

## Indicators of health status, risk factors, outcomes and use of services

As noted in Section 1, this atlas describes the extent and significance of inequalities in health and social inclusion across Australian society. As such, it reflects recognition within the health sector of the impact of socioeconomic disadvantage on health and wellbeing.<sup>124,125</sup>

Although some indicators of health status and outcomes are specifically covered by the indicators for social inclusion presented above (e.g., smoking in pregnancy, median age at death), details are presented in the following pages for a number of indicators (listed below) of health status, health risk factors and outcomes, and screening for bowel cancer.

### Chronic diseases and associated risk factors:

- Prevalence of circulatory system diseases;
- Prevalence of type 2 diabetes;
- Prevalence of smoking among males;
- Prevalence of smoking among females;
- Prevalence of obesity among males; and
- Prevalence of obesity among females.

### Screening services:

- National Bowel Cancer Screening Program, participation; and
- National Bowel Cancer Screening Program, positive test results.

### Premature mortality:

- Deaths from all causes; and
- Deaths from suicide and self-inflicted injury.

In addition to the indicators listed, a substantially larger number of indicators can be found online at [www.adelaide.edu.au/phidu/](http://www.adelaide.edu.au/phidu/). For example, services provided by general medical practitioners and funded through Medicare are available from the PHIDU website, with separate details for men and women, and for selected services, such as the 45 Year Old Health Check. Details are also available for a wider range of causes of death (and for a later period (2008-12) than is shown here), of other screening programs (breast and cervical cancer screening), and of other chronic diseases and associated risk factors; and information about children includes immunisation status at ages one, two and five years.

### National Bowel Cancer Screening Program (NBCSP)

Since 2006, the Australian Government has initiated a limited colorectal cancer screening program, which aims to reduce the incidence and death from bowel cancer, by using a one-time immunochemical faecal occult blood test (FOBT) for people aged 50, 55 and 65 years. The second phase of the NBCSP commenced on 1 July 2008 and offered testing to people turning 50 years of age between January 2008 and December 2010, and to those turning 55 or 65 between July 2008 and December 2010. From 2012, the program was expanded to include Australians turning 60 years of age, and from 2015, those turning 70 years. In 2017-18, the program will offer biennial screening, commencing with 72 year olds, as per the recommendations of the National Health and Medical Research Council for two-yearly screening.<sup>134</sup>

In addition to the NBCSP, a variety of FOBT kits are available in Australia to screen for bowel cancer; these are either available over the counter from pharmacies, through medical practitioners, or through other programs such as BowelScreen Australia (an education and screening initiative run by The Pharmacy Guild of Australia), and BowelCare (a community service project of various Rotary clubs and districts). The data contained within this report only represent participation within the NBCSP implemented by the Australian Government in partnership with State and Territory governments, and not the other programs. This is likely to have influenced the patterns evident in the maps of participation in testing, and of positive test results, published here. Additional notes are provided in Appendix A, page 205.

## Prevalence of circulatory system diseases, capital cities

*Circulatory system diseases are diseases of the heart and the vascular (blood vessel) system: ischaemic heart disease (IHD), stroke, hypertensive heart disease (due to the effects of high blood pressure), and rheumatic heart disease. In 2009, the leading cause of death in Australia was heart disease; and IHD and stroke combined contributed to 73.2% of deaths from diseases of the circulatory system.<sup>87</sup> Groups at increased risk of developing and dying from these diseases include Aboriginal and Torres Strait Islander Australians, people of lower socioeconomic status, males over the age of 45 years, males living in rural and remote areas, and people with diabetes and/or a family history of heart disease.<sup>88</sup>*

**Indicator definition:** Estimated population with circulatory system diseases as a long-term condition, expressed as a percentage (age-standardised); further details of these estimates are in Appendix B.

**Table 36: Estimated population with circulatory system diseases, by capital city, 2007-08**

*Per cent (age-standardised rate per 100 population)*

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
13.9	17.0	15.6	18.5	14.3	19.7	11.0	16.3	15.6

### Capital cities

The estimated rate of circulatory system diseases varied across the capital cities, with the highest rates in Hobart (19.7%) and Adelaide (18.5%), and the lowest rates in Darwin (11.0%) and Sydney (13.9%).

Rates were relatively low in **Sydney**, with the highest estimates in the outer north-eastern SLAs of Wyong - North-East (16.3%) and - South and West (16.2%), and Gosford - West (15.7%); and the western SLAs of Parramatta - South (15.6%), and Bankstown - North-West (16.2%) and - South (15.5%). The lowest rates were estimated for the inner city areas of Sydney - Inner and - East, and for North Sydney.

SLAs with the highest rates in **Melbourne** were located to the north (in Moreland - North (18.7%) and - Coburg (18.6%); Darebin - Preston (18.5%), Northcote (18.3%), and Hume Broadmeadows (18.3%); in the west, in a group from Maribyrnong (18.6%) to Wyndham West (18.3%); and in the south-east, in Cardinia - Pakenham (18.5%).

Areas with the highest rates of circulatory system diseases were generally along, or close to, the coast, and in the outer south and south-west of **Brisbane**, including Caboolture - Central (17.8%), Ipswich Central (17.6%), Redland Balance (17.3%) and Chermside West/Chermside (17.4%). The lowest estimated rates were in a number of inner city areas, including Spring Hill, Herston, Newstead, St Lucia, and Toowong.

In **Adelaide**, the highest estimated rates were in a band of SLAs from the north-west to the outer north: from Port Adelaide Enfield - Park (20.2%) and - Inner (19.7%) to Playford - West Central (20.6%) and - Elizabeth (20.3%); in the outer south, in Onkaparinga - Hackham (19.8%) and - South Coast (19.6%); and in the west, in

West Torrens - East (19.6%). The lowest rates were in Adelaide Hills - Ranges and - Central, and Burnside - North-East.

The estimated prevalence of circulatory system diseases was lower in **Perth**, with the highest rates in a mix of inner, middle and outer suburbs, including Kwinana (15.9%), Bassendean (15.8%), Belmont (15.7%) and Fremantle - Remainder (15.6%). The lowest rates were in the inner city SLAs of Perth - Remainder and Subiaco; and to the north, in Joondalup - North and - South.

Estimated rates were high in all SLAs in **Hobart**, with the highest in Brighton (22.1%), Derwent Valley - Part A (20.7%), Glenorchy (20.6%) and Sorell - Part A (20.5%). The lowest rates, in Kingborough - Part A and Hobart - Remainder, were still relatively high, at 18.5%.

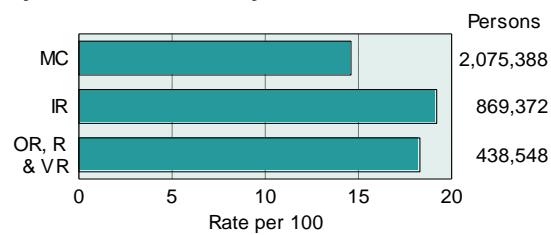
In **Darwin**, rates of circulatory system diseases were lower, ranging from 11.8% in Litchfield - Part B to 10.8% in Palmerston.

Rates in **Canberra** were highest in the SLAs of Eastern Fringe (17.5%), Canberra North (17.2%) and Canberra South (16.8%), with rates of above 16% in all of the Belconnen and Woden SLAs, other than Woden - Central.

### Remoteness

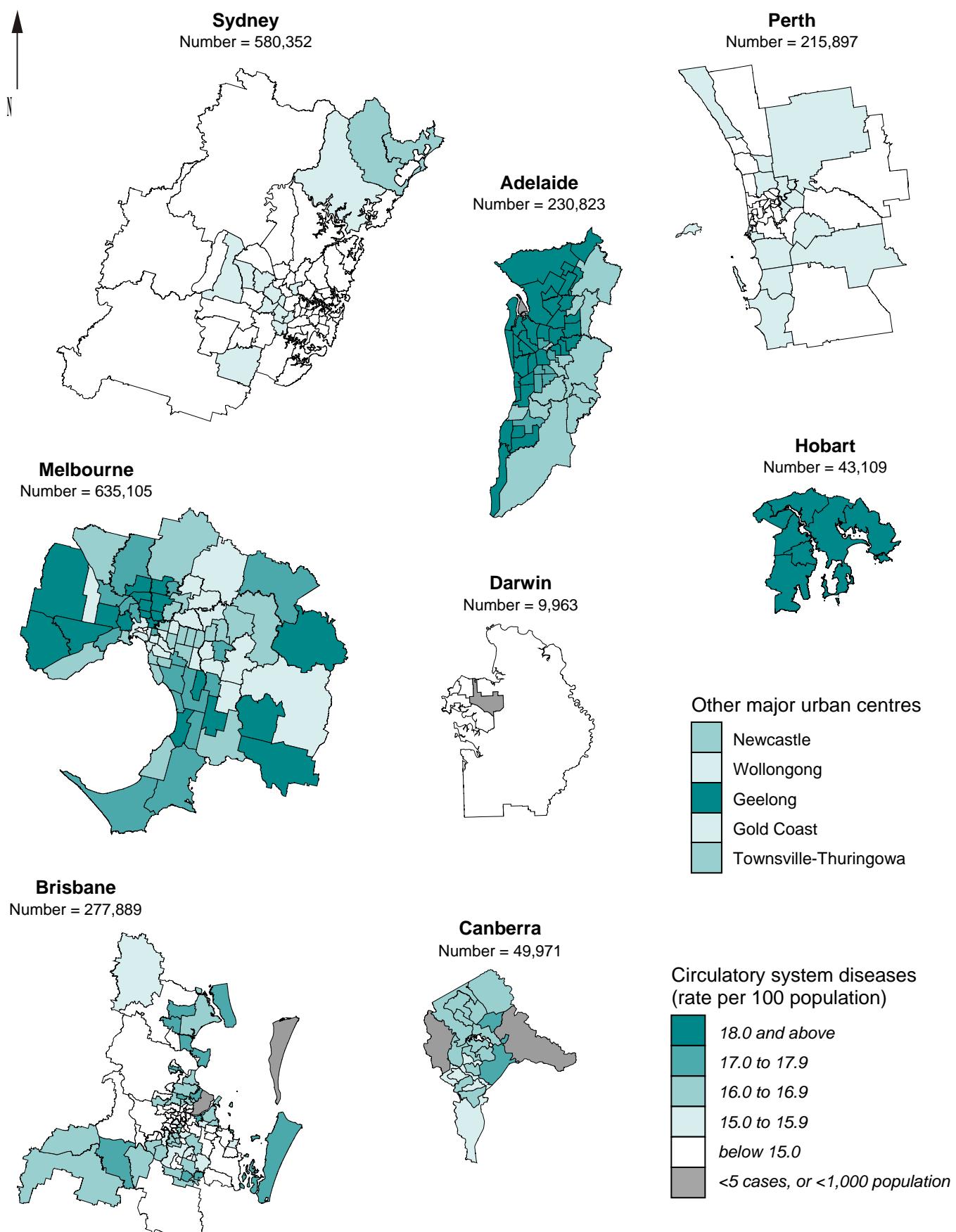
Rates of circulatory system diseases were highest outside of the Major Cities remoteness class.

**Figure 21: Estimated population with circulatory system diseases, by remoteness, 2007-08**



**Map 35: Estimated population with circulatory system diseases, major urban centres, 2007-08**

standardised rate per 100 population by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (provided as a consultancy)

## Prevalence of circulatory system diseases, Australia

**Notes:** These estimates were not made for the most remote areas of Australia. This is of particular relevance to the Northern Territory; as a result, totals are not available for the Northern Territory. See comments on previous text page for other details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 37: Estimated population with circulatory system diseases, by State/ Territory, Australia, 2007-08**

*Per cent (age-standardised rate per 100 population)*

Area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan <sup>1</sup>	15.9	18.0	16.3	18.8	15.3	20.2	..	..	16.7
Total <sup>1</sup>	14.7	17.3	16.0	18.6	14.5	20.0	..	16.3	16.0

<sup>1</sup> Estimates have not been made for SLAs in the remote areas of Australia: the 'Non-metropolitan' and 'Total' figures do not therefore represent the entire population of these areas. See Appendix B for further details.

### Non-metropolitan areas

In 2007-2008, estimated rates of circulatory system diseases in the non-metropolitan areas were highest in Tasmania (20.2%). The lowest rates were in Western Australia (15.3%) and New South Wales (15.9%). Rates in the non-metropolitan areas were higher than those in the capital cities.

High rates of circulatory system diseases in non-metropolitan **New South Wales** were estimated for the SLAs of Broken Hill (with the highest rate of 16.7%) in the far west; Wellington (16.6%) in the mid-west; and for a number of SLAs along the coast, with the highest rates in a group from Kempsey to Tweed Heads (both 16.4%).

Although areas with low rates were quite widespread across the State, those with the lowest rates were generally in the far south and south-west of the State.

In the non-metropolitan areas of **Victoria**, the highest estimated rates of circulatory system diseases were dispersed across the State, largely in towns and regional centres, including all of the SLAs in Bendigo - Central (19.3%) to - Strathfieldsaye (16.4%); Wangaratta - Central (18.9%); Ballarat - Central (18.9%), - South (18.7%) and - Inner North (18.6%); and Latrobe - Moe (18.7%), Morwell (18.5%) and - Traralgon (18.4%). Low rates were in SLAs located across the State, with the lowest in a cluster in and around Geelong.

Estimated rates of circulatory system diseases in non-metropolitan **Queensland** were highest to the north of Brisbane in coastal areas (around Hervey Bay (17.9% in Part B and 17.6% in Part A) and inner coastal areas (18.5% in Mount Morgan), and to the north-west and west of the city (17.6% in Laidley). Areas estimated to have the lowest rates were in a group located south of Mackay, and around the Gold Coast, Cairns and Toowoomba.

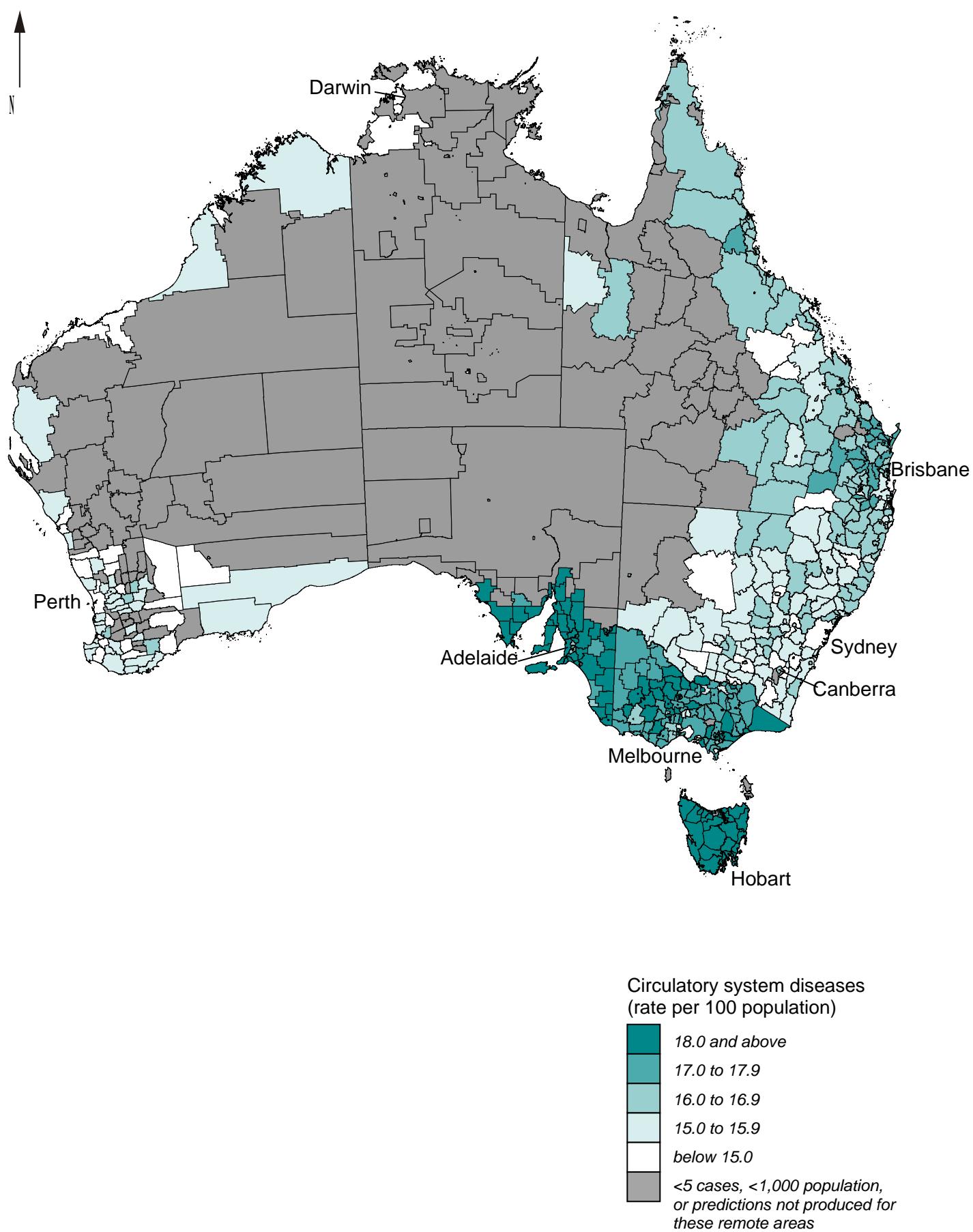
A number of towns and regional centres in **South Australia** had high estimated rates of circulatory system diseases, including Peterborough (19.9%), Whyalla (19.7%), Port Pirie City Districts - City (19.7%) and Port Augusta (19.5%), in the north; Murray Bridge (19.5%) and Mount Barker (19.4%), closer to Adelaide; and Berri and Barmera (19.2%), and Mount Gambier (19.1%). Several rural SLAs also had high rates. The lowest rates were in the SLAs of Roxby Downs in the far north, Adelaide Hills - North and Mount Barker - Balance to the east of Adelaide, and Robe, in the south-east.

Non-metropolitan SLAs in **Western Australia** with the highest estimated rates of circulatory system diseases were to the west in Kellerberin (16.7%), Northam (16.3%) and Quairading (16.5%); south-west (Gnowangerup (16.3%) and south (Collie (16.2%) of Perth. The SLAs with the lowest rates included Lake Grace in the south, and Port Hedland and Roebourne, in the north.

All of the SLAs in non-metropolitan **Tasmania** were estimated to have rates for circulatory system diseases above the national average. Rates of 20% or higher were estimated for the majority of SLAs on the north and west coasts, including Burnie - Part A (20.6%), Launceston - Part B (20.5%), George Town - Part A (20.5%), Devonport (20.4%); and in West Coast (20.6%), Southern Midlands (20.6%) and Central Highlands (20.5%). The lowest rates were in Kingborough - Part B and Glamorgan/Spring Bay.

Of the few areas mapped in non-metropolitan **Northern Territory**, the estimated rates of circulatory system diseases were all relatively low. Rates of 12% were estimated for Coomalie, Katherine and the Alice Springs SLAs of - Heavitree, - Larapinta and - Charles.

Map 36: Estimated population with circulatory system diseases, Australia, 2007-08  
standardised rate per 100 population by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (provided as a consultancy)

## Prevalence of type 2 diabetes, capital cities

Type 2 diabetes is the commonest form of diabetes, and its prevalence is increasing.<sup>89</sup> Control of modifiable risk factors (such as overweight, obesity and physical inactivity) is key to preventing type 2 diabetes and reducing its complications.<sup>89</sup> Aboriginal and Torres Strait Islander peoples are three times as likely as non-Indigenous people to have diabetes; and have higher hospitalisation and death rates than other Australians.<sup>89</sup> Diabetes prevalence and death rates for the poorest fifth of the population are also nearly twice as high as for the most affluent fifth of the population.<sup>89</sup>

**Indicator definition:** Estimated population with type 2 diabetes as a long-term condition, expressed as a percentage (age-standardised); further details of these estimates are in Appendix B.

**Table 38: Estimated population with type 2 diabetes, by capital city, 2007-08**

Per cent (age-standardised rate per 100 population)

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
3.3	3.4	3.4	3.5	3.3	2.5	3.6	3.1	3.3

### Capital cities

There was little variation in the estimated rate of type 2 diabetes between the capital cities, apart from the lower rate in Hobart (2.5%).

Areas in **Sydney** for which the highest rates of type 2 diabetes were estimated were in a band from Sydney - South to Blacktown - South West (both 3.9%), and south to Liverpool - East (3.7%), including Parramatta - South (4.1%) and Fairfield - East and Bankstown - North-East (3.9%). Similar rates were estimated for Wyong - North-East (3.8%) and Wyong - South and West (3.7%). The lowest rates were in Woollahra and a number of SLAs on the north shore.

A cluster of SLAs to the north of **Melbourne** had some of the highest rates, including Moreland - North (4.0%), - Brunswick (3.8%) and - Coburg (3.8%); Hume - Broadmeadows (4.0%); Whittlesea - South-West (4.0%); and Darebin - Preston (3.9%). Rates were equally high in the west, in Maribyrnong and Brimbank - Sunshine (both 4.0%); and in the south-east, in Greater Dandenong - Dandenong (3.9%) and Balance (3.7%). Rates are lowest in Nillumbik - South and Balance in the outer north-east, and in Melbourne - Southbank Docklands.

SLAs with the highest estimated rates of type 2 diabetes were dispersed across **Brisbane**, in Darra-Sumner/Wacol (4.2%), to the south-west; Stretton-Karawatha/Kingston (4.0%) and Marsden and Loganlea (both 3.9%), to the south; Redland Balance (4.1%) and Caboolture - Central (4.0%), on the coast; and in Dutton Park/Woolloongabba (4.0%) and Rocklea (3.9%). The lowest estimated rates were generally in the inner and middle suburbs.

Rates of type 2 diabetes in **Adelaide** were estimated to be highest in the outer north in the SLAs of Playford - Elizabeth and - West Central both 4.3%) and Salisbury - Inner North (4.1%);

and in the north-west, in Port Adelaide Enfield - Park (4.3%), - Port (4.1%) and - Inner (4.0%), and Charles Sturt - North-East (4.0%); and in Onkaparinga - North Coast and - Hackham (both 3.9%). Areas to the east and south of the city had the lowest rates.

The highest estimated rate of type 2 diabetes in **Perth** was in Perth - Inner (4.6%), with other high rates in the inner and middle SLAs of Kwinana (3.9%), Belmont (3.7%), Wanneroo -South (3.6%) and Bassendean (3.6%). The lowest rates were largely in inner SLAs, with a low rate also estimated for Joondalup - North and - South.

In **Hobart**, Brighton, Derwent Valley - Part A, Glenorchy and Sorell - Part A had rates of 2.8% to 3.0%; with 2.5% in Clarence and 2.4% in Kingborough - Part A; and the lowest, in Hobart Remainder (2.1%).

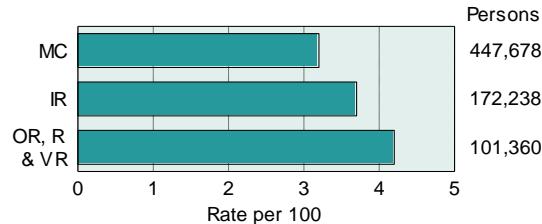
In **Darwin**, the prevalence of type 2 diabetes varied from 4.0% in Palmerston, to 3.2% in Litchfield - Part A.

The rate of type 2 diabetes in **Canberra** was estimated to be highest in Canberra North (3.4%), Eastern Fringe (3.3%), Canberra South (3.2%), Woden Central (3.2%), and the Belconnen SLA groups.

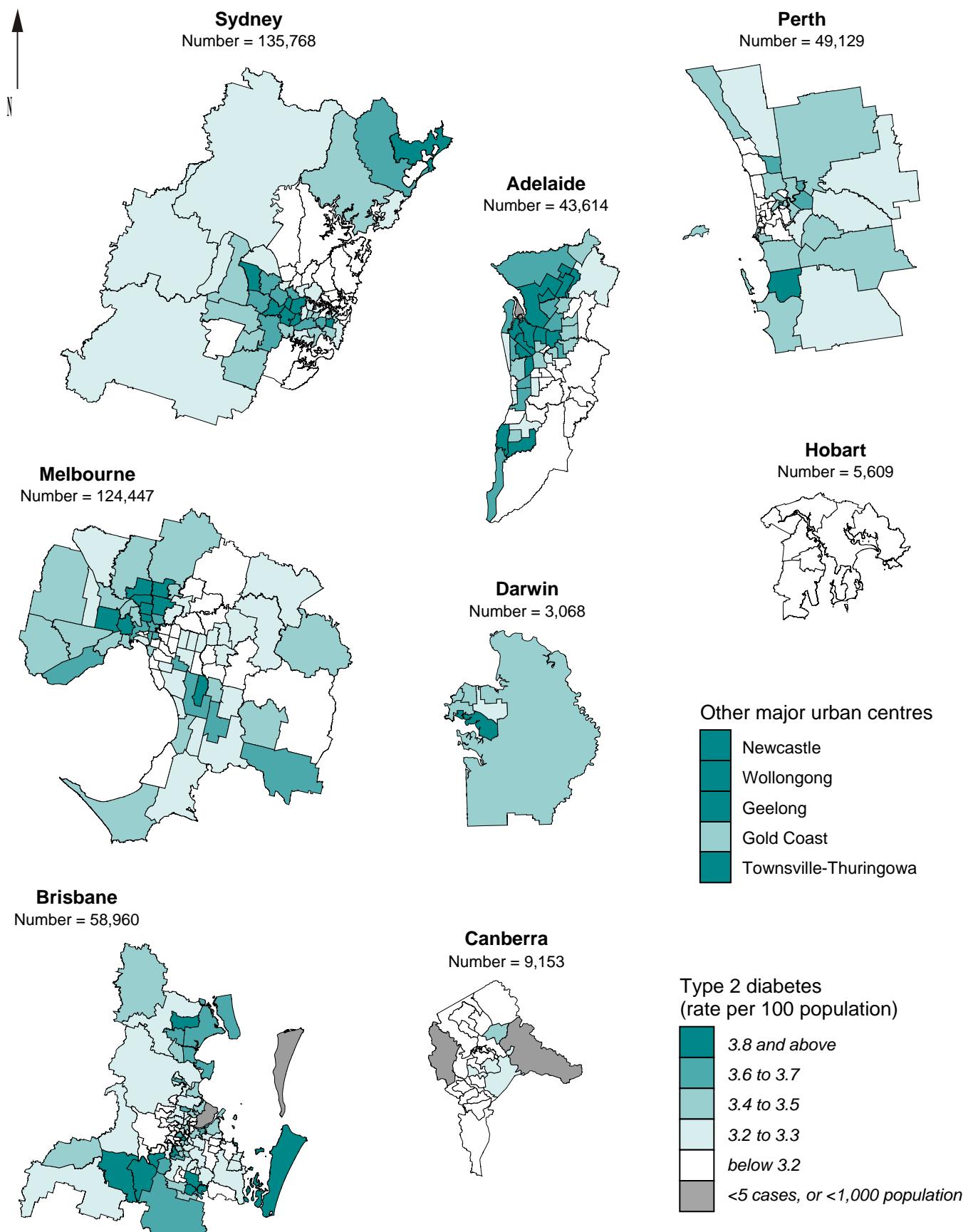
### Remoteness

Rates increased steadily across the remoteness classes, from a rate of 3.2% in the Major Cities to 4.2% in the combined Outer Regional, Remote and Very Remote classes.

**Figure 22: Estimated population with type 2 diabetes, by remoteness, 2007-08**



**Map 37: Estimated population with type 2 diabetes, major urban centres, 2007-08**  
 standardised rate per 100 population by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (provided as a consultancy)

## Prevalence of type 2 diabetes, Australia

**Notes:** These estimates were not made for the most remote areas of Australia. This is of particular relevance to the Northern Territory; as a result, totals are not available for the Northern Territory. See comments on previous text page for other details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 39: Estimated population with type 2 diabetes, by State/ Territory, Australia, 2007-08**

*Per cent (age-standardised rate per 100 population)*

Area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan <sup>1</sup>	3.7	3.5	3.5	3.5	3.5	2.8	..	..	3.5
Total <sup>1</sup>	3.5	3.4	3.5	3.5	3.3	2.7	..	3.1	3.4

<sup>1</sup> Estimates have not been made for SLAs in the remote areas of Australia: the 'Non-metropolitan' and 'Total' figures do not therefore represent the entire population of these areas. See Appendix B for further details.

### Non-metropolitan areas

There is little variation in the estimated population with type 2 diabetes across the non-metropolitan areas, other than in Tasmania, with a lower rate of 2.8%. The estimated rates for the non-metropolitan areas were higher than those for the capital cities, apart from South Australia, where the rates were the same.

A cluster of areas along the northern State border had the highest rates in **New South Wales**, including the SLAs of Brewarrina (6.5%), Walgett (4.9%), Bourke (4.7%), and Coonamble (4.3%). High rates were also estimated for Wellington, further south; and for Clarence Valley Balance, Richmond Valley Balance and Kempsey in the north-east. The lowest rates were estimated for SLAs across the south and south-east and extending to the north as far as Armidale Dumaresq Balance. They included Palerang - Part A, Snowy River, Greater Hume Shire - Part A, Yass Valley, Wingecarribee, Wagga Wagga - Part B, and Goulburn Mulwaree Balance.

The highest rates of type 2 diabetes in the non-metropolitan areas of **Victoria** were estimated for the SLAs of Central Goldfields - Maryborough (3.8%) and Balance (4.0%), and Greater Bendigo - Central (3.9%) and - Eaglehawk (3.8%); further south in Ballarat - South and Corio - Inner (both 3.8%); and east, in Latrobe - Moe and - Morwell, and Wellington - Rosedale (all 3.8%). Rates were lowest in areas to the north and west of Melbourne, extending through the south of the State to the Grampians; and in central eastern Victoria.

In **Queensland**, the highest rates were in a number of coastal and inner coastal SLAs north of Brisbane, including Mount Morgan (a rate of 4.6%), Hervey Bay - Part B (4.3%), and Kolan (4.1%); further north, in Herberton (4.2%), Dalrymple (4.0%), Cairns - City (4.1%) and Cook (4.0%); to the far west, in Mount Isa (4.1%) and Cloncurry (4.0%); and in the south, in Tara (4.1%). Rates were lowest closer to Brisbane,

in the SLAs of Beaudesert - Part C, Cambooya - Part B and Noosa - Noosa-Noosaville; and in a cluster of areas in the mid-north, including Broadsound, Nebo, Peak Downs, Belyando, Duaringa and Bungil.

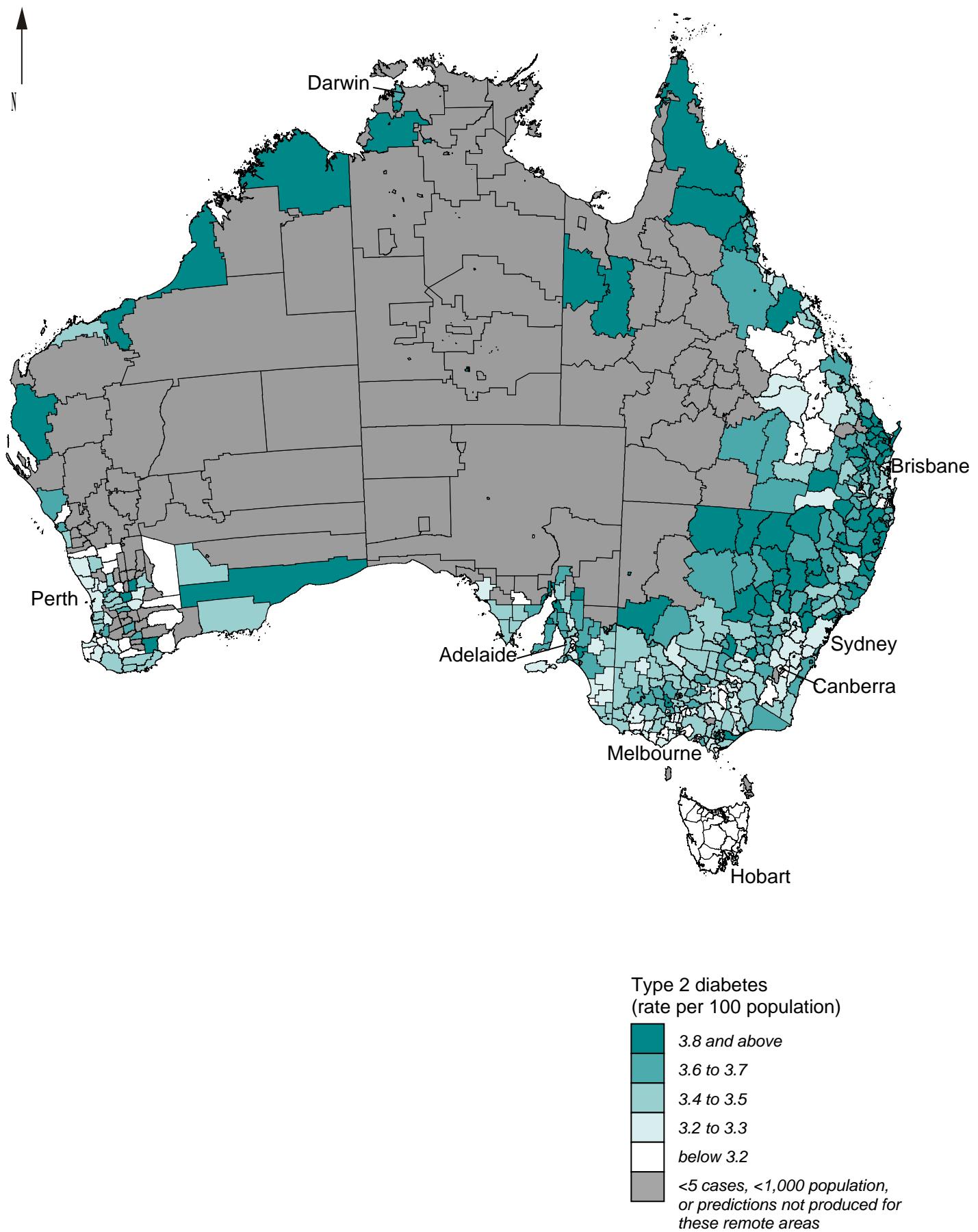
The highest rates of type 2 diabetes in the non-metropolitan areas of **South Australia** were estimated for the northern SLAs of Port Augusta and Peterborough (both with rates of 4.2%), Whyalla, Port Pirie City Districts - City and Balance, and Copper Coast; and closer to Adelaide, in Murray Bridge. Roxby Downs in the far north, Robe in the south-east, and Kimba in the west had the lowest rates. Low rates were also estimated for SLAs to the east of Adelaide, in Adelaide Hills - North and Balance, and Mount Barker Balance.

The highest rates in non-metropolitan **Western Australia** included the SLAs of Wyndham-East Kimberley (6.0%), Broome (5.1%) and Port Hedland (3.9%) on the far north coast; Carnarvon (4.4%) on the mid-west coast; and Dundas (4.0%), Kellerberrin (4.0%), Quairading (3.9%) and Gnowangerup (3.9%), in the south. The lowest rates were in SLAs dispersed across the southwest of the State including Lake Grace, Yilgarn, Dalwallinu, Cranbrook, Coorow, Jerramungup, and Kojonup.

The highest rates in the non-metropolitan areas of **Tasmania** were estimated for the SLAs of Tasman (3.2%), Break O'Day (3.1%) and Waratah/Wynyard - Part B (3.1%). A cluster of areas in the north of the State had the lowest rates: these included Launceston - Part C, Meander Valley - Part A, and Northern Midlands - Part A; with a low rate also in Kingborough - Part B, in the south.

Of the few areas mapped in the **Northern Territory**, the highest rate of type 2 diabetes was estimated for the SLA of Daly (7.6%) and the lowest for Jabiru (3.0%). The SLAs in Alice Springs were all estimated to have rates of around four or five per cent.

Map 38: Estimated population with type 2 diabetes, Australia, 2007-08  
standardised rate per 100 population by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (provided as a consultancy)

## Prevalence of smoking among males, capital cities

Tobacco smoking is the greatest single cause of premature death and a leading preventable cause of morbidity in Australia.<sup>90</sup> Smoking rates among Australian adults have declined since the early 1970s. In 2007, 21% of adult males were current smokers, compared to 18% of adult females, with the highest rates for both in the 25-29 year age group (males 30%, females 26%).<sup>90</sup> For the period 2004-05, tobacco smoking was estimated to cost \$31.5 billion annually in health care, lost productivity and other costs.<sup>91</sup> The prevalence of smoking is significantly higher among lower socioeconomic groups, particularly those facing multiple personal and social challenges.<sup>90</sup>

**Indicator definition:** Estimated male population aged 18 years and over who were current smokers, expressed as a percentage (age-standardised); further details of these estimates are in Appendix B.

**Table 40: Estimated male population who were current smokers, 18 years and over, by capital city, 2007-08**

Per cent (age-standardised rate per 100 males)									
Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total	
20.7	21.0	22.0	21.9	21.9	22.3	24.4	17.1	21.2	

### Capital cities

There was little variation in estimated smoking rates for adult males between the capital cities, other than for Canberra and Darwin.

A cluster of SLAs in the west of **Sydney**, including Fairfield - East (27.4%), Parramatta - South (26.8%), Bankstown - North-East (25.4%) and - North-West (24.9%), and Auburn (25.0%), were estimated to have the highest rates of male smokers. Rates were also high further west in Blacktown - South-West (26.6%) and Penrith - East (25.4%), and to the north, in Wyong - North-East (28.1%), and - South and West (25.3%). A group of SLAs to the east and to the north of the city had the lowest rates.

High rates were estimated for SLAs throughout **Melbourne**, including in the north, Hume - Broadmeadows (28.4%) and Whittlesea - South-West; in the west, Melton Balance (26.1%), Brimbank - Sunshine, Altona and Wyndham - West; in the outer south-east, Casey - Cranbourne (26.3%) and - South, Cardinia - South and - Pakenham, and Greater Dandenong - Dandenong and Balance; and in the north-east, Yarra Ranges - Central (25.9%) and - North. The lowest rates were in a number of inner eastern, south-eastern and north-eastern SLAs.

The highest rates in **Brisbane** were estimated for SLAs located to the south, south-west and south-east: in Redland Balance, Darra-Sumner/Wacol, Stretton-Karawatha/Kingston, Marsden, Waterford West and Loganlea; and in the north, in Caboolture - Hinterland and - Central, and Deception Bay. A large group of SLAs to the east and west of the city centre had the lowest rates.

The highest rates in **Adelaide** were estimated for areas in the outer north, in Playford - Elizabeth (30.4%) and - West Central (29.6%), and Salisbury - Inner North (27.4%) and - Central (27.0%); in the south, in Onkaparinga - North Coast (27.8%) and

- Hackham (27.0%); and in the west, in Port Adelaide Enfield - Port (27.2%) and - Park (27.1%). Rates were lowest in SLAs to the east, south and south-east, and in Walkerville, just north of the city.

The highest rates of adult male smokers in **Perth**, were estimated for a group of SLAs in the south, including Kwinana (27.6%), Serpentine-Jarrahdale (25.5%), Rockingham (25.5%), Armadale (25.0%) and Gosnells (24.5%); to the east, in Belmont (25.1%); and to the north, in the Wanneroo SLAs (around 24.5%); as well as in Perth - Inner (24.7%). The lowest rates were in inner and middle suburbs between the city and the coast.

In **Hobart**, the highest rates were estimated for Derwent Valley - Part A (28.5%) and Brighton (28.1%); and the lowest for Hobart - Remainder (18.3%) and Kingborough - Part A (18.9%).

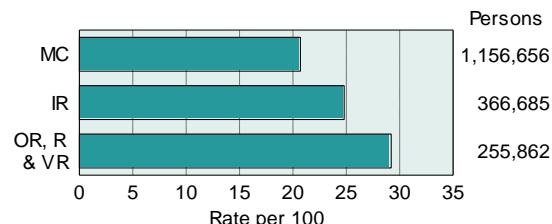
Smoking rates for males in **Darwin** ranged from 27.3% in Litchfield - Part B and 26.3% in Palmerston, to 22.5% in Darwin North East.

Rates in **Canberra** were estimated to be highest in the outer north-west and south, in particular in Eastern Fringe (29.4%); and lowest in Woden North (12.7%) and South (13.7%).

### Remoteness

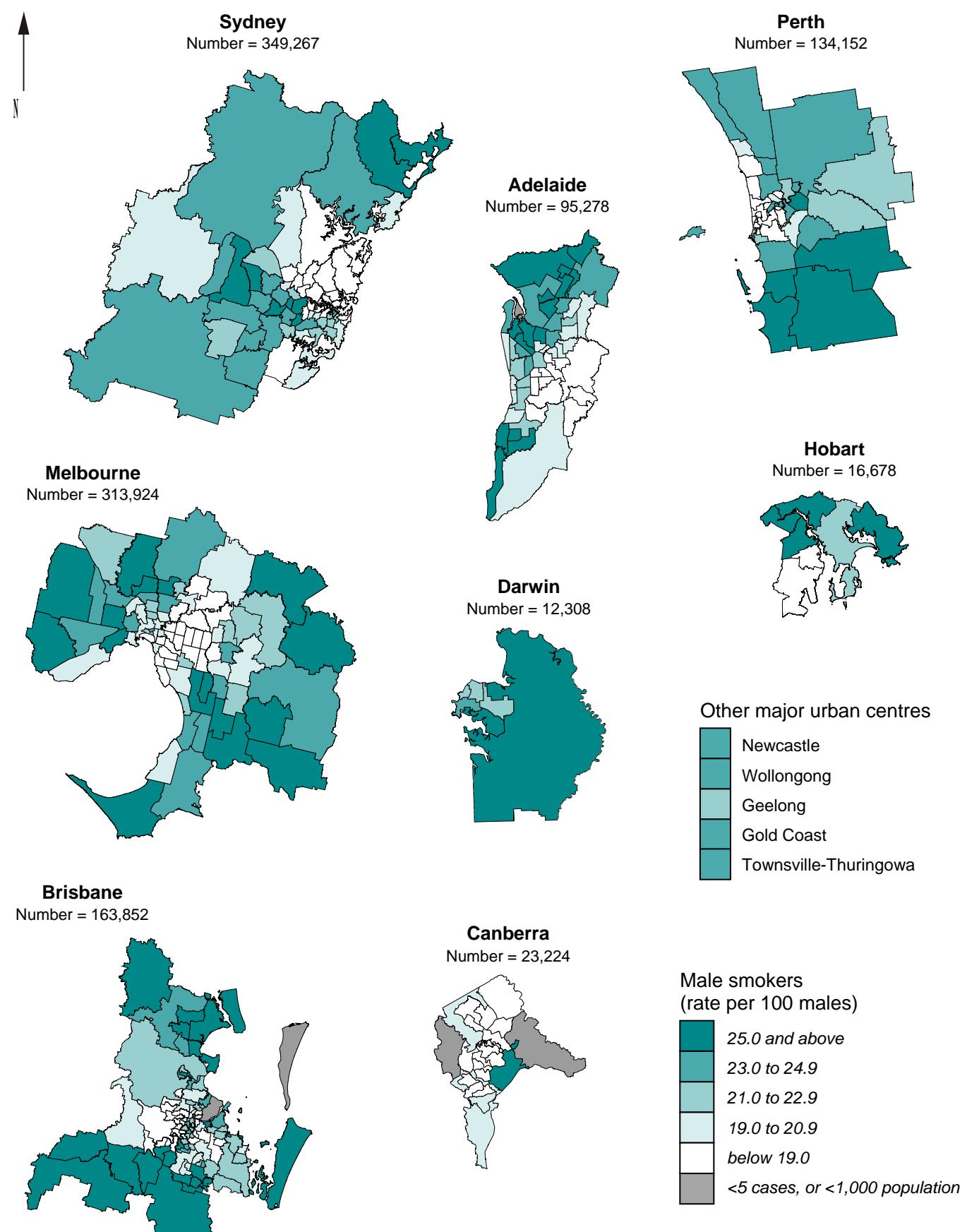
Rates increased steadily across the remoteness classes, from 20.7% in the Major Cities to 29.2% in the combined Outer Regional, Remote and Very Remote classes.

**Figure 23: Estimated male smokers, 18 years and over, by remoteness, 2007-08**



Map 39: Estimated male population who were current smokers, 18 years and over, major urban centres, 2007-08

standardised rate per 100 males by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## Prevalence of smoking among males, Australia

**Notes:** These estimates were not made for the most remote areas of Australia. This is of particular relevance to the Northern Territory; as a result, totals are not available for the Northern Territory. See comments on previous text page for other details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 41: Estimated male population who were current smokers, 18 years and over, by State/ Territory, Australia, 2007-08**

*Per cent (age-standardised rate per 100 males)*

Area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan <sup>1</sup>	24.5	24.5	24.7	25.0	25.8	26.3	..	..	24.8
Total <sup>1</sup>	22.0	21.9	23.4	22.7	22.8	24.6	..	17.1	22.4

<sup>1</sup> Estimates have not been made for SLAs in the remote areas of Australia: the 'Non-metropolitan' and 'Total' figures do not therefore represent the entire population of these areas. See Appendix B for further details.

### Non-metropolitan areas

There was little variation between the States in estimated smoking rates for males aged 18 years and over. The rates in the non-metropolitan areas were higher than those in the capital cities.

Rates in **New South Wales** were above 27.0% in Brewarrina (33.8%), Walgett (30.7%) and Bourke (27.7%), along the northern State border; on or near the north coast, in Kempsey (29.1%), Nambucca (28.7%), Richmond Valley - Casino (27.9%), and Clarence Valley - Coast (27.9%) and Balance (27.5%). Rates were also high in Junee in the south; and in Cessnock and Lithgow to the north and west of Sydney. The lowest rates were in the northern areas of Armidale Dumaresq Balance and - City; and in the south, including Palerang - Part A, Kiama, Jerilderie, Conargo, Yass Valley, Wagga Wagga - Part B and Lockhart.

The highest estimated rates of male smokers in non-metropolitan **Victoria** were in the mid-northern SLAs of Central Goldfields - Maryborough (29.0%) and Balance (28.1%), Greater Bendigo - Eaglehawk (28.1%) and Loddon - South and Pyrenees - North (both 27.5%). High rates were also estimated for East Gippsland - Orbost (28.6%), Balance (27.5%) and - Bairnsdale (27.4%), and Wellington - Rosedale; and in Glenelg - North on the south-western border. Rates were lowest in the south/south coastal areas of Queenscliffe, Newtown, South Barwon - Inner and Surf Coast - East; just north of Melbourne, in Macedon Ranges Balance; and in Yarriambiack - North in the north-west of the State.

In **Queensland**, over 28.0% of males were estimated to be smokers in a large group of SLAs from the west of Brisbane to north of Gladstone, including Mount Morgan, Hervey Bay - Part B, Nanango, Wondai, Miriam Vale, Tiaro, Kolan and Biggenden; and further north in Cook, Herberton, Cairns - Central Suburbs, Bowen and Dalrymple. Rates are lowest just to the west of

Brisbane in Crow's Nest - Part A, Toowoomba - North-East and South-East, and Cambooya - Part B; in Hope Island on the Gold Coast, and in Bauhinia.

Non-metropolitan areas in **South Australia** with the highest estimated rates of male smokers included the northern SLAs of Peterborough (29.9%), Port Augusta (29.6%), Flinders Ranges (29.6%) and Port Pirie Central Districts - City (27.8%); to the east of Adelaide, Murray Bridge and Mid Murray (both 27.7%); and Copper Coast (27.4%) on Yorke Peninsula. SLAs with the lowest rates were near Adelaide, although others were more widespread, on the west coast (Cleve and Kimba); and in the far north (Roxby Downs).

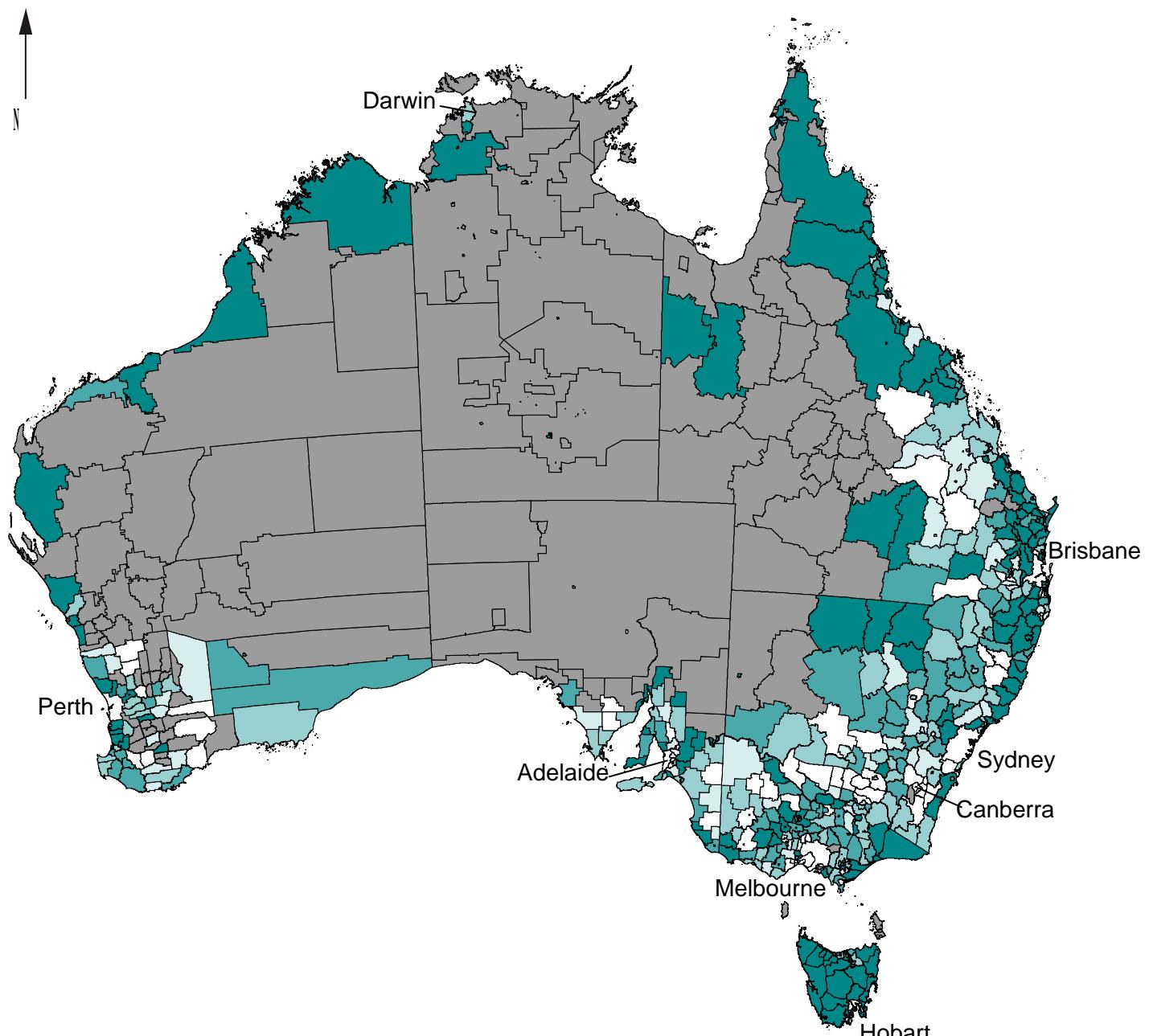
In **Western Australia**, areas with the highest rates of male smokers were the far northern SLAs of Wyndham-East Kimberley (30.2%), Broome and Port Hedland; further south, in Greenough - Part B (30.1%), Carnarvon, Geraldton and Irwin; and south of Perth, in Collie (27.7%), Dardanup - Part A (27.7%) and Harvey - Part B. The lowest rates were in the south-east of the State, in Lake Grace, Jerramungup and Boyup Brook; and just north-east of Perth, in Wongan-Ballidu and Cunderdin.

SLAs in **Tasmania** with the highest rates included George Town - Part A (29.4%), Break O'Day (29.2%), Kentish (29.0%), Tasman (28.6%), Central Highlands (28.5%), West Coast (28.4%), Circular Head (28.5%) and Dorset (28.1%). A cluster of areas in the north had the lowest rates: West Tamar - Part A, Meander Valley - Part A, and Launceston - Part B and - Part C; with a low rate also in Kingborough - Part B in the south.

Of the few areas that could be mapped in the **Northern Territory**, the rates of male smokers were generally high, with 36.7% in Daly, 33.2% in Coomalie, 28.5% in Alice Springs - Heavitree and 28.5% in Katherine. The lowest rates were estimated for Alice Springs - Ross (24.0%) and - Larapinta (25.3%), and Jabiru (25.7%).

Map 40: Estimated male population who were current smokers, 18 years and over, Australia, 2007-08

standardised rate per 100 males by Statistical Local Area/ Statistical Local Area group



Male smokers  
(rate per 100 males)

26.0 and above
25.0 to 25.9
24.0 to 24.9
23.0 to 23.9
below 23.0
<5 cases, <1,000 population, or predictions not produced for these remote areas

Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## Prevalence of smoking among females, capital cities

Tobacco smoking is the greatest single cause of premature death and a leading preventable cause of morbidity in Australia.<sup>90</sup> Smoking rates among Australian adults have declined since the early 1970s. In 2007, 18% of adult females were current smokers, compared to 21% of adult males, with the highest rates for both in the 25-29 year age group (females 26%, males 30%).<sup>90</sup> For the period 2004-05, tobacco smoking was estimated to cost \$31.5 billion annually in health care, lost productivity and other costs.<sup>91</sup> The prevalence of smoking is significantly higher among lower socioeconomic groups, particularly those facing multiple personal and social challenges.<sup>90</sup>

**Indicator definition:** Estimated female population aged 18 years and over who were current smokers, expressed as a percentage (age-standardised); further details of these estimates are in Appendix B.

**Table 42: Estimated female population who were current smokers, 18 years and over, by capital city, 2007-08**

Per cent (age-standardised rate per 100 females)

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
15.8	16.7	18.5	16.0	15.7	18.1	23.7	17.7	16.5

### Capital cities

The estimated rate of current female smokers aged 18 years and over showed little variation across the capital cities, except for Darwin, where the rate was higher, at 23.7%.

The highest rates in **Sydney** were estimated for SLAs in the north, in Wyong - North-East (23.3%), - South and West (both 21.5%), and Gosford - West (20.2%); in the south, in Campbelltown - South (20.6%) and - North (19.8%); and in the west, in Blacktown - South-West (20.6%) and Penrith - East (20.4%). SLAs with the lowest rates were on the north shore, other than Strathfield, Burwood and Woollahra.

In **Melbourne**, the highest estimated smoking rates for females were in the western areas of Melton Balance (22.2%) and Wyndham - West (21.2%); in the north, in Hume - Broadmeadows (21.3%); in the south, in Cardinia - Pakenham (21.4%) and - South (20.6%); in the outer east, in Yarra Ranges - Central (21.0%); and in the south-east in Casey - Cranbourne (20.8%), Frankston - West (20.7%) and - East (20.5%), and Mornington Peninsula - East (20.3%) and - South (20.2%). The lowest rates were located in the eastern suburbs.

Areas with the highest rates in **Brisbane** included Redland Balance (26.4%), Marsden (24.6%), Deception Bay (24.3%), Loganlea (24.2%), Waterford West (24.1%), Stretton-Karawatha/Kingston (23.8%), Bethania-Waterford/Eagleby and Coomera-Cedar Creek in the south and south-east; Ipswich - Central (22.3%) and - East (22.0%) in the south-west; and Deception Bay (24.3%), Caboolture - Central (23.9%), and Morayfield (22.7%), in the north. SLAs in a number of inner suburbs, and middle suburbs to the east and west of the city, had the lowest rates.

In **Adelaide**, the highest estimated rates of female smokers were in the outer north, in Playford - West Central (24.3%) and - Elizabeth (24.2%)

and Salisbury - Inner North (21.0%) and - Central (20.0%); and in the outer south, in Onkaparinga SLAs of - North Coast (20.8%), - Hackham (20.3%), - South Coast and - Morphett (both 19.7%). The lowest rates were in SLAs close to Adelaide, to the north, east and south; and in middle suburbs to the east, south and south-east.

In **Perth**, the highest rates were in the outer areas, in Kwinana (20.8%), Rockingham (18.9%) and Armadale (18.8%) in the south; Wanneroo - North-West (18.8%) and North-East (17.9%) in the outer north; and in Belmont (18.2%), in the east. The lowest rates were estimated for a number of inner and middle SLAs.

Female smoking rates in **Hobart** were estimated to be highest in the SLAs of Brighton (23.7%), Sorell - Part A (23.0%) and Derwent Valley - Part A (22.5%); and lowest in Hobart - Remainder (14.1%) and Kingborough - Part A (15.3%).

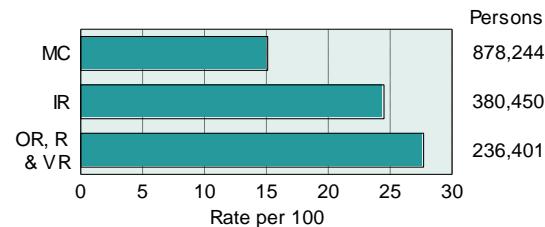
Rates in **Darwin** were all estimated to be above 20.0%. The highest rates were in Palmerston (26.2%) and Litchfield - Part B (24.1%).

Rates in **Canberra** were highest in Eastern Fringe (21.6%), and lowest in Woden North (11.3%) and South (11.4%).

### Remoteness

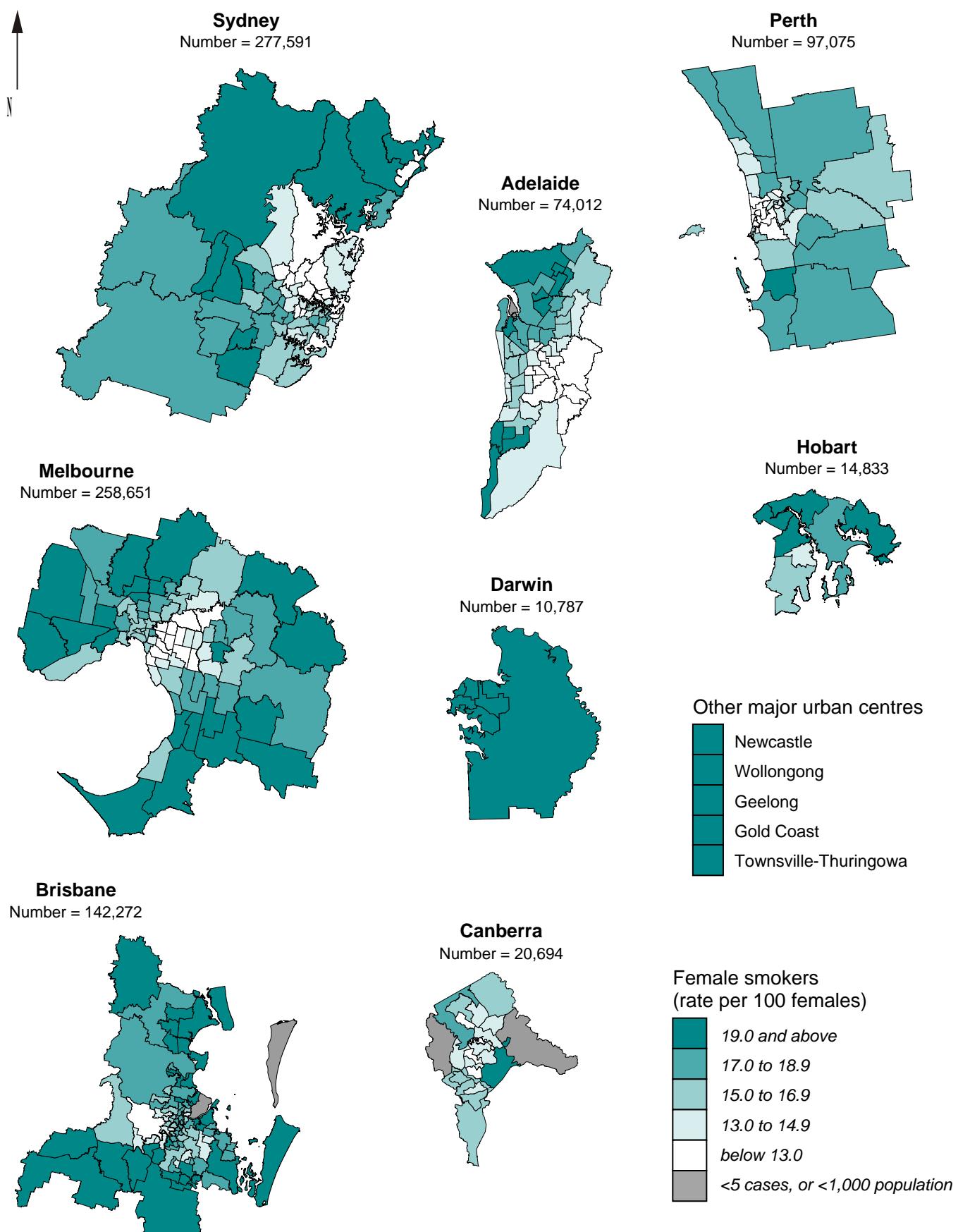
Rates increased across the remoteness classes, from 15.1% in the Major Cities to 27.7% in the combined Outer Regional, Remote and Very Remote classes.

**Figure 24: Estimated female smokers, 18 years and over, by remoteness, 2007-08**



**Map 41: Estimated female population who were current smokers, 18 years and over, major urban centres, 2007-08**

standardised rate per 100 females by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## Prevalence of smoking among females, Australia

**Notes:** These estimates were not made for the most remote areas of Australia. This is of particular relevance to the Northern Territory; as a result, totals are not available for the Northern Territory. See comments on previous text page for other details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 43: Estimated female population who were current smokers, 18 years and over, by State/ Territory, Australia, 2007-08**

*Per cent (age-standardised rate per 100 females)*

Area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan <sup>1</sup>	21.5	20.9	21.7	20.8	21.8	22.4	..	..	21.5
Total <sup>1</sup>	17.8	17.8	20.2	17.2	17.1	20.5	..	14.7	18.2

<sup>1</sup> Estimates have not been made for SLAs in the remote areas of Australia: the 'Non-metropolitan' and 'Total' figures do not therefore represent the entire population of these areas. See Appendix B for further details.

### Non-metropolitan areas

There was little variation between the States in the estimated rate of smoking by adult females, with rates in the non-metropolitan areas higher than in the capital cities.

High estimated smoking rates were evident for females across much of **New South Wales**, from the north-east to the south-west, with the highest in Brewarrina (37.5%), Walgett (32.2%), Coonamble (32.2%), Bourke (30.5%), Bogan (28.0%) and Cobar (27.0%). High rates were also evident in Wellington (28.6%), in central New South Wales; Nambucca (28.3%), on the north coast; and Broken Hill (27.9%), in the far west. The lowest rates were in areas closer to the coast, to the east, south-east and north-east of Sydney; in the south of the State; and to the north, in a number of SLAs near the coast.

The highest smoking rates were estimated for females in the outer eastern and western areas of **Victoria**. These included the SLAs of East Gippsland - Orbost (27.4%) and - Bairnsdale (26.7%), in the east; Glenelg - Portland (26.0%) and - North (25.3%), in the south-west; Swan Hill - Central (25.9%) and - Robinvale (25.0%), and Mildura - Part A (25.9%) along the State's northern border; and Horsham - Central (25.4%) and Hindmarsh (25.0%), in the west. The lowest rates were predominantly in two groups of SLAs: one from south of Geelong to Macedon Ranges, and another in the north-west of the State, around Wangaratta and Shepparton.

Rates in **Queensland** were highest in the far north, in Cook (31.3%), Herberton (29.6%) and Cairns - Central Suburbs (27.9%); in the far west, in Cloncurry (28.6%) and Mount Isa (28.3%); to the west of Brisbane in a group from Tara (26.6%) to Murweh (27.7%); and north of Brisbane, from Wondai (26.1%) to Miriam Vale (26.8%) and Mount Morgan (26.6%). Areas with the lowest rates were largely close to Brisbane, to the west,

south, and north; and further north, around Livingstone - Part A.

In **South Australia**, female smoking rates were estimated to be highest in the mid north of the State, in Peterborough (26.6%), Port Augusta (26.4%), Port Pirie (25.5%), Whyalla (24.7%), and Flinders Ranges (24.4%); on the Eyre Peninsula, in Port Lincoln (26.3%); in Yorke Peninsula - South (24.6%) and Copper Coast (24.3%); and in the Riverland, in Barmera (24.2%) and Berri (24.0%). Areas on the fringe of the metropolitan area, from Light to Yankalilla, had the lowest rates.

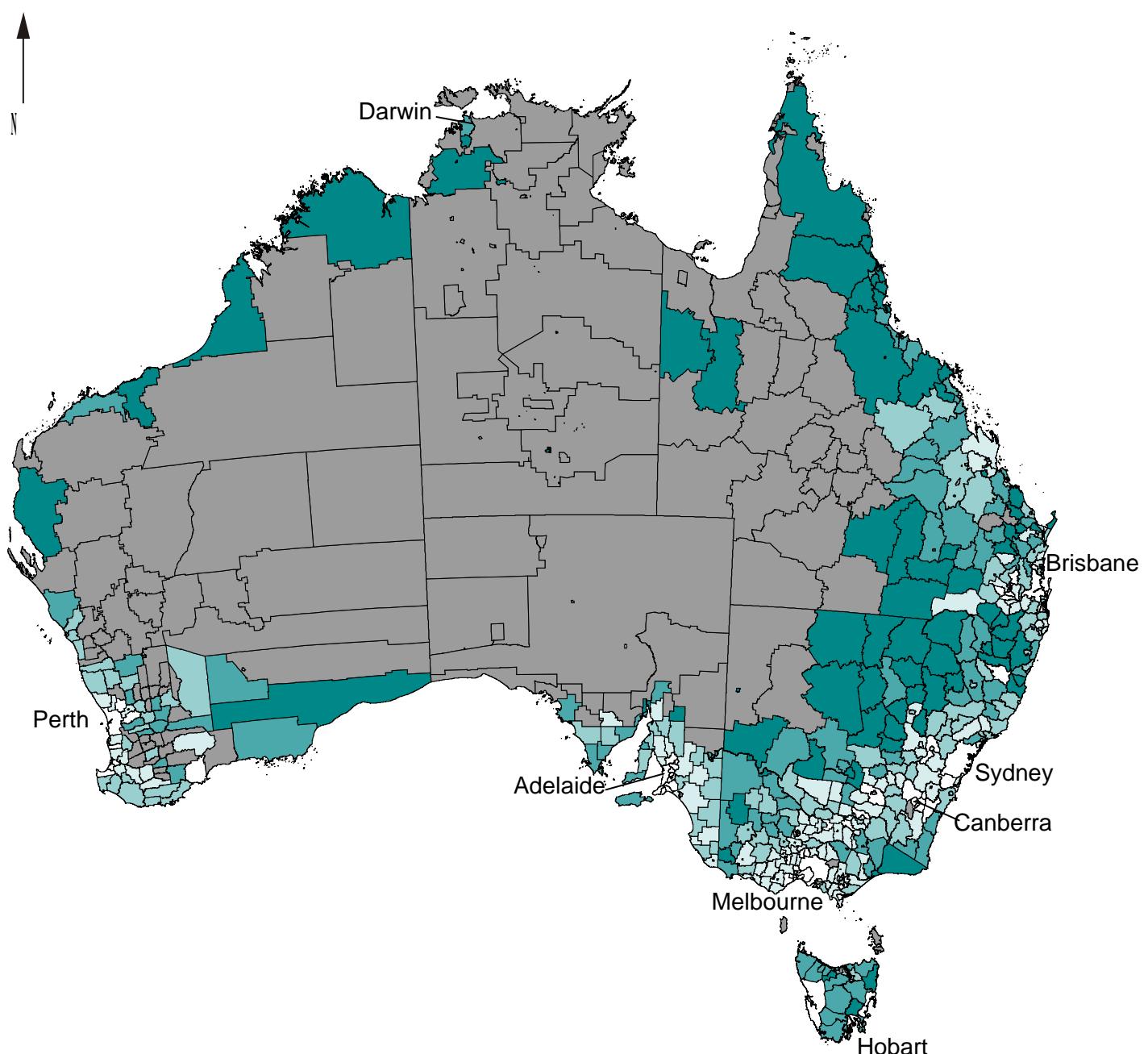
The highest female smoking rates in **Western Australia** were in coastal SLAs including Wyndham-East Kimberley (29.6%), Broome (28.6%) and Port Hedland (26.1%), in the far north; on the mid-west coast in Carnarvon (29.6%) and Geraldton (29.3%); and in the south-west, in Dundas (27.2%). A small number of areas to the west of Perth also had high rates. The lowest rates were in SLAs to the north and east of Perth; in a group from Mandurah to Busselton; and in Jerramungup and Lake Grace.

The highest rates of female smokers estimated for **Tasmania**, included the north coast SLAs of George Town - Part A (27.4%), Burnie - Part A (26.3%), Waratah/ Wynyard - Part A (26.0%), Central Coast - Part A (25.7%), Break O'Day (25.7%), and nearby Kentish (25.9%); and Southern Midlands (26.2%), north of Hobart. The SLAs of West Coast, Glamorgan/Spring Bay, and a number of SLAs in and around the Tamar Valley, had the lowest rates.

Of the few areas that could be mapped in the **Northern Territory**, the estimated rates of female smokers was highest in Daly (34.7%), Katherine (28.8%), and Alice Springs - Heavitree (28.6%) and - Stuart (28.5%). The lowest rates were estimated for Jabiru (23.7%) and Alice Springs - Ross (25.5%).

Map 42: Estimated female population who were current smokers, 18 years and over, Australia, 2007-08

standardised rate per 100 females by Statistical Local Area/ Statistical Local Area group



Female smokers  
(rate per 100 females)

25.0 and above
23.0 to 24.9
21.0 to 22.9
19.0 to 21.9
below 19.0
<5 cases, <1,000 population, or predictions not produced for these areas

Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## Prevalence of obesity among males, capital cities

In 2007-08, an estimated 61.4% of the Australian population were either overweight or obese, with 25.6% of adult males classified as obese (Body Mass Index > 30.0 kg/m<sup>2</sup>).<sup>92</sup> For adults, the health problems and consequences of obesity are many and varied, and include musculoskeletal problems, cardiovascular disease, some cancers, sleep apnoea, type 2 diabetes, and hypertension.<sup>93</sup> Many of these health problems are preventable: for example, regular physical activity reduces cardiovascular risk in its own right and also improves levels of cardiovascular risk factors such as overweight, high blood pressure, and Type 2 diabetes.<sup>94</sup>

**Indicator definition:** Estimated male population aged 18 years and over who were obese based on BMI from self-reported height and weight, expressed as a percentage (age-standardised); further details of these estimates are in Appendix B.

**Table 44: Estimated male population who were obese, 18 years and over, by capital city, 2007-08**

Per cent (age-standardised rate per 100 males)

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
20.3	17.0	19.9	17.3	15.7	15.4	24.0	16.5	18.4

### Capital cities

The estimated population of obese adult males varied across the capital cities, from 24.0% in Darwin, to 15.4% in Hobart and 15.7% in Perth.

The highest estimated rate of male obesity in **Sydney** was in the western SLA of Blacktown - South-West (29.4%), with high rates also in a group of SLAs including Liverpool - East (28.9%), Bankstown - North-East (28.2%) and - North-West (28.1%), Auburn (26.7%), Canterbury (26.6%) and Campbelltown - North (23.9%) and - South (23.3%). The lowest rates were in Strathfield and Burwood, south of the city centre; and on the north shore, in Ku-ring-gai, Willoughby, Hornsby - South and Baulkham Hills - South.

In **Melbourne**, only Whittlesea - South-West (26.3%) had a very high rate. Other high rates were estimated for Melton Balance (21.7%), in the north-west; Greater Dandenong - Dandenong (25.3%), Cardinia - South (22.3%) and Casey - Cranbourne (20.9%), in the south-east; and Yarra Ranges - Central (21.4%), in the outer east. The lowest rates were in the city centre, and in a large group of inner and middle SLAs to the east and south-east.

Obesity rates for males in **Brisbane** were high, at over 25%, in the south in Marsden (30.8%), Loganlea (29.7%), Waterford West (28.6%) and Inala/Richlands (27.9%); in the north in Deception Bay (30.1%) and Caboolture - Central (29.9%); and in the south-east, in Redland Balance (26.8%). A group of SLAs to the west of the Brisbane River, and another group in the south, had the lowest rates.

Areas in **Adelaide** with the highest rates included Salisbury - Inner North (26.3%) and - Central (25.1%) in the outer north; Onkaparinga - Hackham (26.1%) and - Morphett (25.1%) in the outer south; and Charles Sturt - North-East

(23.7%) to the north-west of the city. Rates were lowest in the City of Adelaide and in SLAs to the east, south and south-east.

Obesity rates for males were lower in **Perth**, with the highest rates estimated for Kwinana (20.9%), Armadale (20.0%), Belmont (19.0%), Wanneroo - South (19.0%) and Bassendean (19.0%). The inner SLAs of Peppermint Grove, Claremont, Subiaco, Nedlands and South Perth had the lowest rates; with low rates also in Melville, Canning, Mosman Park and Cambridge.

In **Hobart**, estimated male obesity rates were much higher in Glenorchy (23.4%) than in the other SLAs, where rates ranged from 11.1% in Hobart - Remainder to 17.8% in Kingborough - Part A.

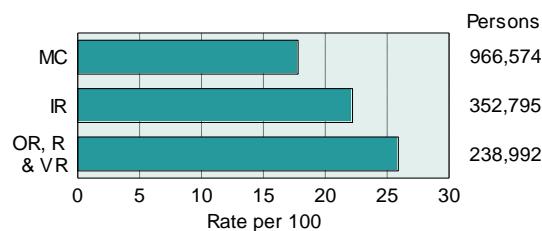
Rates in **Darwin** were relatively high in Palmerston (27.7%), Litchfield - Part A (26.2%), and Darwin North East (25.3%). Darwin North West, Darwin South West and Litchfield Part B had the lowest rates.

There was little variation in male obesity rates in **Canberra**, ranging from 15.8 to 17.9 per 100 males, apart from in Eastern Fringe (21.5 per 100 males). Rates were higher in the outer SLAs.

### Remoteness

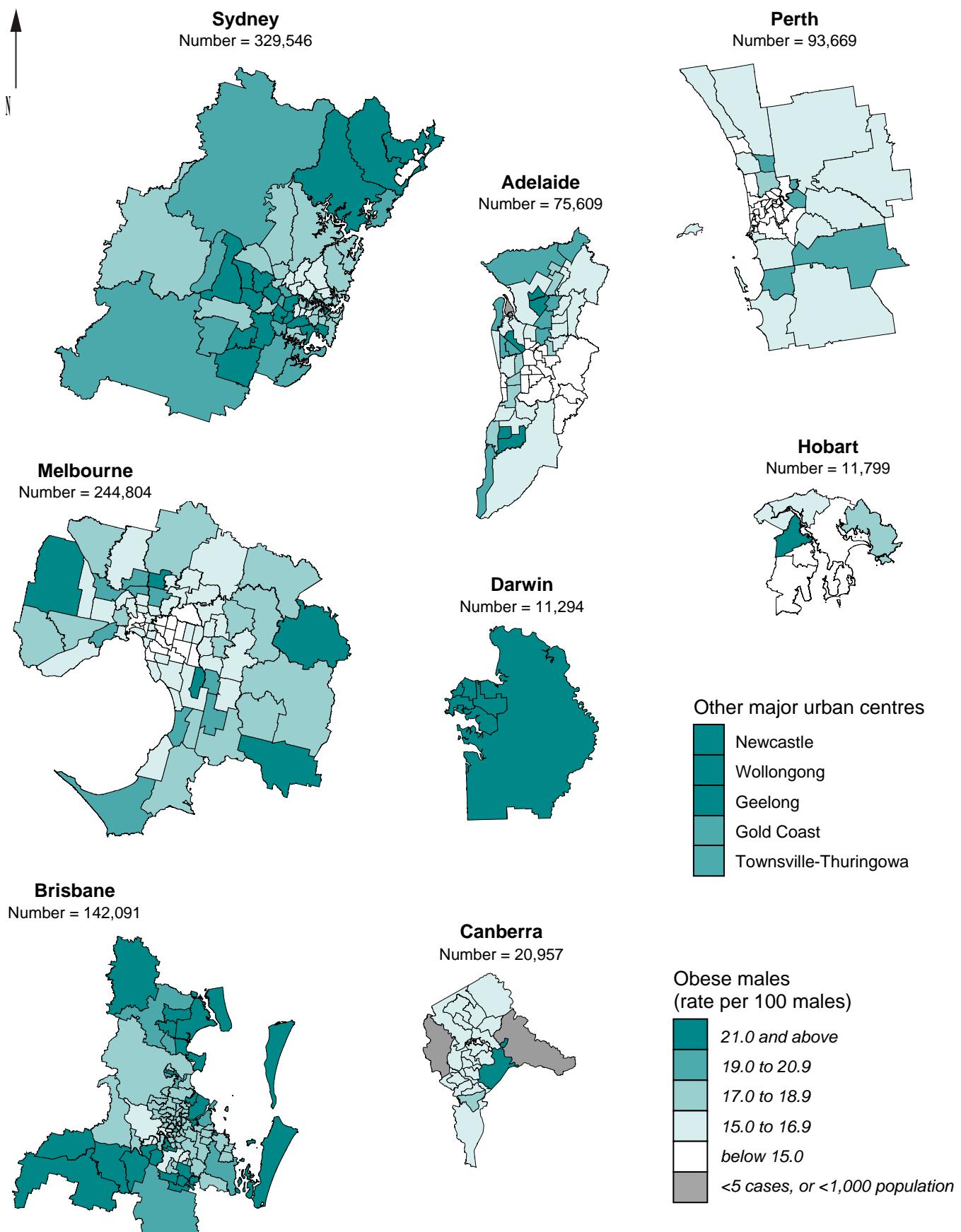
Male obesity rates increased from a rate of 17.8 per 100 males in Major Cities to 25.9 in the combined Outer Regional to Very Remote classes.

**Figure 25: Estimated male population who were obese, 18 years and over, by remoteness, 2007-08**



**Map 43: Estimated male population who were obese, 18 years and over, major urban centres, 2007-08**

standardised rate per 100 males by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## Prevalence of obesity among males, Australia

**Notes:** These estimates were not made for the most remote areas of Australia. This is of particular relevance to the Northern Territory; as a result, totals are not available for the Northern Territory. See comments on previous text page for other details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 45: Estimated male population who were obese, 18 years and over, by State/ Territory, Australia, 2007-08**

*Per cent (age-standardised rate per 100 males)*

Area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan <sup>1</sup>	23.8	20.7	21.6	19.4	19.0	19.0	..	..	21.8
Total <sup>1</sup>	21.6	18.0	20.9	17.9	16.5	17.5	..	16.5	19.6

<sup>1</sup> Estimates have not been made for SLAs in the remote areas of Australia: the 'Non-metropolitan' and 'Total' figures do not therefore represent the entire population of these areas. See Appendix B for further details.

### Non-metropolitan areas

There was little variation between the States in the rate of obesity among males aged 18 years and over, apart from a higher rate, of 23.8%, in New South Wales. Rates in the non-metropolitan areas were higher than those in the capital cities.

Areas with the highest rates of male obesity in **New South Wales** were widely dispersed, including the rural SLAs of Junee (30.8%), Inverell - Part B (30.4%), Gilgandra (30.3%), Bourke (30.1%), Narrandera (30.0%), Lachlan (29.9%) and Gunnedah (29.8%); and regional centres such as Goulburn (29.8%), Grafton (29.8%) and Broken Hill (29.7%). The lowest rates were evident in SLAs to the south of Sydney.

Male obesity rates of 26.0% or higher in the non-metropolitan areas of **Victoria** were located in the regional centres of Bendigo (the SLAs of - Eaglehawk (28.1%) and - Central (27.5%)), and Maryborough (27.3%), in the mid-west of the State; in Swan Hill - Robinvale (27.6%), on the State border; in Corio - Inner (27.0%), in the south-west; and in Latrobe - Moe (26.9%) and - Morwell (26.5%), in the south-east. The rural SLAs of Loddon - South (26.2%), and Pyrenees - North (26.0%) also had high rates. The lowest rates were in a group of SLAs to the south-west, west and north of Melbourne; in the north-east of the State; and in the Bendigo SLAs of - Inner East and - Strathfieldsaye.

In **Queensland**, rates of 29.0% or higher were estimated for areas to the west and south-west of Brisbane, in Booringa (31.0%), Toowoomba - North-East (30.0%) and Warwick - Central (30.2%); to the north in Cooloola - Gympie (29.9%), Bundaberg (29.7%), Mundubbera (29.5%), Gayndah (29.4%), Maryborough (29.1%), Wondai (29.1%) and Kilkivan (29.0%); and further north in Charters Towers (29.5%). The lowest rates were largely in SLAs located in the Sunshine Coast and Gold Coast; further north, inland from Mackay; and in some parts of Cairns.

Areas in non-metropolitan **South Australia**, with rates of 24.0% or higher, included Renmark Paringa - Renmark (26.0%), Loxton Waikerie - West (25.9%), Murray Bridge (25.7%), Berri & Barmera - Barmera (25.4%) and Mid Murray (24.0%) in the Murray Valley; on Yorke Peninsula, in Copper Coast; and in the north, in Flinders Ranges (26.0%) and Port Augusta (25.9%). Roxby Downs in the far north had the lowest rate (12.5%), with low rates also in areas close to Adelaide, from Alexandrina - Strathalbyn, in the south, to Clare and Gilbert Valleys, in the north.

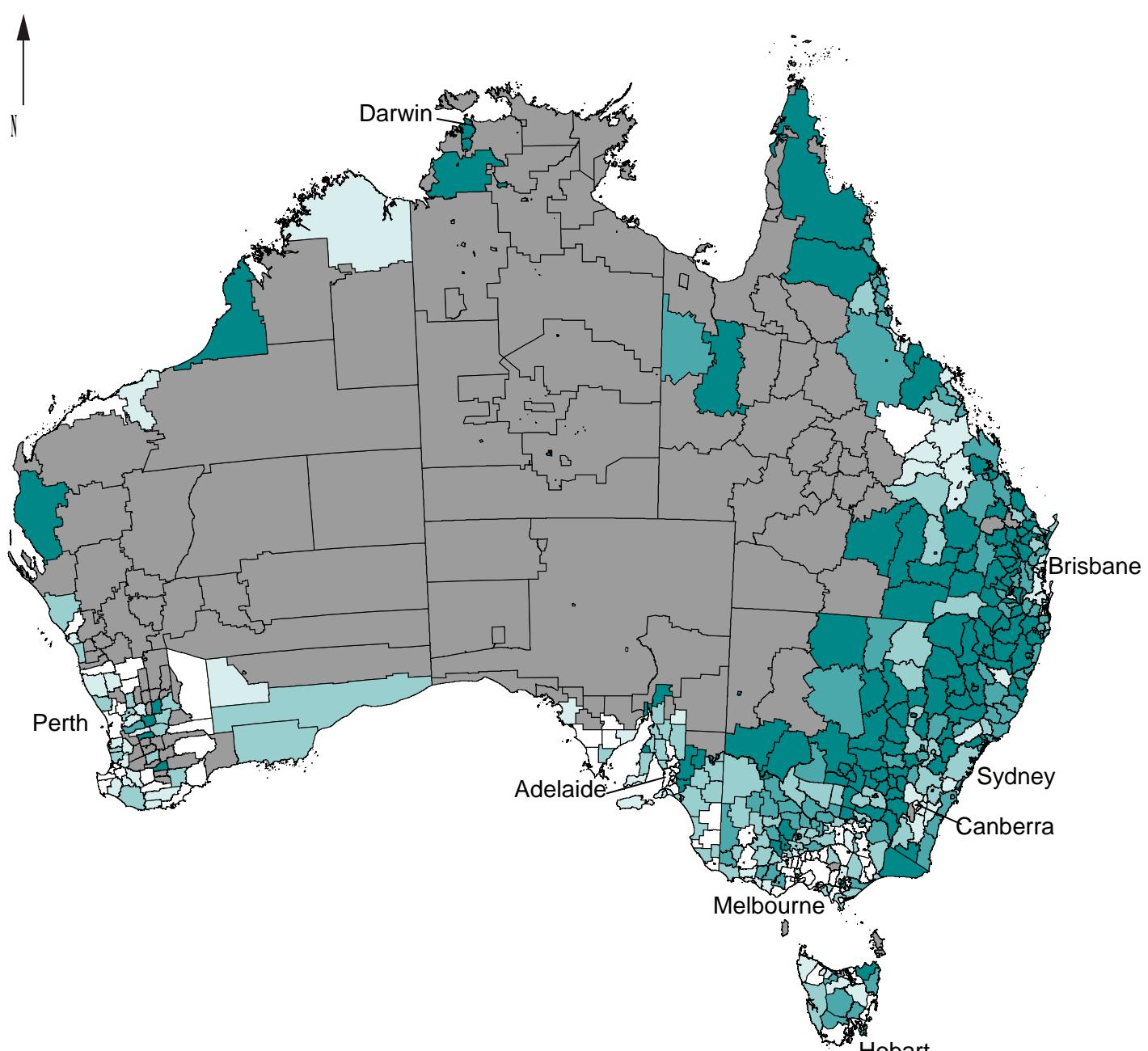
In non-metropolitan **Western Australia**, areas with the highest estimated populations of obese males were largely located in the south-west of the State, including Quairading (26.7%), Northam (26.5%), Katanning (25.8%) and Pingelly; along the mid-western coast in Geraldton (25.9%), and further north in Carnarvon (25.2%) and Broome (25.3%). SLAs with the lowest rates included Roebourne, on the north coast; Busselton and Capel - Part A, and Augusta-Margaret River in the south-west; and Kalgoorlie/Boulder - Part A in the far west.

Male obesity rates were highest in northern **Tasmania**, in the non-metropolitan SLAs of Dorset (24.2%), Burnie - Part A (23.8%), Devonport (23.5%), Waratah/ Wynyard - Part A (23.4%) and Kentish (23%); and in the SLA of Central Highlands (23.5%). Rates were lowest in Kingborough - Part B and West Tamar - Part A.

Of the areas that could be mapped in non-metropolitan **Northern Territory**, the estimated rates of obese males were generally high. Rates of 28.0% or higher were estimated for the Alice Springs SLAs of - Stuart (31.5%) and - Charles (28.2%), and Daly (28.3%). The lowest rates were estimated for Jabiru and Alice Springs - Ross.

Map 44: Estimated male population who were obese, 18 years and over, Australia, 2007-08

standardised rate per 100 males by Statistical Local Area/ Statistical Local Area group



Obese males  
(rate per 100 males)

24.0 and above
22.0 to 23.9
20.0 to 21.9
18.0 to 19.9
below 18.0
<5 cases, <1,000 population, or predictions not produced for these remote areas

Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## Prevalence of obesity among females, capital cities

In 2007-08, an estimated 61.4% of the Australian population were either overweight or obese, with 24.0% of adult females classified as obese (Body Mass Index > 30.0 kg/m<sup>2</sup>).<sup>92</sup> For adults, the health problems and consequences of obesity are many and varied, and include musculoskeletal problems, cardiovascular disease, some cancers, sleep apnoea, type 2 diabetes, and hypertension.<sup>93</sup> Many of these health problems are preventable: for example, regular physical activity reduces cardiovascular risk in its own right and also improves levels of cardiovascular risk factors such as overweight, high blood pressure, and Type 2 diabetes.<sup>94</sup>

**Indicator definition:** Estimated female population aged 18 years and over who were obese based on BMI from self-reported height and weight, expressed as a percentage (age-standardised); further details of these estimates are in Appendix B.

**Table 46: Estimated female population who were obese, 18 years and over, by capital city, 2007-08**

Per cent (age-standardised rate per 100 females)

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
15.6	15.5	16.1	16.7	15.1	16.2	17.5	13.6	15.7

### Capital cities

The lower rate in Canberra and the higher rate in Darwin were the main variations in the estimated rate of obesity for females aged 18 years and over across the capital cities.

In **Sydney**, the highest rates of obesity were estimated for females in Wyong - North East (19.8%) and - South and West (19.3%) and Gosford - West (19.0%), in the outer north-east; in the west, in Parramatta - South (19.2%), and further west, in Penrith - East (19.4%) and - West (19.1%); and to the south-west, in Campbelltown - South (19.2%) and - North (19.0%), and Liverpool - East (19.0%). The lowest rates were in a large group of SLAs on the north shore, and in Woollahra.

The highest rates in **Melbourne** were in the northern SLAs of Hume - Broadmeadows (19.8%) and - Craigieburn (19.3%), Moreland - North (19.6%) and Whittlesea - South-West (19.3%); in the west, in Melton Balance (19.7%) and Wyndham - North (19.1%); and in the south-east, in Cardinia - Pakenham (19.8%) and Casey - Cranbourne (19.2%). The lowest rates were in the city centre, and in a large group of inner and middle SLAs to the east and south-east.

In **Brisbane**, female obesity rates were estimated to be highest in the south, in Marsden (21.0%), Waterford West and Loganlea (both 20.4%); in the west, in Ipswich Central and - East; and in the north, in Deception Bay (20.2%) and Caboolture - Central (20.1%). SLAs with the lowest rates were in inner and middle suburbs to the west of the Brisbane River.

The highest rates in **Adelaide** were estimated to be in the outer north, in Playford - West Central (21.3%), - Elizabeth (20.7%), - East Central (20.0%) and - West (19.7%), and in Salisbury - Inner North (20.1%) and - North-East (19.3%); the north-western SLA of Charles Sturt - Inner

(19.2%); and in the outer south, in Onkaparinga - South Coast (19.6%) and - North Coast (19.4%). The lowest rates were in inner suburbs to the east, south and south-east of the city.

Estimated rates of obesity for females in **Perth** were highest in the outer south in Kwinana (20.5%); the outer north in Wanneroo - North-West (19.7%); and in Perth - Inner (19.0%). A near-city cluster of SLAs including Peppermint Grove, Nedlands, Claremont, Perth - Remainder, Subiaco, Canning, Melville, Mosman Park and South Perth had the lowest rates.

In **Hobart**, the highest rates were in Brighton (19.0%) and Derwent Valley - Part A (19.0%); and the lowest were in Hobart - Remainder and Kingborough - Part A.

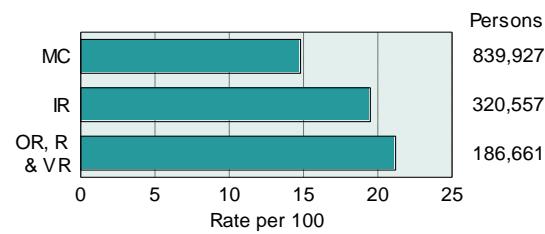
There was little variation in the estimated rate of female obesity in **Darwin**, other than for the highest rate in Palmerston (18.5%) and the lowest rate in Litchfield - Part A (15.7%).

Apart from the high rate in Eastern Fringe (19.8%), female obesity rates in **Canberra** varied little, with the highest rates in the outer suburbs.

### Remoteness

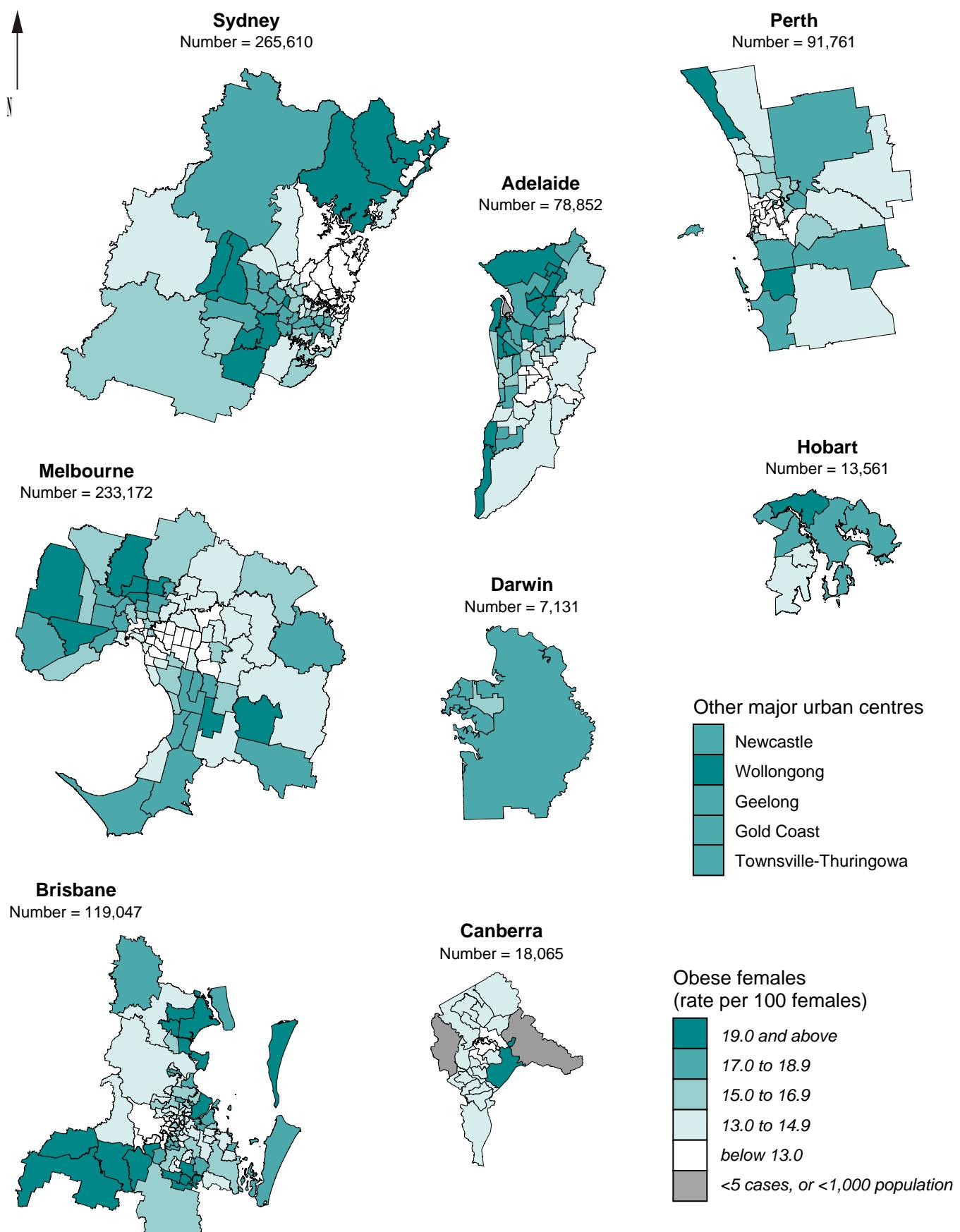
Female obesity rates increased steadily across the remoteness classes, from 14.8% females in the Major Cities to 21.2% in the combined Outer Regional, Remote and Very Remote classes.

**Figure 26: Estimated female population who were obese, 18 years and over, by remoteness, 2007-08**



**Map 45: Estimated female population who were obese, 18 years and over, major urban centres, 2007-08**

standardised rate per 100 females by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## Prevalence of obesity among females, Australia

**Notes:** These estimates were not made for the most remote areas of Australia. This is of particular relevance to the Northern Territory; as a result, totals are not available for the Northern Territory. See comments on previous text page for other details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 47: Estimated female population who were obese, 18 years and over, by State/ Territory, Australia, 2007-08**

*Per cent (age-standardised rate per 100 females)*

Area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan <sup>1</sup>	17.9	17.4	17.9	18.0	17.7	17.8	..	..	17.8
Total <sup>1</sup>	16.5	16.0	17.1	17.0	15.8	17.1	..	13.6	16.4

<sup>1</sup> Estimates have not been made for SLAs in the remote areas of Australia: the 'Non-metropolitan' and 'Total' figures do not therefore represent the entire population of these areas. See Appendix B for further details.

### Non-metropolitan areas

There was little variation between the States in the estimated rate of female obesity at age 18 years, with rates in the non-metropolitan areas higher than those in the capital cities.

The highest rates in the non-metropolitan areas of **New South Wales** were in SLAs located on the northern State border in Walgett (20.6%), Brewarinna (19.7%) and Gwydir (19.5%); the north coast in Kempsey (19.7%) and surrounding SLAs; south of Sydney, in Shellharbour (20.0%) and Wollongong Balance (19.5%); in the far south, in Junee (19.9%), Murrumbidgee (19.7%) and Tumbarumba (19.6%); and, to the west of Sydney, in Lithgow (19.5%). Areas with the lowest rates were largely in the south of the State and included Palerang - Part A, Greater Hume Shire - Part A, Wagga Wagga - Part B, Yass Valley, Snowy River and Conargo; in the north, in Armidale Dumaresq Balance; mid-state in Bathurst Regional - Part B and Dubbo - Part B; and, just south of Sydney, in Kiama.

In **Victoria**, the non-metropolitan SLAs estimated to have the highest rates of obesity among females included Latrobe - Moe and - Morwell east of Melbourne; Central Goldfields - Maryborough and Balance in the middle of the State; Moira - West on the mid-northern State border; Swan Hill - Robinvale on the north-western State border; Mitchell - South just north of Melbourne; and Hindmarsh and Yarriambiack - South in the far west. Areas with the lowest rates were south in Queenscliffe, Surf Coast - East and - West, and Newtown; in Macedon Ranges Balance, just north of Melbourne; further north, in Greater Bendigo - Strathfieldsaye; and in the far north-east, in Wangaratta - North.

Many areas had high rates of obesity among females in **Queensland**, including the SLAs of Tara (20.3%), Rosalie - Part B (20.0%) and Laidley (19.9%) west of Brisbane; and a large number of areas, in a band running north of Brisbane,

from Tiaro (20.1%), through Kolan (20.0%), Gladstone (19.9%) and Calliope - Part B (19.9%), to Mount Morgan (20.1%); and further north in Sarina (19.9%), Bowen (20.0%) and Cairns - Central Suburbs (19.5%). The lowest rates were in regional centres, including Toowoomba and a number of the Cairns SLAs, and on the Gold Coast.

In non-metropolitan **South Australia**, the highest rates of obesity for females were in the north of the State, in Port Augusta (20.5%), Peterborough (20.4%) and Whyalla (20.3%); on the west coast, in Elliston (20.3%); and in Southern Mallee (20.2%), Murray Bridge (19.8%) and Loxton Waikerie - West (19.5%). Rates were lowest in Roxby Downs in the far north; just east of the Adelaide metropolitan area in Mount Barker Balance, Adelaide Hills - North and Balance; and in Robe, in the south-east.

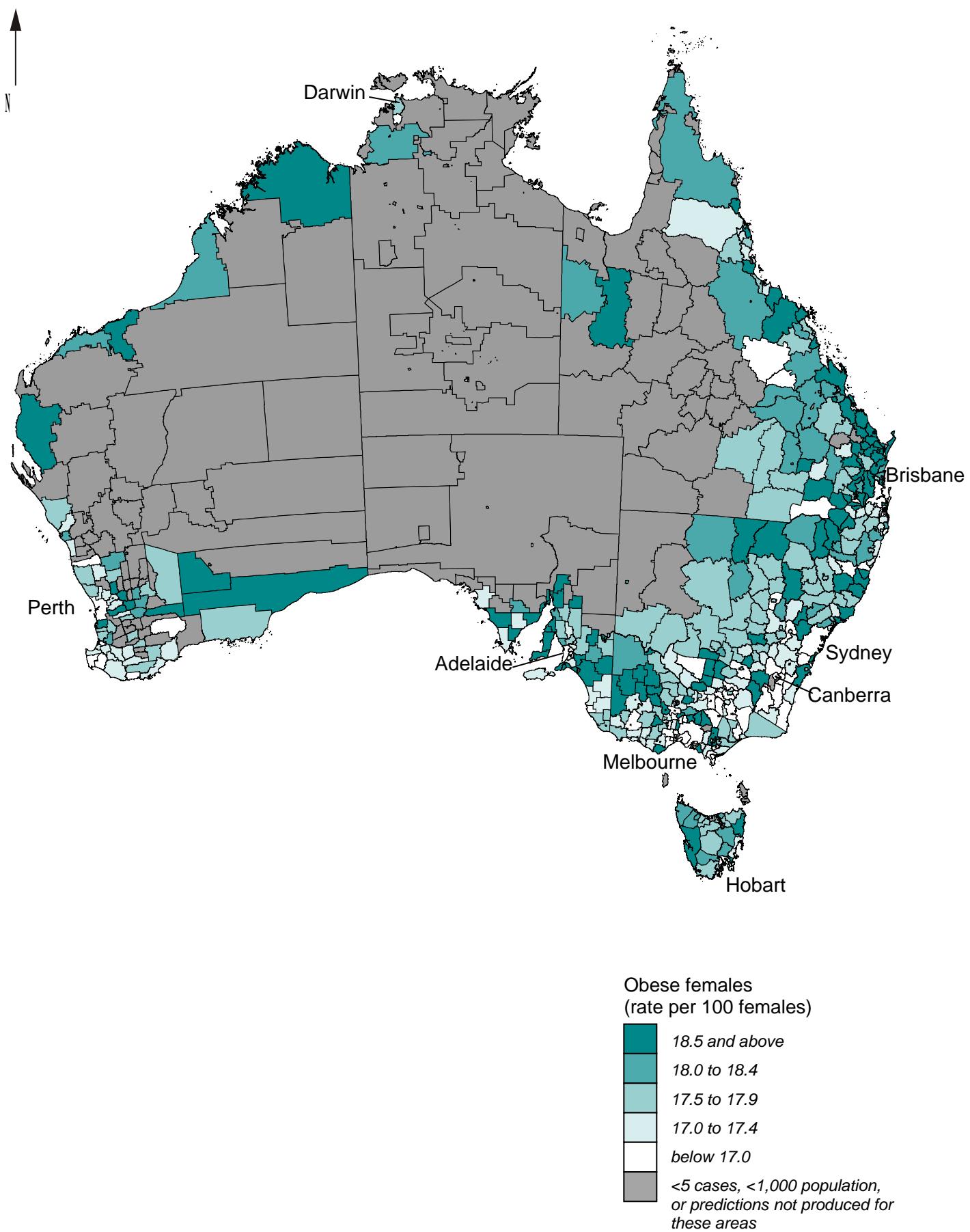
In **Western Australia**, the six highest obesity rates were estimated for females in a band of SLAs to the east and north-east of Perth, including Quairading (20.0%), Cunderdin (19.8%), Beverley (19.5%) and Goomalling (19.3%); and south of Perth, in Murray (19.4%) and Mandurah (19.3%). The lowest rates were also in the south-west, in Dardanup - Part B, Capel - Part A and Harvey - Part A; further east, in Lake Grace; and on the mid-west coast, in Greenough - Part A.

Obesity rates for females in **Tasmania** showed less variation, ranging from 16.5 to 20.5 per 100 females. The highest rates were in the coastal SLAs of George Town - Part A, West Coast, Latrobe - Part B, Break O'Day and Sorell - Part B. The lowest rates were in Kingborough - Part B, West Tamar - Part A, and Tasman.

Of the areas that could be mapped in the **Northern Territory**, rates were also low, ranging from 13.9% in Alice Springs - Ross to 18.9% in Alice Springs - Stuart, with 18.2% in both Daly and Katherine.

Map 46: Estimated female population who were obese, 18 years and over, Australia, 2007-08

standardised rate per 100 females by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on unpublished data supplied by ABS (produced as a consultancy)

## National Bowel Cancer Screening Program, participation, capital cities

*Colorectal cancer, also known as bowel cancer, is one of the commonest forms of cancer, with around 80 Australians dying each week from the disease. Bowel cancer can be treated successfully if detected in its early stages, but currently fewer than 40 per cent of bowel cancers are detected early. Screening has been shown in randomised trials to reduce the incidence of and mortality from colorectal cancer.<sup>132,133</sup> (See the additional notes on page 127 and in Appendix A, page 205, regarding the National Bowel Cancer Screening Program (NBCSP)).*

**Indicator definition:** Number of people aged 50, 55 or 65 years who participated in the NBCSP, as a proportion of the number of people at those ages who were invited to participate in the Program.

**Table 48: National Bowel Cancer Screening Program, participants aged 50, 55 or 65 years, by capital city, 2010**

Per cent									
Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total	
33.2	35.6	35.2	41.4	40.5	40.9	29.1	39.2	36.0	

### Capital cities

Participation in the NBCSP ranged from 29.1% in Darwin to 41.4% in Adelaide.

In **Sydney**, participation rates in the NBCSP were lowest in a band of SLAs stretching from the coast to the west and south of the city. Some of the lowest rates were in Sydney - Inner (25.5%), - East (27.0%) and - South (29.8%), Blacktown - South-West (25.8%), Parramatta - South (26.6%), Bankstown North-East (27.1%), Woollahra (28.4%), Liverpool - West (28.9%) and - East (29.2%), Canterbury (29.3%), Campbelltown - North and Strathfield (both 29.4%), and Waverley (29.8%). No areas had participation rates of 40% or more.

Participation in **Melbourne** was lowest in the north, in Hume - Broadmeadows (29.8%) and - Craigieburn (30.9%), and Whittlesea - South-West (30.2%); and in Monash - South-West (30.0%), Greater Dandenong - Dandenong (30.6%) and Casey - Cranbourne (30.6%) in the south-east. Rates of 40% or more were recorded in Banyule - North and - Heidelberg, Nillumbik - South-West and - South, Mornington Peninsula - West, Manningham - East, Whitehorse - Nunawading East and Boroondara - Camberwell South.

A number of SLAs south of **Brisbane** recorded low participation rates, including Marsden (24.8%), Chandler-Capalaba West (25.7%) and Stretton-Karawatha/Kingston (27.6%). Several other areas to the north and south of the Brisbane River also recorded very low participation rates. Areas with rates of 40% or more included Bribie Island, Albany Creek, Anstead/Moggill, Hills District and Burpengary-Narangba.

Over half of the SLAs in **Adelaide** recorded participation rates of above 40%. These

Hills (47.4%) and - Reservoir (46.9%). Port Adelaide Enfield - Port (29.7%) recorded the lowest rate.

Similarly, participation rates in **Perth** were generally high, with SLAs in the coastal strip north of the city, including Joondalup - South (45.6%) and - North (44.8%), Cambridge (44.9%) and Stirling - Coastal (44.6%), the highest of these. Fremantle - Inner (17.9%, 7 participants) and Perth - Inner (29.5%) had the lowest rates.

Rates in **Hobart** were relatively high, including in Kingborough - Part A (44.7%), Hobart - Remainder (42.2%), Clarence (41.8%) and Sorrell - Part A (41.4%).

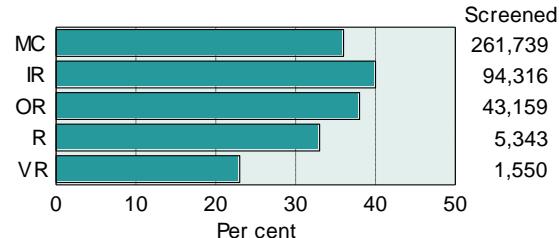
Participation in **Darwin** was relatively low, ranging from 26.5% in Darwin South West to 32.4% in Litchfield - Part A.

The SLA of Eastern Fringe (17.8%, 16 participants) recorded the lowest participation rate in **Canberra**. SLAs with rates above 40% included Belconnen South, Weston Creek, Woden South and North, and Canberra North.

### Remoteness

Participation rates were similar in the first three remoteness classes, before declining to lower rates in the Remote (33.3%) and Very Remote (22.8%) areas.

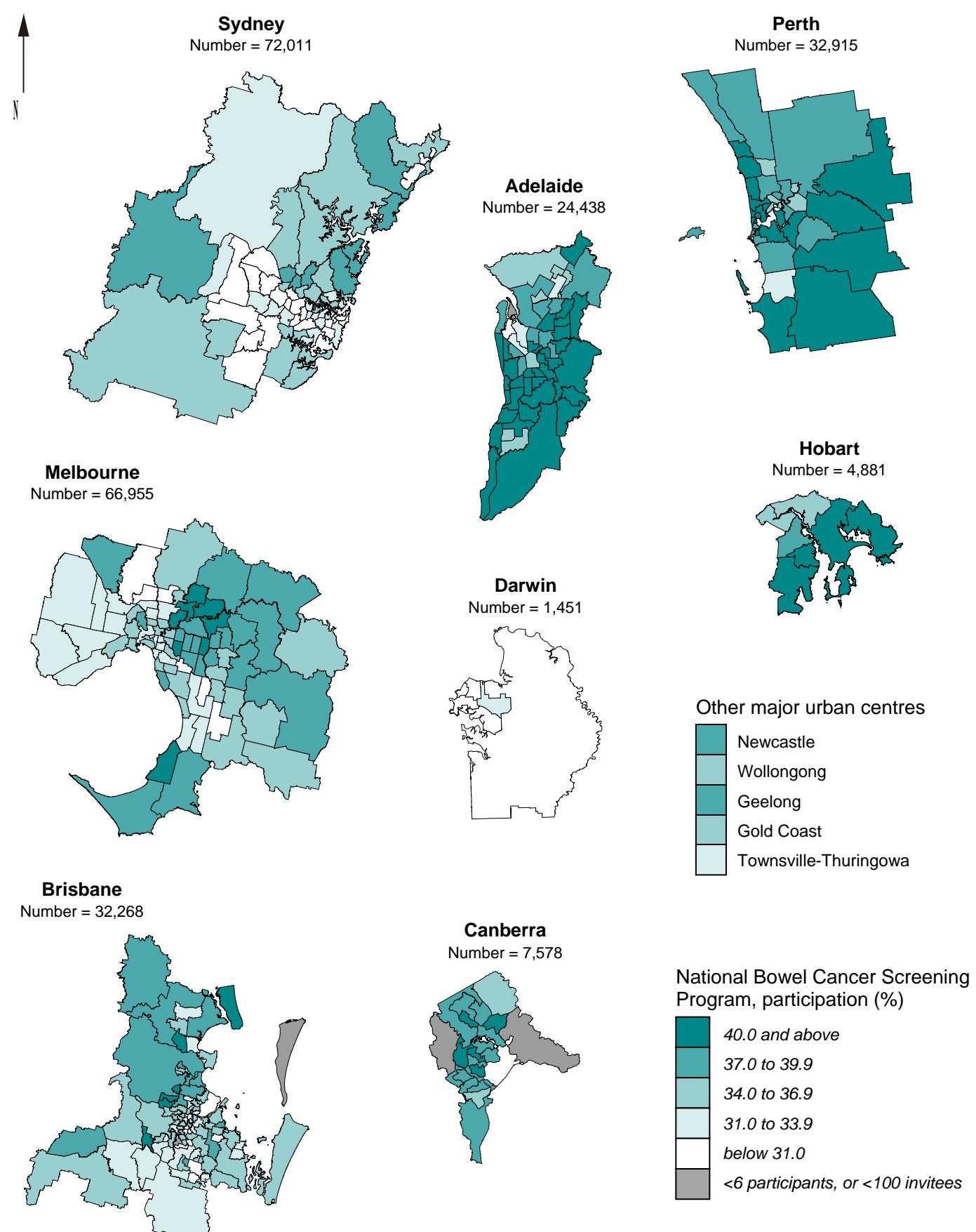
**Figure 27: NBCSP, participants aged 50, 55 or 65 years, by remoteness, 2010**



included the four highest capital city participation rates, in Holdfast Bay - South (49.4%) and - North (47.4%), and Onkaparinga -

**Map 47: National Bowel Cancer Screening Program, participants aged 50, 55 or 65 years, major urban centres, 2010**

per cent by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on data provided by DoHA from the National Bowel Cancer Screening Program

## National Bowel Cancer Screening Program, participation, Australia

**Notes:** See comments on previous text page for details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 49: National Bowel Cancer Screening Program, participants aged 50, 55 or 65 years, by State/ Territory, Australia, 2010**

Area	Per cent								
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan	37.4	40.7	36.7	43.1	38.7	41.3	24.6	..	38.2
Total	34.9	37.1	36.1	41.9	40.1	41.1	24.0	39.1	36.9

### Non-metropolitan areas

Participation rates in the non-metropolitan areas ranged from 36.7% in Queensland to 43.1% in South Australia, other than for a lower rate of 24.6% in the Northern Territory (the only instance where the non-metropolitan rate was below the capital city rate).

Participation in the NBCSP by invitees aged 50, 55 and 65 years was lowest in a group of areas in the outer far west of non-metropolitan **New South Wales**, from the northern to near the southern border. SLAs in this category included Bourke (22.2%), Brewarrina (22.7%), Walgett (25.6%), Central Darling (26.6%), Balranald (27.3%), Coonamble (27.6%), Cobar (28.0%), Bland (29.1%), and Blayney and Lachlan (both 29.2%). Areas with the highest participation by invitees included Lord Howe Island (54.2%, 13 participants), Urana (44.1%), Dungog (44.0%), Hastings - Part B (43.4%) and Bega Valley (43.2%).

In non-metropolitan **Victoria**, Swan Hill - Robinvale (25.8%) was the only SLA with a participation rate below 30%. Areas in the next lowest range (of between 30% to less than 35%) included Yarra Ranges - Part B, Hepburn - East, Moyne - North-East, Loddon - South and Mitchell - North. A number of areas recorded participation rates of 45% or more, with the highest of these including Queenscliffe (49.1%), South Gippsland (48.3%), Ballarat - North and Glenelg - North (both 47.4%), and Murrindindi - East (47.3%).

Participation in the NBCSP in **Queensland** was lowest in the far north, north-west and west of the State. Areas with the lowest rates included Torres (9.4%, 13 participants), Carpentaria (13.7%), Etheridge (15.9%, 7 participants), Aramac (18.9%, 7 participants), Quilpie (20.6%), Cloncurry (21.9%), Winton (23.3%) and Weipa (25.6%). Higher participation rates were predominant in SLAs around Brisbane, and to the north, along the coast. The highest were in Gayndah (52.6%), Mundubbera (49.0%), Tambo (48.6%, 18 participants), Blackall (46.2%), and Cambooya - Part B and Kingaroy (both 45.2%).

Rates were relatively high in non-metropolitan **South Australia**, with the highest in SLAs in the south-east, the mid north, and on the Yorke and Eyre Peninsulas. The highest of these - with rates above 50% - included the SLAs of Robe and Kimba (both 53.8%), Yorke Peninsula - South (53.4%), Tumby Bay (52.7%) and Barunga West (52.4%). Roxby Downs (30.6%) had the lowest rate of participation, followed by Unincorporated Flinders Ranges (34.8%) and Ceduna (35.0%).

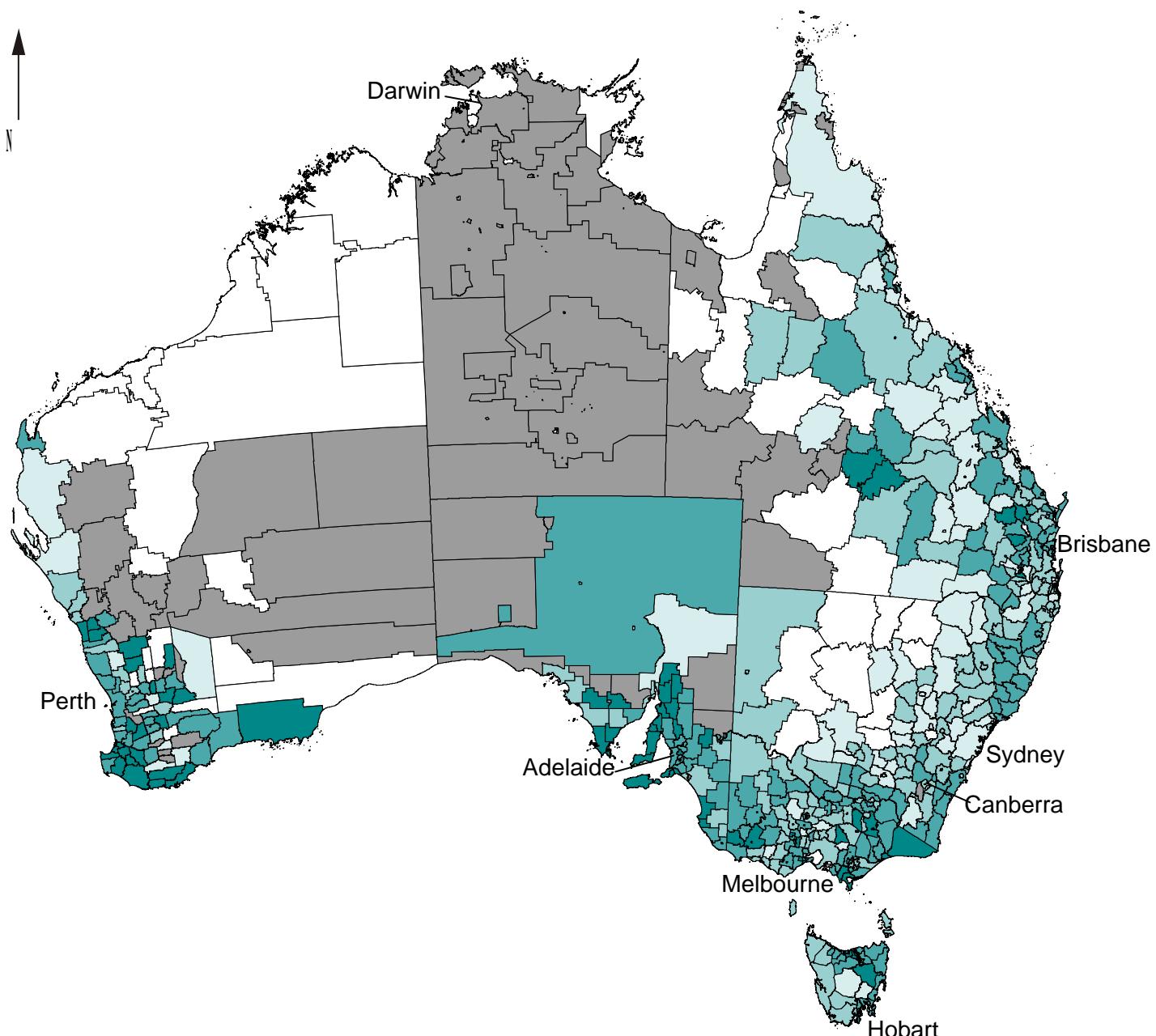
In non-metropolitan **Western Australia**, participation in the NBCSP by invitees aged 50, 55 and 65 years varied more widely than in some of the other States. SLAs with participation rates of 50% or more included Mukinbudin (57.6%, the highest SLA rate in Australia, 19 participants), Wickepin (55.4%, the second highest), Wongan - Ballidu (52.6%), and Narembeen, Williams, Nannup and Dardanup - Part B (all 50%). Areas with low rates covered much of the State, other than the south-west. Of areas with 20 or more participants, those recording the lowest rates included Derby - West Kimberley (15.8%), Port Hedland (23.8%), Wyndham - East Kimberley (25.6%), East Pilbara (25.7%), Broome (25.9%), Coolgardie (27.2%), Roebourne (28.3%) and Ashburton (28.6%).

Participation rates in **Tasmania** were lowest in the Southern Midlands (33.3%) and Central Highlands (34.8%) SLAs; and were highest in Kingborough - Part B (49.5%), West Tamar - Part B (46.8%) and Northern Midlands - Part B (46.0%).

Of the small number of areas where participation rates in the non-metropolitan areas of the **Northern Territory** are available, rates were all below 30%, ranging from 11.0% in East Arnhem - Balance (15 participants) to 26.7% (16 participants) in Coomalie.

Map 48: National Bowel Cancer Screening Program, participants aged 50, 55 or 65 years, Australia, 2010

per cent by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on data provided by DoHA from the National Bowel Cancer Screening Program

## National Bowel Cancer Screening Program, positive test results, capital cities

The National Bowel Cancer Screening Program (NBCSP) offers a faecal occult blood test (FOBT) for bowel cancer to eligible adults who do not have any obvious symptoms of the disease.<sup>133</sup> A 'positive test result' indicates that blood has been found in the sample provided by a participant, and further medical follow up is then indicated.

**Indicator definition:** Number of participants aged 50, 55 or 65 years who received a positive test result from the FOBT in the NBCSP, expressed as an age-standardised rate per 100 participants in the NBCSP at these ages.

**Table 50: NBCSP positive test results, participants aged 50, 55 or 65 years, by capital city, 2010**

Age-standardised rate per 100 participants

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
8.2	8.3	7.9	8.5	8.3	10.1	10.7	7.8	8.2

### Capital cities

The highest rates of positive test results were recorded in Darwin (10.7 people aged 50, 55 or 65 years with a positive result per 100 people who participated in the NBCSP) and Hobart (10.1 per 100 participants); the lowest was recorded in Brisbane (7.9 per 100 participants).

Fairfield - East (with a rate of 10.8 positive results per 100 people who participated), Bankstown - South (10.0 per 100) and Canterbury (10.0 per 100) recorded the highest rates in **Sydney**. The lowest rates were found in the inner city and in areas to the north, east and south of the city; and included Hunters Hill (5.3 per 100), Waverley (5.7 per 100), Pittwater (5.8 per 100), Manly (5.9 per 100) and Mosman (5.9 per 100).

In **Melbourne**, the highest rate was in Yarra - Richmond (11.4 per 100 participants), east of the inner city. Other high rates included areas to the north, in Moreland - Coburg (10.7 per 100) and - North (10.5 per 100) and Hume - Broadmeadows (10.7 per 100); in the outer west, in Hume - Sunbury (11.3 per 100), Wyndham - West (10.6 per 100) and Hobsons Bay - Altona (10.5 per 100); and in the south-east, in Cardinia - Pakenham (11.0 per 100) and Casey - Hallam (10.3 per 100) and - South (10.2 per 100). Areas with the lowest rates were largely in the inner city, and to the east.

High rates of positive test results in **Brisbane** were recorded in outer northern and southern SLAs, of which the highest were in Marsden (11.7 per 100 participants), Bribie Island (11.0 per 100), Deception Bay (10.5 per 100) and Ipswich - West (10.2 per 100). Fewer than three positive test results per 100 people who participated were found in the inner areas of Camp Hill/Carindale and Stafford Heights/Mitchelton (both 1.1 per 100), Upper Brookfield/Fig Tree Pocket (2.0 per 100) and Lota/Manly/Manly West (2.3 per 100).

SLAs in the northern areas of **Adelaide** had the highest rates, including in Salisbury - North-East (12.9 per 100) and - Inner North (11.7 per 100),

and in Playford - Elizabeth (11.9 per 100) and - East Central (11.7 per 100). Similarly high rates were also recorded in the outer southern SLA of Onkaparinga - North Coast (12.2 per 100) and the north-western area of Port Adelaide Enfield - Port (11.8 per 100). Unley - West (4.2 per 100), Adelaide (5.2 per 100) and Onkaparinga - Hills (5.8 per 100) recorded the lowest rates.

The highest rates of positive test results in **Perth** were in outer areas, including Wanneroo - North-West (11.1 per 100 participants) and Kwinana (11.0 per 100). The inner areas of Mosman Park (4.4 per 100), Subiaco (4.8 per 100) and Claremont (4.9 per 100) had the lowest rates of positive test results.

In **Hobart**, high rates of positive test results were found in Sorell - Part A (12.5 per 100 participants) and Glenorchy (12.2 per 100), with the lowest rates in Derwent Valley - Part A (6.6 per 100) and Kingborough - Part A (8.6 per 100).

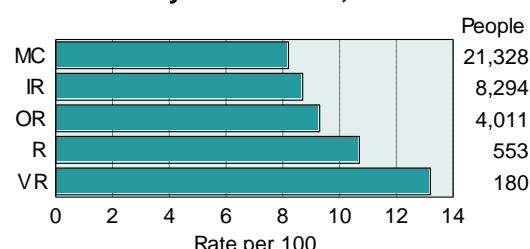
Litchfield - Part B was the only SLA in **Darwin** to be mapped, with 9.3 positive test results per 100 people who participated.

The rates of positive test results in **Canberra** were generally low, ranging from 1.4 per 100 in Belconnen North, to 8.5 per 100 in Kambah.

### Remoteness

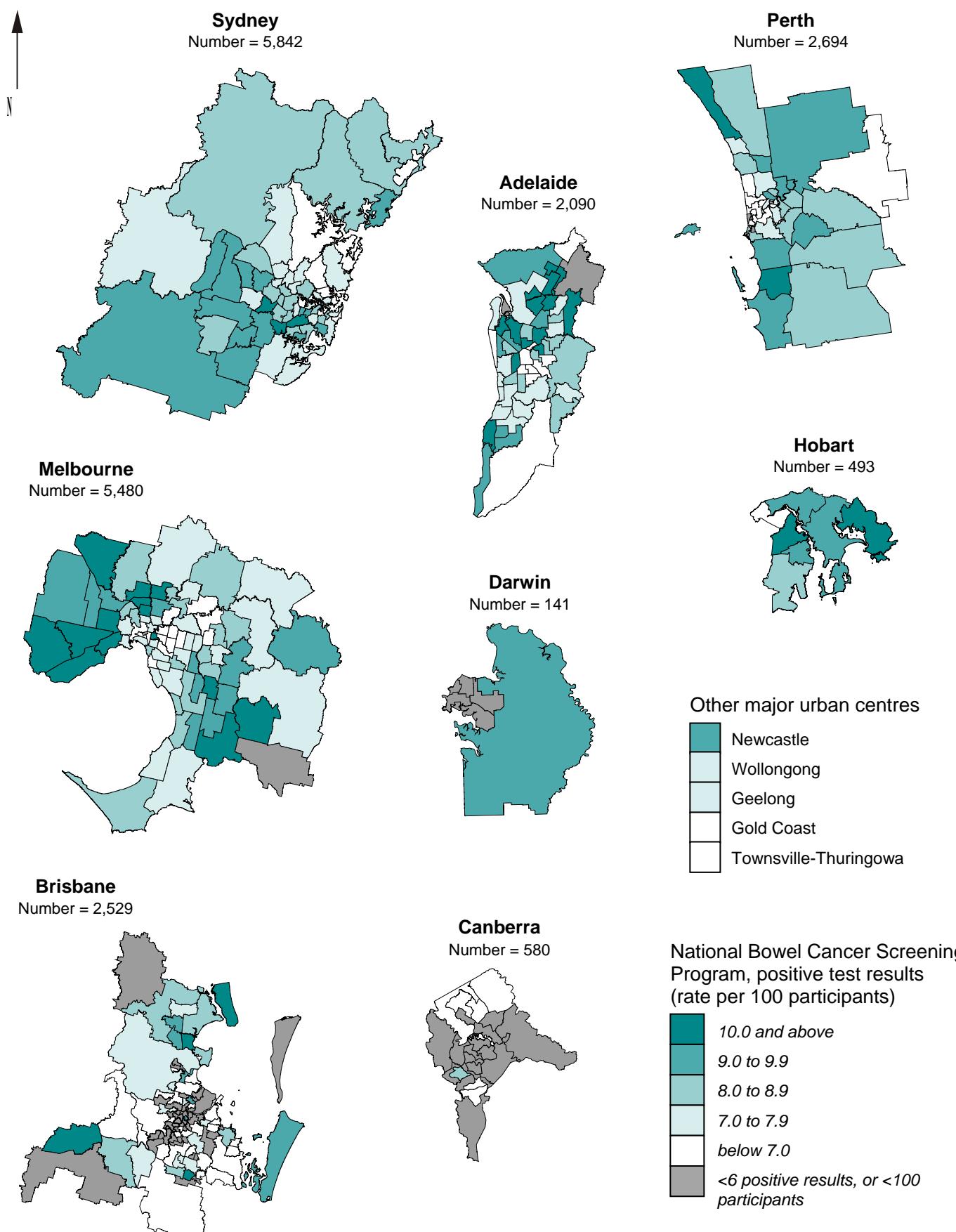
The rate of positive test results increased steadily across the remoteness classes from the Major Cities (8.2 per 100 people) to the Remote areas (10.7 per 100), with a more substantial increase, to 13.2 per 100, in the Very Remote areas.

**Figure 28: NBCSP, positive test results, participants aged 50, 55 or 65 years, by remoteness, 2010**



**Map 49: National Bowel Cancer Screening Program, positive test results, participants aged 50, 55 or 65 years, major urban centres, 2010**

standardised rate per 100 participants by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on data provided by DoHA from the National Bowel Cancer Screening Program

## National Bowel Cancer Screening Program, positive test results, Australia

**Notes:** See comments on previous text page for details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 51: National Bowel Cancer Screening Program, positive test results, participants aged 50, 55 or 65 years, by State/ Territory, Australia, 2010**

Area	Age-standardised rate per 100 participants								
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan	8.7	8.8	8.5	9.6	9.3	9.6	15.1	..	8.8
Total	8.4	8.4	8.2	8.9	8.5	9.8	11.5	7.8	8.4

### Non-metropolitan areas

By far the highest rate of positive test results of people aged 50, 55 or 65 years who participated in the NBCSP was recorded in the non-metropolitan areas of the Northern Territory (15.1 per 100 people). Queensland had the lowest non-metropolitan rate (8.5 per 100).

Many areas have been mapped in grey, as the numbers were considered too small to be reliable.

High rates of positive test results in **New South Wales** were recorded in SLAs in a group from Newcastle, inland and north-west to the border; and from Wollongong, inland and south-west to the border. The highest of these were recorded in Walgett (17.4 per 100 participants), Greater Hume Shire (15.7 per 100), Tumut Shire (13.3 per 100), Wellington (13.2 per 100), Gwydir (12.9 per 100) and Bombala (12.6 per 100). Fewer than five positive test results per 100 participants were recorded in Snowy River (4.7 per 100), Kyogle (4.7 per 100) and Cootamundra (4.8 per 100).

SLAs with the highest rates of positive test results of those who participated in the NBCSP were scattered across **Victoria**, including Corangamite - South (14.4 per 100 participants), Gannawarra (12.4 per 100), Surf Coast - West (11.9 per 100) and Mount Alexander Balance (11.8 per 100). Areas with low rates were also widespread throughout the State, of which the lowest were recorded in Hepburn - West (3.3 per 100), Greater Bendigo - Strathfieldsaye (3.8 per 100), Hepburn - East and Glenelg - Heywood (both 4.2 per 100), and Wangaratta - South (4.4 per 100).

In the non-metropolitan areas of **Queensland**, the highest rates of positive test results were in Pittsworth (16.5 per 100 participants), Murweh (15.3 per 100), Rockhampton - Mount Morgan (12.7 per 100), and Bundaberg - Isis (12.3 per 100). The Townsville areas of Townsville Coastal/Magnetic Island (1.4 positive test results per 100 participants), Townsville South East (3.0 per 100) and Murray/Mt Louisa (3.8 per 100) recorded the lowest rates, with 3.8 positive test results per 100 participants also recorded in Isaac - Belyando.

Relatively few areas in **South Australia** had sufficient numbers for the publication of results. Of these, the far northern areas of Roxby Downs (17.0 per 100 participants) and Unincorporated Far North (14.9 per 100) recorded the highest rates, with high proportions also recorded in the mid northern areas of Mid Murray (13.7 per 100), Port Augusta (12.5 per 100), Mallala (12.2 per 100) and Wakefield (12.0 per 100). The lowest rates were recorded in the Riverland SLAs of Loxton Waikerie - Berri (3.6 per 100) and Berri & Barmera - Berri (4.2 per 100).

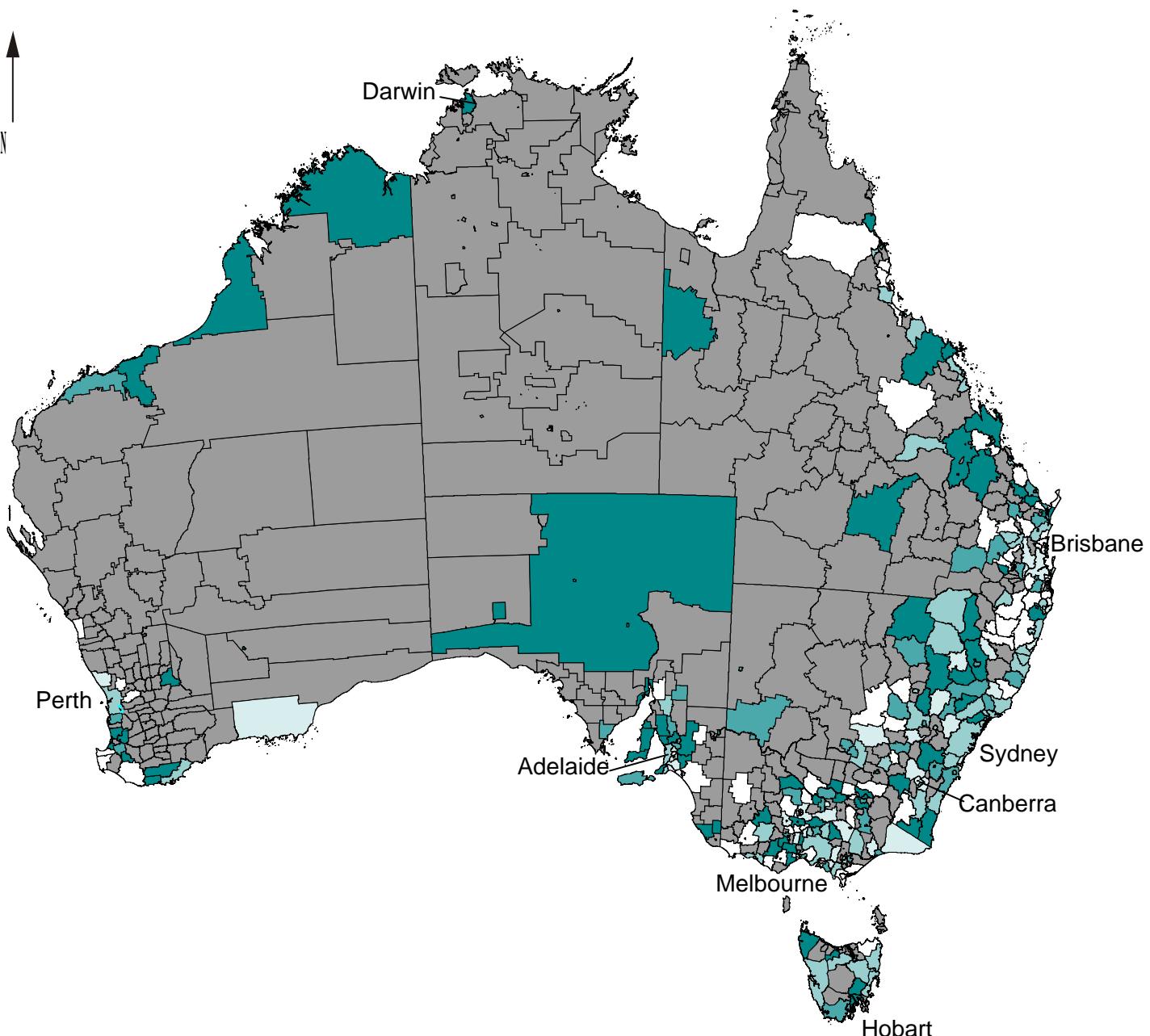
A majority of the non-metropolitan areas in **Western Australia** also had too few positive test results to be mapped. The highest rate was in Plantagenet (13.5 per 100 participants in the NBCSP), with a rate of 12.7 per 100 in Merredin. Other high rates were in Port Hedland and Broome (both 11.7 per 100) in the far north; and in Bridgetown-Greenbushes (11.5 per 100) in the south-west. Dardanup - Part A (with a rate of 4.2 per 100), in the south-west; Toodyay (4.4 per 100), north of Perth; Irwin (4.6 per 100), on the north coast; and York (4.9 per 100), to the east of the city, recorded the lowest rates.

In the non-metropolitan areas of **Tasmania**, the highest rates of positive test results were recorded in the SLAs of Southern Midlands (12.5 per 100 people who participated, located to the north of Hobart), Kentish (11.8 per 100, in the north) and Circular Head (11.0 per 100, in the north-west). The lowest rate (5.7 per 100) was recorded in both Kingborough - Part B, and in Dorset.

No SLAs in the non-metropolitan areas of **Northern Territory** were mapped, as there were too few positive test results.

Map 50: National Bowel Cancer Screening Program, positive test results, participants aged 50, 55 or 65 years, Australia, 2010

standardised rate per 100 participants by Statistical Local Area/ Statistical Local Area group



National Bowel Cancer Screening  
Program, positive test results  
(rate per 100 participants)

darkest teal	10.0 and above
teal	9.0 to 9.9
light teal	8.0 to 8.9
very light teal	7.0 to 7.9
white	below 7.0
grey	<6 positive results, or <100 participants

Source: Compiled in PHIDU based on data provided by DoHA from the National Bowel Cancer Screening Program

## Premature mortality, all causes, capital cities

*Deaths before the age of 75 years are deemed premature, given the life expectancy of Australians of 79.0 years for males and 83.7 years for females for the period, 2005 to 2007.<sup>97</sup> Diseases of the circulatory system, malignant neoplasms (cancer), and the combined external causes of accidents, poisonings and violence were the main causes of premature death of Australians in 2005.<sup>98</sup>*

**Indicator definition:** Deaths at ages 0 to 74 years, expressed as an age-standardised rate per 100,000 population.

**Table 52: Premature mortality (deaths at ages 0 to 74 years), by capital city, 2003 to 2007**

Age-standardised rate per 100,000 population

Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
233.6	222.9	246.6	251.9	229.7	294.7	357.2	216.5	235.0

### Capital cities

Premature mortality rates are highest in Darwin (a rate of 357.2 deaths per 100,000 population) and Hobart (294.7), and lowest in Canberra (216.5) and Melbourne (222.9). There is a strong association at the SLA level with high premature death rates and socioeconomic disadvantage in Melbourne and Brisbane, and a very strong association in Sydney, Adelaide and Perth.

The highest rates of premature mortality in **Sydney** were found in Blacktown - South-West (341 per 100,000 population) and - South-East (288), in the outer west; Sydney - South (337) and - East (297) and Marrickville (298) in the inner city; Parramatta - Inner (306) and - South (280) to the west; Campbelltown - North (293) in the outer south; and in the outer north in Wyong - South and West (326) and - North-East (289). SLAs on the north shore had the lowest rates.

High rates were widespread across **Melbourne**, in the outer south-east, in Cardinia - South (315 per 100,000 population) and Casey - Cranbourne (282); in the outer west, in Melton Balance (289); and closer to the city, in Maribyrnong (313), Port Phillip - St Kilda (290), and Hobson's Bay - Williamstown (278). The lowest rates were in the inner city and in SLAs to the east and north-east.

Premature death rates in **Brisbane** were very high, particularly in many SLAs in and around the city centre (generally to the east of the Brisbane River), and in the south, south-west and the outer north. The highest rates were in Dutton Park/ Woolloongabba (463 per 100,000 population), Stretton-Karawatha/Kingston (383), Rocklea (374), Annerley/Fairfield (360) and Murarrie (354). Areas with low rates were scattered throughout Brisbane and included the SLA groups of St Lucia, Chandler-Capalaba West, Calamvale and Gumedale/ Wakerley.

High rates of premature mortality in **Adelaide** were located in three distinct areas: to the north-west and outer north and south of the city centre. The highest were in Playford - West Central (418) and - Elizabeth (396), Salisbury - Inner North

(337); Port Adelaide Enfield - Coast (392), - Inner (354), - Park (346) and - Port (341); and Onkaparinga - North Coast (327). SLAs in the east and south-east had the lowest rates.

Premature death rates in **Perth** were highest in SLAs to the east of Victoria Park (390 per 100,000 population), Belmont (308) and Bassendean (303); and to the south, in Kwinana (295) and Armadale (280). Perth - Inner had a rate of 283 deaths per 100,000 population. The lowest rates were in the near-city SLAs of Peppermint Grove, Cottesloe, Claremont and Cambridge.

In **Hobart**, premature mortality rates were very high in Derwent Valley Part A (412 per 100,000), Hobart Inner (392, Brighton (376) and Glenorchy (352). Only Kingborough - Part A (238) had a rate close to the capital city average.

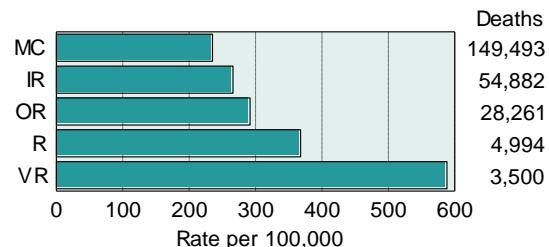
Premature death rates in **Darwin** were all above average, with rates of 393 in Palmerston, 289 in Darwin South West, 353 in Litchfield - Part B, 351 in Darwin North West, 305 in Darwin North East and 258 in Litchfield - Part A.

Rates in **Canberra** were highest in Canberra South (275 deaths per 100,000 population) and North (253), with rates of 244 and above in the outer parts of Tuggeranong and Belconnen, and in Eastern Fringe.

### Remoteness

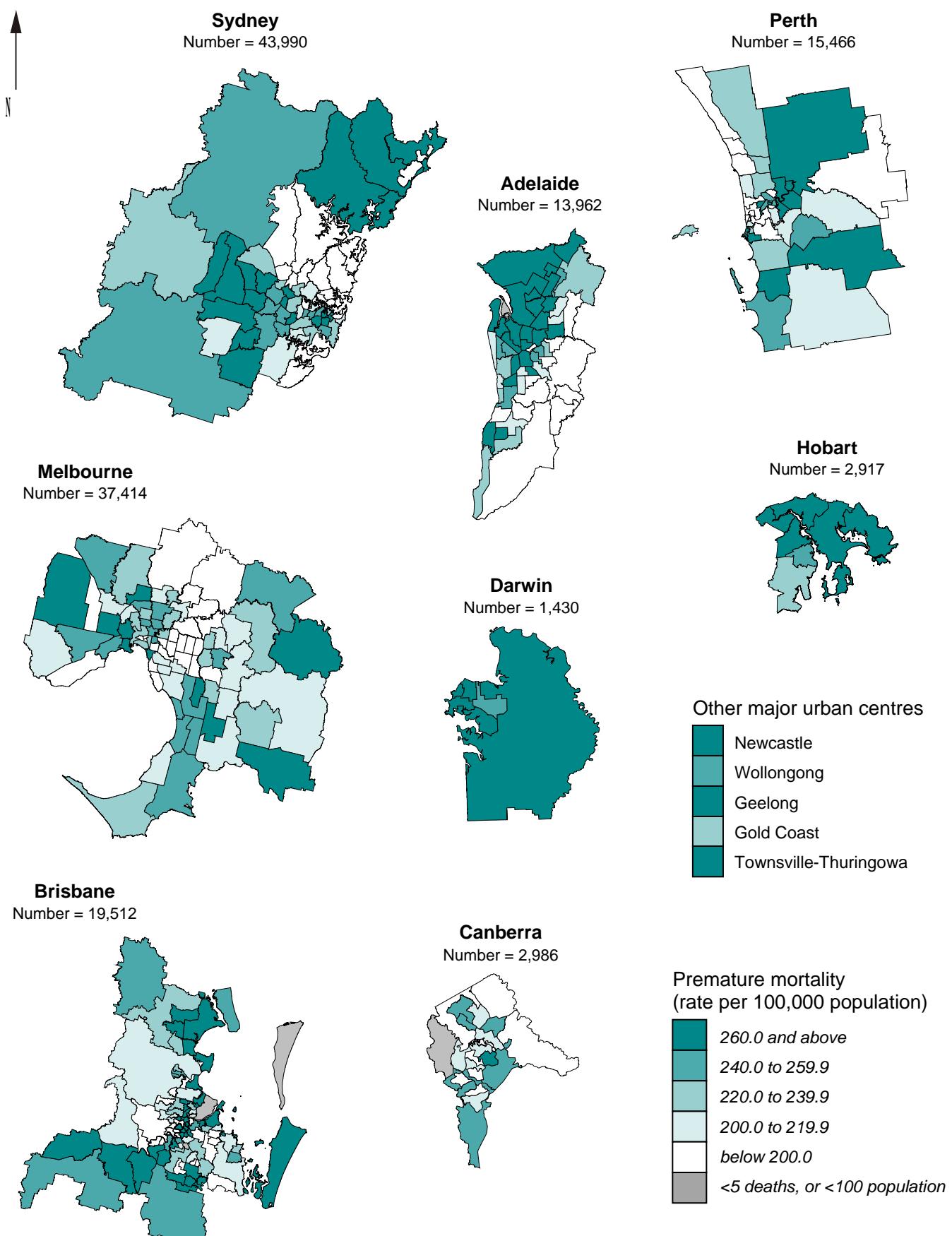
Premature mortality rates increased strongly across the first four remoteness classes (from 93 to 146 deaths per 100,000 population), before increasing substantially in the Very Remote class, to 233 deaths per 100,000 population, two and a half times the rate in the major cities' areas.

**Figure 29: Deaths at ages 0 to 74 years, by remoteness, 2003 to 2007**



**Map 51: Premature mortality (deaths at ages 0 to 74 years), major urban centres, 2003 to 2007**

standardised rate per 100,000 population by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on data supplied by ABS on behalf of State and Territory Registrars of Deaths

## Premature mortality, all causes, Australia

**Notes:** See comments on previous text page for details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 53: Premature mortality (deaths at ages 0 to 74 years), by State/ Territory, Australia, 2003 to 2007**

*Age-standardised rate per 100,000 population*

Area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan	280.9	269.9	262.3	277.3	283.4	294.3	716.7	..	277.5
Total	253.1	236.8	255.6	259.1	244.2	294.5	508.3	216.4	252.2

### Non-metropolitan areas

The rate of premature death of 716.7 deaths per 100,000 population in the Northern Territory was more than twice the rate of the next highest, Tasmania, with a rate of 294.3. All of the non-metropolitan areas had relatively high rates, reflecting the high rates of premature death among the Indigenous population.

The highest (of many high) premature mortality rates were recorded in a group of SLAs across inland **New South Wales**, from Walgett (471 deaths per 100,000 population), through Brewarrina (684), Bourke (609) and Central Darling (514) in the north, to Balranald (458) and Jerilderie (651), in the south. Areas with low rates were generally located in the eastern parts of the State, and along the coast, with the lowest rates in Dubbo - Part B, Wagga Wagga - Part B, Bathurst Regional - Part B, Kiama and Armidale Dumaresq Balance.

Rates were well below the non-metropolitan average in all SLAs in **Victoria**. The majority of SLAs with the State's highest rates were to the west and north-west of Melbourne, with a small number to the east. These included Ballarat - North (400 deaths per 100,000 population) and - South (324), Southern Grampians - Wannon (377), Greater Bendigo - Eaglehawk (349), Pyrenees - South (342), Loddon - South (335), Northern Grampians - Stawell (330); on the coast, Glenelg - Portland (344) and Geelong West (340); and in the east, Wellington - Sale (353) and Latrobe - Morwell (350). SLAs with below average rates of premature death were generally located closer to Melbourne, and in the north-east of the State.

The highest of many very high premature death rates in the non-metropolitan areas of **Queensland** were largely in remote areas of the State: on Cape York and in the Torres Strait, in some northern coastal communities, and along the border with the Northern Territory. Highly elevated rates (more than five times the Australian average) were found in the remote areas of Doomadgee (1,632 deaths per 100,000 population), Mornington (1,402), Pormpuraaw (1,290) and Hope Vale (1,268), and in

Cherbourg (1,624), north-west of Brisbane. The lowest rates were largely recorded in areas to the west of Brisbane, and in and around the Gold Coast and Sunshine Coast.

A majority of SLAs in the far north and west of **South Australia** had very high premature mortality rates, including Unincorporated West Coast (936 deaths per 100,000 population), Anangu Pitjantjatjara (725), Unincorporated Whyalla (712), Unincorporated Far North (658), Coober Pedy (541) and Ceduna (522). SLAs with the lowest rates were in the north, in Roxby Downs; to the east and south-east of Adelaide in Adelaide Hills - North, Alexandrina - Strathalbyn and Mount Barker Balance; in the south-east of the State in Karoonda East Murray and Robe; and in Franklin Harbour, on the Eyre Peninsula.

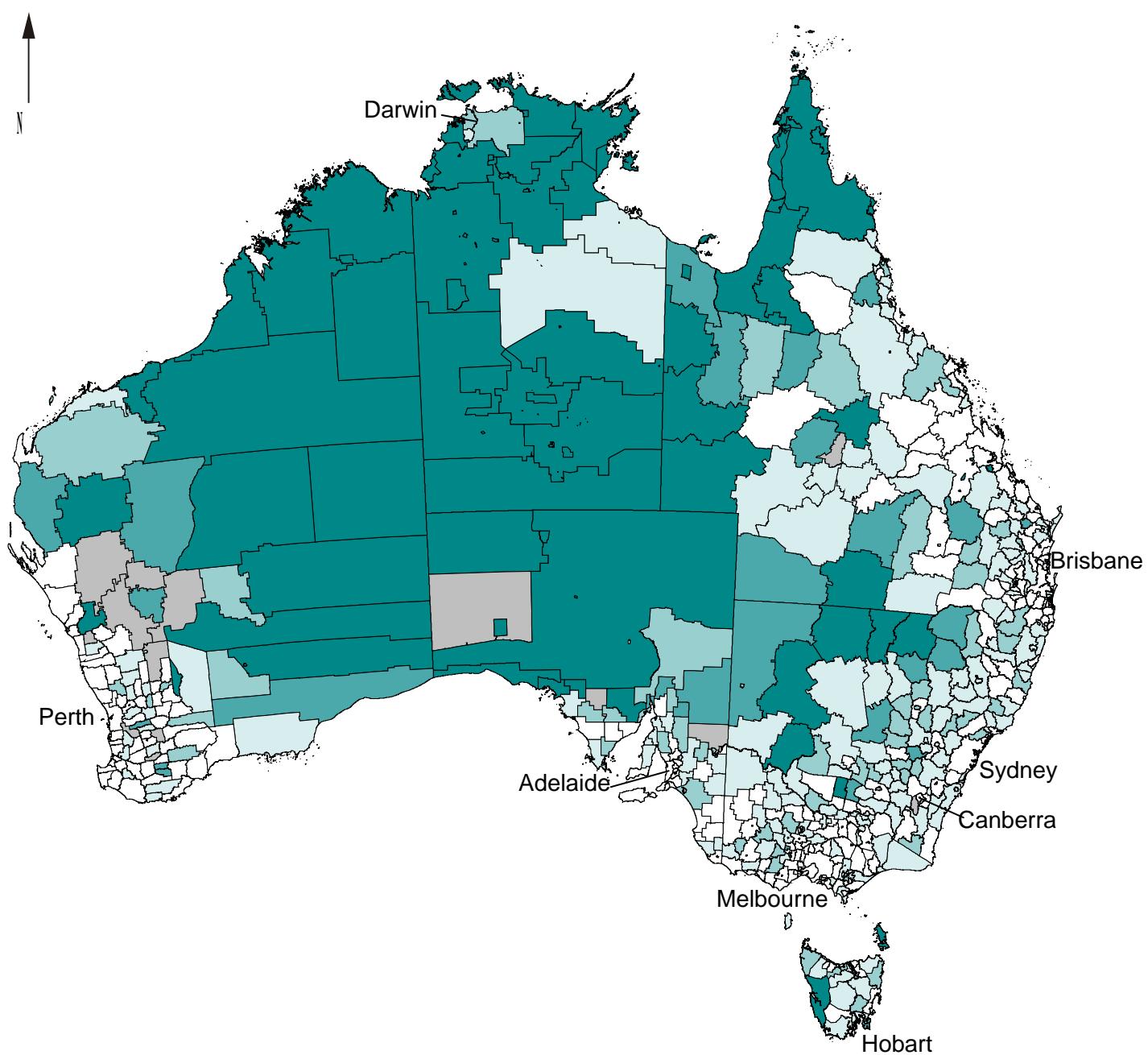
SLAs with high rates of premature death covered much of **Western Australia**, from Kalgoorlie / Boulder - Part B (1,165 deaths per 100,000 population) to Wyndham-East Kimberley (662), and Halls Creek (1,1135), Derby-West Kimberley (976), Ngaanyatjarraku (910), Wiluna (774), Menzies (563), Broome (554) and East Pilbara (478). Similar rates were recorded in Mulewa (657) and Upper Gascoyne (528). The lowest rates were largely in SLAs in the south-west of the State, and to the north of Perth.

The SLAs of Flinders (206 per 100,000 population) and West Coast (188) had the highest premature mortality rates in **Tasmania**, with high rates also in a number of other coastal SLAs. The lowest rates were largely in SLAs located in the north of the State, including Burnie - Part B, Central Coast - Part B, George Town - Part B, Meander Valley - Part A and West Tamar - Part A; and, in the south, Derwent Valley - Part B.

More than three-quarters of the SLAs in the non-metropolitan areas of **Northern Territory** had premature death rates of more than twice the Australian average. Rates were more than five and a half times the Australian average in the Indigenous communities of Belyuen (2,294), Lajamanu (1,584), Watiyawana (1,565), Kunbarllanjra (1,529), Numbulwar Numburindi (1,463) and Tiwi Islands (1,426).

Map 52: Premature mortality (deaths at ages 0 to 74 years), Australia, 2003 to 2007

standardised rate per 100,000 population by Statistical Local Area/ Statistical Local Area group



Premature mortality  
(rate per 100,000 population)

440.0 and above
380.0 to 439.9
320.0 to 379.9
260.0 to 319.9
below 260.0
<5 deaths, or <100 population

Source: Compiled in PHIDU based on data supplied by ABS on behalf of State and Territory Registrars of Deaths

## Premature mortality from suicide and self-inflicted injury, capital cities

*Suicide is the leading cause of death for adults under the age of 34 years, and for males under the age of 44 years.<sup>99</sup> Males comprised over three-quarters (77%) of all suicide deaths in 2007, the tenth leading cause of death of males.<sup>100</sup> Although death by suicide is a relatively uncommon event (occurring at a rate of about 1 per 10,000 population per year), the human and economic costs are substantial.<sup>100</sup> Suicide costs the nation over \$17 billion every year, but remains largely preventable, if early identification and effective treatment are available for those suffering mental illness, substance use and other related health problems.<sup>101</sup>*

**Indicator definition:** Deaths from suicide and self-inflicted injury at ages 0 to 74 years, expressed as an age-standardised rate per 100,000 population.

**Table 54: Deaths from suicide and self-inflicted injury at ages 0 to 74 years, by capital city, 2003 to 2007**

Age-standardised rate per 100,000 population									
Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total	
8.5	10.2	10.3	13.1	10.7	15.4	19.4	9.5	10.1	

### Capital cities

Death rates from suicide and self-inflicted injury before the age of 75 years were lowest in Sydney (8.5 deaths per 100,000 population) and Canberra (9.5), and highest in Darwin (19.4) and Hobart (15.4). The comments on the following text page as to the quality of suicide data should be read in conjunction with the information presented here.

The highest death rates from suicide and self-inflicted injury in **Sydney** were in the inner SLAs of Sydney - South (15.8 deaths per 100,000 population), - East (14.6) and - Inner (12.4), and the outer western SLA of Blue Mountains (15.1). SLAs in the inner west, the east and on the north shore had the lowest rates, including Pittwater, Strathfield, Lane Cove and Ashfield.

High death rates were most evident in the outer areas of **Melbourne**, in particular in the east and north-east, with by far the highest rate in Yarra Ranges - North (25.4 deaths per 100,000 population), followed by Frankston - West (16.3), Yarra Ranges - Central (15.9) and Yarra Ranges - Dandenongs (15.7). Other high rates were evident in areas throughout the city.

In **Brisbane**, the highest death rates from suicide were in the outer areas of Redland Balance (24.6 deaths per 100,000 population), Caboolture Central (23.8), Stretton-Karawatha/Kingston (19.6), Lawnton (19.1) and Browns Plains (18.5). Some inner city SLAs also had high rates. Dutton Park/Woolloongabba, Red Hill/Kelvin Groves and West End/Highgate Hill in the inner city, had the lowest rates.

In comparison, death rates from suicide and self-inflicted injury were relatively high across much of **Adelaide**, and there was a very strong association at the SLA level with socioeconomic disadvantage. The highest of these rates were in Port Adelaide Enfield - Port (29.2 deaths per 100,000 population), - Inner (23.3), - Coast and

- Park (both 20.1); Onkaparinga - North Coast (28.2) and Playford - Elizabeth (27.0) and - West Central (25.7)

The highest rates in **Perth** were in SLAs to the east of the city, in Belmont (19.8 deaths per 100,000 population) and Victoria Park (17.2); and to the west, in Mosman Park (14.5), Stirling - Coastal (13.3) and Cambridge (13.2). The lowest rates were in outer SLAs: no deaths from suicide were recorded for Peppermint Grove.

In **Hobart**, death rates from these causes were above the capital city average in each SLA other than Hobart - Inner (no suicide deaths recorded), with the highest rates in Brighton (22.5), Sorell - Part A (18.1) and Hobart - Remainder (16.5).

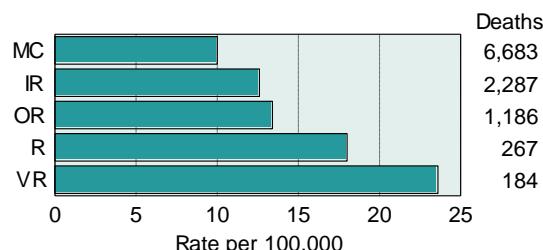
The highest rates in **Darwin** were in Litchfield - Part B (27.8), Darwin North West (22.4), South West (19.2) and North East (17.3). Palmerston had the lowest, although still relatively high rate, with 12.1 deaths per 100,000 population.

Death rates from suicide and self-inflicted injury were generally low across **Canberra**, with the highest in Woden South (15.4 deaths per 100,000 population), Belconnen West (12.4) and North (12.0), and Canberra Central (12.3)

### Remoteness

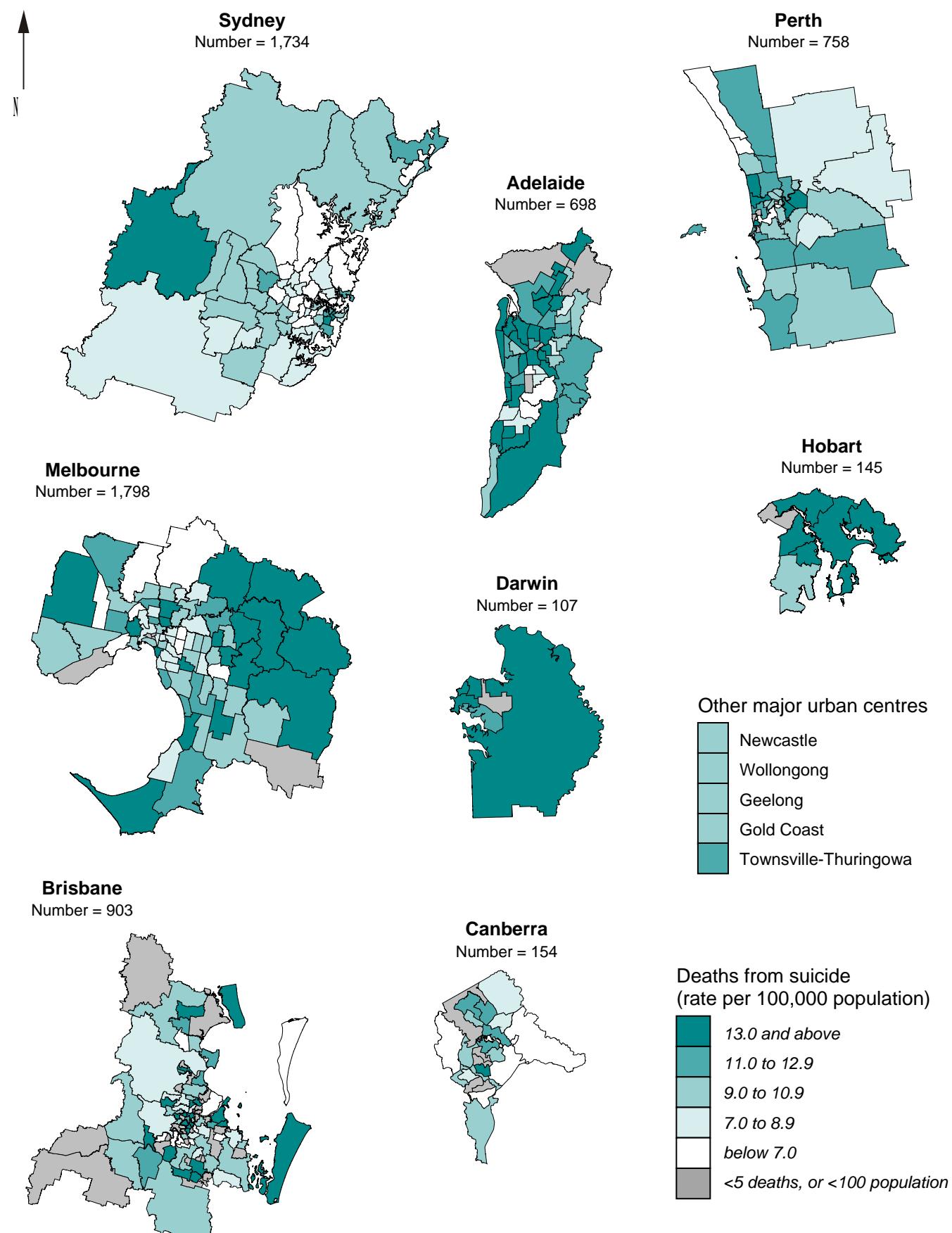
Death rates from suicide and self-inflicted injury increased steadily with increasing remoteness, from a rate of 10.0 deaths per 100,000 population in Major Cities to 23.6 in the Very Remote class.

**Figure 30: Deaths from suicide and self-inflicted injury at ages 0 to 74 years, by remoteness, 2003 to 2007**



**Map 53: Deaths from suicide and self-inflicted injury at ages 0 to 74 years, major urban centres, 2003 to 2007**

standardised rate per 100,000 population by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on data supplied by ABS on behalf of State and Territory Registrars of Deaths

## Premature mortality from suicide and self-inflicted injury, Australia

**Notes:** See comments on previous text page for details of this indicator. 'Non-metropolitan' refers to the area of the State or Territory outside of the capital city. 'Total' refers to the whole State or Territory.

**Table 55: Deaths from suicide and self-inflicted injury at ages 0 to 74 years, by State/ Territory, Australia, 2003 to 2007**

Area	Age-standardised rate per 100,000 population								
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
Non-metropolitan	10.6	13.3	13.8	13.7	12.9	17.2	25.8	..	12.8
Total	9.3	11.0	12.2	13.2	11.2	16.5	22.3	9.5	11.1

### Non-metropolitan areas

Death rates from suicide and self-inflicted injury were higher in the non-metropolitan areas of Australia than in the capital cities, with the highest in the Northern Territory, a rate of 25.8 deaths per 100,000 population; the rate of 17.2 in Tasmania was also relatively high.

### Data quality: a cautionary note

Where there were fewer than five deaths in an SLA, data have not been mapped and have been 'greyed out' (so as to protect the privacy of small communities, and as small numbers may not be a reliable indicator of the actual situation), and this approach is particularly evident in this map. In addition to the many areas treated in this way, all but two of the areas mapped in white (areas with rates below six deaths per 100,000 population) had no deaths at all from these causes. This finding – that there were fewer than five deaths from suicide and self-inflicted injury over this five-year period in a large number of areas, many of which have relatively large Indigenous populations – is at odds with our general understanding of the high rates of suicide in Indigenous communities.

In this regard, the ABS advises that 'care should be taken in using and interpreting suicide data due to issues affecting data quality.' They add that 'a reluctance by Coroners to make a determination of "suicide" and the high number cases with a status of "open" on the NCIS (National Coroners Information System) have impacted on the 2007 suicide data.'<sup>102</sup> This comment is also applicable to data from the earlier years shown here.

The SLAs in the non-metropolitan areas of **New South Wales** mapped in white, including a number in the far north-west, had no deaths recorded from these causes. As noted in the box, above, this finding appears surprising. More than 19 deaths per 100,000 population from these causes were recorded in Cowra (39.0), Inverell - Part A (32.7), Walgett (19.9), Tumut Shire (19.8) and Richmond Valley - Casino (19.8).

In **Victoria**, 22 SLAs recorded rates above 19 deaths per 100,000 population, with the highest in Mildura - Part B (39.8), Pyrenees - South (33.2), Wellington - Avon (32.3), Northern Grampians - St Arnaud (32.0) and Murrindindi - East (31.3). Many areas had no deaths from these causes.

Deaths rates from suicide and self-inflicted injury in **Queensland** were as high as 164.1 per 100,000 population in Mornington and 108.7 in Doomadgee, with other high rates in Cook (55.2) and Tiaro (48.0). By contrast, a number of SLAs had no deaths recorded from these causes.

The remote area of Unincorporated Far North (74.6 deaths per 100,000 population) had the highest rate in non-metropolitan **South Australia**, followed by the SLAs of Peterborough (67.7), Anangu Pitjantjatjara (44.9), and Kangaroo Island (39.3). As noted above, many areas had no deaths recorded from these causes.

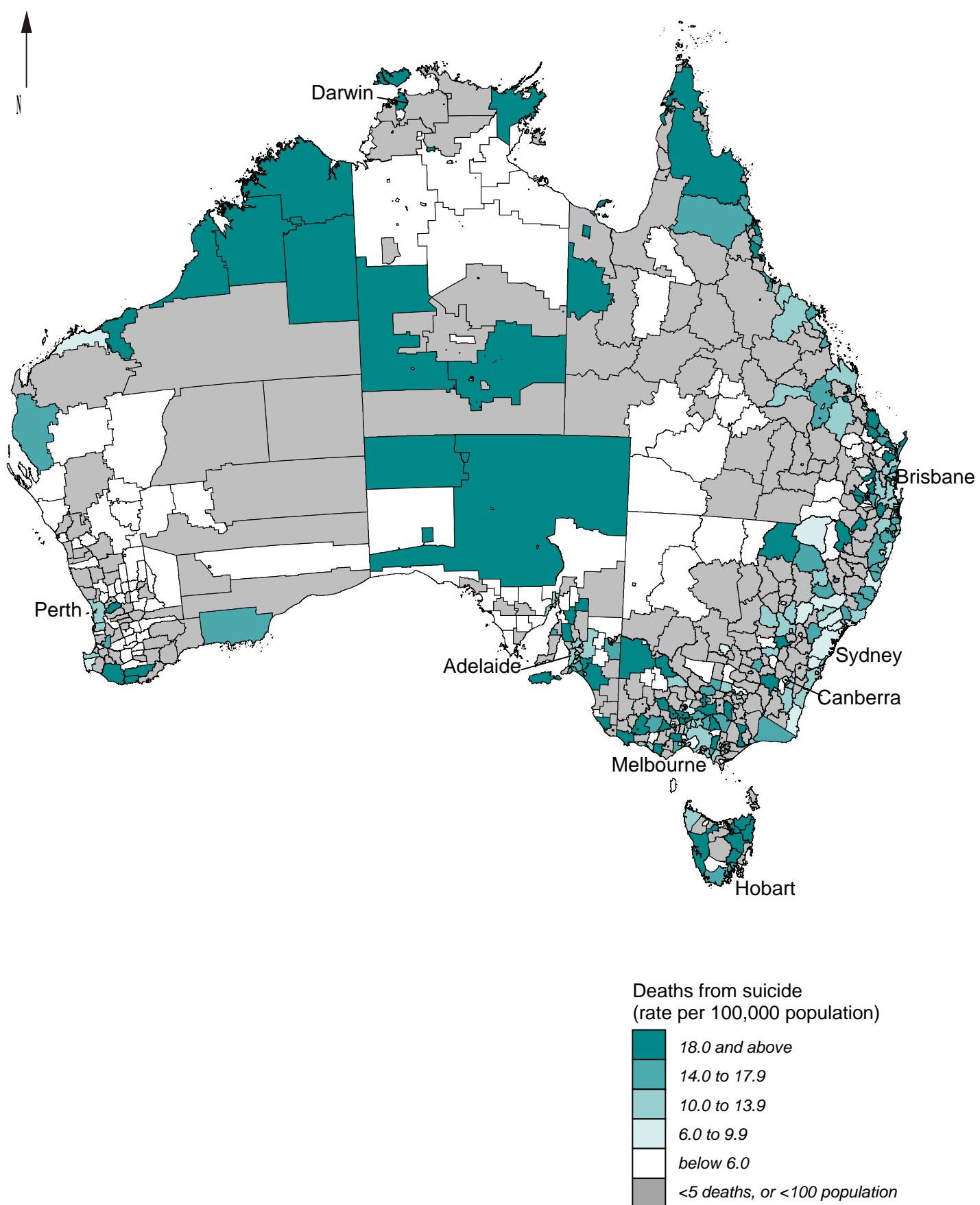
High suicide rates were evident in two areas of **Western Australia**, one in the south-west of the State, including York (46.4), Manjimup, Denmark, Northam and Plantagenet; and the other in the far north, including Halls Creek (34.1), Derby-West Kimberley, Wyndham-East Kimberley, Broome and Port Hedland. Again, many areas had no deaths recorded from these causes.

The majority of the SLAs mapped in **Tasmania** had death rates in the highest range; of these, the highest were in Kentish (37.5), Dorset (37.0), West Coast (36.5), Launceston - Part C (36.3) and Break O'Day (32.1). In areas with ten or more deaths, the lowest rates were recorded in Central Coast - Part A and West Tamar - Part A.

SLAs in the **Northern Territory** with no deaths recorded from these causes formed a group, running from Katherine, through to north of Tennant Creek. However, there were extremely high rates in several other SLAs, in particular the Tiwi Islands (127.1 deaths per 100,000 population), Sandover (70.2), Tanami (55.6), Tennant Creek (46.9), and East Arnhem Balance (28.9). The data for many areas, including those with no deaths, may not be reliable.

Map 54: Deaths from suicide and self-inflicted injury at ages 0 to 74 years, Australia, 2003 to 2007

standardised rate per 100,000 population by Statistical Local Area/ Statistical Local Area group



Source: Compiled in PHIDU based on data supplied by ABS on behalf of State and Territory Registrars of Deaths

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