

# Poverty Transitions in Non-remote Indigenous Households: The Role of Labour Market and Household Dynamics

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## Abstract

*Using data from the HILDA Survey, this paper estimates year-to-year poverty entry and exit rates for Indigenous and non-Indigenous individuals living in non-remote areas of Australia. Indigenous Australians of working age have a higher probability of entering poverty and a lower probability of exiting than non-Indigenous people, suggesting that Indigenous poverty is likely to be more persistent and have a greater negative impact on well-being. Changes in household size trigger almost half of Indigenous poverty entries and 40% of exits. Indigenous people tend to live in more dynamic households than non-Indigenous people, and also have a greater likelihood of entering poverty and a smaller likelihood of exiting after experiencing changes in household size. The labour market also plays a prominent role in triggering poverty transitions for Indigenous people, while changes in private income, such as business and investment income, play a much smaller role, largely because Indigenous people get far less of their income from such sources.*

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## 1. Introduction

It is well-documented that Indigenous Australians have higher income poverty rates than non-Indigenous Australians (e.g. Altman and Hunter, 1998; Hunter, 2006; Markham and Biddle, 2018a; Ross and Mikalauskas, 1996; Ross and Whiteford, 1992). Lack of employment has been identified by many authors as a key driver of Indigenous poverty, from the seminal work of Henderson (1975) and the reports he commissioned (Brown *et al.*, 1974; Gale and Binnion, 1975) onwards. For example, Altman and Nieuwenhuysen (1979) emphasise the role of labour market disadvantage in driving Indigenous economic status, while Ross and Mikalauskas (1996) conclude that unemployment among family members is the primary factor underlying Indigenous income poverty.

Family dynamics are also likely to contribute to high poverty rates among the Indigenous population. In a series of papers, Daly and Smith (1999; 1995; 1996) examine the implications of Indigenous household structure and mobility for various socioeconomic indicators, including household income. They argue that the prevalence of large, multi-family households and high mobility and visitor rates among Indigenous households is likely to induce economic stress and ‘reinforce poverty entrapment for low income households’ (Daly and Smith, 1999, p. 11).

Most research on Indigenous income poverty has used cross-sectional data on income and other characteristics, primarily from the Census or the National Aboriginal and Torres Strait Islander Social Survey.<sup>1</sup> The analyses have focused on describing the characteristics of those who are in poverty, as well as the relationships between income poverty and other indicators of financial stress, deprivation and social exclusion (e.g. Hunter, 1999, 2012; Markham and Biddle, 2018a).

However, cross-sectional analysis is limited in its ability to provide insights into the factors that push people into poverty and keep them there. Using longitudinal data, Headey *et al.* (2005) find that relatively few Australians live in persistent poverty, but that the likelihood of exiting poverty falls substantially as poverty duration increases. Policy interventions to alleviate income poverty (such as income support payments) can be targeted at the most needy by identifying those who are currently poor. However, interventions to prevent people falling into poverty in the first place, and help those at most risk of persistent poverty to exit, require a good understanding of poverty dynamics and their drivers (Jenkins, 2000). At current, this is lacking for the Australian Indigenous population.

The study of poverty dynamics in Australia has been facilitated by the increasing availability of longitudinal data, notably the Household Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Survey is not representative of the Australian Indigenous population because it does not include those living in very remote areas, who are disproportionately Indigenous. Nevertheless, it provides a small but reasonably representative sample of Indigenous people living in non-remote areas of Australia. Analysis by Wilkins (2016) shows that Indigenous people in the HILDA sample are around half as likely to exit poverty each year (and therefore have longer poverty spells)

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<sup>1</sup> The ABS Survey of Income and Housing, one of the principal sources of information on income and poverty incidence in Australia, does not collect data in very remote areas or Indigenous communities and does not release information on Indigenous status.

as non-Indigenous Australian-born people, all other things equal. Buddelmeyer and Verick (2008) examine the factors associated with poverty entry and persistence and find that employment and education protect people against entering and remaining in poverty, while living in a non-urban area is associated with a greater likelihood of poverty entry. These results suggest that, based on their average characteristics, Indigenous people may be more likely to enter and remain in poverty than non-Indigenous people. However, to our knowledge there are no published estimates of poverty entry and exit rates by Indigenous status, nor specific consideration of the factors that drive differences in poverty dynamics between Indigenous and non-Indigenous Australians.

This paper contributes to the Indigenous poverty literature by presenting estimates of income poverty entry and exit rates for Indigenous adults living in non-remote areas of Australia. It examines the contribution of various ‘trigger events’ such as changes in household size, the number of workers in the household, labour income and other private income to entry and exit rates to determine which factors are most important in driving Indigenous poverty dynamics. The next section outlines the data and methods used in the analysis. Results are then presented for entry and exit rates and their drivers. The final section discusses the results and their limitations and provides some areas for further research.

## 2. Data and methods

### *HILDA Survey*

The HILDA Survey is a nationally-representative longitudinal survey of people living in private dwellings aged over 15 years. The survey covers a range of topics including personal, labour market and family characteristics, income, health and well-being. The survey has been conducted annually since 2001. We use data from waves 3 (2003) to 15 (2015), the latest year available at the time of writing. Data on the number of employed persons per household, a key variable in our analysis, were not available in a comparable form in the 2002 wave, so waves 1 and 2 are excluded from the analysis.

All new survey entrants are asked in a face-to-face interview whether they identify as Aboriginal, Torres Strait Islander, both or neither. This information is then used in subsequent waves to identify Indigenous status (we define Indigenous people as those who identify as Aboriginal, Torres Strait Islander or both).

Indigenous people are under-represented in the HILDA Survey for several reasons. First, the survey does not sample people from very remote areas and those in remote areas are under-sampled. Second, Indigenous status is only collected when respondents enter the HILDA sample for the first time. Analysis from the Census shows that significant numbers of people change their Indigenous identification over a five-year period, resulting in a net gain in the number of people identifying as Indigenous between 2006 and 2016 (Biddle and Crawford, 2015; Markham and Biddle, 2018b). It is likely the assumption used in the HILDA Survey that Indigenous status is unchanging will lead to an underestimate of the Indigenous population in the later waves of the HILDA Survey. Finally, attrition rates for the sample of Indigenous people in HILDA are around twice those for non-Indigenous respondents (attrition and its impact on sample representativeness are discussed in more detail below).

Despite these limitations, the HILDA Survey presents the best available source of annual longitudinal data on the incomes of Indigenous Australians (Howlett, *et al.*, 2016).<sup>2</sup> We restrict our analysis to look only at Indigenous and non-Indigenous people living in non-remote areas of Australia, for which the HILDA Survey is broadly representative (see below for discussion of the representativeness of the sample). We pool observations across all available waves of the HILDA Survey to ensure that our sample of Indigenous people is large enough to conduct meaningful analysis. Our final sample includes around 3600 observations for around 660 Indigenous adults.

### ***Defining poverty***

Defining poverty is fraught with methodological and ideological complexity; defining Indigenous poverty even more so (Altman and Hunter, 1997; Hunter, 2012). Rather than revisiting this debate, we concentrate only on income poverty and adopt a definition of poverty that is comparable with other Australian research on poverty dynamics (Buddelmeyer and Verick, 2008; Headey, *et al.*, 2005; Wilkins, 2016). Drawing on previous research findings for Indigenous people (Hunter, *et al.*, 2003; Smith and Daly, 1996), we focus on the household rather than the family or income unit, as the primary unit of analysis for income. We leave analysis of the dynamics of other aspects of poverty, such as consumption, deprivation and social exclusion, for future research.

Income poverty is defined in this paper at the individual level as having equivalised household disposable income below 50% of the median. Household disposable income is adjusted for household size using a modified OECD equivalence scale, whereby a weight of one is given to the first adult (aged 15 years and over) in each household, 0.5 to each subsequent adult and 0.3 to each child aged under 15 years.

We test the sensitivity of our results to the definition of poverty by re-estimating poverty transition rates for several alternative poverty thresholds (equivalised gross household income below 50% of the median; equivalised disposable household income below 40% of the median; and equivalised disposable household income below 60% of the median) as well as for three alternative equivalence scales (the 'old' OECD equivalence scale<sup>3</sup>; per capita income; and square root of household size).

The household income variable used is household disposable financial year regular income. The bulk of HILDA Survey interviews are typically conducted between July and December each year (Summerfield *et al.*, 2016), so the financial year income variables in each wave of the data refer to income from the financial year finishing just before the survey is administered. Household financial year income is aggregated across all adult members of each household and imputed in the HILDA data where missing. Tax and some transfer income is imputed in the HILDA data to compile an estimate of household disposable financial year income (Summerfield, *et al.*, 2016). We drop from our sample a small number of individuals who live in

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2 The Australian Census Longitudinal Dataset links individuals from five-yearly censuses, but does not include annual data on income. The Multi-Agency Data Integration Project links annual income tax data with census and other administrative data, but does not include annual information about household structure or labour market engagement.

3 The 'old' OECD equivalence scale gives a weight of one to the first adult, 0.7 to each subsequent adult and 0.5 to each child in the household.

households with negative disposable household income (less than 0.1% of households).

Aggregation and imputation of household income in the HILDA Survey is based on household composition in the survey year. For example, the 2005 wave of the HILDA survey includes information for household financial year income that is the sum of financial year income for 2004/2005 for each of the household members living in the household in mid-late 2005 (i.e. during the 2005/2006 financial year). Ideally, we would use financial year income for 2005/2006 and household composition data for 2006 (i.e. from the following wave of the survey) to estimate equivalised household financial year income. However, it is not possible to re-aggregate household financial year income for the household members who were present in the previous wave because not all were included in the survey in the previous wave and therefore financial year income data are not available for all. We therefore follow convention in other papers on poverty dynamics using the HILDA Survey (Buddelmeyer and Verick, 2008; Headey, *et al.*, 2005; Wilkins, 2016) and use data on household composition and financial year income from the same wave to calculate equivalised household income.

### ***Estimating poverty transition rates***

As attrition in the HILDA Indigenous sample is relatively high, we consider only year-to-year poverty transitions. Assume any individual can be either poor (P) or non-poor (NP) at any point in time. We construct two-year pairs of observations for individuals that compare poverty in year  $t$  and year  $t+1$ . Two types of transitions can be identified: entry and exit:

$$\Pr(\text{entry}) = \Pr(P_{t+1}|NP_t)$$

$$\Pr(\text{exit}) = \Pr(NP_{t+1}|P_t)$$

To maximise the sample size for the Indigenous population, we pool two-year pairs across the full HILDA sample from 2003 to 2015 (base year  $t=2003-2014$ ). As a result, each individual may appear in the sample more than once. All estimates are weighted using the cross-sectional person-level weights provided in the HILDA Survey for year  $t$ . While there are longitudinal weights available, we do not use these as they do not control specifically for attrition by Indigenous status. We discuss the impact of attrition and the representativeness of the resulting sample in more detail below.

### ***Estimating the contribution of trigger events to poverty transitions***

We define poverty as having household equivalised disposable income – essentially household income divided by a weighted sum of household size – below a certain threshold. Individuals who live in households that move into or out of poverty must, by definition, have experienced a change in household income, a change in household size/composition, or both. Therefore, following Bane and Ellwood (1983) and Jenkins and Schluter (2003), we can decompose poverty entry and exit rates to determine the contribution of various ‘trigger’ events such as changes in household size, employment and labour and non-labour income. We can also compare the Indigenous and non-

Indigenous samples to understand how much of the difference in entry/exit rates by Indigenous status can be attributed to differences in the occurrence of each trigger event and how much to differences in the likelihood of poverty entry/exit given the occurrence of a trigger event.

Assume there is an exhaustive set of  $J$  mutually-exclusive trigger events,  $E_j$  that occur between year  $t$  and year  $t+1$ . For individuals who are in poverty in year  $t$ , the probability of exiting poverty between year  $t$  and year  $t+1$  can then be written as:

$$\Pr(\textit{exit}) = \Pr(NP_{t+1}|P_t) = \sum_{j=1}^J \Pr(\textit{exit}|E_j) \Pr(E_j) \quad (1)$$

For individuals who are not in poverty in year  $t$ , the probability of entering poverty between year  $t$  and year  $t+1$  can be written as:

$$\Pr(\textit{entry}) = \Pr(P_{t+1}|NP_t) = \sum_{j=1}^J \Pr(\textit{entry}|E_j) \Pr(E_j) \quad (2)$$

We initially define a series of eight mutually-exclusive trigger events based on changes in household size, the number of employed persons in a household, the amount of labour income earned by the household and the amount of private non-labour income (business and investment income, regular private pensions and regular private transfer income) earned by the household. The trigger events are:

- Increase/decrease in the number of people in household;
- Increase/decrease in the number of employed adults in household, with no change in total household size;
- Increase/decrease in the amount of gross annual household labour earnings, with no change in the number of employed adults or household size; and
- Increase/decrease in the amount of gross annual household private non-labour income, with no change in the amount of gross annual household labour earnings, the number of employed adults or household size.

As our eight events are not exhaustive of all the possible changes in household income and/or composition, we also include a residual category that captures all other changes that affect the likelihood of entry/exit, assuming that there are no other changes in household size, the number of employed adults or labour/non-labour earnings.

The HILDA Survey follows individuals, rather than households, over time and it is important to emphasise that we examine poverty entry and exit at the individual level. We define household size changes based on how many people each individual reports living with at the time of each survey. An individual in our sample can experience increases or decreases in household size in two ways. First, they may live in the same ‘household’ in years  $t$  and  $t+1$ , but other household members may have left or joined the household. Second, the individual may have left their year  $t$  ‘household’ and joined a household with a different number of members. In a more detailed version

of this paper (Venn and Hunter, 2018) we extend our analysis by breaking down household size changes into particular life events (e.g. the birth/adoption of a child; partnering or separation; adult children leaving or joining the household; or being an adult child who moves out/in).

We calculate the likelihood of each trigger event and the probability of entry/exit given the occurrence of each event for the Indigenous and non-Indigenous samples separately. We can then compare the relative importance of each type of event in explaining overall entry/exit rates for both populations, as well as look at differences between populations in the likelihood of events and their impact on entry/exit rates.

### ***Sample characteristics***

Table 1 presents some descriptive statistics for our sample of non-remote Indigenous people from the HILDA Survey, and compares their characteristics to those of the non-remote Indigenous population from the 2002 and 2014/15 editions of the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) conducted by the Australian Bureau of Statistics. Like the HILDA Survey, the NATSISS samples individuals living in private dwellings. Unlike the HILDA Survey, the NATSISS covers people living in remote areas and discrete Indigenous communities. However, the data presented in Table 1 from the NATSISS refer to the non-remote population.

Table 1: Characteristics of HILDA Indigenous and non-Indigenous non-remote samples (% of sample observations unless otherwise stated)

	Indigenous		Non-Indigenous		
	HILDA non-remote		NATSISS non-remote		HILDA non-remote
	Pooled cross-section Base 2003-2014	Analysis sample <sup>a</sup> Base 2003-2014	2002	2014/15	Analysis sample <sup>a</sup> Base 2003-2014
Women	54.0	55.2	52.4	52.0	50.9
15-24 years	34.7	33.3	29.5	32.0	16.6
25-34 years	21.3	20.8	25.0	21.3	17.1
35-44 years	17.8	18.1	20.7	17.0	18.1
45-54 years	12.6	13.2	13.8	14.7	17.6
55-64 years	6.6	7.1	6.8	9.4	14.5
65+ years	7.0	7.5	4.3	5.7	16.1
Average age (years)	35.0	35.6	34.7	35.9	44.6
Couple only	10.8	11.2	..	11.9	24.9
Couple + children <sup>b</sup>	35.4	36.2	..	..	44.1
Couple + dependent children <sup>c</sup>	..	..	..	22.5	..
Lone parent + children <sup>b</sup>	19.7	20.5	..	..	8.8
Lone parent + dependent children <sup>c</sup>	..	..	..	11.4	..
Extended one-family household <sup>d</sup>	15.3	13.9	..	..	6.4
Extended one-family household <sup>e</sup> (including those with adult children)	..	..	..	35.7	..
Lone person	9.4	9.9	..	11.3	11.8
Multifamily household	7.8	6.9	..	4.0	2.6
Group household	1.7	1.5	..	3.2	1.3
High school or less	68.6	68.2	70.6	63.6	49.3
Diploma or certificate	24.0	24.1	24.6	30.6	28.5
Tertiary qualification	7.3	7.7	4.0	5.8	22.2
Employed <sup>d</sup>	48.9	49.5	44.1	49.0	63.3
Unemployed	9.5	8.9	16.7	11.7	3.1
Not in labour force	41.6	41.5	39.1	39.3	33.6
Major city	51.4	51.6	..	44.8	72.3
Inner regional	26.1	26.9	..	27.5	18.8
Outer regional	22.5	21.4	..	27.8	8.9
Number of individuals	813	666	6802	5644	23004
Number of observations	4194	3647	6802	5644	153540

a. Analysis sample is pooled sample of respondents with two consecutive years of data required to calculate poverty transitions.

b. Includes children aged under 15 years, dependent students and non-dependent children.

c. Includes couple and lone parent families with extended family members or unrelated people living in the household.

d. Includes CDEP participation in 2002 NATSISS

e. NATSISS household type information does not allow us to distinguish between couple/lone parent households who have non-dependent children and those with 'other' persons present.

.. indicates comparable data not available.

Source: HILDA Survey, NATSISS 2002 accessed through RADL, NATSISS 2014/15, accessed through TableBuilder.

Compared with the NATSISS, the pooled cross-sectional sample of non-remote Indigenous respondents in the HILDA Survey contains more women, fewer young people, fewer unemployed, more people living in major cities and more people living in multi-family households.<sup>4</sup> Comparing the NATSISS 2002 and 2014/15 estimates, it is clear that average education levels and employment rates have increased, and the HILDA sample has education levels somewhere between the two NATSISS estimates (although with tertiary education levels higher than both) and employment rates at around the 2014/15 level. With the exception of geographical location, the differences in characteristics between the samples are relatively small, suggesting that the HILDA non-remote sample is reasonably representative of the non-remote Indigenous population as measured by the NATSISS, but more urbanised.

As discussed above, the sample used in our analysis of poverty transitions contains pooled observations for all respondents for whom we can construct a two-year window of data. Year-to-year attrition rates are higher for Indigenous than non-Indigenous people in the HILDA Survey and also tend to be higher for those who are poor than for those who are non-poor, although the difference for the Indigenous sample is not statistically significant (Venn and Hunter, 2018). However, despite relatively high attrition rates for the Indigenous sample, Table 1 shows that our analysis sample of Indigenous people is not substantially different to the pooled cross-sectional Indigenous sample, with the main differences being that the analysis sample has fewer young people and more older people, as well as slightly more women. We expect that higher attrition rates among poor households will mean that our results under-estimate poverty entry rates and over-estimate poverty exit rates.

### 3. Results

#### *Poverty transitions*

Table 2 shows the incidence of year-to-year poverty transitions for the total population as well as for the population of working age (15-64 years). Where poverty is defined using a threshold of 50% of median modified-OECD equivalised disposable income (our primary definition), around 14% of the non-remote Indigenous population enter income poverty from year to year. Among those who are poor, 38% exit income poverty by the following year. Entry and exit rates are very similar for the working-age population. Poverty entry rates are higher for Indigenous than non-Indigenous people. Exit rates among the total population are not statistically different by Indigenous status, but this is largely because of low exit rates among poor non-Indigenous people aged 65 years and over. Among the working-age population, exit rates are also significantly lower for Indigenous than non-Indigenous people.

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4 Comparable data on the proportion of people living in households with a couple/lone parent plus their dependent and non-dependent children only are not available from the 2014/15 NATSISS, so it is difficult to compare the HILDA sample and NATSISS for these household types or for extended one-family households.

Table 2: Year-to-year poverty transition rates (%) among Indigenous and non-Indigenous adults in non-remote areas using different poverty thresholds and equivalence scales

<i>Equivalence scale:</i>	<i>Poverty threshold:</i>		<i>Total population</i>		<i>Working-age population</i>	
			<i>Entry rate</i>	<i>Exit rate</i>	<i>Entry rate</i>	<i>Exit rate</i>
Modified OECD scale	50% of median disposable income	Indigenous	13.6	37.8	13.0	37.7
		Non-Indigenous	6.3	40.4	5.1	48.9
		P-value	0.000	0.208	0.000	0.000
	50% of median gross income	Indigenous	14.6	27.2	13.7	27.1
		Non-Indigenous	7.1	31.3	5.8	39.5
		P-value	0.000	0.016	0.000	0.000
	60% of median disposable income	Indigenous	15.7	25.1	14.5	24.8
		Non-Indigenous	8.0	31.3	6.8	39.1
		P-value	0.000	0.000	0.000	0.000
	40% of median disposable income	Indigenous	8.9	55.8	8.8	56.1
		Non-Indigenous	4.2	65.7	3.3	66.7
		P-value	0.000	0.000	0.000	0.000
Per capita income	50% of median disposable income	Indigenous	11.0	29.0	11.1	28.3
		Non-Indigenous	5.6	50.7	4.9	48.3
		P-value	0.000	0.000	0.000	0.000
Square root of household size	50% of median disposable income	Indigenous	13.0	34.8	12.4	34.8
		Non-Indigenous	6.4	35.5	5.2	45.1
		P-value	0.000	0.801	0.000	0.000
Old OECD scale	50% of median disposable income	Indigenous	13.5	35.6	13.0	34.9
		Non-Indigenous	6.1	47.6	5.0	50.3
		P-value	0.000	0.000	0.000	0.000
Number of observations		Indigenous	2558	1089	2445	993
		Non-Indigenous	131708	21832	115243	12830

*Note:* Pooled sample with base years 2003-2014. All income measures are for household equivalised income. P-values are for a test of difference in means between Indigenous and non-Indigenous estimates. Working-age population is persons aged 15-64 years.

While the levels are somewhat different, a similar pattern of entry and exit is evident when using alternative definitions of poverty. Each year, between 9% and 16% of Indigenous adults enter poverty, and between around one quarter and one half of Indigenous people in poverty exit. Indigenous people have higher entry rates than non-Indigenous people regardless of the definition of poverty used, while exit rates are generally significantly lower, the exception being for the standard poverty threshold of 50% of median disposable income using either the modified-OECD or square root of household size equivalence scales.

Using a less extreme poverty threshold (less than 60% of median income) increases Indigenous poverty entry rates slightly but greatly reduces exit rates. This suggests that even when Indigenous people escape poverty defined using the 50% threshold, many move only just above the poverty line, thereby risking poverty re-entry. Indigenous exit rates from extreme poverty (defined as less than 40% of median income) are relatively lower than for non-Indigenous people, indicating that the non-Indigenous poor sit closer to the poverty threshold.

While the choice of equivalence scale does not seem to alter the main patterns of poverty entry and exit, it has a different effect for Indigenous and non-Indigenous people. Using a scale which assumes greater economies of size within the household or allocates greater weight to children increases entry rates for both the Indigenous and non-Indigenous samples, but has a different effect on exit rates, which increase for the Indigenous sample and decrease for the non-Indigenous sample.

One reason that poverty entry rates are likely to be higher, on average, for Indigenous than non-Indigenous people is that Indigenous people have lower average incomes and so are closer to the poverty threshold. Among those who are not poor in year  $t$ , 39% of Indigenous people have household income in the bottom 40% of the distribution, compared with 27% of non-Indigenous people. Therefore a uniform reduction in income is likely to push more Indigenous than non-Indigenous people below the poverty threshold, all other things equal. However, in the three income deciles from which most poverty entries come (deciles 2-4 of the income distribution make up 76% of Indigenous and 72% of non-Indigenous poverty entries), Indigenous people have significantly higher poverty entry rates than non-Indigenous people.<sup>5</sup> This suggests that there is something more than simply differences in income distribution driving differences in poverty entry rates between Indigenous and non-Indigenous people. In order to examine the impact of differences in the income distribution on poverty entry rates in more detail, the analysis of entry rates in the next section is conducted separately for the whole population, the working-age population and the low-income working-age population, defined as individuals aged 15-64 years with household equivalised disposable income in the bottom 40% of the income distribution.

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5 Less than 3% of poverty entries are from people in the bottom income decile as most of them are already in poverty in year  $t$ .

### ***Trigger events and poverty transitions***

The previous section has shown that around 14% of non-poor Indigenous people will enter poverty from one year to the next. This section will consider the relative importance of trigger events in contributing to poverty entries.

Two factors account for more than half of all poverty entries by Indigenous people. First, 18-19% of those who are non-poor in any year experience a decrease in household size, and of those, around a quarter of the total population and 40% of the low-income working-age population will move into poverty. Decreases in household size account for 29-36% of all entries into poverty by Indigenous people.<sup>6</sup>

Second, 17% of all non-poor Indigenous people will experience a reduction in labour income not accompanied by a change in either household size or the number of people employed in their household. Around 15% of Indigenous people experiencing falling labour income will enter poverty, with such changes accounting for almost 20% of all poverty entries. Decreases in labour income are less common among the low-income working-age population, possibly because they are less likely to be employed (and have labour income) in the first place. However, low-income people experiencing falling labour income are more than twice as likely as the total Indigenous population to enter poverty. By contrast, increases in labour income seem to be protective against poverty entry. More than one quarter of non-poor Indigenous people experience an increase in labour income (that is not accompanied by a change in household size or the number of people employed) and only 1-2% of these will enter poverty.<sup>7</sup>

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6 Changes in household size may also be accompanied by changes in the number of employed people, labour income and other private income.

7 While it may seem counterintuitive that increases in labour income result in poverty entry for a small number of people, this can occur because we are holding constant only household size and the number of employed persons per household. Those experiencing an increase in labour income may be also simultaneously experiencing changes in other income sources, including welfare payments. It is likely to be the combination of changes in labour and other income that result in poverty entry rather than the change in labour income itself.

Table 3: Trigger events contributing to poverty entry among non-remote population, by Indigenous status

	Total population			Working-age population			Low-income working-age population		
	Indigenous	Non-Indigenous	P-value <sup>a</sup>	Indigenous	Non-Indigenous	P-value <sup>a</sup>	Indigenous	Non-Indigenous	P-value <sup>a</sup>
	%	%		%	%		%	%	
Entry probability: Pr(poort+1 non-poor)	13.6	6.3	0.000	13.0	5.1	0.000	25.6	12.9	0.000
Increase in household size	12.3	7.6	0.000	12.8	8.4	0.000	13.2	9.1	0.001
Pr(entry/levent)	9.4	4.2	0.002	9.6	4.1	0.001	19.0	12.1	0.061
% of all entries	8.5	5.1		9.5	6.8		9.9	8.6	
Decrease in household size	17.7	11.7	0.000	18.3	12.6	0.000	19.1	11.7	0.000
Pr(entry/levent)	27.7	12.9	0.000	26.5	11.8	0.000	41.0	25.9	0.001
% of all entries	36.2	24.0		37.4	29.4		30.6	23.6	
Increase in employed persons <sup>b</sup>	10.9	10.5	0.652	11.2	11.5	0.745	12.5	14.9	0.134
Pr(entry/levent)	11.4	5.0	0.037	11.7	4.7	0.024	23.1	10.2	0.045
% of all entries	9.1	8.4		10.1	10.6		11.3	11.9	
Decrease in employed persons <sup>b</sup>	7.8	7.9	0.936	7.9	8.1	0.784	8.1	8.2	0.947
Pr(entry/levent)	10.6	5.7	0.026	11.1	5.2	0.010	24.1	12.2	0.027
% of all entries	6.1	7.1		6.8	8.3		7.7	7.8	
Increase in labour income <sup>c</sup>	27.2	32.8	0.000	27.9	35.6	0.000	22.3	32.4	0.000
Pr(entry/levent)	0.8	1.0	0.552	0.8	0.9	0.792	2.5	3.3	0.507
% of all entries	1.6	5.1		1.7	6.3		2.2	8.2	
Decrease in labour income <sup>c</sup>	16.8	17.9	0.198	16.6	18.7	0.021	13.0	13.1	0.917
Pr(entry/levent)	15.9	6.8	0.000	14.7	6.4	0.000	36.0	20.4	0.003
% of all entries	19.7	19.2		18.8	23.5		18.3	20.8	

Increase in other private income <sup>d</sup>	Pr(event)	1.8	4.8	0.000	1.3	2.0	0.002	2.7	4.2	0.006
	Pr(entry event)	16.3	5.6	0.072	14.3	4.8	0.079	16.6	7.8	0.165
	% of all entries	2.2	4.2		1.4	1.8		1.8	2.6	
Decrease in other private income <sup>d</sup>	Pr(event)	2.5	5.4	0.000	1.6	2.1	0.078	3.5	3.8	0.628
	Pr(entry event)	36.5	24.2	0.058	42.1	21.0	0.013	48.9	34.0	0.132
	% of all entries	6.9	20.6		5.3	8.8		6.7	10.2	
Other entries	% of all entries	9.6	6.3		9.1	4.5		11.6	6.4	
Number of observations		2558	131708		2445	115243		920	26716	

*Note:* Pooled sample with base years 2003-2014. Poverty defined as living in a household with equivalised disposable household income below 50% of the median. Figures shown in bold are statistically significantly different from non-Indigenous estimates at 95% confidence level or higher.

a. P-value from a test of difference of means between non-Indigenous and Indigenous samples.

b. No change in household size.

c. No change in the number of employed persons in the household or in household size.

d. No change in labour income, in the number of employed persons in the household or in household size.

Changes in the number of people employed in the household (in households where there is no overall change in household size) account for around 15-18% of poverty entries by Indigenous people. Somewhat counterintuitively, increases and decreases in the number of people employed carry with them a similar risk of poverty entry (11% among the total population, increasing to around 24% for the low-income working age population). It may be that changes in the number of people employed are sufficiently offset by changes in other sources of income so that total income is relatively unchanged.

The incidence of changes in other private income among the Indigenous sample is low, but decreases carry a high poverty entry risk: 37-49% of those who experience a fall in other private income enter poverty.

Comparing the Indigenous and non-Indigenous samples, several results are worthy of note. First, Indigenous people are significantly more likely to enter poverty after experiencing most types of trigger event, with the poverty entry risk for Indigenous people typically around twice that for non-Indigenous people. As discussed in the previous section, this is likely to be, in part, because Indigenous people have lower average incomes than non-Indigenous people so require a smaller change to income or household composition to push them over the poverty threshold. However, the difference in poverty entry risk between Indigenous and non-Indigenous people is only slightly ameliorated when the sample is restricted to those in the bottom 40% of the income distribution.

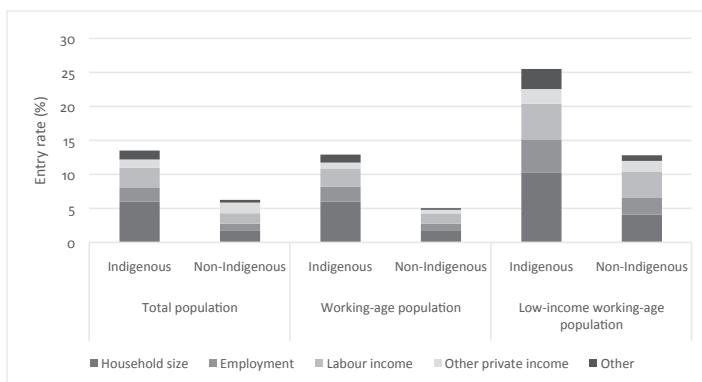
Second, Indigenous people are much more likely than non-Indigenous people to experience events relating to changes in household size. Only 19-21% of non-Indigenous people experience a change in household size from year-to-year compared with 30-32% of Indigenous people. In particular, Indigenous people are about 1.5 times more likely to experience a decrease in household size, the event associated with the highest risk of poverty entry except decreases in private income for both Indigenous and non-Indigenous people. As a result, a much larger share of poverty entries for Indigenous people are attributable to changes in household size (41-47%) compared to non-Indigenous people (29-36%). In a more detailed analysis of household size changes, we find that the household size changes most likely to trigger poverty entry for Indigenous people are being an adult child who leaves home (12.5% of all poverty entries) and being in a household where a family member leaves (13.5% of all poverty entries). These events account for only 11% of all poverty entries combined in non-Indigenous households, both because these events are far less common than in Indigenous households and because they carry with them a smaller risk of poverty entry (Venn and Hunter, 2018).

By contrast, Indigenous people are significantly less likely than non-Indigenous people to experience events relating to changes in income – both increases and decreases – that are not linked to changes in either household size or the number of people employed in their household. This may reflect their lower average reliance on wages/salaries and other private income than non-Indigenous people (Howlett, *et al.*, 2016)

Figure 1 shows the contribution of each type of trigger event to the total poverty entry rate for Indigenous and non-Indigenous people. The largest contribution to the difference between Indigenous and non-Indigenous poverty entry rates comes from differences in the incidence and effect of changes to household size, with household size changes contributing to more than three times as many poverty entries for Indigenous than non-Indigenous people. As discussed above, this is due to both a

higher incidence of household size changes among the Indigenous population and a higher risk of poverty entry for those experiencing household size changes.

Figure 1: Contribution of trigger events to total poverty entry rate by Indigenous status



Note: Pooled sample with base years 2003-2014.

Changes in employment trigger more than twice as many poverty entries for Indigenous than non-Indigenous people, due to the higher risk of poverty entry for Indigenous people experiencing changes in household employment rather than the probability of the event itself. The difference in contribution of events relating to changes in income is smaller. This is because while Indigenous people are less likely to experience such events, they typically have a higher risk of poverty entry if they do.

### **Trigger events and poverty exits**

In this section we examine the contribution of trigger events to poverty exit rates for those who are in poverty in year  $t$ . We show the results for the total population in poverty in year  $t$  as well as the working-age population in poverty in year  $t$ . The low-income working-age population is not shown separately as in the previous section because the samples used in this section are by definition low income already. The single biggest contributor to Indigenous poverty exit rates is decreases in household size (Table 4). Around 37-40% of Indigenous people in poverty experience a decrease in household size, and more than half of these will exit poverty. In total, decreases in household size contribute to 44-47% of all poverty exits for the Indigenous sample. Among household size changes, the biggest contributors to poverty exit are having a family member (other than a partner or child) move into your household (9.3% of exits for Indigenous people), partnering (7.7% of exits), having a family member leave your household (7.5% of exits) and the birth or adoption of a child (5.3% of exits) (Venn and Hunter, 2018). A further third of exits are accounted for by increases in either labour income or the number of workers in the household. More than 70% of people experiencing one of these labour market events in their household will exit poverty.

Table 4: Trigger events contributing to poverty exits among non-remote population

	Total population			Working-age population		
	Indigenous %	Non-Indigenous %	P-value <sup>e</sup>	Indigenous %	Non-Indigenous %	P-value <sup>e</sup>
Exit probability: Pr(non-poor+1  poor)	37.8	40.4	0.208	37.7	48.9	0.000
Increase in household size						
Pr(event)	17.8	6.7	0.000	19.2	10.4	0.000
Pr(exit event)	44.1	68.4	0.000	42.4	67.8	0.000
% of all exits	20.8	11.4		21.6	14.4	
Decrease in household size						
Pr(event)	19.9	6.8	0.000	22.5	9.7	0.000
Pr(exit event)	35.0	47.9	0.012	33.9	53.1	0.000
% of all exits	18.4	8.1		20.2	10.6	
Increase in employed persons <sup>b</sup>						
Pr(event)	8.6	8.2	0.634	9.6	12.7	0.008
Pr(exit event)	61.5	55.4	0.295	63.8	54.9	0.045
% of all exits	14.0	11.2		16.2	14.2	
Decrease in employed persons <sup>b</sup>						
Pr(event)	4.8	5.1	0.827	4.1	7.1	0.000
Pr(exit event)	45.8	54.1	0.519	32.4	56.9	0.002
% of all exits	5.9	6.8		3.5	8.3	
Increase in labour income <sup>c</sup>						
Pr(event)	14.2	13.9	0.856	14.7	21.0	0.000
Pr(exit event)	61.5	74.5	0.025	57.7	74.1	0.009
% of all exits	23.0	25.5		22.4	31.9	
Decrease in labour income <sup>c</sup>						
Pr(event)	5.2	4.9	0.775	5.9	7.0	0.268
Pr(exit event)	28.8	32.7	0.610	29.1	32.9	0.619
% of all exits	4.0	4.0		4.6	4.7	
Increase in other private income <sup>d</sup>						
Pr(event)	6.4	19.1	0.000	4.9	9.1	0.000
Pr(exit event)	25.2	45.8	0.001	27.7	50.8	0.003
% of all exits	4.3	21.7		3.6	9.5	

Decrease in other private income <sup>d</sup>	Pr(event)	2.5	12.5	0.000	2.0	5.3	0.000
	Pr(exit/levent)	19.3	14.3	0.616	5.2	12.6	0.074
	% of all exits	1.3	4.4		0.3	1.4	
Other exits	% of all exits	8.4	7.0		7.7	5.0	
Number of observations		1089	21832		993	12830	

*Note:* Pooled sample with base years 2003–2014. a. P-value from a test of difference of means between non-Indigenous and Indigenous samples.

b. No change in household size.

c. No change in the number of employed persons in the household or in household size.

d. No change in labour income, in the number of employed persons in the household or in household size.

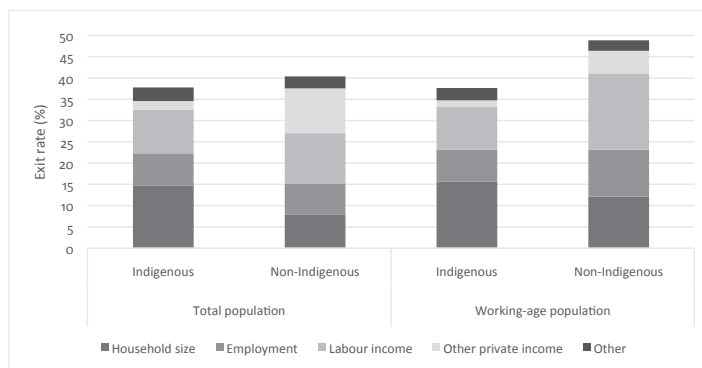
Comparing the Indigenous and non-Indigenous samples, we see that changes in household size are again more common among the Indigenous sample, but they are less likely to lead to poverty exit than for non-Indigenous people. For example, around 55% of Indigenous people in poverty who experience a decrease in household size exit poverty, compared with around 70% of non-Indigenous people. As a result, the overall contribution of changes in household size to exit rates is similar for Indigenous and non-Indigenous people.

The incidence of increases in the number of workers in the household is similar for Indigenous and non-Indigenous people, but results in a higher chance of poverty exit for Indigenous people (although this difference is only marginally significant). The chance of exiting poverty after experiencing an increase in labour income is routinely high: around three quarters for both Indigenous and non-Indigenous people.

Indigenous people are far less likely to experience changes in private income than non-Indigenous people. This is partly explained by the age distribution of the non-Indigenous sample (with those of retirement age having more private non-labour income (e.g. from superannuation) than those of working age), but the effect is still evident within the working-age population. Increases in private income are significantly less likely to result in poverty exit for Indigenous people: around 22-24% of Indigenous people experiencing increases in private income exit poverty compared with 47-52% of non-Indigenous people.

Figure 2 shows that, among the total population, exit rates are similar for Indigenous and non-Indigenous people, with higher exits attributable to family composition and labour income changes for Indigenous people offset by a smaller contribution from other private income. The higher exit rate for working-age non-Indigenous than Indigenous people results from a slightly larger number of exits among non-Indigenous people for all of the events examined. As discussed above, this is due to both an increased likelihood of particular events for non-Indigenous people (e.g. changes in the number of workers or other private income) as well as a higher likelihood of exit among those who experience particular events (e.g. changes in household size, the number of workers and other private income).

Figure 2: Contribution of trigger events to total poverty exit rate by Indigenous status



Note: Pooled sample with base years 2003-2014.

## 4. Discussion

This paper presents estimates of income poverty entry and exit rates for Indigenous Australians living in non-remote areas. Around one in seven non-poor Indigenous adults will enter poverty from one year to the next, while 38% of those who are in poverty will exit, where poverty is defined as having household equivalised disposable income less than 50% of the median level. Indigenous people generally have higher entry and lower exit rates than non-Indigenous people.

The observed pattern of poverty dynamics among the non-remote Indigenous population is perhaps not surprising given their average characteristics and what is already known about the importance of employment and education in driving poverty transitions (Buddelmeyer and Verick, 2008). It also concurs with the findings of Wilkins (2016) that Indigenous people are less likely than non-Indigenous people to exit poverty. Nevertheless, our results provide further evidence that Indigenous poverty is likely to be more persistent than non-Indigenous poverty, thus having a bigger negative impact on the ability to accumulate income and wealth over the longer term.

One of the reasons that poverty entry rates are higher for Indigenous people than non-Indigenous people is that they have lower average household income and therefore are closer to the poverty threshold. Policies that raise average income levels for Indigenous households are likely to reduce the risk of poverty entry. For example, Venn and Hunter (2018) show that higher educational attainment reduces the risk of poverty entry for most types of trigger events and that Indigenous people with Year 12 or higher qualifications are less than half as likely to fall into poverty as those without Year 12.

Initial income explains only part of the difference in poverty entry rates: entry rates are significantly higher for Indigenous than non-Indigenous people across much of the income distribution, suggesting that other factors are also in play. A major contribution of this paper is to establish the relative importance of changes in household composition, employment, labour income and other non-private income in triggering poverty entry and exit for Indigenous Australians. Changes in household size are the biggest triggers of poverty entry and exit for Indigenous people, accounting for almost half of poverty entries and 40% of poverty exits. Changes in household size are more prevalent for Indigenous than non-Indigenous people, partly due to higher birth and partnering rates and partly due to the greater proportion of Indigenous people who live in dynamic extended or multi-family households (Venn and Hunter, 2018).

Changes in household size can have two possible effects on equivalised income and therefore on the risk of poverty. First, an arriving (or departing) household member may bring (take) some income, either directly as in the case of an adult with labour, social security or other income, or indirectly in the case of a child who carries with them an entitlement to social security income or child support. Second, an arriving (departing) household member consumes a proportion of household income (with the amount assumed to vary according in line with the type of equivalence scale used), reducing the amount left for other household members. The balance of these two effects will determine whether household equivalised income falls or rises when household size changes.

A key finding of our results is that, on average, the income effect outweighs the consumption effect. Poverty entries are much more common when household size falls than when it rises: 27% of Indigenous people living in a household that has decreased in size enter poverty, compared with 9% of those living in households that have increased in size. Likewise, increases in household size carry a higher chance of poverty exit (44%) than decreases in household size (35%), although the difference here is smaller. These results challenge existing research that suggests that increases in household size have a largely negative effect on household economic well-being (e.g. Smith and Daly, 1996). However, our analysis assumes that new household members share their income with existing household members, something that may not always be the case (Schwab, 1995).

Among the roughly two-thirds of Indigenous people who do not experience changes in household size from one year to the next, the labour market plays a prominent role in triggering poverty transitions. For those in poverty, increased exposure to the labour market (either by having more household members working or higher labour earnings) results in a 62% likelihood of exiting poverty, while reductions in employment and labour earnings trigger around one-quarter of all poverty entries for Indigenous people. Changes in private income, such as business and investment income, play a much smaller role in triggering poverty entries and exits for Indigenous than non-Indigenous people, largely because Indigenous people get far less of their income from such sources (Howlett, *et al.*, 2016).

These results highlight the importance of employment in general, and stable employment in particular, in reducing poverty incidence and persistence among the Indigenous population. For those in poverty, increasing employment leads to an increased chance of exiting. However, it is important to ensure that employment is sustained: Indigenous people are significantly more likely to move from employment to non-employment than non-Indigenous people (Hunter and Gray, 2016), risking poverty re-entry.

There is mounting evidence that the impact of equivalence scales on poverty estimates is likely to differ by Indigenous status (Hunter, *et al.*, 2004; Hunter, *et al.*, 2003). We show that the choice of equivalence scale has differential effects on poverty exit rates for Indigenous and non-Indigenous people, with scales that assume greater economies of size and allocate a higher weight to children reducing exit rates for Indigenous people but increasing exit rates for non-Indigenous people. However, our main results – that poverty entry rates are higher and exit rates lower for Indigenous than non-Indigenous people and that changes in household size account for a large proportion of poverty transitions in the Indigenous population – are quite robust to using alternative equivalence scales.

Our analysis has several limitations that should be taken into account when examining the results. First, due to sample attrition, we were only able to examine poverty transitions over two consecutive years. As such, exit rates are calculated for the entire poor population and do not take into account that some people may have already been in poverty for several years before being observed in year  $t$ , the so-called ‘initial conditions effect’ (Cappellari and Jenkins, 2002). Previous research using HILDA for the total Australian population has shown that the likelihood of exiting poverty falls

quickly with poverty duration (Headey, *et al.*, 2005). It is likely that the relatively low exit rates for Indigenous people capture both a lower likelihood of exiting for a given duration, as well as a larger proportion of the in-poverty sample who have relatively long poverty duration when we observe them at year  $t$ . However, it is not possible to differentiate between these two effects. We are also not able to observe intra-year poverty transitions nor changes in household composition or labour market status that occur more frequently than annually. Ethnographic research shows that short-term mobility rates are high within Indigenous households (Schwab, 1995), but we are unable to determine the extent to which these changes trigger poverty transitions.

Second, household disposable income data from the HILDA Survey is not measured concurrently with household composition. Recall that household income is for the financial year preceding the survey, and is aggregated over all current household members. Where household composition is unchanged, this assumption will have little effect on the results. But as we have found, around one third of Indigenous people live in households that change size from year to year. This introduces measurement error in our poverty measures that is likely to vary by Indigenous status. It also means that some poverty entries and exits are likely to be the drivers of, rather than the results of, changes in household size.

Finally, our results are based on analysis of Indigenous Australians living in non-remote areas, and due to attrition our sample is probably more urbanised than the non-remote Indigenous population in general. Our results suggest that Indigenous people living in remote areas are likely to experience even higher poverty entry rates and lower poverty exit rates than those in non-remote areas, based on existing research that shows that they have higher transitions out of employment (Hunter and Gray, 2016) and are more likely to live in extended family and multi-family households than Indigenous people in non-remote areas. However, caution should be used when generalising our results to the wider Indigenous population.

Despite these limitations our results provide important insights into the dynamics of income poverty in Indigenous households. Future research could usefully extend this analysis to examine the extent to which changes in income poverty translate into changes in household well-being, using measures of deprivation or financial stress that are included in the HILDA Survey. This approach may shed some light on the extent to which financial resources and costs are shared within Indigenous households.

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