# Potentially preventable hospitalisations in Australia by small geographic areas, 2020–21

Potentially preventable hospitalisations in Australia include admission to hospital for a condition where the hospitalisation could have potentially been prevented through the provision of appropriate, individualised preventative health interventions and early disease management, usually delivered in primary care and community-based care settings (including by general practitioners, medical specialists, dentists, nurses and allied health professionals).

This Technical information document details the specifications used to analyse potentially preventable hospitalisations data in Australia for the AIHW's *Potentially preventable hospitalisations in Australia by small geographic areas, 2020–21* data.

An overview of data analysis and methodology applied to the 2020–21 data is highlighted in the table below.

## Key information

| | **This release:** Potentially preventable hospitalisations in Australia by small geographic areas, 2020–21 |
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| **Definition** | Data for this measure are defined in accordance with the [National Healthcare Agreement (NHA) indicator PI 18-Selected potentially preventable hospitalisations, 2022](#) |
| **Numerator source** | Data were sourced from the [National Hospital Morbidity Database](#) (NHMD) held by the AIHW. |
| **Denominator source** | Population counts at 31 December 2020 are based on [Australian estimated resident populations](#) at 30 June 2020 and 2021, and are calculated by averaging. |
| **Reporting years** | 2020–21 |
| **Geographical areas** | National, PHN, and SA3. |
| **Scope of data** | 22 Potentially preventable hospitalisation (PPH) conditions<br>3 Potentially preventable hospitalisation (PPH) categories (with subtotal and total) |

# Technical information

## About the data

The AIHW compiles the National Hospital Morbidity Database (NHMD) from data supplied by State and Territory health authorities. It is a collection of electronic, confidential summary records for admitted patient separations (the process by which an episode of care for an admitted patient is completed) from public and private hospitals in Australia.

Australian estimated resident population data are sourced from the Australian Bureau of Statistic's Regional population by age and sex, 2021 (ABS cat. no.3235.0).

Hospital data and populations were accurate as at 5 January 2023.

### Hospitals data

1. The counting unit for this publication were episodes of care, measured by financial year of separation (completed episode of care for an admitted patient). This may be a complete hospital stay (to discharge, transfer, or death), or a part of the stay if there was a change of care type (for example from acute to rehabilitation). As a record is included for each hospitalisation, not for each patient, patients hospitalised more than once or transferred between hospitals in the financial year will have more than one record.

2. Episodes for *unqualified newborn care*, *posthumous organ procurement*, *hospital boarders* and missing age were excluded.

3. For more detail on data quality issues and changes to coding over time, see Admitted patient care 2020–21: Data Quality Statements.

## Geography

The report presents information nationally and by sub-national geography:

- Primary Health Network (PHN) areas – 31 geographic areas covering Australia, with boundaries defined by the Australian Government Department of Health and Aged Care (2017).

- Statistical Area Level 3 (SA3) – 340 geographic areas covering Australia, with boundaries defined by the ABS (2016).

1. Geography is based on area of usual residence—Statistical Area Level 2 (SA2)—as recorded in the NHMD

2. Data has been reported for the Primary Health Network (PHN) 2017 areas, and the Statistical Area Level 3 (SA3) 2016, based on correspondences from the Australian Statistical Geography Standard (ASGS) 2016. ASGS geographic correspondences (2016) were obtained from data.gov.au.

3. There have been changes to PHN boundaries over time. This report uses concordances from 2017 based on the 2016 ASGS and 2016 Census population. Further information is available from the Department of Health and Aged Care PHN page.

4. National totals include data where place of usual residence was overseas, no fixed abode, offshore and migratory, and undefined; these records are excluded from PHN area and SA3 estimates. National totals may not match the sum of sub-national geography.

## Age standardised rates

1. Age standardised rates are hypothetical rates that would have been observed if the populations studied had the same age distribution. This facilitates comparisons between populations with different age structures and changes over time within an area. This adjustment is important because the prevalence of health conditions and rates of health service use vary with age.

2. Age standardised rates were derived by calculating crude rates by five-year age groupings of 0–4 years to 85+ years. These crude rates were then given a weight that reflected the age composition of the standard population
(ABS ERP for Australia as at 30 June 2001).

## Definitions and measures

Potentially preventable hospitalisation: this measure is defined in accordance with the [National Healthcare Agreement (NHA) indicator PI 18-Selected potentially preventable hospitalisations, 2022](#), and reported nationally, and by small geography, PHN and SA3.

**PPH per 100,000 people (crude):** Number of potentially preventable hospitalisations per 100,000 population. Rates are calculated using the estimated population as at 31 December 2021 for each geographic area.

**PPH per 100,000 people (age-standardised):** Age-standardised rates are directly age standardised to the Australian estimated resident population as at 30 June 2001. Rates are expressed as potentially preventable hospitalisations per 100,000 persons for each geographic area.

**Number of PPH:** Total number of potentially preventable hospitalisations in an area for the specified PPH condition.

**Number of same-day PPH:** Number of potentially preventable hospitalisations where the admission and separation occur on the same date.

**Percentage of PPH that are same day (%):** Number of same-day potentially preventable hospitalisations divided by the total number of potentially preventable hospitalisations, by area and PPH condition, rounded to one decimal place.

**Total PPH bed days:** The sum of the number of days from admission to separation for potentially preventable hospitalisations, by area and PPH condition. Same day hospitalisations are allocated one bed day and leave days are excluded.

**Average length of stay (days):** The number of bed days divided by the number of potentially preventable hospitalisations, including same day hospitalisations, by area and PPH condition, rounded to one decimal place.

Counts are rates are rounded to whole numbers. Counts and rates may not sum to the total, due to rounding and population estimates. Additionally, some hospitalisations may account for multiple PPH conditions. As a result, conditions may not sum to categories, and categories may not sum to total PPH.

## Suppressed and non-published results

Data have been supressed to manage confidentiality and volatility.

1.  All data for an area were suppressed (marked NP) if the number of rounded PPH was between one and four, or the population in an area was less than 300. Consequential suppression was applied to manage confidentiality. This is the process of suppressing information that on its own is not necessarily confidential, but that may be used to derive confidential (suppressed) data.

2.  Rates based on low numbers of events and/or very small populations are more susceptible to random fluctuations and therefore may not provide a reliable representation of activity in that area. For this reason, results for some areas were suppressed to manage volatility.

    a.  Crude and age-standardised rates were not reported if the number of PPH in an area was less than 20 or the population in an area was less than 2,500.

    b.  Additionally, age-standardised rates were not reported if any 5-year age group in an area was less than 30.

3.  Results for the number of same-day PPH, percentage of PPH that are same day, number of PPH bed days, and average length of stay were suppressed if either of the above conditions were met, or the number of same-day PPH was between one and four for an area. Consequential suppression was applied to manage confidentiality.

In summary:

| Numbers and Rates | If the number of PPH is five or more **AND** the population is 300 or more but less than 2,500, then counts have been reported but crude and age-standardised rates have been suppressed due to volatility. |
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| | If the number of PPH is 20 or more **AND** the population is 2,500 or more, then counts and crude rates have been reported **BUT** if any age group population is less than 30 then age-standardised rates have been suppressed due to volatility. |
| | If the number of PPH is 20 or more **AND** the population is 2,500 or more **AND** all individual age group populations are 30 or more, then count, crude rate and age-standardised rates have all been reported. |
| Same-day PPH and bed days | If the number of PPH is 20 or more **AND** the population is 2,500 or more, **BUT** the number of same-day PPH is between one and four, then the number of same-day PPH, percentage of same day PPH, the total PPH bed days and average length of stay have been supressed. |
| | If the number of PPH is 20 or more **AND** the population is 2,500 or more **AND** the number of same-day PPH is 5 or more, then the number and rate of same day PPH and bed days have been reported. |

## Consequential suppression

Consequential suppression was applied to protect suppressed data cells (PPH and same-day PPH between one and four) where this number could otherwise be back-calculated from other, unsuppressed, cells.

Where required, consequential suppression was applied to the number of PPH/same-day PPH to ensure confidentiality. Consequential suppression was applied to the same measures as those in primary suppression. For example, primary suppression of same day PPH between one and four are same day PPH, percentage of same day PPH, bed days and average length of stay. Consequential suppression was generally applied to a PPH condition with the smallest same-day PPH, and its percentage of same-day PPH, bed days and average length of stay.

Consequential suppression was applied based on the following scenarios:

- **Where a single chronic PPH condition is suppressed**, a second chronic PPH condition is consequentially suppressed (considered nationally and for each PHN and SA3).

- **Where a single acute/vaccine preventable PPH condition is suppressed**, a second acute/vaccine preventable condition is consequentially suppressed (considered nationally and for each PHN and SA3).

  Acute/vaccine preventable PPH conditions are assigned by principal diagnosis or any diagnosis. One hospitalisation can be assigned to one or more acute/vaccine preventable conditions. The sum of acute/vaccine preventable PPH conditions can equal or exceed the Acute/Vaccine preventable PPH Total.

- **Where a single PHN is suppressed**, a second PHN is consequentially suppressed (considered for each PPH condition).

- **Where a single SA3 is suppressed**, a second SA3 is consequentially suppressed (considered for each PPH condition).

- **Where a single SA3 within a PHN is suppressed**, a second SA3 within that PHN is consequentially suppressed (considered for each PPH condition).

## Other considerations

**Comparison with other published data:** Results published here may vary slightly from those reported by states and territories due to minor variations in the scope (inclusions, exclusions) and the availability of more recent data (see also *Updates to the Admitted Patient Care database*).

**Updates to the Admitted Patient Care database:** Data on hospital admissions may be resubmitted at any time by state/territory data custodians to the Admitted Patient Care database and could affect PPH counts over time. Counts are correct as at the time of analysis.

## Scope and measures of the data

The data includes information about selected potentially preventable hospitalisations 2020–21, presenting 22 condition groups in 3 categories. Totals are also provided for a combined Acute and vaccine preventable PPH and all 22 condition groups combined (Total PPH).

1. **Acute PPH**
    o Cellulitis
    o Convulsions and epilepsy
    o Dental conditions
    o Ear, nose and throat infections
    o Eclampsia
    o Gangrene
    o Pelvic inflammatory disease
    o Perforated/bleeding ulcer
    o Pneumonia (not vaccine-preventable)
    o Urinary tract infections, including pyelonephritis

2. **Vaccine preventable PPH**
    o Other vaccine-preventable conditions
    o Pneumonia and influenza (vaccine-preventable)

3. **Chronic PPH**
    o Angina
    o Asthma
    o Bronchiectasis
    o COPD
    o Congestive cardiac failure
    o Diabetes complications
    o Hypertension
    o Iron deficiency anaemia
    o Nutritional deficiencies
    o Rheumatic heart disease

## Additional requirements

The calculation of PPH for each condition group additional requirements for inclusions, (such as particular age groups or diagnosis type (all, principle) and exclusions (such as particular age groups or records with specific intervention codes). For more information on diagnosis and intervention codes, inclusion and exclusion rules, please see the National Healthcare Agreement PI 18 specification 2022.

## Reported measures

The following measures are reported for each potentially preventable hospitalisation condition group and category totals:

- Number of PPH
- PPH per 100,000 people (crude rate)
- PPH per 100,000 people (age-standardised rate)
- Number of same-day PPH
- Percentage of PPH that are same day (%)
- Total PPH bed days
- Average length of stay (days)

All potentially preventable hospitalisations condition groups and category totals are reported at the National, PHN, and SA3 levels.