact, with one in five (15.8% of males and 28.2% of females) the subject of a report in the 12 months prior to the index contact;
- in the 5 years prior to the index contact, more than one quarter of the cohort (24.3% of males and 34.7% of females) had been the subject of a ROSH and/or referred report where physical abuse was identified as an issue; emotional abuse had been reported as an issue for over one quarter of the cohort (23.9% of males and 34.2% of females); and neglect was reported as an issue for one quarter of the cohort (22.2% of males and 32.1% of females).¹²

The characteristics of the subgroup having their first contact with the criminal justice system were generally similar to the characteristics of the cohort as a whole, with slightly lower rates of OOHC (e.g., 8.3% of those with no prior CJS contact vs. 10.1% of those with up to two prior contacts had previously been in OOHC) and ROSH and/or referred reports (e.g., 38.5% of those with no prior CJS contact vs. 44.6% of those with up to two prior contacts had been the subject of a ROSH and/or referred report in the 5 years prior to their index CJS contact).

RE-OFFENDING WITHIN 12 MONTHS

Twenty-five per cent of those with up to two priors (i.e., the whole cohort) and 20 per cent of those with no priors committed a re-offence within 12 months of their index CJS contact, with the re-offending rate higher in males than females (27.9% vs. 19.0% for those with up to two priors, and 22.1% vs. 16.0% for those with no priors). Rates of re-offending within 12 months are included in Table 1, by demographic, offending and child protection characteristics.

Table 1. Re-offending within 12 months of the index contact with the criminal justice system, by sex and number of prior contacts

	Per cent re-offended within 12 months					
	No prior contacts			Up to two prior contacts		
	Males (N = 8,752)	Females (N = 4,115)	Persons (N = 12,867)	Males (N = 12,266)	Females (N = 5,372)	Persons (N = 17,638)
All	22.1	16.0	20.2	27.9	19.0	25.2
Age at index contact (years)						
10/11	29.3	28.6	29.1	36.5	22.2	34.7
12	24.2	26.7	24.9	35.2	28.6	33.9
13	28.3	21.9	26.0	30.2	28.0	29.7
14	25.0	20.3	23.2	33.0	25.7	30.4
15	22.6	15.4	20.1	30.2	24.3	28.0
16	20.5	12.8	18.0	29.5	19.5	26.1
17	18.9	10.5	16.8	27.3	15.3	23.7
Indigenous status						
Indigenous	40.9	32.5	38.0	47.9	32.8	43.0
Non-Indigenous	20.4	14.1	18.4	24.7	16.6	22.3
Unknown	4.0	2.6	3.5	4.1	2.6	3.6
Remoteness of residence						
Major city	21.5	15.2	19.6	27.2	19.0	24.8
Inner regional	22.4	15.3	20.0	28.4	17.9	25.1
Outer regional	23.3	17.8	21.4	28.6	20.2	25.8
Remote	24.2	21.6	23.4	34.1	19.3	29.6
Very remote	25.5	22.2	24.5	32.1	22.7	29.3
Missing/ Unknown	17.8	9.8	15.3	24.1	12.0	20.4
SEIFA of residence						
Quartile 1 (Most disadvantaged)	23.7	17.8	21.8	30.5	19.7	27.3
Quartile 2	24.3	18.0	22.2	29.7	21.1	27.0
Quartile 3	22.2	15.0	19.8	27.5	18.7	24.7
Quartile 4 (Least disadvantaged)	17.1	11.7	15.6	21.8	15.2	20.0
Missing/ Unknown	16.1	3.4	12.1	21.7	7.0	17.1
Jurisdiction of index contact						
Caution	20.6	14.2	18.4	21.4	14.3	19.0
Police-referred YJC	19.0	14.1	17.8	26.1	15.9	23.3
Court appearance (includes court-referred YJC)	27.1	23.6	26.1	38.9	30.2	36.7
Number of offences at index contact						
1	20.5	14.6	18.5	24.3	16.0	21.6
2	26.7	20.0	24.9	33.5	26.8	31.8
3	23.9	21.6	23.3	32.0	27.5	30.9
4	22.0	20.5	21.6	37.4	27.5	34.7
5+	36.1	29.5	34.4	48.0	32.2	44.1
Offence type at index contact						
Violent	23.5	20.2	22.2	32.9	24.9	29.9
Property/fraud	23.9	14.1	19.7	30.5	16.6	25.2
Drugs	20.3	11.4	18.9	32.0	27.5	31.2
Property damage	24.8	23.0	24.5	31.5	24.0	29.8
Public order	24.3	20.2	23.4	21.5	13.6	20.3
Traffic/driving	20.3	13.7	18.9	26.8	18.1	25.0
Breach of violence order	47.7	37.3	44.0	54.9	36.4	48.4
Domestic violence related	30.5	24.7	28.2	39.5	29.1	35.8
Number of prior formal CJS contacts						
0				22.1	16.0	20.2
1				38.4	25.7	34.9
2				49.0	35.2	45.6

Table 1. Re-offending within 12 months of the index contact with the criminal justice system, by sex and number of prior contacts (continued)

	Per cent re-offended within 12 months					
	No prior contacts			Up to two prior contacts		
	Males (N = 8,752)	Females (N = 4,115)	Persons (N = 12,867)	Males (N = 12,266)	Females (N = 5,372)	Persons (N = 17,638)
Number of prior cautions						
0				23.3	16.5	21.1
1				40.3	28.3	37.1
2				48.8	32.8	44.8
Number of prior conferences						
0				27.6	18.8	24.9
1+				40.4	29.7	37.9
Number of prior court appearances						
0				26.8	18.4	24.2
1				47.4	32.6	43.8
2				49.4	36.1	45.5
Prior juvenile justice supervision				55.4	36.1	50.7
Prior offences						
Violent				44.8	33.5	40.7
Property/fraud				44.9	29.6	40.4
Drugs				44.3	30.8	41.8
Property damage				39.2	28.3	37.7
Public order				43.7	34.8	42.3
Traffic/driving				50.0	32.0	46.8
Breach of violence order				53.5	36.4	46.1
Domestic violence related				50.9	38.3	46.5
OOHC placement						
Prior to index contact	37.2	30.4	34.6	44.4	33.0	40.1
In 12 months prior to index contact	35.5	34.2	35.0	44.2	37.2	41.5
Prior to 10 years of age	39.7	33.2	37.3	46.3	34.6	42.1
Current placement at time of index contact	34.1	34.1	34.1	41.0	38.0	39.9
Number of OOHC placements entered prior to index contact						
0	20.9	14.4	18.9	26.3	17.0	23.5
1	33.6	21.1	29.1	39.0	23.6	33.7
2	38.0	26.4	33.8	45.5	31.5	40.3
3	37.7	38.6	38.1	46.1	37.9	43.3
4	42.0	25.0	35.9	53.8	29.4	44.3
5+	40.2	40.3	40.3	46.8	41.6	44.6
Time spent in OOHC placements prior to index contact (years)						
0	20.9	14.4	18.9	26.3	17.0	23.5
<1	34.6	25.2	31.2	41.9	29.1	37.2
1 - <5	37.4	28.5	33.7	45.5	30.3	39.5
5 - <10	39.8	31.9	36.7	44.1	34.7	40.6
10+	39.6	43.1	40.9	46.9	45.2	46.3
Type of OOHC placements in years prior to index contact						
Foster care	38.4	34.6	37.0	46.1	38.8	43.3
Kinship care	38.9	31.8	36.1	45.4	33.3	40.8
Residential care	41.3	48.8	44.6	53.3	49.7	51.9
Other care	35.6	36.6	36.0	44.4	36.4	41.2
ROSH or referred report						
In 5 years prior to index contact	30.8	22.0	27.3	37.8	24.8	32.9
In 12 months prior to index contact	35.5	27.5	31.7	43.7	31.1	38.2

Table 1. Re-offending within 12 months of the index contact with the criminal justice system, by sex and number of prior contacts (continued)

	Per cent re-offended within 12 months					
	No prior contacts			Up to two prior contacts		
	Males (N = 8,752)	Females (N = 4,115)	Persons (N = 12,867)	Males (N = 12,266)	Females (N = 5,372)	Persons (N = 17,638)
Number of ROSH or referred reports, in 5 years prior to index contact						
0	17.7	10.2	15.7	21.3	12.0	19.0
1	26.7	16.0	23.0	30.8	17.9	26.7
2	28.3	16.3	23.5	36.6	18.3	30.3
3	31.4	17.9	25.6	38.1	19.9	31.2
4	32.7	19.4	27.3	38.6	20.5	32.1
5	35.0	31.3	33.4	42.6	30.2	37.5
6+	35.9	30.0	33.2	44.2	32.8	39.2
ROSH or referred reports - reported issue, in 5 years prior to index contact						
Domestic violence	29.6	24.5	27.6	37.5	26.8	33.7
Drug & alcohol use by the carer	31.8	25.4	29.2	40.0	28.7	35.7
Drug & alcohol use by the child/ young person	39.2	27.4	33.0	44.6	31.6	38.3
Emotional abuse	31.8	24.2	28.7	39.4	26.8	34.5
Inappropriate sexual behaviour of child/ young person	31.5	31.4	31.5	39.5	32.5	37.6
Mental health issues of carer	32.6	25.6	29.9	39.8	28.1	35.4
Neglect	35.5	27.3	32.1	42.6	30.0	37.7
Other issues of the carer	34.9	30.5	33.0	42.5	33.3	38.5
Physical abuse	32.1	24.8	29.1	40.0	27.9	35.3
Runaway child/ young person	48.6	27.6	35.5	52.0	31.5	40.7
Sexual abuse	32.2	22.9	26.6	38.9	26.2	31.5
Suicide risk for child/ young person	35.0	27.0	31.2	42.5	30.8	37.3

The data presented indicate in general terms that rates of re-offending within 12 months, for those with no priors as well as those with up to two priors, were higher for young persons, who:

- were younger at the time of their index contact;
- were Indigenous;
- were living in remote or very remote areas;
- were living in more disadvantaged areas;
- had an index contact that was a court appearance (rather than a conference or police caution);
- had an index contact that involved a breach of violence order;
- had one or more placements in OOHC prior to the index contact;
- had spent time in residential care (compared to other types of care);
- had been the subject of a ROSH and/or referred report in the 5 years and/or 12 months prior to the index contact;
- had been reported as a runaway in the 5 years prior to the index contact;
- had drug and alcohol use reported as an issue in the 5 years prior to the index contact.

Further, for those with up to two prior contacts, rates of re-offending within 12 months were higher for young persons, who:

- had larger numbers of concurrent offences;
- had more prior criminal justice system contacts;
- had a prior conference or court appearance.

MODELS OF RE-OFFENDING

We now present the models of re-offending that included a limited range of demographic and offending characteristics. Table 2 shows the characteristics that were independently associated with re-offending within 12 months for males, with and without the inclusion of child protection variables. Separate models for those with no prior contacts and those with up to two prior contacts are presented. More detailed output, including various measures of model performance, is included in Table A5 (available electronically at www.bocsar.nsw.gov.au).

Focusing on the first panel, “Demographic & Offending Characteristics” for the subgroup of young persons with no priors, it can be seen that the odds of re-offending in males:

- decreased with increasing age;
- were higher for Indigenous males versus non-Indigenous males;

Table 2. Models of re-offending within 12 months, using restricted demographic and offending characteristics: Males

	No prior contacts				Up to two prior contacts					
	With Child Protection Characteristics				Demographic & Offending Characteristics		With Child Protection Characteristics			
	OR	(95% CI)			OR	(95% CI)	OR	(95% CI)		
Age at index contact (years)										
14 vs. 13 years and under	1.02	(0.85, 1.23)			0.90	(0.77, 1.06)	0.98	(0.83, 1.15)		
15	0.92	(0.78, 1.10)			0.86	(0.74, 1.00)	0.96	(0.83, 1.12)		
16	0.80	(0.67, 0.95)			0.71	(0.62, 0.82)	0.83	(0.72, 0.97)		
17	0.70	(0.59, 0.83)			0.60	(0.52, 0.70)	0.76	(0.65, 0.88)		
Indigenous status										
Indigenous vs. Non-Indigenous/Unknown	2.68	(2.35, 3.07)		2.35	(2.05, 2.69)		2.24	(2.02, 2.49)		
Jurisdiction at index contact										
Court vs. caution/police-referred YJC	1.55	(1.38, 1.75)		1.36	(1.21, 1.53)		1.86	(1.69, 2.04)		
Number of prior formal contacts										
1 vs. 0						1.73	(1.55, 1.92)			
2 vs. 0						2.23	(1.96, 2.55)			
Out-of-home-care placements										
Prior to 10 years of age				1.42	(1.14, 1.77)			1.48	(1.22, 1.80)	
At time of index contact								0.73	(0.57, 0.93)	
Ever in residential care								1.59	(1.15, 2.19)	
ROSH or referred report										
In 5 years prior to index contact				1.47	(1.26, 1.73)			1.36	(1.23, 1.50)	
In 12 months prior to index contact				1.20	(1.01, 1.42)			1.23	(1.08, 1.40)	
ROSH or referred reports - reported issue in 5 years prior to index										
Domestic violence				0.82	(0.70, 0.97)					
Neglect				1.23	(1.04, 1.46)					
Runaway child/ young person				1.86	(1.35, 2.56)			1.34	(1.08, 1.66)	

Note. OR – Odds Ratio; CI - confidence interval.

- were higher for those young males who had an index contact in court compared to those who were cautioned or referred to a youth justice conference by police.

Further, the model for the whole cohort (i.e., those with up to two prior contacts) shows that the odds of re-offending were higher for young males with prior formal CJS contacts.

The panels “With Child Protection Characteristics” show the child protection related variables that were independent predictors when included along with the demographic and offending variables. For the subgroup of young males with no prior contact with the criminal justice system as well as the whole male cohort (i.e., those with up to two prior contacts), the odds of re-offending were higher for those who had:

- an OOHC placement prior to 10 years of age;
- a ROSH and/or referred report recorded in the 5 years prior to the index contact;

- a ROSH and/or referred report recorded in the 12 months prior to the index contact;
- runaway child or young person reported as an issue in the 5 years prior to the index contact.

Likewise, Table 3 presents the models developed for females (more detailed output is included in Table A6 available electronically at www.bocsar.nsw.gov.au). Looking in the panels “Demographic & Offending Characteristics” it can be seen that the odds of re-offending in females also:

- decreased with increasing age;
- were higher for Indigenous females versus non-Indigenous females;
- were higher for those who had an index contact in court compared to those who were cautioned or referred to a youth justice conference by police;

- were higher for those with prior cautions and court appearances than those without.

Looking at the child protection related variables, for the subgroup of young females with no prior contact with the criminal justice system as well as the whole female cohort (i.e., those with up to two prior contacts), it can be seen that the odds of re-offending were higher for those females who had:

- spent more than 10 years in OOHC prior to the index contact;
- been in residential care at any stage prior to the index contact;
- a ROSH and/or referred report recorded in the 12 months prior to the index contact;
- neglect reported as an issue in the 5 years prior to the index contact.

The models that were developed using a more extensive range of demographic and offending characteristics are included in Table A7 and Table A8 of the Appendix, for males and females respectively (available electronically at www.bocsar.nsw.gov.au).

While additional demographic and offending characteristics were found to be associated with re-offending (e.g., index offence type/s), the child protection related variables found to be independently associated with re-offending remained much the same in both sets of models (i.e., those with a limited versus a more extensive range of demographic and offending characteristics).

Model performance & classification accuracy

The “area under the curve” (AUC) values for the various models of re-offending are presented in Table 4. These values highlight the poor performance of the models, regardless of whether an extensive range of demographic and offending characteristics were included, and regardless of whether child protection related data were included.

As stated earlier, an AUC value of 0.5 indicates a model is no better than chance at discriminating a young person who will re-offend from one who will not, and 1.0 indicates a model discriminates perfectly. Generally the models had AUC values less than 0.7, not achieving what would be considered “acceptable” discrimination (Hosmer & Lemeshow, 2004).

Table 3. Models of re-offending within 12 months, using restricted demographic and offending characteristics: Females

	No prior contacts				Up to two prior contacts			
	Demographic & Offending Characteristics		With Child Protection Characteristics		Demographic & Offending Characteristics		With Child Protection Characteristics	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Age at index contact (years)								
14 vs. 13 years and under	0.84	(0.64, 1.09)	0.86	(0.66, 1.13)	0.83	(0.66, 1.05)	0.85	(0.67, 1.08)
15	0.60	(0.46, 0.79)	0.64	(0.49, 0.84)	0.58	(0.46, 0.73)	0.61	(0.48, 0.78)
16	0.48	(0.36, 0.64)	0.56	(0.42, 0.75)	0.40	(0.31, 0.51)	0.45	(0.35, 0.58)
17	0.36	(0.26, 0.48)	0.46	(0.34, 0.63)	0.32	(0.25, 0.41)	0.40	(0.31, 0.52)
Indigenous status								
Indigenous vs. Non-Indigenous/Unknown	2.62	(2.14, 3.21)	2.18	(1.76, 2.69)	1.90	(1.61, 2.23)	1.70	(1.44, 2.01)
Jurisdiction at index contact								
Court vs. caution/police-referred YJC	2.06	(1.68, 2.53)	1.73	(1.40, 2.14)	2.41	(2.05, 2.84)	2.09	(1.77, 2.47)
Number of prior formal contacts								
1/2 vs. 0					1.55	(1.30, 1.84)	1.34	(1.12, 1.60)
Out-of-home-care placements								
10+ years vs. <10 years			2.40	(1.37, 4.18)			2.10	(1.35, 3.27)
Ever in residential care			2.11	(1.28, 3.47)			1.92	(1.33, 2.76)
ROSH or referred report								
In 12 months prior to index contact			1.43	(1.14, 1.79)			1.41	(1.18, 1.69)
ROSH or referred reports - reported issue in 5 years prior to index								
Drug & alcohol use by the child/young person							1.23	(1.01, 1.50)
Neglect			1.37	(1.07, 1.76)			1.36	(1.13, 1.63)

Note. OR – Odds Ratio; CI - confidence interval.

Table 4. Area under the curve values, by sex and model

		Area under the curve (95% confidence interval)			
		No prior contacts		Up to two prior contacts	
		Demographic & Offending Characteristics	With Child protection Characteristics	Demographic & Offending Characteristics	With Child protection Characteristics
Males	Restricted	0.604 (0.589, 0.619)	0.633 (0.619, 0.647)	0.672 (0.661, 0.683)	0.687 (0.676, 0.697)
	Extensive	0.626 (0.611, 0.641)	0.650 (0.632, 0.664)	0.683 (0.672, 0.694)	0.695 (0.684, 0.706)
Females	Restricted	0.662 (0.639, 0.685)	0.698 (0.675, 0.721)	0.684 (0.666, 0.703)	0.710 (0.692, 0.728)
	Extensive	0.665 (0.642, 0.687)	0.698 (0.675, 0.721)	0.691 (0.672, 0.709)	0.713 (0.695, 0.731)

Table 5. Classification accuracy, by sex and model

No prior contacts	Demographic & Offending Characteristics (Restricted)				With Child Protection Characteristics					
	>= .2	>= .3	>= .4	>= .5	>= .2	>= .3	>= .4	>= .5		
Males (N = 8,752)										
Number >= threshold	4,751	1,192	818	118	3,226	1,312	628	259		
Sensitivity (%)	63.4	25.2	18.8	4.0	63.3	27.7	16.2	7.8		
Specificity (%)	48.3	89.7	93.3	99.4	67.8	88.6	95.4	98.4		
Positive predictive value (%)	25.9	40.9	44.4	65.3	32.0	40.9	50.0	57.9		
Females (N = 4,115)										
Number >= threshold	775	401	109	22	978	405	213	73		
Sensitivity (%)	36.6	22.8	8.2	2.0	47.1	27.1	16.9	7.0		
Specificity (%)	84.6	92.7	98.4	99.7	80.7	93.4	97.1	99.2		
Positive predictive value (%)	31.1	37.4	49.5	59.1	31.7	44.0	52.1	63.0		
Up to two prior contacts	Demographic & Offending Characteristics (Restricted)					With Child Protection Characteristics				
	>= .2	>= .3	>= .4	>= .5	>= .6	>= .2	>= .3	>= .4	>= .5	>= .6
Males (N = 12,266)										
Number >= threshold	7,343	4,318	2,179	1,031	586	7,776	4,170	2,232	1,174	595
Sensitivity (%)	74.0	55.6	34.1	18.3	11.1	79.1	54.6	35.0	20.9	11.5
Specificity (%)	45.6	72.7	88.5	95.4	97.7	42.7	74.0	88.3	94.8	97.7
Positive predictive value (%)	34.5	44.1	53.5	60.9	64.7	34.8	44.9	53.6	60.9	66.4
Females (N = 5,372)										
Number >= threshold	1,633	895	366	97	29	1,820	860	432	200	84
Sensitivity (%)	52.7	35.8	18.1	5.9	1.7	59.2	36.2	23.3	12.4	5.1
Specificity (%)	74.9	87.8	95.8	99.2	99.7	72.1	88.7	95.5	98.3	99.3
Positive predictive value (%)	33.0	40.9	50.6	61.9	58.6	33.2	43.0	55.1	63.5	61.9

The only exceptions were the models for females with up to two prior contacts that included child protection characteristics, which had AUC values just over 0.7. Regardless of whether models included those with no prior contacts with the criminal justice system or those with up to two prior contacts, improvement from including child protection variables in the models was small.

The performance of the models suggests that applying the models in a screening context would result in a lot of false positives and/or the misclassification of those at increased risk of

re-offending. Table 5 shows the level of accuracy of the models (based on restricted demographic and offending characteristics) when different thresholds of predicted probabilities are used to classify those at risk of re-offending (Table A9, available electronically at www.bocsar.nsw.gov.au, shows similar results for those models that included a range of demographic and offending characteristics). If the models were to be used for screening purposes it is likely that similar thresholds would be applied to identify those for further intervention.¹³

For example, in the model based on restricted demographic and offending characteristics for males with no prior contacts, if those with a predicted probability of at least .2 were classified as being at increased risk of re-offending, this would have included 54 per cent (4,751/8,752) of the male sample. While 63 per cent (sensitivity) of those who did go on to re-offend within 12 months would have been classified as being at risk, only one-quarter (positive predictive value = 26%) of those classified as being at risk of re-offending would have re-offended within 12 months – i.e., three-quarters of those classified would not have re-offended within 12 months. By applying a more rigorous cut-off, such as a predicted probability of re-offending of at least .4, 9 per cent of males would have been identified as being at risk of re-offending, and while fewer of those who re-offended within 12 months would have been classified as being at risk (e.g., sensitivity = 19%), a greater proportion of those classified as being at risk would have actually re-offended within 12 months (positive predictive value = 44%).

DISCUSSION

The purpose of this study was to examine whether the inclusion of child protection data would improve the ability to predict re-offending within 12 months in youth with few prior formal contacts with the CJS. BOCSAR has previously developed simple screening tools for the identification of young persons at increased risk of re-offending. These tools have relied on information easily accessible from administrative data sources at the point of contact with the CJS, such as demographic and prior offending characteristics. However, because these tools rely heavily on prior offending characteristics they are of limited usefulness when young persons have had minimal (or no) prior formal CJS contact (i.e., when trying to identify young persons at risk of re-offending at an early stage). Given the breadth of studies finding associations between abuse, neglect, and OOHC and juvenile delinquency and offending, the effect of including child protection data in models of re-offending was explored. It is important to understand that contact with child protection authorities or OOHC is examined not as a cause of delinquency but as a proxy for problems like child abuse and neglect that are known to increase the risk of delinquency.

While identifying differences in risk factors of re-offending for males and females was not the focus of this study, separate models were nevertheless developed for males and females. In males, the following child protection related characteristics were consistently found to be associated with re-offending (after taking into account demographic and offending characteristics): an OOHC placement prior to 10 years of age; a ROSH report in the 5 years prior to the index contact; and reported issues of runaway child or young person in the 5 years prior to the index contact. In females, the following were consistently found to be associated with re-offending: placement in OOHC for more than 10 years; a residential care placement prior to the index contact; a ROSH report in the 12 months prior to the index contact; and

neglect as a reported issue in the 5 years prior to the index contact. Based on previous studies that reported an association between placement instability and delinquency (e.g., Baskin & Sommers, 2011; DeGue & Widom, 2009), it was expected that the risk of re-offending would increase with the number of OOHC placements. However, after adjusting for demographic and offending characteristics, this association was not found. Further, having a reported issue of abuse (whether physical, emotional or sexual) in the 5 years prior to the index contact was not found to be associated with re-offending, after adjusting for demographic and offending characteristics.

While associations between some child protection related variables and re-offending were found, the inclusion of these variables in addition to demographic and offending characteristics did little to improve the ability to predict those at increased risk of re-offending. Even with these variables included, the models had less than acceptable discrimination. This said, ultimately the question of whether or not it is worth using child protection data to assist in identifying juvenile offenders at risk of re-offending depends on whether the benefits associated with correctly identifying a recidivist juvenile offender (i.e., a “hit”) exceed the costs associated with a “miss” (failing to identify a recidivist) and a “false alarm” (mistakenly identifying a juvenile offender as a prospective recidivist). If the costs of a “false alarm” are low and the benefits of a “hit” are high, any prediction instrument that improves on guesswork may be worth having.

The fact that the child protection data did not greatly improve our ability to predict whether a young offender will re-offend should not be construed as implying that problems like child neglect and juvenile delinquency are unrelated, nor that there is little need for child welfare and juvenile justice authorities to cooperate in responding to juvenile delinquency. Indeed, the fact that almost half of the young offenders included in the study had been the subject of a ROSH and/or referred report in the 5 years prior to their contact with the CJS, and almost one in ten had previously been in OOHC, highlights the inter-relationship between child welfare and juvenile delinquency. Further, a limitation of the study is that the proportion of young offenders who had been neglected and/or abused is likely to have been underestimated, as contact with child protection services is only a proxy for abuse and neglect. Similarly, offending will have been underestimated as not all offending results in contact with the criminal justice system.

It is also important to remember that the present study examined the question of whether information about child protection would substantially improve our ability to identify young offenders who are likely to re-offend, in the presence of demographic and offending information. It is another question whether child protection information would assist in identifying which youth in the community are likely to have contact with the criminal justice system (i.e., to offend in the first place). This question was beyond the scope and data provisions of the current study.

In conclusion, findings from the current study highlight difficulties in using administrative data to accurately predict re-offending in young persons with few contacts with the criminal justice system. The inclusion of child protection information along with demographic and offending data did little to improve the performance of re-offending models. However, it remains possible that the inclusion of other administrative data, such as information on educational outcomes, school attendance, performance, and discipline, could assist in the early identification of young persons at risk of persistent involvement in crime. We hope to address this issue in future research.

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NOTES

- 1 However, while Allard et al. (2010) found that only 14 per cent of all young persons born in Queensland in 1990 had at least one contact with the juvenile justice system, proportions varied substantially by gender and Indigenous status: approximately two in three of all Indigenous males and one in four Indigenous females had an offending contact by the age of 17 years.
- 2 Under the *Young Offenders Act 1997* a juvenile offender can also be issued a warning. However, the recording and availability of data on warnings is variable. For this reason, warnings are not included in this study.
- 3 The ROSH reporting threshold was introduced as a key legislative reform under Keep Them Safe on 24 January 2010. The Wood Inquiry recommended that the threshold for reporting be raised from “Risk of Harm” to “Risk of Significant Harm” so that children and young persons at the highest level of risk could be supported by a statutory intervention from FACS, while children and young persons below the threshold could be supported through early intervention programs. The increased threshold was accompanied by the introduction of new initiatives to facilitate the accuracy of risk assessments and reporting, including Child Wellbeing Units, the Mandatory Reporter Guide, and other Structured Decision-Making tools.
- 4 While there may be some differences in the reporting of ROSH and Risk of Harm (referred) reports over the period of the study, the impact of this is expected to be minimal.
- 5 Prior to October 2003, child protection and OOHC information was collected in the Client Information System (CIS), which was introduced in 1988. Due to reporting changes and data quality issues, CIS and KiDS data are not comparable.
- 6 Offending data relating to individuals was not provided to FACS. Similarly, the data FACS provided to BOCSAR did not include personal identifiers, but did include the ROD person number so that BOCSAR could link the offending data with child protection data.
- 7 Re-offences that took place when the young person was 18 years of age and/or re-offences finalised in a Local, District or Supreme Court (i.e., not processed in the Children’s Court) were included.
- 8 While we refer to “re-offences” in this study, it may be the case that the young person did not have a proven offence at the index contact, in which case an offence following their index contact would not technically be a “re-offence”.
- 9 While this means that all re-offences within 12 months of an index appearance that were finalised within 3 months of occurring would be included in the study, some re-offences within 12 months that took more than 3 months to finalise would not have been included. Those that were not included in the study are more likely to relate to index appearances later in the 2011–2012 period and/or to re-offences that occurred later in the observation period (i.e., closer to December 2013).
- 10 Multiple issues can be recorded per report.
- 11 A child or young person with prior OOHC may have subsequently exited from OOHC prior to their index contact.
- 12 A young person may have been the subject of multiple ROSH or referred reports, and multiple issues may have been associated with each report.
- 13 Ideally the models would have been developed on one sample and applied to another.

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APPENDIX

Table A1. Linking ROD cohort to KiDS: matching strategies and number of resulting matches

Pass	Description	No. matches	% of total matches
1. Exact	Last name, first name, DOB and gender matched exactly	10,028	80.8
2. Exact, no gender	Last name, first name and DOB matched	94	0.8
3. Soundex first name	Variation in spelling of first name; all other variables matched	858	6.9
4. First name = middle name	Middle name from ROD matched with first name in KiDS; all other variables matched	8	0.1
5. Alias	DOB and gender matched, either first name or last name matched, with the other name matched with alias recorded in KiDS	1,050	8.5
6. Alias, no gender	DOB matched, either first name or last name matched, with the other name matched with alias recorded in KiDS	13	0.1
7. DOB, MM/YYYY	All variables matched except DOB where month and year of birth matched	359	2.9
Total		12,410	100.0

Note. The original cohort that was provided to FACS included 18,764 unique individuals.

Table A2. Data that FACS provided to BOCSAR, with the ROD person number appended to the records

Variables	
ROD person number	Unique person identifier to allow linkage to ROD data
Out-of-home-care (up to 31 December 2012)	Start and end dates of each OOHC episode Start and end dates of each OOHC placement
ROSH reports (or equivalent, up to 31 December 2012)	Date of each ROSH report (or equivalent) Reporter type (e.g., police, mandatory, non-mandatory) corresponding to each ROSH report Reported issue/s corresponding to each ROSH report: physical abuse, neglect, domestic violence, psychological abuse, sexual abuse, inappropriate sexual behaviour.
Assessment of actual harm or risk of harm (based on secondary assessment, from November 2003 up to 31 December 2012) ^a	Date of assessment of actual harm or risk of harm (based on secondary assessment) Reported issue/s corresponding to each secondary assessment of actual harm or risk of harm: physical abuse, neglect, domestic violence, psychological abuse, sexual abuse, inappropriate sexual behaviour.

Note. FACS – NSW Department of Family and Community Services; BOCSAR – NSW Bureau of Crime Statistics & Research; ROD – Re-offending Database; OOHC – out-of-home-care; ROSH – risk of significant harm.

^a While data on assessments of actual harm or risk of harm was provided this data was not used as many factors could have influenced whether or not a young person had an assessment. Information from risk of significant harm reports was instead used. These data were considered reliable and valid.

Table A3. Classification of reported issues

Contact reported issue	Characteristics of issue
Domestic Violence (DV)	Domestic Violence DV, children exposed to violence DV, children harmed intervening
Drug or alcohol use by the carer	Alcohol abuse by carer Drug abuse by carer
Drug or alcohol use by the child or young person (C/YP)	Alcohol use by child or young person Drug use by child or young person
Emotional abuse	Persistent caregiver hostility Psychological mistreatment Risk of psychological harm
Inappropriate sexual behavior of child or young person	Child inappropriate sexual behaviour
Mental health of the carer	Emotional state of carer Psychiatric disability, carer Suicide risk/attempt of carer
Neglect	Child/n left unattended in car Child/n or YP/s abandoned Failure to thrive, non-organic Inadequate clothing Inadequate nutrition Inadequate shelter or homeless Inadequate supervision for age Medical treatment not provided Neglect EDU:C/YP Not Enrolled Neglect EDU: Habitual Absence Neglect: Hygiene
Other issues of the carer	Unauthorised out-of-home-care arrangement Carer in prison Developmental disability, carer Financial problems of carer Gambling problem of carer Legal guardianship issues Physical disability of carer
Physical abuse	Physical: hit, kick, strike Physical: other Physical: poisoning Physical: shaking baby/child Physical: strangle/suffocate Physical: throwing baby/child Risk of physical harm/injury
Prenatal report	Prenatal Report
Runaway child or young person	Runaway child or young person
Sexual abuse	Risk of sexual harm/injury Sexual: penetration Sexual: exposure pornography Sexual: indecent acts/molestation Sexual: non-physical exploitation
Suicide risk for child or young person	Suicide risk for child or young person
Other issues	C/YP is danger to self /others Death of child, non-accident Death of sibling, non-accident Request for Supported Care Hague Convention, kidnapping

Note. Source: KiDS – CIW; produced by Corporate Governance and Performance, NSW Department of Family and Community Services.

Table A4. Characteristics of the cohort, by sex and number of prior contacts

	No prior contacts						Up to two prior contacts					
	Males		Females		Persons		Males		Females		Persons	
	n	per cent	n	per cent	n	per cent	n	per cent	n	per cent	n	per cent
Total (% of cohort)	8,752	(68.0)	4,115	(32.0)	12,867	(100.0)	12,266	(69.5)	5,372	(30.5)	17,638	(100.0)
Age at index contact (years)												
10	57	0.7	9	0.2	66	0.5	63	0.5	9	0.2	72	0.4
11	148	1.7	40	1.0	188	1.5	176	1.4	42	0.8	218	1.2
12	339	3.9	131	3.2	470	3.7	410	3.3	143	2.7	553	3.1
13	749	8.6	433	10.5	1,182	9.2	904	7.4	490	9.1	1,394	7.9
14	1,252	14.3	788	19.2	2,040	15.9	1,607	13.1	949	17.7	2,556	14.5
15	1,745	19.9	966	23.5	2,711	21.1	2,416	19.7	1,244	23.2	3,660	20.8
16	1,911	21.8	904	22.0	2,815	21.9	2,893	23.6	1,234	23.0	4,127	23.4
17	2,551	29.2	844	20.5	3,395	26.4	3,797	31.0	1,261	23.5	5,058	28.7
Indigenous status												
Indigenous	1,192	13.6	610	14.8	1,802	14.0	2,220	18.1	1,061	19.8	3,281	18.6
Non-Indigenous	6,982	79.8	3,201	77.8	10,183	79.1	9,456	77.1	4,001	74.5	13,457	76.3
Unknown	578	6.6	304	7.4	882	6.9	590	4.8	310	5.8	900	5.1
Remoteness of residence												
Major city	4,795	54.8	2,125	51.6	6,920	53.8	6,572	53.6	2,716	50.6	9,288	52.7
Inner regional	1,609	18.4	795	19.3	2,404	18.7	2,345	19.1	1,061	19.8	3,406	19.3
Outer regional	1,935	22.1	1,001	24.3	2,936	22.8	2,740	22.3	1,336	24.9	4,076	23.1
Remote	186	2.1	88	2.1	274	2.1	280	2.3	118	2.2	398	2.3
Very remote	98	1.1	45	1.1	143	1.1	159	1.3	66	1.2	225	1.3
Missing/ Unknown	129	1.5	61	1.5	190	1.5	170	1.4	75	1.4	245	1.4
SEIFA of residence												
Quartile 1 (Most disadvantaged)	2,411	27.6	1,138	27.7	3,549	27.6	3,556	29.0	1,499	27.9	5,055	28.7
Quartile 2	2,477	28.3	1,240	30.1	3,717	28.9	3,542	28.9	1,663	31.0	5,205	29.5
Quartile 3	2,029	23.2	998	24.3	3,027	23.5	2,826	23.0	1,298	24.2	4,124	23.4
Quartile 4 (Least disadvantaged)	1,711	19.6	681	16.6	2,392	18.6	2,185	17.8	841	15.7	3,026	17.2
Missing/ Unknown	124	1.4	58	1.4	182	1.4	157	1.3	71	1.3	228	1.3
Jurisdiction of index contact												
Caution	6,383	72.9	3,242	78.8	9,625	74.8	7,394	60.3	3,653	68.0	11,047	62.6
Police-referred YJC	216	2.5	71	1.7	287	2.2	395	3.2	145	2.7	540	3.1
Court-referred YJC	73	0.8	52	1.3	125	1.0	190	1.5	108	2.0	298	1.7
Children's Court appearance	1,482	16.9	583	14.2	2,065	16.1	3,414	27.8	1,231	22.9	4,645	26.3
Local Court appearance	583	6.7	163	4.0	746	5.8	853	7.0	230	4.3	1,083	6.1
Higher Court appearance	15	0.2	4	0.1	19	0.2	20	0.2	5	0.1	25	0.1
Number of offences at index contact												
1	6,471	73.9	3,264	79.3	9,735	75.7	8,347	68.1	3,989	74.3	12,336	69.9
2	1,306	14.9	495	12.0	1,801	14.0	2,086	17.0	742	13.8	2,828	16.0
3	549	6.3	190	4.6	739	5.7	904	7.4	320	6.0	1,224	6.9
4	177	2.0	78	1.9	255	2.0	366	3.0	138	2.6	504	2.9
5+	249	2.9	88	2.1	337	2.6	563	4.6	183	3.4	746	4.2
Offence type at index contact												
Violent	1,718	19.6	1,123	27.3	2,841	22.1	2,794	22.8	1,694	31.5	4,488	25.5
Property/fraud	2,851	32.6	2,076	50.5	4,927	38.3	4,018	32.8	2,499	46.5	6,517	37.0
Drugs	1,076	12.3	201	4.9	1,277	9.9	1,377	11.2	257	4.8	1,634	9.3
Property damage	1,680	19.2	344	8.4	2,024	15.7	2,414	19.7	513	9.6	2,927	16.6
Public order	1,497	17.1	401	9.7	1,898	14.8	2,214	18.1	629	11.7	2,843	16.1
Traffic/driving	783	9.0	219	5.3	1,002	7.8	1,211	9.9	320	6.0	1,531	8.7
Breach of violence order	109	1.3	59	1.4	168	1.3	268	2.2	143	2.7	411	2.3
Domestic violence related	482	5.5	308	7.5	790	6.1	859	7.0	477	8.9	1,336	7.6

Table A4. Characteristics of the cohort, by sex and number of prior contacts

	No prior contacts						Up to two prior contacts					
	Males		Females		Persons		Males		Females		Persons	
	n	per cent	n	per cent	n	per cent	n	per cent	n	per cent	n	per cent
Number of prior formal contacts												
0							8,752	71.4	4,115	76.6	12,867	73.0
1							2,209	18.0	825	15.4	3,034	17.2
2							1,305	10.6	432	8.0	1,737	9.9
Number of prior cautions												
0							9,295	75.8	4,302	80.1	13,597	77.1
1							2,219	18.1	817	15.2	3,036	17.2
2							752	6.1	253	4.7	1,005	5.7
Number of prior conferences												
0							11,937	97.3	5,271	98.1	17,208	97.6
1							316	2.6	98	1.8	414	2.4
2							13	0.1	3	0.1	16	0.1
Number of prior court appearances												
0							11,597	94.6	5,146	95.8	16,743	94.9
1							584	4.8	190	3.5	774	4.4
2							85	0.7	36	0.7	121	0.7
Prior juvenile justice supervision												
							260	2.1	83	1.6	343	1.9
Prior offences												
Violent							905	7.4	504	9.4	1,409	8.0
Property/fraud							1,603	13.1	669	12.5	2,272	12.9
Drugs							291	2.4	46	0.9	337	1.9
Property damage							1,118	9.1	221	4.1	1,339	7.6
Public order							803	6.5	182	3.4	985	5.6
Traffic/driving							234	1.9	50	0.9	284	1.6
Breach of violence order							43	0.4	33	0.6	76	0.4
Domestic violence related							216	1.8	115	2.1	331	1.9
OOHC placement												
Prior to index contact	650	7.4	411	10.0	1,061	8.3	1,111	9.1	669	12.5	1,780	10.1
In 12 months prior to index contact	389	4.4	263	6.4	652	5.1	684	5.6	419	7.8	1,103	6.3
Prior to 10 years of age	421	4.8	250	6.1	671	5.2	707	5.8	387	7.2	1,094	6.2
Current placement at time of index contact	317	3.6	211	5.1	528	4.1	537	4.4	326	6.1	863	4.9
Number of OOHC placements entered prior to index contact												
0	8,102	92.6	3,704	90.0	11,806	91.8	11,155	90.9	4,703	87.6	15,858	89.9
1	238	2.7	133	3.2	371	2.9	374	3.1	199	3.7	573	3.3
2	129	1.5	72	1.8	201	1.6	213	1.7	127	2.4	340	1.9
3	69	0.8	44	1.1	113	0.9	128	1.0	66	1.2	194	1.1
4	50	0.6	28	0.7	78	0.6	80	0.7	51	1.0	131	0.7
5+	164	1.9	134	3.3	298	2.3	316	2.6	226	4.2	542	3.1
Time spent in OOHC placements prior to index contact (years)												
0	8,102	92.6	3,704	90.0	11,806	91.8	11,155	90.9	4,703	87.6	15,858	89.9
<1	217	2.5	123	3.0	340	2.6	353	2.9	206	3.8	559	3.2
1 - <5	214	2.5	151	3.7	365	2.8	367	3.0	241	4.5	608	3.5
5 - <10	108	1.2	72	1.8	180	1.4	195	1.6	118	2.2	313	1.8
10+	111	1.3	65	1.6	176	1.4	196	1.6	104	1.9	300	1.7

Table A4. Characteristics of the cohort, by sex and number of prior contacts

	No prior contacts						Up to two prior contacts					
	Males		Females		Persons		Males		Females		Persons	
	n	per cent	n	per cent	n	per cent	n	per cent	n	per cent	n	per cent
Type of OOHC placements in years prior to index contact												
Foster care	320	3.7	205	5.0	525	4.1	549	4.5	343	6.4	892	5.1
Kinship care	406	4.6	267	6.5	673	5.2	710	5.8	435	8.1	1,145	6.5
Residential care	104	1.2	80	1.9	184	1.4	227	1.9	151	2.8	378	2.1
Other care	233	2.7	172	4.2	405	3.2	442	3.6	302	5.6	744	4.2
ROSH or referred report												
In 5 years prior to index contact	2,945	33.7	2,012	48.9	4,957	38.5	4,920	40.1	2,946	54.8	7,866	44.6
In 12 months prior to index contact	1,117	12.8	1,030	25.0	2,147	16.7	1,932	15.8	1,517	28.2	3,449	19.6
Number of ROSH or referred reports, in 5 years prior to index contact												
0	5,807	66.4	2,103	51.1	7,910	61.5	7,346	59.9	2,426	45.2	9,772	55.4
1	966	11.0	524	12.7	1,490	11.6	1,446	11.8	670	12.5	2,116	12.0
2	502	5.7	331	8.0	833	6.5	829	6.8	432	8.0	1,261	7.2
3	303	3.5	224	5.4	527	4.1	504	4.1	311	5.8	815	4.6
4	226	2.6	155	3.8	381	3.0	396	3.2	224	4.2	620	3.5
5	177	2.0	131	3.2	308	2.4	296	2.4	205	3.8	501	2.8
6+	771	8.8	647	15.7	1,418	11.0	1,449	11.8	1,104	20.6	2,553	14.5
ROSH or referred reports - reported issue, in 5 years prior to index contact												
Domestic violence	1,238	14.2	764	18.6	2,002	15.6	2,048	16.7	1,154	21.5	3,202	18.2
Drug or alcohol use by the carer	1,137	13.0	775	18.8	1,912	14.9	1,903	15.5	1,181	22.0	3,084	17.5
Drug or alcohol use by the child/young person	413	4.7	464	11.3	877	6.8	953	7.8	899	16.7	1,852	10.5
Emotional abuse	1,690	19.3	1,188	28.9	2,878	22.4	2,936	23.9	1,839	34.2	4,775	27.1
Inappropriate sexual behaviour of child/young person	308	3.5	118	2.9	426	3.3	532	4.3	197	3.7	729	4.1
Mental health issues of the carer	824	9.4	528	12.8	1,352	10.5	1,422	11.6	841	15.7	2,263	12.8
Neglect	1,505	17.2	1,086	26.4	2,591	20.1	2,721	22.2	1,725	32.1	4,446	25.2
Other issues of the carer	352	4.0	269	6.5	621	4.8	603	4.9	463	8.6	1,066	6.0
Physical abuse	1,716	19.6	1,206	29.3	2,922	22.7	2,983	24.3	1,864	34.7	4,847	27.5
Prenatal report	-	-	2	0.1	2	0.0	2	0.0	3	0.1	5	0.0
Runaway child/ young person	175	2.0	290	7.1	465	3.6	446	3.6	555	10.3	1,001	5.7
Sexual abuse	605	6.9	916	22.3	1,521	11.8	1,026	8.4	1,452	27.0	2,478	14.1
Suicide risk for child/ young person	309	3.5	281	6.8	590	4.6	595	4.9	478	8.9	1,073	6.1