Examining the intersection of child protection and public housing: development, health and justice outcomes using linked administrative data

Catia Malvaso 1,2, Alicia Montgomerie,1 Rhiannon Megan Pilkington,1 Emma Baker,3 John W Lynch1,4

ABSTRACT
Objective We described development, health and justice system outcomes for children in contact with child protection and public housing.

Design Descriptive analysis of outcomes for children known to child protection who also had contact with public housing drawn from the South Australian (SA) Better Evidence Better Outcomes Linked Data (BEBOLD) platform.

Setting The BEBOLD platform holds linked administrative records collected by government agencies for whole-population successive birth cohorts in SA beginning in 1999.

Participants This study included data from birth registrations, perinatal, child protection, public housing, hospital, emergency department, early education and youth justice for all SA children born 1999–2013 and followed until 2016. The base population notified at least once to child protection was n=67,454.

Primary outcome measure Contact with the public housing system.

Secondary outcome measures Hospitalisations and emergency department presentations before age 5, and early education at age 5, and youth justice contact before age 17.

Results More than 60% of children with at least one notification to child protection had contact with public housing, and 60.2% of those known to both systems were known to housing first. Children known to both systems experienced more emergency department and hospitalisation contacts, greater developmental vulnerability and were about six times more likely to have youth justice system contact.

Conclusions There is substantial overlap between involvement with child protection and public housing in SA. Those children are more likely to face a life trajectory characterised by greater contact with the health system, greater early life developmental vulnerability and greater contact with the criminal justice system. Ensuring the highest quality of supportive early life infrastructure for families in public housing may contribute to prevention of contact with child protection and better life trajectories for children.

STRENGTHS AND LIMITATIONS OF THIS STUDY
⇒ This descriptive study provides epidemiological insight into the largely unexplored intersection between child protection and housing systems using whole-of-population linked administrative data.
⇒ The findings of this study are based on data drawn from South Australia and may not be directly generalisable to other locations because of different administrative systems.
⇒ Despite data being drawn from one Australian jurisdiction, the qualitative relationship between child protection and housing is likely to be similar.

INTRODUCTION
Child maltreatment is a worldwide problem and poor outcomes among maltreated children have been well documented.1 Contact with child protection systems is common. In South Australia (SA), one in three children was reported to child protection by age 18 and, of those reported, 38% were first reported by age 5.2,3 This cumulative incidence is approximately twice that of asthma.4 In Australia, the number of notifications to child protection that were screened-in for review has reached unprecedented levels, with more than 450,000 notifications in 2018–2019.5 The scale of the child protection problem is consistent with data across Australian jurisdictions,6,7 New Zealand,8 California9 and the UK.10,11 Extensive reforms within statutory child protection have been recommended by numerous inquiries.12–15 A consistent theme is the call for a public health approach to reduce child protection contact through greater integration of preventive efforts across multiple government agencies. However, the design of siloed ‘incident-based’ information systems (ie, agencies counting episodes of contact)
does not support integration because different agencies may not be able to view their ‘common clients’.5

Secure, safe and affordable housing is a basic social determinant of health and is crucial as a stable base for child health and development. Inadequate housing has been suggested as an underlying reason for child protection contact because it reflects resource constraints that limit family capacity to provide adequate care.16–18 It recognised that any association between housing and child protection may vary depending on the type of housing, its quality, location and the community within which different types of housing are situated. It is probable that contact with public housing and child protection systems may be the result of the same underlying conditions (eg, poverty). However, the connection between child protection and housing system contact has been largely unexplored.19 We do not know how many children in contact with child protection are also in contact with public housing. Under calls for greater integration across agencies, it is unclear what role the housing system might play in child maltreatment prevention.

This study describes the intersection between the child protection and public housing systems, and subsequent health, developmental and justice system outcomes. The analysis is deliberately descriptive to explore the role of agencies outside of statutory child protection.20 First, we documented the number of children in contact with child protection who also had contact with public housing. Second, we identified the proportion of children for whom housing contact preceded child protection notification. Third, we examined perinatal characteristics, emergency department (ED) presentations, hospitalisations, early developmental vulnerability and youth justice system contact for children known to both child protection and housing systems.

METHOD
Data source
The Better Evidence Better Outcomes Linked Data (BEBOLD) platform is a comprehensive linked data platform able to track children’s well-being from before birth into early adulthood. It contains deidentified whole-of-population linked administrative data on all SA children born from 1999 onwards. Data were probabilistically linked by an independent linkage agency using demographic characteristics. Australian data linkage systems typically estimate a false linkage rate of 0.1%–0.5%.21 22

Child protection
Information on children who had contact with child protection was obtained from the SA Department for Children Protection (DCP). Children were considered to be in contact with the child protection if they were the subject of at least one report by age 16. In SA, any individual can make a report (known in SA as a notification) to DCP if they suspect on reasonable grounds that a child is, or may be, at risk of child abuse, neglect or harm.

Notifications are thus the ‘front-end’ of the child protection system. Notifications are then assessed to determine whether they should be screened-in, and then potentially enter an investigation phase. SA operates under legislation of mandatory reporting for any volunteer or professional who works with children to notify concerns. The base population for this analysis were children notified at least once to child protection was n=67,454.

Public housing system
Information on all children known to the jurisdictional government-funded housing system was obtained from the SA Housing Authority. This Authority collects data on people who have received or applied for government managed housing services and short-term private rental assistance schemes. It does not include schemes funded by the federal government or delivered by non-government agencies. In this study, children were considered to be known to the housing system if they were recorded as living in households who had received at least one of three different types of housing assistance, including (1) lived in a household receiving short-term private rental assistance; (2) listed as part of a household on a waitlist for public housing; and/or (3) had lived in public housing. These services are offered on a means-tested basis, and because household social and financial circumstances can change, it is possible that a child may have experienced all three types of public housing assistance over time.

Short-term private rental assistance provides financial assistance to help secure or maintain a tenancy in the private market, such as bond guarantees, cash bonds, up to 2 weeks’ rent in advance, rent in arrears (for existing tenancies) and financial assistance for up to three nights’ emergency accommodation. Families who are unable to access suitable housing and who meet income and asset eligibility criteria can apply to live in public housing. They may be placed on a public housing waitlist if they are awaiting approval of an application, awaiting housing becoming available or awaiting transfer to another property.

Perinatal characteristics
Perinatal characteristics and demographic information was sourced from the SA Perinatal Statistics Collection. Perinatal data were supplemented and validated by Births Registrations data, which included parental and child demographic information as well as basic clinical birth data. Pregnancy and birth outcome information included maternal smoking in the second half of pregnancy (yes/no), low birth weight (<2500 g/≥2500 g), preterm gestational age (<37 weeks/≥37 weeks), number of previous births, insufficient antenatal care defined as <7 visits (yes/no), and a postnatal health check at approximately 1–4 weeks that is universally available (yes/no). Sociodemographic variables included maternal age, maternal marital status (partner/no partner) and parental labour force status (in labour force/not in labour force). Postcode

was used to derive a neighbourhood level indicator of sociodemographic disadvantage (Index of Relative Socioeconomic Advantage and Disadvantage; IRSAD)\textsuperscript{23} that included neighbourhood aggregate information on income, education, employment, housing, car ownership, lone parenthood, English proficiency and disability.

**Health, education and justice system outcomes**

Contact with adjacent agencies included emergency department (ED) presentation before age 5 (yes/no); inpatient public hospital visit (yes/no) before age 5; developmental vulnerability at age 5 on one or more domains (yes/no) and identified as special needs (yes/no) using the Australian Early Development Census (AEDC)\textsuperscript{24}; and any contact with the youth justice system (yes/no) and admission into custody (yes/no) before age 17.

**Statistical analyses**

Data are presented for all SA children born from 1999 to 2013 for whom child protection and housing data were available. In stage 1 of the analysis, we calculated the proportion of children who had at least one notification to child protection and contact with public housing. The follow-up time from birth to contact with child protection and/or housing was not the same for all children because a child born in 1999 would have had ~16 years to have contact with these systems, whereas a child born in 2013 would have only had ~2 years. In stage 2, we calculated the proportion of children who had contact with the child protection and/or the housing system before age five for children born 1999–2010 to ensure that all children had the same follow-up time. In stage 3, we compared sociodemographic and characteristics at birth for children who had contact with the child protection system, ED presentation and inpatient hospital visits before age 5, early development at age 5, and contact with the youth justice system before age 17 (for the 1999 birth cohort only to ensure follow-up to age 17), according to types of housing system contact. For these comparisons, mutually exclusive categories of housing system contact were created to broadly reflect levels of need: (1) no contact with the housing system; (2) children in households which had received short-term private rental assistance but who had never been on a public housing waitlist or had lived in public housing; (3) children in households who had been on a public housing waitlist or who had been in households receiving short-term private rental assistance but had never lived in public housing; and (4) children who had ever lived in public housing before age 5. Analyses were conducted in Stata SE V.15.\textsuperscript{25}

**Patient and public involvement**

No patient involved.

**RESULTS**

Of the children born 1999–2013 who had been notified to child protection at least once (n=67454), over half (n=40540; 60.1%) also had contact with public housing. Figure 1 provides a breakdown of public housing contact among children with at least one notification to child protection. The largest proportion (n=33492; 82.6%) were in households provided with short-term private rental assistance, followed by those who were ever on a public housing waitlist (n=24439; 60.3%). A relatively smaller proportion (n=16078; 39.7%) had ever lived in public housing. However, it was common for children to have experienced combinations of types of housing assistance. As can be seen by the number in the centre of the Venn diagram, just under a quarter of children (n=9583; 23.6%) had experienced all three types of housing assistance.

Table 1 shows the number of children with child protection notification and different types of housing system contact experienced.

![Figure 1](https://example.com/figure1.png)

**Figure 1** Children born 1999–2013 with at least one child protection notification and different types of housing system contact experienced.
and living in the most disadvantaged areas (33.9% vs 57.0%). We examined whether children known to both systems had received a postnatal health check that is universally available. Although over half (55.2%) of children known to child protection but who did not have housing system contact did not receive a health check, the proportion was even higher (60%–69%) among those who also had contact with the housing system.

Being admitted to hospital and ED presentations was common for all groups. For hospital admissions, this ranged from 44.3% for children known to child protection who had also been listed on a public housing waitlist, to 50.6% for those who ever lived in public housing. For ED presentations, this ranged from 38.6% for children known to child protection who had ever lived in public housing to 47.1% for those who had lived in a household receiving short-term private rental assistance.

The proportion of children identified as developmentally vulnerable on one or more domains at age 5 differed depending on the type of housing assistance provided. Compared with children notified to child protection but who had no contact with housing, a higher proportion of children who were notified and who ever lived in public housing were developmentally vulnerable (37.4% vs 56.5%) and a higher proportion were identified as having special needs (10.2% vs 14.0%).

For the 1999 birth cohort, contact with the youth justice system before age 17 also differed across the different types of housing assistance, with 10% of children who were notified and who lived in public housing before age five experiencing youth justice supervision and 7% entering custody by age 17 (compared with 1.6% and 1.3% who had only been notified). See online supplemental material for subsequent birth cohorts.

**DISCUSSION**

There is substantial overlap between children known to the child protection and public housing systems in SA. Over half of the children born 1999–2013 who were notified at least once to child protection also had contact with the housing system, and over 60% of those known to both systems were known to housing first. For additional context, 13.9% of children not known to child protection had contact with the housing system (data not shown). Children known to both systems experienced a greater burden of hospitalisations, emergency department presentations, developmental vulnerability and a higher

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**Table 1** Timing of child protection and housing system contact before age 5 for children born 1999–2010

<table>
<thead>
<tr>
<th>Any housing system contact</th>
<th>Different types of housing system contact</th>
<th>Listed on a public housing waitlist†</th>
<th>Ever in public housing‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short-term private rental assistance only*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>As % of (A)</td>
<td>As % of (B)</td>
<td>n</td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
<td>-------------</td>
<td>---</td>
</tr>
<tr>
<td>Notified to child protection (A)</td>
<td>35 144</td>
<td>144</td>
<td>6079</td>
</tr>
<tr>
<td>Known to housing and child protection (B)</td>
<td>21 477</td>
<td>61.0</td>
<td>3299</td>
</tr>
<tr>
<td>Known to housing before child protection</td>
<td>12 924</td>
<td>36.8</td>
<td>3299</td>
</tr>
<tr>
<td>Known to housing and child protection at the same time</td>
<td>73</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Known to housing after child protection</td>
<td>8 490</td>
<td>24.1</td>
<td>2758</td>
</tr>
</tbody>
</table>

*Excludes children who have been in, or on a waitlist for, public housing.
†Includes children who have been in families receiving short-term private rental assistance but excludes children who have been in public housing.
‡Includes all children who have ever been in public housing.
There may be potential for the public housing system to be a focus for prevention efforts in child maltreatment given our findings that over a third of all the children who came to the attention of child protection by age five were already receiving some form of housing assistance.

A coordinated service approach from agencies providing housing assistance and those providing family support might better meet the needs of some families rather than services operating in isolation. With ongoing support to ensure basic housing needs are met, families may be better able to engage with other support services.

Table 2  Characteristics at birth of children with at least one notification to child protection before age 5 with different types of housing system contact, born from 1999 to 2010

<table>
<thead>
<tr>
<th>Maternal age</th>
<th>No housing contact (n=13667)</th>
<th>Short-term private rental assistance only* (n=6079)</th>
<th>Listed on a public housing waitlist† (n=6241)</th>
<th>Ever in public housing‡ (n=9157)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>% col</td>
<td>n</td>
<td>% col</td>
</tr>
<tr>
<td>&lt;19</td>
<td>677</td>
<td>6.7</td>
<td>1064</td>
<td>19.9</td>
</tr>
<tr>
<td>20–24</td>
<td>2053</td>
<td>20.4</td>
<td>1880</td>
<td>35.2</td>
</tr>
<tr>
<td>25–29</td>
<td>2772</td>
<td>27.6</td>
<td>1283</td>
<td>24.0</td>
</tr>
<tr>
<td>30–34</td>
<td>2616</td>
<td>26.0</td>
<td>744</td>
<td>13.9</td>
</tr>
<tr>
<td>35–39</td>
<td>1485</td>
<td>14.8</td>
<td>305</td>
<td>5.7</td>
</tr>
<tr>
<td>40+</td>
<td>452</td>
<td>4.5</td>
<td>72</td>
<td>1.3</td>
</tr>
</tbody>
</table>

| Baby Aboriginal or Torres Strait Islander | 632 | 6.3   | 370  | 6.9   | 695  | 13.0  | 2541 | 29.6  |
| Mother's marital status—no partner      | 2046| 20.4  | 1769 | 33.1  | 2191 | 41.1  | 3987 | 46.5  |
| Mother not in labour force              | 4899| 48.9  | 3397 | 63.7  | 4027 | 76.0  | 7276 | 85.3  |
| Father not in labour force              | 1556| 16.2  | 1173 | 23.5  | 1816 | 37.5  | 3941 | 52.1  |
| Jobless family                          | 1191| 11.8  | 1132 | 21.2  | 1623 | 30.5  | 3204 | 37.4  |

| Lived in the most disadvantaged SEIFA quintile | 3391 | 33.9 | 2291 | 42.9 | 2445 | 45.9 | 4888 | 57.0 |
| Mother smoking in pregnancy              | 3126| 31.6  | 2328 | 44.1  | 2758 | 52.6  | 5346 | 63.6  |
| Low birth weight (<2500 g)                | 896 | 8.9   | 492  | 9.2   | 570  | 10.7  | 1135 | 13.2  |
| Preterm birth                            | 1036| 10.3  | 550  | 10.3  | 625  | 11.8  | 1187 | 13.9  |

| Mother number of previous births          | None | 3685 | 36.7 | 2255 | 42.3 | 2116 | 39.8 | 2437 | 28.5 |
|                                         | 1    | 3108 | 31.0 | 1555 | 29.1 | 1476 | 27.7 | 2128 | 24.9 |
|                                         | 2    | 1761 | 17.6 | 891  | 16.7 | 883  | 16.6 | 1600 | 18.7 |
|                                         | 3    | 863  | 8.6  | 391  | 7.3  | 459  | 8.6  | 1101 | 11.8 |
|                                         | 4+   | 615  | 6.1  | 245  | 4.6  | 385  | 7.3  | 1387 | 16.2 |

| Insufficient antenatal care (<7 visits)   | 1264| 13.8  | 811  | 16.3  | 1063 | 21.8  | 2290 | 29.5  |
| 1 to 4 week health check                  | 7717| 56.5  | 4175 | 68.7  | 3750 | 60.1  | 5768 | 63.0  |
| Hospital inpatient before age 5           | 4961| 36.3  | 2801 | 46.1  | 2765 | 44.3  | 4635 | 50.6  |
| Emergency department presentation before age 5 | 4742 | 34.7 | 2862 | 47.1  | 2539 | 40.7  | 3532 | 38.6  |

| Developmentally vulnerable at age 5       | 1035| 37.4  | 667  | 43.3  | 561  | 46.8  | 1019 | 56.5  |
| Identified as special needs at age 5       | 319 | 10.2  | 157  | 9.1   | 154  | 11.2  | 301  | 14.0  |
| Any youth justice involvement up to age 17§ | 12  | 1.6   | 8    | 3.6   | 24   | 4.7   | 63   | 10.0  |

| Entered custody before age 17§             | 10  | 1.3   | 5    | 2.2   | 18   | 3.5   | 44   | 7.0   |

*Excludes children who had been in, or on a waitlist for, public housing.
†Includes children who had been in families receiving short-term private rental assistance but excludes children who had been in public housing.
‡Includes all children who had ever been in public housing.
§Includes children born in 1999 only to ensure follow-up time for Youth Justice to age 17.
Housing workers could be upskilled to provide the relevant outreach and community connections to support parenting-related needs. Using housing as a conduit to community-based support services may be viewed as less threatening because contact and support are provided while delivering a housing benefit rather than in the context of child protection where parenting practices are scrutinised.

Despite their preventive potential, housing agencies are resource constrained and have failed to keep pace with need with 149,000 households waiting housing allocation in 2019.26 A decline in the proportion of public housing stock has occurred alongside housing affordability crisis in Australia putting many households at increased risk of financial stress, which may impact child well-being.27 Unmet demand for homelessness services is also increasing, with 32.7% of individuals with an identified need being unmet in 2017–2018.28 Individuals experiencing family violence comprised 40% of specialist homelessness services clients in 2016–2017, with more than one-fifth of clients (22%) including children under the age of 10.29

Although the findings of this study are based on data drawn from SA and may not be directly generalisable to other locations because of different administrative systems, the qualitative relationship between child protection and housing is likely to be similar, especially in other Australian jurisdictions.

This paper is the first to demonstrate the large overlap between families known to child protection and public housing systems. It is well known that there are multiple drivers of child maltreatment, including family violence, serious mental health issues, and drug and alcohol abuse and that these often co-occur with poverty and poor housing. Secure, safe and stable housing is a fundamental social determinant of health. This study has shown the added health, developmental and criminal justice burden for the substantial proportion of children experiencing both child protection and housing contact. Ensuring the highest quality of supportive early life infrastructure for families in public housing may contribute to prevention of contact with child protection and better life trajectories for children.

**Author affiliations**

1BetterStart Health and Development Research, School of Public Health, Faculty of Health and Medical Sciences, The University of Adelaide, Adelaide, South Australia, Australia.

2School of Psychology, Faculty of Health and Medical Sciences, The University of Adelaide, Adelaide, South Australia, Australia.

3Australian Centre for Housing Research, School of Social Sciences, Faculty of Arts, Business, Law and Economics, The University of Adelaide, Adelaide, South Australia, Australia.

4Population Health Sciences, Bristol Medical School, University of Bristol, Bristol, UK.

**Twitter** Emma Baker @HealthyCities.

**Contributors** All authors were involved in study conception and design, interpretation of the data and drafting of the manuscript. JWL, RMP, AM and CM were involved in the acquisition of data. AM and CM analysed the data. EB and JWL provided critical revision of the article. CM accepts full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study involves human participants and was approved by the SA Department of Health Human Ethics Research Committee (HREC; 377/06/2013; HREC/13/SAH/106), the University of Adelaide HREC (H-185-2011), and the Aboriginal Health Research Ethics Committee (REC2411/9/14). SA NT Datalink operates under strict data security protocols and implements high level physical security measures. Their security protocols are in accordance with the Australian Government Protective Security Policy Framework, the Population Health Research Network Information Governance Framework, and the NHMRC Code for Responsible Conduct of Research.

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**Data availability statement** No data are available. The data underlying this article were provided by several Australian State and Commonwealth government agencies under agreements with the researchers led by author JWL. SA NT Datalink is the independent linkage authority and multiple ethics committees. Data are only able to be accessed by researchers who have entered into agreements with the Data Custodians and are approved users by the Human Research Ethics Committee. Data can be accessed through an application and approval process administered by the independent data linkage authority, SA NT Datalink.

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**ORCID iD** Catia Malvaso http://orcid.org/0000-0003-1227-5434

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