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# Northern Territory small area population projections

## Methods & assumptions

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This paper explains the process of producing the Northern Territory (NT) projected enrolled population at 4 September 2028 by Statistical Area Level 1 (SA1). ABS has used the most up-to-date population data available as at 22 February 2024.

### 1. Projection Method

The method employed for projecting the population for NT was the cohort-component method, widely accepted as the best way of producing population projections by age and sex. 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.

For each SA1 in NT, total population aged 18 years and over was projected using average historical growth from 2016 to 2022. The projected SA1 enrolment counts were proportionally constrained to the projected total NT enrolment count.

Complete process:

1. State projections. The total NT population was projected by single year of age and sex from 30 June 2022 to 30 June 2029. The base for NT (and SA2's) was 30 June 2022. For 30 June 2023, the NT total population aligned with 30 June 2023 estimated resident population published in December 2023.
2. Greater Capital City Statistical Area (GCCSA) projections. The total population of both GCCSAs in NT at 30 June 2023 to 30 June 2029 was projected by single year of age and sex, from a base (observed) population 30 June 2022, and constrained to the state level.
3. Statistical Area Level 2 (SA2) projections. The total over-18 population of all SA2s in NT at 30 June 2023 to 30 June 2028 was projected by single year of age and sex, from a base (observed) population 30 June 2022, and constrained to the GCCSA level.
4. Projected population at the roll count date, 22 February 2024, and the enrolment projection date, 4 September 2028, was calculated by linear interpolation between the projected populations at 30 June 2022 and 30 June 2029.
5. The share of NT SA1 over-18 population by SA2 over-18 population at 30 June 2023 and 30 June 2029 was estimated by extrapolating the average change between 30 June 2016 and 30 June 2022 up to 30 June 2026, before being held constant for 30 June 2027 to 30 June 2029. This was then applied to the projected SA2 over-18 population at 4 September 2028.
6. The enrolled population at 4 September 2028, by SA1, was calculated by applying a ratio to the total over 18 population. The ratio assumed no change over the projection timeframe and was the enrolled population at 22 February 2024 divided by the projected over-18 population at 22 February 2024 for each SA1. The enrolled population at 4 September 2028 was then constrained to the total projected NT electors at 4 September 2028 which was calculated by applying the same enrolment ratio calculation at the state level.

## 2. Assumptions at the State level

Assumptions for the state-level projection were based on both recently observed and long-term trends for given components of population change. Assumptions for the components of natural increase (births and deaths) were taken from previously published *National, state and territory population* data. Assumptions for both net internal and overseas migration were developed by combining observed, forecasted, and extrapolated data for the timeframe from June 30 2022 to June 30 2029 to reflect the impacts of the COVID-19 pandemic and subsequent ongoing recovery period. To project future migration outcomes, the annual pre-pandemic ten-year weighted average from 1 July 2009 to 30 June 2019 was calculated<sup>1</sup>. The first two years after 30 June 2022 represented a weighted share of national Net Overseas Migration (NOM) for NT. The national NOM figure used was 4,800 for July 1 2022 to 30 June 2023, and 3,465 for 1 July 2023 to 30 June 2024. The difference between the 30 June 2022 data and the long-term trend was then calculated and the difference progressively added over July 1 2024 to June 30 2026, with an additional one-half of the difference each year, to simulate a return to long-term trends in both internal and overseas migration<sup>2</sup>. The annual long-term trend was then held constant for the time July 1 2026 to 30 June 2029.

Table 1: Assumed components for Northern Territory, 2024-2029

Population component	Year ending 30 June					
	2024	2025	2026	2027	2028	2029
Fertility – total fertility rate <sup>A</sup>	1.76	1.76	1.76	1.75	1.75	1.75
Mortality – Standardised Death Rate	7.3	7.3	7.2	7.2	7.1	7.1
Net interstate migration – persons <sup>B</sup>	-2,500	-2,250	-1,750	-1,500	-1,500	-1,500
Net overseas migration – persons <sup>B</sup>	4,508	4,093	3,696	3,318	2,959	2,620

<sup>A</sup> Rounded to the nearest hundredth.

<sup>B</sup> Rounded to the nearest ten.

## 3. Assumptions at the Greater Capital City Statistical Area level

A similar process was used for determining migration assumptions at the GCCSA level, with a weighted time period of 1 July 2012 to 30 June 2019 considered, selected for the most recently available data as well as to remove years affected by the Covid-19 pandemic<sup>3</sup>. Total internal and overseas movements up to 30 June 2022 were used from [Regional population, 2021-22 financial year](#) data published on 31 August 2023.

<sup>1</sup> This involves giving increasingly greater weight to the years closer to the projection base year.

<sup>2</sup> For Overseas Migration, this incorporates suppressed movements due to the pandemic and then record net gain during the ongoing recovery period. This is guided by research from Treasury's Centre of Population (Centre for Population, 2022; The Australian Government the Treasury, 2023a; The Australian Government the Treasury, 2023b). This is revised from previous estimates that forecasted internal and overseas migration wouldn't return to long-term trends until the end of the 2024-25 Financial Year (Centre for Population, 2022; Charles-Edwards et al., 2021).

<sup>3</sup> Regional Internal Migration Estimates (RIME) and Regional Overseas Migration Estimates (ROME) data has only been published below the state-level starting from the 2011-12 Financial Year, while Net Internal Migration (NIM) and Net Overseas Migration data goes back to 1971. RIME at the GCCSA level does not add up to NIM at the state level, as RIME also considers inter-GCCSA movements that aren't captured by inter-state movements in NIM.

Table 2: Assumed components for Greater Darwin, 2024-2029

Population component	Year ending 30 June					
	2024	2025	2026	2027	2028	2029
Fertility – total fertility rate <sup>A</sup>	1.67	1.67	1.67	1.67	1.67	1.67
Mortality – Standardised Death Rate	6.2	6.1	6.1	6.1	6.0	6.0
Regional Internal Migration Estimates – persons <sup>B</sup>	-1,380	-1,221	-995	-768	-768	-768
Regional Overseas Migration Estimates – persons <sup>B</sup>	3,215	2,943	2,679	2,424	1,723	1,543

<sup>A</sup> Rounded to the nearest hundredth.

<sup>B</sup> Rounded to the nearest ten.

Table 3: Assumed components for Rest of Northern Territory, 2024-2029

Population component	Year ending 30 June					
	2024	2025	2026	2027	2028	2029
Fertility – total fertility rate <sup>A</sup>	1.76	1.76	1.76	1.76	1.76	1.76
Mortality – Standardised Death Rate	9.6	9.5	9.4	9.3	9.2	9.1
Regional Internal Migration Estimates – persons <sup>B</sup>	-1,445	-1,162	-947	-732	-732	-732
Regional Overseas Migration Estimates – persons <sup>B</sup>	1,293	-1,150	1,017	894	1,236	1,077

<sup>A</sup> Rounded to the nearest hundredth.

<sup>B</sup> Rounded to the nearest ten.

#### 4. Assumptions at the Statistical Area Level 2 and below

Migration profiles at the SA2 level were based on internal and overseas migration data by age and sex from 1 July 2021 to 30 June 2022. This data was selected as the best going forward due to the high level of aggregation, with only the total over-18 population at each geographical level being required, and the data being the most recently available.

SA1 population assumptions were average annual historical growth in the share of total over-18 population of corresponding SA2 population from 30 June 2016 to 30 June 2022, extrapolated to 30 June 2026 and then assumed constant to 30 June 2029.

The ratio of enrolled population to total over-18 population at 22 February 2024 was assumed to be constant up to 4 September 2028, except for some outliers. The adjustments to these include both areas with declining populations and rapidly growing areas having high ratios, which the ABS has interpreted as a lag in the updating roll address. Other areas were adjusted to account for population declines, which could be influenced by SA2-level data from the Covid-19 being carried forward through the projection horizon.

#### 5. Data and method quality

The relationship between the roll count and the projected population at 22 February 2024 maintained a consistent relationship across the projection horizon. However, other quality issues may persist as they are unable to be isolated and so cannot be accounted for. As such, anomalous SA1s could be subject to further adjustments.

Other SA1s with anomalous ratios of roll count to population can be explained. These include areas with

- Prisons
- Indigenous communities
- Secondary and tertiary student accommodation
- Areas with recorded enrolments but no or little ERP prior to 30 June 2022.

We (ABS) have made some adjustments to 12 SA1's which showed roll count declines of between 11% and 55% (average decline of 24%) out to 2028. The adjustments were:

1. Set the 12 fast decline SA1's to zero change by adding enrolments.
2. Offset this adjustment by scaling every other SA1 in NT by slightly reducing enrolments.

This approach maintained the NT totals and NT growth trajectory.

The justification for treating the fast declining SA1's was that they were Indigenous communities. Although the model did pick up recent declines in ABS ERP, it was not considered defensible to assume these declines would continue through into 2028.

## 6. Geography

SA1 boundaries are from the [Australian Statistical Geography Standard \(ASGS\): Edition 3 – Main Structure and Greater Capital City Statistical Areas, July 2021](#) (ABS cat. no. 1270.0.55.001), as used for the 2021 Census.

## 7. 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 likely 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.

## 8. References

The Australian Government the Treasury, Centre for Population, 2023a, *2022-23 Budget: Australia's Future Population*.

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Centre for Population 2022, *Population Statement 2022*, The Australian Government Canberra.

Charles-Edwards, E., Wilson, T., Bernard, A., Wohland, P., 2021, 'How will COVID-19 impact Australia's future population? A scenario approach', *Applied Geography*, vol.134