

# Producing time-series estimated resident populations by Indigenous Area for Aboriginal and Torres Strait Islander people

## Key points

### Background

To counter the relatively large increases in Aboriginal and Torres Strait Islander population numbers recorded at subsequent population censuses, PHIDU contracted a consultant to produce a smoothed set of population estimates for the period 2001 to 2016. The estimates were produced at the Indigenous Area level, to use in the calculation of death rates for a time series analysis at this geographic level.

### Results

The rates produced using the smoothed populations resulted in a more even decline.

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# Producing time-series estimated resident populations by Indigenous Area for Aboriginal and Torres Strait Islander people

## Introduction

This document describes the process used to prepare populations for Aboriginal and Torres Strait Islander (referred to as Indigenous) people by Indigenous Area (IARE) and age group over the years 2001 to 2016. These populations were used to prepare the rates for Indigenous (and non-Indigenous) deaths published as revised rates in the Closing the gap Time Series Atlas (see under Topic-specific Atlases [here](#)).

## Discussion

The Australian Bureau of Statistics (ABS) produces counts of the usual resident population (URP) at each Population Census by age group and by sub-state geographical area. The URP is then adjusted, using the results of the Census Post Enumeration Survey (PES)<sup>1</sup>, to produce the estimated resident population (ERP), the official estimate of the Australian Indigenous population, on which rates (e.g., for deaths, hospitalisations) are based.

Over time, the growth of the Indigenous population has varied between Censuses, often by relatively large amounts. Since 2001, the largest increases in counts (URP) have been between the 2006 and 2011 Censuses (an increase of 20.5%) and between the 2011 and 2016 Censuses (an increase of 18.4%). The ABS note that, with respect to the most recent period, most (78.6%) of the increase can be accounted for by explainable demographic factors of population change – births, deaths and migration<sup>2</sup>. However, the remaining 21.4% of the increase cannot be explained by typical factors of population change and equates to 3.3% of the total 2016 Census count of Aboriginal and Torres Strait Islander people (factors of unexplainable change in Census counts include: coverage, response rates and a changing propensity to identify). This increase did not occur consistently across the country and was primarily focused in Major Cities and Inner Regional areas, particularly in New South Wales.

To publish data at the IARE level, Indigenous populations by age are needed, both at a point in time and over time. As the ABS does not produce time series data at the IARE level between Censuses, we initially averaged the populations between Censuses. This produced populations that varied over time in a step-wise fashion, reflecting the large inter-censal increases referred to above. When applied to, for example, the number of deaths before 65 years of age, rates also vary in this way, as shown in the chart below (see the ‘Original rate’ line in Figure 1), where the IARE rates have been aggregated to Australia.

We asked Dr. George Preston, who has in the past produced Indigenous population estimates for Australia for Statistical Areas Level 2 (SA2, produced for PHIDU, on behalf of the Department of Health, prior to the 2016 Census, when the only available population (denominator) data were for 2011, and numerator data were available for years to 2016).

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<sup>1</sup> ABS. 2940.0 - Census of Population and Housing: Details of Overcount and Undercount, Australia, 2016, Available at <https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2940.0~2016~Main%20Features~About%20the%20Census%20Post%20Enumeration%20Survey~2>; last accessed 28 June 2021.

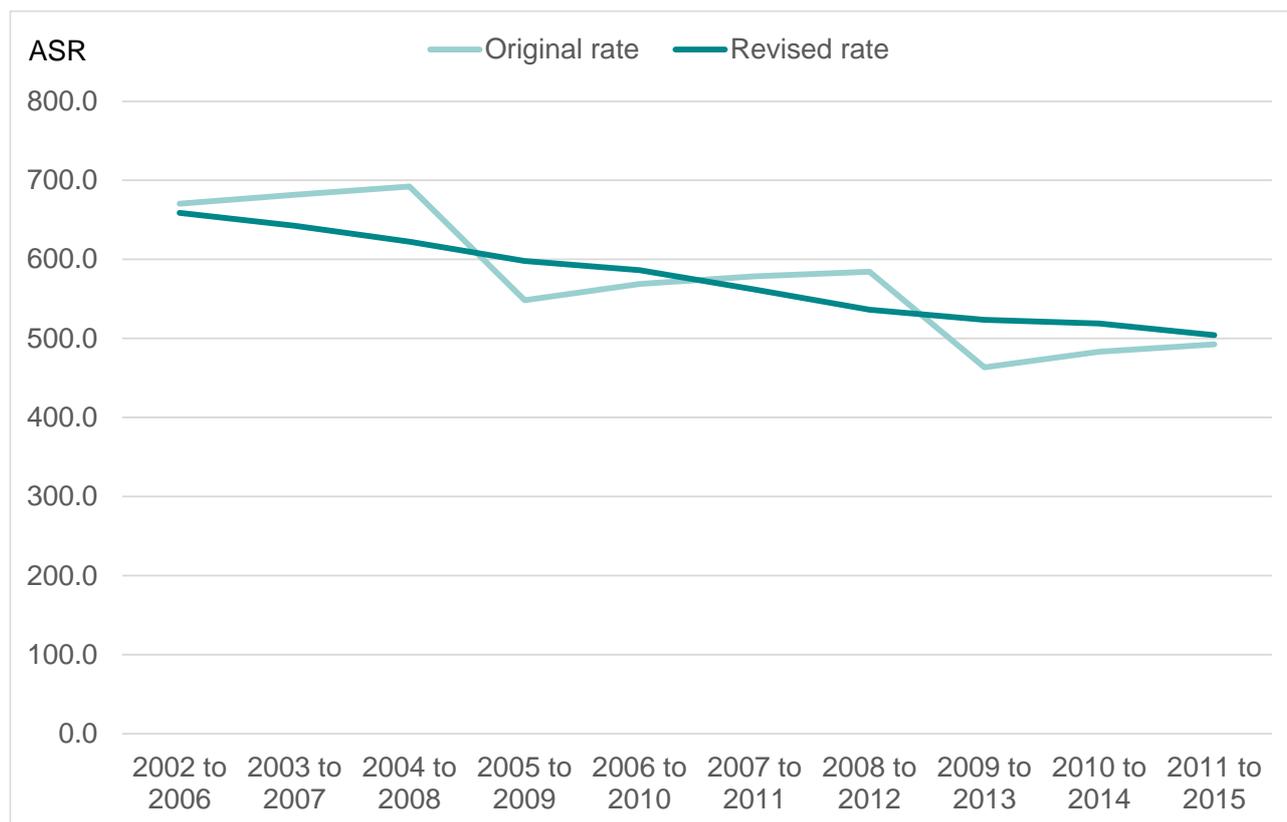
<sup>2</sup> ABS. Census of Population and Housing: Understanding the Increase in Aboriginal and Torres Strait Islander Counts. Available at <https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/census-population-and-housing-understanding-increase-aboriginal-and-torres-strait-islander-counts/latest-release>; last accessed 28 June 2021/

Following that work he was asked by the New South Wales Ministry of Health to produce a 'smoothed' set of estimates at the SA2 level for the years from 2006 to 2016.

The paper [here](#) describes Dr. Preston's approach to producing estimates at the IARE level from 2001 to 2016. It includes a link to his program, written in R (programming language).

The rates produced using the smoothed populations are shown in Figure 1 alongside the original rates.

Figure 1: Indigenous premature mortality rates using ABS (original) and PHIDU (revised) populations



Note: ASR is the indirectly, age-standardised rate per 100,000 population

### Non-Indigenous populations

Rates for the non-Indigenous population were also re-calculated, with the populations produced by subtracting the revised Aboriginal and Torres Strait Islander population in each IARE from the published ABS ERP for the year.