

Welcome to Issue 79 of *Research Matters*, the Department of Environment, Land, Water & Planning's quarterly planning research bulletin, featuring DELWP research and analysis, news about recently released data, and research from other sources. If you have any questions or comments, you can contact us at:

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In this issue...

In this issue we present research and analysis from the Land Use and Population Research team.

Continuing our census 2016 series, this edition provides three articles. The first provides a census primer, including data and results

The second article examines the different measures of population, specifically the census count and the intercensal estimates. Connections between these types of population measure are explained and estimation issues discussed.

The third article provides a brief history of the census and makes some long term comparisons of household size, the prevalence of renting and the time spent by young people in educational institutions.

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The 2016 census is here: The census basics

The Australian census

On June 27, 2017, the Australian Bureau of Statistics (ABS) released the results of the 2016 census of Population and Housing which was conducted on 9 August 2016.

Every five years, the census involves a count of all people in Australia on the second Tuesday night of August. It includes visitors as well as usual residents, but does not count Australian residents who were temporarily overseas on census night.

Two types of population counts are provided from the census, one based on where people were on census night (place of enumeration), the other based on their usual residence.

The census results contains a wealth of information and can answer questions such as: the number of people who speak a language other than English at home; the types of dwellings households live in; the proportion of households in mortgage or rent stress¹ and the number of people that require care.

The comprehensiveness of the census means that it also provides this data for small areas which allows us to see how different a given place is from its neighbours, or from the state or national average.

Later in the year, information will be released about peoples' jobs (what do they do, where they work and how did they travel to work) and about changes of address (whether people have moved in the past year, the past 5 years and, if so, where).

¹ mortgage/rent stress is determined by taking into account both the income that people are earning and the amount that they are paying in mortgage or rent. A common measure of such 'stress' is where more than 30% of household income is used for housing payments.

Why do we need a census?

Population data is useful for all manner of uses including policy and decision making. Furthermore, there is a legal requirement that the government have an annual estimate of the number of people who usually live in each State, Territory, and local government area (at 30 June). These estimates are used to determine the number of seats allocated to each state in the House of Representatives; distribute GST revenue to the states; and determine state grants to local government areas.

The 2016 census results

Fears about the integrity of the 2016 census have proved unfounded with a robust 96 percent response rate, consistent with past census results. All censuses miss people and this alone does not invalidate the results of the 2016 census.

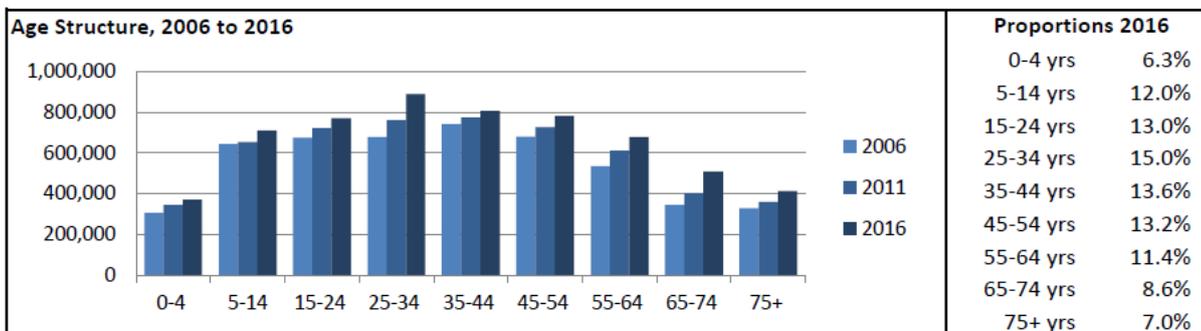
Detailed results from the census can be found at the ABS website (abs.gov.au). The Land Use and Population Research team will continue to produce a suite of census-based products. The first is a series of one-page profiles for areas, available online at: www.planning.vic.gov.au/land-use-and-population-research/census-2016.

A sample profile for Victoria is included on the following page.

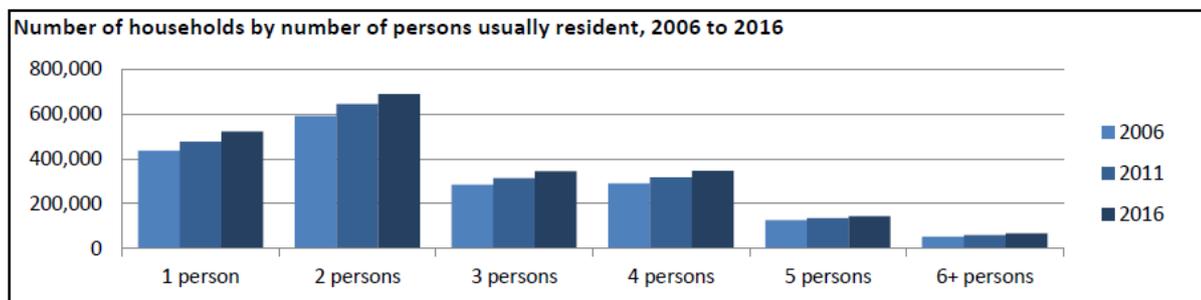
Census 2016 Fact Sheet produced by: Land Use and Population Research, DELWP | forwardpolicy.research@delwp.vic.gov.au
 Time Series Profile 2006-2016

Victoria

Count of persons by Usual Residence	Total 2006	4,932,422	Period	5-year change	Annual rate
	Total 2011	5,354,039	2006-11	421,617 increase	1.7% p.a.
	Total 2016	5,926,624	2011-16	572,585 increase	2.1% p.a.



	2006	2011	2016
Median population age in years	37	37	37
Proportion indigenous persons	0.6%	0.7%	0.8%
Proportion Australian citizens	86.3%	85.0%	81.6%
Proportion born in Australia	69.6%	68.6%	64.9%
Proportion born elsewhere	23.8%	26.2%	28.4%
Proportion speaking English only at home	74.4%	72.4%	67.9%
Proportion speaking other language at home	20.4%	23.1%	26.0%



	2006	2011	2016
Average household size	2.6	2.6	2.6
Average persons per bedroom	0.8	0.8	0.9
Proportion of households with children	42.7%	42.3%	41.4%
Proportion couple-only households	24.2%	24.6%	24.0%
Proportion lone person households	23.3%	23.5%	23.3%
Proportion group households	3.8%	4.1%	4.3%
Proportion of dwellings rented	23.9%	25.9%	27.5%
Proportion owned with mortgage	34.7%	33.0%	30.7%
Proportion owned outright	34.0%	34.5%	33.5%



Proportions may not sum to 100 per cent: not all categories may be listed, including non-response/not stated

Figure 4: One-page profile for Victoria
 Source: ABS/DELWP

Census data, ERPs and projections: what’s the connection?

Introduction: census data and ERPs

The census is the most comprehensive way to count population. However, the census only occurs every five years. More regular estimates of the number of people who usually live in Australia, is provided by the Estimated Resident Population (ERP) which is calculated every quarter.

Building from the census, the ERP is determined by adding and subtracting the different component of population change: births; deaths; and, net migration.

How are ERPs calculated?

After each census, in recognition that some changes in the population have not been counted in the ERP, the ABS re-calibrates the ERP and publishes rebased ERP numbers for the years since the previous census.

On 27 June 2017, a new ERP was published for 2016 and the years 2012 to 2015. This involved the following steps:

1. Move people back to their State of usual residence and exclude overseas visitors.
2. Account for people who were missed or perhaps counted more than once in the census (based on the ABS Post Enumeration Survey or PES) and include people who were temporarily overseas (based on overseas arrivals and departures statistics).
3. Wind back the population changes that occurred between 30 June and census night (9 August 2016) in terms of births, deaths and migration.

These steps are shown diagrammatically in figure 1 using numbers for Australia. The Australian ERP at 30 June 2016 was calculated to be 24,210,800, 3.5 percent higher than the census usual residence count (23,401,900). For Victoria, the difference was 3.4 percent (6,179,200 ERP to 5,926,600 usual residence census count).

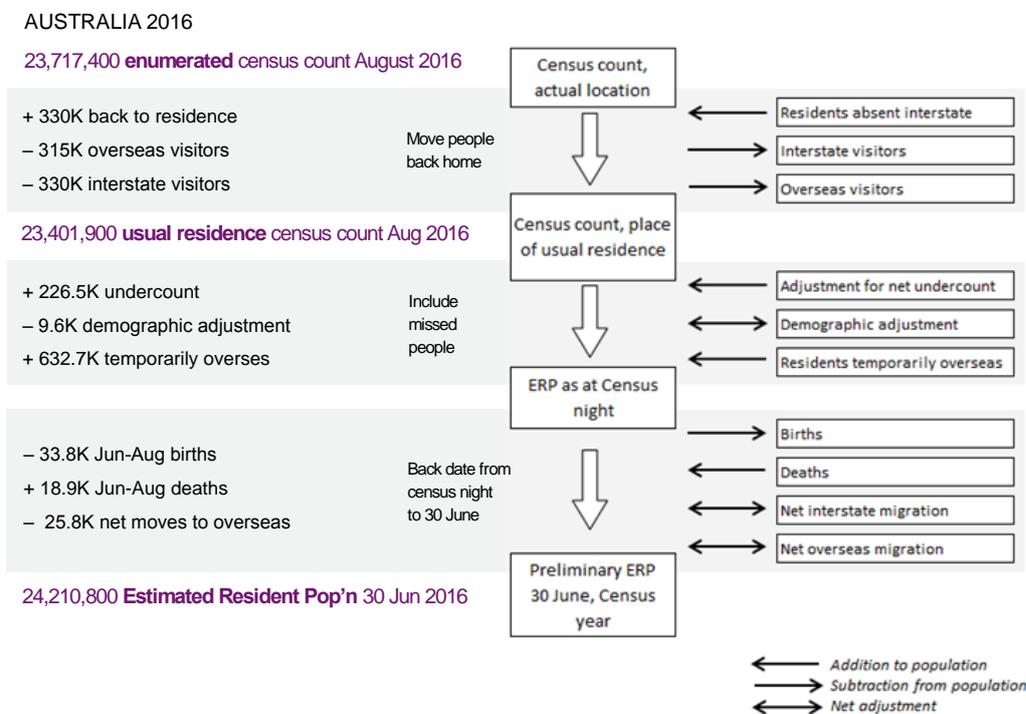


Figure 1: Census to ERP process

Source: ABS, *Australian Demographic Statistics*, cat. 3101.0, June 2017

How did the 2016 census-based ERP change?

The rebasing of ERP after each census recognises that some of the population changes in the intercensal period have not been measured accurately. The 2016 census revealed that Victoria's population had grown by 641,000 people over the 2011 to 2016 period resulting in an upward revision of Victoria's population by 108,000. The intercensal difference for each state and territory, and Australia is shown in figure 2.

	'000	%
New South Wales	10	0.1
Victoria	108.7	1.8
Queensland	6.9	0.1
South Australia	4.7	0.3
Western Australia	-57.4	-2.2
Tasmania	-1.4	0.3
Northern Territory	0.5	0.2
Australian Capital Territory	7.1	1.8
Australia	78.7	0.3

Figure 2: Intercensal difference 2011 to 2016

Source: ABS Demographic Statistics, cat. 3101.0, 2017

It is not possible to determine with certainty the components of the intercensal difference. But it is possible to make some educated guesses. It seems unlikely to be due to births or deaths as they are based on registrations and the underlying trends in both generally stable. While some births and deaths will be missed, the actual numbers are likely to be small.

That leaves migration. Migration is intrinsically more difficult to measure and is volatile. Net overseas migration is measured using incoming and outgoing passenger cards collected at ports and airports. Net interstate migration is estimated based on changes in Medicare place of address and building approvals.

Part of the explanation might be that large numbers of overseas migrants did not stay in their state of arrival (especially in Western Australia) and moved states with a strong labour market (like Victoria), without these movements being recorded as interstate migration.

The ABS will continue to look towards better understanding what drove the significant intercensal revisions between 2011 and 2016. It remains possible that we will never know, but it is nonetheless worthwhile investigating.



A look back at past censuses

The census in historical perspective

The first census in Australia was conducted by the colony of New South Wales in 1828. In 1881, the first simultaneous census of all the Australian colonies occurred. The first Commonwealth Government census occurred in 1911.

Decennial censuses continued until 1961 when the census moved to 5-year intervals. The 1971 census was the first to fully include the Aboriginal and Torres Strait Islander population. Until 1967, the Constitution did not count Aboriginals in the official population estimate.

11

A. SPECIMEN OF A FILLED IN PERSONAL CARD.
COMMONWEALTH OF AUSTRALIA.
CENSUS, 3rd APRIL, 1911.
PERSONAL CARD

For Every Person present in the Night from 2nd to 3rd April, 1911, or returning on 3rd April (if not included elsewhere).

Personal Card No. 3; of Householder's Schedule No. 27; of Mesh No. 3; of Collector's District B; of Census District No. 8. State of—Victoria.

- Name in full— *Miller, James.*
(Underline Surname.)
- Sex— { Write M for Male } *M.*
 { Write F for Female }
- Date of Birth:—Day, 3; Month, *Sept.*; Year, 1880.
(a) Where exact date of birth is unknown, age at last birthday.....years.
- { If married, write M.
 { If widowed, write W.
 { If divorced, write D.
 { If never married, write N. M. } *N. M.*
- Date of existing Marriage:—Year.....
- Number of Children (living and dead) from existing Marriage.....
(a) Number of Children (living and dead) from previous Marriage.....
- Relation to Head of Household— *Serv.*
- State if Blind or Deaf and Dumb.....
- Country (or Australian State) where Born— *Scotland.*
- { If a British Subject by Parentage, write P.
 { If a British Subject by Naturalization, write N. } *P.*
Race:—.....
- If born outside Commonwealth, state length of residence therein—
q years.
(a) Date of Arrival in Commonwealth:—Day, 13; Month, *March*; Year, 1902.
- Religion— *Presbyterian Ch. of Australia.*
- Education— *R. W. B. S. Melbourne.*
(a) At present receiving Education— *U.*
- Profession or Occupation— *Student at University.*
(If engaged in more than one occupation, underline principal occupation.)
(a) State if Employer or Employee, etc.....
(See Instructions, page 4, line 14 (a) and (b)).
(b) If out of work, state period.....
(c) Occupation of Employer (if any).....

Figure 1: 1911 census personal card

Source: ABS

The census has grown with Australia. In the 1911 census there were 14 questions and the 4 million cards were processed by hand by 250 sorters (figure 1). The 1954 census had 24 questions, the 1976 53 and the 2016 census over 60 questions with 8.4 million responses (4.9 million of which were online).

The distant past ...

Comparisons over long periods of time are possible because the same questions have been included in several censuses. Perennial favourites include questions about educational attainment; marriage; profession; and country of birth. Looking back at the past censuses provides valuable context for how we look at the present.

Households have become much smaller (figure 2).

	1911	1954	2016
Average persons per dwelling	5.0	3.7	2.6

Figure 2: Average persons per dwelling

Source: ABS

The proportion of people renting is similar to that for 1933 during the Great Depression (figure 3).

	All dwellings			
	1933	1947	1954	2016
Outright owner	52%	45%	50%	31%
Mortgagee	17%	8%	16%	34%
Renter	28%	43%	31%	31%
Other	3%	3%	3%	1%
Not stated	0%	1%	1%	3%
% Total	100%	100%	100%	100%
No. Total	2,056,019	1,873,623	2,243,421	8,286,077

Figure 3: Home ownership statistics

Source: ABS

Younger people now spend longer in educational institutions (figure 4).

	1911	1933	2011
Under 5	2%	2%	31%
5 to 9	81%	85%	88%
10 to 14	81%	87%	91%
15 to 19	9%	12%	63%
20 and over	0%	0%	7%

Figure 4: Proportion of population in education by age (not yet available for 2016)

Source: ABS