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Technical report

Pathways of Care Longitudinal Study: Outcomes of Children and Young People in Out-of-Home Care

Do Wave 1 participants differ from study-eligible non-participants? Results of non-response analyses

Pathways of Care Longitudinal Study: Outcomes of Children and Young People in Out-of-Home Care in NSW

Technical Report No. 3

Do Wave 1 participants differ from study-eligible non-participants? Results of non-response analyses

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About the information in this report
All the information in this report is accurate as of May 2015. The analyses presented are based on a an almost final version of the Wave 1 unweighted data collected in face-to-face interviews with children, young people and caregivers; and FACS administrative data.

Pathways of Care Longitudinal Study Clearinghouse
All study publications including research reports, technical reports and briefs can be found on the study webpage www.community.nsw.gov.au/pathways

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Preface

Pathways of Care Longitudinal Study (POCLS) is funded and managed by the New South Wales Department of Family and Community Services (FACS). It is the first large-scale prospective longitudinal study of children and young people in out-of-home care (OOHC) in Australia. Information on safety, permanency and wellbeing is being collected from various sources. The child developmental domains of interest are physical health, socio-emotional wellbeing and cognitive/learning ability.

The overall aim of this study is to collect detailed information about the life course development of children who enter OOHC for the first time and the factors that influence their development. The POCLS Objectives are to:

- describe the characteristics, child protection history, development and wellbeing of children and young people at the time they enter OOHC for the first time
- describe the services, interventions and pathways for children and young people in OOHC, post restoration, post adoption and on leaving care at 18 years
- describe children's and young people's experiences while growing up in OOHC, post restoration, post adoption and on leaving care at 18 years
- understand the factors that influence the outcomes for children and young people who grow up in OOHC, are restored home, are adopted or leave care at 18 years
- inform policy and practice to strengthen the OOHC service system in NSW to improve the outcomes for children and young people in OOHC.

The POCLS is the first study to link data on children's child protection backgrounds, OOHC placements, health, education and offending held by multiple government agencies; and match it to first hand accounts from children, caregivers, caseworkers and teachers. The POCLS database will allow researchers to track children's trajectories and experiences from birth.

The population cohort is a census of all children and young people who entered OOHC for the first time in NSW between May 2010 and October 2011 (18 months) (n=4,126). A subset of those children and young people who went on to receive final Children's Court care and protection orders by April 2013 (2,828) were eligible to participate in the study. For more information about the study please visit the study webpage www.community.nsw.gov.au/pathways.

Executive Summary

This report aims to increase understanding of the extent and effects of non-participation in the face-to-face interview for the Pathways of Care Longitudinal Study (POCLS), and the implications of non-participation in the face-to-face interview for the representativeness of the sample obtained. The report aims to shed light on whether response bias may have occurred and whether weighting of the data is necessary.

The report makes use of administrative data derived for the total eligible POCLS sample (*n* = 2,827)[1] from the Key Information Directory System (KiDS), the Department of Family and Community Services' administrative database that provides information on children reported at risk of significant harm in New South Wales. Available child, caregiver and household level information that was likely to be related to participation or non-participation in Wave 1 of the POCLS was included in the analyses, with the total eligible sample divided into three groups:

1) Wave 1 participants in a face-to-face interview (*n* = 1,285).
2) Approached to participate in a face-to-face interview, but declined (*n* = 823).
3) Not contacted (*n* = 719)[2].

The first step undertaken was to compare the two non-participating groups (the **approached but declined** and **non-contacted** groups) to determine whether they differed significantly and should be retained as separate groups in subsequent analyses or combined into one non-participating group. The groups were found to differ significantly on a number of child characteristics and were therefore retained as separate groups.

A series of multinomial logistic regression analyses was conducted to compare the groups for each selected study child characteristic, more specifically, to determine whether the participating group could be significantly differentiated from one or both of the non-participating groups. The significant child characteristics identified from these analyses were subsequently entered into a single multivariate multinomial logistic regression analysis, with household variables also included, to determine whether the variables continued to differentiate the groups while the effects of other variables were held constant. A similar process was used to identify the caregiver characteristics that significantly differentiated the groups (data for female caregivers was used, as the number of male caregivers was substantially lower and the analysis required minimal data to be missing). Finally, the significant child, caregiver and

[1] Please note that *n* = 1 case was excluded from analysis due to large quantities of missing data; this one case belonged to the 'non-contacted' group.

[2] The 'non-contacted' group was predominantly comprised of study-eligible children who had been restored to their birth parents by the time Wave 1 recruitment took place (*n* = 515). The restored children were in out-of-home care for a relatively short period of time. This group also included children (*n* = 204) whose caregivers could not be contacted (e.g., contact details were not available).

household characteristics were included in one overall multivariate multinomial logistic regression model[3].

Many of the significant variables from the child and caregiver analyses remained significant when included in the combined model with the effects of other variables held constant. Differences were evident on:

- the *child characteristics* of age when first placed after the issuing of final orders, the length of time in care, Aboriginal status and number of substantiated ROSH reports;
- the *female caregiver characteristics* of age and Aboriginal status; and
- the *household characteristics* of the number of resident caregivers, the number of study-eligible children living in the household, placement type (e.g., foster, relative/kinship) and geographic area of residence.

The findings suggest that the Wave 1 group participating in a face-to-face interview differs from the non-participating groups (the **approached but declined** and **non-contacted** groups) in meaningful and important ways. It appears that the POCLS Wave 1 participant sample under-represents, to a certain extent, older study-eligible children, non-Aboriginal children, those who have been in out-of-home care for a shorter period of time, and those with fewer substantiated ROSH reports. In terms of caregiver and household characteristics, it tends to under-represent younger caregivers, Aboriginal caregivers, relative/kinship caregivers, single caregiving households, metro households, and households with a larger number of study-eligible children.

If generalisation to the total cohort of study-eligible children is desired (2,827), weighting of the POCLS Wave 1 primary data collection dataset should be considered. The report discusses some issues relevant to weighting, and also notes some limitations to the analyses undertaken, particularly the scarce caregiver data available for analysis.

To summarise, the POCLS is a study of a particular population – children placed in OOHC in NSW – and it is further restricted to children who have been placed on a final court order for the first time within a particular timeframe. Thus, the relevant population to which generalisation would be made is to children in NSW who have been placed on a final court order for the first time between May 2010 and April 2013. If generalisation to this population is not a high priority, then there may be less need for weighting, although it remains important to understand how the participating sample differs from the non-participating sample so that potential biases can be understood and the findings considered in light of them. Thus, the first step should be to decide whether generalisation to the study-eligible population is a major objective of the POCLS.

[3] Please note that some figures presented in this report may differ slightly to those presented in the POCLS Wave 1 Baseline Statistical Report (Australian Institute of Family Studies, Chapin Hall Center for Children University of Chicago, & New South Wales Department of Family and Community Services, 2015) due to missing data across some administrative variables.

Abbreviations and Key Terms

Term	Meaning
Caregiver	Person caring for the study-eligible child at the time of the face-to-face interview; this term also applies to foster carers, relative/kinship carers, residential caregivers and the birth parents for children restored.
Children	Child and young person; children and young people aged 0–17 years
FACS	Department of Family and Community Services, NSW
LSAC	Longitudinal Study of Australian Children
KiDS	Key Information Directory System, FACS
NSW	New South Wales
OOHC	Out-of-Home Care
POCLS	Pathways of Care Longitudinal Study
PR	Parental Responsibility
RRR	Relative Risk Ratio
ROSH	Risk of Significant Harm
Short-term or emergency placement	Care arrangements provided when children and young people need an immediate OOHC placement. It is an unplanned short-term placement arranged on the same day as required.

1. Introduction

1.1. Background of the Pathways of Care Longitudinal Study

The Pathways of Care Longitudinal Study (POCLS) is a longitudinal study of children and young people[4] aged 0–17 years entering out-of-home care (OOHC) for the first time on Children's Court orders in New South Wales (NSW). The study is led and managed by the NSW Department of Family and Community Services (FACS), with assistance from a consortium of Australian researchers through the Australian Institute of Family Studies, researchers from Chapin Hall Center for Children at the University of Chicago, USA, and I-view as the data collection agency. The study aims to collect detailed information about the life course development of children who enter OOHC for the first time, in order to provide the knowledge needed to strengthen the OOHC service system and improve the outcomes for children and young people in OOHC (details of the study aims and key research questions are provided in Paxman et al., 2015).

Three waves of data are being collected, with each wave to be conducted over an approximately two-year period with an 18-month interval between waves. To be eligible for the study, the children should have entered OOHC for the first time, usually on interim court orders, within an 18-month period between May 2010 and October 2011, with a further 18 months provided for the obtaining of final care and protection orders (up to April 2013). The recruited cohort includes children of diverse ages, as well as differing placement types and geographic locations across NSW.

1.2. Rationale for this report

Individuals who are selected to take part in a study are sometimes unable or not willing to participate. This can result in non-response bias, in which respondents and non-respondents differ in substantive ways. Non-response can affect the accuracy of estimates if non-respondents differ from respondents on the characteristics examined, and can also lead to an increase in the total variance of estimates due to the smaller sample size achieved (Statistics Canada, 2014). It is therefore important to understand the extent and effects of non-response, and its implications for the representativeness of the sample obtained. This can inform decisions about whether weighting of the recruited Wave 1 sample is necessary.

This report compares the Wave 1 recruited POCLS sample with the eligible, non-participating Wave 1 sample on characteristics sourced from the administrative data held by FACS to ascertain whether response bias may have occurred.

[4] For reader ease, children and young people are referred to as 'children' hereafter.

1.3. Eligible sample

Several steps were used to identify, select and recruit the POCLS sample:

a) The ***study population cohort*** was all children aged 0–17 years who entered OOHC for the first time under the *Children and Young Persons (Care and Protection) Act 1998* across NSW within the 18-month period of May 2010 to October 2011 (*n* = 4,126).

b) The subset of children who entered OOHC for the first time in the specified time period but did **not** receive final care and protection orders because they were assessed as being able to return to their parents' care with appropriate services and supports were excluded (*n* = 1,298, the ***no final care and protection orders cohort***).

c) The subset of children who entered care for the first time in the specified time period and received final care and protection orders from the Children's Court by April 2013 were eligible to take part in the face-to-face interviews for the study (*n* = 2,827; the ***final care and protection orders cohort***).

d) The subset of children who entered care for the first time in the specified time period, received final care and protection orders from the Children's Court by April 2013 and whose caregivers took part in the study, comprised the Wave 1 interviewed sample (*n* = 1,285; the ***final orders interviewed cohort***).

While the non-response analysis conducted for this report considers characteristics of both the study child and their caregiver, it is important to note that the sample unit for the POCLS is the study child. The POCLS sample was drawn from the Key Information Directory System (KiDS); the FACS administrative database that provides information on children reported at risk of significant harm (ROSH) in NSW.

This report focuses on the **final care and protection orders cohort** (*n* = 2,827). The cohort can be divided into those who took part in Wave 1 of the POCLS and those who did not. The non-participating group can be further sub-divided into those who were approached to take part but declined, and those who were not approached to take part (e.g., due to the study child being restored to their birth parent[s], or caregiver was unable to be contacted). For the non-response analyses, the following three groups are compared:

1) The *interviewed group*, whose caregivers took part in a Wave 1 face-to-face interview (*n* = 1,285). This cohort will be referred to as '**Wave 1 participants**'.

2) The *non-interviewed group*, who were approached to participate, but declined (*n* = 823). This cohort will be referred to as the '**approached but declined'** group.

3) The *non-contacted group*, who were not contacted to participate in Wave 1, either because they were restored to their birth parents before the interview was conducted (*n* = 515), or were not able to be contacted despite

reasonable efforts to contact the caregiver (*n* = 204). The total *n* for this group is 719[5]. This cohort will be referred to as the '**non-contacted'** group.

1.4. Overview of analysis methodology

Chapter 2 provides a description of the study variables relevant to the selection and comparison of the two non-response groups. Caregiver and child variables were selected for the non-response analysis on the basis of their conceptual value, their availability in the administrative dataset, and the variable being fit for analysis (e.g., not having a large proportion of missing cases). As the only data available for the non-response groups was from the administrative dataset, this source was for all analyses (the much larger array of relevant variables in the Wave 1 POCLS dataset could not be used as they were only available for the interviewed cohort). Section 2.1 provides a description of the variables used.

It would be possible to simply compare the group who took part in Wave 1 with the group who did not. However, it cannot be assumed that the **approached but declined** and the **non-contacted** groups are similar on key child and caregiver characteristics, as the reasons for their non-response differ. Therefore, the first task undertaken was to compare, using bivariate analyses, the two non-response groups to establish if there were significant differences between them on child characteristics and whether treating them as two separate groups in further analyses was justified. The resulting findings (described in Section 2.2) were then used to determine whether the groups would be analysed as one 'did not participate' group, or as two separate groups.

Bivariate analyses were then conducted using child characteristics and household characteristics, with each characteristic examined separately to determine whether there were differences between the **Wave 1 participants** group and either or both of the **approached but declined** and **non-contacted** groups. The child and household variables that were significantly associated with participation/non-participation were then included in a multivariate model.

Comparable bivariate and multivariate analyses were undertaken using caregiver data. The significant child, caregiver and household variables were then included in one overall model, to investigate which child, caregiver and household variables remained significantly associated with participation/non-participation in Wave 1.

Chapters 3 to 5 present results of the non-response analyses for child, caregiver and combined child/ caregiver characteristics.

[5] Please note that all non-participating children in Wave 1, including those who were restored to their birth parents, will be followed-up at Wave 2 and invited to participate at each subsequent wave.

2. Variable selection and comparison of the two non-response groups

2.1. Variable selection

Child and caregiver variables were selected on the basis of their potential to be important descriptor variables, which could influence whether caregivers, and hence the children in their care, participated in Wave 1. Other major considerations were their availability in the administrative dataset and being suitable for analysis (e.g., not having a large proportion of missing cases). The variables selected for analysis were:

Child variables[6]

- Gender;
- Age (in years) at the start of the child's first placement after the issuing of the final order;
- Aboriginal status: Aboriginal ('Aboriginal' and/or 'Torres Strait Islander') and non-Aboriginal;
- Total length of time in care (the number of days the child had spent in their placement(s) in total after being placed on a final order);
- Most recent placement type with categories of: foster care, relative/kinship care and other/mixed type of care (includes residential care);
- Geographic area of child and caregiver's placement (most recent)[7];
- Number of ROSH reports prior to the child's first placement spell after being placed on a final care and protection order);
- Number of substantiated ROSH reports before the child's first placement following the issuing of their first care and protection order (usually an interim order while assessments are conducted); and

Predominant primary and secondary reported issues in ROSH reports prior to the child's first placement spell after being placed on a final care and protection order, with the categories of: 'no maltreatment issue'; 'more than 50% of issues were neglect'; 'more than 50% of issues were physical abuse'; 'more than 50%

[6] It is important to define the point in time at which certain variables were derived. The administrative dataset included data up to 1 September 2012, which was prior to the end of Wave 1; hence, total length of time in care, primary placement type, placement area of residence are calculated at, or up to as appropriate, this date. The variable 'total length of time in care' does not include time spent in short-term or emergency placements prior to obtaining final care and protection orders; hence 94% of children were still in their first OOHC placement at 1 September 2012.

[7] Initially there were 16 districts, which were subsequently coded into the following six broader areas: **Northern metro** – Northern Sydney and Central Coast; **Northern non-metro** – Hunter New England, Mid North Coast and Northern NSW; **Western metro** – Western Sydney and Nepean Blue Mountains; **Western non-metro** – Murrumbidgee, Western NSW and Far West; **Southern metro** – South Western Sydney, South Eastern Sydney and Sydney; and **Southern non-metro** – Illawarra Shoalhaven and Southern NSW.

of reported issues were sexual abuse'; 'more than 50% of reported issues were emotional abuse'; and 'mixed maltreatment issues').

Caregiver variables[8]

- Age (in years);[9]
- Aboriginal status (Aboriginal/non-Aboriginal);
- Number of caregivers in the household;
- Number of study-eligible children in the household;
- Most recent placement type;
- Geographic area of caregiver/child residence (most recent)[10].

It is important to note that the KiDS administrative data is predominantly child-focused and there were fewer caregiver variables available for analysis. There were also a number of variables (e.g., caregiver's primary cultural background and marital status) that could not be analysed due to a significant amount of missing data.

2.2. Comparing the two non-response groups

This section presents bivariate findings comparing the two 'did not participate' groups (***approached but declined*** and ***non-contacted***). The purpose of these analyses was to determine, using the child variables listed in Section 2.1, whether the two groups differed significantly and would therefore need to be retained as two separate groups in further analyses.

For dichotomous variables (e.g., child gender, Aboriginal status), Pearson χ^2 analyses were used[11]. For variables with more than two categories (e.g., placement type), Pearson χ^2 analyses were again undertaken and if a statistically significant result was found, standardised residuals were examined to identify the cells in which trends were significantly different to those expected

[8] The caregiver variables are based on data for female caregivers only, since one or more female carers were present in the great majority of caregiving households (91%; *n* = 2,560). In a secondary analysis, data for male caregivers is used to investigate whether the pattern of results differs for female and male caregivers. However, it should be noted that there were considerably fewer male caregivers present in caregiving households (55%, *n* = 1,563). Thus, inclusion of male caregiver data in the final combined model would greatly reduce the sample size (the analysis technique requires cases to have complete data) and the sample would be biased towards dual caregiver households (i.e., children living in households with one female and one male caregiver). Please note that the analyses of caregiver data are conducted at the child-level (*n* = 2,827), with subsequent analyses using combined child and caregiver data also at the child-level.

[9] As of 1 May 2011, which reflects the start of the Wave 1 fieldwork period on 1 May 2011.

[10] These replicate the 'placement type' and 'geographic area' variables used in the child characteristics analyses. As bivariate analyses would simply replicate those found for children, these variables are only included in the multivariate caregiver model.

[11] This statistic is used to investigate whether distributions of categorical variables differ from one another, by comparing the observed count in each table cell to the count which would be expected under the hypothesis of no association between two groups (e.g., males and females; Diener-West, 2008).

by chance[12]. For continuous/metric variables (e.g., length of time in care, age in years), binary logistic regressions were conducted[13].

Table 2.1 presents descriptive statistics for the selected child variables across the two Wave 1 non-response groups and for the non-participating groups combined. Significant group differences are **bolded** for reader ease, while specific details are shown in footnotes 12-18.

Table 2.1: Characteristics of the two non-response groups on child and household characteristics (shown as percentages unless otherwise specified)*

	Non-participating groups		All children in non participating groups
	Approached but declined	Non-contacted	
Gender			
Female	48.0	46.3	47.2
Male	52.0	53.7	52.8
N	823	719	1,542
Age in years			
Mean (*SD*)	**4.3 (4.3)**	**5.1 (4.7)**	4.7 (4.5)
N	823	719	1,542
Aboriginal status			
Aboriginal	37.3	23.5	30.9
Non-Aboriginal	**62.7**	**76.5**	69.1
N	823	719	1,542
Time in care (days)			
Mean (*SD*)	**542.6 (178.3)**	**323.8 (199.5)**	440.6 (217.8)
N	823	719	1,542
Placement type			
Foster care[#]	**42.4**	**51.7**	46.8
Relative/kinship care	**54.8**	**41.6**	48.6
Other/mixed type of care	**2.8**	**6.7**	4.6
N	913	719	1,542
Area of residence			
Northern metro	8.7	8.1	8.4
Northern non-metro	24.4	24.3	24.4
Western metro	18.4	18.5	18.5
Western non-metro	14.6	12.8	13.8
Southern metro[#]	26.2	26.6	26.4
Southern non-metro	7.7	9.7	8.6
N	820	719	1,539

[12] Adjusted residuals measure the degree of the difference between observed and expected values and are useful when there are more than two categories. They are produced for each cell, with residuals greater than 1.96 indicating that the observed cell proportions differ significantly to those expected by chance (Tredoux & Durrheim, 2004).

[13] This technique is used to predict a dichotomous dependent variable (here, the two 'did not participate' groups) from one (or a set of) categorical and/or metric predictor variables (Wuensch, 2014).

	Non-participating groups		All children in non participating groups
	Approached but declined	Non-contacted	
Number of ROSH reports			
Mean (*SD*)	**9.2 (8.2)**	**7.7 (7.8)**	8.5 (8.0)
N	810	711	1,521
Substantiated ROSH reports			
Mean (*SD*)	**1.6 (1.2)**	**1.3 (1.2)**	1.5 (1.2)
N	810	711	1,521
Predominant maltreatment issue			
No maltreatment issue[#]	11.0	14.2	12.5
More than 50% of reported issues were neglect	**32.6**	**22.1**	27.7
More than 50% of reported issues were physical abuse	**17.7**	**23.4**	20.3
More than 50% of reported issues were sexual abuse	**1.5**	**3.9**	2.6
More than 50% of reported issues were emotional abuse	4.2	4.2	4.2
Mixed maltreatment issues	33.1	32.2	32.7
N	810	711	1,521

* Please note that Ns are provided separately for each variable.
[#] Denotes the base/comparator group for categorical variables with more than two response options.

Significant differences between the two non-response groups were found for seven of the nine variables investigated (there were no significant differences for gender and area of residence).
In summary:

- The child age distributions of the two non-response groups were significantly different to those expected by chance. More specifically, a higher proportion of the **non-contacted** group were older than the **approached but declined** group.[14]
- The **approached but declined** group contained a higher percentage of Aboriginal children than the **non-contacted** group than would be expected by chance.[15]
- Children in the **approached but declined** group tended to have spent more days in care compared with those in the **non-contacted** group than expected by chance.[16]
- Children in foster care or another/mixed type of care were more likely to be in the **non-contacted** group, while those in relative/kinship care were more likely to be in the **approached but declined** group than expected by chance. [17]

[14] $\chi^2 = 14.6$, $p < .001$
[15] $\chi^2 = 34.2$, $p < .001$
[16] $\chi^2 = 364.4$, $p < .001$
[17] $\chi^2 = 32.4$, $p < .001$

- The number of ROSH and substantiated ROSH reports were significantly higher for the **approached but declined** group than the **non-contacted** group. [18, 19]
- Children whose major ROSH type was neglect (i.e., more than 50%) were more likely to be in the **approached but declined** group, while those whose major ROSH type was physical or sexual abuse were more likely to be in the **non-contacted** group than expected by chance. However, the low numbers for sexual abuse mean that the findings for this ROSH type must be interpreted with caution. [20]

On the basis of these findings, it is evident that there are clear and consistent differences between the two non-participating groups on child-related variables. Therefore, in subsequent analyses, these two groups will be compared to the Wave 1 participant group when investigating if there are significant differences between groups who participated and did not participate in Wave 1.

[18] $\chi^2 = 12.9$, $p < .001$
[19] $\chi^2 = 15.3$, $p < .001$
[20] $\chi^2 = 33.1$, $p < .001$

3. Non-response analysis: Child characteristics

The statistical analyses in this section compared three groups (the ***participating***, ***approached but declined*** and the ***non-contacted*** groups) individually for each child and household characteristic using multinomial logistic regressions (nine regressions were conducted). Multinomial logistic regression is an extension of binary logistic regression (see Section 2.2 for description) that allows comparison of more than two categories of a dependent or outcome variable (in this case, the three participation groups). Similarly to binary logistic regression, multinomial logistic regression uses maximum likelihood estimation to predict the probability of group membership (Starkweather & Moske, 2011).

These analyses aimed to identify the variables that significantly differentiated between groups and hence would subsequently be included in a multivariate model of child characteristics. The **participating** group was selected as the reference group for each analysis, meaning that this group was compared in turn to the **approached, but declined** and **non-contacted** groups.

3.1. Bivariate multinomial logistic regressions

Table 3.1 presents descriptive statistics for the selected child and household variables across the three groups, as well as for the cohort of all study-eligible children (*n* = 2,827). Significant findings are **bolded** for reader ease, with details shown in footnotes 19 to 26.

Table 3.1: Comparison of the participating and non-participating groups on child and household characteristics (shown as percentages unless otherwise specified)*

	Study eligible children			Study eligible children: Overall
	Participated	Approached but declined	Non contacted	
Gender				
Female	50.4	48.0	46.3	48.7
Male	49.6	52.0	53.7	51.3
N	1,284	823	719	2,826
Age in years				
***M* (*SD*)**	3.4 (4.0)	**4.3 (4.3)**[21]	**5.1 (4.7)**[22]	4.1 (4.3)
N	1,284	823	719	2,826
Aboriginal status				
Aboriginal	35.1	37.3	23.5	32.8
Non-Aboriginal	65.0	62.7	**76.5**[23]	67.2
N	1,284	823	719	2,826
Time in care (days)				
M (SD)	569.0 (162.5)	**542.6 (178.3)**[24]	**323.8 (199.5)**[25]	498.9 (204.8)
N	1,284	823	719	2,826
Number of ROSH reports				
M (SD)	8.5 (8.2)	9.2 (8.2)	**7.7 (7.8)**[26]	8.5 (8.1)
N	1,280	810	711	2,801
Substantiated ROSH reports				
M (SD)	1.5 (1.2)	1.6 (1.2)	**1.3 (1.3)**[27]	1.5 (1.2)
N	1,280	810	711	2,801

[21] $\chi^2 = 77.5$, $p < .001$. Wald: participated vs. contacted but declined = 4.7, $p < .001$
[22] $\chi^2 = 77.5$, $p < .001$. Wald: participated vs. non-contacted = 8.6, $p < .001$
[23] $\chi^2 = 40.2$, $p < .001$. Wald: participated vs. non-contacted = 5.3, $p < .001$
[24] $\chi^2 = 643.5$, $p < .001$. Wald: participated vs contacted but declined = -3.6, $p < .001$
[25] $\chi^2 = 643.5$, $p < .001$. Wald: participated vs. non-contacted = -21.4, $p < .001$
[26] $\chi^2 = 12.6$, $p < .001$. Wald: participated vs. non-contacted = -2.1, $p < .05$
[27] $\chi^2 = 18.2$, $p < .001$. Wald: participated vs. non-contacted = -3.7, $p <. 001$

	Study eligible children			Study eligible children: Overall
	Participated	Approached but declined	Non contacted	
No maltreatment issue[#]	14.3	11.0	14.2	13.3
More than 50% of reported issues were neglect	33.2	32.6	**22.1**[28]	30.1
More than 50% of reported issues were physical abuse	18.4	17.7	23.4	19.4
More than 50% of reported issues were sexual abuse	1.6	1.5	**3.9**[29]	2.2
More than 50% of reported issues were emotional abuse	3.1	**4.2**[30]	4.2	3.7
Mixed maltreatment issues	29.5	**33.1**[31]	32.2	31.2
N	1,280	810	711	2,801
Primary placement type				
Foster care[#]	49.6	42.4	51.7	48.1
Relative/kinship care	48.2	**55.8**[32]	**41.6**[33]	48.4
Other/mixed type of care	2.2	2.8	**6.7**[34]	3.5
N	1,284	823	719	2,826
Area of residence				
Northern metro	8.1	8.1	7.9	8.0
Northern non-metro	29.6	**24.0**[35]	**24.5**[36]	26.7
Western metro	15.5	19.8	18.3	17.4
Western non-metro	18.2	**13.9**[37]	**12.7**[38]	15.6
Southern metro[#]	20.6	26.5	26.9	23.9
Southern non-metro	8.0	7.8	9.8	8.4
N	1,284	820	718	2,822

* Please note that Ns are provided separately for each variable.
[#] Denotes the reference group for variables with more than two response options.

[28] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. non-contacted = -2.6, $p < .05$
[29] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. non-contacted = 2.8, $p < .01$
[30] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. contacted but declined = 2.1, $p < .05$
[31] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. contacted but declined = -2.5, $p < .05$
[32] $\chi^2 = 50.7$, $p <. 001$. Wald: participated vs. contacted but declined = 3.7, $p < .001$
[33] $\chi^2 = 50.7$, $p <. 001$. Wald: participated vs. non-contacted = -2.0, $p = .05$
[34] $\chi^2 = 50.7$, $p <. 001$. Wald: participated vs. non-contacted = 3.6, $p < .001$
[35] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. contacted but declined = -3.6, $p <.001$
[36] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. non-contacted = -3.5, $p =.001$
[37] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. contacted but declined = -3.7, $p <.001$
[38] $\chi^2 = 50.7$, $p < .001$. Wald: participated vs. non-contacted = -4.1, $p <.001$

Significant differences were found on all variables except child gender:

- The mean age of children in the **participating** group was significantly lower than their counterparts in the **non-contacted** and **approached but declined** groups.
- Relative to the **participating** group, a lower proportion of the **non-contacted** group were Aboriginal.
- Children in the **participating** group tended to have been in care for a significantly greater number of days since being placed on a final order than the **approached but declined** and **non-contacted** groups.
- Children in the **non-contacted** group had a significantly lower number of ROSH reports than children in the **participating** group. The **participating** and **approached but declined** groups did not differ significantly on the number of ROSH reports.
- Similarly, children in the **non-contacted** group had a significantly lower number of substantiated ROSH reports than those in the **participating** group, but there were no significant differences between the **participating** and **approached but declined** groups.
- The groups significantly differed on the predominant type of maltreatment. Relative to the **participating** group, the **non-contacted** group contained a higher proportion of children with 'mixed maltreatment' issues' or whose predominant maltreatment issue was 'emotional abuse' (i.e., more than 50% of reports were of this type) when compared to no maltreatment. Again relative to the **participating** group, the **non-contacted** group contained a lower percentage of children whose predominant maltreatment type was 'neglect' when compared to no maltreatment. The **non-contacted** group as opposed to the **participating** group had a higher rate of 'sexual abuse' when compared to no maltreatment (although the relatively low incidence of this maltreatment type should be kept in mind).
- Overall, there were significant differences between the participating group and each non-participating group on placement type. Relative to the **participating** group, the **approached but declined** group had higher rates of relative/kinship care when compared to foster care. On the other hand, relative to the **participating** group, children in the **non-contacted** group were significantly less likely to be in relative/kinship care than foster care. The results for other/mixed type of care should be interpreted with caution due to this group's small sample size (participating n = 28; approached but declined n = 23; non-contacted n = 48), but rates appeared to be higher in the **non-contacted** than the **participating** group.
- Area of residence significantly differentiated between the groups overall. Relative to the **participating** group, children in the **approached but declined** and **non-contacted** groups were significantly less likely to be residing in the Northern non-metro area than the Southern metro area. A similar pattern of results was found for Western non-metro, with children residing in this area less likely to be in the **approached but declined** or **non-contacted** groups relative to the **participating** group when compared to Southern metro area.

3.2. Multivariate multinomial logistic regressions

Following the analyses investigating whether there were differences between the participating group and each non-participating group on the separate child and household characteristics, the variables on which significant differences were found were included together in one multivariate multinomial logistic regression. The purpose of this analysis was to examine which variables remained significantly associated with study participation once the effects of other characteristics were included (child gender was also retained given its importance).

Relative risk ratios (RRRs) were produced for each variable included in the model and are the main statistics reported here (full details of the model can be found in Appendix 8.1). RRRs quantify the likelihood of an outcome (e.g., the presence of a particular medical condition) in one group by comparison with another (e.g., a group exposed to a risk versus a group that was not exposed to the risk). For the current analyses, RRRs are used to indicate the likelihood of children being in the participating group versus one of the non-participation groups on the basis of a particular child characteristic (e.g., how old they were, or whether they were Aboriginal or non-Aboriginal, etc.).

The results from the multivariate multinomial logistic regression of child and household characteristics indicated that the variables of child age in years, their total length of time in care, their Aboriginal status, number of substantiated ROSH reports, placement type, and area of residence significantly differentiated the participating group from one or both of the non-participating groups. The RRR results for each child-level variable are shown in Table 3.2 and discussed below:

Table 3.2: Relative risk ratios (and standard errors) for child and household variables included in the multivariate multinomial logistic regression

Child characteristic	Approached but declined# *RRR (SE)*	Non contacted# *RRR (SE)*
Female child	Reference category	
Male child	1.09 (0.10)	1.13 (0.13)
Child age in years	**1.06*** (0.01)**	**1.11* (0.02)**
Total length of time in care	**-1.00*** (0.00)**	**-0.99*** (0.00)**
Aboriginal child	Reference category	
Non-Aboriginal child	**-0.81* (0.08)**	**1.32* (0.17)**
Number of ROSH reports	1.00 (0.01)	0.99 (0.01)
Number of substantiated ROSH reports	0.97 (0.05)	**0.88* (0.06)**
No maltreatment issue	Reference category	

Child characteristic	Approached but declined# *RRR (SE)*	Non contacted# *RRR (SE)*
More than 50% of maltreatment issues were neglect	1.16 (0.19)	-0.72 (0.14)
More than 50% of maltreatment issues were physical abuse	1.22 (0.21)	1.34 (0.26)
More than 50% of maltreatment issues were sexual abuse	-0.92 (0.37)	1.19 (0.45)
More than 50% of maltreatment issues were emotional abuse	1.54 (0.43)	1.74 (0.58)
Mixed maltreatment issues	1.26 (0.21)	1.13 (0.23)
Foster care placement	Reference category	
Relative/kinship care placement	**1.31** (0.12)**	1.04 (0.12)
Other/mixed care placement	-0.77 (0.25)	-1.01 (0.33)
Area of residence – Southern metro	Reference category	
Area of residence – Northern metro	-0.81 (0.15)	1.01 (0.22)
Area of residence – Northern non-metro	**-0.59*** (0.08)**	**0.51*** (0.08)**
Area of residence – Western metro	-0.88 (0.13)	0.75 (0.13)
Area of residence – Western non-metro	**-0.57*** (0.09)**	**0.60** (0.11)**
Area of residence – Southern non-metro	-0.70 (0.13)	-0.85 (0.18)

Reference group is the participating group
* $p < .05$ ** $p < .01$ ***$p < .001$

- As was the case at the bivariate level, gender proportions did not significantly differ across the participating and non-participating groups.
- Group differences on child age continued to be evident once other child characteristics were included in the model, with the two non-participating groups tending to be older than the participating group. The likelihood of being in the **approached but declined** group relative to the **participating** group increased by 6% with every one year increase in child age. Further, the likelihood of being in the **non-contacted** group as opposed to the **participating** group increased by 11% with each one-year increase in child age.
- The **participating** group tended to have spent more time in care since final orders had been granted than the **approached but declined** and **non-contacted** groups.
- Non-Aboriginal children were 19% less likely to be in the **approached but declined** group than the **participating** group in comparison to Aboriginal children. However, relative to the **participating** group, non-Aboriginal

children were 32% more likely to be in the **non-contacted** group compared to Aboriginal children.

- The significant effect found at the bivariate level regarding the number of ROSH reports was non-significant in the multivariate model.
- There were significant differences on the number of substantiated ROSH reports when comparing the **participating** and **non-contacted** groups. With each additional substantiated ROSH report, children were 12% less likely to be in the **non-contacted** group than the **participating** group.
- There were no significant effects for the predominant maltreatment issue.
- Relative to the **participating** group, children in relative/kinship care were 31% more likely to be in the **approached but declined** group, by comparison with those in foster care. There were no other significant effects for placement type.
- Children living in the Northern non-metro and Western non-metro areas were between 40 and 49% less likely to be in the **approached but declined** and **non-contacted** groups relative to the **participating** group, in comparison to children living in the Southern metro area.

In summary, children who were younger, had been in OOHC for longer, and were living in non-metro areas were more likely to be in the Wave 1 participating group. Results for the child's Aboriginal status showed significant, but inconsistent, trends.

In the following chapter, corresponding analyses will be conducted for caregiver and household characteristics. Finally, in Chapter 5, child, caregiver and household variables that significantly differentiated the participating and non-participating groups will be examined in one overall model.

4. Non-response analysis: Caregiver characteristics

4.1. Bivariate multinomial logistic regressions

This section compares the three study-eligible groups - **participants**, **approached but declined**, and **non-contacted** – on the caregiver characteristics listed in Section 2.1. As before, the first step was to conduct separate bivariate multinomial logistic regressions for each caregiver characteristic to identify the variables that significantly differentiated the groups. The **participating** group was the reference group for each analysis, being compared in turn to the **approached but declined** and **non-contacted** groups[39]. The focus was on female caregiver characteristics, as more than 90% of children were living with at least one female caregiver, while only 55% of children were living with a male caregiver.

Table 4.1 presents descriptive statistics on caregiver characteristics for the three groups, as well as for all caregivers. Findings showing significant differences between groups are **bolded**, with details of analyses provided in the notes.

Table 4.1: Female caregiver characteristics (shown in percentages unless otherwise specified)

	Caregivers of study-eligible children			All caregivers
	Participated	Approached but declined	Non contacted	
Caregiver age in years				
M (SD)	46.8 (10.4)	46.5 (11.3)	**36.5 (11.1)**[40]	44.4 (11.6)
N	1,170	707	541	2,418
Caregiver Aboriginal status				
Aboriginal#	14.6	22.7	17.1	17.5
Non-Aboriginal	83.3	**77.3**[41]	82.9	82.5
N	1,203	740	457	2,400

[39] For interest, the two non-participation groups (approached but declined and non-contacted) were compared to investigate whether they significantly differed on caregiver characteristics. As for child characteristics, there were significant differences between groups on each of the four caregiver variables shown above, which justified retaining them as two separate groups in the caregiver analyses (details in Appendix 8.2).

[40] $\chi 2 = 350.5$, $p < .001$

[41] $\chi 2 = 20.6$, $p < .001$

	Caregivers of study-eligible children			All caregivers
	Participated	Approached but declined	Non contacted	
Number of-caregivers present in the household				
One caregiver#	39.1	46.6	65.1	43.1
Two caregivers	60.9	**53.4**[42]	**34.9**[43]	56.9
N	1,280	786	665	2,731
Number of-study-eligible children being cared for				
One child#	48.4	46.3	45.0	47.0
Two children	30.2	30.8	26.2	29.6
Three children	11.4	15.3	12.9	12.9
Four or more children	10.0	7.8	**14.9**[44]	10.5
N	1,280	777	665	2,722

* Please note that Ns are provided separately for each variable.
# Denotes the base/comparator group for categorical variables with more than two response options.

A number of significant differences were evident on female caregiver characteristics, as follows:

- Caregivers in the **participating** group tended to be older than caregivers in the **non-contacted** group.
- The **approached but declined** group was significantly more likely to be Aboriginal than the **participating** group.
- Overall, the participating and non-participating groups significantly differed on the number of caregivers present in the household. More specifically, children in the **approached but declined** and **non-contacted** groups were significantly less likely to be in dual caregiver than sole caregiver households than children in the **participating** group.
- Overall, the participating and non-participating groups significantly differed on the number of study-eligible children being cared for. The only significant individual effect, however, was that caregivers of children who were living with four or more study-eligible children (including the POCLS study child) were significantly more likely to be in the **non-contacted** group than the **participating** group, when compared to households with only one study-eligible child.

Although female caregiver characteristics were the focus of the analyses due to the higher proportion of study-eligible children residing with a female caregiver, the results of corresponding bivariate analyses for male caregivers are displayed in Table 4.2. These revealed that male caregivers in the **participating** group tended to be older than their counterparts in the **non-**

[42] $\chi^2 = 120.0$, $p < .001$. Wald: participated vs. contacted but declined = -3.3, $p = .001$
[43] $\chi^2 = 120.0$, $p < .001$. Wald: participated vs. non-contacted = -10.7, $p < .001$
[44] $\chi^2 = 26.7$, $p < .001$. Wald: participated vs. non-contacted = 3.1, $p < .01$

contacted group. There were also significant findings for Aboriginal status, with a higher proportion of male caregivers in the **approached but declined** and **non-contacted** groups being Aboriginal than male caregivers in the **participating** group.[45] Hence, the findings obtained for male caregivers were similar to those found for female caregivers.

Table 4.2: Male caregiver characteristics (shown in percentages unless otherwise specified)

	Caregivers of study-eligible children			All male caregivers
	Participated	Approached but declined	Non contacted	
Age in years				
M (SD)	48.6 (10.5)	47.3 (11.0)	**39.9 (11.1)[46]**	46.4 (11.3)
N	717	414	305	1,436
Aboriginal status				
Aboriginal[#]	8.8	14.9	14.7	11.7
Non-Aboriginal	91.2	**85.2[47]**	**85.3[48]**	88.4
N	761	431	259	1,451

* Please note that Ns are provided separately for each variable.

[#] Denotes the reference category for variables with more than two response options.

4.2. Multivariate multinomial logistic regression

The next step was to include the female caregiver characteristics found to significantly differentiate the participating from the non-participating groups in a subsequent multivariate multinomial logistic regression. Placement type and area of residence were also included in the multivariate analysis (these were not included in bivariate caregiver analyses as the results would be identical to those previously reported in the child characteristics section). As indicated earlier, it is important to include the significant variables in the same model to identify the aspects that remain significant once they are analysed in conjunction with other factors that may impact on Wave 1 participation/non-participation. Once again, relative risk ratios (RRRs) were produced for each of the variables included in the model.

The results from this multivariate multinomial logistic regression indicated that female caregiver age (in years), female caregiver Aboriginal status, number of caregivers in the household, number of study-eligible children being cared for, placement type and area of residence continued to significantly differentiate the

[45] χ^2 = 12.6, p < .01; Wald: participated vs. non-contacted = 2.7, p < .01; participated vs. contacted but declined = 3.2, p < .01

[46] χ^2 = 141.3, p < .001; Wald: participated vs. non-contacted = -10.8, p < .001

[47] χ^2 = 12.6, p < .01; Wald: participated vs. contacted but declined = 3.2, p < .01

[48] χ^2 = 12.6, p < .01; Wald: participated vs. non-contacted = 2.7, p < .01

participating and non-participating groups. Table 4.3 shows the relative risk ratio findings while details of model results are shown in Appendix 8.3.

Table 4.3: Relative risk ratios (and standard errors) for female caregiver and household variables included in the multivariate multinomial logistic regression

Caregiver characteristic	Approached but declined# *RRR (SE)*	Non-contacted# *RRR (SE)*
Female caregiver age in years	-1.00 (0.00)	**-0.91*** (0.01)**
Female Aboriginal caregiver	Reference category	
Female non-Aboriginal caregiver	**1.80*** (0.23)**	0.95 (0.17)
Foster care placement	Reference category	
Relative/kinship care placement	**1.24* (0.13)**	-0.82 (0.11)
Other/mixed care placement	-4.26e-06 (0.00)	**26.77** (28.81)**
1 caregiver in household	Reference category	
2 caregivers in household	-0.85 (0.09)	**-0.35*** (0.05)**
Area of residence – Southern metro	Reference category	
Area of residence – Northern metro	-0.83 (0.16)	-0.82 (0.21)
Area of residence – Northern non-metro	**-0.61*** (0.09)**	**-0.58** (0.10)**
Area of residence – Western metro	-0.91 (0.14)	-0.90 (0.18)
Area of residence – Western non-metro	**-0.59*** (0.10)**	**-0.62* (0.13)**
Area of residence – Southern non-metro	**-0.65* (0.13)**	1.09 (0.26)
1 study eligible-child in household	Reference category	
2 study eligible-children in household	1.01 (0.12)	1.03 (0.15)
3 study eligible-children in household	**1.34* (0.20)**	**1.75** (0.35)**
4 or more study-eligible children in household	-0.72 (0.13)	**2.85*** (0.54)**

Reference group is the participating group.
* $p < .05$ ** $p < .01$ *** $p < .001$

In summary:

- Female caregiver age significantly differentiated between the **participating** and **non-contacted** groups, although not the **participating** and **approached but declined** groups. The likelihood of being in the **participating** group relative to the **non-contacted** group increased by 9% with every one year increase in female caregiver age.

- Relative to the **participating** group, female caregivers in the **approached but declined** group were 80% more likely to be Aboriginal, in comparison to non-Aboriginal.
- Relative/kinship caregivers were 24% more likely to be in the **approached but declined** group than the **participating** group in comparison to foster caregivers. Caregivers of children in other/mixed type of care were also 27 times more likely to be in the **non-contacted** group than the **participating** group, in comparison to foster caregivers, although these results should be treated with caution due the small numbers in other/mixed types of care.
- Children with two caregivers were 65% less likely to be in the **non-contacted** group than the **participating** group, in comparison to children with one caregiver.
- Those living in the Northern and Western non-metro areas were between 38% and 42% less likely to be in the **approached but declined** and **non-contacted** groups, relative to the **participating** group, in comparison to caregivers living in the Southern metro area. Caregivers of children residing in the Southern non-metro area were also 35% less likely to be in the **approached but declined** group than the **participating** group, relative to children living in the Southern metro area.
- Caregivers who were living with three, or four or more, study-eligible children were between 75% and 185% more likely, respectively, to be in the **non-contacted** group versus the **participating** group, in comparison to caregivers of one study-eligible child. Caregivers who were living with three study-eligible children were also 34% more likely to be in the **approached but declined** group than the **participating** group, in comparison to caregivers with one study-eligible child.

In summary, these findings indicate that at the (female) caregiver level, age in years, Aboriginal status, the number of caregivers residing in the household, placement type and area of residence were all significantly associated with participation in Wave 1. It seemed that caregivers who were older, non-Aboriginal, were living with another caregiver and who were living in the Northern and Western non-metro areas, were more likely to be in the Wave 1 participating group.

5. Non-response analysis: Overall model combining child, caregiver and household characteristics

Based on the significant findings to emerge from the multivariate multinomial logistic regressions using child, female caregiver and household characteristics, the following variables were included in the overall model to investigate which were significantly associated with participation or non-participation in Wave 1 (comparing the **participating** group with the **approached but declined** and **non-contacted** groups):

- Child age (in years) at the start of the child's first placement after the issuing of their final order;
- Child's total length of time in care since the issuing of their final order (in days);
- Child's Aboriginal status;
- Child's most recent placement type;
- Placement area of residence;
- Number of substantiated ROSH reports prior to the child's first placement spell after being placed on a final order;
- Female caregiver's age (in years);
- Female caregiver's Aboriginal status;
- Number of caregivers in the household; and
- Number of study-eligible children in the household.

Relative risk ratios (RRRs) were again produced for each of the variables included in the model and are the focus here (see Table 5.1). Details of model findings are presented in Appendix 8.4. The results can be summarised as follows:

- As found previously, children in the **participating** group tended to be younger than those in the **approached but declined** and **non-contacted** groups. Relative to the **participating** group, the likelihood of being in the **approached but declined** group increased by 7% with every one year increase in age, while the likelihood of being in the **non-contacted** group increased by 11% with each one year increase in child age.
- Children in the **participating** group tended to have spent more time in care than their counterparts in the **approached but declined** and **non-contacted** groups. Each additional year in care decreased the likelihood of being in the **approached but declined** group by 43%, and the **non-contacted** group by 220%, in comparison to the **participating** group.
- Significantly fewer children in the **participating** group were non-Aboriginal than those in the **non-contacted** group. Thus, non-Aboriginal children were 54% more likely to be in the **non-contacted** group as opposed to the **participating** group, in comparison to Aboriginal children.

- Children in the **participating** group had a significantly higher number of substantiated ROSH reports than those in the **non-contacted** group. It was found that with each additional substantiated ROSH report, children were 23% less likely to be in the **non-contacted** group by comparison with the **participating** group.
- Female caregivers in the **participating** group tended to be older than their counterparts in the **non-contacted** group (although the **participating** and **approached but declined** groups did not significantly differ on caregiver age). The likelihood of being in the **participating** group versus the **non-contacted** group increased by 8% with every one year increase in age.
- Relative to the **participating** group, the **approached but declined** group were 83% more likely to include female Aboriginal caregivers, by comparison with non-Aboriginal caregivers.
- Relative to the **participating** group, the **approached but declined** group was 30% more likely to be in relative/kinship care than foster care. Children in other/mixed type of care were 16 times more likely to be in the **non-contacted** group than the **participating** group, when compared to children in foster care. This result should be interpreted with caution, however, due to the small number of children in other/mixed care (n = 99, but n = 28 for those in the **participating** group).
- As reported in previous sections, children who were residing with their caregivers in Northern and Western non-metro areas were between 37% and 48% less likely to be in the **approached but declined** and **non-contacted** groups than the **participating** group, in comparison to those living in the Southern metro area. Those residing in the Southern non-metro area were also 37% less likely to be in the **approached but declined** group, rather than the **participating** group, relative to those living in the Southern metro area.
- The **non-contacted** group was 57% more likely to have one caregiver than two caregivers, in comparison to the **participating** group.
- There were several significant differences between the **participating** and **non-contacted** groups on the number of study-eligible children living in the household, but no significant differences between the **participating** and the **approached but declined** groups on this aspect. Relative to the **participating** group, households in the **non-contacted** group tended to have a larger number of study-eligible children (i.e., three children, or four or more), by comparison with households with one study-eligible child.

Overall, many of the significant variables from the child and caregiver multivariate multinomial logistic regression models remained significant when included in the combined model and after the effects of other variables were held constant. Participation in Wave 1 appeared to be related to children being younger; children being in care for longer; children being from an Aboriginal background; a higher number of substantiated ROSH reports; the household being in a non-metro area; female caregivers being older; the presence of two caregivers in the household; and fewer study-eligible children living in the home. Thus, it appears that child, caregiver and household characteristics were related

to participation/non-participation in Wave 1 of the POCLS study. It was noticeable that the **participating** group significantly differed from the **non-contacted** group on considerably more characteristics (n = 9) than it differed from the **approached but declined** group (n = 5).

Table 5.1: Relative risk ratios (and standard errors) for child and caregiver variables in the multivariate multinomial logistic regression analysis

Characteristic	Approached but declined ***RRR (SE)***	Non contacted ***RRR (SE)***
Child age (in years)	1.07*** (0.02)	1.11*** (0.21)
Child total time in care	-0.99*** (0.00)	-0.99*** (0.00)
Aboriginal child	**Reference category**	
Non-Aboriginal child	**-0.93 (0.12)**	1.54* (0.29)
Number of substantiated ROSH reports	**-0.99 (0.45)**	-0.77*** (0.51)
Female caregiver age in years	**-0.99 (0.45)**	-0.92*** (0.01)
Female Aboriginal caregiver	**Reference category**	
Female non-Aboriginal caregiver	1.83*** (0.29)	**1.54 (0.36)**
Foster care	**Reference category**	
Relative/kinship care	1.30* (0.13)	**1.03 (0.15)**
Other/mixed care	**-8.12e-07 (0.00)**	16.28* (19.13)
Area of residence – Southern metro area	**Reference category**	
Area of residence – Northern metro area	**-0.89 (0.18)**	**-0.92 (0.27)**
Area of residence – Northern non-metro area	-0.58*** (9.08)	-0.52*** (0.10)
Area of residence – Western metro area	**-0.91 (0.14)**	**-0.92 (0.20)**
Area of residence – Western non-metro area	-0.57*** (0.09)	-0.63* (0.14)
Area of residence – Southern non-metro area	-0.63* (0.13)	**-0.87 (0.24)**
One caregiver present in household	**Reference category**	
Two caregivers present in household	**-0.87 (0.09)**	-0.43*** (0.06)
One study-eligible child present in household	**Reference category**	
Two study-eligible children present in household	**-0.92 (0.11)**	**-0.99 (0.17)**
Three study-eligible children present in household	**1.24 (0.19)**	1.68* (0.37)
Four or more-study eligible children present in household	**-0.61** (0.12)**	2.18*** (0.49)

Reference group is the participating group.
* $p < .05$ ** $p < .01$ *** $p < .001$

6. Implications of findings for weighting

6.1. Summary of findings

The non-response analyses revealed a number of differences between the Wave 1 **participating** group and either or both of the non-participating groups (the **approached but declined** and **non-contacted** groups). Overall, many of the significant variables from the child and caregiver multivariate multinomial logistic regression models remained significant when included in the combined model and when the effects of other variables were held constant. Differences were evident in relation to the following three areas:

- *child characteristics*: age when first placed after the issuing of final orders, the length of time in care, Aboriginal status, and number of substantiated ROSH reports;
- *female caregiver characteristics*: age and Aboriginal status; and
- *household characteristics*: number of caregivers present, number of study-eligible children living in the household, placement type, and area of residence.

6.2. Implications of findings

These findings suggest that the participating group differs from the non-participating groups in meaningful and important ways. It appears that the POCLS Wave 1 recruited sample under-represents, to a certain extent, older study-eligible children, non-Aboriginal children, those who have been in care for a shorter period of time, and those with fewer substantiated ROSH reports. In terms of caregiver and household characteristics, it tends to under-represent younger caregivers, Aboriginal caregivers, relative/kinship caregivers, single caregiving households, metro households, and households with a larger number of study-eligible children.

If generalisations to the population of study-eligible children in NSW were desired, some adjustment to the Wave 1 interview dataset would seem desirable. The most common method used is weighting, which is generally undertaken to reduce the possibility that the estimates produced by a study differ substantively from those that would be obtained for the population from which it was drawn. However, it must first be considered whether generalisation is a high priority for the POCLS. Weighting is often used to enable generalisations about general population trends. For example, weighting of the Longitudinal Study of Australian Children (LSAC) aims to increase the sample's comparability to the general Australian child population, while weighting of the Household Income and Labour Dynamics in Australia Study (HILDA) aims to increase comparability to the general Australian adult population. The POCLS is a study of a particular population – children placed in OOHC in NSW – and it is further restricted to children who have been placed on a final court order for the first time within a particular timeframe. Thus, the relevant population to which generalisation would be made is to children in NSW who have been placed on a

final court order for the first time between May 2010 and April 2013. If generalisation to this population is not a high priority, then there may be less need for weighting, although it remains important to understand how the participating sample differs from the non-participating sample so that potential biases can be understood and the findings considered in light of them. Thus, the first step should be to decide whether generalisation to the study-eligible population is a major objective of the POCLS.

6.3. Implications for weighting

If it is decided that the POCLS Wave 1 dataset should be weighted, a number of issues should be considered. The first is the weighting approach that is most appropriate for this dataset. Australian Institute of Family Studies has previously provided advice on this issue (see Appendix 8.5 for an extract) and after consultation with experts in this area, the 'raking' approach of Battaglia, Hoaglin, Frankel (2009) is recommended. This approach is used in other longitudinal studies such as LSAC. One feature of raking is that it utilises a relatively small number of variables: four to five were recommended for the POCLS. The non-response analyses reported here identified 10 variables that differentiated the participating group from either or both the non-participating groups. Thus, a subset of these variables would need to be selected for inclusion in the weighting. Decisions on which variables to select could consider the following issues:

- whether the variable differentiated the participating group from both non-participating groups rather than only one;
- the strength of group differences (e.g., restricting the variables to be included to those showing significant differences at the 1% level);
- whether there is collinearity (i.e., high correlation) between variables, which could guide the retention or dropping of variables;
- the conceptual importance of the candidate variables;
- whether coverage of child, female caregiver and household characteristics is desired; and
- whether differences found for one non-participating group are of higher relevance than differences for the other.

To assist with these decisions, a summary table is provided showing the pattern of significant differences between the Wave 1 **participating** group and the **approached but declined** and **non-contacted** groups (Table 6.1).

Table 6.1: Characteristics on which groups differences were found

Characteristic	Participating group vs approached but declined group	Participating group vs non contacted group
Child age (years) at entry to first placement	✓	✓
Child's total length of time in care (number of days)	✓	✓
Child's Aboriginal status	×	✓
Number of substantiated ROSH reports	×	✓
Female caregiver age (years)	×	✓
Female caregiver Aboriginal status	✓	×
Most recent placement type	✓	✓
Number of caregivers in the household	×	✓
Number of study-eligible children in household	×	✓
Area of residence	✓	✓

✓ = Significant differences were found. × = Significant differences were not found.

A second issue to consider is whether differing weights may be needed for caregiver data and child/young person data. As noted in Section 1.3, several steps were involved in recruiting the sample of caregivers for Wave 1 of the study. A further recruitment step was undertaken for children in which those aged three years and older, six years and older, or seven years and older were invited to complete various direct assessments and an interview.[49] Children could have declined to take part (or not participated for other reasons[50]) in these activities. Thus, the POCLS resembles the HILDA study in using a recruitment process in which, generally speaking, one participant (in the POCLS, the caregiver) must take part in the study before a second participant (in Wave 1 of the POCLS, the child) can be invited to take part. When considering the options for weighting the POCLS Wave 1 dataset, it would seem useful to examine the approach and methods used by the HILDA study, which may be a worthwhile model for the POCLS to follow.

In the longer term, if weighting is implemented for the Wave 1 dataset, longitudinal as well as cross-sectional weights would be needed when data from further waves of the study becomes available. This will likely be more complex than in other studies which generally only need to address participant attrition

[49] Children aged 3+ years were invited to complete the Peabody Picture Vocabulary test; children aged 6-16 years were invited to complete the Matrix Reasoning test from the Wechsler Scale of Intelligence; and children aged 7+ years were invited to complete the FELT security activity and an interview.

[50] As well as child refusal, other reasons for child non-participation were: the child being ill or not present at the time of the Wave 1 interview, caregiver refusal, or the child's non-English speaking background or disability preventing the completion of an assessment.

from the sample recruited at baseline. In the POCLS, as children change placements or return to their birth parents, new caregivers will be invited to take part in the study. Further, data will be collected from birth parents from Wave 2 in cases where children had been restored before the Wave 1 data collection took place; and from childcare workers and teachers across Waves 2 and 3, and caseworkers in Wave 3. Thus, there will be a range of additional informants to the study in later waves. Although this does not preclude weighting of the POCLS dataset, it is likely to introduce more complexity.

6.4. Limitations of the non-response analyses

The limited amount of verified administrative data available for analysis restricted the breadth of child and caregiver characteristics that could be examined. Only a small number of variables, particularly for caregivers, were available or able to be used (some potential variables could not be included as there was too much missing data). For practical reasons (contact data was particularly scarce for children who had been restored to their birth parents) and sensitivities (recent involvement with child protection services), children restored before the Wave 1 interview were not eligible to participate in Wave 1 (n = 515). Variables that were not available in the database that may have been of relevance included the total number of children residing in the household (i.e., in addition to study-eligible children), employment status (e.g., whether in employment or not) and information on household income. Variables that could not be used due to a large amount of missing data for foster and relative kinship carers included caregiver marital status and primary cultural background beyond Aboriginal status (for both children and caregivers), as well as caregivers' prior experience in caring for children in OOHC.

It is thus possible that a range of factors that may have influenced Wave 1 participation, such as those listed above, were not able to be included in the analyses undertaken. Hence, the implications that can be drawn may not be as accurate or useful as those that would have been obtained if a greater breadth of information was available, particularly for caregivers with whom children were placed.

6.5. Conclusions

This report undertook a series of statistical analyses to increase understanding of the extent and effects of non-response to the POCLS, as well as implications regarding the representativeness of the sample obtained. It aimed to shed light on whether response bias may have occurred. The Wave 1 **participating** group was compared to an **approached but declined** group and a **non-contacted** group. Child, female caregiver and caregiving household characteristics were included in the analyses. The variables significantly differentiating between the participating and both or one of the non-participating groups after the effects of other variables were held constant were:

- ***child characteristics***: age when first placed after the issuing of final orders, length of time in care, Aboriginal status, and the number of substantiated ROSH reports;
- ***female caregiver characteristics***: age and Aboriginal status; and
- ***household characteristics***: number of caregivers present, number of study-eligible children living in the household, placement type, and geographic area of residence.

The findings suggest that the interviewed sample for Wave 1 of the POCLS differs from the non-participating sub-samples in important and meaningful ways. If generalisation to the total cohort of study-eligible children is desired, weighting of the POCLS Wave 1 dataset should be considered.

7. References

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8. Appendices

Appendix 8.1: Multivariate Multinomial Logistic regression results using child and relevant household characteristics (significant results are bolded)

Number of observations = 2,797
LR $chi^2(36)$ = 965.98; p = 0.0000
Log likelihood = -2494.68

Characteristic	**Contacted but declined group**					**Non-contacted group**				
	RRR	***SE***	**Wald**	***p* <**	**95% CIs**	***RRR***	***SE***	**Wald**	***p* <**	**95% *CI*s**
Child age (years)	**1.06**	**0.01**	**4.29**	**.000**	**1.03-1.09**	**1.11**	**0.02**	**6.43**	**.000**	**1.08-1.15**
Female	Reference category					Reference category				
Male	1.09	0.10	0.98	.914	0.91-1.31	1.13	0.13	1.12	.263	-.91-1.42
Aboriginal	Reference category					Reference category				
Non-Aboriginal	**0.81**	**0.08**	**-2.17**	**.030**	**0.67-0.98**	**1.32**	**0.17**	**2.19**	**.029**	**1.03-1.69**
Total time in care	**1.00**	**0.00**	**-3.56**	**.000**	**0.99-0.99**	**0.99**	**0.00**	**-21.40**	**.000**	**0.99-0.99**
Number of ROSH reports	1.00	0.01	0.14	.890	0.99-1.01	0.99	0.01	-0.70	.482	0.97-1.01
Number of substantiated ROSH reports	0.97	0.05	-0.53	.590	0.88-1.07	**0.88**	**0.06**	**-1.99**	**.046**	**0.78-0./99**
No maltreatment issue	Reference category					Reference category				
50%+ of issues are neglect	1.16	0.19	0.89	.375	0.84-1.59	0.72	0.14	-1.64	.101	0.49-1.06
50%+ of issues are physical abuse	1.22	0.21	1.15	.252	0.87-1.71	1.34	0.26	1.49	.137	0.91-1.97
50%+ of issues are sexual abuse	0.92	0.37	-0.20	.841	0.43-2.00	1.19	0.45	0.46	.646	0.57-2.51
50%+ of issues are emotional abuse	1.54	0.43	1.56	.118	0.90-2.66	1.74	0.58	1.66	.097	0.90-3.56
Mixed maltreatment issues	1.26	0.21	1.39	.166	0.91-1.76	1.13	0.22	0.60	.548	0.76-1.67

Foster care	Reference category					Reference category				
Relative/kinship care	**1.31**	**0.12**	**2.85**	**.004**	**1.09-1.57**	1.04	0.12	0.32	.751	0.83-1.30
Other/mixed care	0.77	0.25	-0.82	.412	0.41-1.45	1.01	0.33	0.04	.968	0.54-1.91
Southern metro area	Reference category					Reference category				
Northern metro area	0.81	0.15	-1.15	.250	0.57-1.16	0.87	0.19	-0.62	.538	0.56-1.35
Northern non-metro area	**0.59**	**0.08**	**-4.03**	**.000**	**-0.45-0.76**	**0.51**	**0.08**	**-4.18**	**.000**	**0.37-0.70**
Western metro area	0.88	0.13	-0.84	.402	0.66-1.18	0.75	0.13	-1.62	.105	0.53-1.06
Western non-metro area	**0.57**	**0.09**	**-3.76**	**.000**	**0.42-0.76**	**0.60**	**0.11**	**-2.76**	**.006**	**0.42-0.86**
Southern non-metro area	**0.69**	**0.13**	**-2.00**	**.046**	**0.48-0.99**	0.77	0.17	-1.15	.252	0.50-1.20
Constant	0.96	0.22	-0.19	.848	0.61-1.50	13.90	3.65	10.04	.000	8.31-23.24

RRR = Relative risk ratio
SE = standard error
Wald = the Wald test evaluates whether the particular variable significantly differentiates between the groups being compared
p = probability value
95% CIs = 95% confidence intervals

Appendix 8.2: Comparison of the two non-participating groups on caregiver and household characteristics

Characteristic	**Approached but declined**		**Non-contacted**		**Statistical test**	***p* <**
Female caregiver age (years)	*M* = 46.45 *SD* = 11.27 *n* = 707		*M* = 36.36 *SD* = 11.13 *n* = 541		Wald = -13.33	.000
	N	***%***	***N***	***%***		
Aboriginal caregiver	168	22.7	78	17.1	Pearson χ^2 = 5.49	.019
Non-Aboriginal caregiver	572	77.3	379	82.9		
	N	***%***	***N***	***%***		
Two caregivers in household	420	53.4	232	34.9	Pearson χ^2 = 50.08	.000
One caregiver in household	366	46.6	433	66.1		
	N	***%***	***N***	***%***		
One study eligible child	360	46.3	299	45.0	Pearson χ^2 = 20.52	.000
Two study eligible children	239	30.8	181	27.2		
Three study eligible children	119	15.3	66	12.9		
Four or more study eligible children#	**59**	**7.6**	**99**	**14.9**		

standardised residual = 4,42, $p < .001$
M = Mean
SD = Standard Deviation
Wald = the Wald test evaluates whether the particular variable significantly differentiates between the groups being compared
p = probability value

Appendix 8.3: Multivariate multinomial logistic regression results using caregiver and household characteristics (significant results are bolded)

Number of observations = 2,263
LR $chi^2(26)$ = 481.72; p = 0.0000
Log likelihood = -2077.84

Characteristic	**Contacted but declined group**					**Non-contacted group**				
	RRR	***SE***	**Wald**	***p* <**	**95% CIs**	***RRR***	***SE***	**Wald**	***p* <**	**95% CIs**
Female caregiver age (years)	1.00	0.00	-0.84	.401	0.99-1.01	**0.91**	**0.01**	**-14.58**	**.000**	**0.90-0.93**
Aboriginal caregiver	Reference category					Reference category				
Non-Aboriginal caregiver	**1.80**	**0.23**	**4.52**	**.000**	**1.39-2.32**	0.96	0.17	-0.25	.805	0.68-1.34
Dual caregiver household	Reference category					Reference category				
Single caregiver household	0.85	0.09	-1.52	.130	-.70-1.05	**0.35**	**0.05**	**-8.03**	**.000**	**0.27-0.45**
1 study eligible child	Reference category					Reference category				
2 study eligible children	1.01	0.12	0.12	.904	0.81-1.28	1.03	0.15	0.18	.858	0.76-1.38
3 study eligible children	**1.34**	**0.20**	**1.96**	**.050**	**1.00-1.81**	**1.75**	**0.35**	**2.85**	**.004**	**1.19-2.58**
4 study eligible children	0.72	0.13	-1.84	.065	0.50-1.02	**2.85**	**0.54**	**5.49**	**.000**	**1.96-4.14**
Foster care	Reference category					Reference category				
Relative/kinship care	**1.24**	**0.13**	**2.07**	**.039**	**1.01-1.52**	0.82	0.11	-1.50	.133	0.63-1.06
Other/mixed care	4.25E	0.00	-0.02	.984	-	**26.77**	**28.81**	**3.05**	**.002**	**3.25-220.67**

Southern metro area	Reference category					Reference category				
Northern metro area	0.83	0.16	-0.93	.350	0.57-1.22	0.82	0.21	-0.76	.447	0.50-1.36
Northern non-metro area	**0.61**	**0.09**	**-3.53**	**.000**	**0.46-0.80**	**0.58**	**0.10**	**-3.01**	**.003**	**0.41-0.83**
Western metro area	0.91	0.14	-0.57	.570	0.67-1.24	0.90	0.18	-0.53	.594	0.61-1.32
Western non-metro area	**0.59**	**0.10**	**-3.26**	**.001**	**0.43-0.81**	**0.62**	**0.13**	**-2.29**	**.022**	**0.42-0.93**
Southern non-metro area	**0.65**	**0.13**	**-2.13**	**.033**	**0.43-0.97**	1.09	0.26	0.37	.705	0.69-1.73
Constant	0.81	0.20	-0.84	.403	0.50-1.33	29.86	8.95	11.33	.000	16.59-53.74

RRR = Relative risk ratio
SE = standard error
Wald = the Wald test evaluates whether the particular variable significantly differentiates between the groups being compared
p = probability value
95% CIs = 95% confidence intervals

Appendix 8.4: Overall Multivariate multinomial logistic regression results using child, caregiver and household characteristics (significant results are bolded)

Number of observations = 2,243
LR $chi^2(26)$ = 825.22; p = 0.0000
Log likelihood = -1882.28

Characteristic	**Contacted but declined group**					**Non-contacted group**				
	RRR	***SE***	**Wald**	***p* <**	**95% CIs**	***RRR***	***SE***	**Wald**	***p* <**	**95% CIs**
Child age (years)	**1.07**	**0.02**	**4.45**	**.000**	**1.04-1.10**	**1.12**	**0.02**	**5.89**	**.000**	**1.08-1.16**
Aboriginal child	Reference category					Reference category				
Non-Aboriginal child	0.94	0.12	-0.51	.611	0.73-1.20	**1.54**	**0.29**	**2.28**	**.023**	**1.06-2.24**
Child length of time in care (days)	**1.00**	**0.00**	**-4.05**	**.000**	**0.99-0.99**	**0.99**	**0.00**	**-14.21**	**.000**	**0.99-0.99**
Number of substantiated ROSH reports	0.99	0.04	-0.17	.867	0.91-1.08	**0.77**	**0.05**	**-3.95**	**.000**	**0.67-0.88**
Female caregiver age (years)	0.99	0.00	-1.73	.083	0.98-1.00	**0.92**	**0.01**	**-12.01**	**.000**	**0.91-0.94**
Aboriginal caregiver	Reference category					Reference category				
Non-Aboriginal caregiver	**1.83**	**0.28**	**3.89**	**.000**	**1.35-2.48**	1.54	0.36	1.83	.067	0.97-2.44
Dual caregiver household	Reference category					Reference category				
Single caregiver household	0.87	0.09	-1.31	.189	0.71-1.07	**0.43**	**0.06**	**-5.85**	**.000**	**0.32-0.57**
1 study eligible child	Reference category					Reference category				
2 study eligible children	0.92	0.11	-0.67	.505	0.73-1.17	0.99	0.17	-0.08	.937	0.71-1.37
3 study eligible children	1.24	0.19	1.39	.164	0.92-1.68	**1.68**	**0.37**	**2.34**	**.019**	**1.09-2.58**
4 study eligible children	**0.61**	**0.12**	**-2.61**	**.009**	**0.42-0.88**	**2.18**	**0.49**	**3.45**	**.001**	**1.40-3.38**

Foster care	Reference category					Reference category				
Relative/kinship care	1.30	0.14	2.43	.015	1.05-1.60	1.03	0.15	0.17	.861	0.77-1.37
Other/mixed care	8.12E	0.00	-0.01	.990	-	**16.28**	**19.13**	**2.37**	**.018**	**1.63-162.99**
Southern metro area	Reference category					Reference category				
Northern metro area	0.89	0.18	-0.58	.561	0.60-1.32	0.92	0.27	-0.28	.780	0.52-1.64
Northern non-metro area	**0.58**	**0.08**	**-3.78**	**.000**	**0.44-0.77**	**0.52**	**0.10**	**-3.28**	**.001**	**0.35-0.77**
Western metro area	0.91	0.14	09.62	.533	0.66-1.24	0.92	0.20	-0.37	.710	0.60-1.41
Western non-metro area	**0.57**	**0.09**	**-3.42**	**.001**	**0.41-0.79**	**0.62**	**0.14**	**-2.05**	**.041**	**0.40-0.98**
Southern non-metro area	**0.63**	**0.13**	**-2.19**	**.028**	**0.42-0.95**	0.87	0.23	-0.50	.614	0.52-1.48
Constant	1.64	0.53	1.54	.122	0.87-3.09	210.94	68.05	12.82	.000	93.08-478.06

RRR = Relative risk ratio
SE = standard error
Wald = the Wald test evaluates whether the particular variable significantly differentiates between the groups being compared
p = probability value
95% CIs = 95% confidence intervals

Appendix 8.5 Extract from AIFS Weighting Paper

Introduction

There are varying views about whether the data collected for the Pathways of Care Longitudinal Study should be weighted. Accordingly, the New South Wales Department of Family and Community Services has asked the Australian Institute of Family Studies (AIFS) to investigate and provide a recommendation on this issue. In order to make the recommendations provided in this paper, AIFS has drawn on its previous experience applying and using cross-sectional and longitudinal weights, including its experience of developing weights for the four waves of data from the Longitudinal Study of Australian Children. In addition, AIFS sought the advice of Professor David Lawrence (Research Professor at The University of Western Australia, seconded to the Telethon Institute for Child Health Research), who is a leading expert in this area. Professor Lawrence has previously advised AIFS on the weighting procedure used for LSAC.

Summary of discussion

AIFS provided a brief summary of the POCLS, the various populations in the study sample, the often-complicated circumstances surrounding the study children (including changing placements, restoration and pathways in and out of care) and the administrative data available for analysis.

Professor Lawrence advised that to provide a representative account of children placed in out of home care for the first time in New South Wales, it would be preferable to weight the POCLS dataset.

AIFS enquired about the feasibility of weighting when small sample sizes are available for some cohorts. This is particularly an issue for young people aged 12-17 years, and one that will become more critical as the data is cross tabulated, reducing individual cell sizes further.

Professor Lawrence noted that are several issues to consider when contemplating weights for young people aged 12-17 years - including the number of placements, sex, attrition between waves, and very small sample sizes when cross-tabulated, as outlined above. He suggested that weighting these groups would still be appropriate, and that there are two options for weighting data of this type.

Summary of possible weighting approaches

Following this discussion, AIFS further investigated potential weighting procedures. Of these, post stratification and raking/calibration were deemed the most appropriate for cross sectional weighting at Wave 1 and eventual longitudinal weighting of the POCLS dataset at Waves 2 and 3. The benefits and limitations of these procedures are next outlined.

Post Stratification

Post stratification weighting is typically used to mitigate the fact that within any survey sample, people with certain characteristics are not as likely to respond to a survey as others. In order to prevent biased estimates resulting from this imbalance, post stratification uses a ratio-based approach to match survey populations to population control totals.[51]

It would be possible to select variables to weight using post stratification, although this approach is limited to a small number of weighted variables (usually two) and can result in very small cell sizes. Post stratification is required when there is an interaction between the effects of two variables on response rates. There are several issues to consider with this approach and the POCLS dataset. Small sample sizes may be available for some age groups and potentially very high weights could be applied. The possibility of excessively high or low weights being applied is exacerbated when other characteristics (including number of placements, placement type and gender) are included. Excessively high or low weights indicate that the effects of the weighting model are being stretched and the mean value of the weighted data is distorted, resulting in the applied weights increasing disparity between the dataset and the study eligible population, rather than correcting the existing difference.[52] The post-stratification procedure is also sensitive to the effects of wave-to-wave attrition.

Raking / Calibration to Marginal Totals

Raking iteratively adjusts sample weights, multiplying each weight by the ratio of the population control total and the recruited sample total for a given variable. This method works well when demographic variables are included, such as age, sex and CALD status, and requires marginal population counts (the totals of the row and column counts in a cross tabulation), which are available for the POCLS.[53]

It emerged from our discussion that as the number of factors linked to survey participation was likely to be greater than the number able to be included in a post stratification procedure, the raking /calibration approach could be used. Using this approach, each factor included in the weighting is calibrated through statistical “raking” until correct proportional totals for each factor (variable) included in the process are achieved. This process has been used in a number of large surveys by the ABS and Statistics Canada, and for very large longitudinal surveys such as the National Health Interview Survey in the US.[54]

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[51] Little RJA. (1993). Post Stratification: A Modeler's Perspective, Journal of the American Statistical Association, 88 (423), 1001 – 1012.

[52] LSAC wave 3 weighting report http://www.growingupinaustralia.gov.au/pubs/technical/tp6.pdf

[53] Shaw, D et al. Assessment of Alternative Weighting Methods for the National Health Interview Survey, http://www.amstat.org/sections/srms/proceedings/y2010/Files/307624_58976.pdf

[54] LSAC wave 1 weighting report http://www.growingupinaustralia.gov.au/pubs/technical/tp3.pdf

Calibration weighting determines a set of weights that will sum to the correct total for the number of children entering out of home care on final orders in NSW for the recruitment period. Calibration can be conducted on each variable independently and does not require cross-classification of variables as is required by the post stratification technique. This allows the inclusion of a greater number of individual variables in the weighting procedure, up to 4 or 5 in total. Additionally, the potential unreliability of post stratification, which arises from small numbers in individual cells, is not present in the raking/ calibration technique.

Raking/ calibration also allows greater scope for limitation of the effects of final weights, resulting in a more stable sample, particularly for cohorts with small sample sizes, (such as the older age groups in POCLS).
Once non-response variables have been identified, a “raking model” is created from a set of variables selected and appropriate weights are calculated iteratively. Raking allows one to specify maximum weights, avoiding the issue of very high weights present with post stratification. Raking can also report weighted totals for individual variables separately from others.

There are some limitations to raking in this particular instance:

- With a dataset of this size, raking should use as few variables as possible. Professor Lawrence recommended a maximum of 4-5 variables. With a larger number of cases, more variables could be included in the raking procedure.
- Each variable selected must independently affect response rate.
- Collinearity among variables can affect accuracy of weights, although collinear variables can be identified and combined or eliminated/substituted for one another.
- Statistical interactions between variables can undermine the accuracy of weights.

Although a combination of the two approaches is used in LSAC (which uses post stratification for regional weights and raking for other variables), in Pathways of Care Longitudinal Study the sample was not stratified by region and therefore raking alone would be the most appropriate weighting technique.

Recommendation

AIFS recommends that weighting the POCLS data is the most appropriate way forward, and that the raking/calibration procedure is the most feasible option.