Title: Entering out-of-home care during childhood: Cumulative incidence study in Canada and Australia

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Author's names, affiliations and email addresses:

Melissa O'Donnell, Telethon Kids Institute, The University of Western Australia, Perth, Australia. Email: Melissa.O'Donnell@telethonkids.org.au

Miriam Maclean, Telethon Kids Institute, The University of Western Australia, Perth, Australia. Email: Miriam.Maclean@telethonkids.org.au

Scott Sims, Telethon Kids Institute, The University of Western Australia, Perth, Australia. Email: Scott.Sims@telethonkids.org.au

Marni Brownell, Manitoba Centre for Health Policy, Department of Community Health Sciences, University of Manitoba, Winnipeg, Manitoba, Canada. email: marni_brownell@cpe.umanitoba.ca

Okechukwu Ekuma, Manitoba Centre for Health Policy. Email: oke_ekuma@cpe.umanitoba.ca

Ruth Gilbert, Population Policy and Practice Programme, University College London, Institute of Child Health, London. Email: r.gilbert@ich.ucl.ac.uk

Corresponding Author and Address: Melissa O'Donnell, Telethon Kids Institute, The University of Western Australia, 100 Roberts Road, Subiaco, Western Australia. Telephone: (08) 9489 7777. Email: Melissa.O'Donnell@telethonkids.org.au

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Abstract

Cumulative incidence provides a more accurate indicator than annual incidence rates of the number of children who experience out-of-home care during childhood. The study utilises a cohort of all children born in Western Australia (WA) 1994-2005 and Manitoba 1998-2008 using de-identified linked data. Life tables were used to calculate the age-specific cumulative incidence over time and for at-risk groups. Cox regression was used to compare risk factors for entry to care. Manitoba had a larger proportion of children entering care compared to WA (9.4% vs 1.5% by age 12). Over time children entered care at a younger age in both WA (HR=1.5, CI:1.4-1.5) and Manitoba (HR=1.5, CI:1.5-1.6). Similar factors were associated with earlier age care entries in both countries including: socioeconomic disadvantage, young maternal age, maternal hospital admissions for mental health issues, substance misuse and assault. Supplementary analysis for WA showed a time trend with young children (<3 years of age) who entered care spending an increasing proportion of their early years in care. Whilst Manitoba had a larger proportion of children entering care, over time in Western Australia children have been entering care at a younger age and spending more time in care. These latter factors contribute to an increased burden on the out-of-home care system. Manitoba had over five times greater cumulative incidence than WA, however risk factors for entry to out-of-home care were consistent in both countries. Knowledge of the risk factors for entry to out-of-home care can inform targeted support and prevention programs.

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Introduction

In Australia and Canada, like many other developed countries, increasing numbers of children are being placed in out-of-home care (Australian Institute of Health and Welfare, 2007; N. Gilbert, 2012). Concerns have been raised about the pressure on out-of-home care systems to keep up with increasing demand (Bromfield & Osborn, 2007; Farris-Manning & Zandstra, 2003). Changes in out-of-home care entry rates are an important indicator of the impact of policy variations on families. However, current measures of out-of-home care based on annual incidence rates do not adequately reflect shifts in age at first entry into care or which sections of the community are most affected. In several countries, children are coming into care at an earlier age (Mc Grath-Lone, Dearden, Nasim, Harron, & Gilbert, 2016). This potentially could lead to more children being placed in care during childhood, and placed for longer, thereby having a cumulative burden on the out-of-home-care system (R. Gilbert et al., 2012; Zhou & Chilvers, 2010).

This study will report on age-specific cumulative incidence rates of first entry into out-of-home care using state level data from two countries, Australia and Canada. Cumulative incidence studies of out-of-home care have previously been used for two purposes. First, to extend research examining disproportional representation of minority ethnic groups in maltreatment reports and substantiated maltreatment (e.g. Sabol, Coulton, & Polousky, 2004) into out-of-home care placement. Two US studies used this approach (Magruder & Shaw, 2008; Wildeman & Emanuel, 2014). Wildeman and Emanuel (2014),

found that 15.4% of Native American children and 11.5% of African-American children in the population entered care by age 18 compared to 4.9% of White children. More recently, the value of cumulative incidence rates for comparing the impact of differing state or national policies has been recognised (Fallensen, Emanuel, & Wildeman, 2014; Mc Grath-Lone et al., 2016). This paper builds on previous research by providing cumulative incidence rates for entry to out-of-home care in Australia and Canada, as well as examining trends over time and comparing a range of risk factors for overrepresentation in out-of-home care.

We compare two States/Provinces, Western Australia (WA) and Manitoba (MB), that have similar cultural and economic risk factors for child maltreatment, with Indigenous populations that are overrepresented in the child protection system (Blackstock, Trocme, & Bennett, 2004; Hirte, Rogers, & Wilson, 2008). Both WA and MB have a history of abhorrent treatment of Indigenous people. In WA this included the forcible removal of Indigenous children from their families (the 'Stolen Generation') between 1910 and 1970 with devastating impacts on Indigenous social, cultural and emotional wellbeing. Similarly in MB forced removal of Indigenous children occurred between the late 1800's through to the late 1980's. Both MB and WA typically sent these children to residential schools in which their cultural languages and practices were banned and in many cases they suffered physical and sexual abuse. The long term impact of these practices is that in both countries a large proportion of Indigenous families face many challenges and difficulties (including substance use, family violence, mental health issues and parenting challenges) that increase the risk of children being placed in out-of-home care. This is evident in the disproportionate rates of Indigenous children in out-of-home care in both WA and MB, with WA Indigenous children placed in out-of-home care at 15.5 times the rate of non-Indigenous children, and in MB a

ten-fold difference in out-of-home care for Indigenous compared to non-Indigenous

children (Australian Institute of Health and Welfare, 2015; Brownell et al., 2015).

Both WA and MB have long-standing high-quality linkage of administrative data for

health and child protection, allowing comparison of trends in entry into out-of-home care

over time (Holman et al., 2008; Jutte, Roos, & Brownell, 2011). In WA caseworkers

representing the Department for Child Protection and Family Support (DCPFS) make the

decision to remove a child from their family into out-of-home care where the child has been

harmed by a parent/caregiver or is at significant risk of harm. A care and protection order is

applied for through the Children's Court and children may be placed with extended family

members or foster carers and in the minority of cases a residential care facility. The data on

children placed in out-of-home care is comprehensive as the Department's database system

captures all cases. In MB all information on children in care is captured by the Child and

Family Services Information System (CFSIS). CFSIS data is fairly complete from 1999;

however, previous reports have found undercounting of children, particularly those living in

the North, resulting in undercounting of Indigenous children in care (Brownell et al., 2015).

As in WA, when a child is taken into care in MB it means that Child and Family Services has

taken legal responsibility for that child through an order. Children can be taken into care for

a variety of reasons, including abuse, neglect, death or conflict in the family (including

witnessing intimate partner violence), or if the child has a disability or emotional or

behavioural difficulties. However the predominant reason children go into care is due to the

conduct or conditions of their parent(s).

The study has two aims. First, to determine the variation between countries in the

age when children first enter out-of-home-care and what proportion of children are

involved. Second, to examine how these patterns have changed over time and the influence of demographic and parental risk factors on the risk of entry into out-of-home-care. By examining characteristics of high risk groups in these two settings our aim is to inform targeted strategies to prevent children going into care.

Methodology

Study population

The denominator population was defined by retrospective birth cohorts assembled for each country from Birth Registrations or Midwives Notifications. In WA, children born from 1994-2005 contributed person time to the denominator population until they died, identified through linkage to Death Registration, or until the end of 2005. As we could not take into account children born in WA who left the state, rates of out-of-home care may be marginally under-estimated, although this would be only a small proportion of the WA population at around 1% (Australian Bureau of Statistics, 2007, 2008a) . In Manitoba (MB), the birth cohort included all children born from 1998-2009. Children contributed person time at risk until they died or moved away from the province, events which were captured in the population research registry. Cohorts were based on latest data availability for each country at the time of analysis.

Data linkage

WA data sets were linked by the WA Data Linkage Branch by probabilistic matching of identifiers common to the sets of records (Kelman, Bass, & Holman, 2002). Researchers only receive de-identified clinical/service information with a unique project identifier. MB data is from the Manitoba Population Health Research Data Repository housed at the

Manitoba Centre for Health Policy. Data are de-identified but contain an encrypted identifier for linkage.

Outcome

The outcome, first entry into out-of-home care, was ascertained from longitudinal administrative data from the WA Department for Child Protection and Family Support, and in MB the Child and Family Services Information System.

Child and Maternal Health Indicators

For Western Australia, Birth Registrations and Midwives Notification System data include: gender, socio-economic disadvantage, Aboriginality, birth year, and mother's age at child's birth. The Hospital Morbidity Data System and Mental Health Information System (MHIS) include public and private inpatient contacts and for MHIS public outpatient contacts. We ascertained maternal hospital contacts for being assaulted, or for mental health or drug-related issues based on International Classification of Disease (ICD) codes. Socioeconomic disadvantage was determined by the Index of Relative Social Disadvantage (Australian Bureau of Statistics, 2008b). Out-of-home care data was obtained from the Department for Child Protection and Family Support as well as notifications for child maltreatment allegations. For MB, gender, birth year, and maternal age were obtained from hospital birth records and the population registry. Maternal hospital contacts related to assaults, substance use or mental health were obtained from hospital discharge abstracts. Data on out-of-home care and notifications of child maltreatment was obtained from the provincial ministry of family services. Socioeconomic status was ascertained using the Socio-economic Factor Index (SEFI) (Chateau, Metge, Prior, & Soodeen, 2012). Socioeconomic disadvantage

measures from the time of the child's birth were used and aggregated into six levels of disadvantage. WA had missing data for socioeconomic disadvantage therefore a missing category was used, however there was only a small amount of missing data for Manitoba. Birth year was aggregated into three-year groups.

Analyses

Multivariate Cox regression analysis was conducted to assess risk factors for entry to care including socio-economic status, child gender, maternal age, and psychosocial risk markers, and to assess comparisons between earlier birth years to more recent birth years. For WA the model was rerun including Aboriginality. Survival time was defined as the time in years from birth to first entry into out-of-home care with those who did not enter care being censored at the end of the study period. Children who entered care during their birth year had their survival time set to 0.5 years. Model coefficients are displayed in the tables as Hazard Ratios (HR) which represent the risk of entering out-of-home care for each indicator variable in the model compared to its referent category. Estimates for time in care for table 4 were calculated in days from birth date to date of first entry to care. As WA only had birth year (not day or month to protect privacy), January 1st and their birth year was assigned to all children. For Manitoba exact birth date was used. This length of time has been referred to as their age at entry. Life tables were used to determine cumulative incidence of first entry to care. SAS 9.1 was used for the analyses.

Ethics

This study has ethics approval for WA from the Department of Health Human Research Ethics Committee, the University of WA Human Research Ethics Committee, and the WA

Aboriginal Health Ethics Committee, and for MB from the University of Manitoba Health

Research Ethics Board, the Manitoba Health Information Privacy Committee and Manitoba

Family Services.

Results

Overall rates of first entry to out-of-home care

The total study population included 303,057 births in WA, and 157,829 births in Manitoba.

Table 1 shows the cohorts of children born over time in WA and MB and their

characteristics. The countries have many demographic similarities, however women in MB

tended to have children at a younger age, with approximately twice the rate of teenage

births. WA showed a lower percentage of the population classed as living in the most

socially disadvantaged areas, however this may reflect the higher levels of missing data as

evidenced by the high risk attributed to those with missing socioeconomic status. Hence the

differences between the two states may at least be partially caused by the higher

proportion of missing values in WA.

Cumulative incidence of first entry to care is shown in Table 1. In WA, 0.25% of

infants (0-1 year olds) had entered care in the 1994-1997 birth group, increasing to 0.36% of

infants born in 2002-2005. Rates of entry to care were almost 10 times higher for infants in

Manitoba, but showed less increase over time at 2.47% in 1998-2001, 2.67% in 2001-2005,

and 2.86% in 2006-2009.

Risk factors for entry to out-of-home care were assessed in the cox regression

model, with adjusted and unadjusted hazard ratios shown in Table 2. After adjusting for

other risk factors, children born in recent years were significantly more likely to enter out-

of-home care than children born approximately a decade earlier, in both WA (HR 1.48, 95% CI:1.32–1.66), and MB (HR 1.53, 95% CI:1.45-1.62) as shown in Table 2. Risk of entry into out-of-home care increased as maternal age and socio-economic status decreased, however the youngest maternal age and most deprived SES groups were associated with markedly higher risk. After adjusting for other risk factors, children were more likely to enter care if they had a mother with a mental health or substance-related hospital admission (WA HR 6.11, 95% CI:5.45–6.84; MB HR 15.41, 95% CI:14.55-16.32), or assault-related admission (WA HR 4.10, 95% CI:3.60-4.67; MB HR 3.92, 95% CI:3.11-4.95) were from the most socially disadvantaged areas (WA HR 5.53, 95% CI 3.82-8.01 ; MB HR 5.94, 95% CI 4.63-7.63), or were born to teenage mothers (WA HR 2.80, CI:2.42-3.24; MB HR 2.69, CI:2.50-2.89). Child gender was not significant. The increased risk was markedly higher for a number of the risk factors in the univariate models which did not adjust for other risk factors. Maternal assaults for example, were associated with a 14-fold risk in WA and a 20-fold risk in MB (unadjusted) however this reduced to around 4-fold increased risk in both countries after controlling for other risk factors.

As Aboriginality was available only for WA, Aboriginality was excluded from the model in Table 2 to allow consistent comparisons. The WA model was rerun with Aboriginality added. In the fully adjusted model, being Aboriginal was associated with an almost doubled risk of entering care (HR 1.70, 95% CI:1.53-1.88). Cumulative incidence by Aboriginality is shown in Figure 1. By 11 years of age, 7.76% of Aboriginal children had entered out-of-home-care compared to 0.96% of non-Aboriginal children.

Cumulative incidence rates for first entry to care by socioeconomic disadvantage are shown in Figure 2, and by maternal age in Figure 3. Children living in the most

disadvantaged areas had very high rates of entry to care in Manitoba (23.26%) by age 11, and elevated rates in WA (4.29%). In comparison, cumulative incidence rates for children from the least disadvantaged areas were only 0.87% and 0.20% respectively by 11 years old. Higher cumulative incidence of entry to care was also seen for children with the youngest mothers, especially those aged under 20 (22.06% in MB and 5.60% in WA)

As social disadvantage often co-occurs with other risk factors, we examined the risk associated with combinations of selected risk factors (socio-economic disadvantage, Aboriginality, and maternal age) for the WA data in Table 3. The other risk factors were controlled for, so the comparison reference level is non-Aboriginal, maternal age 30-39, high SEIFA (least disadvantaged), male child, child born in 1994-97, with no maternal mental health, substance-related or assault hospital admission. Compared to the reference group, Aboriginal children born to mothers aged under 20 and living in the most disadvantaged areas had a 15 times greater risk of entering care, and non-Aboriginal children with the equivalent risk factors had an 8 times greater risk of entering care. Aboriginal children without any of the included risk factors, from the least disadvantaged areas and born to mothers aged 30-39 still had an elevated risk compared to non-Aboriginal children without risk factors (HR 1.79, 95% CI:1.62-1.98), however their risk of entry to care was much lower than when there were multiple risk factors.

For the WA data we next examined whether early entry to care was associated with an increased total amount of time in care compared to entry at an older age, using the 1994 birth group which had 8 years follow-up to 2005. Children entering care aged under 3 years spent on average more days in care by the end of follow-up, (*M* = 932 days) than children who entered care at 3 or older (*M*=783 days). Children entering care aged under 3 years old

had a longer period of time potentially in care as they entered younger and both groups were followed up to the same age. We further investigated the proportion of time up to the age of three that is spent in care by children who enter care young, and found an increase over time. Children born in 1994 who entered care early (under three years of age) spent an average of 21.4% (235 days) of the first three years of life in care, compared to 38.1% (417 days) for children born in 2002, despite having the same duration of follow-up.

Discussion

This study is the first cross-national study that uses population data to compare cumulative entry to out-of-home care, trends over time and social risk factors. Results indicate the likelihood of entering out-of-home care at an early age has been increasing in WA and MB, however patterns of entry differed between the two countries. Manitoba had very high rates of children entering care: By the end of follow-up at 11 years of age, almost 1 in 10 children in MB had entered care. By age 3, the cumulative incidence rate was 4.56% for MB compared to 0.78% of WA children (2002-2005). Manitoba's rates were also higher than recently published rates using synthetic cohort life tables for the US (2.3%) (Wildeman & Emanuel, 2014), and using birth cohort life tables in Denmark (0.38%) (Ubbesen, Gilbert, & Thoburn, 2015) and in England (by age of 4 years at 1.25%) (Mc Grath-Lone et al., 2016).

Life tables showed WA had lower cumulative incidence than MB, but a greater increase over time particularly in early childhood, congruent with research showing increased levels of child protection contact at a young age elsewhere in Australia(Hirte et al., 2008). A New South Wales study found that infants formed the largest group of children entering care, comprising 19.9% of first entries in 2003-2005 (Zhou & Chilvers, 2010). WA resembles England in both the rate of entry and the increasing rates of very young children

entering care, suggesting policies may be having similar effects in the two countries. This differs markedly from the high and more stable trend in MB, the high but decreasing pattern of the US (Wildeman & Emanuel, 2014), and the low and decreasing trend seen in Denmark (Ubbesen et al., 2015).

Theoretically, early entry to care could be associated with earlier resolution of family problems, and a reduced overall burden on the care system if children who enter care early spend less of their overall childhood in care. Our results contradict this, as early-age entries were associated with more time in care. Not only are more children entering care at an early age, they are remaining in the care system for longer periods of their childhoods. Child protection policy in both MB and WA have increasingly focused on the early intervention of children deemed to be at-risk. In 2008 WA established an interagency early intervention pre-birth memorandum of understanding for expectant mothers where the unborn child was deemed to be at risk. Similarly in MB they implemented a Birth Alert in the early 1990s in which expectant mothers considered by agencies to be at high risk in relation to the care they will provide their newborn infant which is then used to track and locate high-risk expectant mothers. Prioritising unborn children and infants for safety assessment these factors combine to create an increased burden on the care system. Very young children form a large and growing segment of the out-of-home care population thus warrant particular research attention.

Our selected socio-economic and demographic risk factors were strong predictors of entry to care, and were largely consistent between the two countries. Geographically based indicators of social disadvantage were strongly associated with risk: living in an area with the highest level of social disadvantage was associated with 31 times higher risk of care

entry in MB, and 17 times higher risk of care entry in WA. In WA and MB Indigenous families

are at highest risk of socio-economic disadvantage and in both countries Indigenous children

are predominantly taken into care as a result of neglect, often due to issues of poverty and

poor housing, rather than abuse (Australian Institute of Health and Welfare, 2015;

Blackstock, 2007). Neighbourhood disadvantage may influence parenting stress via many

pathways such as increased vigilance due to lower neighbourhood safety, and generally

lower levels of social integration and resources (Coulton, Crampton, Irwin, Spilsbury, &

Korbin, 2007).

Social disadvantage is often associated with increased levels of young parenthood,

mental health problems, substance use, or exposure to violence, creating even greater

levels of risk. Nonetheless, living in disadvantaged areas was associated with a fourfold

increased risk after controlling for these factors. Children living in the most socially

disadvantaged neighbourhoods comprised almost one third (WA) to one half (MB) of entries

into care. Likewise children born to teenage mothers comprised approximately one in five

first entries to care by age 11 in WA, and one in 4 in Manitoba. In the univariate analysis

teenage births were associated with risk of first entry into care by 6-7 time in MB and WA,

however this risk was substantially reduced to 2.7-2.8 once other risk factors were

accounted for in the model. This indicates the co-occurring risks of poverty and maternal

risk factors which are associated with teenage births and our analysis of WA of predicted

risks in Table 3 indicate that teen mothers (both Aboriginal and non-Aboriginal) from the

most disadvantaged communities are at the highest risk. The high numbers of children

entering care from subgroups of the population strongly points to a need for a large

investment in avoiding early pregnancies and providing parenting support for these families in the community.

Poverty and social disadvantage markedly increased risk of out-of-home care across all three previous population studies (Bebbington & Miles, 1989; Ejrnaes, Ejrnaes, & Frederiksen, 2011; Franzen, Vinnerljung, & Hjern, 2008), although the strength of the associations varied. Unlike individual indicators, geographical indicators such as SEIFA and SEFI are easily accessed by Government and other agencies for service planning and should continue to be utilised for addressing disadvantage and community development.

Hospital admissions for maternal assaults were associated with a fourfold increased risk (adjusted) in both countries. The risk associated with maternal mental health or substance-related contacts was strongly related to entry to care in both countries, but was more than twice as high in MB (15.41) as in WA (HR = 6.11).

The risk of entry into care associated with early motherhood (adjusted HR=2.80 for WA and 2.69 for MB) was closer to results from England than Scandinavian studies. Swedish and Danish studies found only marginally increased risks of entry to care for mothers aged under 20 (odds ratios 1.2 – 1.9 for different child age groups (Ejrnaes et al., 2011). Teenage birth rates in Australia and Canada are relatively high compared to Scandinavian countries (Lawlor & Shaw, 2004; McKay, 2010), and the rate for Manitoba is well above the national rate for Canada (McKay, 2010). Research indicates that in countries such as Sweden there are high rates of contraceptive use (Darroch, Singh, & Frost, 2001) and most Scandinavian countries tend to have greater social welfare supports, combined with lower teenage birth rates, resources may be spread less thinly.

Our results for teenage mothers were similar to the UK (OR=2.1 for mothers aged

under 21), despite the study being over 20 years old (Bebbington & Miles, 1989). The

authors noted they underestimated risk associated with young motherhood by excluding

children who entered care at birth. The greater similarity to UK results compared to Sweden

is not surprising. Australian and Canadian child welfare systems are more comparable to the

UKs, sharing a 'child protection' orientation, whereas Scandinavian and some European

systems have 'family service' orientations which focus more on responding broadly to need

and less on establishing harm or culpability (R. Gilbert et al., 2012).

Aboriginal children in WA were eight times more likely to enter out-of-home care

than non-Aboriginal children, although after adjusting for other risk factors, risk was greatly

reduced (adjusted HR = 1.79). The elevated risk was higher than in a South Australian study

which found increased likelihood of maltreatment notifications and substantiations among

Aboriginal children, and an unadjusted odds ratio of 2.5 for out-of-home care (Hirte et al.,

2008). In the US Native American and African-American children were disproportionately

represented in out-of-home care, with 12.1% and 7.9% entering care by age 11 (Wildeman

& Emanuel, 2014). Aboriginal status was not available for MB, however with Aboriginal

children comprising around 25% of the Manitoba child population, but accounting for over

80% of the children in care, Aboriginality is clearly a significant factor (Gough, Trocme,

Brown, Knoke, & Blackstock, 2005).

The removal of Aboriginal children from their birth parents is a sensitive topic, given

the traumatic history resulting from a policy of widespread removal of Aboriginal children.

The findings of this study support the need for ongoing efforts to address risk factors such

as social disadvantage, young maternal age, mental health, substance use and violence

exposure, and for targeted preventive efforts where there is a high level of cumulative risk. Addressing these risk factors is important for both Aboriginal and non-Aboriginal families, however they affect a higher proportion of Aboriginal families (O'Donnell et al., 2010). Australia has highlighted Indigenous over-representation in their National Child Protection Framework 2009-2020 and one of the strategies is to promote the development of safe and strong Indigenous communities to reduce child protection intervention. Likewise the 2015 Truth and Reconciliation Commission of Canada has called upon all levels of government to commit to reducing the number of Indigenous children in care. Given that MB has a larger population of Indigenous children than WA this may contribute to the higher proportion of children placed in Manitoba.

A strength of the study is the comprehensive ascertainment of entries to out-of-home care. However, there are some limitations in the quality of data. Parental admissions data for mental health, substances, and assault only captured service events within public inpatient and outpatient services and private inpatient services, and exclude pharmaceutical prescriptions and GP visits, so are likely to reflect more severe cases. Information on Aboriginality and time in care was not available for Manitoba. As WA only had birth year, day and month of birth was set at 1st January, therefore age-specific cumulative incidence may have been slightly underestimated. In addition, in WA, we could not adjust for children leaving WA in the analysis, but this was only approximately 4% of the population during the study period. The differing study periods between Manitoba and WA could also lead to some systematic difference in results but it is unlikely to have appreciably altered the key findings of our study. Further research could also investigate the re-entry rates of children into care which also contribute to the burden on the child protection system and an

investigation of further important factors not available in our data such as family

functioning, trauma exposure and familial support.

This study provides new information on the cumulative risk of entry into out-of-

home care in Australia and Canada and expands on previous population research by

evaluating a greater range of risk factors. From a policy and planning perspective, the study

provides population-based evidence of the strength of various predictors of entry to care.

Demographic measures of social disadvantage were associated with a large variation in risk

for out-of-home care, suggesting these widely available measures form a useful indicator for

service planning. Behind these demographic indicators of risk often lie a range of

psychosocial issues such as mental health problems, substance abuse and violence

exposure, which need to be addressed to create safer home environments. Although social

disadvantage is often compounded by psychosocial issues, the fourfold risk increase that

remained after controlling for these factors suggests a need to also address poverty and

social inequity directly, and to increase support for reproductive planning and parenting.

It is a challenge to definitively identify policies which may explain the differences in

rates between the two areas. We urge social policy researchers to commit efforts to

develop a strong evidence base on the effect of child protection policies on the rates of

children involved in the child protection system and removed from families, and importantly

policies that can prevent child maltreatment. Our results also raise questions about the

effectiveness, cost and sustainability of current child protection policies, which lead to such

high rates of removal of children from some population groups. There is also an urgent need

for robust evidence of the effectiveness of out-of-home care compared to in-home care

(with and without intensive support strategies for parenting) and to address parental health

and welfare needs. A recent systematic review of comparative studies comparing out-of-home care with in-home care in regards to children's wellbeing, found a lack of evidence from well-controlled cohorts for beneficial effects of out-of-home care (Maclean, Sims, Gilbert, & O'Donnell, 2016). Jurisdictions in which 1 in 10 or more children in some communities are removed from their parents raises concerns about the level of support for parenting as required under the United Nations Convention on the Rights of the Child and the need to consider multiple strategies to meet the needs of these families.

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Table 1. Demographic characteristics of the cohorts of children born in Western Australia and Manitoba who did and did not enter out-of-home care (OoHC)

Descriptives of Cohorts	WESTERN AUSTRALIA						MANITOBA					
	Children born 1994-1997		Children born 1998-2001		Children born 2002-2005		Children born 1998-2001		Children born 2002-2005		Children born 2006-2009	
	Out-of-home care (aged 0->12 yrs)	Did not enter Out-of-home care (aged 0->12 yrs)	Out-of-home care (aged 0-7yrs)	Did not enter Out-of-home care (aged 0-7yrs)	Out-of-home care (aged 0-3yrs)	Did not enter Out-of-home care (aged 0-3yrs)	Out-of-home care (aged 0->12 yrs)	Did not enter Out-of-home care (aged 0->12 yrs)	Out-of-home care (aged 0-7yrs)	Did not enter Out-of-home care (aged 0-7yrs)	Out-of-home care (aged 0-3yrs)	Did not enter Out-of-home care (aged 0-3yrs)
N	1,392 (1.4%)	99,563 (98.6%)	1,142 (1.1%)	99,737 (98.9%)	687 (0.7%)	100,536 (99.3%)	4193 (8.5%)	45293 (91.5%)	3398 (6.7%)	47057 (93.3%)	2424 (4.2%)	55464 (95.8%)
Mean age at first notification(yrs)	3.5		2.0		0.7		2.8		1.6		0.4	
Cumulative Incidence of first entry to care by age												
0<1 year	249 (0.3%)		311 (0.3%)		366 (0.4%)		1379 (2.5%)		1465 (2.7%)		1723 (2.9%)	
1 <2years	482 (0.5%)		581 (0.6%)		576 (0.6%)		1945 (3.6%)		1975 (3.7%)		2155 (4.0%)	
2 <3years	658 (0.7%)		758 (0.8%)		643 (0.8%)		2437 (4.6%)		2391 (4.6%)		2365 (4.8%)	
3 <4years	782 (0.8%)		880 (0.9%)		687 (1.0%)		2761 (5.2%)		2774 (5.4%)		2424 (5.4%)	
4 <5years	917 (0.9%)		995 (1.0%)				3047 (5.9%)		3053 (6.0%)			
5 <6years	1035 (1.0%)		1083 (1.1%)				3284 (6.4%)		3261 (6.5%)			
6 <7years	1132 (1.1%)		1122 (1.2%)				3515 (6.9%)		3366 (7.1%)			
7 <8years	1226 (1.2%)		1142 (1.3%)				3758 (7.5%)		3398 (7.4%)			
8 <9years	1294 (1.3%)						3955 (8.0%)					
9 <10years	1340 (1.3%)						4084 (8.5%)					
10 <11years	1377 (1.4%)						4167 (9.0%)					
11 <12years	1392 (1.5%)						4193 (9.4%)					
Sex												
Male	735 (52.8%)	51,273 (51.5%)	615 (53.9%)	51,004 (51.1%)	350 (50.9%)	51,498 (51.2%)	2194 (52.3%)	23172 (51.2%)	1769 (52.1%	24103 (51.2%)	1234 (50.9%)	28235 (50.9%)
Female	657	48,290	527	48,733	337	49,038	1999	22167	1629	22954	1190	27229

	(47.2%)	(48.5%)	(46.1%)	(48.9%)	(49.1%)	(48.8%)	(47.7%)	(48.8%)	(47.9%)	(48.8%)	(49.1%)	(49.1%)
Socioeconomic (at birth-WA)												
1	19 (1.4%)	7,002 (7.0%)	11 (1.0%)	6,955 (7.0%)	10 (1.5%)	8,101 (8.1%)	36 (0.9%)	3077 (6.8%)	18 (0.5%)	3529 (7.5%)	15 (0.6%)	4004 (7.2%)
2	47 (3.4%)	12,333 (12.4%)	42 (3.7%)	12,607 (12.6%)	25 (3.6%)	13,818 (13.7%)	68 (1.6%)	5627 (12.4%)	46 (1.4%)	5751 (12.2%)	37 (1.5%)	6607 (11.9%)
3	153 (11.0%)	23,539 (23.6%)	93 (8.1%)	21,647 (21.7%)	64 (9.3%)	21,942 (21.8%)	371 (8.9%)	10785 (23.8%)	288 (8.5%)	10903 (23.2%)	186 (7.7%)	12493 (22.5%)
4	347 (24.9%)	25,384 (25.5%)	201 (17.6%)	23,697 (23.8%)	153 (22.3%)	22,981 (22.9%)	731 (17.4%)	11503 (25.4%)	577 (17.0%)	11578 (24.6%)	447 (18.4%)	13431 (24.2%)
5	304 (21.8%)	15,173 (15.2%)	262 (22.9%)	16,130 (16.2%)	152 (22.1%)	15,390 (15.3%)	1010 (24.1%)	8108 (17.9%)	834 (24.5%)	8219 (17.5%)	614 (25.3%)	9528 (17.2%)
6	412 (29.6%)	9,761 (9.8%)	354 (31.0%)	9,514 (9.5%)	165 (24.0%)	8,960 (8.9%)	1946 (46.4%)	5910 (13.1%)	1608 (47.3%)	6904 (14.7%)	1100 (45.4%)	8991 (16.2%)
Missing	110 (7.9%)	6,371 (6.4%)	179 (15.7%)	9,187 (9.2%)	118 (17.2%)	9,344 (9.3%)	31 (0.7%)	225 (0.5%)	27 (0.8%)	173 (0.4%)	25 (1.0%)	410 (0.7%)
Maternal Age at birth												
<20	258 (18.5%)	4,597 (4.6%)	208 (18.2%)	4,525 (4.5%)	103 (15.0%)	4,414 (4.4%)	1132 (27.2%)	3770 (8.3%)	811 (24.1%)	3668 (7.8%)	550 (23.1%)	4631 (8.4%)
20-29	812 (58.3%)	49,143 (49.4%)	626 (54.8%)	45,288 (45.4%)	377 (54.9%)	41,170 (41.0%)	2399 (57.5%)	23492 (52.0%)	1955 (58.2%)	23953 (51.0%)	1372 (57.6%)	28217 (51.0%)
30-39	305 (21.9%)	43,579 (43.8%)	282 (24.7%)	46,946 (47.1%)	189 (27.5%)	51,187 (50.9%)	610 (14.6%)	17105 (37.9%)	554 (16.5%)	18288 (38.9%)	438 (18.4%)	21173 (38.3%)
>39	17 (1.2%)	2,244 (2.3%)	26 (2.3%)	2,978 (3.0%)	18 (2.6%)	3,765 (3.7%)	28 (0.7%)	821 (1.8%)	39 (1.2%)	1052 (2.2%)	24 (1.0%)	1291 (2.3%)
Ethnicity (WA)												
ATSI	513 (36.9%)	6,545 (6.6%)	438 (38.4%)	7,433 (7.4%)	280 (40.8%)	7,967 (7.9%)	*	*	*	*	*	*
Non-ATSI	879 (63.1%)	93,018 (93.4%)	704 (61.6%)	92,304 (92.6%)	407 (59.2%)	92,569 (92.1%)	*	*	*	*	*	*

* Notes: Aboriginal status not available for Manitoba

Table 2. Child and family factors for periods of first care

	WA (Excluding 1990-93 birth group)		Manitoba	
	First Period of Care (univariate)	First Period of Care (multivariate)	First Period of Care (univariate)	First Period of Care (multivariate)
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)

Child gender				
Male	Reference group	Reference group	Reference group	Reference group
Female	0.94 (0.88 – 1.01)	0.95 (0.88 – 1.00)	0.99 (0.95 – 1.03)	1.00 (0.96-1.05)
SEIFA level				
1 – least disadvantaged	Reference group	Reference group	Reference group	Reference group
2	1.64 (1.09 – 2.47)	1.39 (0.93 – 2.08)	0.67 (0.55 – 0.83)	0.65 (0.46-0.9)
3	2.49 (1.73 – 3.58)	1.75 (1.21 – 2.52)	1.60 (1.36 – 1.88)	1.34 (1.05-1.72)
4	5.19 (3.62 – 7.45)	3.02 (2.10 – 4.34)	3.30 (2.84 – 3.85)	2.42 (1.89-3.09)
5	8.30 (5.78 – 11.92)	3.89 (2.69 – 5.61)	6.29 (5.41 – 7.31)	4.09 (3.19-5.23)
6 – most disadvantaged	17.29 (12.06 – 24.77)	5.53 (3.82 – 8.01)	14.35 (12.37 – 16.64)	5.94 (4.63-7.63)
Missing	9.19 (6.36 – 13.28)	4.37 (3.01 – 6.34)	*	*
Child born				
1994 – 1997	Reference group	Reference group	*	*
1998 – 2001	1.05 (0.97 – 1.14)	1.08 (0.99 – 1.17)	Reference group	Reference group
2002 – 2005	1.38 (1.23 – 1.54)	1.48 (1.32 – 1.66)	1.03 (0.98 – 1.08)	1.08 (1.02-1.13)
2006 – 2009	*	*	1.32 (1.25 – 1.39)	1.53 (1.45-1.62)
Maternal age group				
< 20 years	7.21 (6.33 – 8.21)	2.80 (2.42 – 3.24)	6.08 (5.72 – 6.46)	2.69 (2.50-2.89)
20 – 29 years	2.29 (2.07 – 2.54)	1.52 (1.36 – 1.69)	2.38 (2.26 – 2.51)	1.61 (1.52-1.71)
30 – 39 years	Reference group	Reference group	Reference group	Reference group
> 39 years	1.27 (0.96 – 1.69)	1.24 (0.93 – 1.64)	1.31 (1.10 – 1.58)	1.29 (1.02-1.63)
Mother's assault admission				
No	Reference group	Reference group	Reference group	Reference group
Yes	13.98 (12.53 – 15.61)	4.10 (3.60 – 4.67)	20.52 (18.4 – 22.90)	3.92 (3.11-4.95)
Mother's drug or mental health admission				
No	Reference group	Reference group	Reference group	Reference group
Yes	9.85 (8.89 – 10.91)	6.11 (5.45 – 6.84)	29.20 (28.02 – 30.44)	15.41 (14.55-16.32)

*Note. Data not available for specific birth year group.

Table 3. Predicted risks relative to reference group (Western Australia)

Aboriginal	Maternal Age	SEIFA (Low=most disadvantaged)	Hazard Ratio*	95% CI
No	30 – 39	High	Reference group	Reference group
Yes	30 – 39	High	1.79	(1.62 – 1.98)
No	20 – 29	Medium	2.72	(2.26 – 3.28)
Yes	20 – 29	Medium	4.86	(3.96 – 5.98)
No	< 20	Low	8.25	(6.76 – 10.06)
Yes	< 20	Low	14.74	(12.02 – 18.07)

Note: These HRs are based on estimates from the full cox regression model. Hence the entire reference group is non-Aboriginal, maternal age 30-39, high SEIFA/SEFI (least disadvantaged), male child, child born in 1994-97, no maternal mental health, substance-related or assault hospital admission

Table 4. Time in care, Western Australia: Days in care and percentage of total days that were spent in care by children that entered out-of-home care

A Time in care for children born in 1994 who first entered < 3 years age vs 3-11 years age						
Age first entry	N (Children)	Median days	Mean days	Min days	Max days	% time in care
3-11 years age	232	298	783	1	3277	17.9%
< 3 years age	162	208	932	1	4174	21.3%

B Time in care during first 3 years of a child's life, by year of birth						
Year of Birth	N (Children)	Median days	Mean days	Min days	Max days	% first 3 years in care
1994	162	49	235	1	1005	21.4%
1995	161	80	230	1	1044	21.0%
1996	168	65	257	1	1061	23.5%
1997	167	174	277	1	1090	25.3%
1998	178	117	281	1	1050	25.6%
1999	190	210	336	1	1078	30.7%
2000	187	289	355	1	1069	32.4%
2001	203	246	367	2	1074	33.5%
2002	205	389	417	1	1066	38.1%

Note: Panel A refers to the number of days spent in all periods of out-of-home care divided by total days from birth to end of study in 2005. Panel B refers to the number of days spent in all periods of out of home care within the first 3 years.

Figure 1. Cumulative Incidence of First Entry to Care by Aboriginality (WA)
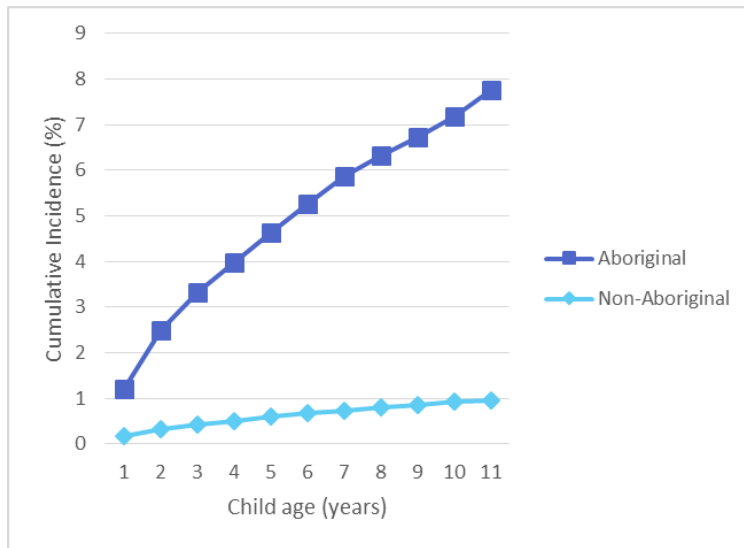

Figure 2. Cumulative Incidence of First Entry to Care MB (Left) and WA (Right) by Socio-economic Disadvantage
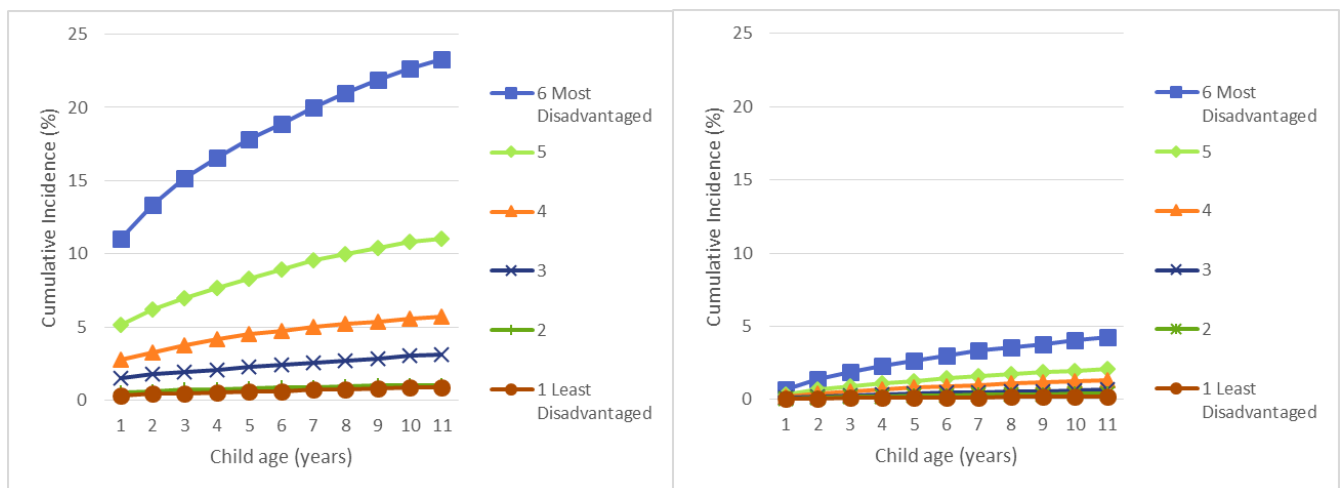
Figure 3. Cumulative Incidence of First Entry to Care MB (Left) and WA (Right) by Maternal Age at Child's Birth