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The 2011 Census Paper Series

In July 2012, the Australian Bureau of Statistics began releasing data from the 2011 Census of Population and Housing. One of the more important results contained in the release was the fact that the number of people who identified as being Aboriginal and/or Torres Strait Islander (Indigenous) had increased by 20.5 per cent since the 2006 Census. There were also significant changes in the characteristics of the Indigenous population across a number of key variables like language spoken at home, housing, education and other socioeconomic variables. In this series, authors from the Centre for Aboriginal Economic Policy Research (CAEPR) document the changing composition and distribution of a range of Indigenous outcomes. The analysis in the series was funded by the Commonwealth Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) through the Strategic Research Project as well as FaHCSIA and State/Territory governments through the Indigenous Populations Project.

The opinions expressed in the papers in this series are those of the authors alone and should not be attributed to FaHCSIA or any other government departments.

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Abstract

This paper uses data from the 2006 and 2011 Censuses to analyse the distribution of income within the Indigenous population and to make comparisons with the non-Indigenous population. The results from the analysis are mixed. On the one hand, after taking into account inflation, average disposable income for the Indigenous population went up from \$391 per week in 2006 to \$488 per week in 2011. While this is a positive development in terms of access to economic resources for the Indigenous population, the ratio of Indigenous to non-Indigenous average income stayed more or less the same over the period, from 0.703 in 2006 to 0.699 in 2011. In a time of relatively stable rates of government transfer payments and more rapid gains in employment related income, the gap with the non-Indigenous population is relatively stable. However, without the gains in mainstream employment for the Indigenous population documented previously, this gap is likely to have risen even further. Another major finding from the paper is that there is as much variation within the Indigenous population as there is between the Indigenous and non-Indigenous population. Despite this variation, for almost every demographic, geographic, education and employment combination, Indigenous Australians have a lower average income than their non-Indigenous counterparts. The only major exception to this is Indigenous females with a degree, who had a slightly higher average income than non-Indigenous females with a degree.

Acknowledgements

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List of acronyms

ABS	Australian Bureau of Statistics
ANU	Australian National University
ASGS	Australian Statistical Geographic Standard
CAEPR	Centre for Aboriginal Economic Policy Research
CDEP	Community Development Employment Projects
ERP	Estimated resident population
FaHCSIA	Department of Families, Housing, Community Services and Indigenous Affairs
HILDA	Household Income and Labour Dynamics in Australia
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
OECD	Organisation for Economic Co-operation and Development
SA1	Statistical Area Level 1

Introduction and overview

According to the framework developed by the Australian Bureau of Statistics (ABS), wellbeing is 'a state of health or sufficiency in all aspects of life' (ABS 2001). This is an attractive concept upon which to base and evaluate government policy. However, wellbeing is inherently difficult to define and even more difficult to measure on a comparable basis. The completeness and complexity of the concept of wellbeing does, however, come at the cost of tractability. One option when faced with a concept that is intuitively appealing but difficult to measure is to focus on other, simpler measures. In essence, measure what is measurable. One such proxy for wellbeing is income, or the money received by an individual or group of individuals over a fixed time period.

There are a substantial (and growing) number of articles, books and opinion pieces on the relationship between wellbeing and income. One of the most influential and most cited early works on the topic was that carried out by Richard Easterlin in the 1970s. In what was to become known as the 'Easterlin Paradox', the author then and in subsequent work identified a lack of a correlation at a national level between a country's average income and its subjective wellbeing. Money did not, it would appear, buy happiness (Easterlin 1974).

This conclusion, however, appears to be based on assumptions of linearity. Subsequent research has added substantial nuance to our understanding of the relationship between income and wellbeing. Some of this is in direct contradiction to the 'Easterlin Paradox'. For example, in a recent paper, Stevenson and Wolfers (2013) showed that wellbeing does continue to increase along all points of the observed income distribution—it just doesn't do so in a linear way. This and other research within and between countries (Clark, Frijters & Shields 2008) has identified a few stylised facts:

- There is a direct effect of income on wellbeing, but it is non-linear.
- Beyond a certain point on the income distribution, one of the main benefits that individuals receive from their income is a higher status or position within a society. This explains why increases in average income do not have a linear effect, as when average income in a society rises the income, an individual's income might rise, but so too will the income that they compare it to.
- Individuals adjust to their income relatively quickly, with continually increasing income required for maintenance of high levels of subjective wellbeing.

An additional finding is that the effect of income on wellbeing depends on the wellbeing measure used. There is a greater effect on life satisfaction than there is on emotional wellbeing, for example (Kahneman & Deaton 2010).

These findings have tended to hold across a range of settings. However, there has been relatively little empirical work on the relationship between income and subjective wellbeing for the Indigenous population in Australia. This is despite the acknowledged policy need to reduce Indigenous disadvantage and to redress the negative historical effects of colonisation and other discriminatory policies. If the aim of government policy is to improve the wellbeing of its citizens, then one of the most important research questions is to what extent improvements in income (both in absolute terms and relative to the non-Indigenous population) will lead to improvements in Indigenous wellbeing. There is a considerable body of research on this issue for the total Australian population (e.g. Australian Institute of Health & Welfare 2012), but less for the Indigenous population and even less for the relationship between income and subjective measures of wellbeing.

In the only study to date, Biddle (2011) found that for Indigenous males in non-remote Australia, there is a positive relationship between income and wellbeing, both in terms of frequent periods of happiness and intense feelings of sadness. The relationship tends to be stronger for equivalised household income than personal income (though there is still a statistically significant association for the latter). When one expands the analysis to the other groups though, it becomes clear that the relationship between income and the two subjective wellbeing measures is highly contingent. While the relationship between equivalised income and wellbeing holds for Indigenous females in non-remote Australia, there is no significant association between personal income and self-reported happiness and only a small association with self-reported sadness. For Indigenous females in non-remote Australia, it would appear that household resources are of greatest importance.

In remote Australia, on the other hand, the relationship between income and wellbeing virtually disappears. There is still an association with self-reported sadness for remote Indigenous males, but this is much weaker than in non-remote Australia. Furthermore, this association does not hold for Indigenous females in remote Australia, nor does it hold for either gender in terms of self-reported happiness. While self-reported happiness and sadness are only two aspects of subjective wellbeing, the results presented in Biddle (2011) demonstrate a complex relationship between wellbeing and income for the Indigenous population.

There is, however, one important variable that does have a strong association with income—financial stress. Biddle’s recent study showed that a one standard increase in equivalised household income was associated with a decline in the probability of the household being unable to raise \$2,000 within a week, equal to 0.055 percentage points in non-remote Australia and 0.104 percentage points in remote Australia (Biddle 2011). On balance, what we can say is that income has a potentially positive impact on an Indigenous person’s lack of stress and subjective wellbeing, but that other factors are also likely to be important.

While income is an incomplete proxy for wellbeing, the reality is that there are many datasets where that is all that is available. Furthermore, there are few datasets where other measures of wellbeing are available for small areas or communities. A prime example of this is the census. Despite its limitations, an analysis of changes in income is important for understanding the socioeconomic dynamics of the Indigenous population.

Previous analysis in this series has given mixed predictions for what might have happened to Indigenous income over the last intercensal period. On the one hand, Gray, Howlett and Hunter (2013) showed that although total employment rates for the Indigenous population declined over the last intercensal period, when Community Development Employment Projects (CDEP) jobs are excluded what the authors defined as mainstream employment actually increased between 2006 and 2011. As there has historically been a smaller difference between the income levels of those in CDEP employment and those not employed than there was between CDEP and non-CDEP employees, these labour market dynamics would tend to suggest improvements in Indigenous socioeconomic circumstances over the period. Bolstering this view is the finding in Biddle (2013) that the level of education of the Indigenous population improved between 2006 and 2011. Both papers, however, showed that these changes were not evenly distributed across the Indigenous population, either by geography or by demography.

One of the aims of this paper, therefore, is to document the level of income for the Indigenous population; how this has changed since 2006 and how it varies across Indigenous Regions and across the Indigenous lifecourse. While these Indigenous dynamics are important, one of the consistent findings from the literature on income and wellbeing is that relative income is as important as absolute income in terms of a person’s subjective evaluations of their own life. It is important, therefore, to look at what has happened to non-Indigenous income over the period and whether Indigenous income has improved in relative, as well as absolute terms.

Before presenting and discussing these income dynamics, the next section of the paper provides some background information on the Indigenous population, as well as the data and geography used in the paper.

Data and geography

Results presented in this paper are based on analysis of the 2006 and 2011 Censuses of Population and Housing. In 2006, the estimated resident population (ERP) of Indigenous Australians was around 517,000. By 2011, the preliminary ERP had increased to around 670,000. This population growth was much faster than suggested by the number of births of Indigenous children minus deaths within the population, meaning that some of those people who were identified as being Indigenous in 2011 were either missed from the 2006 Census or were identified as being non-Indigenous.

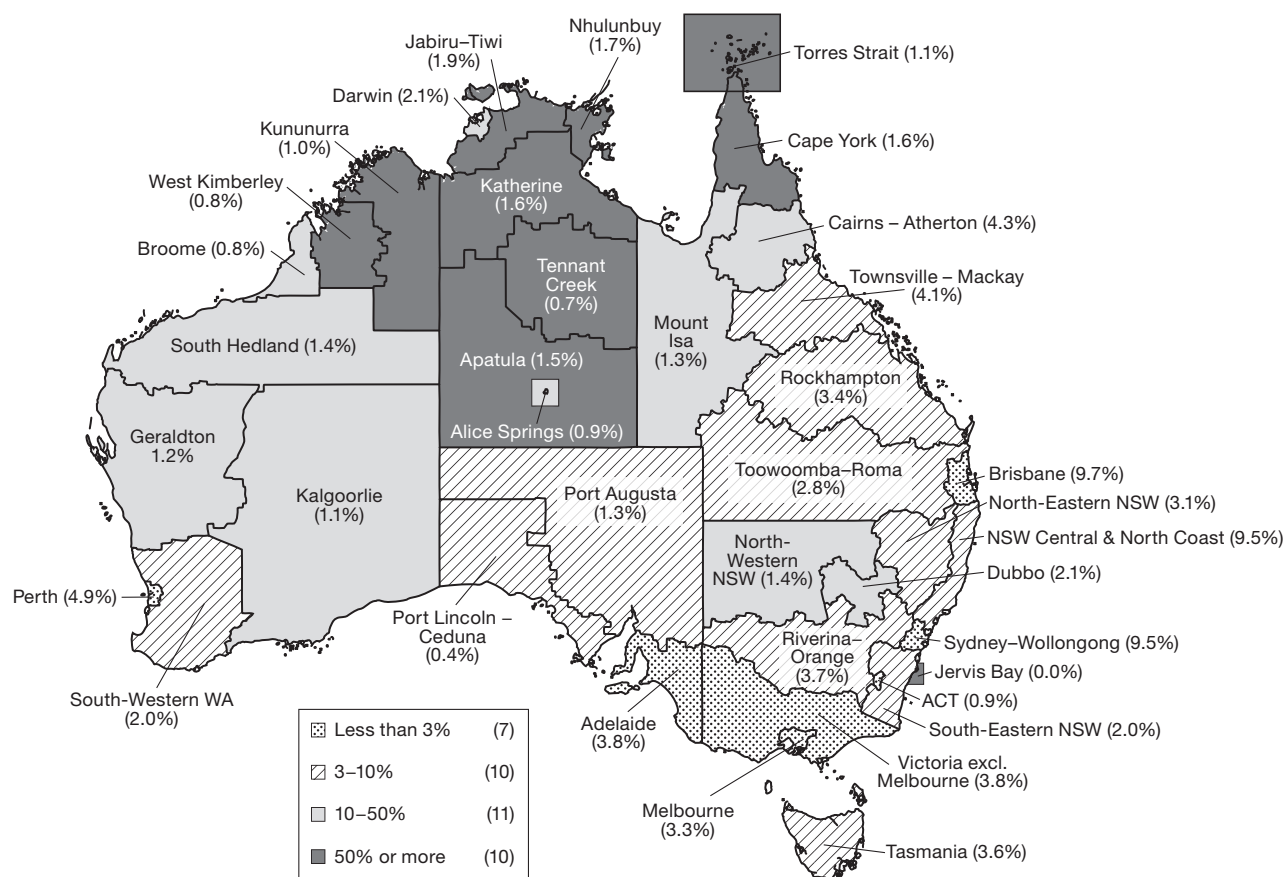
To undertake analysis at the regional and local level, the 2011 Census paper series¹ uses the Indigenous Structure within the Australian Statistical Geographic Standard (ASGS). This is a four-level structure that builds up from the Statistical Area Level 1 (SA1). The next level above the SA1 in the ASGS is Indigenous Locations, of which there were 1,116. The next level above Indigenous Locations are Indigenous Areas, of which there were 429. This number lowers to 411 substantive areas after excluding administrative codes representing those in a particular State or Territory who did not give any additional detail on their place of usual residence, or who were migratory on the night of the census.

The most aggregated level of geography in the Indigenous Structure is Indigenous Regions. There were 57 of these in the 2011 version. After excluding administrative regions, Jervis Bay and the Christmas–Cocos (Keeling) Island regions (both of which have very few Indigenous Australians), this leaves 37 Indigenous Regions used in the analysis for this paper.

The 2011 Indigenous Regions are shown in **Figure 1**. The shading for the regions indicates the percentage of the population in the region who were estimated to be Indigenous, ranging from less than the national average in the dotted areas (3.0 per cent) to more than half of the population (the darkest shading). The numbers that appear after an Indigenous Region name refer to the percentage of the total Indigenous ERP who identified that region as their place of usual residence on the night of the census.

1. Other papers in the series can be downloaded from <http://caepr.anu.edu.au/population/censuspapers.php>.

FIGURE 1. Proportion of population that is Indigenous (shading) by Indigenous Region and proportion of total Indigenous population in each region (text), 2011



Source: Customised calculations using the 2011 Census.

There are two key points that emerge from Figure 1. First, it is in more remote regions that the share of the population who identify as being Indigenous is highest. There are 10 regions where more than half of the population counted in the 2011 Census identified as being Indigenous, with the Torres Strait (84.8 per cent), Apatula (80.5 per cent) and Jabiru-Tiwi (79.3 per cent) all having more than three out of every four usual residents being Indigenous.

While it is remote regions in north, central and western parts of the country that have the highest percentage of the population being Indigenous, the regions with the greatest absolute number of Indigenous Australians are in the south and east of the country. The Brisbane, New South Wales Central and North Coast, and Sydney-Wollongong regions all have an Indigenous population estimate of 60,000 people or higher, whereas most of the remote regions have populations of around 10,000 Indigenous Australians or fewer. While a higher proportion of the Indigenous population lives in remote areas than the

non-Indigenous population, the majority of the Indigenous population lives in urban areas.

Socioeconomic analysis in the census is limited by the fact that income is collected in ranges with information available on gross income rather than disposable income. Specifically, the household respondent is asked the following question regarding all individuals aged 15 years and over in the household: 'What is the total of all wages/salaries, government benefits, pensions, allowances and other income the person usually receives?' Respondents are then instructed: 'Do not deduct: tax, superannuation contributions, health insurance, amounts salary sacrificed, or any other automatic deductions'. However, they are told to include the following:

- Pensions/allowances: family tax benefit; parenting payment; unemployment benefits; Newstart allowance; rent assistance; pensions; student allowances; maintenance (child support); workers' compensation; and any other pensions/allowances.

TABLE 1. Average income within groups, Waves 6 and 10 of the HILDA survey, \$2011

Group	Wave 6 (for 2006 Census)		Wave 10 (for 2011 Census)		
	Range	Personal	Range	Personal	Household
1	0 or less	\$0	0 or less	\$0	\$0
2	\$1–149	\$99	\$1–199	\$99	\$123
3	\$150–249	\$255	\$200–299	\$257	\$256
4	\$250–399	\$342	\$300–399	\$351	\$354
5	\$400–599	\$474	\$400–599	\$489	\$482
6	\$600–799	\$621	\$600–799	\$666	\$649
7	\$800–999	\$756	\$800–999	\$807	\$791
8	\$1,000–1,299	\$914	\$1,000–1,249	\$955	\$955
9	\$1,300–1,599	\$1,086	\$1,250–1,499	\$1,127	\$1,141
10	\$1,600–1,999	\$1,306	\$1,500–1,999	\$1,377	\$1,385
11	\$2,000 or more	\$2,180	\$2,000 or more	\$2,415	\$2,295

Source: Waves 6 and 10 of the HILDA survey.

Note: Range refers to the original unadjusted census income range, personal refers to average personal disposable income for those who fall within that range (adjusted for inflation where appropriate) and household refers to average household equivalised disposable income for people whose household falls within that range.

- Other income: interest; dividends; rents (exclude expenses of operation); business/farm income (exclude expenses of operation); income from superannuation; and any other income.
- Wages/salaries: regular overtime; and commissions and bonuses.

Rather than provide a dollar value, respondents are asked to tick whether their income appears in one of a set of mutually exclusive ranges. These are given in dollars per week, with the equivalent income per year (based on a 52-week year) given in brackets on the census form. In order to calculate mean income using the census, it is therefore necessary to utilise additional information.

To this end, I have used data from the Household Income and Labour Dynamics in Australia (HILDA) survey to estimate the mean income in Australia for a person or household that falls into a particular range. The HILDA survey, however, also has information on mean disposable income for someone whose gross personal income fits within the given range. The income tax system in Australia is monotonic, which means that if you ordered people by their gross income their disposable income would for the most part be in the same order. This means that everyone who fits within a particular gross personal income range should have a higher disposable personal income than

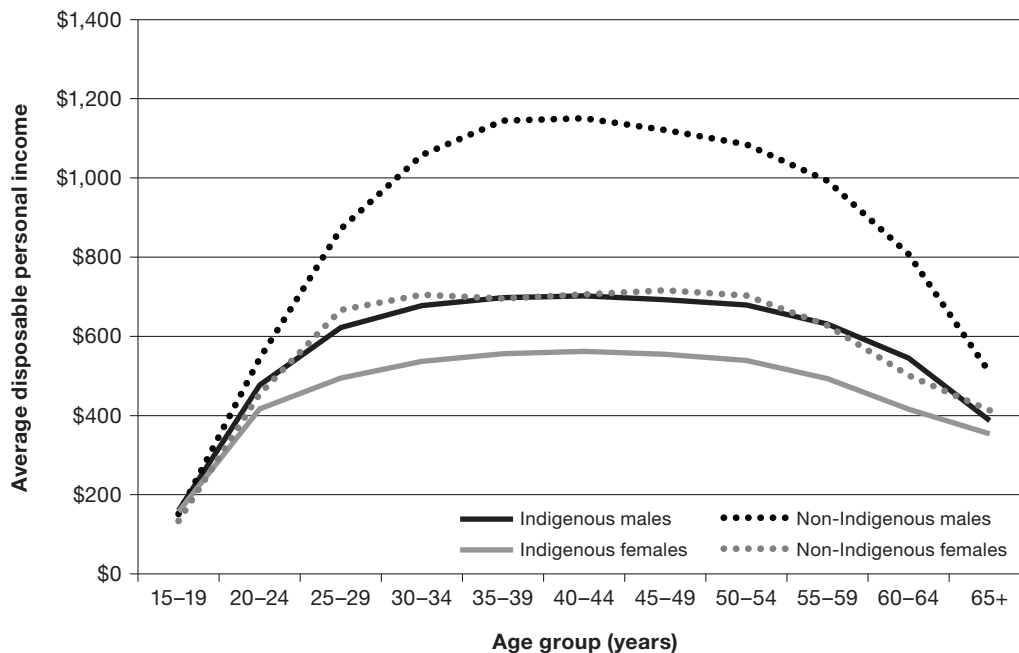
those in the range below them.² Given this, I use the census to estimate the gross personal income group that a person fits into and the HILDA to estimate the mean personal disposable income for everyone in that group.

The census also contains information on the income of the household in which a person lives. This is then equivalised to take into account household demographics (as explained later in this paper). Combining this with information on the household, I therefore estimate the mean household equivalised disposable income for someone who lives in a household with a particular range of household equivalised gross income.

The first part of **Table 1** shows the mean disposable personal income from Wave 6 of the HILDA survey, used for the 2006 Census calculations after adjusting for inflation. The second part of the table gives similar results for Wave 10 of the HILDA survey, used for the 2011 Census (after once again adjusting for inflation), as well as the mean value for household equivalised disposable income.

2. This is not going to be completely true, as some people are able to minimise the tax they pay to varying degrees based on their work, family and housing circumstances. However, in Wave 10 of the HILDA survey, the correlation between a person's gross personal income rank and their disposable personal income rank is 0.9986.

FIGURE 2. Average disposable personal income across the lifecourse, Indigenous and non-Indigenous males and females, 2011



Source: Customised calculations based on the 2011 Census and Wave 10 of the HILDA survey.

Income across the Indigenous lifecourse

Using the mean values from the HILDA, it is estimated that in 2011 Indigenous Australians aged 15 years and over had an average disposable income of \$488 per week. There were some differences by sex, with Indigenous males having an average disposable income of \$535 per week compared to Indigenous females who had an average income of \$447 per week. Both sexes, however, had a significantly lower income than their non-Indigenous counterparts, who had an average disposable income of \$837 for males and \$567 for females.

The Indigenous population is significantly younger than the non-Indigenous population. This means that there will be a greater number of Indigenous Australians at the early part of the age distribution where income is lowest. However, there will be fewer at the upper end of the age distribution where income is also relatively low. Across the distribution, these two differences will tend to cancel each other out. However, as shown in Figure 2, at almost every point on the age distribution, Indigenous Australians receive less than their non-Indigenous counterparts. The only exception is the group aged 15–19 years, where Indigenous males and females receive slightly more than their non-Indigenous counterparts (potentially due to lower rates of participation in full-time education).

Using the same methodology as above, average disposable personal income in 2006 for the Indigenous population was \$400 per week. This has been adjusted for inflation (using the national-level Consumer Price Index), which means that in real terms the income received by the average Indigenous Australian (after taking into account tax and transfer payments) was estimated to have increased by 25.0 per cent over five years, or 4.56 per cent per year.

While this is a reasonably rapid increase, average disposable non-Indigenous income actually increased by a greater amount over the period—by 25.8 per cent over five years or 4.69 per cent per year on average. This indicates that the gap in average disposable income between Indigenous and non-Indigenous Australians widened over the last intercensal period. In 2006, the average Indigenous Australian had a personal disposable income that was 0.703 times as high as the average non-Indigenous Australian. By 2011, this had fallen slightly to 0.699 times as high.

There are three dynamics of the changing income distribution that account for the above trends. First, there was a reasonably large increase in the proportion of Indigenous Australians in the lowest (positive) income category. In 2006, 9.5 per cent of Indigenous Australians had a gross personal income of \$1–149 per week (in \$2006). By 2011, the group in the lowest income band

TABLE 2. Estimated mean disposable income for Indigenous and non-Indigenous males and females, by Indigenous Region, 2011

Indigenous Region name	Indigenous			Non-Indigenous		
	Males	Females	Total	Males	Females	Total
Dubbo	\$488	\$442	\$463	\$704	\$534	\$616
North-Eastern New South Wales	\$462	\$414	\$437	\$727	\$512	\$617
North-Western New South Wales	\$457	\$428	\$442	\$724	\$516	\$622
New South Wales Central & North Coast	\$513	\$435	\$472	\$730	\$505	\$613
Riverina–Orange	\$492	\$421	\$455	\$725	\$511	\$616
South-Eastern New South Wales	\$490	\$466	\$477	\$745	\$544	\$642
Sydney–Wollongong	\$607	\$507	\$554	\$883	\$613	\$744
Melbourne	\$635	\$497	\$564	\$836	\$570	\$699
Victoria exc. Melbourne	\$499	\$422	\$458	\$715	\$493	\$601
Brisbane	\$585	\$485	\$533	\$833	\$573	\$699
Cairns–Atherton	\$465	\$443	\$453	\$761	\$553	\$656
Cape York	\$403	\$386	\$394	\$988	\$725	\$869
Mount Isa	\$617	\$435	\$522	\$1,234	\$682	\$985
Rockhampton	\$625	\$439	\$527	\$854	\$507	\$679
Toowoomba–Roma	\$512	\$427	\$466	\$718	\$502	\$607
Torres Strait	\$452	\$461	\$457	\$956	\$813	\$889
Townsville–Mackay	\$605	\$455	\$526	\$925	\$558	\$742
Adelaide	\$508	\$459	\$482	\$750	\$533	\$638
Port Augusta	\$452	\$373	\$410	\$811	\$500	\$659
Port Lincoln–Ceduna	\$469	\$421	\$443	\$718	\$515	\$617
Broome	\$508	\$456	\$480	\$1,055	\$797	\$928
Geraldton	\$578	\$441	\$503	\$915	\$553	\$737
Kalgoorlie	\$523	\$384	\$446	\$1,219	\$601	\$935
Kununurra	\$398	\$383	\$390	\$1,160	\$876	\$1,030
Perth	\$674	\$513	\$586	\$987	\$597	\$788
South Hedland	\$987	\$565	\$783	\$1,796	\$909	\$1,465
South-Western Western Australia	\$574	\$421	\$492	\$868	\$504	\$683
West Kimberley	\$369	\$375	\$372	\$1,065	\$853	\$970
Tasmania	\$545	\$442	\$491	\$703	\$516	\$606
Alice Springs	\$511	\$476	\$492	\$1,017	\$771	\$892
Apatula	\$258	\$258	\$258	\$1,042	\$803	\$938
Darwin	\$615	\$554	\$582	\$1,006	\$749	\$882
Jabiru–Tiwi	\$308	\$285	\$296	\$1,087	\$791	\$963
Katherine	\$354	\$354	\$354	\$930	\$732	\$835
Nhulunbuy	\$302	\$293	\$297	\$1,488	\$804	\$1,183
Tennant Creek	\$315	\$323	\$319	\$939	\$828	\$888
Australian Capital Territory	\$751	\$660	\$705	\$1,054	\$789	\$918

Source: Customised calculations based on the 2011 Census and Wave 10 of the HILDA Survey.

for that year—\$1–199 per week (in \$2011)—comprised 12.5 per cent. While this increase is partly explained by the increase in the width of the band, it is worth noting that the increase for the non-Indigenous population was much smaller (7.6 per cent rising to 7.9 per cent).

At the other end of the income distribution, there was a large increase in both Indigenous and non-Indigenous Australians in the highest income band (\$2,000 per week in \$2006 and \$2011 respectively). For the Indigenous population, the increase was from 1.0 per cent of the population in 2006 to 2.2 per cent in 2011. For the non-Indigenous population, the increase was from 3.9 per cent to 6.9 per cent over the same period.

The final thing to note regarding changes in income over the last intercensal period is that, based on estimations from the HILDA survey, there was a very large increase in the average disposable income for individuals whose gross personal income was in the highest census income band. Taken together, these three results explain why Indigenous average income increased quite substantially between 2006 and 2011, but also why non-Indigenous income increased slightly faster.

Indigenous income by region

Discussion in the previous section showed that Indigenous Australians continue to have a substantially lower income than their non-Indigenous counterparts. Furthermore, this gap appears to have widened over the last intercensal period. However, as will be shown in this section, there is in many ways as large a variation within the Indigenous population by geography as there is between Indigenous and non-Indigenous Australians. This is demonstrated first in **Table 2**, which shows the estimated mean disposable income for Indigenous and non-Indigenous males and females in 2011 by the Indigenous Region of respondents' usual residence.

The first thing to note from **Table 2** is that there is a significant amount of variation in average income for Indigenous Australians by Indigenous Region. There were three regions (Apatula, Jabiru–Tiwi and Nhulunbuy) where the Indigenous population had an average disposable income that was less than \$300 per week. At the other end of the distribution, there were two regions (the Australian Capital Territory and South Hedland) that had an average disposable income of more than \$700 per week. While the standard deviation across regions for the Indigenous population (\$102) was quite large, the standard deviation for the non-Indigenous population was larger still (\$188).

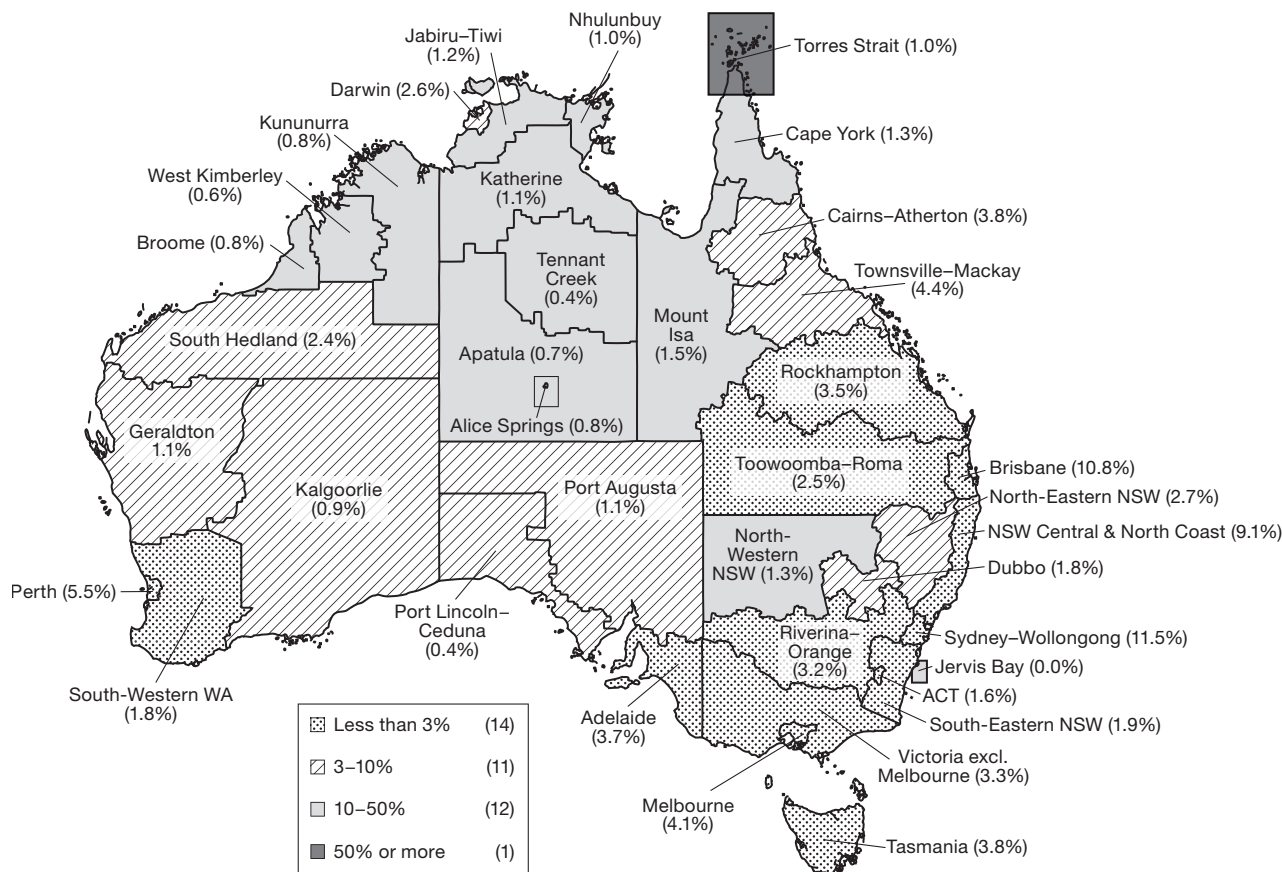
The second thing to note in the table is that non-Indigenous Australians have a higher average disposable income than the Indigenous population in every region in Australia. It is true that there is some variation. For example, in Nhulunbuy, non-Indigenous Australians on average have an income that is 4.0 times as high as the Indigenous population. In Tasmania, on the other hand, average income is only 1.2 times as high for the non-Indigenous population. Nonetheless, there is no region where the Indigenous population has a higher average income compared to the non-Indigenous population.

The final point to note from **Table 2** is that there does not appear to be too strong a relationship between the average income of the Indigenous population in the region and the average income of the non-Indigenous population. Although the highest average income for the non-Indigenous population was also in South Hedland, the next highest average income was in Nhulunbuy, where income for the Indigenous population was very low. Indeed, the correlation between Indigenous average income and non-Indigenous average income at the region level (0.09) was substantially lower than the correlation between the average income of male and female Indigenous and non-Indigenous Australians (0.86 and 0.76 respectively).

Another way to look at the distribution of income across Australia is to look at the total income received in each region and how much of this is received by Indigenous Australians and how much is received by the rest of the population. I do this in **Figure 3** by, in essence, replicating the population analysis from **Figure 1**. Specifically, I apply the estimated mean income from the HILDA survey to each income group and sum within the regions and also across Australia. **Figure 3** demonstrates the share of income recorded in the census going to the Indigenous population in the region (the shading) as well as the share of total Indigenous income received by usual residents of that region (the numbers). It should be noted that this figure uses gross personal income as opposed to disposable income. This was done to capture the total income for that region before taxes were removed. The key dynamics do not change, however, if disposable income is used instead.

Like with the population analysis in **Figure 1**, there is a different distribution of absolute income compared to relative income. Specifically, the income received by Indigenous Australians makes up a greater share of the economy in remote regions compared to those in more urban parts of the country. However, most of the income received by Indigenous Australians accrues to those in urban parts of the country. For example, the total income of Indigenous usual residents of Sydney (\$1,030 million in 2011) was almost 1.5 times as high as the total income of Indigenous usual residents of the Northern Territory (\$702 million).

FIGURE 3. Percentage of Indigenous Region gross personal income received by Indigenous population (shading) and percentage of total income of Indigenous Australians (text), 2011



Source: Customised calculations based on the 2011 Census and Wave 10 of the HILDA Survey.

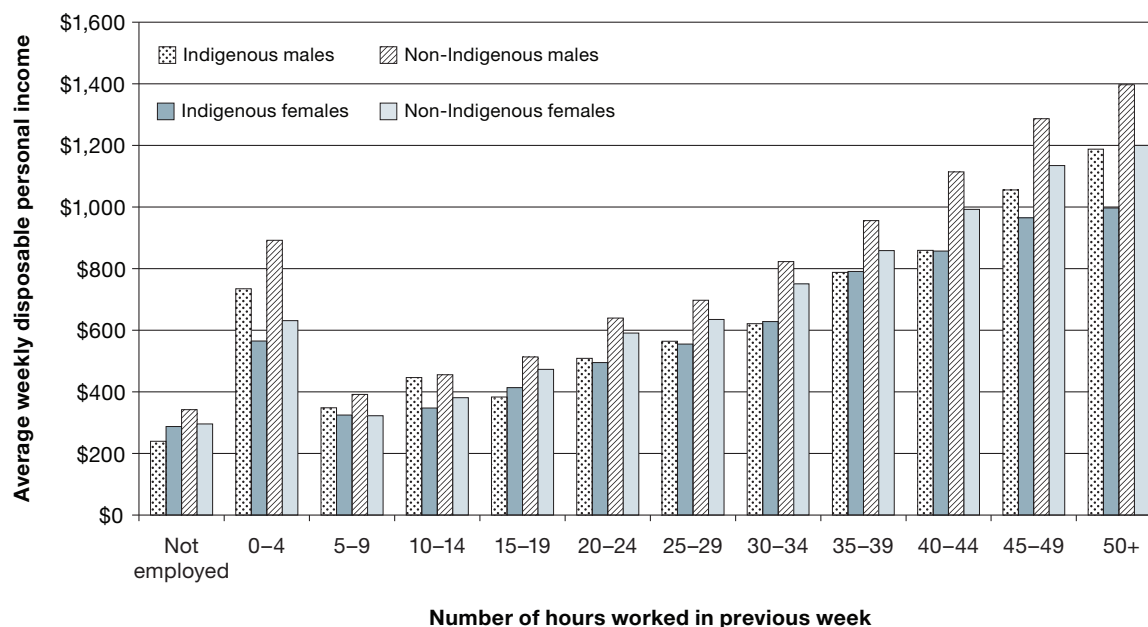
Income by employment and education

There are many ways in which a person can receive an income. There is no recent comparable data for Indigenous and non-Indigenous Australians. However, the 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) had a question on a person's source of personal income. Keeping in mind that respondents were able to list more than one source, it is interesting to note that 52.2 per cent—or more than half of the (weighted) sample—listed government pensions and allowances as one of their sources of income. This was significantly higher than the percentage who reported employee income as one of their sources (44.9 per cent). A much smaller percentage of the population reported other income (11.5 per cent), CDEP income (5.4 per cent) and unincorporated business income (1.5 per cent).

Respondents were also asked about their principal source of personal income. There was a much more even split between employee income (46.0 per cent) and government pensions and allowances (46.3 per cent).

There is no updated survey data on source of income for the Indigenous population. An analysis of administrative data in Section 8.4 of the most recent *Overcoming Indigenous Disadvantage* report (Steering Committee for the Review of Government Service Provision 2011) points to a potential increase in the proportion of the working age Indigenous population on Newstart Allowance, Disability Support Pension and Youth Allowance. Furthermore, when you take into account that many of the 5.2 per cent of the 2008 NATSISS sample whose main source of income was CDEP income would by 2011 be on Newstart allowance or other income support, the data clearly shows that a large proportion of Indigenous Australians obtain their income from outside the mainstream labour market.

FIGURE 4. Average disposable personal income by hours worked in the previous week, Indigenous and non-Indigenous males and females, 2011



Source: Customised calculations based on the 2011 Census and Wave 10 of the HILDA Survey.

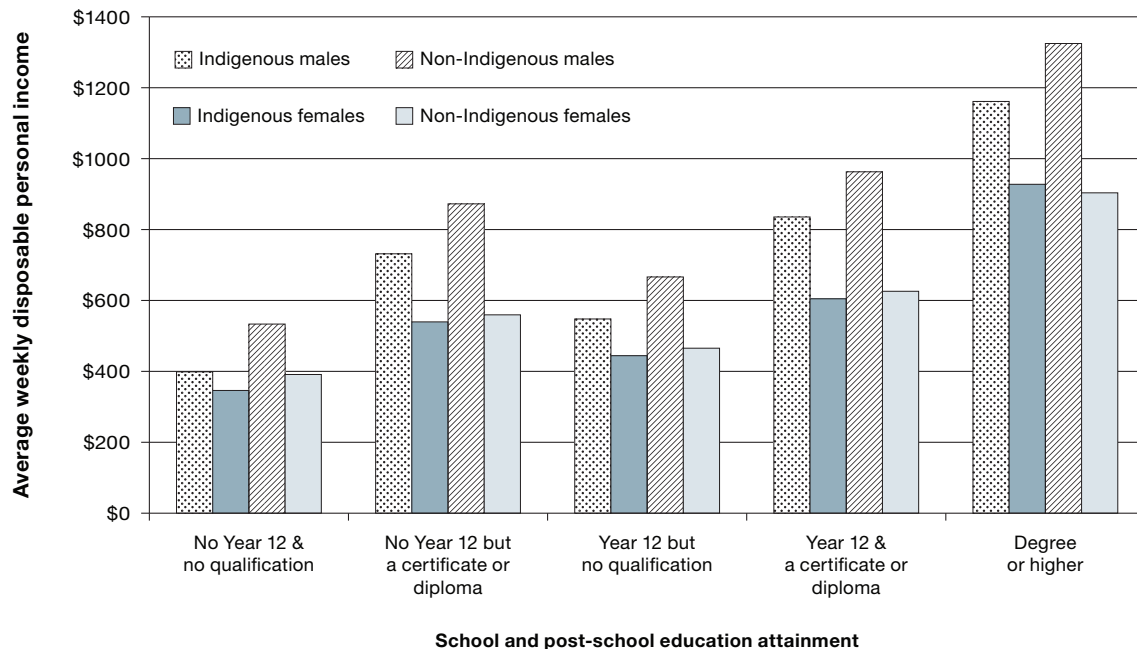
Despite the fact that wages and salaries were not the main source of income for the majority of Indigenous adults, it is still the case that an Indigenous adult who was not employed received less income on average than a non-Indigenous adult who was not employed. Here we can look at census data again (using income group estimates from the HILDA survey). Specifically, an Indigenous male aged 15 years and over who was not employed had an average disposable income of \$240 per week. This is somewhat lower than an Indigenous female who was not employed, who had average disposable income of \$288 per week. This probably reflects the greater caring responsibility of Indigenous females documented earlier in this series (Yap & Biddle 2012), and the way in which transfer payments in Australia are targeted towards those with caring responsibilities.

While non-Indigenous females who were not employed only had a slightly higher income than their Indigenous counterparts (\$296 per week), the difference between Indigenous and non-Indigenous males was quite large. Perhaps due to higher superannuation payments, dividends and a greater level of participation in education, the average disposable income for a non-Indigenous male who was not employed (\$342) was 1.4 times as high as the average income for an Indigenous male.

Figure 4 shows that across the distribution of hours worked, Indigenous males and females have a lower average income than their non-Indigenous counterparts. Results are given for five-hour groupings based on the number of hours worked in the previous week, with all those who worked 50 hours or more grouped together. It should be noted that many of those who worked 0 hours per week in the previous week would have been on leave. Their income was likely to be based as much on their usual hours worked as opposed to the number of hours worked in the previous week.

Apart from those who worked 0-4 hours in the previous week, there is a pretty consistent increase in average income across the distribution. However, apart from females working 5-9 hours per week (for whom transfer payments are likely to make a greater contribution to total income), the non-Indigenous population consistently has a higher average income than the Indigenous population. Furthermore, the difference is for the most part higher for males than females. It is worth noting, however, that for all the groupings of hours worked, the difference between Indigenous and non-Indigenous Australians is less than for the population as a whole. In other words, the different distribution of hours worked between Indigenous and non-Indigenous males and females explains some of the income gaps between the groups.

FIGURE 5. Average disposable personal income by level of education, Indigenous and non-Indigenous males and females, 2011



Source: Customised calculations based on the 2011 Census and Wave 10 of the HILDA Survey.

Another possible explanation for the income gap between Indigenous and non-Indigenous Australians is the level of education of the two populations. As has been documented previously in this series, Indigenous Australians have a substantially lower level of education than their non-Indigenous counterparts (Biddle 2013). While the gap in education has closed over the last intercensal period, Indigenous Australians across the age distribution are still less likely to have completed Year 12 and, regardless of high school status, less likely to have a post-school qualification. **Figure 5** shows the relationship between these low levels of education and low average income.

Figure 5 demonstrates that for a given level of education, male Indigenous and non-Indigenous Australians have a substantially higher average income than their female counterparts. The difference is greater for the non-Indigenous population, meaning that non-Indigenous males in turn have a higher average income than their Indigenous counterparts. This difference gets smaller as education levels rise. For example, an Indigenous male who has not completed Year 12 and does not have a qualification has an average income that is 0.747 times as high as a non-Indigenous male in the same situation. The ratio for those with a degree, however, is 0.877. In general

though, not only do Indigenous males have a significantly lower level of education than non-Indigenous males, their income is lower at all points on the education distribution.

The relationship of income to education is slightly different for Indigenous and non-Indigenous females. At the lower end of the education distribution, Indigenous females have a lower average income than their non-Indigenous counterparts. An Indigenous female who has not completed Year 12 and does not have a qualification has an average income that is 0.885 times as high as a non-Indigenous female with the same level of education. This difference diminishes across the distribution and is even reversed for those with a degree. An Indigenous female with a degree has an average disposable income of \$928 per week. For non-Indigenous females, the average was only \$904 per week.

The above results confirm previous findings (Biddle 2010) that showed relatively high predicted income benefits from education for the Indigenous population. Reducing the barriers to education participation and completion will not completely eliminate the gap in socioeconomic outcomes between Indigenous and non-Indigenous Australians (especially males). However, it is likely that it will make a significant difference.

Income within regions and households

Most (although not all) income is received by individuals. The money that a carer receives might be influenced by his or her family or household circumstances. However, that money still usually goes to the carer themselves to allocate. After this money is received, however, income tends to be shared within a couple, family, household or, in many cases, within a community. What this means is that an individual's access to economic resources is not only influenced by their own income, but also the income of those around them. Similarly, a person's income not only contributes to their own wellbeing, but also to the wellbeing of others.

At the broadest level, a person who has a reasonably high level of income themselves but lives in an area with reasonably low average income is going to have two countervailing influences on their own wellbeing. On the one hand, their social status might be relatively high and, for certain goods and services with reasonably fixed supply (like housing), they may be able to use their income to purchase more than would otherwise be the case. On the other hand, the social status may come at the cost of insecurity and envy, and there may be greater demands on them to support others in the community.

Notwithstanding the intrinsic benefits that individuals receive from such prosocial spending (Aknin et al. 2013), there is the potential for a person's position within the income distribution to impact on their own wellbeing, above and beyond the direct effect of their own income. The net effect is likely to depend on the relative weight that a person puts on income-based status, consumption and sharing (Corrazzini, Esposito & Majorano 2012). This is an area of future analysis that will be returned to in the summary and conclusions of this paper. However, in the first instance it is worth considering the level of income inequality in the areas and regions in which Indigenous Australians live and their place in the relative distribution.

Before looking at the place of Indigenous Australians in the income distribution of the area in which they live, it is also important to consider another form of income sharing—that which occurs within families and households. Since at least the publication of Gary Becker's seminal work, *A Treatise on the Family* (first published in 1981 but revised and expanded in 1991), there has been a recognition by economists that decisions on how to earn and spend income are made through negotiation within the family.

This within-family and within-household sharing did not, and would not, surprise sociologists and anthropologists. There has not, however, been much quantitative work on this issue within the Indigenous population. One

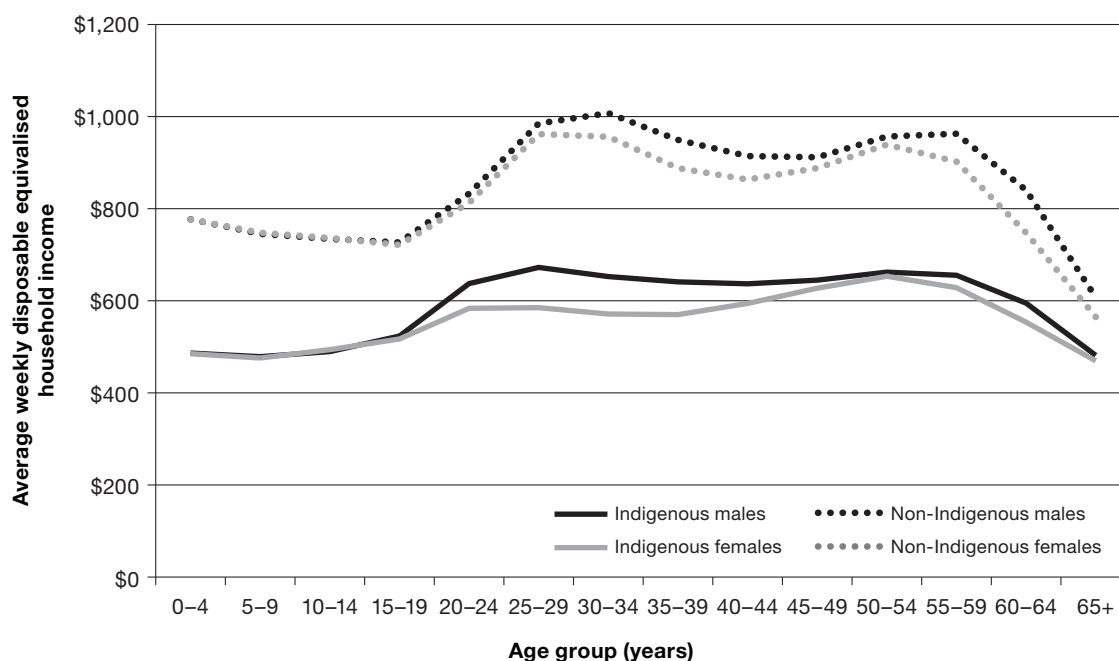
notable exception is Hunter (2012), who found that while household income was associated with financial stress, the strength of the relationship was much less than it was for the general population. This suggests that the concept of the household may be of less relevance to Indigenous Australians and that they are more likely to draw from resources from outside the household, including income of others in the community, as well as non-financial resources like hunting, fishing and gathering. Nonetheless, the relationship is strong and statistically significant. Furthermore, Biddle (2011) showed a stronger relationship between household income and wellbeing than between personal income and wellbeing. This was particularly the case for females. Hence, it is worth looking at the distribution of household income separate to the distribution of individual income.

To do so, I look at the average level of equivalised household disposable income for the households of Indigenous and non-Indigenous males and females across the income distribution. Like with personal income, I use data from Wave 10 of the HILDA survey to calculate the average disposable income for a household, conditional on the gross income grouping that they fall in. This income is equivalised, which means it takes into account the fact that although some additional resources are required, an additional person in the household costs less than the first because of the potential to share resources. The analysis in this paper uses the OECD equivalence scale which assumes an additional adult costs 0.5 times as much and an additional child costs 0.3 times as much as the first adult.

I also take a different approach to some analysts by linking household-level information to the individual, rather than looking at average income by a construct often referred to as 'Indigenous households', or households with at least one Indigenous usual resident. This is done for three reasons. First, taking averages at the household level does not take into account different household sizes and the fact that a low income household with a large number of people in it will have a greater impact on overall wellbeing than a small household with low income. The second reason relates to the problematic nature of the concept of 'Indigenous households' and that many non-Indigenous people live in households that have at least one usual resident who is Indigenous. The final reason is more of a pragmatic one in that by looking at the household circumstances of individuals, it is possible to consider how household circumstances vary by age and sex.

Across Australia, the average equivalised household disposable income for the households that Indigenous Australians live in was estimated to be \$553 per week. Unfortunately, because of the way in which the data was

FIGURE 6. Average equivalised household disposable income across the lifecourse, Indigenous and non-Indigenous males and females, 2011



Source: Customised calculations based on the 2011 Census and Wave 10 of the HILDA survey.

Note: Because it is not possible to calculate household income for those away from their place of usual residence, this data is for those at home on the night of the census only.

output, it is not possible to look at how this has changed through time. However, it is worth noting that the same figure for the non-Indigenous population was \$823 per week, meaning that there was a large gap between Indigenous and non-Indigenous Australians in terms of household as opposed to personal income. Figure 6 shows that there is also significant variation across the lifecourse and by sex.

Figure 6 shows that, across the lifecourse, Indigenous Australians live in households that have a lower average income than non-Indigenous Australians. There is, however, substantially less variation across the lifecourse than in terms of personal income (Figure 2). In terms of patterns, household equivalised disposable income starts off relatively low and stays that way until a person reaches the age of 20. This makes sense, because during that time children consume resources within the household but only contribute resources indirectly (through the family transfer system). While there are differences in childhood between Indigenous and non-Indigenous children, there are no differences between males and females.

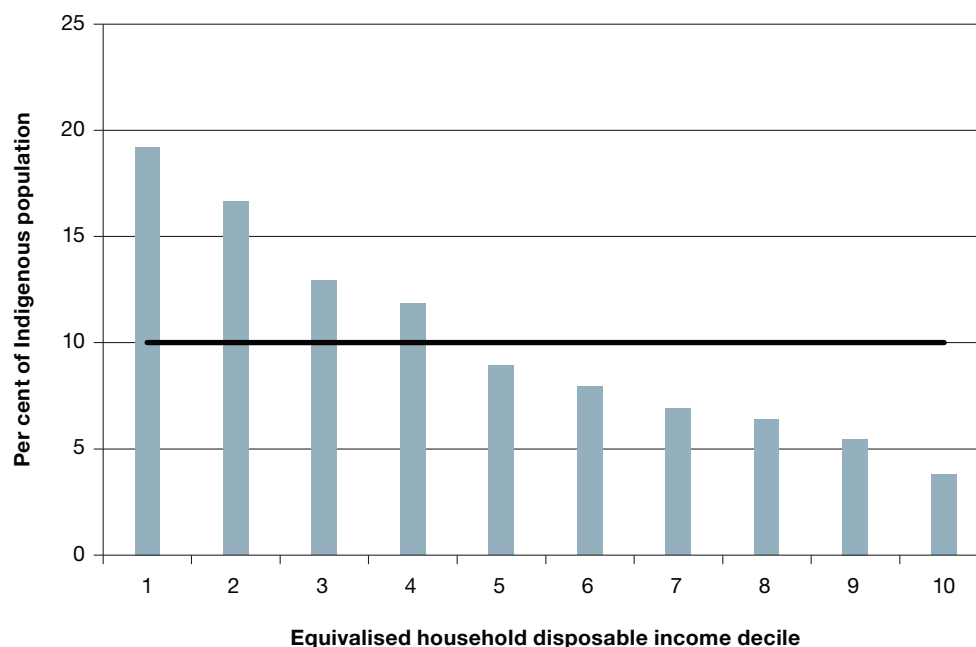
Beyond the age of 20, differences in average income between males and females begin to emerge. Specifically, up until the 65-plus age group, males tend to live in

households that have a higher average household equivalised disposable income than females. This reflects differences in child-rearing responsibilities and the fact that males are more likely to live in single-person households than females, whereas females are more likely to be single parents.

Although the patterns are similar for Indigenous and non-Indigenous Australians, the difference between the two is not consistent across the lifecourse. Between the ages of 0 and 15, Indigenous Australians live in households with an average equivalised disposable income that is about 0.63 to 0.67 times as high as the non-Indigenous population. This rises to 0.72 to 0.74 times the rate of the households of non-Indigenous Australians between the age of 15 and 24, when more non-Indigenous Australians are studying full-time compared to the Indigenous population. Ratios then stay reasonably constant until the oldest age group (65-plus years), when Indigenous Australians live in households that have an average income 0.81 times as high as the non-Indigenous population.

It is clear from Figure 6 that the households in which Indigenous Australians live have a lower average income than the households in which non-Indigenous Australians live. However, analysis of census data also

FIGURE 7. Indigenous population by average household equivalised disposable income of the area in which they live (percentiles)



Source: Customised calculations based on the 2011 Census and Wave 10 of the HILDA survey.

shows that Indigenous Australians live in communities and neighbourhoods with relatively low average income. To demonstrate this, I calculated the average equivalised household disposable income for 53,136 SA1s across Australia. The area in which the average Indigenous Australian lived had a mean income of \$691, whereas for the non-Indigenous population, the average income of their SA1 was \$778 per week.

After ordering the SA1s by their income, they were then grouped into 10 deciles ranging from the first decile with an average income of \$503 per week to the tenth decile with an average income of \$1,111 per week. **Figure 7** shows the proportion of Indigenous Australians in each of the deciles.

If Indigenous Australians lived in similar areas to the non-Indigenous population, then 10 per cent of the population would be in the first decile, 10 per cent in the second decile, and so on. **Figure 7** shows that in reality this definitely is not the case. Specifically, 19.2 per cent of Indigenous Australians live in SA1s in the lowest income decile. This is almost twice the number that would be expected under a completely even distribution. At the other end of the distribution, only 3.8 per cent of Indigenous Australians live in the top 10 per cent of SA1s (based on income).

Summary and conclusions

I began this paper with a discussion of the links between income and wellbeing. In general, as a person's income (or their household's) goes up, so too does their life satisfaction and self-reported happiness. However, the relationship isn't linear, with greater levels of income required as you move along the income distribution for a given increase in wellbeing. It was also noted that this relationship is potentially quite different for Indigenous and non-Indigenous Australians, with significant variation by geography within the Indigenous population. The general finding from the empirical literature is therefore that income is a useful, if incomplete proxy for more subjective measures of wellbeing.

With this in mind, the results from the 2011 Census (combined with a few other data sources) are mixed in terms of Indigenous income. On the one hand, average disposable income for the Indigenous population went up from \$391 per week in 2006 to \$488 per week in 2011. While this is a positive development in terms of access to economic resources for the Indigenous population, another finding from the wellbeing literature is that not only is average income important, but also a person's place in the income distribution. It is less positive to note, therefore, that

the ratio of Indigenous to non-Indigenous average income stayed more or less the same over the period, from 0.703 in 2006 to 0.699 in 2011.

Gray, Howlett and Hunter (2013) showed reasonably rapid growth in mainstream (non-CDEP) employment over the period studied (2006 to 2011). During this time there were relatively stable rates of government transfer payments but relatively rapid gains in employment related income. Taken together, these trends predict a situation of rising Indigenous incomes but rising or stable disparities between the two populations. However, in the absence of these gains in mainstream employment, it is likely that the gap between Indigenous and non-Indigenous Australians would have risen even further.

Another major finding from the paper is that there is as much variation within the Indigenous population as there is between the Indigenous and non-Indigenous population. This is demonstrated by a few ratios:

- The average Indigenous 40–44 year old has a disposable income that is 3.94 times as high as the average Indigenous 15–19 year old;
- The average Indigenous male has a disposable income that is 1.20 times as high as the average Indigenous female's;
- Indigenous Australians who live in the South Hedland Indigenous Region have an average income that is 3.04 times as high as the average income in the Apatula region; and
- Indigenous males who had completed a degree had an income that was on average 2.91 times as high as those who had not completed Year 12 and had no qualifications. The ratio for Indigenous females was 2.68.

Despite this variation, for almost every demographic, geographic, education and employment combination, Indigenous Australians have a lower average income than their non-Indigenous counterparts. The only major exception to this is Indigenous females with a degree who had a slightly higher average income than non-Indigenous females with a degree. It is not just that Indigenous Australians are younger, more likely to live in remote areas, less likely to be employed or have lower levels of education. While important in explaining variation within the Indigenous population, these factors do not explain all of the difference between Indigenous and non-Indigenous Australians. Furthermore, Indigenous Australians are more likely to live in households or areas where those around them also have relatively low incomes.

This last point raises some potentially useful further work. In many ways, this paper could be viewed as the second in a series by the author on Indigenous income. The first paper (Biddle 2011) looked at the relationship between income and wellbeing. This second paper updates our understanding of the position of Indigenous Australians within the income distribution. To complete the trilogy, subsequent work might consider the relationship between the income and other characteristics of the areas and households which Indigenous Australians live and their own wellbeing. This could be done through the creative use of existing databases.

One area of analysis that is not available with current databases is the level of wealth held or accessed by the Indigenous population. Unlike income (which measures the flow of resources over a particular period), wealth or net worth is 'a net concept and measures the extent to which the value of household assets exceeds the value of their liabilities' (ABS 2011: 4). Wealth accumulates through time and provides security for individuals if their income falls, and allows people to take risks and accumulate additional assets. In 2009–10, the level of wealth for a household at the top 10 per cent of the distribution was 49.2 times as high as the wealth of the household in the bottom 10 per cent of the distribution. This is known as the P90/P10 ratio. However, for household income, the P90/P10 ratio was only 9.1, highlighting that there is a much wider distribution of wealth than income in Australia. Unfortunately, we know very little about where Indigenous Australians would place on this wealth distribution.

It is worth ending this paper by noting that neither income nor wealth completely represent an individual or household's worth or contribution to society. There are many carers who provide a valuable contribution to society and there are many people undertaking unpaid volunteer and other work. Furthermore, many people, especially Indigenous Australians, access resources through alternative means like hunting, fishing, gathering and barter. Nonetheless, in a market economy like Australia, a person's income and that of their household has a major impact on their ability to obtain goods and services, including many which the majority of the population take for granted. The results presented in this paper highlight that many Indigenous Australians continue to have much poorer access to these goods and services than the rest of the population, a fact that has the potential to undermine other gains in education and employment that have been documented in this series.

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