Modelled sub-state estimates by Indigenous status, Qld, data quality statement

Introduction

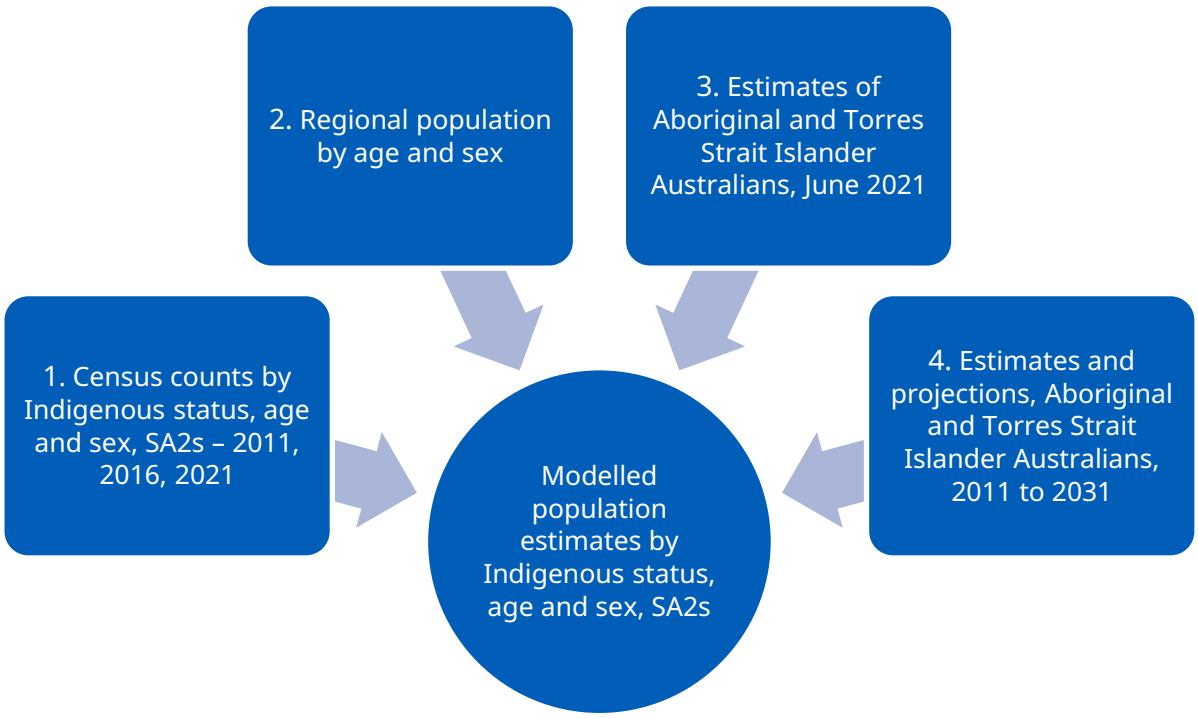
Detailed modelled population estimates by Indigenous status have been produced by:

- Indigenous status (Aboriginal and Torres Strait Islander, and non-Indigenous)
- Queensland statistical areas level 2 (SA2s) based on the 2021 Australian Bureau of Statistics (ABS) Australian Statistical Geography Standard (ASGS 3rd Edition)
- age (five-year age groups to 64 years, and 65 years and over) and sex
- years 2011 to 2024.

Estimates from 2011 to 2021 (2021 Census based) are final; 2022 to 2023 are revised; and 2024 estimates are preliminary and therefore subject to change. The final, revised or preliminary status of these modelled estimates is consistent with the status of small area population estimates by age and sex published by the ABS in *Regional population by age and sex*[1].

These estimates have been modelled using four ABS data sets, each of which contains inherent error affecting the data quality of the modelled estimates. The iterative proportional fitting technique used to create these modelled estimates has ensured that the estimates are consistent with population estimates published by the ABS.

The following figure shows the four ABS data sets used to compile the estimates for sub-state areas in Queensland:



[1] Regional population by age and sex, 2024 | Australian Bureau of Statistics

Sources of error

Census of Population and Housing

The principal sources of error in census data include:

- significant volatility in Aboriginal and Torres Strait Islander counts between censuses and within age-sex structures at the SA2 level
- undercount of both the total population, and for persons identifying as being of Aboriginal and/or Torres Strait Islander origin
- level of non-response to the ABS Standard Indigenous Question
- introduced random error in census output through the perturbation[2] of census counts.

For example, census counts for Wujal Wujal Local Government Area (LGA) in 2011 indicated zero males and 20 females aged 0–4 years[3]. This resulted in 2011 population estimates of zero males and 22 females in the 0–4 years age group in this LGA[1].

Small area population estimates by age and sex for the total population

Small area population estimates published by the ABS are based on census counts in census years, while a mathematical model is used to create estimates for intercensal years. The accuracy of these estimates is therefore directly related to the suitability of the mathematical model for non-census years. The methodology used by the ABS is published alongside the annual release of estimates in *Regional population by age and sex*[1].

Aboriginal and Torres Strait Islander population estimates and projections at the state level

Aboriginal and Torres Strait Islander population estimates and projections at the state level have been produced using the cohort-component method. A 2021 base population has been used, with projections for later years being generated by advancing year by year and applying assumptions regarding future fertility, mortality and migration. A similar technique was used to estimate populations prior to 2021, by 'reverse-surviving' the population using mortality rates derived from life tables.

Therefore, while the 2021 figures are estimated resident population (ERP) numbers, the projections are based on assumptions, and are not predictions, forecasts or ERP numbers. Back-cast estimates are based on assumptions and are also not ERP numbers.

Caveats

Due to sources of error in the various source data sets used to model these estimates, these numbers should be used with caution.

Data cells may not precisely sum to published totals due to rounding.

[2] Perturbation is a technique which has been developed to randomly adjust count values.

[3] ABS, 2011 Census of Population and Housing, *Basic Community Profile*, Table B04 Age by Sex.

Data feature

The ABS back cast estimates of Queensland's Aboriginal and Torres Strait Islander 0–4 year old population for the years 2017 to 2021 are lower than expected when compared with non-ABS data sets. This is due to an assumed gradual reduction in the estimated number of 0-year-olds over this period. However, both perinatal live births data and ABS birth registration data show an increase in Aboriginal and Torres Strait Islander babies over the 5-year period 2016 to 2021. There is also a feature in the ABS time series between 2021 and the first year of the projection series (2022) for 0-year-olds, which carries forward in the projection series to 2031 as this cohort ages. The 'feature' shows a 21.4% increase in the number of 0-year-olds from 2021 to 2022.

Users should use the estimates and projections for babies and young children with caution and consider the implications of these issues when reporting for the youngest cohorts.

Best practice use of the estimates

While modelled estimates were produced at the SA2 level, for age, sex, and Indigenous status, estimates have only been released publicly at the SA4 and Remoteness Area level, and for 5-year age groups, in acknowledgement of the experimental nature of the estimates and to discourage improper use of, or reliance on the data at the more detailed levels.

A high degree of accuracy at the SA2 level cannot be assumed, however the quality of the modelled estimates increases at higher levels of aggregation (for example, larger geographical units; for persons only; or for larger groupings of age categories).

The 2025 edition of modelled estimates should not be used with any previously released time series based on earlier census base years, due to the high level of unexplained increase between censuses causing a break between each rebased time series. For example, the estimate of Aboriginal and Torres Strait Islander Queenslanders at 30 June 2011 was 188,954 persons in the 2011 Census based time series, was adjusted to 198,776 persons in the 2016 Census based time series and further increased to 218,047 persons in the 2021 Census based time series.