

Western Australia small area population and enrolment projections

Method

This paper explains the process of producing Western Australia's projected enrolment at 2 February 2025 by Electoral Divisions and Statistical Areas Level 1 (SA1).

Summary of process

1. State projections. The total Western Australia population at 30 June 2020–2025 was projected by single year of age and sex, from a base (observed) population at 30 June 2019.
2. Greater Capital City Statistical Areas (GCCSA) projection. The total Greater Perth and rest of Western Australia population at 30 June 2020–2025 was projected by single year of age and sex, from a base (observed) population at 30 June 2019.
3. Statistical Areas Level 2 projection. The total population aged 18 years and over of all SA2s in Western Australia at 30 June was projected, from a base population at 30 June 2019, and constrained to the corresponding GCCSA region populations.
4. Statistical Areas Level 1 projection. The total population aged 18 years and over of all SA1s in Western Australia at 30 June was projected, and constrained to the corresponding SA2 populations.
5. Projected population at 15 July 2020 and 2 February 2025 was calculated by linear interpolation between the projected populations at 30 June.
6. The projected enrolment at 2 February 2025, by SA1, was calculated by applying an enrolment ratio to the total projected population aged 18 years and over at 2 February 2025. The enrolment ratio was the enrolment at 15 Jul 2020 by SA1 divided by the population projection at that date.
7. Some SA1s cover more than one Electoral Division. The proportion of each SA1 population corresponding to an Electoral Division was the number of enrolled persons at 15 July 2020 in each unique Electoral Division and SA1 combination divided by the total enrolled persons for the corresponding SA1. The final enrolment at 2 February 2025, by Electoral Division and SA1, was the population from step 5 multiplied by the correspondence proportion.

Population projection

The method employed for projecting the population for Western Australia was the cohort-component method, widely accepted as the best way of producing age/sex population projections. Annual fertility

rates, mortality rates, internal migration, and overseas migration by age and sex were applied to the base population to produce a projected population, which then became the base population for projecting the next year and so on. This cycle was repeated until the projection horizon was reached.

The same cohort-component method was then used to project population for the Greater Perth region and the rest of Western Australia (GCCSA). The projected population and components for these regions were proportionally constrained to the projected state population, and were constraints for the subsequent Statistical Areas Level 2 (SA2) projections.

For each SA2 in Western Australia, total population aged 18 years and over was projected using a component method. Projected components of population aged 17, deaths, net internal migration and net overseas migration for constraining regions (GCCSA) was distributed amongst SA2s according to average historical data from 2017 to 2019. Some adjustments were made where recent average growth did not fit a trend, such as areas with recent accelerating growth rates and large capacity for new dwellings. The projected SA2 populations were proportionally constrained to the projected total populations aged 18 and over in Greater Perth and the rest of Western Australia.

For each SA1 in Western Australia, total population aged 18 years and over was projected using average historical growth rates from 2015 to 2019. The totals of projected SA1 populations were proportionally constrained to the corresponding SA2 populations.

Enrolment projection

To calculate the projected enrolments for each SA1, the projected population aged 18 years and over at 2 February 2025 was multiplied by the enrolment ratio. The enrolment ratio is the enrolment at 15 July 2020 (supplied by AEC) divided by the projected population at that date.

The enrolment ratio at 15 July 2020 was assumed to be constant up to 2 February 2025, except for some adjustments to outliers.

The adjustments to ratios were conservative and aimed to bring more ratio values towards the centre. The adjustments – mostly increases – were also needed to maintain the same total enrolment ratio for Western Australia at 15 July 2020 and 2 February 2025.

The first set of adjusted outlying ratios were those with high population growth and a low enrolment ratio that did not reflect the proportion of resident Australian citizens known from Census 2016, which ABS assumed was lag in updating electoral roll address. These ratios were increased for the end date.

The other set of outliers were areas with flat or declining populations and high enrolment ratios, also explained by lag in updating roll address, and these ratios were decreased for the end date.

Assumptions

The base population for the Western Australia cohort-component projections was preliminary age/sex estimated resident population (ERP) as at 30 June 2019, as released by the ABS in [Australian Demographic Statistics](#) on 18 June 2020. The base population for GCCSA, SA2 and SA1 projections was preliminary age/sex ERP at 30 June 2019, as released by the ABS in [Regional Population by Age and Sex](#) on 28 August 2020.

Assumptions for the state projection were based on both short and long-term trends for each component of population change. Fertility assumptions do not affect the projection for the adult population at 2 February 2025. These assumptions were specified and agreed to by the Australian Electoral Commission.

Population component	Year ending 30 June					
	2020	2021	2022	2023	2024	2025
Mortality – standardised death rate	4.90	4.80	4.80	4.71	4.71	4.62
Net interstate migration – persons	-4,124	-8,905	-8,905	-8,905	-8,905	-8,905
Net overseas migration – persons	15,303	0	9,513	19,026	19,026	19,026

GCCSA component assumptions were based on 2017 to 2019 trends as published in [Regional Population Growth](#), and constrained to the state totals.

SA2 component assumptions were the 2017 to 2019 average distribution of SA2 components amongst each GCCSA region.

SA1 population assumptions were 2015 to 2019 average historical growth.

Data and method quality

The relationship between the enrolment count and the projected population at 15 July 2020 is weaker for smaller areas, and subject to various data quality issues including:

- The difference between the projected and the actual (yet to be estimated) population
- Less reliability in population data for small areas
- Variation in real enrolment rates across Western Australia due to varying rates of eligible people (Australian citizens), propensity to enrol and propensity to update roll address.

SA1 population projections are partly based on SA1 ERP. For statements on the quality of SA1 ERP, see the accompanying document 'Explanatory Notes – ASGS 2016 SA1 ERP (2001-2019)'.

The projections don't account for future development and population growth that hasn't been observed in ABS population data (up to 30 June 2019).

Some SA1s with outlying ratios of roll count to population can be explained well. These include areas with population not eligible to vote:

- Prisons
- Low proportion of Australian citizens

As well as populations that tend to not update their enrolment address:

- High proportion of the population living in staff quarters, most often in mining areas
- Student accommodation

Geography

SA1 boundaries are from the [Australian Statistical Geography Standard \(ASGS\): Volume 1 – Main Structure and Greater Capital City Statistical Areas, July 2016](#) (ABS cat. no. 1270.0.55.001), as used for the 2016 Census.

Disclaimer

It is important to recognise that the projection results in this report reflect the assumptions made about future fertility, mortality and migration trends. While these assumptions are formulated on the basis of an objective assessment of historical demographic trends and their plausible future dynamics, there can be no certainty that they will be realised.

The ABS takes responsibility for the method employed, however in accordance with ABS policy regarding small area population projections, the assumptions used are the final responsibility of the client, and the projections are not official ABS population statistics.

The projections may be referred to as "...projections prepared by the ABS according to assumptions reflecting prevailing trends agreed to by the Australian Electoral Commission".

No liability will be accepted by the ABS for any damages arising from decisions or actions based upon this population projection consultancy service.