

1.1 Chronic obstructive pulmonary disease

Context

This data item examines hospitalisations for chronic obstructive pulmonary disease (COPD) in people of all ages based on their place of residence. COPD is a serious chronic lung disease that often impairs quality of life and sometimes causes premature death.¹ The term COPD encompasses chronic bronchitis and emphysema. COPD accounted for 355,328 hospital bed days, and 15% of all potentially preventable hospitalisations, in Australia in 2013–14.²

Australia, along with Ireland, New Zealand and Austria, has high hospitalisation rates for COPD compared with other countries in the Organisation for Economic Co-operation and Development (OECD).³ Although Australia's smoking rate was below the OECD average in 2013 (13% and 20%, respectively, for daily smoking in people over 15 years of age), it was close to the OECD average in 2000 (25% and 26%, respectively).³

Smoking is the most common cause of COPD. There is typically a lag of decades between starting regular smoking and the appearance of symptoms. Genetic factors, chronic asthma, pulmonary tuberculosis and environmental exposures (for example, to fumes and dust) are also associated with an increased risk of COPD.¹ Approximately 30–40% of people with COPD continue to smoke, and people with COPD often find it more difficult to quit than other smokers.⁴

Rates of smoking, or a history of smoking, are high in regional and remote areas, and among people with socioeconomic disadvantage. Higher smoking rates among disadvantaged groups are associated with a complex interaction between social, economic, physiological and cultural factors.⁵ Many of these factors originate in childhood and accumulate through an individual's lifetime.⁵

Poor health literacy is associated with worse outcomes in COPD, independently of socioeconomic disadvantage.⁶ As a result of poor health literacy, many people with COPD are not able to understand written information or complex verbal information well enough to make appropriate health decisions.⁷ This can reduce their ability to take medicines correctly, maintain good healthcare habits and respond to acute exacerbations of COPD promptly.⁷

Chronic obstructive pulmonary disease

The rate of smoking among Aboriginal and Torres Strait Islander Australians is 41%, which is more than double the rate for the Australian population as a whole.⁸ Aboriginal and Torres Strait Islander Australians have approximately 2.5 times the rate of COPD as other Australians.^{9,10}

Approximately 5% of Australians aged 55 years and over have COPD, rising to 9% of those aged 85 years and over.¹ COPD was the fourth leading cause of burden of disease in 2011.¹¹

Symptoms of COPD include shortness of breath with little or no exertion, coughing, phlegm production and wheezing. Patients with COPD may require hospitalisation for severe exacerbations, which are often caused by infections of the respiratory tract or the tracheobronchial tree. Interventions to reduce exacerbations and hospitalisations in COPD include use of long-acting muscarinic antagonist (LAMA) and long-acting beta2 agonist (LABA) medicines.^{12,13} Vaccination against influenza reduces by approximately 50% the risk of exacerbations, hospitalisations and death in people with COPD.^{13,14} Pulmonary rehabilitation is recommended to improve exercise capacity and quality of life, and reduce hospitalisations and length of stay for COPD.^{15–19} Further details of recommended management are in the COPD-X guidelines.¹⁴

Low health literacy and a lack of culturally safe services for Aboriginal and Torres Strait Islander Australians, and people from other culturally and linguistically diverse backgrounds may be a barrier to accessing health care effectively.²⁰ This may contribute to poorer medication management and lower influenza vaccination rates, with resulting higher hospitalisation rates. No national data are

available on the individual health literacy of Aboriginal and Torres Strait Islander Australians. However, education attainment, and school-based literacy and numeracy scores for Aboriginal and Torres Strait Islander Australians are significantly lower than for the general population.^{8,21} In addition, compared with other Australians, Aboriginal and Torres Strait Islander Australians experience disadvantage across a range of socioeconomic indicators, including education, employment and income.²² It is therefore highly likely that Aboriginal and Torres Strait Islander Australians may be at risk of lower individual health literacy.²⁰

About the data

Data are sourced from the National Hospital Morbidity Database, and include both public and private hospitals. Rates are based on the number of hospitalisations for COPD (based on the potentially preventable hospitalisation specification) per 100,000 people in 2014–15. Because a record is included for each hospitalisation, rather than for each patient, patients hospitalised more than once in the financial year will be counted more than once. The full data specification is available from the Australian Institute of Health and Welfare.²³

The analysis and maps are based on the residential address of the patient and not the location of the hospital. Rates are age and sex standardised to allow comparison between populations with different age and sex structures. Data quality issues – for example, the recognition of Aboriginal and Torres Strait Islander status in datasets – could influence the variation seen.

What do the data show?

Magnitude of variation

In 2014–15, there were 66,250 hospitalisations for COPD, representing 244 hospitalisations per 100,000 people (the Australian rate).

The number of hospitalisations for COPD across 324[†] local areas (Statistical Area Level 3 – SA3) ranged from 63 to 990 per 100,000 people. The rate was **15.7 times as high** in the area with the highest rate compared to the area with the lowest rate. The number of hospitalisations varied across states and territories, from 193 per 100,000 people in the Australian Capital Territory to 619 in the Northern Territory (Figures 1.2–1.5).

After the highest and lowest 10% of results were excluded and 259 SA3s remained, the number of hospitalisations per 100,000 people was 3.3 times as high in the area with the highest rate compared to the area with the lowest rate.

Rates by SA3 for two additional years, 2012–13 and 2013–14, are available online at www.safetyandquality.gov.au/atlas.

Analysis by remoteness and socioeconomic status

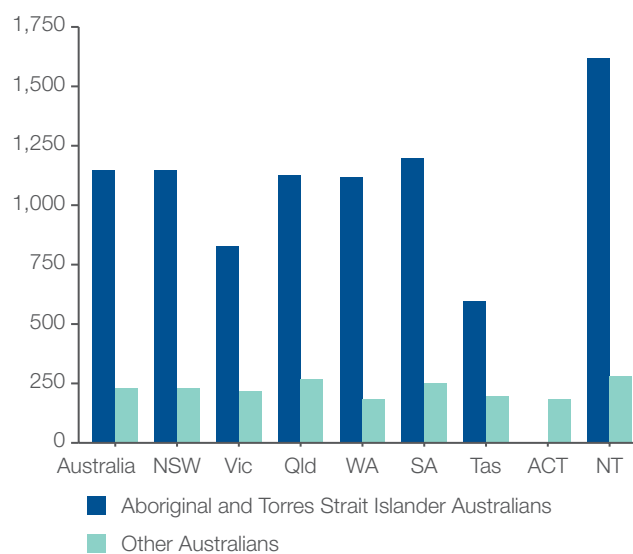
Two SA3s in remote parts of Australia (Bourke – Cobar – Coonamble and Alice Springs) had hospitalisation rates that were more than three times the national rate. Seven further SA3s in outer regional and remote areas (Palmerston, Port Douglas – Daintree, Lower Murray, Outback – North and East, Outback – South, Far North, and Kimberley) had rates that were more than double the national rate. Rates of hospitalisation for COPD were substantially higher in

remote areas than in other areas. Hospital admission rates increased with socioeconomic disadvantage, regardless of remoteness category (Figure 1.6).

Analysis by Aboriginal and Torres Strait Islander status

The rate for Aboriginal and Torres Strait Islander Australians (1,146 per 100,000 people) was 5 times as high as the rate for other Australians (230 per 100,000 people). Rates were higher among Aboriginal and Torres Strait Islander Australians than other Australians in all states and territories (Figure 1.1).

Figure 1.1: Number of potentially preventable hospitalisations – COPD per 100,000 people, age and sex standardised, by state and territory and Indigenous status, 2014–15



The data for Figure 1.1 are available at www.safetyandquality.gov.au/atlas.

[†] There are 333 SA3s. For this item, data were suppressed for nine SA3s due to a small number of hospitalisations and/or population in an area.

Notes:

Some of the published SA3 rates were considered more volatile than others. These rates are excluded from the calculation of the difference between the highest and lowest SA3 rates in Australia.

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Data for ACT (Aboriginal and Torres Strait Islander Australians) have been suppressed.

Data by Indigenous status should be interpreted with caution as hospitalisations for Aboriginal and Torres Strait Islander patients are under-enumerated and there is variation in the under-enumeration among states and territories.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Chronic obstructive pulmonary disease

Interpretation

Potential reasons for the variation include differences in:

- The prevalence of COPD and comorbidities
- Adherence to evidence-based guidelines by clinicians and service providers²⁴
- Access to community pulmonary rehabilitation or physiotherapy services and multidisciplinary care
- Access to secondary prevention programs, such as support for regular physical activity and a healthy diet, which decrease the rate of hospitalisation for COPD²⁵
- Inability to always afford medications and supplemental oxygen when needed
- Patients' health literacy and ability to self-manage exacerbations
- Rates of influenza and pneumococcal vaccination
- Air quality and occupational exposures
- Rates of smoking, which are influenced by socioeconomic disadvantage, psychological distress, Aboriginal and Torres Strait Islander status, and remoteness
- Clinicians' focus on smoking cessation
- Rates of respiratory infections, which are related to socioeconomic disadvantage; people living in overcrowded conditions are more likely to come into contact with others who have influenza, which can cause an exacerbation of COPD
- Primary care services that are affordable, culturally appropriate and easily accessible
- The quality, efficiency and effectiveness of primary health care received by Aboriginal and Torres Strait Islander Australians
- The proportion of people from non-English-speaking backgrounds; the risk of hospitalisations for COPD is higher in these groups¹
- Diagnostic error.

Pulmonary rehabilitation is a program of exercises and education strategies delivered by health professionals to improve breathing and function. Estimates of the use of pulmonary rehabilitation by people with COPD in Australia have ranged from less than 5% to 10%.²⁶ Uptake of pulmonary rehabilitation is lower for Aboriginal and Torres Strait Islander Australians with COPD than for other Australians.²⁷ One reason for this low uptake is difficulty in accessing services.^{17,18,28} For example, access has been limited by the small number of services, restriction of services to hospital settings in many cases, and difficulties with transport and comorbidities.^{29,30} Depression and a lack of perceived benefit also prevent some people with COPD from attending pulmonary rehabilitation.³⁰

System factors likely to influence hospitalisation rates for COPD include access to multidisciplinary respiratory specialty care (particularly in regional and remote areas), integrated care and telehealth. Hospital management of common comorbidities in people with COPD also plays an important role, as does good discharge planning to reduce readmissions.

Variations between areas may not directly reflect the practices of the clinicians who are based in these areas. Area boundaries reflect where people live rather than where they obtain their health care. Patients may travel outside their local area to receive care.

Case study: Pulmonary rehabilitation

Aboriginal and Torres Strait Islander Australians with COPD have lower rates of participation in pulmonary rehabilitation than the general Australian population, but a culturally appropriate program has succeeded in engaging patients and improving outcomes. The program combined cardiac and pulmonary rehabilitation and prevention, and was open to Aboriginal and Torres Strait Islander Australians with COPD, heart failure, ischaemic heart disease or at least two cardiovascular risk factors (for example, smoking, obesity, hypertension).²⁷

Dyspnoea, fatigue and mental health scores improved significantly after the eight-week program, which comprised two exercise sessions and one self-management education session per week.²⁷ The program encouraged participation by providing a variety of exercise types and transport, if required; 79% of the 92 participants attended at least half the sessions. Aboriginal health workers recruited and supported participants, and liaised between the Aboriginal health service and external clinicians. Co-location with the Aboriginal health service and use of Aboriginal health workers were thought to be key factors in the program's success.²⁷

Addressing variation

Reducing smoking rates is key for reducing hospitalisations for COPD, particularly among Aboriginal and Torres Strait Islander Australians, people at socioeconomic disadvantage, people living in regional or remote areas, and people who already have COPD. Rates of smoking are higher among people living in outer remote and remote areas of Australia (21%) than in those living in inner regional areas (17%) or major cities (13%).³¹

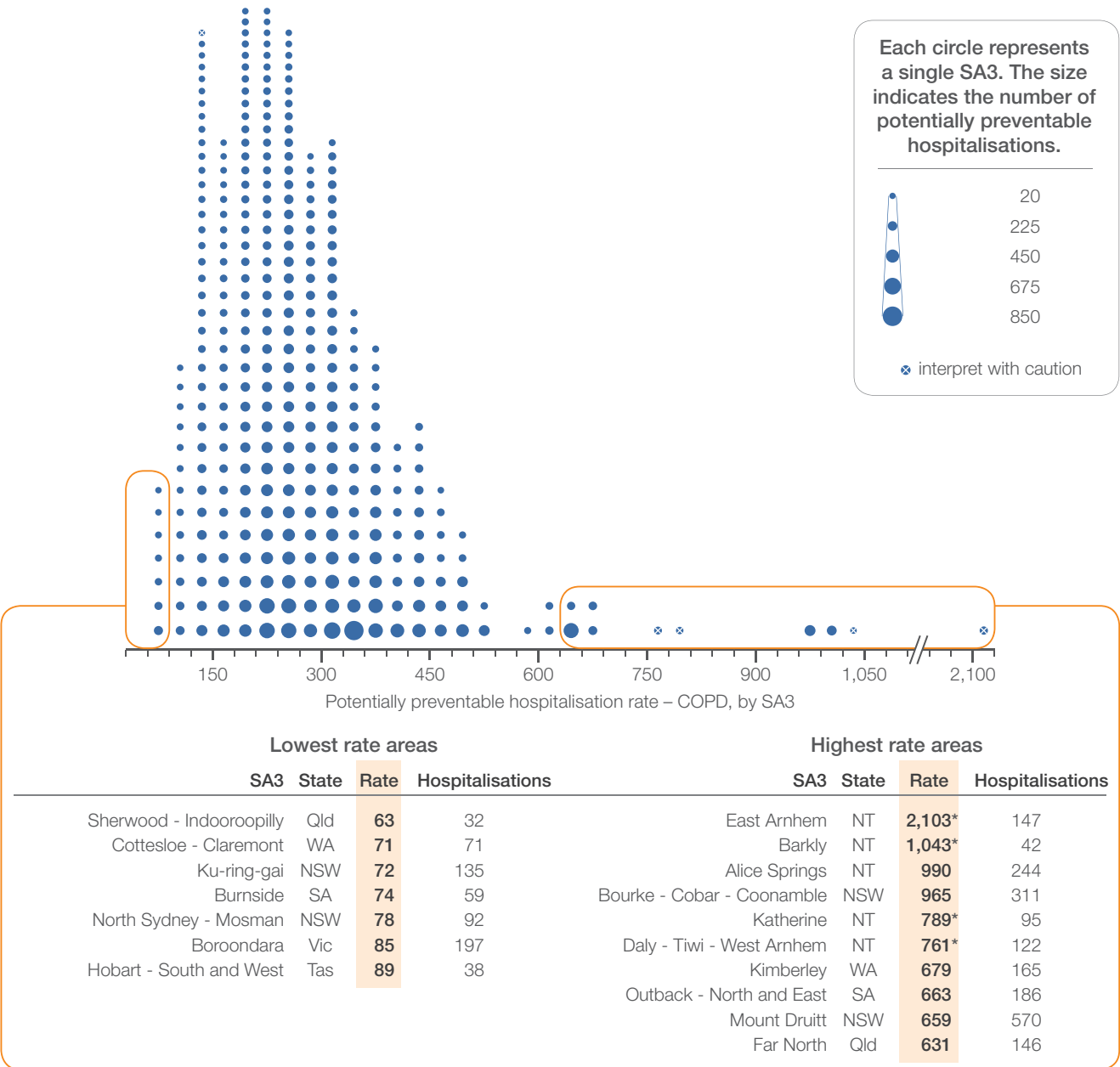
A potential lack of adherence to best practice in primary care contributes to variation in hospitalisation, by leading to differences in education about inhaler technique, differences in rates of influenza and pneumonia vaccination, differences in smoking cessation practices, and late diagnosis. Earlier diagnosis through greater use of spirometry in primary care, strong care coordination and improved access to pulmonary rehabilitation could substantially improve outcomes for people with COPD in Australia.³²

Providing pulmonary rehabilitation in community settings with easy access to transport has shown positive results in improving attendance and reducing hospitalisations.^{17,18} Access to pulmonary rehabilitation in rural and remote areas is particularly challenging. A training program for health professionals in rural and remote areas in providing pulmonary rehabilitation has been trialled successfully and has improved access in these areas.¹⁷ Access to culturally sensitive pulmonary rehabilitation programs will be important if these programs are to benefit Aboriginal and Torres Strait Islander Australians with COPD. Improving health literacy and self-management is particularly important for people with COPD who do not have access to pulmonary rehabilitation.

Chronic obstructive pulmonary disease

Improving individual and environmental health literacy requires a coordinated and collaborative approach. Strategies are needed to build the capacity of people to understand the choices they have, and make decisions about their health and health care. As well, the capacity of the health system to support, encourage and allow this to occur needs to increase.³³ A number of strategies are recommended for improving communication about COPD at the clinician level – for example, using simple language, telephone follow-up and case management; using simple action plans with pictograms rather than words; and providing written material in the patient's preferred language.⁷

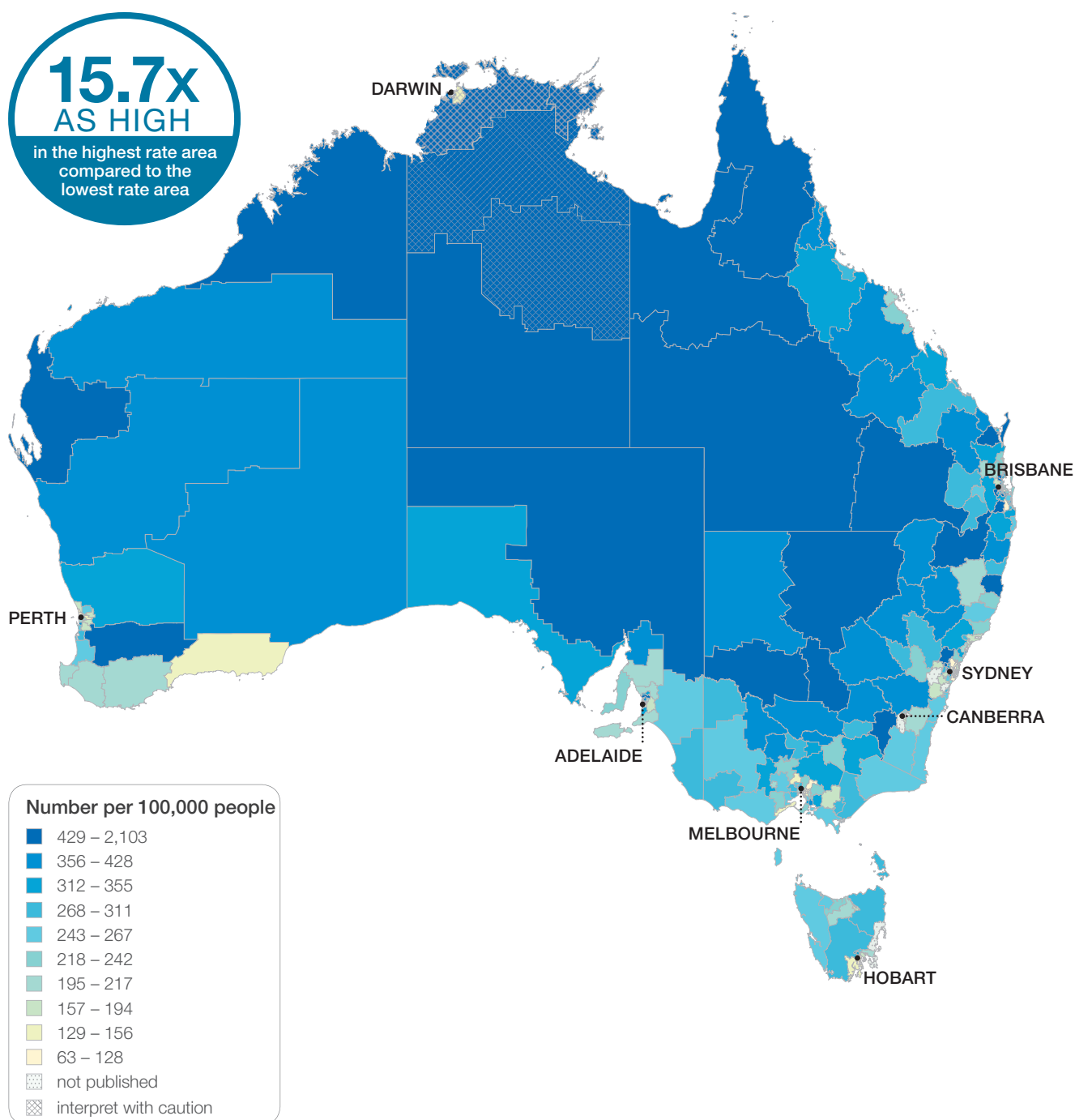
Figure 1.2: Number of potentially preventable hospitalisations – COPD per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), 2014–15



Notes:
Rates are age and sex standardised to the Australian population in 2001.
Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).
Analysis is based on the patient's area of usual residence, not the place of hospitalisation.
Crosses and asterisks indicate rates that are considered more volatile than other published rates and should be interpreted with caution. These rates are excluded from the calculation of the difference between the highest and lowest SA3 rates in Australia.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Chronic obstructive pulmonary disease

Figure 1.3: Number of potentially preventable hospitalisations – COPD per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), 2014–15: Australia map



Notes:

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

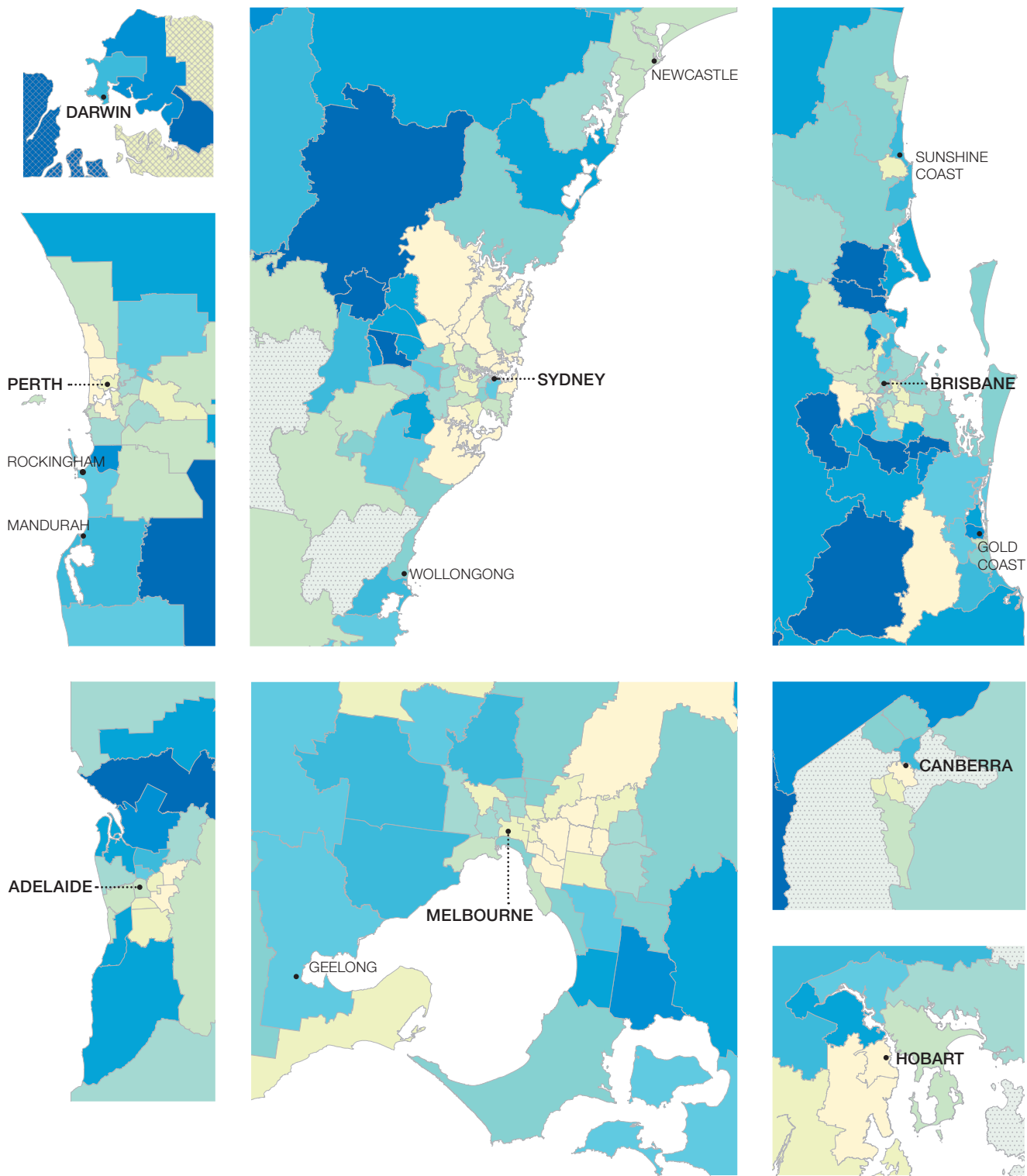
Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Hatching indicates a rate that is considered more volatile than other published rates and should be interpreted with caution.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Figure 1.4: Number of potentially preventable hospitalisations – COPD per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), 2014–15: capital city area maps



Notes:

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Hatching indicates a rate that is considered more volatile than other published rates and should be interpreted with caution.

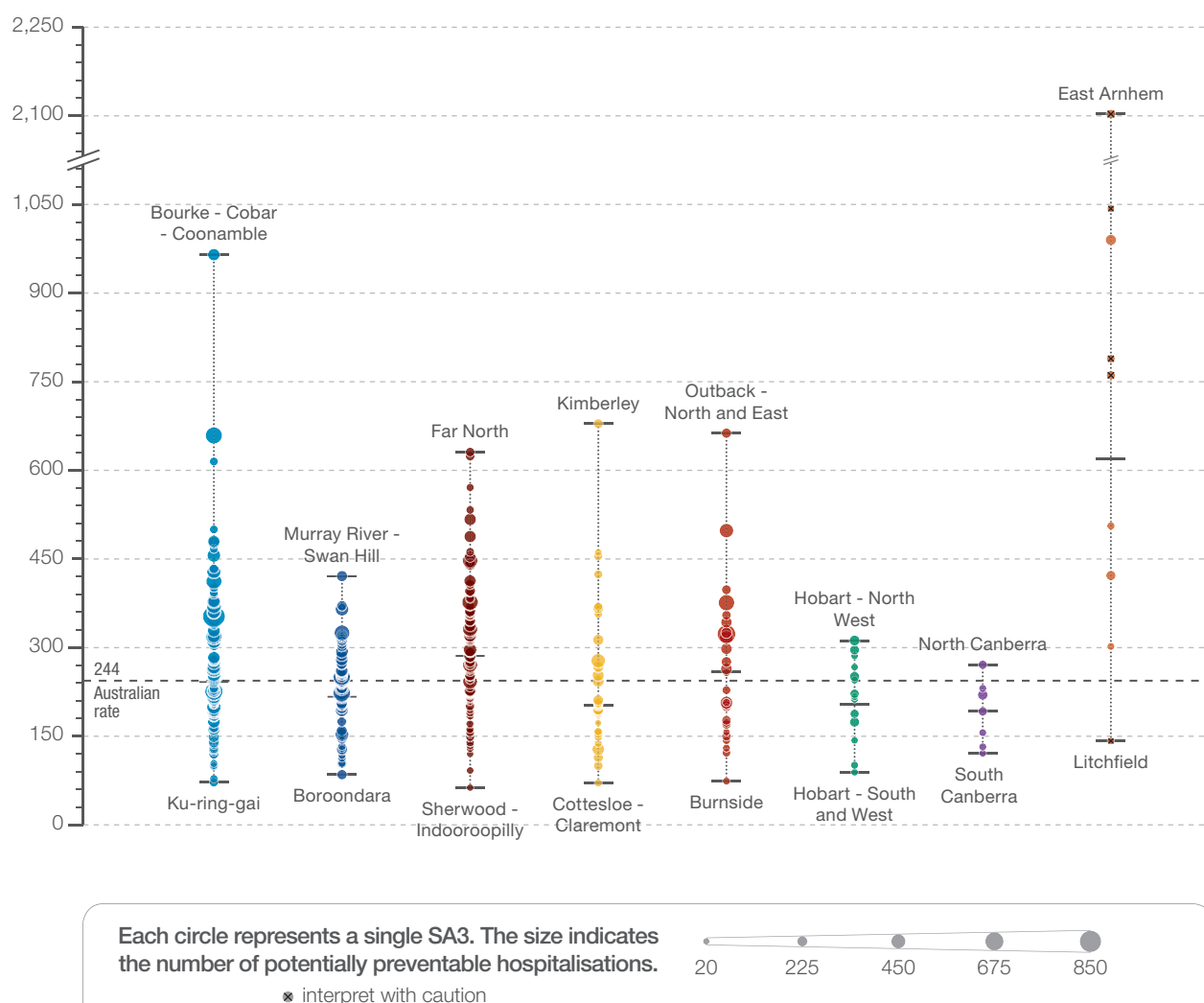
For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Chronic obstructive pulmonary disease

Figure 1.5: Number of potentially preventable hospitalisations – COPD per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), state and territory, 2014–15

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Highest rate	965	421	631	679	663	312	271	2,103*
State/territory	242	217	286	203	259	204	193	619
Lowest rate	72	85	63	71	74	89	121	142*
No. hospitalisations	22,072	14,882	14,846	5,352	5,799	1,438	700	1,001



Notes:

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

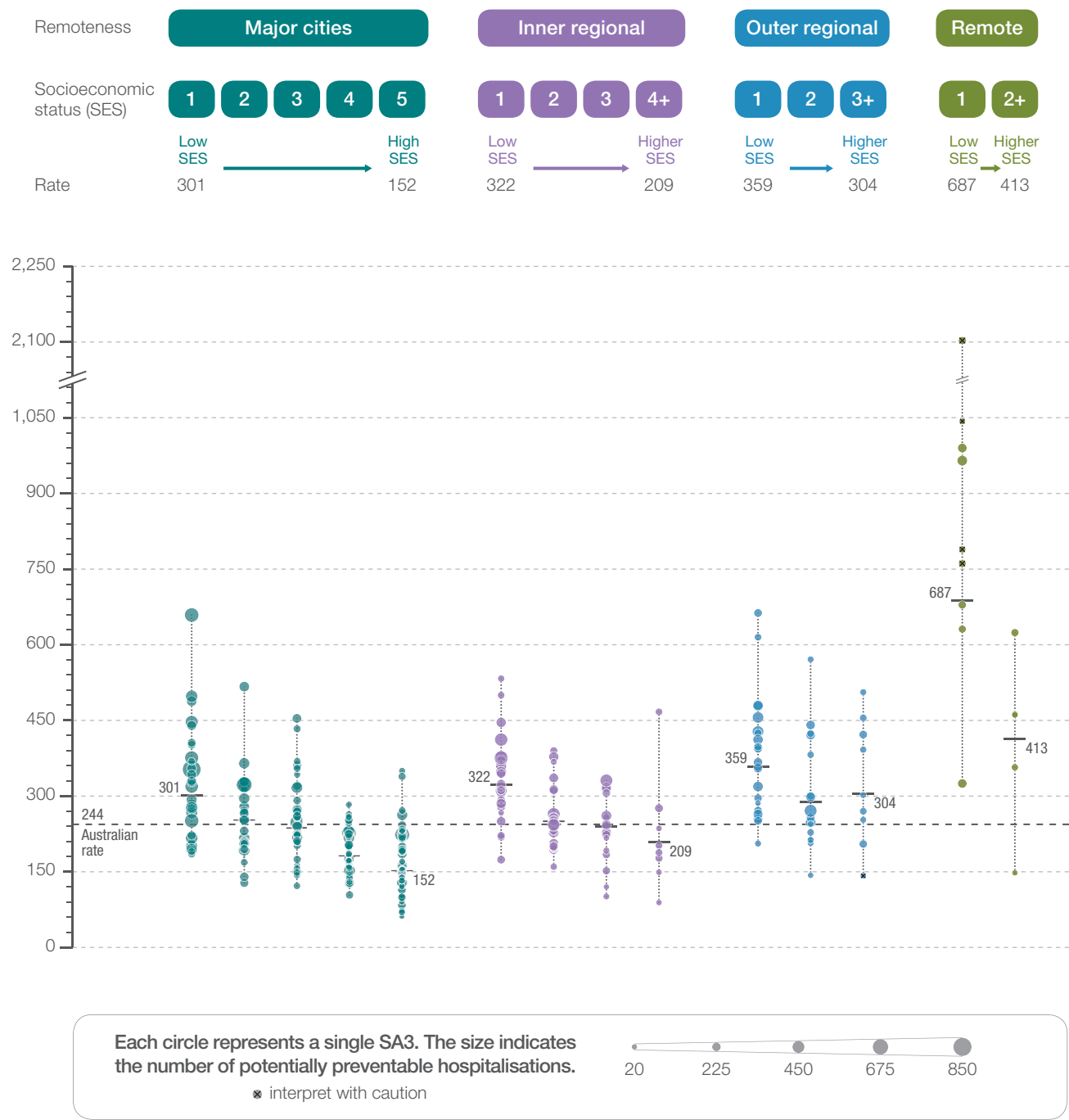
Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Crosses and asterisks indicate rates that are considered more volatile than other published rates and should be interpreted with caution. These rates are excluded from the calculation of the difference between the highest and lowest SA3 rates in Australia.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Figure 1.6: Number of potentially preventable hospitalisations – COPD per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), remoteness and socioeconomic status, 2014–15



Notes:
Rates are age and sex standardised to the Australian population in 2001.
Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).
Analysis is based on the patient's area of usual residence, not the place of hospitalisation.
Crosses indicate rates that are considered more volatile than other published rates and should be interpreted with caution.
For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Chronic obstructive pulmonary disease

Resources

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- Lung Foundation Australia, Australian Physiotherapy Association. Pulmonary rehabilitation toolkit. Brisbane: Lung Foundation Australia; 2016. Available from: www.pulmonaryrehab.com.au
- NPS MedicineWise. Pharmacological therapies for chronic obstructive pulmonary disease in Australia. Sydney: NPS MedicineWise; 2014. Available from www.nps.org.au
- Information and assistance for smokers to quit is available at www.quitnow.gov.au.

Australian initiatives

The information in this chapter will complement work already under way to prevent COPD and improve its management in Australia. At a national level, this work includes:

- National Tobacco Strategy 2012–2018, a framework to reduce tobacco-related harm in Australia
- Tackling Indigenous Smoking program
- Breathe Easy, Walk Easy training program for rural and remote healthcare providers, Lung Foundation Australia.

Many state and territory initiatives are also in place, including:

- State- and territory-based tobacco control strategies
- Aboriginal Tobacco Control Project, Western Australia
- *The ATRAC Framework: A Strategic Framework for Aboriginal Tobacco Resistance and Control in NSW*, NSW Ministry of Health, and Aboriginal Health and Medical Research Council
- Reports on hospital readmission rates for COPD, NSW Bureau of Health Information.

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