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Paper 14 **Population Projections**

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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 including 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 is funded by the Commonwealth Department of Social Services (DSS) (formerly the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA)) through the Strategic Research Project as well as DSS/ FaHCSIA and State/Territory governments through the Indigenous Populations Project.

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

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Abstract

The aim of this paper is to provide a preliminary set of projections at the national and regional level for the Australian Indigenous population. Using population estimates from the Australian Bureau of Statistics and the most recently available vital-statistics data, it is projected that the Indigenous population will grow from around 670,000 in 2011 to around 1,060,000 by 2031. The Indigenous population is therefore projected to grow from around 3.0 per cent of the total population in 2011 to 3.9 per cent by 2031. Importantly, this growth isn't spread evenly across the population with a projected aging and urbanising population over the next several decades.

Acknowledgements

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List of acronyms

ABS	Australian Bureau of Statistics
ANU	The Australian National University
ARC	Australian Research Council
ASGS	Australian Statistical Geographic Standard
CAEPR	Centre for Aboriginal Economic Policy Research
DSS	Department of Social Services
FaHCSIA	Department of Families, Housing, Community Services and Indigenous Affairs
SA1	Statistical Area Level 1
SCRGSP	Steering Committee for the Review of Government Service Provision

Introduction and overview

Not long after the 2006 Census, the Australian Bureau of Statistics (ABS) estimated that there were around 517,000 Aboriginal and Torres Strait Islanders (Indigenous Australians) living in Australia. This represented about 2.5 per cent of the overall Australian population. The Bureau's estimates from the 2011 Census are around 670,000 Indigenous Australians, or approximately 3.0 per cent of the total Australian population.

This is a very rapid population increase over just a five-year period. There are six potential reasons for this increase:

- Indigenous Australians are concentrated in the main childbearing years (at least relative to the non-Indigenous population);
- Indigenous females continue to have a greater number of children than non-Indigenous females, especially when they are relatively young;
- In urban areas in particular, there is a high partnering rate between Indigenous males and non-Indigenous females with the children of these partnerships tending to be identified as being Indigenous.
- The ABS may be getting better at counting Indigenous Australians in the census;
- The ABS may have historically underestimated the number of Indigenous people who were missed by the census in previous years; and
- There may have been a non-negligible number of people who previously did not identify as being Indigenous in the census but now feel more comfortable in doing so.

Although it won't be possible to estimate accurately until later in 2013—when new data is released—it is also a possibility that mortality rates amongst the Indigenous population have fallen. Whatever the reasons for this rapid population increase, it is clear that it has implications for policies that seek to address socioeconomic and health disadvantages faced by the population.

For Indigenous-specific programs with a fixed budget, a rapidly growing population means that each individual Indigenous Australian will receive fewer resources. Alternatively, for programs that are funded on a fixed dollar basis per person, a large growth in the Indigenous population means that the cost of the program to whichever government or non-government organisation that is funding it will rise. This may not be too important an

issue if the program makes up a relatively small share of an overall budget. However, for some programs, and for some jurisdictions, there are a number of programs that have very large expenditures.

As important as the population increase at the national level is, the change in composition of the Indigenous population through time is equally important. Growth that is unevenly distributed by geography, age or other characteristics will inevitably put greater pressure on particular regions or policy areas. Furthermore, at the jurisdictional or regional level, residential mobility needs to be added as a seventh potential source of growth. Consider **Fig. 1**, which gives the change in the Indigenous population estimate by broad age group and State/Territory.

There are two main points to note from the **Fig. 1**. First, the highest rate of growth over the last intercensal period was amongst those aged 55 years and over. That is, the Indigenous population is aging. Secondly, growth was fastest in the east-coast states and slowest in the Northern Territory.

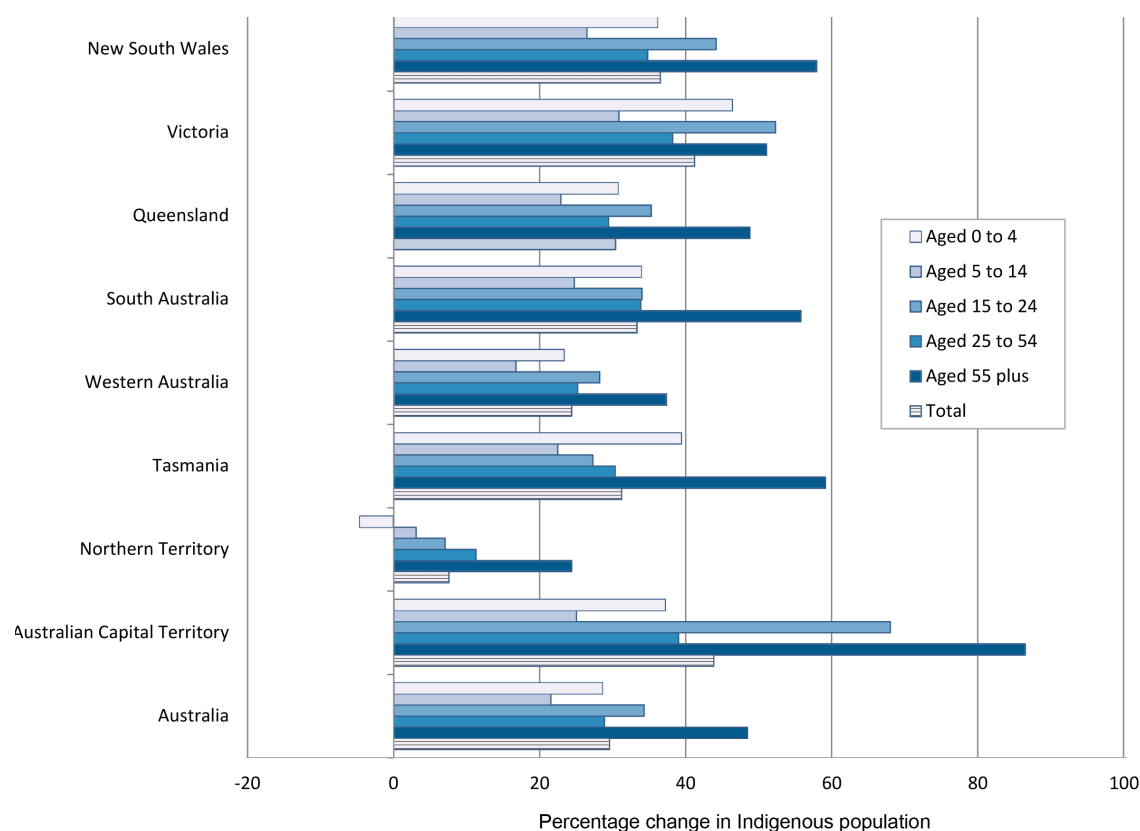
While age-specific mobility rates may explain some of the patterns in **Fig. 1**, it is unlikely that the growth that occurred in many of the jurisdictions was due to natural population increase alone (that is, the first three points mentioned above). Rather, for many jurisdictions, changes in identification, enumeration strategies or estimation methodology are likely to have driven much of the increase.

Population change is much easier to manage from a policy sense if it is predictable. Increases in the costs of programs can be factored into forward estimates and resources and infrastructure can be directed to those areas where population is likely to grow the fastest. Growth in the Indigenous population between 2006 and 2011 was predicted by both academic demographers and the ABS to be faster than that of the non-Indigenous population. However, such a rapid growth was not predicted a priori. For example, projections undertaken by Biddle and Taylor (2009), as well as by the ABS (2009) were for an Indigenous population in 2011 of around 575,000. While still large, the projected growth was around 38 per cent of that actually observed.

Some of the causes of this rapid population increase are likely to continue to have an effect into the future. We can obtain reasonable estimates of growth caused by the current age structure of the Indigenous population as well as current rates of fertility and paternity. However, changes in identification and enumeration are more difficult to control for.

The aim of this paper is to provide an initial set of population projections using currently available data.

FIG. 1. Estimated change in Indigenous population (%), by State/Territory, 2006 to 2011



Source: Customised calculations based on the 2011 Census.

Projections will be based on a reasonably standard projection methodology using the most recently available rates of fertility and mortality. These are summarised at the national level in the next section. While national level results are important for the broad direction of Indigenous policy in Australia, the reality is that many programs and policies are delivered at the local level. The national level results are therefore followed by a summary of a set of population projections at the regional level. The section that follows includes a discussion of the implications of the projected population growth, using the example of Indigenous disability and the forthcoming DisabilityCare Australia programme. The final section of the paper providing a brief summary and overview of future work.

As will be explained in the following section, the projection methodology used in this paper means that a set of population projections is available for each region of Australia for each five year age cohort for each five-year period (2016, 2021, 2026, and 2031). This would be too much information to provide in a written document. Therefore, the national and regional level projections are made available as a downloadable spreadsheet from the

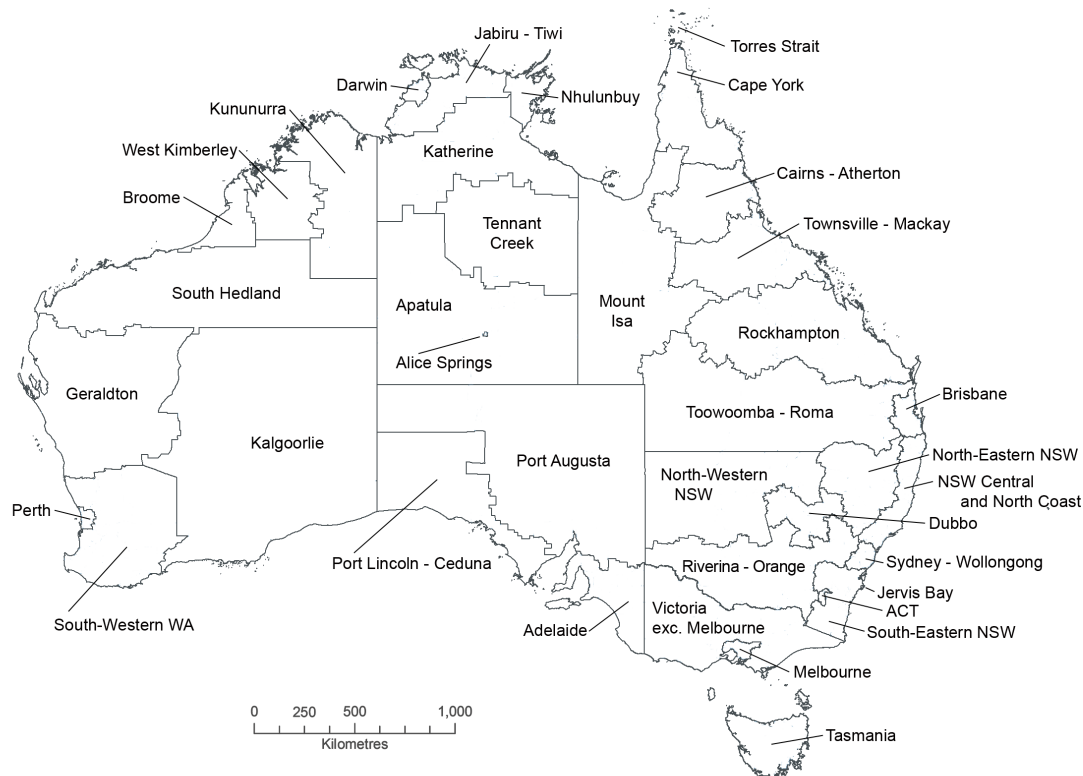
CAEPR website at <<http://caepr.anu.edu.au/Publications/census-papers/2013CP14.php>>.

Projection methods and national level results

Although it is very difficult to predict future changes in identification or enumeration, it is possible to use current data to obtain a set of population projections for what the Indigenous (and non-Indigenous) population might look like into the future if currently high rates of fertility and paternity continue. This is not a forecast in the usual sense in that predictions are not made based on judgement and probabilities. Rather, population projections tend to be simply a reflection of what the future would look like if previously observed data and trends continued.

The most common method to project the Indigenous population (and the one used by the ABS) is the cohort-component methodology (Rowland 2003). At the national level, the Indigenous population at a particular future time period ($t+\Delta$) is equal to the population at a previous point

FIG. 2. Indigenous Region structure of the ASGS



Source: ABS.

in time (t), plus births to Indigenous mothers and births to non-Indigenous mothers/Indigenous fathers that occurred over the period (which are identified as being Indigenous), minus Indigenous deaths, plus international net migration. For regional population change, net internal migration should also be added. These components of population change are examined separately, and rates for these are applied to cohorts of a base population as appropriate, resulting in a set of projections for a set time period. This process is iterative across age groups over the projection period.

Such methods require a set of assumptions about the particular populations and rates. To undertake analysis at the regional and local level, the 2011 Census paper series 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 AIGC is Indigenous Locations, of which there were 1,116. The next level above Indigenous Locations are Indigenous Areas, of which there were 429. This figure becomes 411 substantive areas after excluding administrative codes representing

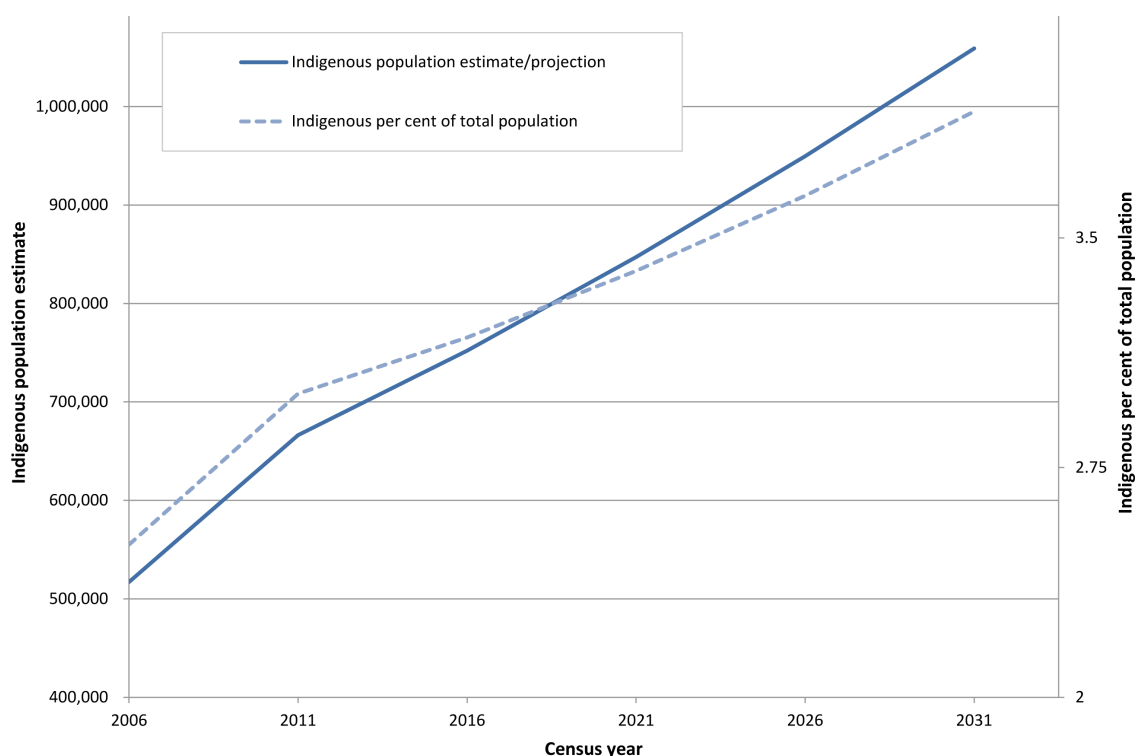
those in a particular State or Territory who did not give any additional detail on their place of usual residence, or who were migratory on the night of the census.

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 boundaries and names for these regions are given in Fig. 2.

The assumptions used to obtain an initial set of population projections summarised as follows:

- base population—the 2011-based ABS population estimates for each five-year age group;
- births of Indigenous children to Indigenous and non-Indigenous mothers—the State/Territory based fertility rates (from 2009), applied to each Indigenous Region and age group;

FIG. 3. Projected Indigenous population, 2006 to 2031



Source: Customised calculations based on the 2011 Census.

- deaths of Indigenous Australians—the State/Territory (2005–2007) mortality rates for each State/Territory applied to each Indigenous Region and age group;
- international migration—assumes zero international migration for the Indigenous population and 180,000 net non-Indigenous migration per year (allocated to each Indigenous Region based on its share of recent migrants over the 2007–2011 period);
- internal migration—assumes that the net Indigenous Region migration rates over the 2006–2011 intercensal period are replicated for each subsequent period, capped at -5 per cent and +5 per cent.

In essence, the projections are based on the most recently available data for birth rates and death rates, which are applied to the 2011 base population, assuming a net international migration rate for the non-Indigenous population of 180,000 people per year. Using these assumptions, Fig. 3 gives the projected Indigenous population from 2016 to 2031, as well as the estimated Indigenous population in 2011. The dashed line (whose

values are plotted against the right-hand axis) gives the percentage of the total Australian population projected to be Indigenous.

Fig. 3 demonstrates that if rates of fertility, paternity and mortality continue as they have been, then the Indigenous population is projected to grow from around 670,000 in 2011 to around 1,060,000 by 2031. While this population growth isn't as fast as was observed between 2006 and 2011 (because no identification or enumeration change was incorporated into the projections), it is still projected that the Indigenous population will grow from around 3.0 per cent of the total population in 2011 to 3.8 per cent by 2031.

Regional level projections

As with the growth that occurred between 2006 and 2011, the projected growth between 2011 and 2031 is not evenly distributed by geography. This is demonstrated in Table 1, which presents the projected population in 2031 for 37 Indigenous Regions, as well as the projected share of that region in 2031 that will be Indigenous. These figures are

TABLE 1. Projected Indigenous population and growth, 2031

Indigenous Region	Population		Per cent Indigenous		Projected yearly growth rate (2011 to 2031)
	2011	2031	2011	2031	
Dubbo	13,625	16,963	15.1	19.7	1.1
North-Eastern NSW	20,790	26,368	9.8	12.1	1.2
North-Western NSW	9,492	10,684	22.2	28.4	0.6
NSW Central and North Coast	62,896	97,258	4.2	5.9	2.2
Riverina - Orange	24,311	33,548	5.1	7.0	1.6
South-Eastern NSW	13,178	19,060	3.9	5.1	1.9
Sydney - Wollongong	64,184	88,371	1.4	1.6	1.6
Melbourne	22,461	39,268	0.5	0.8	2.8
Victoria exc. Melbourne	24,872	43,570	1.7	2.7	2.8
Brisbane	64,993	133,189	2.2	3.3	3.7
Cairns - Atherton	29,088	57,512	12.6	19.7	3.5
Cape York	9,812	12,772	60.0	65.2	1.3
Mount Isa	9,358	12,126	27.5	31.6	1.3
Rockhampton	22,822	46,290	5.1	8.3	3.6
Toowoomba - Roma	18,389	30,197	5.4	7.8	2.5
Torres Strait	6,885	8,807	85.7	87.9	1.2
Townsville - Mackay	27,607	49,698	7.2	10.1	3.0
Adelaide	25,718	44,134	1.7	2.5	2.7
Port Augusta	8,863	11,768	10.6	14.5	1.4
Port Lincoln - Ceduna	2,827	4,188	8.1	11.9	2.0
Broome	5,481	8,416	34.8	36.2	2.2
Geraldton	8,055	12,246	13.1	16.8	2.1
Kalgoorlie	7,180	9,733	11.8	13.9	1.5
Kununurra	6,611	8,529	54.6	55.6	1.3
Perth	32,837	57,292	1.9	2.5	2.8
South Hedland	10,014	17,921	15.6	17.0	3.0
South-Western WA	13,162	25,763	3.4	5.3	3.4
West Kimberley	4,930	6,206	55.1	61.6	1.2
Tasmania	24,165	32,529	4.7	5.9	1.5
Alice Springs	6,233	9,872	21.9	30.5	2.3
Apatula	9,894	10,448	78.9	80.4	0.3
Darwin	14,660	22,165	11.1	14.6	2.1
Jabiru - Tiwi	12,151	15,551	78.0	81.0	1.2
Katherine	10,543	11,754	53.8	59.1	0.5
Nhulunbuy	10,896	13,912	64.5	71.2	1.2
Tennant Creek	4,473	4,854	68.2	72.7	0.4
ACT	6,160	10,465	1.7	2.3	2.7

Source: Customised calculations based on the 2011 Census.

presented alongside the 2011 population estimates for comparison, with the final column giving the implied yearly growth rate.

Based on current rates of fertility, mortality and mobility, the regions which are projected to experience the most rapid population growth between 2011 and 2031 are Brisbane, Rockhampton, Cairns - Atherton, South-Western WA, South Hedland and Townsville - Mackay. Even in the absence of changes in self-identification, these four regions (four in Queensland and two in Western Australia) are projected to grow by 3 per cent or more per year. On the other hand, there are four regions projected to grow by less than 1 per cent per year over the period—Apatula, Tennant Creek, Katherine and North-Western NSW.

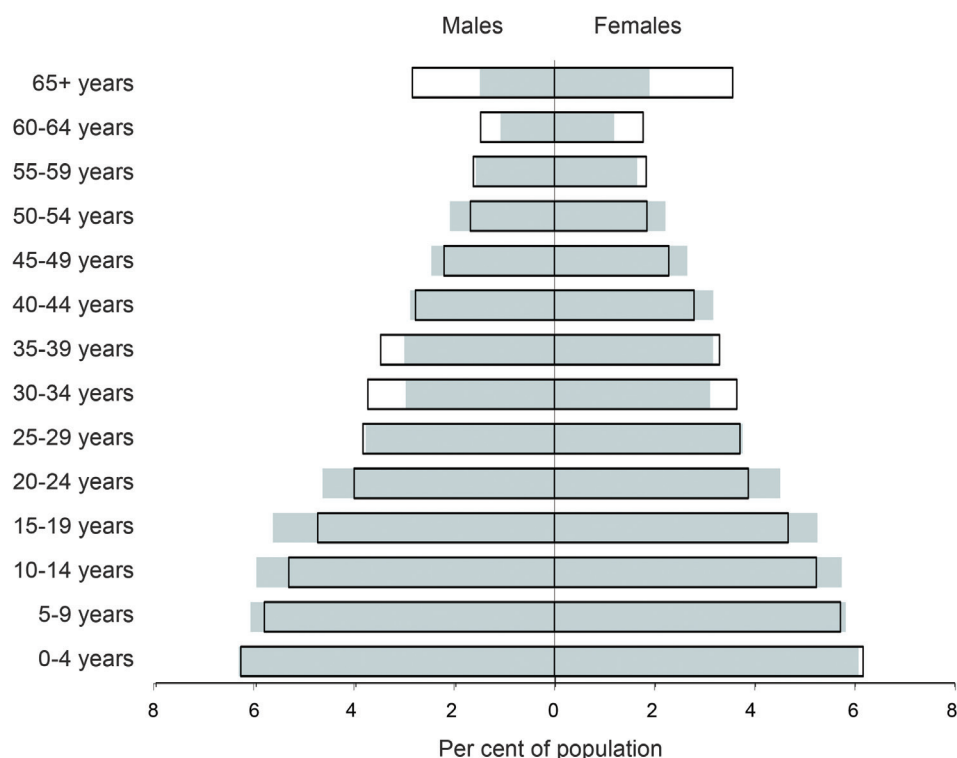
The Indigenous population is projected to become much more urban over the next 20 years. For an illustration of this change, consider the populations of Brisbane (which includes the Gold Coast) and the seven regions in the Northern Territory. In 2011, the Indigenous population of the Brisbane Indigenous Region was estimated to be around 65,000. This is slightly less than the roughly 69,000 Indigenous people who were estimated to live in the whole

of the Northern Territory. By 2031, however, the Brisbane region is projected to have an Indigenous population of a little over 132,000 people, around 50 per cent higher than the entire projected population of the Northern Territory, which is a little under 89,000.

Policy implications and future work

A rapidly growing Indigenous population could place budget pressures on those Indigenous specific programs that are delivered where Indigenous populations are increasing in overall number or across certain age groups. For programs that are funded on a fixed dollar basis per person, a large growth in the eligible Indigenous population could mean that the cost of the program would need to be either increased or spread across a greater number of people. It is perhaps even more policy relevant to note though that the growth in the Indigenous population is not projected to be evenly distributed across Australia (as demonstrated above) or across the age distribution (as discussed below).

FIG. 4. Age structure of the Indigenous population, 2011 estimates and 2031 projections



Source: Customised calculations based on the 2011 Census.

However, this impact would also be shared with mainstream programs and may not be too large overall. As the *2012 Indigenous Expenditure Report* (Steering Committee for the Review of Government Service Provision (SCRGSP) 2012) shows, nationally the majority of all government expenditure on Indigenous Australians is through mainstream programs with only 22% of coming through Indigenous specific programs. Additionally, the eastern coast states where there has been the greatest increase in Indigenous population (NSW and QLD) have even lower proportions of Indigenous expenditure coming from Indigenous specific programs (15% and 20%, respectively).

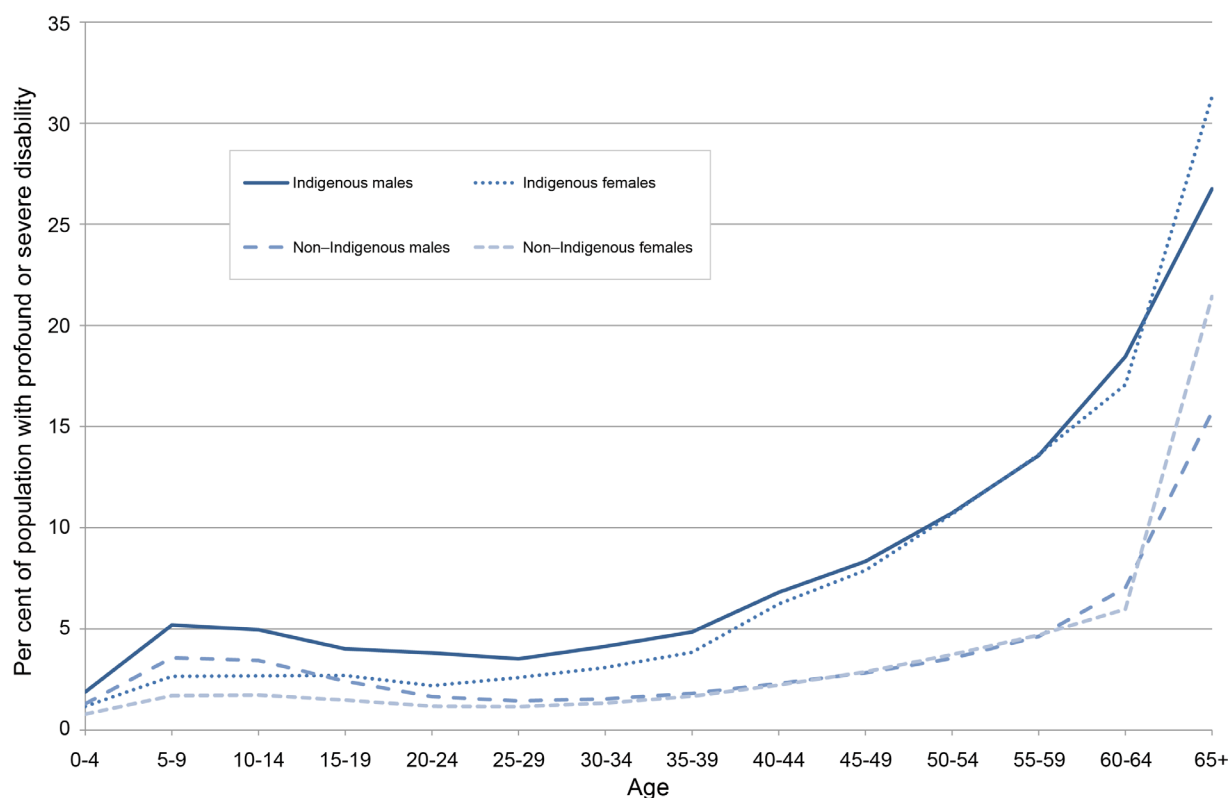
For example, although the total Indigenous population is projected to grow by 59 per cent between 2011 and 2031, the population aged 0 to 24 is only projected to grow by 47 per cent. This is still faster than the equivalent projection for the non-Indigenous population in that age group, but is much slower than the 65 and over Indigenous population, which is projected to grow by 200 per cent. What this means is that the Indigenous population in 2031 is projected to be much older than the Indigenous population in 2011, as demonstrated by the age pyramid at Fig. 4, (which gives the per cent of the 2011 and 2031 Indigenous population in each age/sex combination).

The current Indigenous population is estimated to be slightly older than the population recorded at the 2006 Census. Fig. 4 shows, however, that this aging is likely to continue, with 6.4 per cent of the Indigenous population projected to be aged 65 years and over in 2031 compared to around 3.4 per cent at the 2011 Census. This could have profound financial implications, as low rates of employment are likely to mean that Indigenous retirees have far less savings than their non-Indigenous counterparts. It is also likely to have implications for health and disability policy.

To understand why, consider Fig. 5, which details the distribution of profound or severe disability for Indigenous and non-Indigenous males and females from the 2011 Census.

Clearly, and perhaps not surprisingly, rates of disability increase substantially across the age distribution. However, it is worth noting that Indigenous males and females have a higher rate of disability than their non-Indigenous counterparts in every age group. When you apply these disability rates to the 2011 population estimates, you obtain a figure of around 19,500 Indigenous males and 17,500 Indigenous females with a profound or severe disability. This

FIG. 5. Rates of profound or severe disability by Indigenous status and sex, 2011



Source: Customised calculations based on the 2011 Census.

represents 5.9 per cent and 5.2 per cent of the respective populations.

If the above disability rates were applied to the 2031 Indigenous population, however, then it is estimated that there would be 34,300 Indigenous males and 33,600 Indigenous females with a profound or severe disability in 2031. This is not only an 83 per cent increase in the Indigenous population with such a disability, but also represents an increase in disability as a percentage of the Indigenous population to 6.6 per cent of Indigenous males and 6.3 per cent of Indigenous females, an increase of 0.7 per cent and 0.9 per cent respectively.

These population projections are in many ways preliminary and may change somewhat as new data becomes available and as different techniques are applied to them. This is an area of ongoing work within CAEPR, including as part of an Australian Research Council (ARC) linkage grant with the Commonwealth Department of Social Services (DSS) also providing support. The aim of this project (which will commence in late 2013) is to create a flexible set of population projections for the Indigenous population based on qualitative and quantitative analyses which identify the processes involved in Indigenous identification, partnering of both Indigenous and non-Indigenous peoples, births of children to Indigenous and non-Indigenous mothers, and internal migration.

While the ongoing work and release of updated statistics from the ABS will likely lead to a refined set of projections, those presented in this paper (and available for download alongside this paper on the CAEPR website) are broadly indicative, and it is quite likely that the Indigenous population will continue to grow at a faster rate than the non-Indigenous population, and that there will be an ongoing aging of the population.

For many reasons, Indigenous population increase is a good thing. It can signal a greater confidence in identifying as such, an improvement by our statistical agencies in establishing the true population or, perhaps, a greater proportion of Indigenous Australians surviving to adulthood and beyond. However, it doesn't come without complications and issues. Ideally, these issues should be thought through and planned for by policy makers and researchers well in advance in order to ensure that the lives to which Indigenous Australians aspire, and to which they are in many ways entitled, receive the type of policy support required.

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