Australian Government
Australian Institute of Health and Welfare

Geography and time-specific health data for environmental analysis

Web report | Last updated: **07 Mar 2024** | Topic: Environment & health

About

This release includes up to 20 years of weekly health service use data by Statistical Area Level 4 geography. It includes data relevant to respiratory, cardiovascular, and mental health conditions, as well as other health conditions. The report includes data and visualisations on:

- hospitalisations
- emergency department presentations
- Medicare Benefits Schedule service claims
- Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Benefits Scheme prescriptions dispensed.

Cat. no: PHE 338

Findings from this report:

- Select hospitalisation, ED presentation, MBS, and PBS service use data are available by week at SA4-level geography
- There is notable variation in health service use over time and geography, at both lower and higher levels of aggregation
- Variation in finely disaggregated data reflects fundamental and methodological drivers, as well as natural volatility
- Considered analysis is required to attribute any shifts in health service use to environmental events

Summary

Geography and time-specific data for environmental analysis

This release contains up to 20 years of weekly data of health service use relating to specific health conditions by geographic area (Statistical Area 4 – SA4). Data are presented for respiratory, cardiovascular, and mental health conditions, including:

- hospitalisations (2002–03 to 2021–22)
- hospital emergency department presentations (2014–15 to 2021–22)
- Medicare Benefits Schedule service claims (2002–03 to 2021–22)
- Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS) prescriptions dispensed (2002–03 to 2021–22).

The data set also includes hospitalisations and emergency department visits for other health conditions (burns, dehydration, eye conditions, diabetes, chronic kidney disease, fractures, and cellulitis).

This data set was compiled to facilitate research on the impact of environmental events (in particular, bushfire) on health service use. The data are presented by week and SA4 to allow for geographic and time-specific analysis of variation in health service use, while maximising the amount of data that can be released. Finer disaggregation by time or geography leads to substantially more data points needing to be omitted from the data set for reasons relating to privacy and confidentiality (most notably – small numbers).

For further information on the data sources and how the data have been grouped and structured see Technical notes.

Considerations for use of the data

Variation in the data items over time and across jurisdictions will be evident due to a wide range of factors – both fundamental (for example, differing demographics, shifts in policies, changing markets for health service provision), and methodological in nature (for example, changing data coding schemas and practices over time).

The health service use data are based on administrative records and there are considerations that users should be aware of when using or viewing the data, including:

- The definitions differ from those used elsewhere for reporting purposes. Key differences for this data set include:
  - date of hospitalisation is based on admission date instead of separation date
  - geographical areas associated with the data represent place of residence rather than place of service provision
  - some areas of Australia have been excluded such as other territories and records that do not map to a geographical area.
- The data provide a partial snapshot of service provision for any particular condition and only show need that has been met. For example, natural disasters may affect people's ability to reach services or the ability for services to operate normally, and in general, due to capacity constraints, the health system may not immediately be able to satisfy a surge in need. People may stay home to avoid exposure to environmental hazards (for example, bushfire smoke or flood waters). See also the explanation of Figure 1 in relation to clinical and sub-clinical effects.
- The data are administrative and therefore can be subject to a range of factors such as variation in administrative processes, or changes in policy, diagnosis codes or diagnosis coding practices.
- The data may not be appropriate or suitable for understanding patterns in health service requirements or prevalence over time and by geography due to the issues described above.
- Data custodians apply a range of rules and principles in order to protect privacy and confidentiality. Therefore, certain data may be denoted as 'not presented' (n.p.).

For detail on the data's construction by data set and other important considerations for using the data (including changes to scope and data definitions over time), see Technical notes.

Environmental health analysis

As the impacts of climate and environmental change are increasingly felt throughout Australia, and worldwide, there is a need to better understand the influence of environmental factors on human health. The aim of this project is to provide a publicly available, accessible data set that will allow researchers and other practitioners (such as people working in the areas of health service planning, disaster resilience and response or public health policy) to better understand how environmental events may influence health outcomes or health service use. The project is part of an Australian Research Data Commons (ARDC) Bushfire Data Challenges program.

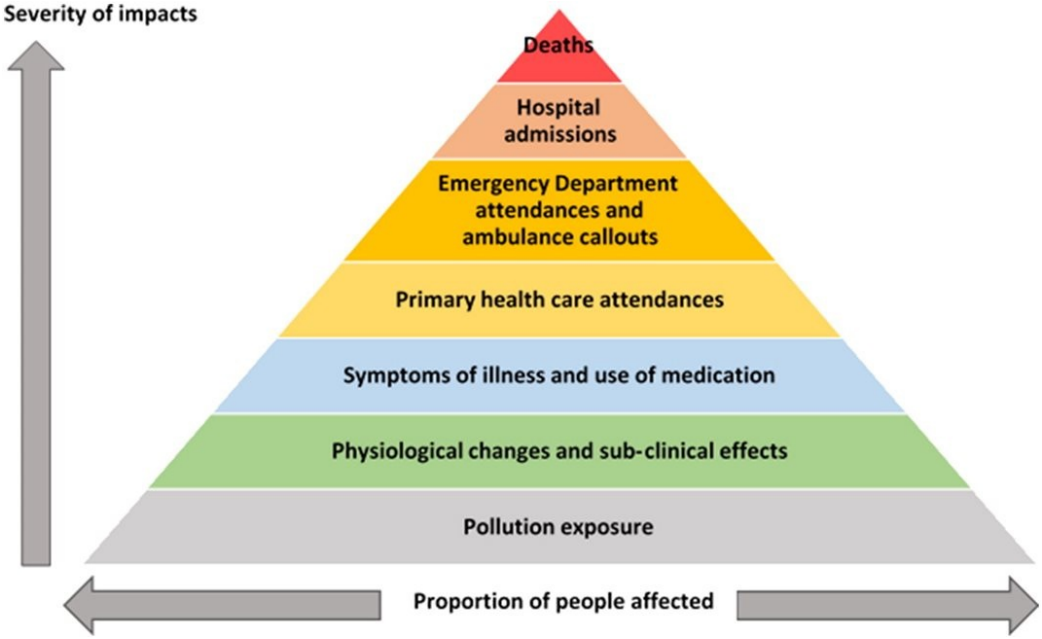
This release contains health service use data for health conditions that are potentially associated with or exacerbated by bushfire and bushfire smoke impact. Some of this health service use may be bushfire-related, but likely only a portion for any particular data item, and only in particular places at particular points in time. There is no information in the data that directly indicates that the health service use is related to bushfire events, and this causal attribution is to be examined by researchers in future projects. However, researchers may be able to use these data in conjunction with environmental data (for example, bushfire smoke data or temperature data) to derive insights about health service use coinciding with particular events, and to help identify topics for more detailed study.

The data only provide a partial picture of health. Figure 1 (sourced from Melody and Johnston 2015) illustrates that the largest proportion of people who experience impacts from bushfire smoke and airborne particulate matter may not have significant symptoms or may not visit a health professional. In addition, the data are reflective of health services provided and not the unmet need which may exist. Bushfires and other environmental events can be disruptive to health service facilities and staffing and may require people to move from their usual address.

While most of the data have been grouped according to conditions that have been associated with bushfire impacts in the scientific literature, or that could potentially be associated with the impacts of bushfire or bushfire smoke, it is important to note that a range of factors can lead to increases or decreases in service use.

While the focus for this release is potentially bushfire-related data, there is also scope for using this geographic and time-specific data to examine other topics with appropriate methods.

Figure 1: The air pollution pyramid



Source: Melody and Johnston 2015 (CC BY-NC-ND 4.0)

References

Cascio W (2018) 'Wildland fire smoke and human health', *Science of the Total Environment*, 624:586–95, doi:10.1016/j.scitotenv.2017.12.086.

Melody SM and Johnston FH (2015) 'Coal mine fires and human health: What do we know?', *International Journal of Coal Geology*, 115, Part B:1–14, doi:10.1016/j.coal.2015.11.001.

Dashboards

Select the relevant category to explore the data:

Hospitalisations data

Emergency department presentations data

Medicare Benefits Schedule services data

Pharmaceutical Benefits Scheme prescriptions data

For data tables, see Data.

About the dashboards

These dashboards display data relating to respiratory, cardiovascular and mental health conditions as well as other health conditions that are, or that could potentially be, associated with the impacts of bushfire or bushfire smoke, including:

- **hospitalisations (2002-03 to 2021-22)**
  - respiratory conditions
    - acute respiratory infection
    - chronic lower respiratory conditions
      - chronic obstructive pulmonary disease (COPD) with acute exacerbation
      - asthma
  - heart, stroke, and vascular conditions
    - selected heart conditions (hypertensive disease, coronary heart disease, pulmonary heart disease, and other forms of heart disease)
    - coronary heart disease
      - heart attack (acute myocardial infarction)
    - heart failure and cardiomyopathy
    - atrial fibrillation and heart flutter
    - stroke
  - mental and behavioural disorders
    - mental and behavioural disorders due to psychoactive substance use
    - mood (affective) disorders
    - neurotic, stress-related and somatoform disorders
  - diabetes mellitus
  - chronic kidney disease
  - dehydration
  - burns
  - fractures
  - eye conditions
  - cellulitis
- **hospital emergency department presentations (2014-15 to 2021-22) (as above)**
- **Medicare Benefits Schedule service claims (2002-03 to 2021-22)**
  - respiratory test items
  - Asthma cycle of care items
  - cardiovascular diagnostic procedures and investigations
  - cardiovascular diagnostic imaging services
  - mental health service items – as listed at Medicare-subsidised mental health-specific services (up to 20 January 2023).

- **Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS) prescriptions dispensed (2002–03 to 2021–22)**
  - respiratory prescriptions
    - relievers
    - preventers
    - other (including COPD-specific treatments, other asthma)
  - oral corticosteroids
  - mental health prescriptions
    - anxiolytics
    - antidepressants
    - other mental health
  - cardiovascular prescriptions
    - anti-thrombotic agents
    - blood pressure lowering medicines
    - lipid-modifying agents
    - other cardiovascular medicines.

Data are presented on a weekly basis and displayed geographically by Statistical Area Level 4 (SA4) areas based on the Australian Bureau of Statistics (ABS) Australian Statistical Geography Standard (ASGS) 2016 structure.

The dashboard can be used to examine the data and identify particular points where there may have been large changes as a result of administrative factors. However, users are encouraged to consult the Technical notes section of this report as well as undertaking their own detailed examination of the data, prior to analysis, to identify other potential data quality issues.

When using the data in this release for analysis, users should consider a range of factors, including:

- Each data item shows significant variation in service use levels and rates over time and geography. This variation reflects various fundamental characteristics (for example, seasonal variation, the population sex and age structure, trends in service use or disease prevalence over time), as well as methodological factors or administrative effects (for example, variation between states and territories in diagnosis coding practices), and natural variation and volatility (as described in more detail in Technical notes). This should be taken into consideration when interpreting shifts in service use in association with environmental events.
- To gain some insight into changes in service use associated with environmental events, shifts in service use for a particular place and time associated with a particular environmental event could be compared with coincident changes in service use in unaffected areas. However, it should be noted that other factors may also influence volatility – for example, random chance and public holidays.
- The geolocation of the data reflects the residential location of the patient, which may differ from the location of the patient at the time of condition onset, or exposure to an environmental influence. Care should be taken in the interpretation of results.

For further discussion on these points and related issues, see General guidance for using this data set.

Dashboards

Admitted patients are people who undergo a public or private hospital's formal admission process to receive treatment and/or care. The types of care included in these data are acute care, newborn care or mental health care. Also included are hospitalisations where the care type was unknown or not reported.

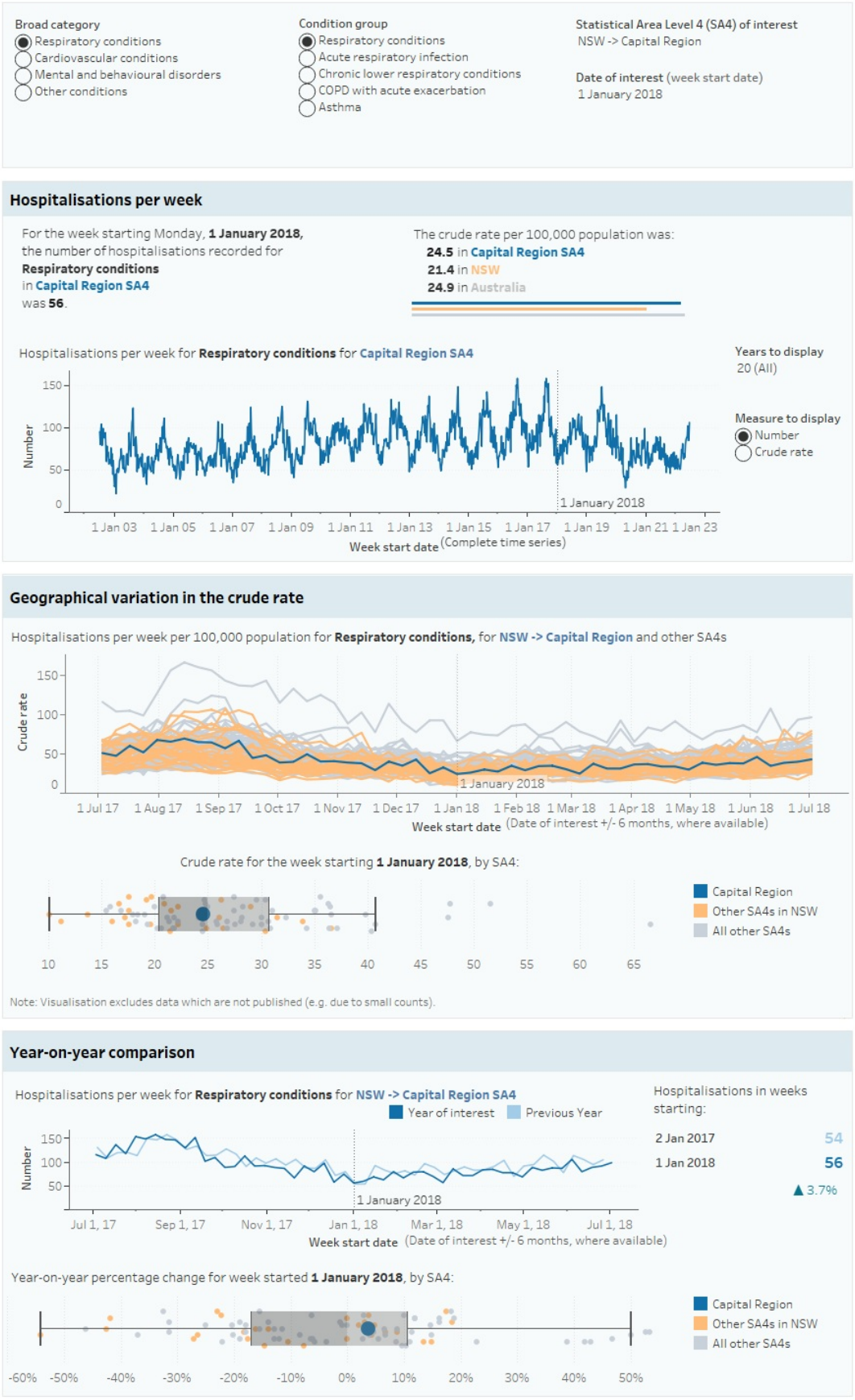
These data include weekly hospitalisations, grouped according to admission date, for selected conditions or condition groupings. The geographic grouping of the data is based on a patient's usual residential address rather than the location of the hospital attended.

For detail on the data's construction and other important considerations for using the data (including changes to scope and data definitions over time), see Technical notes.

For data tables, see Data.

Figure 2: Hospitalisations data dashboard

The data dashboard allows users to explore the weekly hospitalisations data. The user can select a condition group of interest, statistical area level 4 (SA4) of interest, and a date to reflect the week of interest.



The data dashboard allows the user to explore the weekly hospitalisations data. The user can select:

- a condition group of interest
- statistical area level 4 (SA4) of interest
- a date to reflect the week of interest.

There are three panels, which all display data for the selected condition group.

The first panel, Hospitalisations per week, shows a time series of hospitalisations for the SA4 of interest over the complete period from 1 July 2002 to 30 June 2022. The user can opt to zoom in around the week of interest, selecting the number of years to display. The user can also choose to display either the number or rate (per 100,000 population) of hospitalisations per week. When rate is selected, the crude rate for the SA4 of interest is displayed, alongside the crude rates for the jurisdiction within which that SA4 is located, and Australia as a whole.

The second panel, Geographical variation in the crude rate, shows the geographical variation in the crude rate of hospitalisations between different SA4s around the week of interest. One graph shows the time series for each SA4 over a 12-month period around the week of interest. A second graph displays the box and whisker spread for the date of interest specifically. In both graphs, the SA4 of interest is shown in blue, other SA4s in the same jurisdiction are shown in orange, and all other SA4s shown in grey.

Box and whisker plots show the distribution of data values across different groups. The plot consists of a rectangular box showing the interquartile range (IQR) of the data, (that is, the difference between the 25^{th} and 75^{th} percentiles). The line inside the box is the median value. The whiskers extend from the box out to the minimum and maximum values that are within 1.5 times the IQR from the edges of the box. Outliers beyond the whiskers are shown as individual dots. In the second panel, the box and whisker plot shows the spread of the crude rate of hospitalisations for different SA4s on a specific date. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

The third panel, Year-on-year comparison, shows the year-on-year change in the weekly number of hospitalisations around the week of interest. One graph shows the time series for the SA4 of interest for the 12-month period around the week of interest alongside that of the previous year. A second graph displays the year-on-year percentage change (for the week of interest relative to the closest week in the previous year) for the SA4 of interest, compared to other SA4s. The SA4 of interest is shown in blue, other SA4s within the same jurisdiction are shown in orange, and all other SA4s in Australia are shown in grey. The box and whisker plot shows the spread of the percentage change in the number of hospitalisations (relative to the closest date one year prior) for different SA4s on the date of interest. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

Suppressed data are excluded from the visualisations.

Dashboards

Emergency departments (EDs) are an essential component of Australia's health care system. Many of Australia's public hospitals have purpose-built EDs, staffed 24 hours a day, providing care for patients who require urgent medical, surgical, or other attention.

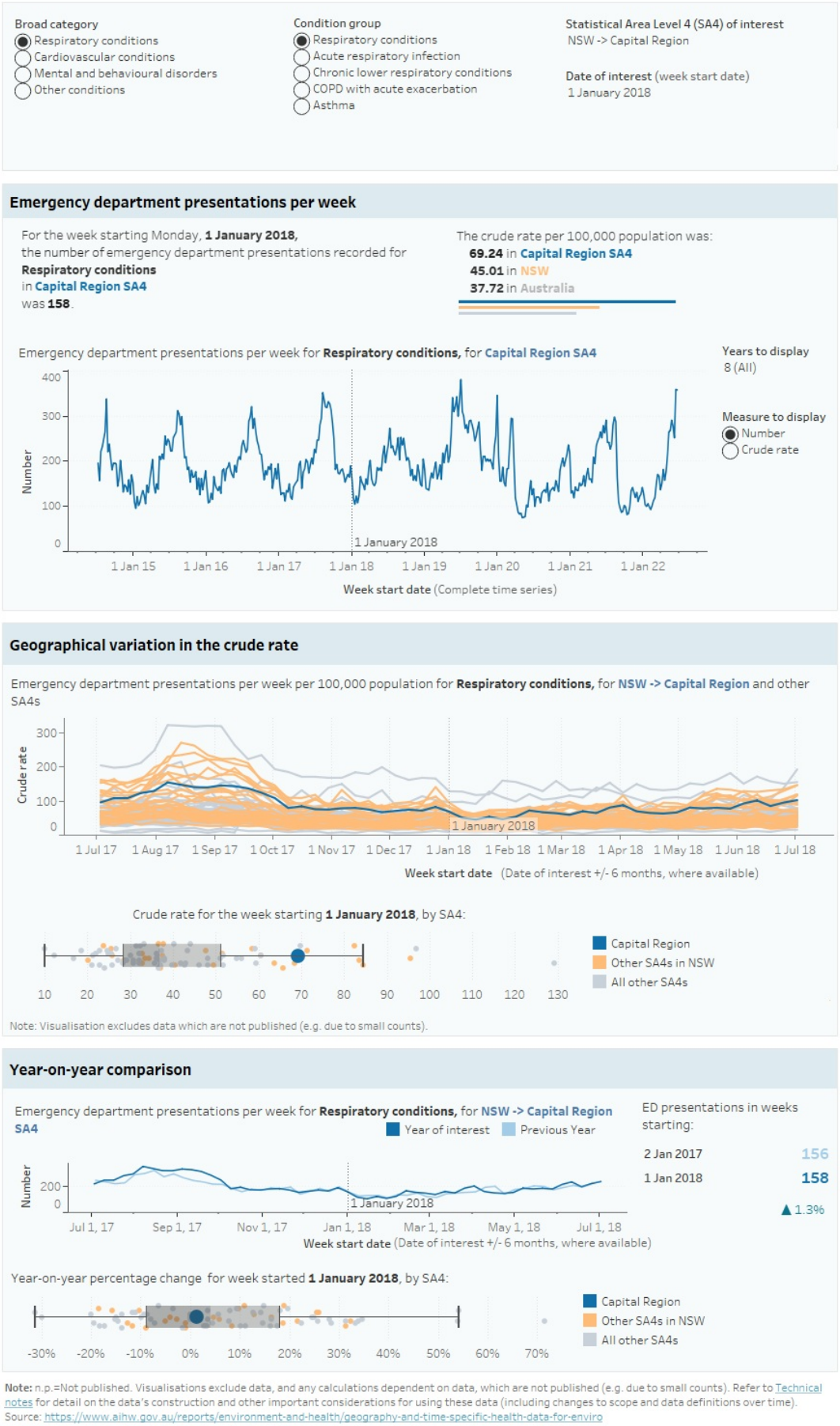
These data include weekly ED presentations, grouped according to presentation date, for selected conditions or condition groupings. The geographic grouping of the data is based on a patient's usual residential address rather than the location of the ED attended. (See Figure 3)

For detail on the data's construction and other important considerations for using the data (including changes to scope and data definitions over time), see Technical notes.

For data tables, see Data.

Figure 3: Emergency department presentations data dashboard

The data dashboard allows users to explore the weekly emergency department presentation data. The user can select a condition group of interest, statistical area level 4 (SA4) of interest, and a date to reflect the week of interest. There are three panels, which display various aspects of the data.



The data dashboard allows the user to explore the weekly emergency department (ED) presentations data. The user can select:

- a condition group of interest
- statistical area level 4 (SA4) of interest
- a date to reflect the week of interest.

There are three panels, which all display data for the selected condition group.

The first panel, Emergency department presentation per week, shows a time series of presentations for the SA4 of interest over the complete period from 1 July 2014 to 30 June 2022. The user can opt to zoom in around the week of interest, selecting the number of years to display. The user can also choose to display either the number or rate (per 100,000 population) of ED presentations per week. When rate is selected, the crude rate for the SA4 of interest is displayed, alongside the crude rates for the jurisdiction within which that SA4 is located, and Australia as a whole.

The second panel, Geographical variation in the crude rate, shows the geographical variation in the crude rate of ED presentations between different SA4s around the week of interest. One graph shows the time series for each SA4 over a 12-month period around the week of interest. A second graph displays the box and whisker spread for the date of interest specifically. In both graphs, the SA4 of interest is shown in blue, other SA4s in the same jurisdiction are shown in orange, and all other SA4s shown in grey.

Box and whisker plots show the distribution of data values across different groups. The plot consists of a rectangular box showing the interquartile range (IQR) of the data, (that is, the difference between the 25^{th} and 75^{th} percentiles). The line inside the box is the median value. The whiskers extend from the box out to the minimum and maximum values that are within 1.5 times the IQR from the edges of the box. Outliers beyond the whiskers are shown as individual dots. In the second panel, the box and whisker plot shows the spread of the crude rate of ED presentations for different SA4s on a specific date. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

The third panel, year-on-year comparison shows the year-on-year change in the weekly number of presentations around the week of interest. One graph shows the time series for the SA4 of interest for the 12-month period around the week of interest alongside that of the previous year. A second graph displays the year-on-year percentage change (for the week of interest relative to the closest week in the previous year) for the SA4 of interest, compared to other SA4s. The SA4 of interest is shown in blue, other SA4s within the same jurisdiction are shown in orange, and all other SA4s in Australia are shown in grey.

The box and whisker plot shows the spread of the percentage change in the number of ED presentations (relative to the closest date one year prior) for different SA4s on the date of interest. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

Suppressed data are excluded from the visualisations.

Dashboards

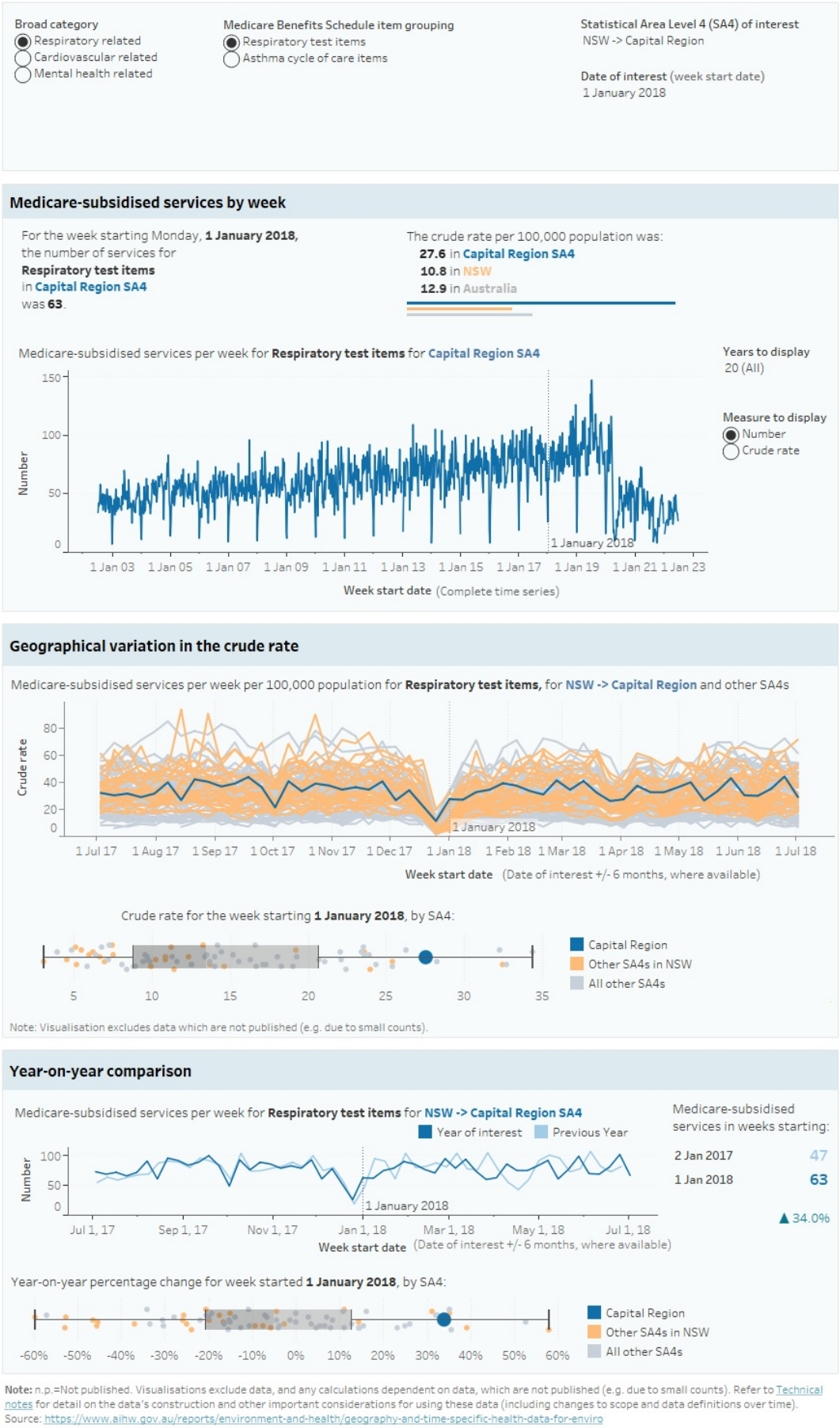
The Australian Government has subsidised the cost of health services covered by the Medicare Benefits Schedule (MBS) for all Australians since 1984. The dashboard (Figure 4) displays data on selected services funded through the MBS from 2002–03 to 2021–22. These data include weekly Medicare-subsidised services provided out of hospital, grouped according to date of service, for selected groupings of services related to particular conditions. The geographic grouping of the data is based on the postcode of a patient's Medicare enrolment address (at the time of processing) rather than the location of the service provision.

For detail on the data's construction and other important considerations for using the data (including changes to scope and data definitions over time), see Technical notes.

For data tables, see Data.

Figure 4: Medicare Benefits Schedule services data dashboard

The data dashboard allows users to explore the weekly selected Medicare Benefits Schedule (MBS) item service use data. The user can select an MBS item group of interest, statistical area level 4 (SA4) of interest, and a date to reflect the week of interest. There are three panels, which display various aspects of the data.



The data dashboard allows the user to explore the weekly selected Medicare Benefits Schedule (MBS) item service use data. The user can select:

- an MBS item group of interest
- a statistical area level 4 (SA4) of interest
- a date to reflect the week of interest.

There are three panels, which all display data for the selected MBS item grouping.

The first panel, Medicare-subsidised services by week shows a time series of Medicare-subsidised services for the selected MBS item grouping for the SA4 of interest over the complete period from 1 July 2014 to 30 June 2022. The user can opt to zoom in around the week of interest, selecting the number of years to display. The user can also choose to display either the number or rate (per 100,000 population) of MBS services per week. When crude rate is selected, the crude rate for the SA4 of interest is displayed, alongside the crude rates for the jurisdiction within which that SA4 is located, and Australia as a whole.

The second panel, Geographical variation in the crude rate, shows the geographical variation in the crude rate of Medicare-subsidised services for the selected MBS item grouping between different SA4s around the week of interest. One graph shows the time series for each SA4 over a 12-month period around the week of interest. A second graph displays the box and whisker spread for the date of interest specifically. In both graphs, the SA4 of interest is shown in blue, other SA4s in the same jurisdiction are shown in orange, and all other SA4s shown in grey.

Box and whisker plots show the distribution of data values across different groups. The plot consists of a rectangular box showing the interquartile range (IQR) of the data, (that is, the difference between the 25^{th} and 75^{th} percentiles). The line inside the box is the median value. The whiskers extend from the box out to the minimum and maximum values that are within 1.5 times the IQR from the edges of the box. Outliers beyond the whiskers are shown as individual dots. In the second panel, the box and whisker plot shows the spread of the crude rate of selected Medicare-subsidised services for different SA4s on a specific date. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

The third panel, Year-on-year comparison, shows the year-on-year change in the weekly number of MBS services around the week of interest. One graph shows the time series for the SA4 of interest for the 12-month period around the week of interest alongside that of the previous year. A second graph displays the year-on-year percentage change (for the week of interest relative to the closest week in the previous year) for the SA4 of interest, compared to other SA4s. The SA4 of interest is shown in blue, other SA4s within the same jurisdiction are shown in orange, and all other SA4s in Australia are shown in grey.

The box and whisker plot shows the spread of the percentage change in the number of selected Medicare-subsidised services (relative to the closest date one year prior) for different SA4s on the date of interest. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

Suppressed data are excluded from the visualisations.

Dashboards

The Commonwealth government subsidises the cost of a wide range of prescription medicines through two separate schemes, the Pharmaceutical Benefits Scheme (PBS), available to current Medicare card holders and other eligible people, and the Repatriation Pharmaceutical Benefits Scheme (RPBS), for eligible war veterans and their dependants.

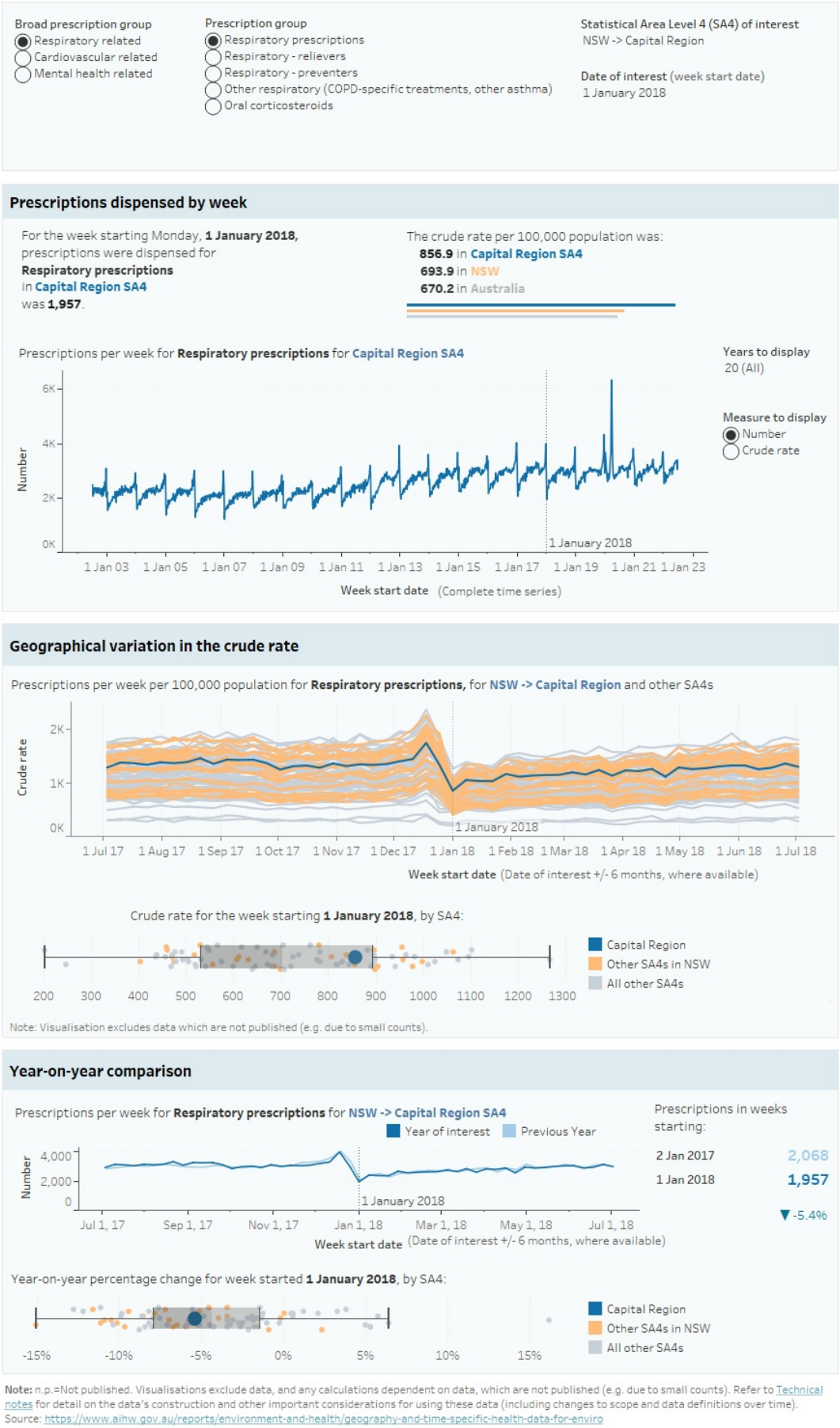
The dashboard (Figure 5) displays data on selected services funded through the PBS/RPBS from 2002–03 to 2021–22. These data include weekly PBS and RPBS prescriptions dispensed, grouped according to date of dispensing, for selected groupings of medicines. The geographic grouping of the data is based on the postcode of a patient's Medicare enrolment address (at the date of supply) rather than the location where the prescription was dispensed.

For detail on the data's construction and other important considerations for using the data (including changes to scope and data definitions over time), see Technical notes.

For data tables, see Data.

Figure 5: Pharmaceutical Benefits Scheme prescriptions data dashboard

The data dashboard allows users to explore the weekly selected Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS) service use data. The user can select a prescription group of interest, statistical area level 4 (SA4) of interest, and a date to reflect the week of interest. There are three panels, which display various aspects of the data.



The data dashboard allows the user to explore the weekly selected Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS) service use data. The user can select:

- a prescription group of interest
- a statistical area level 4 (SA4) of interest
- a date to reflect the week of interest.

There are three panels, which all display data for the selected prescription group.

The first panel, Prescriptions dispensed by week, shows a time series of prescriptions dispensed for the selected prescription group for the SA4 of interest over the complete period from 1 July 2014 to 30 June 2022. The user can opt to zoom in around the week of interest, selecting the number of years to display. The user can also choose to display either the number or rate (per 100,000 population) of prescriptions dispensed per week. When crude rate is selected, the crude rate for the SA4 of interest is displayed, alongside the crude rates for the jurisdiction within which that SA4 is located, and Australia as a whole.

The second panel, Geographical variation in the crude rate, shows the geographical variation in the crude rate of prescriptions dispensed for the selected prescription group between different SA4s around the week of interest. One graph shows the time series for each SA4 over a 12-month period around the week of interest. A second graph displays the box and whisker spread for the date of interest specifically. In both graphs, the SA4 of interest is shown in blue, other SA4s in the same jurisdiction are shown in orange, and all other SA4s shown in grey.

Box and whisker plots show the distribution of data values across different groups. The plot consists of a rectangular box showing the interquartile range (IQR) of the data, (that is, the difference between the 25^{th} and 75^{th} percentiles). The line inside the box is the median value. The whiskers extend from the box out to the minimum and maximum values that are within 1.5 times the IQR from the edges of the box. Outliers beyond the whiskers are shown as individual dots. In the second panel, the box and whisker plot shows the spread of the crude rate of selected PBS/RPBS prescriptions dispensed for different SA4s on a specific date. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

The third panel, Year-on-year comparison, shows the year-on-year change in the weekly number of prescriptions dispensed around the week of interest. One graph shows the time series for the SA4 of interest for the 12-month period around the week of interest alongside that of the previous year. A second graph displays the year-on-year percentage change (for the week of interest relative to the closest week in the previous year) for the SA4 of interest, compared to other SA4s. The SA4 of interest is shown in blue, other SA4s within the same jurisdiction are shown in orange, and all other SA4s in Australia are shown in grey.

The box and whisker plot shows the spread of the percentage change in the number of selected PBS/RPBS prescriptions dispensed (relative to the closest date one year prior) for different SA4s on the date of interest. The user can see how the selected SA4 compares to other SA4s and whether or not there are outliers.

Suppressed data are excluded from the visualisations.

Technical notes

Select a heading for detailed notes on the topic of interest.

General data specifications

Hospitalisations data

Emergency department presentations data

Medicare Benefits Schedule services data

Pharmaceutical Benefits Scheme prescriptions data

Population data

General guidance for using this data set

The aim of the current project was to develop a data set that:

- contains data on health service use potentially relevant to bushfire and bushfire smoke impact
- is of interest to policy makers and/or the research community
- is comprehensive in geographical scope and timespan
- is published at an appropriate level in terms of time and geography
- meets current privacy, confidentiality and data governance frameworks to allow publication.

The data set was developed in consultation with a Bushfire and Health Data Expert Advisory Group as well as Australian Institute of Health and Welfare (AIHW) subject matter experts and internal and external data custodians. These technical notes detail information on subjects such as data specifications and data sources.

Technical notes

Various aspects of the structure and specifications of the data are presented in Table 1, Table 2 and Table 3. For information on what aspects of health service use are included in the data set, refer to details on each of the main sources of the data below.

Table 1: Geographic and temporal extent of the data

Type of data	Aspect	Extent/scope	Notes
All	Geographic extent	National	Excludes *Other territories*, non-spatial special purpose codes (*Migratory - Offshore - Shipping and No Usual Address)* as well as records which could not be mapped to geo-located 2016 ASGS SA4
Admitted patient hospitalisations	Years of data available	2002–03 to 2021–22	
Emergency department presentations	Years of data available	2014–15 to 2021–22	Sufficient quality diagnosis records are not available for earlier years
Medicare Benefits Schedule service claims	Years of data available	2002–03 to 2021–22	For claims processed up to 7 August 2023
PBS/RPBS prescriptions dispensed	Years of data available	2002–03 to 2021–22	

ASGS = Australian Statistical Geography Standard
PBS/RPBS = Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Schedule of Pharmaceutical Benefits
SA4 = Statistical Area Level 4.

Table 2: Grouping of the data by geography

Type of data	Grouping element	Relevant source data field	Notes
Admitted patient hospitalisations	2016 ASGS SA4	Patient's area of usual residence	Structure used for coding of area of residence in source data varies over time; source structure is mapped to 2016 ASGS SA4s[1]
Emergency department presentations	2016 ASGS SA4	Patient's area of usual residence	Structure used for coding of area of residence in source data varies over time; source structure is mapped to 2016 ASGS SA4s[1]
Medicare Benefits Schedule service claims	2016 ASGS SA4	Postcode of patient's Medicare enrolment address at time of processing the claim	Postcodes are mapped to 2016 ASGS SA4s[2]
PBS/RPBS prescriptions dispensed	2016 ASGS SA4	Postcode of patient's Medicare enrolment address at date of supply	Postcodes are mapped to 2016 ASGS SA4s[2]

ASGS = Australian Statistical Geography Standard
PBS/RPBS = Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Schedule of Pharmaceutical Benefits
SA4 = Statistical Area Level 4

Notes

1. The geographical schema used in the source data collections varies over time: 2016 ASGS SA2 was recorded for 2017–18 to 2021–22; 2011 ASGS SA2 for 2012–13 to 2016–17; and in prior years, the relevant reference year Australian Standard Geographical Classification (ASGC) Statistical Local Area (SLA) was recorded. For the current data set, the ASGC geographies were mapped to the 2011 ASGS SA2 structure using the relevant annual probabilistic (population-weighted) mapping file from the Australian Bureau of Statistics (ABS). The 2011 ASGS geography was then mapped to the 2016 ASGS SA4 using another probabilistic (population-weighted) ABS mapping file applied at the SA2 level.
2. Postcodes are mapped to 2016 ASGS SA4s using a probabilistic 2016 (population-weighted) AIHW mapping file (based on an ABS correspondence file).

Table 3: Grouping of the data by time

Type of data	Grouping element	Relevant source data field	Notes
Admitted patient hospitalisations	Weeks (Monday to Sunday)	Date of admission	Differs from usual AIHW reporting of hospitalisations, that is, by date of separation
Emergency Department presentations	Weeks (Monday to Sunday)	Date of presentation	
Medicare Benefits Schedule service claims	Weeks (Monday to Sunday)	Date of service provision	
PBS/RPBS prescriptions dispensed	Weeks (Monday to Sunday)	Date prescription dispensed	

PBS/RPBS = Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Benefits Scheme.

Go to Technical notes

Technical notes

About the data source

Hospitalisations data used in the construction of this data set were sourced from the National Hospital Morbidity Database (NHMD). Further information on the NHMD is available at Hospitals info & downloads: About the data and National Hospitals Data Collection. Earlier data quality statements are available online at Data quality statement: Admitted Patient Care 2017-18 and by following the relational attributes at this link to locate the superseded earlier data quality statements.

The NHMD is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals.

The data supplied are based on the National Minimum Data Set (NMDS) for Admitted Patient Care and include demographic data, administrative data, as well as data on the diagnoses of the patients.

Methodology

In constructing this data set, hospitalisations were grouped by week (based on date of admission), geographical area (based on the patient's place of usual residence), and principal diagnosis, for select groupings of interest. The derivation of these fields is described further below.

The data set reports a count measure, which reflects the total number of hospitalisations each week assigned a principal diagnosis falling within a given condition grouping, for a given geographical area. Counts represent the number of hospitalisations rather than the number of people.

The associated crude rate refers to the number of hospitalisations per 100,000 population. Rates were calculated by dividing the count data by the estimate of population for the relevant week and geographical area derived as described in Population data.

Note: In some cases, 'statistical admissions' arising from the commencement of a new episode of care, with a new care type, may occur for a patient within a single hospital stay.

Diagnosis groupings

The conditions (and associated ICD-10-AM codes) in Table 4 were selected for inclusion based on existing literature on the health impacts of bushfires and bushfire smoke pollution as well as subject matter expert advice.

In Australia, for the period relevant to this project, the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) was used to code diagnoses in the underlying source data.

The edition of the ICD-10-AM used to classify diagnoses in the source data varied over time as follows:

- 2002–03 and 2003–04: Third Edition
- 2004–05 and 2005–06: Fourth Edition
- 2006–07 and 2007–08: Fifth Edition
- 2008–09 and 2009–10: Sixth Edition
- 2010–11 to 2012–13: Seventh Edition
- 2013–14 and 2014–15: Eighth Edition
- 2015–16 and 2016–17: Ninth Edition
- 2017–18 and 2018–19: Tenth Edition
- 2019–20 to 2021–22: Eleventh Edition.

The data were mapped to the ICD-10-AM (11^{th} edition) prior to aggregating into condition groups.

To capture acute hospitalisations, hospitalisations with a care type of acute care, newborn with qualified days only, newborn with qualified and unqualified days, and not reported/ unknown were included in the analysis. Additionally, hospitalisations with a care type of mental health were also included. Note that the mental health care type was introduced from 1 July 2015. For the 2002–03 financial year, the numeric code for unknown/not reported was 11.0. The code became 99.0 from 2004–05 onwards. The code of 11 was assigned to mental health from 1 July 2015 onwards. Care types that were excluded from the analysis include rehabilitation care, palliative care, geriatric evaluation and management, psychogeriatric care, maintenance care, other admitted patient care, organ procurement – posthumous, and hospital boarder.

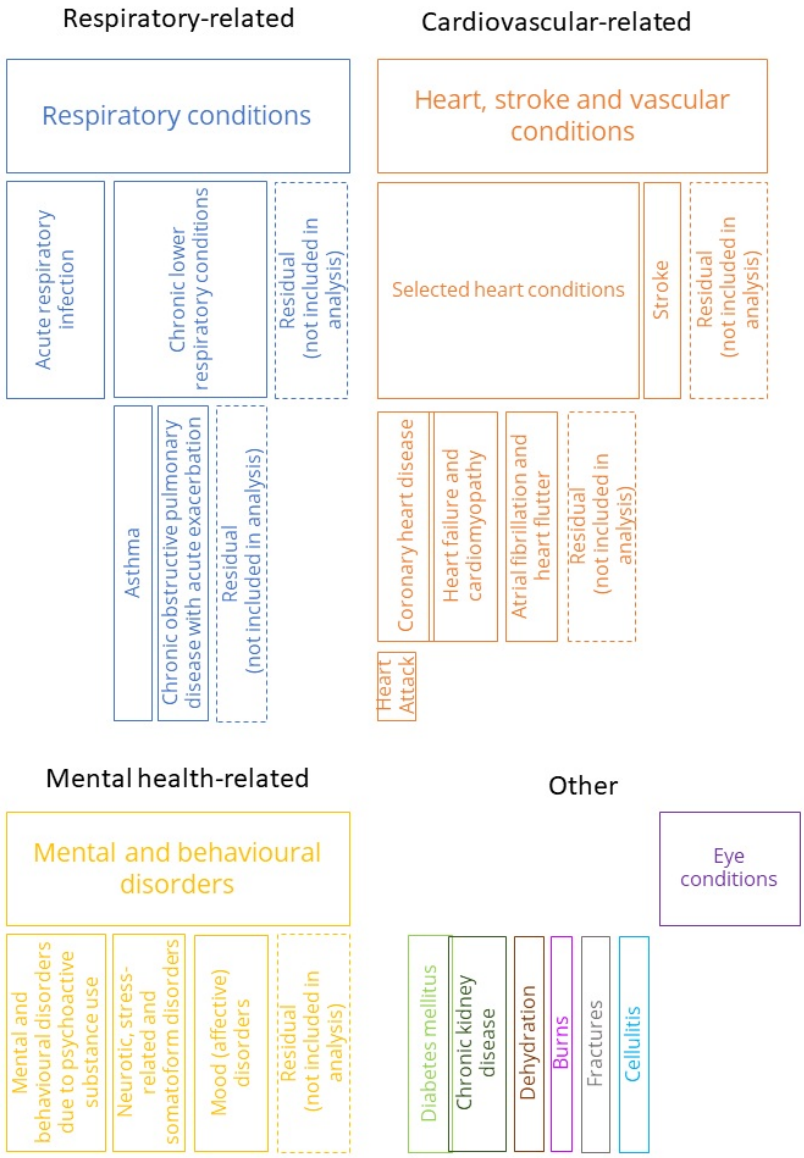
Table 4: International Statistical Classification of Diseases and Related Health Problems (ICD), Tenth Revision, Australian Modification (ICD-10-AM) codes used for hospital admitted patient care data

Condition group	ICD-10-AM, Eleventh Edition codes
Respiratory conditions	J00–J99
Acute respiratory infection	J00–J22

Chronic lower respiratory conditions	J40–J47
Chronic obstructive pulmonary disease (COPD) with acute exacerbation	J44.1
Asthma	J45–J46
Heart, stroke, and vascular conditions	I00–I99
Selected heart conditions (hypertensive disease, coronary heart disease, pulmonary heart disease, and other forms of heart disease)	I10–I15, I20–I25, I26–I28, I30–I52
Coronary heart disease	I20–I25
Heart attack (acute myocardial infarction)	I21
Heart failure and cardiomyopathy	I50, I125.5, I42.0, I42.5–I42.9, I43
Atrial fibrillation and heart flutter	I48
Stroke	I60–I64
Mental and behavioural disorders	F00–F99
Mental and behavioural disorders due to psychoactive substance use	F10–F19
Mood (affective) disorders	F30–F39
Neurotic, stress-related and somatoform disorders	F40–F49
Diabetes mellitus	E10, E11, E13, E14, O24
Chronic kidney disease	E10.2, E11.2, E13.2, E14.2, I12, I13, I15.0, I15.1, N00–N08, N11, N12, N14–N16, N18, N19, N25–N28, N39.1, N39.2, D59.3, B52.0, E85.3, Q60–Q63, T82.4, T86.1, U87.1
Dehydration	E86
Burns	T20–T31
Fractures	S02, S12, S22, S32, S42, S52, S62, S72, S82, S92, T02, T08, T10, T12, T14.2
Eye conditions	H00–H59
Cellulitis	L03

A representation of how the items are related is shown in Figure 6.

Figure 6: Representation of relationship between condition groupings in hospitals data



Note: The size of the boxes does not reflect the number of hospitalisations or presentations associated with each condition group.

Analysis by week

Presentations are grouped by week (Monday–Sunday) based on date of admission. The weeks form a continuous time series over the temporal extent of the data set.

Analysis by geography

Analysis at the SA4 level was based on the patient's usual area of residence (not the SA4 of the hospital at which the patient was admitted).

Data in the NHMD were supplied by jurisdictions to the AIHW. Data were recorded in the NHMD as follows:

- 2002–03: 2002 ASGC (Australian Standard Geographical Classification) Statistical Local Area (SLA)
- 2003–04: 2003 ASGC SLA
- 2004–05: 2004 ASGC SLA
- 2005–06: 2005 ASGC SLA
- 2006–07: 2006 ASGC SLA
- 2007–08: 2007 ASGC SLA
- 2008–09: 2008 ASGC SLA
- 2009–10: 2009 ASGC SLA
- 2010–11: 2010 ASGC SLA
- 2011–12: 2011 ASGC SLA
- 2012–13 to 2016–17: 2011 ASGS SA2
- 2017–18 to 2021–22: 2016 ASGS SA2

For the current project, all records were mapped to the SA2s under the ASGS 2016 structure using concordance files, and the SA4 of usual residence derived from the SA2 data. Data recorded in ASGC for the relevant years was mapped to 2011 ASGS SA2 and then to 2016 ASGS SA2 via concordance files. The 2016 ASGS SA2 records were then mapped to 2016 ASGS SA4 using a concordance file.

Reporting of results

In line with AIHW policy on reporting to manage confidentiality, as well as data management protocols for this data set, some data have been suppressed. In particular, where counts for a diagnosis group in a given week in a given jurisdiction or SA4 were less than 5, data were suppressed. Secondary suppression was also applied throughout in the event that a suppressed cell could be identified from a higher-level aggregation.

Data considerations and limitations

Divergence from reporting data

The data presented here on hospitalisations differ from data presented elsewhere (for example, used for reporting purposes) for multiple reasons. Specifications of note include:

- Temporal structure: these data are structured by admission date rather than separation date.
- Geolocation: these data are geolocated according to the patient's usual place of residence, rather than the hospital location.
- Condition specifications, for example:
  - For diabetes mellitus, these data only include records with a relevant principal diagnosis (rather than additional diagnoses). This will underestimate reported diabetes hospitalisations as the majority are recorded as additional diagnoses.
  - For mental health, these data only include records with a relevant principal diagnosis (they do not include other records with episodes of specialised psychiatric care).
  - The 'selected heart conditions' grouping comprises heart conditions including hypertensive disease, coronary heart disease, pulmonary heart disease, and other forms of heart disease. This condition grouping was included in previous AIHW reports on the health impacts of the 2019–20 Australian bushfires.
- Care type scope: These data are focused on acute hospitalisations (and capture only the following care types: acute care, newborn care (excluding newborn care with unqualified days only), mental health care and hospitalisations where the care type was unknown or not reported). Care types that were excluded from the analysis include rehabilitation care, palliative care, geriatric evaluation and management, psychogeriatric care, maintenance care, other admitted patient care, organ procurement – posthumous, and hospital boarder.

Count of hospitalisations

The data reflect a count of hospitalisations as per the source data set, and not the count of unique patients. One hospital stay may result in more than one hospitalisation where a new episode of care is commenced within the same hospital stay.

Annual structure of source data

The NHMD is a compilation of annual data sets, each comprising hospital records with a separation date within a particular financial year. Impacts of methodology and changes to coding standards and practices often occur at the juncture of these financial years.

However, note that the current data set is structured by admission date, rather than separation date.

Specifications of geolocation

The geolocation of the data is based on patients' usual residence, and not the place of hospitalisation. The patient's place of usual residence may differ from the location of the patient at the time of condition onset, and any exposure to an environmental influence.

Quality of geolocation data

All the data in this release are presented according to a common geographical structure – 2016 ASGS SA4. However, except in recent years, this is not the structure used to record patients' area of residence in the underlying source data. To derive this structure, probabilistic population-weighted mapping files have been applied to the source data. For a description of this process and detail of the geographical schemas used in the underlying source data, see Analysis by geography.

This mapping process will tend to reduce the quality of historical geolocation data reported by 2016 ASGS SA4 (relative to more recent periods), and the issue will affect some geographical areas more than others. Where whole historical SLAs, and 2011 ASGS SA2s are mapped to a single 2016 ASGS SA4, the mapping process does not introduce any error. However, there is an issue for areas which are split during the process of mapping forward to the ASGS 2016 SA4. Each juncture which requires a mapping file affects the quality of the geolocation, and this leads to shifts in quality over the time series.

Quality and comparability of diagnosis data

In the admitted patient setting, diagnosis data tend to be high quality; qualified clinical coders record the principal diagnosis as the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care.

However, practices and policies around recording diagnoses have varied over time, and across jurisdictions. Care has been taken in aligning the data to some extent for the data release; see the Diagnosis groupings section for details on the mapping process and the various coding schemas used in the source data over time (note that in the admitted patient context, the whole relevant history of source data uses ICD-

10-AM schemas to classify the diagnosis, which provides a degree of consistency). However, changes in various classifications used to code diagnoses, the associated Australian Coding Standards, and coding practices, are likely to affect the comparability of the hospitalisations and diagnosis data in the data set over time and across jurisdictions.

Of note:

- Changes to the Australian Coding Standard for Rehabilitation (ACS 2104), introduced from 1 July 2015 in the Ninth Edition of ICD-10-AM mean that Category Z50 *Care involving the use of rehabilitation interventions* (which was previously required to be assigned as the principal diagnosis) has been changed to an 'Unacceptable principal diagnosis'. The change to the ACS means that the 'reason' for rehabilitation will now be identified as the principal diagnosis (rather than as the first additional diagnosis). Therefore, between 2014–15 and 2015–16, the numbers of separations with a principal diagnosis in the ICD-10-AM Chapter 21 *Factors influencing health status and contact with health services* (Z00–Z99) decreased markedly. Over the same period, there were corresponding increases in principal diagnoses reported for other ICD-10-AM chapters – most notably for Chapter 19 *Injury, poisoning and certain other consequences of external causes* (S00–T98), and Chapter 13 *Diseases of the musculoskeletal system and connective tissue* (M00–M99).
- The care type Mental health was introduced on 1 July 2015. The implementation of the mental health care type was incomplete in 2015–16, that is, not all episodes for patients who received mental health care and were admitted before 1 July 2015 and who subsequently separated during 2015–16 were recorded with a mental health care type.
- Following the mental health care type implementation on 1 July 2015, the statistical discharge and readmission of mental health-related patients, resulted in large increases in patient days overall for Queensland (2015–16) and for New South Wales (2016–17). Therefore, information presented by care type from 2015–16 will not be comparable with data presented for earlier periods.
- Changes and clarifications around the Australian Coding Standard for Diabetes mellitus and intermediate hyperglycaemia (ACS 0401) (formerly Diabetes mellitus and impaired glucose regulation) between 2009–10 and 2012–13 affected the comparability over time of data for diabetes. For further information, see: Diabetes: Australian facts, Hospitalisations - Australian Institute of Health and Welfare.
- Clinical guidelines published by Global Initiative for Asthma (GINA) changed in 2019 regarding diagnosis of children with asthma under the age of 6 (see Levy et al. 2022). As a result, a decrease in asthma for children in this age group is observed, with an associated increase in other more general respiratory conditions (such as acute respiratory infection).

State-specific coding rules

The Australian Coding Standards (ACS) are developed for use in both public and private hospitals and are a set of classification guidelines that complement the ICD-10-AM and ACHI Tabular Lists and Alphabetic Indices for certain diseases, health problems and interventions, to promote consistency in the classification of admitted episodes of care. Although all states and territories instruct their coders to follow the ACS, some jurisdictions also apply state-specific coding rules to deal with state-specific reporting requirements. These standards may be in addition to relevant ACS and may affect the comparability of ICD-10-AM/ACHI coded data.

Variation in practices between hospitals

Although there are national standards for data on hospital services, there are some variations in how hospital services are defined and counted, between public and private hospitals, among the states and territories and over time. For example, there is variation in admission practices for some services, such as chemotherapy and endoscopy. As a result, people receiving the same type of service may be counted as same-day admitted patients in some hospitals and as non-admitted patients in other hospitals. In addition, some services are provided by hospitals in some jurisdictions and by non-hospital health services in other jurisdictions. The national data on hospital care does not include care provided by non-hospital providers, such as community health centres. For more information, see Variation in hospital admission policies and practices: Australian hospital statistics.

State-specific data supply changes

There have been various changes in coverage or data supply over time that may affect the interpretation of the data. Some of the more recent examples include the following.

For New South Wales:

- Between 2010–11 and 2011–12, there were substantial increases in counts of Newborn episodes of care with qualified days for New South Wales due to changes in reporting practices.
- From 2015–16, increases in the numbers of separations for private hospitals are, in part, accounted for by improvements in the coverage of reporting.
- Between 2016–17 and 2017–18, changes in admission practices resulted in an apparent decrease in separations for public hospitals. The New South Wales Ministry of Health estimated that about 83,000 separations in 2016–17 would not have been included if the admission practice changes had been implemented in that year.
- Between 2016–17 and 2017–18, changes in the classification of qualified days for Newborn episodes resulted in an apparent decrease in separations for both public and private hospitals. However, the overall number of Newborn separations in 2017–18 was consistent with the overall number in 2016–17.

For Victoria:

- Between 2009–10 and 2010–11 there was a decrease in private hospital separations for Victoria due to the reclassification of some same-day mental health care as non-admitted patient activity (which was previously classified as admitted patient activity).
- From 2009–10, the data for Albury Base Hospital (in New South Wales) have been reported by the Victorian Department of Health and Human Services as part of the Albury Wodonga Health Service. Therefore, the information presented for Victoria will include Albury Base Hospital.

- From 2010–11, some same-day mental health care provided in private hospitals was re-categorised as non-admitted patient activity. These records were thereafter excluded from the NHMD.
- Between 2011–12 and 2012–13, a relatively large decrease in public hospital separations reflected a change in Victoria's emergency department admission policy.

For Western Australia:

- In 2009–10, Western Australia did not provide data for about 13,000 separations, 2,400 from public hospitals and 10,600 from one private hospital.
- Between 2012–13 and 2013–14, the large decrease in public hospital separations may reflect a change in Western Australia's emergency department admission policy. The Western Australian Department of Health advised that "improved compliance to the Admission Readmission Discharge and Transfer (ARDT) policy led to a reduction in the reporting of invalid admitted activity in the 2013–14 financial year, and hence a decrease in the number of separations and patient days compared with 2012–13."

For South Australia:

- Between 2015–16 and 2016–17, the numbers of separations decreased due to changes in admission practices for some rehabilitation care at the Repatriation General Hospital. During 2017–18, the Repatriation General Hospital closed, and the Royal Adelaide Hospital was relocated (which affected the numbers of patients admitted).

For Tasmania:

- Some psychiatric care provided in public hospitals was categorised as residential care from 2010–11. In previous years, this activity was categorised as admitted patient care.

For the Australian Capital Territory:

- Prior to 2019–20 data were not available for some private hospitals; in 2019–20 these data were provided for the first time.

References

Levy ML, Bacharier LB, Bateman E, Boulet, L, Brightling, C, Buhl R, Cruz AA, Drazen JM, Duijts L, Fleming L, Hiromasa, I, Ko FWS, Krishnan JA, Mortimer K, Pitrez PM, Sheikh A, Yorgancioglu A and Reddel HK (2023) 'Key recommendations for primary care from the 2022 Global Initiative for Asthma (GINA) update'. npj Primary Care Respiratory Medicine. 33 (7), doi:10.1038/s41533-023-00330-1.

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Technical notes

About the data source

Emergency department (ED) data used in the construction of this data set were sourced from the National Non-admitted Patient Emergency Department Care Database (NNAPEDCD). A data quality statement and detailed data specifications for the NNAPEDCD is available online at Hospitals – About the data and About our data – National hospitals data collection.

The data supplied by state and territory health authorities for the Non-admitted Patient Emergency Department Care (NAPEDC) National Minimum Data Set/National Best Endeavours Data Set (NMDS/NBEDS) were used by the AIHW to assemble the National Non-admitted Patient Emergency Department Care Database (NNAPEDCD). The data cover waiting times and other characteristics of presentations to public hospital emergency departments.

The NNAPEDCD provides information on the care provided for non-admitted patients registered for care in public hospital EDs that have:

- a purposely designed and equipped area with designated assessment, treatment, and resuscitation areas
- the ability to provide resuscitation, stabilisation, and initial management of all emergencies
- availability of medical staff in the hospital 24 hours a day
- designated ED nursing staff 24 hours per day 7 days per week, and a designated emergency nursing unit manager.

Methodology

In constructing this data set, emergency department presentations were grouped by week (based on date of presentation), geographical area (based on the patient's place of usual residence), and principal diagnosis, for select groupings of interest. The derivation of these fields is described further below.

The data set reports a count measure, which refers to the total number of presentations each week assigned a principal diagnosis falling within a given condition grouping, for a given geographical area. Counts represent the number of presentations rather than the number of people.

The associated crude rate refers to the number of ED presentations per 100,000 population. Rates were calculated by dividing the count data by the estimate of population for the relevant week and geographical area derived as described in Population data.

Diagnosis groupings

The condition groups in Table 5 were selected for inclusion in the data set based on existing literature on the health impacts of bushfires and bushfire smoke pollution as well as subject matter expert advice. (Note that the ICD-10-AM Short List Eleventh Edition codes used to define the condition groupings in the emergency department context represent those Short List codes that fall into the ICD-10-AM version 11 condition grouping definitions used in the admitted patient analysis.)

Diagnosis data provided by jurisdictions to the NNAPEDCD have been reported using a variety of different coding schemas over the years and reporting varies by jurisdiction. Between 2014–15 to 2017–18, diagnosis data were reported using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM), Second, Sixth, Seventh, Eighth and Ninth Editions (developed across time by the National Centre for Classification in Health (NCCH), the University of Wollongong (UOW), and the Australian Collaboration for Classification Development (ACCD)), the Systematized Nomenclature of Medicine – Clinical Terms – Australian version, Emergency Department Reference Set (SNOMED CT-AU EDRS), and the International Statistical Classification of Diseases and Related Health Problems, Ninth Revision, Clinical Modification (ICD-9-CM). Further detail on the prevalence of coding schemas used by different jurisdictions in different points in different years can be found in the appendices of data tables of Australian Hospital Statistics Emergency Department Care publications (see for example, Table C2 in Australian hospital statistics 2013–14: emergency department care, Table B1 in Emergency department care 2014–15: Australian hospital statistics and Table A2 in Emergency department care 2015–16: Australian hospital statistics).

From 2018–19, Principal diagnoses were provided to the NNAPEDCD using the ICD-10-AM Tenth Edition Principal Diagnosis Short List, developed by the Independent Health and Aged Care Pricing Authority (IHACPA) from the full version of ICD-10-AM. Between 2019–20 and 2021–22, the short list was based on ICD-10-AM, Eleventh Edition. The principal diagnosis data recorded in earlier coding schemas were all mapped to ICD-10-AM Principal Diagnosis Short List Eleventh Edition codes using mapping files.

Table 5: Constituent International Statistical Classification of Diseases and Related Health Problems (ICD), Tenth Revision, Australian Modification (ICD-10-AM), Eleventh Edition Principal Diagnosis Short List codes used for emergency department care data

Condition group	Constituent ICD-10-AM, Eleventh Edition Principal Diagnosis Short List codes
Respiratory conditions	J00, J01.9, J02.9, J03.9, J04.0, J04.1, J05.0, J05.1, J06.9, J09, J10.1, J11.1, J12.9, J15.9, J18.0, J18.1, J18.9, J20.9, J21.9, J22, J30.4, J32.9, J34.8, J35.0, J35.1, J36, J39.9, J40, J42, J43.9, J44.0, J44.1, J44.9, J45.9, J46, J47, J69.0, J70.9, J80, J81, J84.9, J90, J93.9, J95.09, J96.99, J98.4, J98.9

Acute respiratory infection	J00, J01.9, J02.9, J03.9, J04.0, J04.1, J05.0, J05.1, J06.9, J09, J10.1, J11.1, J12.9, J15.9, J18.0, J18.1, J18.9, J20.9, J21.9, J22
Chronic lower respiratory conditions	J40, J42, J43.9, J44.0, J44.1, J44.9, J45.9, J46, J47
Chronic obstructive pulmonary disease (COPD) with acute exacerbation	J44.1
Asthma	J45.9, J46
Heart, stroke, and vascular conditions	I00, I09.9, I10, I13.9, I15.9, I20.0, I20.9, I21.3, I21.4, I21.9, I24.9, I25.9, I26.9, I28.9, I30.9, I31.3, I31.9, I33.9, I38, I40.9, I42.9, I44.2, I45.9, I46.9, I47.1, I47.2, I47.9, I48.9, I49.0, I49.5, I49.9, I50.0, I50.1, I50.9, I51.9, I60.9, I61.9, I62.0, I62.9, I63.9, I64, I66.9, I67.4, I67.9, I71.1, I71.2, I71.3, I71.4, I71.9, I72.9, I73.9, I74.9, I77.9, I80.0, I80.20, I80.9, I82.9, I83.9, I85.0, I87.9, I88.0, I89.9, I95.10, I95.9, I99
Selected heart conditions	I10, I13.9, I15.9, I20.0, I20.9, I21.3, I21.4, I21.9, I24.9, I25.9, I26.9, I28.9, I30.9, I31.3, I31.9, I33.9, I38, I40.9, I42.9, I44.2, I45.9, I46.9, I47.1, I47.2, I47.9, I48.9, I49.0, I49.5, I49.9, I50.0, I50.1, I50.9, I51.9
Coronary heart disease	I20.0, I20.9, I21.3, I21.4, I21.9, I24.9, I25.9
Heart attack (acute myocardial infarction)	I21.3, I21.4, I21.9
Heart failure and cardiomyopathy	I42.9, I50.0, I50.1, I50.9
Atrial fibrillation and heart flutter	I48.9
Stroke	I60.9, I61.9, I62.0, I62.9, I63.9, I64
Mental and behavioural disorders	F03, F05.1, F05.9, F07.2, F09, F10.0, F10.2, F10.3, F10.9, F11.0, F11.2, F11.3, F11.9, F12.0, F12.2, F12.3, F12.9, F13.01, F13.21, F13.31, F13.90, F14.0, F14.2, F14.3, F14.9, F15.01, F15.02, F15.21, F15.22, F15.31, F15.32, F15.90, F16.01, F16.21, F16.31, F16.90, F17.9, F18.0, F18.2, F18.3, F18.9, F19.0, F19.2, F19.3, F19.9, F20.9, F22.9, F23.90, F25.9, F29, F30.9, F31.9, F32.90, F33.9, F39, F41.0, F41.2, F41.9, F43.0, F43.1, F43.2, F43.9, F44.9, F45.9, F48.9, F50.0, F50.9, F53.9, F55.9, F60.9, F69, F89, F91.9, F93.9, F98.9, F99
Mental and behavioural disorders due to psychoactive substance use	F10.0, F10.2, F10.3, F10.9, F11.0, F11.2, F11.3, F11.9, F12.0, F12.2, F12.3, F12.9, F13.01, F13.21, F13.31, F13.90, F14.0, F14.2, F14.3, F14.9, F15.01, F15.02, F15.21, F15.22, F15.31, F15.32, F15.90, F16.01, F16.21, F16.31, F16.90, F17.9, F18.0, F18.2, F18.3, F18.9, F19.0, F19.2, F19.3, F19.9
Mood (affective) disorders	F30.9, F31.9, F32.90, F33.9, F39
Neurotic, stress-related and somatoform disorders	F41.0, F41.2, F41.9, F43.0, F43.1, F43.2, F43.9, F44.9, F45.9, F48.9
Diabetes mellitus	E10.11, E10.65, E10.8, E10.9, E11.11, E11.65, E11.8, E11.9, E14.11, E14.65, E14.8, E14.9

Chronic kidney disease	D59.3, I13.9, N04.9, N05.9, N12, N18.9, N19, N28.9
Dehydration	E86
Burns	T20.0, T20.1, T20.2, T20.3, T21.09, T21.19, T21.29, T21.39, T22.00, T22.10, T22.20, T22.30, T23.0, T23.1, T23.2, T23.3, T24.0, T24.1, T24.2, T24.3, T25.0, T25.1, T25.2, T25.3, T26.4, T28.4, T29.0, T29.1, T29.2, T29.3
Fractures	S02.0, S02.1, S02.2, S02.3, S02.4, S02.5, S02.60, S02.9, S12.9, S22.00, S22.2, S22.32, S22.40, S32.00, S32.82, S32.83, S42.00, S42.10, S42.20, S42.3, S42.40, S42.9, S52.20, S52.30, S52.9, S62.10, S62.30, S62.50, S62.60, S62.8, S72.00, S72.10, S72.3, S72.40, S72.9, S82.0, S82.18, S82.28, S82.38, S82.40, S82.5, S82.6, S82.81, S82.82, S82.9, S92.0, S92.20, S92.3, S92.4, S92.5, S92.9, T02.90
Eye conditions	H00.0, H00.1, H01.9, H02.9, H04.9, H05.0, H05.9, H10.1, H10.9, H11.0, H11.3, H11.9, H16.0, H16.9, H18.9, H20.9, H21.9, H26.9, H27.9, H33.5, H35.6, H35.9, H40.9, H43.9, H44.9, H46, H47.7, H53.1, H53.2, H53.9, H54.0, H54.4, H54.9, H57.1, H57.9
Cellulitis	L03.01, L03.02, L03.12, L03.13, L03.2, L03.3, L03.9

A diagrammatic guide on the relationship between these items is shown in Figure 6.

Analysis by week

Presentations are grouped by week (Monday–Sunday) based on date of presentation. The weeks form a continuous time series over the temporal extent of the data set.

Analysis by geography

Analysis at the SA4 level was based on the patient's usual area of residence (not the SA4 of the emergency department at which the patient presented). SA4 of usual residence was derived from SA2 of usual residence. Data in the NNAPEDCD were supplied by jurisdictions with SA2 of usual residence. From 2017–18 onwards, all jurisdictions supplied data by SA2 of usual residence according to the ASGS 2016 structure. For 2014–15 to 2016–17, while most jurisdictions supplied the data with SA2 of usual residence according to the ASGS 2011 structure, NSW and one hospital in Victoria provided the data with SLA of usual residence. SA2 ASGS 2011 of usual residence was derived by the AIHW through mapping on a probabilistic basis in these cases. For the current project we mapped records with SA2 of usual residence in the ASGS 2011 structure to the ASGS 2016 structure using a concordance file and the SA4 of usual residence derived from the SA2 ASGS.

Reporting of results

In line with AIHW policy on reporting to manage confidentiality, as well as data management protocols for this data set, some data have been suppressed. In particular, where counts for a diagnosis group on a given week in a given jurisdiction or SA4 were less than 5, both the counts and rates were suppressed. Secondary suppression was also applied throughout in the event that a suppressed cell could be identified from a higher-level aggregation.

Data considerations and limitations

Divergence from reporting data

The data presented here on emergency department presentations differ from data presented elsewhere (for example, used for reporting purposes) for multiple reasons. Of particular note, these data are geolocated according to the patient's usual place of residence, rather than the emergency department location.

Annual structure of source data

The NNAPEDCD is a compilation of annual data sets, each comprising emergency department presentations within a particular financial year. Changes to coding standards and practices often occur at the juncture of these financial years.

Specifications of geolocation

The geolocation of the data is based on patients' usual residence, and not the location of the emergency department. The patient's place of usual residence may differ from the location of the patient at the time of condition onset, and any exposure to an environmental influence.

Geographical scope

Because the scope of the collection is limited to emergency departments that meet nationally agreed criteria, most of the data provided to the NNAPEDCD relate to emergency department care provided to people living in *Major cities*. The NNAPEDCD may not include emergency presentations to hospitals that have emergency departments that are not in scope for the Non-admitted Patient Emergency Department Care (NAPEDC) National Minimum Data Set (NMDS)/National Best Endeavours Data Set (NBEDS).

Quality of geolocation data

All the data in this release are presented according to a common geographical structure – 2016 ASGS SA4. However, prior to 2017-18, the 2011 ASGS SA4 structure was used to record patients' area of residence in the underlying source data (NSW data were actually reported to the AIHW using the ASGC SLA structure, and these data were mapped to 2011 SA2s in the compilation of the NNAPEDCD). A probabilistic

population-weighted mapping file has been applied to map these regions to the ASGS 2016 structure in the construction of this data set. For a description of this process, see Analysis by geography.

This mapping will tend to reduce the quality of historical geolocation data reported by 2016 ASGS SA4 (relative to the recent period during which the 2016 ASGS structure was reported in the source data), and the issue will affect some geographical areas more than others. Where whole 2011 ASGS SA2s are mapped to a single 2016 ASGS SA4, the mapping process does not introduce any error. However, some error is introduced when areas are split across 2016 SA4s during the mapping process.

Variation in classifications, coding standards and practices

Although there are national standards for data on non-admitted patient emergency department services, the way those services are defined and counted varies across states and territories, and over time. Therefore, comparisons of ED presentations across jurisdictions, and across time should be considered with caution, and made with reference to the accompanying notes in data tables or in this report.

For more detailed information on the source data, see About the data - Hospitals info.

Quality and comparability of diagnosis data

Practices and policies around recording diagnoses have varied significantly over time, and across jurisdictions. In the emergency department setting, prior to 2018-19 a number of different coding schemas were used to record patients' principal diagnoses across different jurisdictions at different times (see for example, Table C2 in Australian hospital statistics 2013–14: emergency department care, Table B1 in Emergency department care 2014–15: Australian hospital statistics and Table A2 in Emergency department care 2015–16: Australian hospital statistics).

Care has been taken in aligning the data to some extent for this data release; see the Diagnosis groupings section for detail on the mapping process. However, the changes in classifications and practices used to code presentation diagnoses may still affect the comparability of the presentations and diagnosis data in the data set over time and across jurisdictions.

A more general consideration with data from emergency departments is that diagnoses are not coded by qualified clinical coders, as they are for admitted patient care. Emergency department diagnoses data are coded at point of care by medical, nursing or clerical personnel.

State-specific data supply changes

Prior to 2020–21, the following jurisdictions provided data to the NNAPEDCD using the NAPEDC NBEDS specification:

- Queensland (from 2015–16 to 2019–20).
- Victoria and Western Australia (from 2016–17 to 2019–20).

All other states and territories used the NAPEDC NMDS. The data provided using the NAPEDC NBEDS may not be entirely comparable with data provided using the NAPEDC NMDS. For example, under the NAPEDC NBEDS specification, patients in transit are included as Emergency presentations.

From 2020–21, the NNAPEDCD may not include emergency presentations to hospitals that have emergency departments that are not in scope for the NAPEDC NMDS.

In New South Wales:

- In 2018–19 Northern Beaches Hospital opened, Manly Hospital closed, and Mona Vale hospital ceased providing emergency department services. Byron Central Hospital commenced providing emergency department care in 2015–16, replacing care previously provided by Mullumbimby Hospital and Byron Bay Hospital.

In Queensland:

- The Sunshine Coast University Hospital opened in March 2017, but this did not constitute a change in coverage, as the emergency department services were previously provided by a number of smaller hospitals in the region, which reported data for the NNAPEDCD.
- Data for the Royal Children's Hospital and the Mater Children's Hospital were included in reporting in 2014–15. During 2014–15, they were replaced by the Lady Cilento Children's Hospital. All 3 hospitals reported emergency department care data in 2014–15.

In Western Australia:

- Fiona Stanley Hospital Launched its Ambulatory Emergency Care Clinic in February 2021, which numerous Urgent and Semi-urgent presentations were referred to from triage for treatment.
- In 2018-19, six Public acute group C hospitals started reporting in Western Australia. This constitutes a change in coverage, as the analogous activity was previously not reported for the NNAPEDCD.
- Nickol Bay Hospital closed and was replaced by Karratha Health campus during the 2018–19 year. Both hospitals were reported in 2018–19.
- Perth's Children's Hospital opened in June 2018 and Princess Margaret Hospital closed. Both hospitals were reported in 2017–18.
- The St John of God Midland Public Hospital opened, and the Swan District Hospital closed in November 2015. Both hospitals were reported in 2015–16.
- In 2014–15, Busselton Health Campus began reporting emergency department care data, after the Busselton hospital was redeveloped to include a larger emergency department. This constituted a change in coverage as the activity was previously not reported for the NNAPEDCD.
- In 2014–15, the Fremantle Hospital's emergency department was replaced by the Fiona Stanley Hospital emergency department. Both hospitals were reported for 2014–15.

In South Australia:

- South Australia commenced reporting for three Public acute group C hospitals in 2019–20: Mount Barker District Soldier Memorial Hospital, South Coast District Hospital and Murray Bridge Soldier'' Memorial Hospital. This constitutes a change in coverage.

In the Northern territory:

- Palmerston Regional Hospital opened in August 2018. This constitutes a change in coverage.

Go to Technical notes

Technical notes

About the data source

Data on Medicare Benefits Schedule (MBS) service claims are sourced from the Medicare Benefits Schedule data collection.

Medicare is Australia's universal health insurance scheme. Medicare provides access to free or subsidised treatment by health professionals such as doctors, specialists, optometrists, and in specific circumstances, dentists, and other allied health practitioners. Medicare also provides free treatment as a public patient in a public hospital.

All Australian residents and overseas visitors covered by a reciprocal health-care agreement requiring immediate medical attention are eligible for subsidised treatment under Medicare. The Medicare Benefits Schedule (MBS) is a listing of services that qualify for a benefit under the Health Insurance Act 1973. The associated MBS claims data comprise information on MBS services claimed through Medicare. These include visits to a GP or to certain specialists and allied health professionals, and hospital visits by a private patient in a public or private hospital.

The claims data do not include information on public patients in public hospitals or services that are not listed on the MBS.

The MBS data collection accessed for this report is maintained by the Commonwealth Department of Health and Aged Care. Information on patterns in MBS service use over time may be found at: Medicare Benefits Scheme funded services over time and Medicare Benefits Scheme funded services: monthly data, Dashboard.

Methodology

Data were extracted on MBS service claims for services provided out-of-hospital. Data were extracted for the variables shown in Table 6.

Table 6: Specifications relevant to Medicare Benefits Schedule data

Type of information	Data item	Description
MBS claim	MBS item number	A unique numeric identifier and associated description for an item for which an MBS benefit is paid for a provided service. Each number has an associated description.
MBS claim	Number of services	Number of services rendered (includes out-of-hospital services only).
MBS claim	Date of service	Date of service provision.
Patient	Patient postcode	Patient's Medicare enrolment postcode at the time of processing the service claim.

Data were extracted for select groupings of item numbers (Table 7), and the constructed data set reports the count of services associated with each of these groupings. The crude rate is also reported. Rates were calculated by dividing the count data by the estimate of population for the relevant week and geographical area derived as described in the Population data section.

Table 7: MBS item claim groupings

Broad category	MBS item grouping[1]	MBS Item Numbers[2]	Description
Respiratory-related	Respiratory test items	11505, 11506, 11512	Spirometry items (For further details, see: Note DN.1.20 – Medicare Benefits Schedule)
Respiratory-related	Asthma cycle of care items	2546–2559, 2664–2677; 265–271	The 'asthma cycle of care' involves at least 2 asthma-related consultations with a GP within 12 months for a patient with moderate-to-severe asthma. There are 12 MBS items for GP consultations that relate to the completion of an asthma cycle of care. These visits include the development of a written asthma action plan.[3]

Cardiovascular-related	Cardiovascular diagnostic procedures and investigations	11700–11727	Electrocardiography monitoring, including during exercise or pharmacological stress; ambulatory electrocardiography monitoring; blood dye dilution indicator test; implanted pacemaker testing; and implanted defibrillator testing.
Cardiovascular-related	Cardiovascular diagnostic imaging services	55113–55136, 57360–57361, 59903–59973	Includes echocardiography (includes exercise and pharmacological stress echocardiography), computed tomography, and angiocardiography.
Mental health-related	Mental health services items	As listed in Medicare-subsidised services – Mental health – AIHW, *Data source* section (up to 20 January 2023)	See Medicare-subsidised services – Mental health – AIHW, *Data source* section (up to 20 January 2023)

Notes

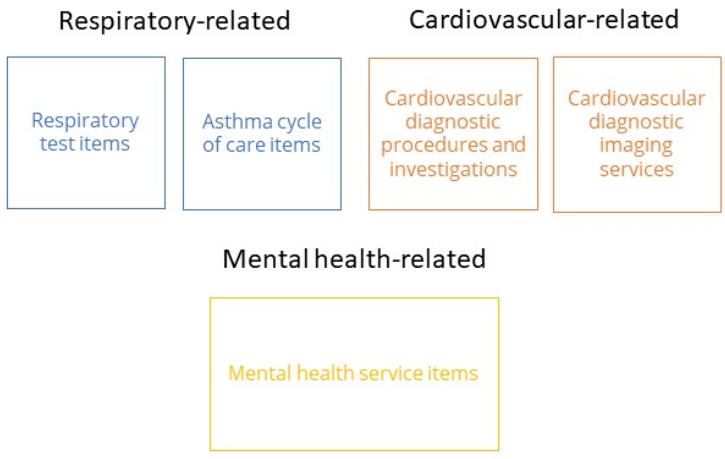
1. Includes out-of-hospital services only.
2. For item descriptions associated with specific item numbers, including for items that have been removed from the MBS, see: Department of Health and Aged Care 2023 *Medicare Item Map* [data set]. Department of Health and Aged Care, Australian Government, accessed 20 November 2023.
3. Asthma action plans may also be developed outside of the asthma cycle of care (for which there is no specific MBS item) and it is likely that these items capture a small proportion of the people with a written plan. In addition many people may not have a written asthma action plan (see: Using PBS and MBS data to report on the treatment and management of chronic respiratory conditions 2016–17).

The data were aggregated by MBS item grouping, week and SA4.

- Week was based on the date of service, with weeks (Monday to Sunday) being identified by their start date and forming a continuous time series with no overlap of weeks spanning calendar years.
- SA4 was derived from the postcode of the patient's Medicare enrolment address (at the time of processing the claim). Postcodes were mapped to SA4 based on an ABS population-based correspondence. Where the area of a postcode crossed more than one SA4 the data were proportionally allocated to SA4 according to the population proportions.

A representation of the items is shown in figure 7.

Figure 7: Representation of relationship between item groupings in Medicare Benefits Schedule data



Note: The size of the boxes does not reflect the volume of services associated with each category.

Reporting of results

In line with AIHW Policy on reporting to manage confidentiality as well as data management protocols for this data set, some data have been suppressed. In particular, where counts of a given MBS item grouping on a given week in a given SA4 were less than 6, the data were not reported. Secondary suppression was also applied throughout in the event that a suppressed cell could be identified from a higher-level aggregation.

Data considerations and limitations

Association with health conditions

While MBS data provide useful information on medical services used, they provide limited information about why a service was used – and therefore it is not possible to determine, solely from MBS data, the reason a patient was accessing the MBS item.

Specifications of geolocation

The geolocation of the data is based on patients' Medicare enrolment address, and not the place of service provision. The patient's address may differ from the location of the patient at the time of condition onset, and any exposure to an environmental influence.

Quality of geolocation data

All the data in this release are presented according to a common geographical structure – 2016 ASGS SA4. However, in the source MBS data, geographical area is identified by the patients' Medicare enrolment address postcode. A single mapping file from 2016 is used to map from postcodes to 2016 ASGS SA4s, based on the distribution of the population within the postcode in 2016, and the intersection of its boundaries with the boundaries of the SA4.

In this context, quality of the data is not affected where postcodes completely fall within a single SA4. However, quality will be affected for postcodes which are divided across SA4s, and for which the geographical distribution of the population has changed over time.

Seasonality

Data for this report were based on the date that the service occurred. When comparing data from different time periods, the impact of public holidays on the volume of services should be considered. For example, 'service days' vary from year to year, and variation seen in the data may be at least partly due to this.

Coverage of mental health services items

The data in this release relate only to services claimed under specific mental health care MBS item numbers. Therefore, the reported number of services is unlikely to represent all service use by people who receive mental health care as it is unclear how many people receive GP mental health-related care that is billed as a consultation against, for example, a general MBS item number. In addition, people may receive mental health care from service providers or practitioners that are not subsidised by the MBS.

Coverage of asthma cycle of care items

Asthma cycle of care involves at least 2 asthma-related consultations with a GP within 12 months for a patient with moderate-to-severe asthma.

Note that patients may manage their asthma with other service items, and this would not be captured in the asthma cycle of care data (AIHW 2018). Around one-third of people with asthma (30% of males and 38% of females) have a written asthma action plan (see: Chronic respiratory conditions: Asthma).

Asthma cycle of care items were removed from the Medicare Benefits Schedule as of 1 November 2022.

Policy changes

Service utilisation can be affected by MBS policy changes. Some such relevant changes in more recent years are described below. Further detail on policy changes to the MBS may be found at MBS-funded services data – technical notes.

- 1 January 2004: New extended Medicare safety net (EMSN) introduced to further protect families and individuals who face high out-of-pocket costs for non-hospital patient billed services. This safety net was based on out-of-pocket costs between the benefit and the fee charged. Once legislated thresholds for out-of-pocket costs were exceeded, MBS non-hospital services for the remainder of the calendar year attracted higher rebates. The original safety net continued to apply.
- 1 January 2010: Introduction of the capping of EMSN benefits, which placed a maximum limit on the amount of EMSN benefit that could be paid, was applied to selected MBS items.
- 13 March 2020: New telehealth items, including telephone consultations items, introduced into the MBS to protect patients and doctors during the COVID-19 pandemic. From March 2020, new temporary bulk billing incentive items for patients vulnerable to COVID-19 were introduced and there was a doubling in the rebate for bulk billing incentives, up to and including 30 September 2020. Substantial lockdowns impacted on Medicare utilisation in 2020. A catch-up in service provision in 2021 occurred particularly for services impacted upon by the lockdown – for example, diagnostic imaging.

For respiratory function tests:

- From 1 November 2018 there were a number of changes to the MBS items for respiratory function tests, including those for spirometry. For further detail, see Changes to diagnostic services for respiratory function tests.

For diagnostic imaging:

- November 2009: A new bulk billing incentive was introduced into the MBS for out-of-hospital diagnostic imaging services. Rebates are paid at 95% of Schedule fee for the item (except for some items). In addition to the new incentive, providers receive an additional bulk billing incentive for unreferred diagnostic imaging services that are bulk billed to patients aged under 16 or concessional patients.

For mental health services items:

- November 2006: Introduction of Better Access to Mental Health Care Initiative (Better Access). The program funded up to 12 individual and 12 group mental health sessions per year (plus an additional 6 sessions in exceptional circumstances) for eligible patients.
- July 2011: Mental health videoconference items introduced for eligible patients in regional/remote areas. These items are rendered by specialists or consultant physicians.
- November 2011: Better Access scheme reduced to 10 individual and 10 group sessions per calendar year. GP rebates for mental health items changed to time-dependent (minimum of 20 minutes).
- March 2012: Additional six Better Access sessions in exceptional circumstances reinstated for transition period ending 31 December 2012.
- November 2017: Better Access telehealth videoconference items introduced for eligible patients in regional/remote areas. These items are rendered by allied health practitioners (clinical psychologists, psychologists, occupational therapists, and social workers).
- November 2019: MBS mental health items for eating disorder treatment introduced.
- January 2020: Bushfire response mental health items, including telehealth. Up to 10 items per calendar year, which do not count against Better Access quota.
- March 2020: Additional mental health telehealth (including telephone) items introduced in response to the COVID-19 pandemic available across Australia.
- October 2020: Better Access Pandemic Support. Additional 10 individual sessions per calendar year up to 31 December 2022.
- December 2020: Better Access items for residential aged care facilities to allow access up to 20 individual services each calendar year.

References

AIHW (Australian Institute of Health and Welfare) (2018) *Using PBS and MBS data to report on the treatment and management of chronic respiratory conditions 2016–17*, AIHW, Australian Government, accessed 14 December 2023.

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Technical notes

About the data source

Data on prescriptions dispensed are sourced from the Pharmaceutical Benefits Scheme (PBS) data collection.

The Commonwealth government subsidises the cost of a wide range of prescription medicines through two separate schemes, the Pharmaceutical Benefits Scheme (PBS), available to current Medicare card holders and other eligible people, and the Repatriation Pharmaceutical Benefits Scheme (RPBS), for eligible war veterans and their dependants.

Most prescriptions for General Schedule medicines are dispensed through community pharmacies, but PBS is also available through private hospitals and eligible public hospitals to patients on discharge and day patients. In addition, a number of drugs are distributed under alternative arrangements when the usual supply through community pharmacies is unsuitable. Examples are the highly specialised drugs program and General Schedule medicines that are supplied directly to Indigenous patients via Aboriginal Health Services in remote areas of Australia (RAAHS program).

PBS data includes all prescriptions dispensed under the PBS and RPBS and processed for subsidy by Services Australia, including prescriptions that were not eligible for subsidy (referred to as 'under co-payment' prescriptions). Data excludes some PBS programs where patient-level details are not available, for example the RAAHS program. The PBS data collection accessed for this report is maintained by the Commonwealth Department of Health and Aged Care.

PBS data contains information about the medication supplied and details about the patient, prescriber and supplier of the medication.

The PBS does not cover medicines supplied to public hospital in-patients, over-the-counter medicines or private prescriptions.

Any future reference to PBS data in this document will include both PBS and RPBS prescriptions (PBS accounting for over 95% of the total by volume).

Methodology

PBS data were extracted for the variables shown in Table 8.

Table 8: Pharmaceutical Benefits Scheme (PBS) data variables

Type of information	Data item	Description
PBS prescription	ATC code	ATC code of the PBS item as listed in the Schedule of Pharmaceutical Benefits.
PBS prescription	Number of prescriptions	The total number of times that a pharmaceutical benefit is supplied to the patient.
PBS prescription	Date of supply	The date the prescription was supplied to the patient.
Patient	Patient postcode	Patient's Medicare enrolment postcode at date of supply.

ATC = Anatomical Therapeutic Chemical; PBS = Pharmaceutical Benefits Scheme

Data were extracted for categories of medicines associated with treating the following types of health conditions, according to the following broad groupings of Anatomical Therapeutic Chemical (ATC) codes:

- Respiratory – R03, H02AB06/07
- Mental health – N05, N06A/B
- Cardiovascular – C, B01.

See Table 9 for a more detailed breakdown of the codes. For more information on the ATC classification, please see: WHO Collaborating Centre for Drug Statistics.

PBS ATC classification versus WHO classification
There are a small number of cases where the therapeutic use of the drug as listed by the Therapeutic Goods Administration, and hence by PBS, differs from the WHO classification. In these cases the drug may be classified to a different group that more accurately reflects the therapeutic use of the drug in Australia, see: Pharmaceutical Benefits Scheme (PBS) – Body system.

A representation of the items is shown in Figure 8.

The data were aggregated by prescription group, week and SA4.

- Week was based on the date of supply, with weeks (Monday to Sunday) being identified by their start date and forming a continuous time series over the duration of the data set.

- SA4 was derived from the postcode of the patient's residential address. Postcodes were mapped to SA4 based on an ABS population-based correspondence. Where the area of a postcode crossed more than one SA4 the data were proportionally allocated to SA4 according to the population proportions. Note that for around 85% of the data the postcode was contained wholly within an SA4, requiring no proportional allocation.

Records with missing patient details were excluded from the final data set. These accounted for less than 1% of the selected data.

The constructed data set reports the count of prescriptions dispensed associated with each of these groupings. The crude rate is also reported. Rates were calculated by dividing the count data by the estimate of population for the relevant week and geographical area derived as described in the Population data section.

Table 9: PBS medicine groupings by Anatomical Therapeutic Chemical (ATC) codes

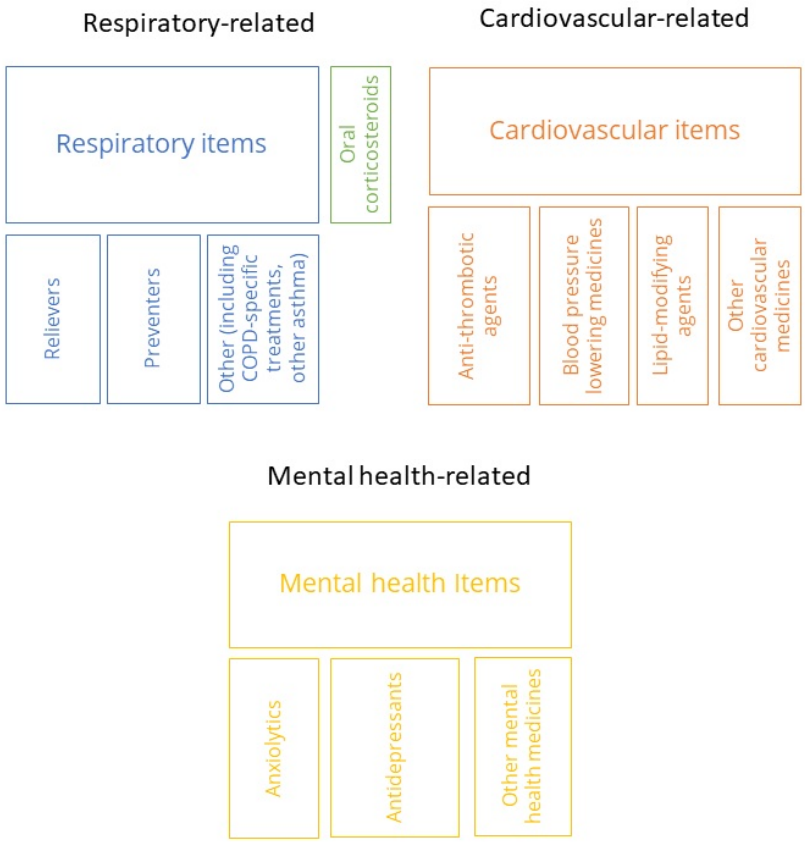
Broad category	Prescription group	ATC codes	Description
Respiratory-related items	Respiratory items	R03	Drugs for obstructive airway disease
	Relievers	R03AC02, R03AC03	R03AC02 – Salbutamol R03AC03 – Terbutaline Belonging to a common class of medications (short-acting beta2-agonists (SABA)) dispensed and used to relieve breathlessness and wheeze due to airway narrowing and to prevent exercise-induced airway narrowing in people with asthma.
	Preventers	R03AK, R03BA, R03DC	R03AK[1] – combination medications which include an inhaled corticosteroid and a long-acting beta2 agonist (LABA). R03BA – Inhaled corticosteroids used as a long-term maintenance treatment for asthma to reduce symptoms and prevent exacerbations. R03DC – Leukotriene receptor antagonists (LTRA) are the first-line preventer in the management of asthma in children aged 2–14. They are provided as tablets and may be used as an alternative or adjunct to inhaled corticosteroids.
	Other (including COPD-specific treatments, other asthma)	Remainder of R03	For a more detailed description of respiratory medications see: Using PBS and MBS data to report on the treatment and management of chronic respiratory conditions 2016–17
	Oral corticosteroids	H02AB06, H02AB07	Oral corticosteroids are used for short-term treatment of exacerbations of asthma and COPD to reduce the duration and severity of episodes. Note that these medications can also be used for the treatment of other conditions such as arthritis, colitis and allergic/inflammatory conditions.
Mental health-related items	Mental health items	N05A, N05B, N05C, N06A, N06B	See below
	Anxiolytics	N05B	N05B – This group comprises preparations used in the treatment of neuroses and psychosomatic disorders associated with anxiety and tension, for example benzodiazepines.
	Antidepressants	N06A	This group comprises preparations used in the treatment of endogenous and exogenous depressions. The group is subdivided mainly according to mode of action. The various antidepressants have different modes of action, and the classification will not reflect the exact mode of action of the various antidepressants.

	Other mental health	Residual	N05A – Antipsychotics: this group comprises drugs with antipsychotic actions (that is, neuroleptics). N05C – Hypnotics and sedatives. Hypnotic drugs are used to induce sleep and treat severe insomnia. Sedative drugs are prescribed to reduce excitability or anxiety. NO6B – Psychostimulants, agents used for ADHD and nootropics. Agents used for Attention-Deficit Hyperactivity Disorder (ADHD) and to improve impaired cognitive abilities (nootropics).
Cardiovascular-related items	Cardiovascular items	B01, C01, C02, C03, C04, C05, C07, C08, C09, C10	See below. For further details on cardiovascular medicines see Medicines for cardiovascular disease
	Anti-thrombotic agents	B01	Antithrombotic medicines prevent blood clots forming or dissolve existing blood clots. These medicines help to reduce the risk of heart attack among people with coronary heart disease and reduce the risk of further strokes among patients with a history of ischaemic stroke.
	Blood pressure lowering medicines	C03, C07, C08, C09	C03 – Diuretics C07 – Beta-blocking agents C08 – Calcium channel blockers C09 – Renin-angiotensin system agents These medicines are used to treat high blood pressure. Combinations of blood pressure lowering medicines are often used because this increases their effectiveness and allows lower doses of each drug to be used.
	Lipid-modifying agents	C10	Lipid-modifying medicines control blood cholesterol levels. They are effective in preventing heart attacks and reducing coronary heart disease deaths
	Other cardiovascular medicines	C01, C02, C04, C05	C01 – Cardiac therapy: is a therapeutic subgroup of the ATC classification system. The subgroup includes cardiac glycosides, antiarrhythmics and cardiac stimulants, which are used to regulate the rhythms of the heart. They may also be used to treat angina and heart failure. The subgroup also includes vasodilators, which open the main blood vessels of the body, as well as other cardiac preparations used in treating coronary heart disease C02 – Antihypertensives[2] suppress signals to the heart that make it beat harder, or open and relax peripheral arteries. These have largely been replaced by newer medicines to control blood pressure. C04 – Peripheral vasodilators: open blood vessels in outer parts of the body, such as the arms and legs, making it easier for the heart to pump blood and lowering blood pressure. Overall, these make up a very small proportion of cardiovascular-related prescriptions. C05 – Vasoprotectives: act to relieve certain conditions of the blood vessels such as haemorrhoids and varicose veins. Overall, these make up a very small proportion of cardiovascular-related prescriptions.

Notes

1. Single Maintenance and Reliever Therapy involves the use of inhaled corticosteroid and a long-acting beta-2 agonist combination inhaler (budesonide/formoterol) for both maintenance and as a reliever.
2. Antihypertensives can also be considered blood pressure lowering medications, though they have largely been replaced by newer medicines.

Figure 8: Representation of relationship between item groupings in Pharmaceutical Benefits Scheme data



Note: The size of the boxes does not indicate the volume of medicines dispensed.

Reporting of results

In line with AIHW Policy on reporting to manage confidentiality as well as data management protocols for this data set, some data have been suppressed. In particular, where prescription counts on a given week in a given SA4 for a given groups of drugs were less than 6, the data were not reported. Secondary suppression was also applied throughout in the event that a suppressed cell could be identified from a higher-level aggregation.

Data considerations and limitations

Association with health conditions

PBS data do not generally include the reason a medicine has been prescribed. However, the restriction requirements of a drug as listed in the Schedule of Pharmaceutical Benefits can give some information about the reasons for prescribing, depending on the level of authority required. For more details about Authority requirements see PBS for prescribers – Services Australia.

Scope

Data are based on prescriptions that were dispensed.

Specifications of geolocation

The geolocation of the data is based on patients' Medicare enrolment address, and not the place the prescription was dispensed. The patient's address may differ from the location of the patient at the time of condition onset, and any exposure to an environmental influence.

Quality of geolocation data

All the data in this release are presented according to a common geographical structure – 2016 ASGS SA4. However, in the source PBS data, geographical area is identified by the patients' Medicare enrolment address postcode. A single mapping file from 2016 is used to map from postcodes to 2016 ASGS SA4s, based on the distribution of the population within the postcode in 2016, and the intersection of its boundaries with the boundaries of the SA4.

In this context, quality of the data is not affected where postcodes completely fall within a single SA4. However, quality will be affected for postcodes which are divided across SA4s, and for which the geographical distribution of the population has changed over time.

Seasonality

Data for this report were based on the date a prescription was supplied. When comparing data over time, the impact of public holidays on the volume of prescriptions dispensed should be considered. Other examples of potential seasonal effects include the influence of the timing and severity of the annual 'flu season' on respiratory medications.

Also see the PBS safety net scheme section.

Respiratory medications

- Note that asthma reliever medication salbutamol inhalers (R03AC02) and terbutaline (R03AC03) inhalers can be purchased over the counter at a pharmacy without a prescription. These sales are not included in PBS data.
- The Single Maintenance and Reliever Therapy (SMART) regimen is the use of budesonide/eformoterol combined (Symbicort) as a single inhaler for both preventer and reliever therapy. Only certain form and strengths of budesonide/eformoterol are eligible for SMART therapy. These Item codes amount to 50% of use by volume. Given that only 50% of the scripts for this drug qualify for SMART therapy, and it is impossible to tease out how much of that 50% may be for reliever use rather than preventer, it was decided to categorise this drug as preventer only.
- Oral corticosteroids may also be used to treat conditions other than respiratory related conditions.

For specific notes and known issues relating to the data, see Table 10.

PBS under co-payment prescriptions

On 1 April 2012, the PBS data collection expanded in scope to include under co-payment prescription data. Prior to April 2012, PBS prescription data were only collected for subsidised prescriptions.

Under the PBS the cost of most prescription medicines is subsidised by the Commonwealth government. Patients are required to pay a co-payment towards the cost of their prescription with the government paying the remaining cost. To determine the amount of co-payment, patients are classified as either general (Medicare card) or concessional (Medicare card + concessional card). At 1 January 2022 the maximum co-payment fee was set at $42.50 for general and $6.80 for concessional patients. For current and historical co-payment amounts, see Pharmaceutical Benefits Scheme (PBS) | Fees & Patient Contributions.

A PBS prescription is classified as under co-payment when the dispensed price of the prescription does not exceed the patient co-payment, and the patient pays the full cost of the medication.

As a consequence of the PBS pricing structure, under co-payment prescriptions are predominantly dispensed to general non-safety net patients. The maximum co-payment for general patients was $36.10 in 2013, increasing to $42.50 in 2022.

For calendar year 2013, the first full year that under co-payment data was collected, under co-payment data accounted for around 24% of PBS prescriptions (67 million / 283 million). By 2022 this had increased to 32% (105 million/330 million).

PBS safety net scheme

The PBS safety Net scheme is designed to protect patients and their families requiring a large number of PBS or RPBS prescriptions. The safety net scheme operates over a calendar year. When eligible patient contributions of patients and families reach their safety net threshold the co-payment is reduced for the remainder of the year, with the general co-payment reduced to the concessional rate, and the concessional co-payment reduced to zero.

Safety Net entitlements can act as an incentive for repeat prescriptions to be used to obtain medicines earlier than they are needed, historically resulting in an artificial increase in prescription volume in November/December, with a consequent decrease in the early months of the following year.

This pattern has been reduced to some degree by the introduction of the following legislation:

- 1 January 2006 – the safety net 20-day rule.

For certain PBS medicines a repeat supply of the same medicine within 20 days will fall outside the Safety Net, that is, the cost will not count towards a person's Safety Net threshold or if the Safety Net threshold has been reached, the charge will be the usual PBS contribution, not the reduced Safety Net amount.

- 1 January 2016 – the safety net early supply rule.

Expanded PBS early supply rule provisions replaced the Safety Net 20-day rule and extended early supply rules to apply to more medicines.

COVID-19 impact in 2020

In March 2020, there was an increase of 23.1% in the total number of PBS scripts dispensed for the month compared to March 2019, followed by a decrease in April. This spike was most significant for the respiratory group of medicines. In response to the increase, steps were taken to limit the over-buying of medicines (Therapeutic Goods Administration 2020).

Table 10: Specific notes relating to Pharmaceutical Benefits Scheme data

Category	Sub-category	ATC codes	Under co-payment notes - comparison between 2011-12 and 2012-13	Dominant drug notes

Respiratory	Reliever	R03AC02 R03AC03	There is an increase in script volumes from 2012–13 with the introduction of the under co-payment data collection, script volumes increasing by 17% in 2012–13 compared with previous year.	• Primarily salbutamol, comprising 95% of this category in 2012–13 increasing to 98% in 2021–22. • Salbutamol is mostly the pressurised inhaler form, with nebules solution form accounting for 12% of salbutamol in 2012–13, dropping to around 6% in 2021–22.

Respiratory	Preventer (includes combinations)	R03BA
		R03DC
		R03AK
		(preventer + combinations less biologics)
			No change, with drugs priced above the co-payment.	• There are two dominant drugs, each with around a third of scripts for the group in 2021–22:
				  ◦ FLUTICASONE PROPIONATE + SALMETEROL (Seretide®)
				  ◦ BUDESONIDE + FORMOTEROL (Symbicort®).
				• FLUTICASONE FUROATE + VILANTEROL (Breo Ellipta®), a recent combination drug, was 12% of the group in 2021–22.

Respiratory	Other – mainly COPD	Remainder of R03	No change in 2012–13, with drugs priced above the co-payment.	The dominant drug has been Tiotropium (COPD), ranging from 75% of scripts for the group (up to 2013–14) and reducing to 40% in 2021–22, with new combination drugs being introduced in recent years, for example, FLUTICASONE FUROATE + UMECLIDINIUM + VILANTEROL (18% in 2021–22)
Respiratory	Oral corticosteroids	H02AB06 H02AB07	There is a significant increase in script volumes from 2012–13 with the introduction of the under co-payment data collection, script volumes increasing by 50% in 2012–13.	Prednisolone tablets have consistently accounted for over 60% of scripts over the whole period.
Mental Health	Anxiolytics	N05B	• There is an increase in script volume from 2012–13 with the introduction of the under co-payment data collection, script volume increasing by 17% in 2012–13 • Diazepam accounted for 70% of the under co-payment scripts in 2012–13.	There are two dominant drugs, accounting for 97% of the group in 2021–22: • Diazepam (Valium® and generics) – increasing from 50% of the group in 2010-11 to 75% in 2021–22 (mostly the 5mg tablet). • Oxazepam (Serepax® and generics) – 33% of the group in 2010-11, reducing to 21% in 2021–22.
Mental Health	Antidepressants	N06A	• There is a significant increase in script volume from 2012–13 with the introduction of the under co-payment data collection, script volume increasing by 32% in 2012–13. • Sertraline (Zoloft and generics) and Escitalopram (Lexapro and generics) together accounted for almost 50% of the under co-payment scripts in 2012–13.	Usage is spread across a number of drugs: • Sertraline (Zoloft® and generics) and Escitalopram (Lexapro® and generics) both have around 18% market share in 2021–22, with Venlafaxine, Desvenlafaxine, Mirtazapine and Amitriptyline all at around 10%.

Mental Health	Other	N05A, N05C, N06B	• There is an increase in script volume from 2012–13 with the introduction of the under co-payment data collection, script volume increasing by 12% in 2012–13 • Temazepam (Normison and generics) accounted for 70% of the under co-payment scripts.	• The dominant drug in this group has been Temazepam (Normison and generics), around 33% of the group in 2010-11 and reducing to 18% in 2021–22. • Other prominent drugs are Methylphenidate (Ritalin®), Olanzapine and Quetiapine, all at around 14% in 2021–22.
Cardiovascular	Anti-thrombotic agents	B01	• There is an increase in script volume from 2012–13 with the introduction of the under co-payment data collection, script volume increasing by 7% in 2012–13. • Warfarin was the main contributor, accounting for 85% of the under co-payment scripts.	• The dominant drug in this group was Warfarin, around 34% of the group in 2010-11. • This reduced to 10% by 2021–22 with patients switching to new drugs Rivaroxaban and Apixaban (combined around 50% of the group in 2021–22). • Clopidogrel accounted for 34% of the group in 2010-11, reducing to 21% in 2021–22. • Note that Aspirin (14% in 2010-11) was delisted from the PBS general schedule for most patients on 1 Jan 2016.
Cardiovascular	Blood pressure lowering medicines	C03, C07, C08, C09	• There is a significant increase in script volume from 2012–13 with the introduction of the under co-payment data collection, script volume increasing by 26% in 2012–13. • Most drugs contributed to this increase according to their market share.	Usage is spread across many drugs in this group. • Perindopril and Perindopril with combinations have a combined volume of 17% of the group in 2021–22 (14% in 2010-11).
Cardiovascular	Lipid-modifying medicines	C10	• There is a minor impact on script volume, under co-payment scripts accounting for 5% of the total in 2012–13. However, the historical rate of increase for the group dropped in that year, so there was no noticeable overall impact on script volume.	The dominant drugs in this group are the statins (atorvastatin, rosuvastatin, simvastatin), accounting for 80% of the script volume in all years.
Cardiovascular	Other	C01, C02, C04, C05	• There is an increase in script volume from 2012–13 with the introduction of the under co-payment data collection, script volume increasing by 12% in 2012–13. • A number of drugs contributed to this increase, with Moxonidine, Sotalol and Prazosin accounting for over 50% of the increase.	Usage is spread across a number of drugs in this group: • In 2021–22 main drugs were Moxonidine (18%), Isosorbide Mononitrate (12%), Prazosin and Sotalol (both 10%). • In 2010-11 main drugs were Isosorbide Mononitrate (19%), Glyceryl Trinitrate (18%), Prazosin (12%) and Sotalol (8%).

ATC = Anatomical Therapeutic Chemical

References

Therapeutic Goods Administration (2020) *Coronavirus (COVID-19): Information on medicines and medical devices*, Therapeutic Goods Administration website, accessed 13 December 2023.

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Technical notes

Population data are used in calculating the crude rates presented in this data set.

Estimated resident population (ERP)

Population estimates held by the AIHW are sourced from the Australian Bureau of Statistics (ABS). For Statistical Area Level 4 (SA4) areas, ERPs for SA4 areas based on the 2016 Australian Statistical Geographic Standard (ASGS) were available for 30 June for years from 2001 to 2021 (ABS 2017, ABS 2022). June 2022 SA4 populations were available in the ASGS 2021 schema.

Methodology

The 30 June 2022 SA4 populations which were available in the ASGS 2021 schema were mapped to ASGS 2016 using a mapping file.

Linear interpolation between the yearly 30 June ERPs was then undertaken by AIHW to estimate weekly ERP for each (ASGS 2016) SA4. Note that a limitation of this method is that it does not necessarily reflect the actual trajectory of the population changes.

For the state and territory level data, the aggregate of the constituent SA4-level population data (for SA4s in scope) was used as the population denominator in calculating crude rates.

References

Australian Bureau of Statistics (2017) *Population by Age and Sex, Regions of Australia, 2016*, ABS. cat. No. 3235.0 ((data available via ABS.Stat) Downloaded by AIHW on 28/09/2018).

Australian Bureau of Statistics (2022) *Regional population by age and sex*. Reference period 2021 (downloaded from .Stat Data Explorer on 07/09/2022).

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Technical notes

Interpreting data variation over time and geography

As noted in the Data considerations and limitations sections (under each of the source data sets) in this report, there are a range of factors that can cause variation in counts and rates for given data items over time and across or between jurisdictions. Causal links cannot be determined without further detailed analysis. Some of the factors that may lead to variation in the data are listed below.

Fundamental factors include:

- changes/differences in population demographic profiles
- policy shifts (for example, the introduction of the Better Access Scheme for MBS mental health services; changing PBS medication restriction levels and definitions of the eligible population)
- changes in disease prevalence, health characteristics or treatment options
- changing markets for health service provision
- seasonality, for example:
  - changes in incidence of illness (for example, respiratory infections during winter, 'back-to-school asthma')
  - impact of public holidays on demand/ supply of health services
  - policy-induced changes (for example, the increase in PBS prescriptions filled towards the end of the calendar year associated with the PBS safety net policy)
- natural volatility.

Methodological factors include:

- changes/differences in diagnosis coding schemas and practices adopted by different jurisdictions or hospitals at different times
- changes in data scope (for example, the scope of the PBS collection expanded to capture under co-payment scripts on 1 April 2012)
- the application of mapping files to construct 2016 ASGS SA4 geography.

Additionally, intermittent shocks (for example, natural disasters – but also, events such as the COVID-19 outbreak) can cause effects which can vary across time and geographically, and can affect policies, practices or service use/ access.

Impact of COVID-19 on health service use

The COVID-19 outbreak led to significant shifts in many data series – and these were both fundamental and methodological in nature. For example, there were shifts in demand for different types of health services (for instance, due to lockdowns, and associated changes in the profile of disease), the delivery of health services changed considerably (for instance, with greater use of telehealth, prescription stockpiling), and relatedly in some cases, new codes were introduced to reflect the evolved health system. For further information on the impact of COVID-19 on service use, see:

- *Australia's hospitals at a glance* – Impact of COVID-19 on hospital care
- Admitted patient activity – What impact has COVID-19 had on admitted patient activity
- Emergency department care activity – Impact of COVID-19 on emergency department activity
- *Impacts of COVID-19 on Medicare Benefits Scheme and Pharmaceutical Benefits Scheme service use*.

Implications for research design

This data set, due to its innate structure, lends itself to particular research methods.

For example, some empirical methods attempt to exploit the panel aspect of data – analysing variation across both geographical and temporal dimensions. These methods might allow researchers to attribute shifts in health service use in particular locations at particular times to environmental events, through assessing the extent to which evident trends and volatility in affected areas are also evident in unaffected areas. However, issues around the quality of the data (including its geolocation), and the comparability of the data over time and geography (as discussed throughout these notes) will need to be taken into consideration. Additionally, the aggregation of data to a weekly time period by SA4 geography will need to be considered in interpreting any results (for example, in interpreting estimates of the magnitude of changes in service use associated with environmental exposures).

In the context of bushfires, research might also benefit from a consideration of other factors (such as extreme heat), which are temporally and geographically correlated with bushfire, and which could separately impact health service use.

There are limitations to the utility of these data in assessing longer-term impacts of bushfire on health and health service use. For example, this data set would not facilitate a cohort study (following particular individuals over time). It reflects service use counts, rather than individuals. Moreover, since people tend to relocate over time, the correlation between an individual's recorded place of residence and the likelihood they were exposed to an historical environmental event in that place, declines the longer the time lag since the event occurred.

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Glossary

acute
A term used to describe something that comes on sharply and is often brief, intense and severe.

acute care
Care provided to patients admitted to hospital that is intended to cure illness, alleviate symptoms of illness or manage childbirth.

acute myocardial infarction
Life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot.

anxiety disorders
A group of mental disorders marked by excessive feelings of apprehension, worry, nervousness and stress. Includes generalised anxiety disorder, obsessive-compulsive disorder, panic disorder, post-traumatic stress disorder and various phobias.

asthma
A common, chronic inflammatory disease of the air passages that presents as episodes of wheezing, breathlessness and chest tightness due to widespread narrowing of the airways and obstruction of airflow.

cardiomyopathy
A condition where there is direct and widespread damage to the heart muscle, weakening it. It can be due to various causes, such as viral infections and severe alcohol abuse. It can lead to an enlarged, thickened and dilated heart as well as heart failure.

cardiovascular disease/condition
Any disease of the cardiovascular system, namely the heart (cardio) or blood vessels (vascular). Includes angina, heart attack, stroke and peripheral vascular disease. Also known as circulatory disease.

chronic kidney disease (CKD)
Refers to all conditions of the kidney, lasting at least 3 months, where a person has had evidence of kidney damage and/or reduced kidney function, regardless of the specific cause.

chronic obstructive pulmonary disease (COPD)
Serious, progressive and disabling long-term lung disease where damage to the lungs, usually because of both emphysema and chronic bronchitis, obstructs oxygen intake and causes increasing shortness of breath. By far the greatest cause is cigarette smoking.

condition (health condition)
A broad term that can be applied to any health problem, including symptoms, diseases and various risk factors (such as high blood cholesterol, and obesity). Often used synonymously with disorder.

co-payment
The amount the patient pays towards the cost of a Pharmaceutical Benefits Scheme (PBS) or Repatriation Pharmaceutical Benefits Scheme (RPBS) subsidised medicine. Patients have different maximum co-payments based on their level of entitlement and safety net status. This does not take into account brand premiums or pharmacists applying the $1 discount. For under co-payment scripts the amount is based on the dispensed price for the quantity of medicine supplied but does not account for any additional fees or discounts applied by pharmacies. For current and historical co-payment amounts see the PBS website.

coronary heart disease
A disease due to blockages in the heart's own (coronary) arteries, expressed as angina or a heart attack. Also known as ischaemic heart disease.

COVID-19 (Coronavirus disease 2019)
An infectious disease caused by the SARS-CoV-2 virus.

depression
A mood disorder with prolonged feelings of being sad, hopeless, low and inadequate, with a loss of interest or pleasure in activities and often with suicidal thoughts or self-blame.

depressive disorders
A group of mood disorders with prolonged feelings of being sad, hopeless, low and inadequate, with a loss of interest or pleasure in activities and often with suicidal thoughts or self-blame.

diabetes (diabetes mellitus)
A chronic condition in which the body cannot properly use its main energy source, the sugar glucose. This is due to a relative or absolute deficiency in insulin, a hormone that is produced by the pancreas and helps glucose enter the body's cells from the bloodstream and then be processed by them. Diabetes is marked by an abnormal build-up of glucose in the blood, and it can have serious short- and long-term effects. For the 3 main types of diabetes see type 1 diabetes, type 2 diabetes and gestational diabetes.

diagnostic imaging
The production of diagnostic images, for example, computed tomography, magnetic resonance imaging, X-rays, ultrasound and nuclear medicine scans.

dialysis
An artificial method of removing waste substances from the blood and regulating levels of circulating chemicals – functions usually performed by the kidneys.

disease
A physical or mental disturbance involving symptoms (such as pain or feeling unwell), dysfunction or tissue damage, especially if these symptoms and signs form a recognisable clinical pattern.

disorder (health disorder)
A term used synonymously with condition.

emergency department presentation
The presentation of a patient at an emergency department is the earliest occasion of being registered clerically and occurs following the arrival of the patient at the emergency department.

estimated resident population (ERP)
The official Australian Bureau of Statistics estimate of the Australian population. The ERP is derived from the 5-yearly Census counts and is updated quarterly between each Census. It is based on the usual residence of the person.

general practitioner (GP)
A medical practitioner who provides primary comprehensive and continuing care to patients and their families in the community.

gestational diabetes
A form of diabetes when higher than optimal blood glucose is first diagnosed during pregnancy (gestation). It may disappear after pregnancy but signals a high risk of diabetes occurring later on.

health
Term relating to whether the body (including the mind) is in a well or ill state. With good health, the state of the body and mind are such that a person feels and functions well and can continue to do so for as long as possible.

heart attack
Life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot. The medical term commonly used for a heart attack is myocardial infarction. See also cardiovascular disease.

heart failure
When the heart functions less effectively in pumping blood around the body. It can result from a wide variety of diseases and conditions that can impair or overload the heart, such as heart attack, other conditions that damage the heart muscle directly (see cardiomyopathy), high blood pressure, or a damaged heart valve.

high blood pressure/ hypertension
Definitions can vary. The Australian Bureau of Statistics' National Health Survey 2017–18 measured blood pressure at the time of the interview. High blood pressure was defined as any of the following:

- systolic blood pressure greater than or equal to 140 mmHg
- diastolic blood pressure greater than or equal to 90 mmHg
- receiving medication for high blood pressure.

Note: This only refers to the measurement at the time of the interview and does not necessarily indicate a chronic condition. For this survey, this is distinguished from hypertension which was self-reported as a long-term health condition

hospitalisation
An episode of hospital care that starts with the formal admission process and ends with the formal separation process (synonymous with admission and separation). An episode of care can be completed by the patient's being discharged, being transferred to another hospital or care facility, or dying, or by a portion of a hospital stay starting or ending in a change of type of care (for example, from acute to rehabilitation). Admission date is used to group hospitalisation in this release. Other reports often use separation date to group hospitalisations.

hypertension
See high blood pressure/ hypertension

illness
A state of feeling unwell, although the term is also often used synonymously with disease.

ischaemia
Reduced or blocked blood supply. See also ischaemic heart disease.

ischaemic heart disease
Also heart attack and angina (chest pain). Also known as coronary heart disease. See also ischaemia

ischaemic stroke A type of stroke due to a reduced or blocked supply of blood in the brain. Also known as cerebral infarction
lipids
Fatty substances, including cholesterol and triglycerides, which are in blood and body tissues.

Medicare
A national, government-funded scheme that subsidises the cost of personal medical services for all Australians and aims to help them afford medical care. The Medicare Benefits Schedule (MBS) is the listing of the Medicare services subsidised by the Australian Government. The

schedule is part of the wider Medicare Benefits Scheme (Medicare).

Medicare Benefits Schedule (MBS) data collection
The MBS data collection contains information on services that qualify for a benefit under the Health Insurance Act 1973 and for which a claim has been processed. The database comprises information about MBS claims (including benefits paid), patients and service providers. MBS claims data is an administrative by-product of the Services Australia administration of the Medicare fee-for-service payment system.

Medicare-subsidised services
Refer to services listed in the Medicare Benefits Schedule that resulted in a payment of Medicare benefit.

mental health
A state of wellbeing in which the person realises their own abilities, can cope with normal stresses of life, can work productively and can contribute to the community. Mental health is the capacity of individuals and groups to interact with one another and their environment in ways that promote subjective wellbeing, optimal development and the use of cognitive, affective and relational abilities.

mental illness (or mental health disorder)
A clinically diagnosable disorder that significantly interferes with an individual's cognitive, emotional or social abilities. The term covers a spectrum of disorders that vary in severity and duration, including anxiety disorders, affective disorders (such as depression), psychotic disorders and substance use disorders.

Metadata
Information about how data are defined, structured and represented. It makes data files meaningful by describing the information captured in data, and how it is measured and represented.

mood (affective) disorders
A set of psychiatric disorders, also called mood disorders. The main types of affective disorders are depression, bipolar disorder, and anxiety disorder. Symptoms vary by individual and can range from mild to severe.

Pharmaceutical Benefits Scheme (PBS) data collection
The PBS data collection contains information on prescription medicines that qualify for a benefit under the *National Health Act 1953* and for which a claim has been processed. The database comprises information about PBS scripts and payments, patients, prescribers and dispensing pharmacies. PBS data is an administrative by-product of the Services Australia administration of the PBS Online system.

PM2.5
Atmospheric particulate matter (PM) that have a diameter of 2.5 micrometres (0.0025 millimetres) or less.

prescription pharmaceuticals
Pharmaceutical drugs available only on the prescription of a registered medical or dental practitioner and available only from pharmacies.

prescription
An authorisation issued by a medical profession for a patient to be issued a particular medication.

principal diagnosis
The diagnosis established after study to be chiefly responsible for occasioning an episode of patient care (hospitalisation), an episode of residential care or an attendance at the health care establishment. Diagnoses are recorded using the relevant edition of the International statistical classification of diseases and related health problems, 10^{th} revision, Australian modification (ICD-10-AM).

rate
One number (numerator) divided by another number (denominator). The numerator is commonly the number of events in a specified time. The denominator is the population 'at risk' of the event. Rates (crude, age-specific and age-standardised) are generally multiplied by a number such as 100,000 to create whole numbers.

respiratory condition
A chronic respiratory condition affecting the airways and characterised by symptoms such as wheezing, shortness of breath, chest tightness and cough. Conditions include asthma and chronic obstructive pulmonary disease (COPD) – which includes emphysema and chronic bronchitis.

specialist services
Services that support people with specific or complex health conditions and issues, who are generally referred by primary health care providers. They are often described as 'secondary' health care services. In many cases, a formal referral is required for an individual to be able to access the recommended specialist service.

specialists
Fully-qualified physicians who have specialised and work primarily in areas other than general practice. Physicians in training are normally excluded.

stroke
An event that occurs when an artery supplying blood to the brain suddenly becomes blocked or bleeds. A stroke often causes paralysis of parts of the body normally controlled by that area of the brain, or speech problems and other symptoms. It is a major form of cerebrovascular disease.

type 1 diabetes
A form of diabetes mostly arising among children or younger adults (but can be diagnosed at any age) and marked by a complete lack of insulin. Insulin replacement is needed for survival. It is a lifelong disease, for which the exact cause is unknown, but believed to be the result of an interaction of genetic and environmental factors. See diabetes (diabetes mellitus).

type 2 diabetes

The most common form of diabetes, is a condition in which the body becomes resistant to the normal effects of insulin and gradually loses the capacity to produce enough insulin in the pancreas. The condition has strong genetic and family-related (non-modifiable) risk factors and is also often associated with modifiable risk factors. See diabetes (diabetes mellitus).

Under co-payment pharmaceuticals
Pharmaceuticals listed in the PBS or RPBS, the total costs of which are equal to, or less than, the statutory patient contribution for the class of patient.

Notes

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