Linking SAAP, child protection and juvenile justice data collections

A feasibility study

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A feasibility study

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Abbreviations

AIHW	Australian Institute of Health and Welfare
CPSS NMDS	Child Protection and Support Services National Minimum Data Set
JJ NMDS	Juvenile Justice National Minimum Data Set
SAAP	Supported Accommodation Assistance Program
SLK	statistical linkage key

Summary

Background

This report presents the findings of a study funded by the Community and Disability Services Ministers' Advisory Council that examined the feasibility of creating a linked data set of three community-sector data collections: child protection, juvenile justice and the Supported Accommodation Assistance Program (SAAP). This data set would be created through statistical data linkage—a powerful tool for combining and extending the utility of existing data sets.

In Australia, both state/territory and federal levels of government are not only committed to developing and maintaining efficient and effective service-delivery strategies but also to intervening early to reduce the number of children and young people who need the services of the child protection, juvenile justice and supported accommodation systems. Such intervention will help governments reduce the number of children and young people at high risk of being socially excluded.

Existing research demonstrates that there are clear links between the experience of child abuse or neglect, homelessness and criminal activity for young people. Consequently, a national data set that contained information on young people in the child protection, juvenile justice and supported accommodation systems would enable the analysis of the movements between these sectors and the characteristics of young people who are involved in more than one sector. This would provide valuable information for the improvement of services for young people and the implementation, monitoring and evaluation of targeted intervention strategies across sectors. In particular, a data set that contained information for a number of years would enable the analysis of the movements of young people over time between these three sectors.

Report findings

State of readiness for data linkage

Both the juvenile justice and SAAP data collections have data suitable for linkage: the juvenile justice collection from 2000–01 and SAAP from 2005–06. The child protection unit-record data collection is currently in the pilot stage. Each collection contains (or will contain) the same statistical linkage key (SLK) variable, which allows the linkage of data with a level of accuracy sufficient for statistical purposes without the need for other identifying information, such as full name.

Technical and methodological issues

There are no technical impediments to linking the SAAP data collection, Juvenile Justice National Minimum Data Set (NMDS) and (in time) data from the Child Protection NMDS. Existing data sets can be linked to form a new data set through the use of statistical data linkage. The easiest method of statistical data linkage involves the simple matching of all complete SLKs. It is conservatively estimated that this would identify at least 90% of all true links. There will be some missing links (for example, due to name changes over time); however, the accuracy of the linkage may be improved by using additional variables that are

common to or related across the data collections, such as the place of residence before receiving a service. The utility of enhancing linkage in this way would need to be tested. The treatment of incomplete or missing SLKs also requires further consideration.

Ethical and privacy issues

While the creation of a linked data set involves linking individual unit records, the use of an SLK to link records rather than other information (such as full name) limits the possibility of identifying a particular individual's data with complete certainty. In addition, all three data collections are held at the Australian Institute of Health and Welfare (AIHW), which has a strict privacy regime based on the *Australian Institute of Health and Welfare Act 1987* and the Commonwealth *Privacy Act 1988* to ensure that personal information is protected and a specific protocol to safeguard privacy during data linkage.

Consent issues are more complex for the SAAP data collection than for the Juvenile Justice and Child Protection NMDSs, which are administrative by-product data. SAAP data are collected with informed consent but this project represents a new use of that data. This issue will require further exploration and the finalisation of data linkage protocols for the SAAP sector, which are currently being drafted.

Linking these three collections would also require state and territory approval. Relevant state and territory administrative committees were consulted regarding privacy practices and data access procedures as part of this feasibility study. While some jurisdictions require local ethics committee approval, separate to the AIHW's ethics committee process, no jurisdiction indicated that there were any jurisdictional legislative impediments to this project proceeding.

Support and resourcing

There is great potential value in linking data relating to SAAP, juvenile justice and child protection. The resulting data would provide a rich source of information for developing early intervention policy in these areas. This project would maximise the use of existing data and would not require the collection of new data. However, it would require the support and commitment of multiple government departments in each jurisdiction across Australia. The linking of data in these areas, while technically and legislatively possible, remains a sensitive new area of data development. Endorsement and support over time, particularly from the relevant administrative committees, would be vital to this project. The findings of the first stage of this project, this report, were endorsed by the National Community Services Information Management Group, Australasian Juvenile Justice Administrators, National Child Protection and Support Services Data Group, and SAAP Coordination and Development Committee in late 2007.

Conclusions

It is feasible to begin linking the currently suitable and available data from the juvenile justice and SAAP national data collections with future stages including child protection data when these are available. As subsequent years of data become available in the future, there would be great value in their inclusion in the linkage project, because children and young people may be involved with the relevant services (especially child protection and juvenile justice services) over a number of years. The accumulation of data would enable flows between services over the long term to be identified and more sophisticated analyses to be conducted.

1 Introduction

This report examines the feasibility of creating a linked data set to analyse the flows of young people between three community services sectors: child protection, juvenile justice and the Supported Accommodation Assistance Program (SAAP) and identify the characteristics of young people who move between the three sectors. Funding has been provided by the Community and Disability Services Ministers' Advisory Council (CDSMAC) for this first stage, which is to develop a method to identify linkages at a client level between child protection, juvenile justice and supported accommodation and assistance services. Future stages of this project would use this method to develop a linked data set to enable analysis of important policy issues involving movement between sectors. In the longer term, the purpose of this project is to assist in reducing the extent to which clients of one service become clients of another service. For example, identifying the characteristics of child protection clients who are also highly likely to become clients of juvenile justice and SAAP would inform the development of early intervention and social inclusion policies and programs.

The next section of this report reviews some of the research into links between child welfare and juvenile justice and suggests policy issues that an analysis of the proposed linked data set could investigate. Then, the relevant data collections are described and their readiness for data linkage discussed. Following this, an overview of the privacy and ethical considerations relevant to data linkage is provided, along with an outline of the privacy regime at the Australian Institute of Health and Welfare (AIHW). The methodological issues specific to the linking of these three data collections are then discussed. Finally, recommendations are made for future stages of this project.

2 Policy issues that could be investigated

2.1 Research into links between child welfare, homelessness and juvenile justice

Existing research shows that there are clear links between the experience of child abuse or neglect, homelessness and criminal activity.

A significant number of young people are involved in the juvenile justice system. A cohort study conducted in South Australia found that around 17% of children born in 1984 had at least one formal police apprehension as a juvenile (Skrzypiec & Wundersitz 2005). Furthermore, a variety of research has found links between this involvement and an experience of homelessness and child abuse or neglect, although estimates of the extent of such interactions vary.

Several Australian studies have found a relationship between child abuse or neglect and involvement in the juvenile justice system. In one such study, Stewart et al. (2005) found that by the age of 17, around 10% of children born in Queensland in 1983 and 1984 had contact with child protection, while 15% had received a police caution and 5% had a finalised children's court appearance. Of those who were maltreated, 26% went on to offend. In a survey of young people in juvenile justice by Pritchard & Payne (2005), almost half of those surveyed reported being the victim of some form of abuse or neglect during childhood. Eighteen per cent reported being left alone for long periods as a child, and about one-third reported being the victim of violent or emotional abuse; the survey did not specifically ask about sexual abuse. In at least 83% of instances, the perpetrator was reported as being a parent/guardian or sibling of the child. At the time of their last offence, 42% of the young people in this survey were not living at home with their parents.

There is also extensive evidence that young people who have been in state care and protection are over-represented among the homeless (National Youth Commission 2008), and studies have found a relationship between offending and homelessness. A study by the National Crime Prevention initiative found that 72% of young homeless people were on a corrective order and 44% had been in a penal facility or institution at some time (NCP 1999). Regarding the temporal relationship between homelessness and youth crime, Martijn & Sharpe (2006) found that for 35 homeless youth aged 14–25 years in Sydney, crime did not precede homelessness for all but one person, but that involvement in criminal activity increased following homelessness. Minkes (2005) concluded that:

> There is consistent evidence that homeless youths break the law more than the general population of young people. They do so in order to survive, stealing for food or breaking into premises for somewhere to sleep…There is also an association between running away from home and long term involvement in crime: nearly half of sentenced prisoners report having run away from home as children.

A more complex picture was found in a larger study conducted in the United States of America. In the study of 602 homeless and runaway youth, 52% reported being arrested at

least once (Chapple et al. 2004). For about half of these arrestees, the first arrest occurred after running away from home. Those who reported being arrested before running away also reported a higher overall number of arrests than those whose first arrest occurred later. Chapple et al. (2004) also noted that the research has consistently identified three predictors of self-reported offending among homeless youth: association with criminal peers, exposure to street stressors and experiences of familial abuse.

Finally, there is evidence that early intervention works: the reduction in the number of homeless youth in Australia from 2001 to 2006 is mostly attributable to early intervention programs (National Youth Commission 2008).

2.2 Policy questions for investigation

Several state and federal government initiatives require information about the involvement of young people in the SAAP, child protection and juvenile justice sectors.

For example, the SAAP V Multilateral Agreement between the Australian Government and the state and territory governments has three relevant strategic priorities:

1. increase involvement in early intervention and prevention strategies
2. provide better assistance to people who have a number of support needs
3. provide ongoing assistance to ensure stability for clients post crisis.

In the recently released report on youth homelessness in Australia, the National Youth Commission (2008) made ten recommendations, which included preventing homelessness by supporting 'at-risk' families, implementing a national approach for the care and protection of children and resourcing early intervention for 'at-risk' young people.

At a broader level, there is an increasing commitment to promoting a socially inclusive society at both state and federal government levels. This requires policies that focus on the reasons for and the problems associated with social exclusion, such as poverty, homelessness and crime, and that address these issues in an interrelated manner (Cappo 2002). Consequently, a key component of social inclusion initiatives is the need for 'joined up' service delivery that can respond to the multiple causes and effects (Cappo 2002).

A linked data set such as the one proposed in this report would allow for the development, monitoring and evaluation of early intervention and social inclusion initiatives by providing information on young people who are at high risk of becoming socially excluded. Examining the patterns of movements between service sectors over time may help develop policies that could result in better outcomes for young people and identify cost savings associated with effective early intervention strategies.

The following are examples of the types of questions that could be answered from analyses of the linked data set. Most of these could be examined over different time periods of varying lengths.

- What is the likelihood of clients of child protection services being supervised by juvenile justice agencies or needing the services of the SAAP? What are the characteristics of young people who receive services from multiple sectors, and what are the differences between these young people and those who do not receive services from multiple sectors?

- Does being homeless increase the chance of a young person entering or re-entering juvenile justice supervision generally, or juvenile detention specifically?
- Does being a juvenile justice client affect subsequent experiences in the child protection system (for example, is it more difficult to find a care placement for young people with a history of juvenile justice supervision)?
- What proportion of young people leaving juvenile detention access SAAP services and what are the implications for post–release support services?
- Do homeless young people spend longer in detention instead of being released into the community (such as on bail or parole)?
- What is the proportion of young people that access services in multiple jurisdictions?
- What is the proportion of Indigenous young people that are clients of more than one of these services (compared to other young people)? What are the implications for early intervention strategies targeting this population?

2.3 Possible types of analysis

Regardless of the specific policy questions, there are a number of general types of analysis that could be undertaken. These would involve both descriptive statistical analyses and multivariate techniques. The principle unit of analysis would be the child or young person.

- Identifying the common pathways for movements between and within service sectors. For short periods of one or a few years, this may simply be movement from one service type to another. As the period of available data increases, there is a potential for these pathways to become more complex with movement back and forth between service types. This involves tabulating the number of links found for each pathway and then possibly allowing for missing data to estimate actual flows (see Section 5.2).
- Comparing the characteristics of young people who did and did not move from one particular service sector to another (or, if appropriate, along a particular pathway through the three sectors). Logistic regression would be an appropriate statistical technique for such an analysis, with the available variables being those in the data for the sector of origin. These may include service items such as length of time as a client and the specific type of intervention or service. It would also be possible to do such an analysis retrospectively, for example, comparing those clients of juvenile justice who within a certain period had previously been in child protection with those who had not.
- For those who do move from one service sector to another, analysing the length of time between the two and the characteristics associated with it. This would entail a form of survival analysis. Variables available for analysis may include those in the linked data from both sectors.
- If complex pathways were found to be sufficiently common, detailed examination of these could involve other forms of regression modelling and event history analysis.

3 State of readiness for data linkage

3.1 Supported Accommodation Assistance Program

3.1.1 Description of data collection

The SAAP National Data Collection has been providing annual information since 1996–97 and currently comprises the client collection, the administrative data collection, and the demand for accommodation collection (AIHW 2007b).

The client collection contains information about all clients receiving support under SAAP of more than an hour's duration. Collected data include basic sociodemographic information as well as information on the services requested by and provided to each client, and their situation before and after receiving SAAP services. There is a high level of participation among SAAP agencies in this collection; in 2005–06, 93% of relevant SAAP agencies participated.

The administrative data collection contains general information about the agencies providing accommodation and support services to people who are homeless or in crisis, including the client target group of each agency and its principal activity, along with funding details and staff capacity.

The demand for accommodation collection is conducted annually over 2 weeks, and measures the level of unmet demand for SAAP services.

A fourth collection, the casual client collection, was conducted annually to obtain information regarding short-term or one-off assistance provided to homeless people, but this collection was discontinued from July 2005 (AIHW 2005).

SAAP agencies can provide data on either paper forms or through an electronic recording system known as the SAAP Management and Reporting Tool (SMART). About 60% of SAAP agencies use SMART. SMART extracts for clients who have left the agency (completed support periods) are sent in every 3 months, while paper forms for clients with completed support periods are collected monthly (AIHW 2005). Information about clients who are ongoing at 31 December and 30 June is also collected. Annual data on ongoing and completed support periods are published. Data are currently stored in separate years but can be merged.

3.1.2 Statistical linkage key

A statistical linkage key (SLK) is created from an alpha code that is assigned to each client by the SAAP agency to maintain privacy. The alpha code consists of the second and third letters of the first given name and the second, third and fifth letters of the last name, ending with either M or F, depending on the sex of the client (AIHW 2005). The client's full date of birth is attached to the alpha code, which is then encrypted by the National Data Collection

Authority (NDCA) upon receipt of the form to create the SLK. The unencrypted alpha code and date of birth are not stored (AIHW 2005).

The protocols of the SAAP National Data Collection require that agencies obtain informed consent from clients before information is collected. If consent is not obtained, only a subset of the form is completed and the alpha code is not recorded. In 2005–06 (the first year of the full SLK), valid alpha codes with consent ('valid consent') were obtained from clients in 82% of support periods (AIHW 2007b). The level of valid consent varied among states and territories and the primary target group of the support agency. Consent must be obtained from accompanying children (a child is defined as a person under the age of 18 years). This consent can be obtained from the child or the parent/guardian, depending on family circumstances and the ability of the child to comprehend the issue of consent. Valid consent for accompanying children is lower than for adults, at around 70%.

An agreed set of protocols for linking SAAP data with other data collections is currently being developed in consultation with the homelessness sector. Data linkage between the SAAP data collection and other data collections will not occur until these protocols have been finalised (AIHW 2005).

3.1.3 Data custodian and data location

The SAAP data are held at the AIHW, which is the data custodian. Data are collected directly from SAAP agencies.

3.1.4 Readiness for linkage

From 2005–06, the SAAP data collection contains the SLK as described above. Data before 2005–06 contains a statistical linkage key consisting of a different combination of letters from the client's name and the year of birth only, rather than the full date of birth. This key is considered less reliable than the current SLK both for longitudinal analysis within the SAAP national data collection and for linkage with other data sets.

Accompanying children are recorded on their guardian's form but are also given an SLK. However, only about 70% of the data for children have a valid SLK, compared with around 80–85% for adults. Initially, the persons in scope for this project would generally be accompanying children and clients aged 18 years or younger. However, the inclusion of older clients may prove useful to allow for instances where young people access SAAP services after leaving either child protection or juvenile justice services. In 2005–06, over one-third (34,900 clients) were aged 24 years or younger, including approximately 13,200 clients (13%) aged 0–17 years. Additionally, there were approximately 50,000 accompanying children (AIHW 2007b).

The SAAP data are currently stored in separate years. Merging across years has not been done in the past because the data are weighted to account for client non-consent and agency non-participation. Depending upon the type of analysis required, it might be possible to either merge the un-weighted data or analyse using the existing separate year data.

Protocols for linking SAAP data with other data sets are currently under development by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) in consultation with the AIHW. These protocols will be

conveyed to the sector through the Australian Federation of Homelessness Organisations. These protocols would need to be finalised before data linkage could begin.

3.2 Juvenile Justice National Minimum Data Set

3.2.1 Description of data collection

The Juvenile Justice National Minimum Data Set (JJ NMDS) is designed to capture information on all young people involved in juvenile justice supervision throughout Australia. The ages of young people in the juvenile justice systems in Australia differ between jurisdictions. To allow for these variations, a client for the purposes of inclusion in the JJ NMDS is:

A person who is under the supervision or case management of the juvenile justice department as a result of:

- having committed or allegedly committed an offence between the ages of 10 and 17 years; or
- having committed or allegedly committed an offence at an age greater than 17 years, and who is treated as a juvenile due to his or her vulnerability or immaturity.

In general, the types of supervision included in the collection are those entailing the direct involvement of the juvenile justice agency, such as formal supervision while awaiting trial or sentencing and while serving a sentence. Both community and custodial supervision types are included. Some types of intervention that may be administered by juvenile justice agencies are *not* in the scope of the JJ NMDS. These include diversionary schemes, conferences, warnings and fines.

There are three collections within the JJ NMDS. The first is the episode-related collection, which is unit-record data. This allows for the collection of information on the flows of individuals into and out of supervision, their movements within supervision, and transfers between jurisdictions. This flow data will, over time, provide valuable information on differences between community-based and detention supervision, and returns to juvenile justice supervision. The second collection is the client collection, which provides one line of data per client and contains all relevant client characteristic variables. This collection includes a unique identifier. Lastly, the centre collection provides some administrative details on the detention centres used in the JJ NMDS. This collection is not relevant to this linkage project.

The collection of information about young people in the JJ NMDS is based on episodes. An episode is defined as:

> A period of time during which a juvenile justice client is under the supervision of, or is case managed by, a state or territory juvenile justice department, as a result of having committed or allegedly committed an offence, and where there is no change in the type of supervision provided or the specific juvenile justice agency responsible.

Episodes provide details on the types of supervision (community-based and detention) that occur at various stages, from awaiting an initial court appearance to post-release supervision.

Only one episode may be recorded for any individual at any one point in time. When a young person is subject to more than one type of supervision simultaneously (for example,

while undergoing a community sentence a young person is placed on supervised bail for a new offence), the most serious episode according to the hierarchy outlined in the data dictionary, is recorded.

A supervision period is defined as:

> A period of time during which a juvenile justice client is under the supervision of, or is case managed by, a state or territory juvenile justice department, as a result of having committed or allegedly committed an offence.

A supervision period pertains to continuous contact with supervision resulting from offences being allegedly committed. One supervision period may contain several episodes as the client moves through the system—for example, from remand to serving a supervised sentence.

Data are collected annually and then merged such that episodes that are ongoing across two collection periods are linked.

3.2.2 Statistical linkage key

The JJ NMDS includes the following data items from which the SLK is formed:

- letters of name—2nd, 3rd and 5th letters of the family/surname and 2nd and 3rd letters of given name
- date of birth
- sex.

These data items are collected for every young person in the JJ NMDS. Currently, less than 1% of young people have missing data that prevent the SLK from being constructed.

3.2.3 Data custodian and data location

The JJ NMDS data are held at the AIHW, which is the data custodian. Data are collected from state and territory departments responsible for juvenile justice.

3.2.4 Readiness for linkage

Three reports of the JJ NMDS covering 2000–01 to 2005–06 have been released and it is anticipated that the fourth report, which will cover 2006–07, will be released in July 2008. It is expected that annual reporting will continue for further years. Although coverage was incomplete for the first report, with data missing from the Australian Capital Territory for 2000–01 to 2002–03, from 2003–04 all young people within scope are included.

In 2005–06, there were around 11,000 young people in juvenile justice supervision (AIHW 2007c) and over 36,000 young people in the entire JJ NMDS. While the principle age of juvenile justice clients is 10–17 years, a significant number are older. In 2005–06, 15% of young people in juvenile justice supervision were aged 18 years or older.

The JJ NMDS is structurally ready to be linked using the SLK. At this stage, the SLK has not been tested in linking young people across jurisdictions within the JJ NMDS.

As the JJ NMDS merges data across years, the flow of young people within juvenile justice supervision can be tracked over time.

3.3 Child Protection National Minimum Data Set

3.3.1 Description of data collection

The Child Protection and Support Services National Minimum Data Set (CPSS NMDS), which is currently in a pilot stage, is designed to capture information on all children and young people involved in the child protection systems throughout Australia. The definition of a client differs but generally involves a person aged 0–17 years.

The CPSS NMDS will comprise three collections:

- child protection specific data, which includes contacts to child protection authorities, notifications, substantiations and services provided by child protection authorities
- children who are on care and protection orders
- children in out-of-home care.

The CPSS NMDS will contain the following six data files: client file, child protection file, care and protection orders file, out-of-home care file, case worker file and sibling file. The case worker file is not relevant to this linkage project.

Data will be collected at unit-record level and each child in the CPSS NMDS will be given a unique identifier. The data to be collected include the type of abuse involved, the relationship of the victim to the person believed to be responsible, types of assistance and support received, and the types of care and protection orders and care arrangements.

In the child protection collection, a contact will occur when the community services department receives, records and assesses initial information about a concern regarding the maltreatment or welfare of a child. Contacts can include allegations of child abuse or neglect, maltreatment, or harm or risk of harm to a child. They may also include broader concerns about the health and wellbeing of a child.

The care and protection order data will be collected in episodes, which are defined as a period of time in which a child is under a care and protection order.

Each type of care and protection order is considered to be a discrete episode such that all orders are recorded. If a child is on more than one order at a time, details of each order are provided.

The out-of-home care data will also be collected in episodes or placements. All children in a placement organised by the child protection authority (or their delegate) or who are case managed by the authority for child protection reasons will be included. These placements may be legal or voluntary, thus children may or may not be on care and protection orders. Placements made in disability services, psychiatric services, juvenile justice facilities, SAAP services or overnight child care services will be included where they meet the definition for a placement.

3.3.2 Statistical linkage key

The CPSS NMDS will include the following data items from which the SLK will be formed:

- letters of name—2nd, 3rd and 5th letters of the family/surname and 2nd and 3rd letters of given name

- date of birth
- sex.

These data items will be collected for every child in the CPSS NMDS.

3.3.3 Data custodian and data location

The CPSS NMDS data will be held at the AIHW, which will be the data custodian. Data will be collected from jurisdictional departments responsible for child protection services.

3.3.4 Readiness for linkage

A pilot collection with 2004–05 data has been implemented but it is expected that further work on the pilot data collection will not continue until at least 2009–10. It is unknown at this stage when regular reporting of the CPSS NMDS will begin.

However, the CPSS NMDS is structurally set up for linkage with the SLK and unit-record flow data. Therefore, once usable data are received, linkage with other data collections will be viable.

It is possible that the first extraction for reporting could include a number of years of data, similar to the first juvenile justice extraction. While it is unlikely that child protection data will be included in the implementation stages of this linkage project, the data may be able to 'catch up' later.

At this stage, it is unknown how many children will be in the CPSS NMDS in any one year. From the aggregate data available in 2005–06, we estimate the number to be between 167,000 and 194,000 (AIHW 2007a).

It is intended that the CPSS NMDS will merge data across years so that the flows of children to and from the system can be tracked over time.

3.4 Summary and conclusions

The three collections each contain the same SLK: from 2000–01 for juvenile justice, 2005–06 for SAAP, and the year of implementation for child protection. Reliable data for the SLK are available for over 99% in juvenile justice and 70–82% for SAAP. The reliability for the proposed child protection data collection is expected to be similar to that for juvenile justice.

Data in the JJ NMDS are merged across years, so longitudinal data exists from 2000–01 onwards with complete coverage of the population from 2004–05. It is intended that the child protection data will be similarly merged. Consequently, it will be possible to analyse the characteristics of different groups of clients over long periods. While the SAAP data collection could, in theory, be merged across years, this is currently untested.

Currently, the SAAP data collection contains only encrypted SLKs—unencrypted data are not stored, although it is possible to link the SAAP data collection with the juvenile justice and future child protection data collections by either de-encrypting the SAAP SLKs or using the SAAP encryption program to encrypt the SLKs in the juvenile justice and child protection data collections. This would require the availability of the program used to encrypt the SAAP SLK for all data collections and across years, as each year of new data would need to

be encrypted using the same program to enable it to be linked to previous years' data. Encryption can have positive benefits for privacy, as discussed in Section 4.2, but it also places limitations on the ability to validly match SLKs (see Section 5).

Linkage between the juvenile justice and SAAP data collections is thus currently possible. As linkage requires the use of the same SLK in the different data collections, Juvenile Justice data from 2000–01 onwards and SAAP data from 2005–06 onwards could be linked. The linkage could be extended to include the child protection data collection when unit-record data become available, as well as further years of data for all three collections. An important issue is the higher proportion of missing linkage key data in the SAAP collection compared with the other two collections, and ways of handling this will need to be considered. This is discussed in Section 5.2.

The linked data set would contain children, young people and adults. Primarily, they will be aged 0–18 years at the time of their first contact with one of the three community sectors. However, over time these young people could re-enter the different data collections at various ages. For example, a young person who first appeared in the juvenile justice data collection could later appear in the SAAP data collection as an adult seeking housing assistance or in the child protection data collection as a parent or carer of a child with a protection order.

4 Privacy, confidentiality and consent

4.1 Personal information, privacy and data linkage

Statistical data linkage is a powerful tool for combining and extending the utility of data sets beyond their individual boundaries. There is an emerging recognition that linkage between existing data sets greatly facilitates investigations into many issues for which it is very difficult and/or expensive to obtain purpose-specific data. This is particularly true when examining movements between services for which considerable data are collected as part of program administration. The value of well-planned research utilising data linkage to contribute to the improvement of community and welfare services in Australia has long been recognised (AIHW: Community Services Ministers' Advisory Council 2004).

The statistical linkage key (SLK) common to the three collections discussed in this paper was first developed for the Home and Community Aged Care Minimum Data Set and is now included in a number of community services administrative data collections to enable linkage to be carried out both within and between data sets. The SLK is accurate enough for statistical purposes but is not (and was not designed as) a unique identifier, so that it does not enable the linkage of a particular individual's data with complete certainty. Analysis has shown that the likelihood of two individuals sharing the same SLK is less than 1%, at least in a number of large aged care data sets, although this proportion may increase with increasing years of data.

4.2 Privacy and data linkage at the AIHW

The AIHW has a strict privacy regime that is based on the confidentiality and privacy regulations in the *Australian Institute of Health and Welfare Act 1987* (s. 29) and the *Privacy Act 1988* and requires research to be approved by the AIHW Ethics Committee. This regime ensures that personal information is protected by strict confidentiality provisions and includes provisions for the imposition of severe penalties on those who breach legislated confidentiality requirements. The privacy regime also includes a requirement that staff sign an Undertaking of Confidentiality.

In addition, the AIHW has a specific data linkage protocol (AIHW 2006) that covers the process of linking data sets held within the AIHW and its collaborating units. This protocol is based on the following underlying principles:

a) Data linkage is not carried out between original complete data sets.

b) Data linkage is undertaken using purpose-specific linkage data sets that contain only the data required for establishing and validating links.

c) Links between data sets are recorded using project-specific unique record identifiers so that links identified for a particular project cannot be used to establish links between other data sets using a chain of links.

d) Analysis files do not contain identifying data (in this case, the full SLK).

This protocol contains procedures to ensure that personal identifying information, specifically the SLK, is separated from other data to be used in analysis, and that any record identifiers that would allow linkage back to the source data are absent from the resulting linked data. This is in accordance with Guideline 3.2.4 of the *National statement on ethical conduct in human research* (NHMRC 2007).

The encryption of the SLKs contained in the three data collections is a further possible measure to protect privacy. As discussed above, the linkage key used in the SAAP collection is currently encrypted and the unencrypted data are not stored. It would be possible to use the same encryption program for the encryption of the linkage keys in the juvenile justice and child protection data sets, which would allow linkage to occur without the use of the original linkage key. However, the use of encrypted SLKs restricts the possibilities for performing probabilistic linkage (see Section 5). While encryption offers some additional privacy protection, the major privacy safeguards are the privacy regime and the data linkage protocol of the AIHW, as discussed above. Unencrypted SLKs may contain further sufficient information for a data custodian with access to an agency-specific collection to identify an individual (AIHW: Community Services Ministers' Advisory Council 2004), although it is unlikely that this would be possible without access to agency-specific information. For these three national administrative data collections held by the AIHW, such agency-specific information would not be available to the AIHW data custodian or the staff working on the collections.

4.3 Consent

The issue of consent regarding the use of personal information differs among the three data collections. The juvenile justice and child protection data collections consist of administrative by-product data, and informed consent is not required for the collection of such data. Instead, the data are routinely collected and recorded in order that the service can be provided. In contrast, the SAAP data collection requires informed consent for the collection of any data. SAAP data collectors are required to provide clients with information about the collection and how the information will be used to enable clients to provide informed consent for the recording of their personal information. Furthermore, from the date of the introduction of the new SLK on 1 July 2005, SAAP data collectors have also been required to inform clients about the SLK and the possibility that it will be used to link data collections before gaining informed consent. A protocol for linkage between SAAP and other data collections is currently being finalised following consultation with the agencies that collect SAAP data (see Section 3.1).

The National Health and Medical Research Council's ethical guidelines (NHMRC 2007) allow for the use of identifiable data to link data collections even where consent has not been obtained:

> Where research involves linkage of data sets, approval may be given to the use of identifiable data to ensure that the linkage is accurate, even if consent has not been given for the use of identifiable data in research. Once linkage has been completed, identifiers should be removed from the data to be used in the research unless consent has been given for its identifiable use (*National statement on ethical conduct in human research,* Guideline 3.2.4, p.30)

The Criminology Research Council has made similar statements regarding criminological linkage projects:

Personal information may only be used to allow records to be linked without the consent of participants if a researcher obtains the approval of a research ethics committee. The committee must be satisfied that personal information will be disclosed only for the purposes of linkage, will not be retained once linkage completed, will be done with sufficient security. The committee must also conclude that the research has public benefit (Chalmers & Israel 2005).

4.4 Personal information and privacy regulations

In Australia, the federal *Privacy Act 1988* regulates Commonwealth agencies as well as government agencies in the Australian Capital Territory. In New South Wales, Victoria, Tasmania and the Northern Territory, agencies are regulated by privacy and personal information legislation[1], while in South Australia and Queensland, administrative instructions or standards[2] require agencies to comply with a set of privacy principles. An information privacy bill[3] was introduced to the Western Australian Parliament in March 2007 (The Office of the Federal Privacy Commissioner n.d.).

With some slight variations in wording, all of these privacy regulations define personal information as 'information…about an individual whose identity is apparent, or can reasonably be ascertained, from that information'.

In several jurisdictions (Victoria, Tasmania, the Northern Territory and the proposed Western Australian Bill), the above privacy legislation allows the use and disclosure of personal information for the purposes of research or analysis as long as the results are not published in a form that identifies an individual. In certain jurisdictions, it is also a requirement that it is impracticable to obtain the individual's consent for the disclosure of personal information or that the recipient of the information does not disclose the information.

The regulations in the remaining jurisdictions (New South Wales, Queensland, South Australia and the Australian Capital Territory) can only use or disclose personal information if it is for a purpose directly related to the purpose for which the information was collected.

As the aim of linking the data collections is to provide information to improve the provision of child protection, juvenile justice and SAAP services, it appears that such data linkage would be in accordance with the privacy regulations discussed above. However, the existence of other pertinent regulations, such as sector-specific legislation, would need to be considered in assessing the privacy implications of data linkage for each jurisdiction.

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1 The *Privacy and Personal Information Protection Act 1988* (NSW), *Information Privacy Act 2000* (Vic), *Personal Information Protection Act 2004* (Tas) and *Information Act 2006* (NT).

2 Information Standard No. 42: Information Privacy (Qld) and PC012—Information Privacy Principles Instruction (SA).

3 Information Privacy Bill 2007.

4.5 Process of data linkage

In order for the three data collections to be linked, ethical clearance would have to be obtained from the AIHW Ethics Committee. All jurisdictions would need to approve the release of their data; the process for this may vary by jurisdiction. Appendix 1 contains information obtained from jurisdictional representatives regarding the process for gaining approval for each of the three collections. The AIHW Ethics Committee would provide overall clearance for the linkage, with the relevant administrative committees (the Australasian Juvenile Justice Administrators, the National Child Protection and Support Services Data Group and the SAAP Coordination and Development Committee) being responsible for obtaining approval from each jurisdiction for the linkage of their data.

5 Methodological issues

5.1 Overview of data linkage method

Data linkage consists of combining data from different sources so that a greater understanding of a situation or individual can be attained (AIHW: Community Services Ministers' Advisory Council 2004). There are two main distinct purposes for data linkage:

- 'administrative' data linkage for client management purposes (for example, linking Centrelink data with Australian Taxation Office data for auditing of individuals)
- 'statistical' data linkage for research and policy purposes (AIHW: Community Services Ministers' Advisory Council 2004).

In 'statistical linkage ', the individual's identity is unimportant. Instead, the focus is on his or her contribution to the overall characteristics of the client group. There are two types of statistical linkage:

- deterministic linkage, which involves the exact one-to-one matching of linkage variables across two or more data collections
- probabilistic linkage, which involves making probability assumptions regarding which records should be matched (AIHW: Community Services Ministers' Advisory Council 2004).

Statistical linkage between data sets is often based on full name and other demographic data and the data are linked using probabilistic methods based on the similarity of the demographic data in records in the data sets being linked. However, complete name data are not essential for data linkage if sufficient data are available to distinguish between individuals with a high probability, such as the data contained within a statistical linkage key (SLK). The SLK can be used to link records either deterministically or probabilistically, if other suitable common information is available in the data sets being linked.

Deterministic linkage involves simple matching of all complete SLKs and is the easiest option. However, this method cannot match cases where any part of the SLK is missing. It can also falsely match SLKs (false positives) when two different people have the same SLK, and fail to match SLKs that belong to the same person (false negative), for example, when one young person has more than one SLK due to a name change or there is a mistake in the recording of a component of the SLK, such as the date of birth.

Probabilistic linkage can be used to reduce the incidence of both false negatives and false positives. This requires additional variables that are common to the data sets being linked or somehow related across them (see Table 1 for examples). Postcode can often be used for this purpose (AIHW: Karmel 2005); however, due to the nature of the services involved, this is unlikely to be sufficiently reliable here as the population of interest may not have a stable place of residence. For example, both the juvenile justice and child protection data collections include provision for 'no fixed abode' as the previous place of residence. However, state or territory of residence may be sufficiently reliable to be used to improve linkage accuracy.

Indigenous status is the only other variable that is common to the three data sets and might have some utility. However, the most likely information that could be used to assist in the linkage process would be dates of services received together with those variables that

provide some information as to where the young person has come from or is going to (see sections 5.3 and 5.5). The utility of this would need to be tested at the time of data linkage.

The possibility of using probabilistic linkage would be reduced if the SLKs were to be encrypted before linkage. In this case, the elements contained within the SLK cannot be separated and used in different combinations to potentially enhance the data linkage. Therefore, it would be advantageous if the SLKs were to remain unencrypted for maximum flexibility in linking the data collections. While encryption may increase privacy, the amount of identifying data in the existing data collections, along with the strict privacy regime in place at the AIHW, make it extremely unlikely that an individual will be able to be identified from the information contained in the linked data set, especially as the SLKs will only be used to construct the linked data set and will not be included in the final data set, as specified in the AIHW data linkage protocols (AIHW 2006). However, if the additional privacy protection were considered warranted, it would be possible to construct the linked data set with encrypted SLKs.

5.2 Treatment of missing linkage key data

The juvenile justice data collection has a negligible rate of missing SLKs and it is expected that this will also be the case with the child protection data collection. However, the SAAP collection has a substantial proportion of clients with missing SLKs, especially for accompanying children. Therefore, an analysis would need to be carried out to determine, as far as possible, whether there are any significant differences between clients with valid linkage keys and clients with missing linkage keys. This would indicate whether the two groups are likely to have the same rates of linkage and thus movements to or from the other two services. If there do not appear to be any substantial differences, it may be possible to estimate the rates for the clients with missing linkage keys by analysing the characteristics of the two groups.

5.3 Variation in linkage keys and validity testing

All three collections use the same SLK: from 2000–01 in the juvenile justice data collection, 2005–06 in the SAAP data collection and from the date of (future) implementation in the child protection data collection.

In the juvenile justice and child protection data collections, it is possible for a client to have more than one SLK (where elements such as letters of name have changed over time). Where multiple SLKs occur, they could each be used for linkage. Currently, less than 1% of clients from a total of about 36,000 in the juvenile justice data set have more than one SLK.

There is a possibility that certain groups will be more likely to have multiple SLKs than others. While the degree of use of aliases among Australian juvenile offenders is unknown, it is likely to be higher than the general population, although name changes due to marriage will be less common. An examination of the use of multiple names by Canadian female prisoners found that 48% had three or more names and 24% had five or more (Martin et al. 2005). In addition, young people of Aboriginal or Torres Strait Islander origin might also have a greater number of aliases or name changes than the other groups. A study of Australian Aboriginal children in the Top End found that by the age of four, 30% had changed the name they commonly used at least once, noting that the children had multiple

names relating to kinship and family relationships and that name changes often occurred following the death of a namesake (Sayers et al. 2003).

Both the SAAP and the child protection data collections contain variables that may assist validity testing of the linkage (Table 1, see also Appendix 2).

Table 1: Variables that could be used for linkage-validity testing

Supported Accommodation Assistance Program data collection	
Source of referral/information	Options include police/legal unit/correction institution, and community services department
Type of house/dwelling immediately before and after	Options include prison/youth training centre
Child protection data collection	
Juvenile justice correction order	Options are juvenile justice order, adult correctional order, neither, unknown
Reason for exiting	Includes option for legal detention
Place of residence after exiting	Includes option for juvenile justice/adult correction facility

5.4 Timing of data

There are a number of possible pathways for young people to move between the service sectors, although they may not all be equally as likely. This means that a full analysis of these pathways would require data from the three sectors over the same period. However, for analyses that centred on one service type, another approach would be to examine those young people who, for example, first encountered child protection in one particular year, and determine what experience they had with SAAP and juvenile justice before and after this time. As the opportunity arose with the increasing availability of data, this could be done for each service sector. In either case, some data would be required over a period of a number of years.

The linked data set would initially contain juvenile justice data from 2000–01 onwards and SAAP data from 2005–06 onwards. Child protection data are currently not available and it is unlikely that data will be available before 2009–10, which is when further work on the pilot collection is expected to commence. It is unknown at this stage whether the pilot collection will include data from previous years.

To maximise the potential of the linkage project, it would be necessary to have the SAAP database merged across years. Where data are available only in single years, analysis is obviously restricted to a 1-year period. We would be able to determine how many people were clients of more than one service within that year only. Where movements between services occur across more than one year, the links would be missed. If the SAAP database were to be merged across years in a manner similar to the other data sets, this would allow for longitudinal analysis of the flows of children and young people between the services over time.

5.5 Overview of linked data set

The final linked data set will consist of most of the variables from the three component data sets. In accordance with the AIHW data linkage protocol (AIHW 2006), the full SLK will not be included in the final data set. However, it would be useful to include the month and year of birth as a variable in the final linked data set to enable age at various dates to be calculated, and, in circumstances were the exact age is of analytical significance, such as to distinguish juveniles from adults, the full date of birth.

Three particular sets of variables are listed below (where JJ stands for juvenile justice and CP stands for child protection). These are (a) those variables that are common to the three data sets, (b) variables that could be used for testing the validity of linkage and (c) derived variables that could be included in the analyses of linked data.

5.5.1 Common variables

- Sex
- Date of birth (or month and year of birth)
- Indigenous status
- Service provision dates

5.5.2 Validity testing variables

- Source of referral/information (from SAAP)
- Type of house/dwelling immediately before and after (from SAAP)
- Juvenile justice/correction order (from CP)
- Reason for exiting (from CP)
- Place of residence after exiting (from CP)

5.5.3 Derived/calculated variables

- Length of time receiving assistance (SAAP)
- Length of time under supervision (JJ)
- Length of time on an order (CP)
- Has previously appeared in SAAP (to flag history)
- Has previously appeared in CP (to flag history)
- Has previously appeared in JJ (to flag history)
- Currently in SAAP (to flag simultaneous services)
- Currently in CP (to flag simultaneous services)
- Currently in JJ (to flag simultaneous services)

In addition, a range of other variables from the three component data sets would be included in the final linked data set (see Appendix 2 for a list of variables in each data set).

Appendix 1 Jurisdictional data linkage approval processes

Jurisdiction	Juvenile justice	Child protection	Supported Accommodation Assistance Program (SAAP)
NSW	Australian Juvenile Justice Administrators (AJJA) representative gives authorisation and has given in-principle approval.	Deputy Director-General, Service System Development, NSW Department of Community Services gives authorisation. The NSW Privacy legislation includes: •*Privacy and personal information Protection Act 1998* (PPIPA) •*Health Records and Information Privacy Act 2002 (*HRIPA).	
Vic	Director responsible for the service gives authorisation.	Director responsible for the service gives authorisation.	Director responsible for the service gives authorisation.
Qld	Department of Communities approves the final format and usage of these data, ensuring privacy and confidential issues associated with these data have been covered. This department would provide its approval through AJJA. Privacy and confidentiality of data is the major issue, particularly the use of any personal identifying data, the usage of which would be unlikely to be approved.	Department of Child Safety would approve the final format and usage of these data, ensuring privacy and confidential issues associated with these data have been covered. This department would provide its approval through the National Child Protection and Support Services Data Group (NCPASS). The Department of Child Safety supports AIHW Ethics Committee protocols Privacy and confidentiality of data is the major issue, particularly the use of any personal identifying data, the usage of which would be unlikely to be approved.	The SAAP Coordination and Development Committee (SAAP CAD) gives authorisation.
WA	Departmental approval required.	Departmental approval required.	SAAP CAD gives authorisation, assuming this is consistent with the SAAP linkage protocols currently being drafted. No need for approval with respect to SAAP data, however the linkage with child protection will require internal departmental clearance. Suggest linkage be done independently of analysis.

SA	Chief Executive, Department for Families and Communities. Legislation: C*hildren's Protection Act 1993*, s. 58 Duty to maintain confidentiality: prohibition on divulging personal information gathered in the administration of the Act, except with Chief Executive approval *Young Offenders Act 1993*, s. 13 (2) Prohibition on divulging personal information gathered in the administration of the Act, except in the course of official duties. While the Act is not clear on this point, it is likely that the Chief Executive, Department for Families and Communities could The Chief Executive the release of information. She would need to be assured that the methods of transfer, storage, data linkage and any reporting out of the linkage maintained the privacy and confidentiality of the individual young person. South Australian Information Privacy Principles may also apply.	Chief Executive, Department for Families and Communities. Legislation: *Children's Protection Act 1993*, s. 58 Duty to maintain confidentiality: prohibition on divulging personal information gathered in the administration of the Act, except with Chief Executive approval. *Young Offenders Act 1993*, s. 13 (2) Prohibition on divulging personal information gathered in the administration of the Act, except in the course of official duties. While the Act is not clear on this point, it is likely that the Chief Executive, Department for Families and Communities could authorise the release of information. The Chief Executive would need to be assured that the methods of transfer, storage, data linkage and any reporting out of the linkage maintained the privacy and confidentiality of the individual young person. South Australian Information Privacy Principles may also apply.	Ethics committee approval required. SAAP CAD representative has given in-principle support.
TAS	Deputy Secretary, Human Services Group, Department of Health and Human Services gives authorisation.	Deputy Secretary, Department of Health and Human Services gives authorisation.	SAAP CAD/ISC (Information Sub Committee) plus authorisation also provided by Director, Housing Tasmania. Some additional training/communication may be required for SAAP data collectors to advise clients on the potential use of data for such data linkage projects.
ACT	NCPASS representative can arrange authorisation through the appropriate directors. ACT ethics committee required.	NCPASS representative can arrange authorisation through the appropriate directors. ACT ethics committee required.	NCPASS representative can arrange authorisation through the appropriate directors. ACT ethics committee required.
NT	Authorisation for the use of data requires Family and Children's Services (FACS) Director endorsement and Chief Executive Officer (CEO) approval.	Authorisation for the use of data requires FACS Director endorsement and CEO approval.	Authorisation for the use of data requires FACS Director endorsement and CEO approval.

Appendix 2 Data collection items

SAAP data collection

Data item	Reference to child protection or juvenile justice
Agency ID	
Support period (start and finish dates)	
Support period ongoing at 30 June	
Consent obtained	
Alpha code (letters of name and sex)	
Date of birth of client	
Sex of client	
Person(s) receiving assistance (individual, couple etc.)	
Source of referral/information	Options include police/legal unit/correction institution, and community services department
Country of birth of client	
Indigenous status (Australian Bureau of Statistics standard)	
Presenting reasons for seeking assistance	
Main presenting reason	
Main income source before and after support	
Labour force status before and after	
Student status before and after	
Type of house/dwelling immediately before and after	Options include prison/youth training centre
Type of tenure immediately before and after	
With whom was the client living immediately before and after	
Location of client's last home	
Case management plan	
Case management goals	
Support to client	
Details of SAAP/Crisis Accommodation Program (CAP) accommodation	
Alpha code of accompanying children	
Date of birth of children	
Sex of children	
Country of birth of children	
Aboriginal and Torres Strait Islander (ATSI) status	
Support to children	

Juvenile Justice NMDS

Data item	Reference to child protection or homelessness
Client collection	
Client ID	
Letters of name	
Date of birth	
Sex	
Indigenous status	
Date of first contact	
Episode collection	
Episode ID	
Client ID	
Entry date	
Juvenile justice episode type	
Transferred from	
Last known home suburb/town/locality name	Includes options for no fixed abode and unknown
Last known home postcode	
Juvenile justice agency name	
Juvenile justice agency postcode	
Reason for exit	
Exit date	

Child Protection NMDS

Data item	Reference to juvenile justice or homelessness
Client file	
Client ID	
Letters of name	
Date of birth	
Estimated date of birth flag	
Sex	
Indigenous status	
Main language other than English	
Child with disability	
Child protection file	
Client ID	
Contact date	
Unborn child flag	
Suburb etc. at time of contact	Includes option for no fixed abode
Postcode at time of contact	
Personal or professional relationship of notifier	
Type of service of notifier	
Contact assessment decision	
Date contact assessment decision was made	
Date investigation commenced	
Date investigation concluded	
Investigation outcome	
Living arrangements	
Primary abuse type	
Secondary abuse type	
Relationship of person believed responsible	
Type of assistance support – protective services	
Type of assistance support –intensive family support services (IFSS)	
Type of assistance support – other support services	
Type of assistance support – respite care	
Type of assistance support – referral/ advice	
Type of assistance support – no service	
Out-of-home care flag	
Child protection order flag	

Care and protection order file	
Client ID	
Date of effect	
Type of order	
First ever order flag	
Suburb etc. before entering out-of-home care (OHC)	
Postcode before entering OHC	
Date of expiry	
Reason order no longer applies	
Date of initial case plan	
Date of case plan review 1	
Out-of-home care file	
Client ID	
Suburb etc. immediately before	Includes option for no fixed abode
Postcode immediately before	
Suburb etc. of placement	
Postcode of placement	
Date of entry	
Legal status	
Juvenile justice/correction order	Options are juvenile justice order, adult correctional order, neither, unknown
Financial payment flag	
Agency/carer ID	
Placement type	
Indigenous status of carer	
Date of exit	
Reason for exiting	Includes option for legal detention
Place of residence after exiting	Includes option for juvenile justice/adult correction facility
Date of initial case plan	
Date of case plan review	
Sibling file	
Client ID	
Sibling/significant other ID number	
Sibling date of birth	
Sibling sex	

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