

Health in rural and remote Australia

The first report of the Australian Institute of Health and Welfare on rural health

**Kathleen Strong
Phil Trickett
Ian Titulaer
Kuldeep Bhatia**

**Australian Institute of Health and Welfare
Canberra**

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Foreword

This report is the first produced by the Australian Institute of Health and Welfare (AIHW) devoted entirely to the health of Australians living in rural and remote zones. It compares the health of those living in rural and remote zones with that of those living in the metropolitan zone by analysing a wide range of national health data sources, including death registrations, hospital statistics, and results from the 1995 ABS National Health Survey. The report will be an invaluable resource for researchers, policy makers and educators who wish to understand the health problems and service needs of those living in rural and remote Australia.

The health of people living in rural and remote zones is poorer than that of their metropolitan counterparts with respect to some health indicators. Likewise, the health of Indigenous people is known to be poorer than that of other Australians. In this report, the impact of Indigenous health on health differentials between metropolitan, rural and remote zones is quantified using mortality data from the jurisdictions with reliable registration of Indigenous deaths—South Australia, the Northern Territory and Western Australia. Mortality data for Indigenous, other Australians and all Australians show that the proportion of the population of Indigenous origin is not high enough in the metropolitan and rural zones to have any marked effect on health differentials between these areas. Thus, rural health disadvantage is not a result of poorer Indigenous health, but instead reflects disadvantage for all Australians living in this zone.

This report has been prepared with the assistance of funding from the Commonwealth Department of Health and Family Services. The AIHW is planning to conduct further work on rural and remote health and would welcome comments on any aspect of this report.

Richard Madden
Director
Australian Institute of Health and Welfare

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Summary

Australia's rural and remote populations have poorer health than their metropolitan counterparts with respect to several health outcomes. They have higher mortality rates and consequently lower life expectancy. They also experience higher hospitalisation rates for some causes of ill health. This report adopts an indicator-based approach to compare the health of rural and remote populations with that of metropolitan Australians. Mortality data, cancer incidence, hospital statistics, ABS 1995 National Health Survey risk factors, medical labour force statistics, and Medicare data have all been analysed using the three zone/seven category Rural, Remote and Metropolitan Area classification (RRMA). This classification was developed in 1994 jointly by the Department of Primary Industries and Energy and the then Department of Human Services and Health. The seven RRMA categories are 'capital cities' and 'other metropolitan centres' within the metropolitan zone, 'large rural centres', 'small rural centres' and 'other rural areas' within the rural zone, and 'remote centres' and 'other remote areas' within the remote zone.

Report structure

The report is composed of seven chapters and three appendices including an introduction which explains the major factors influencing rural health disadvantage. The main chapters address rural and remote differentials for sociodemographics, health status, risk factors and preventive methods, and health service expenditure and utilisation. Separate chapters are provided for emerging issues and data sources and deficiencies. Appendix I gives detailed information on the statistical methods used in this report and appendix II provides a list of statistical local areas by RRMA category for each State and Territory. Finally, there is a list of references used in the report which is a useful source for further reading on the subject of rural health. A description of the main points of each chapter follows.

Sociodemographics

From a demographic point of view, Australia is very much an urban society. At 30 June 1996, more than 70% of its population lived in the metropolitan zone with 90% of these residents living in 'capital cities'.

Life-expectancy varies with geographic location. Those living in 'capital cities' can expect to live longer than their counterparts living in remote zone, and to a lesser extent, those living in rural areas. This is a reflection of the lower death rates for those living in 'capital cities' compared to those living in rural and remote areas. Demographic statistics indicate that:

- rural females can expect to live 80.8 years, only 0.4 years less than females living in 'capital cities'
- males living in the rural zone can expect to live 74.7 years, compared to those living in 'capital cities' who can expect to live 75.6 years
- males living in 'other remote areas' can expect to live 71.5 years, 4 years less than their 'capital cities' counterparts
- females living in 'other remote areas' can expect to live 77.4 years, almost 4 years less than females from 'capital cities'.

Differences in fertility rates between women living in metropolitan, rural and remote zones have also been examined. The analysis shows that women in rural and remote zones are having more children than those living in 'capital cities'.

- In 1995, women living in 'other rural areas' had a total fertility rate of 2.2 children per woman, compared with 1.7 children for women living in 'capital cities'.
- Women living in 'remote centres' had the highest total fertility rate in 1995, 2.5 children per woman.

Those living in rural and remote zones also have the concern that socioeconomic status is linked to geographic location. The three indicators of socioeconomic wellbeing calculated from the 1991 Census, 'Economic resources', 'Education and occupation', and 'Disadvantage', all show increasing socioeconomic disadvantage with increasing distance from a major urban centre.

Health status

This report examines a range of indicators of health status, specifically important causes of death, incidence of common cancers and major causes of hospitalisation. Major differences in death rates across RRMA categories for the 1992-96 period include:

- male and female total death rates for those living in 'capital cities' were 6% lower than for those living in 'large rural centres' and 20% lower than for those living in 'remote centres'
- injury is a major contributor to premature mortality in Australia, and there is a strong pattern of increasing mortality from injury with increasing remoteness, particularly for males
- death rates for all causes of injury in males living in 'other remote areas' were double those of males living in 'capital cities'
- males living in 'other rural areas' experienced death rates from injury around 50% higher than those living in 'capital cities'
- death rates from road vehicle accidents show an even more pronounced pattern of increase with increasing remoteness
- both males and females living in 'other rural areas' die in road vehicle accidents at more than double the rate of those living in 'capital cities'.

Hospitalisation often follows the same pattern as mortality. Similar patterns include:

- hospitalisation rates for injury, with much higher rates in the rural and remote zones compared to the metropolitan zones
- hospitalisation rates for falls in people aged 65 years or more show higher rates in rural and remote zones
- male hospitalisation rates due to burns in the remote zone were seven times those of males living in 'capital cities'
- both males and females living in the rural zone also experience higher hospitalisation rates from burns than those from 'capital cities', with rates around one-third higher than in 'capital cities'.

Other causes of death and hospitalisation show a less clear pattern for rural and remote health outcomes. Some examples of this more complex pattern are:

- there are no significant differences in stroke death rates between metropolitan, rural and remote Australia. But, hospitalisation rates from stroke show a pattern of increasing rates with increasing rurality and remoteness, for both sexes
- both mortality and hospitalisation rates from coronary heart disease reveal slightly higher rates in the rural zone, compared to 'capital cities'. Mortality rates from coronary heart disease are slightly higher still for people living in the remote zone in contrast with hospitalisation rates from coronary heart disease which are higher in the rural and metropolitan zones for females but surprisingly lower for males.

Risk factors and preventive measures

A range of risk factors and preventive measures were derived from the ABS 1995 National Health Survey. The risk factors examined include being overweight, smoking, high alcohol consumption, high serum cholesterol and high blood pressure. Preventive measures include participation in breast cancer and cervical cancer screening programs, the use of sun protection and walking for exercise. The major findings are:

- males from 'other metropolitan centres', 'remote centres' and 'other remote areas' report the highest rates of high alcohol consumption
- the remote zone and 'other metropolitan centres' report the highest proportions of male and female smokers
- males and females in 'other metropolitan centres', the rural zone and 'remote centres' report higher use of sun protection compared to males and females from 'capital cities'
- over 55% of females over the age of 40 from all zones have participated in some form of breast cancer screening program in the last 5 years
- 70% of women aged 18 or older report having had a Pap smear test in the last 2 years regardless of whether they live in a rural, remote or metropolitan zone.

Health resources

People living in rural and remote zones have less access to health care compared with those living in the metropolitan zone. Indicators of hospital services, expenditure and important health labour force personnel such as general practitioners (GPs), pharmacists and nurses were used to identify areas of rural and remote health access disadvantage. The important findings include:

- the supply of GPs and pharmacists (retail) falls sharply in the rural and remote zones
- nurses provide a higher proportion of health care in rural and remote Australia than in metropolitan Australia
- the number per capita of medical specialists is substantially lower in 'small rural centres', 'other rural areas' and the remote zone than in the metropolitan zone
- 'capital cities' have 30% more hostel accommodation for the aged than the rural zone and three times more hostel places per capita than 'remote centres'
- nursing home availability decreases with increasing remoteness
- Medicare data indicate that people living in rural and remote zones are using less services than those living in the metropolitan zone
- overall hospitalisation rates are highest for those living in the remote zone.

Impact of Indigenous health on RRMA differentials

Australia's Indigenous population continues to experience much poorer health than other Australians. Therefore, in reporting on the health differences between metropolitan, rural and remote Australians, it is important to quantify the impact of the health status of the Indigenous population on these differences.

Australia's Indigenous population makes up a little over 2% of Australia's total population. The proportion of Indigenous people in each RRMA category determines the impact of Indigenous health on health differences between metropolitan, rural and remote zones. This proportion varies considerably across RRMA categories. Indigenous people constitute:

- 1% of the metropolitan zone population
- 3% of the rural zone population
- 13% of the population in 'remote centres'

- 26% of the population in 'other remote areas'.

To illustrate the impact of Indigenous health on differences in health status across RRMA categories, analysis of mortality data for the period 1992–96 was examined for the three States and Territories considered to have the most complete registration of Indigenous deaths. Western Australia, South Australia and the Northern Territory have identified more than 90% of their Indigenous deaths over this period. The resulting analysis shows that:

- the proportion of Indigenous people is not high enough in the rural zone to have an impact on differences in health status between people living in metropolitan and rural zones
- the substantially higher proportion of Indigenous people living in the remote zone means that the Indigenous population does statistically lower the health status of people in the remote zone compared to metropolitan and rural zones.



1 Introduction

Background

Australians have long regarded life in the country as healthier than life in the city. Australian city-dwellers move to rural areas for health benefits such as clean air and reduced traffic congestion (Humphreys & Rolley 1991). However, people living in rural and remote Australia have many health disadvantages compared with their urban counterparts. These are demonstrated by higher mortality and morbidity rates for some diseases in rural and remote communities. Many factors can contribute to the rural health disadvantage, including:

- geographic isolation and problems of access to care;
- shortage of health care providers and health services;
- socioeconomic disparities;
- greater exposure to injury, in particular for persons employed in farming and mining;
- lower road quality;
- small, sparsely distributed populations; and
- Indigenous health needs.

Not all rural Australians have inequity of access to health services. They may benefit from having immediate access to 'nursing home type' beds, proximity to hospital, and the capacity to have their own general practitioner (GP) as case manager, before, during and after hospitalisation (Reid & Solomon 1992). However, most rural Australians recognise the need to travel further for access to services, especially for specialist consultations (Reid & Solomon 1992). Some people are compensated for their cost through the Isolated Patients Travel Assistance Scheme. However, this scheme does not fully pay for the financial and social costs incurred by the need to travel to seek medical assistance (Reid & Solomon 1992). Requirements for travel of patients and health care providers result in higher use in some areas of health care and lower use in others. For example, they may lead to lower rates of GP consultations and higher rates of hospital in-patient care in rural and remote areas because travel to a GP may be further than the nearest hospital. Models of patient care may also differ between urban and rural areas because of distance to health services. Patients with chronic conditions that require follow-up treatment are more likely to be hospitalised for that treatment in rural and remote areas, especially if they have to travel long distances to seek care.

As well as the differences in the models of care, there are clear differences in the health status of people living in rural and remote Australia. These are demonstrated by the consistently higher levels of mortality, disease incidence and hospitalisation, and health risk factors experienced in rural and remote areas.

A number of theoretical frameworks aid our understanding of the data and indicate that rurality is not the causative factor in poorer rural health. Rather, factors associated with rurality, such as poverty and less access to health services, are causes of the rural health disadvantage. By analysing the data for rural and remote populations, we hope to identify both the health problems and the reasons for these problems.

Indicators of rural health

An indicator-based approach has been adopted for the presentation of rural health information in this report, because it provides easily understood information on a broad range of health issues to an audience of varying levels of knowledge of health and statistics.

Introduction

Health indicators inform the general public, medical professionals and policy makers about the state of health in different population groups. They also help to identify differences between population groups and can lead to public health interventions that are targeted at specific groups. However, no single indicator is able to provide complete insight into the state of a population's health. Therefore, a collection of indicators has been selected from an array of data sources to present comparative statistics in an easy-to-understand format. We report on indicators of rural health in four major areas:

- sociodemographics
- health status
- health risk factors
- expenditure and utilisation of health services.

Age structure, growth and size of the population as well as summary indicators of wellbeing such as life expectancy, total death rate and total fertility rate are the sociodemographic characteristics of interest. Understanding the underlying demographics of the population is necessary for interpretation of the reported health indicators. For example, Australia's Indigenous population makes up only 2% of Australia's total population. Only 1% of the population in metropolitan areas and 2% of the population in rural areas are Indigenous people. However, 13% of the population in 'remote centres' and 26% of the population in 'other remote areas' are Indigenous Australians. Consequently, health differentials in metropolitan and rural areas will not be markedly influenced by the relatively poorer health of the Indigenous population but this population will have an effect on the health differentials of remote areas. Analysis of the demographic structure of these populations provides a better understanding of health differentials between the population groups.

Health status indicators focus on differential mortality and hospital separation rates for important causes of ill health. Health risk factors include individual behaviours that influence the development of disease and their impact on morbidity and mortality. Availability and use of health services determines whether or not individuals receive effective treatment for their medical conditions. The cost of these health services to each of the communities involved in providing the services is also an important component of the analysis.

This analysis uses indicators derived from various types of health-related statistics. Emphasis was placed on indicators that report on the National Health Priority Areas (AIHW & DHFS 1997).

Mortality statistics are one of the most comprehensively collected national data sets. Indicators based on these statistics constitute useful measures of the health status and wellbeing of a population (Mathers 1996). Death rates may also be used as markers for the level of socio-economic development or to identify health needs. Death rates by cause put this information into an epidemiological context, and can even provide an environmental perspective (Trickett et al. 1997).

Hospital separation statistics are often cited as measures of community morbidity. Event-based hospital statistics may also be used as indicators of availability of and access to health services. Cause-specific hospital separation rates are helpful in plotting spatio-temporal variation of illness. They may also be used for identifying population needs.

Statistics distinguishing hospital separation rates for surgical procedures and medical diagnoses are useful indicators of differential health service use. They can be used to measure accessibility and availability of health services. Whereas medical diagnoses are more likely to reflect the distribution of illness, 'surgical' and 'other' categories provide additional insight into available medical facilities and technology.

However, hospital separation statistics do not provide comprehensive indicators of disease incidence for many conditions because they relate mostly to the acute end of the spectrum of illness (AIHW 1997a). Indicators based on primary health care statistics, in particular consultations by GPs, community nurses and pharmacists, can augment this information.

GP and community nurse consultations usually represent the less acute end of the illness spectrum. They are much more discretionary than hospitalisation, and may include consultations for a variety of purposes. Nonetheless, physical illness is the strongest predictor of these consultations (Jacomb et al. 1997). The rate for GP consultation is known to decrease with geographical distance, although factors such as acceptability and continuity of care also play an important role (Humphreys et al. 1997).

Most of the above indicators look at the use of health services in the context of health care needs. However, it is also important to look at the availability of, and access to, health services. In rural and remote zones where the supply of services is restricted by difficulties in attracting health service personnel and the cost of service provision, indicators derived from health resource statistics, such as the health labour force and overall health expenditure, may be useful in targeting specific needs for health services. However, community input into the need for health services will be necessary to ensure that the services provided are not confined to those based on urban requirements.

Indicators based on self-reported health status, risk factors, risk-taking behaviours and health-related action statistics, such as those collected through the National Health Surveys (NHS), provide useful insights into aspects of health from the perspective of lifestyle. Some of these indicators may be interpreted in two different ways. The prevalence of self-reported high cholesterol levels, for example, is a guide to the level of a risk factor (or condition) in the population. However, it may also reflect the degree of awareness of the risk factor (or condition) in the population, or the willingness of the individual to report the condition. Viewed together with mortality and hospital separation statistics, these indicators help generate valuable profiles of a population's health.

The mortality of the Indigenous population is compared with that of the non-Indigenous population to show the extent to which the poorer health of the Indigenous population affects metropolitan/rural/remote health differentials. These indicators demonstrate that the Indigenous population in metropolitan and rural zones is not large enough to affect the health differentials between these zones. However, in the remote zone the Indigenous population forms a larger proportion of the total population, and does influence the lower health status of remote regions. These indicators also show that the health status of the Indigenous population becomes worse with increasing distance from urban centres.

The RRMA classification

The Rural, Remote and Metropolitan Areas (RRMA) classification, developed in 1994 by the Department of Primary Industries and Energy, and the then Department of Human Services and Health, was used as the framework by which the various data sources could be analysed for metropolitan, rural and remote zones. Seven categories are included in this classification – 2 metropolitan, 3 rural and 2 remote zones (Table 1).

The classification is based on Statistical Local Areas (SLA) and allocates each SLA in Australia to a category based primarily on population numbers and an index of remoteness (DPIE & DSHS 1994). The index of remoteness was used to allocate non-metropolitan SLAs to either the rural or remote zone. This index of remoteness was constructed for each non-metropolitan SLA using 'distance factors' related to urban centres containing a population of 10,000 persons or more, plus a factor called 'personal distance' (Arundell 1991). Personal distance relates to population density and indicates the 'remoteness' or average distance of residents from one another (DPIE & DSHS 1994). It is important to note that this method of allocating an SLA to a rural or remote zone is not perfect. Both the size of SLAs and the distribution of the population within SLAs vary enormously. This can mean, for example, that within a remote SLA there can be pockets that are rural rather than remote, and vice versa.

Introduction

Table 1: Structure of the Rural, Remote and Metropolitan Areas (RRMA) classification

Zone	Category
Metropolitan zone	Capital cities
	Other metropolitan centres (urban centre population \geq 100,000)
Rural zone	Large rural centres (urban centre population 25,000–99,000)
	Small rural centres (urban centre population 10,000–24,999)
	Other rural areas (urban centre population $<$ 10,000)
Remote zone	Remote centres (urban centre population \geq 5,000)
	Other remote areas (urban centre population $<$ 5,000)

The RRMA groupings are classified according to Statistical Local Areas (SLAs) based on the Australian Standard Geographical Classification (ASGC) version 2.1 (ABS 1995). However, much of the data analysed had been geographically coded to SLAs based on earlier and subsequent ASGC versions, or had been coded to postcodes rather than SLAs (see Chapter 7 for more details). Concordance algorithms were developed to convert postcode information and the various versions of SLA boundaries into RRMA groupings.

Data sources

Relevant information was extracted from the following data sources:

- mortality statistics from the Australian Institute of Health and Welfare (AIHW) Mortality Database
- hospital separation statistics from the AIHW National Hospital Morbidity Database
- cancer incidence data from the AIHW National Cancer Statistics Clearing House
- health care statistics provided by the Medicare Estimates and Statistics Section of the Commonwealth Department of Health and Family Services (DHFS), based on Health Insurance Commission (HIC) datasets
- perinatal statistics from the AIHW National Perinatal Statistics Unit
- National Health Surveys (NHS) 1989–90 and 1995
- health labour force statistics compiled by AIHW from registration data
- AIHW Hospital Utilisation and Costs Study, 1996
- Medicare data provided by the Health Insurance Commission
- 1995 ABS Child Immunisation Survey
- ABS population estimates by SLA for the 1992–96 period aggregated into RRMA categories, taking into account SLA boundary changes over this period
- Aboriginal and Torres Strait Islander population estimates, compiled by scaling the 1996 Census counts (by RRMA and State/Territory) to the State/Territory experimental estimates of the Indigenous population (ABS 1998c).

2 Sociodemographics

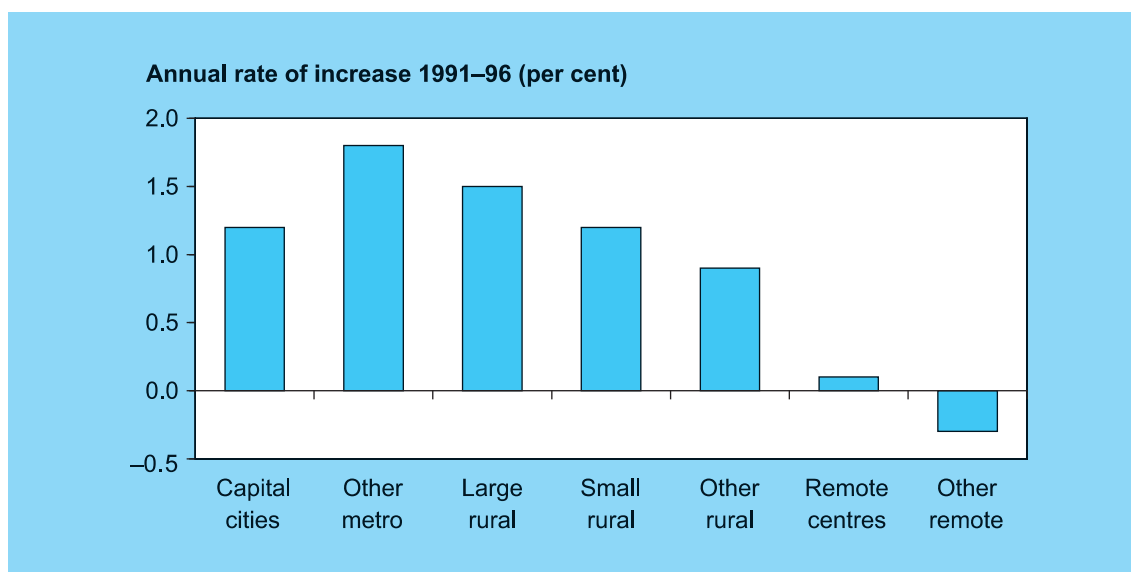
This chapter presents a range of indicators which summarise the demographic characteristics and the social wellbeing of the population in the various rural, remote and metropolitan zones. The size, growth and age structure of the overall population and the Indigenous population are described. The aspects of social wellbeing examined here include life expectancy, fertility rate and the 1991 Census-derived Socio-Economic Indexes for Areas (SEIFA).

Socioeconomic disadvantage and related sociodemographic factors are now recognised as important determinants of health. Because indicators of health status such as death rates and hospitalisation rates for specific causes depend on demographic factors such as age, sex and population size, understanding the demographics of a population is crucial to interpreting the results of health statistics. For example, it is important to remember that Australia's Indigenous population makes up only 2% of Australia's population. The Indigenous population is only 1% of the metropolitan zone and 3% of the rural zone. This percentage increases to 13% in 'remote centres' and 26% in 'other remote areas'. Consequently, the generally poorer health of Indigenous Australians will have little effect on metropolitan and rural health differentials but may affect the differentials in the remote zone. Understanding the demographics of the Indigenous and non-Indigenous populations allows for more effective analysis of health-related data.

Socio-Economic Indexes for Areas (SEIFA) are indicators of access to proper nutrition, adequate housing, transport and education. Lack of any of these necessities will affect health. Some necessities, like adequate nutrition, will have a direct impact on health status. Other necessities, like education, have a more subtle effect on health. For example, lack of information and education about the importance of breast examinations or Pap smear tests in preventing breast and cervical cancer can directly affect death rates from these diseases. Socioeconomic status has a strong influence on health outcomes for older population groups. For example, older males and females of low socioeconomic status are more likely to be overweight and inactive, smoke and use health services more than older people of higher socioeconomic status (AIHW 1998a). This in turn can result in the recorded higher rates of cardiovascular disease among people of low socioeconomic status.

Population distribution

Population distribution and growth, 1991–96



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Population size 30 June 1996 (millions)	11.6	1.4	1.1	1.2	2.4	0.2	0.3	18.3
Per cent annual increase 1991–96	1.2	1.8	1.5	1.2	0.9	0.1	-0.3	1.2
Population density (per km ²)	346.7	191.0	59.4	18.4	2.6	0.3	0.1	2.4

Source: AIHW population database, based on SLA resident population estimates compiled by ABS.

Population distribution

- Australia is very much an urban society, with more than 70% of its population living in the metropolitan zone in 1996. Of these metropolitan residents, almost 90% live in 'capital cities'. About 26% of Australia's population reside in the rural zone, with only 3% living in the remote zone.
- The population density varies enormously across RRMA categories, ranging from 347 persons per km² in 'capital cities' to 0.1 person per km² in 'other remote areas'. Population density may be misleading as a measure of isolation in that most of the settlements in rural and remote zones are clustered rather than distributed uniformly. However, it does provide some notion of the degree of isolation and distances people may have to travel to access health services.
- 'Capital cities', 'other metropolitan centres', and 'large rural centres' experienced the highest population growth rates in the 1991–96 period. This reflects the large

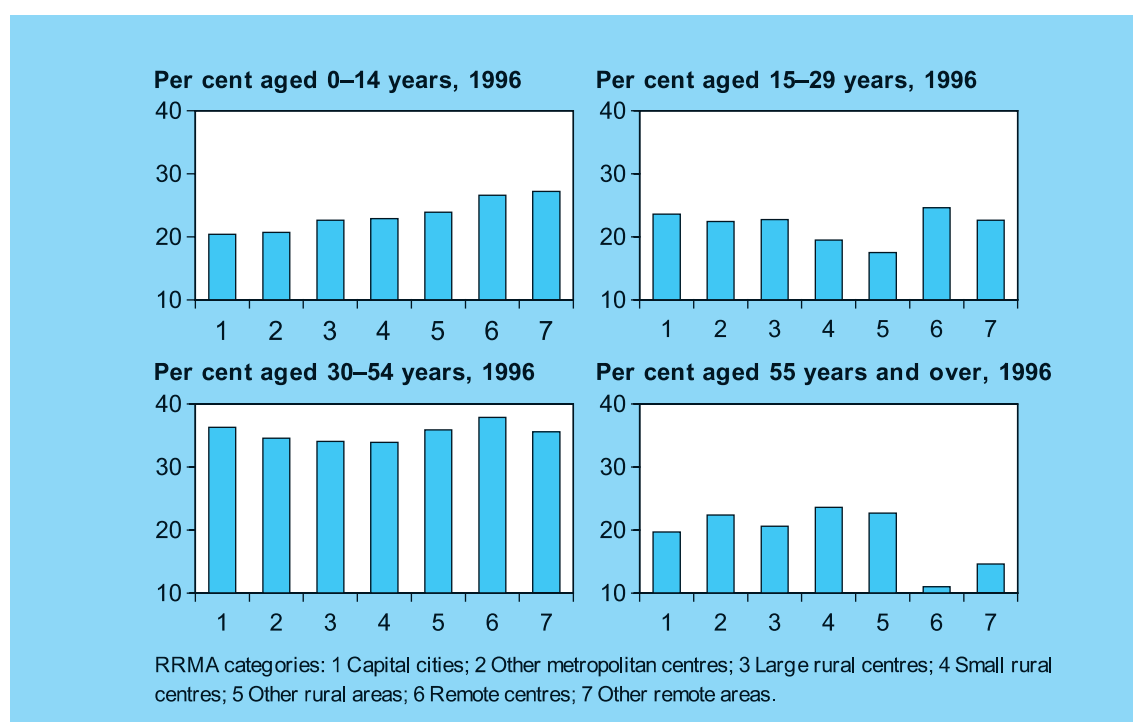
proportion of these areas which are situated within Australia's fast-growing coastal belt. In contrast, the remote zone experienced negligible growth over the same period.

- Although the 1991–96 growth rates provide a broad indication of where Australia's population growth is occurring, there is considerable variation in growth rates within RRMA categories. For example, within the 'small rural centres' category, the population of the New South Wales coastal town of Ballina increased by 15% between 1991 and 1996, whereas the population of the New South Wales inland city of Armidale declined by 4% over the same period.

For more information, see:

Australian Bureau of Statistics 1998. Regional population growth Australia, 1996–97. ABS Cat. No. 3218.0. Canberra: AGPS.

Age distribution, 1996



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
0–14	20.4	20.7	22.6	22.9	23.9	26.6	27.2	21.4
15–29	23.6	22.4	22.7	19.5	17.5	24.6	22.6	22.4
30–54	36.3	34.6	34.1	33.9	35.9	37.9	35.6	35.8
55 and over	19.7	22.4	20.6	23.6	22.7	11.0	14.6	20.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Columns may not add to 100.0 due to rounding.

Source: AIHW population database, based on SLA resident estimates compiled by ABS.

Age distribution

- There are substantial variations in the age structures of Australia's populations living in metropolitan, rural and remote zones. These differences reflect the varying patterns of fertility, mortality and migration experienced in each zone.
- Resident population estimates at 30 June 1996 show that rural and remote communities have larger proportions of children compared with the metropolitan zone. This is consistent with the higher fertility rates in rural and remote zones.
- The established pattern of young adults leaving country areas and migrating to cities and large towns is reflected in the lower

proportions of 15–29-year-olds in 'small rural centres' and 'other rural areas'.

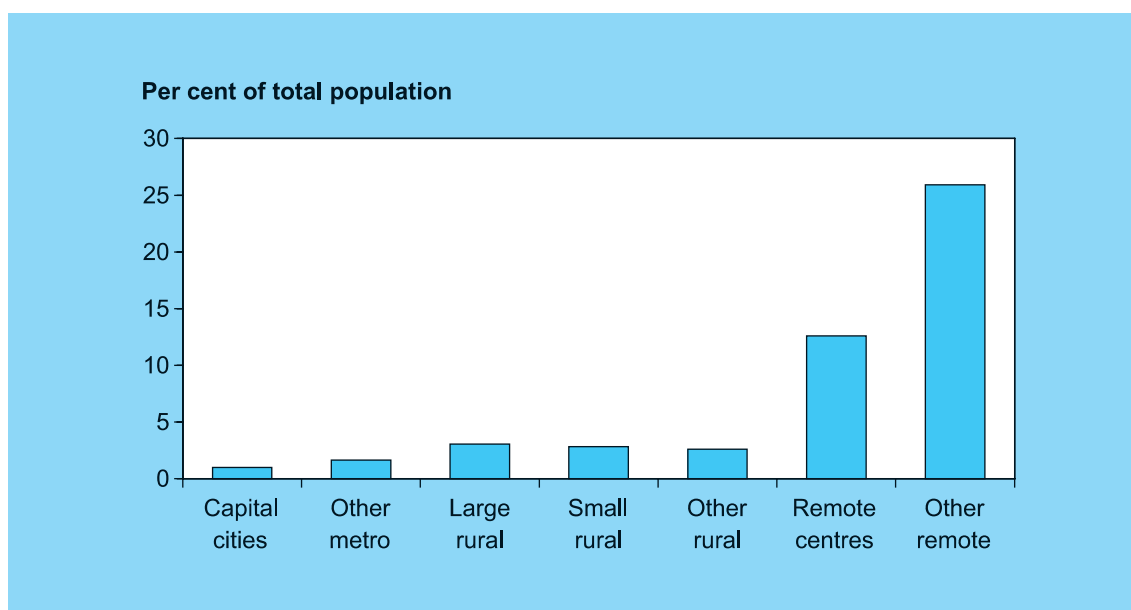
- The proportion of people aged 55 years and over in the remote zone is around half that of metropolitan and rural communities. Out-migration and higher premature mortality of people living in the remote zone contribute to these lower proportions.

For more information, see:

Australian Bureau of Statistics 1997. Population by age and sex, Australia, States and Territories. ABS Cat. No. 3201.0. Canberra: AGPS.

Indigenous population

Distribution of Indigenous population, 1996



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Population size 30 June 1996 ('000)	117.1	22.9	33.4	34.0	64.0	27.5	87.1	386.0
Per cent of total population	1.0	1.7	3.1	2.8	2.6	12.6	25.9	2.1

Source: AIHW population database, based on Indigenous State/Territory population estimates compiled by ABS.

Distribution of Indigenous population

- The Indigenous population constitutes just over 2% of Australia's population. Across zones, this proportion varies considerably, from around 1% in the metropolitan zone to 3% in the rural zone, increasing to 13% in 'remote centres' and 26% in 'other remote areas'. The Indigenous component of the population is not large enough in relative terms to contribute markedly to differences in health status between metropolitan and rural zones, but is large enough to affect differences in the remote zone.
- The majority of Indigenous people are living in 'capital cities' and 'other remote areas'. In 1996, 30% of Australia's Indigenous population lived in 'capital cities' and 23% lived in 'other remote areas'.
- Indigenous Australians suffer a higher burden of illness and die at a younger age than other Australians (Bhatia & Anderson 1995; Anderson et al. 1996). As a result the median

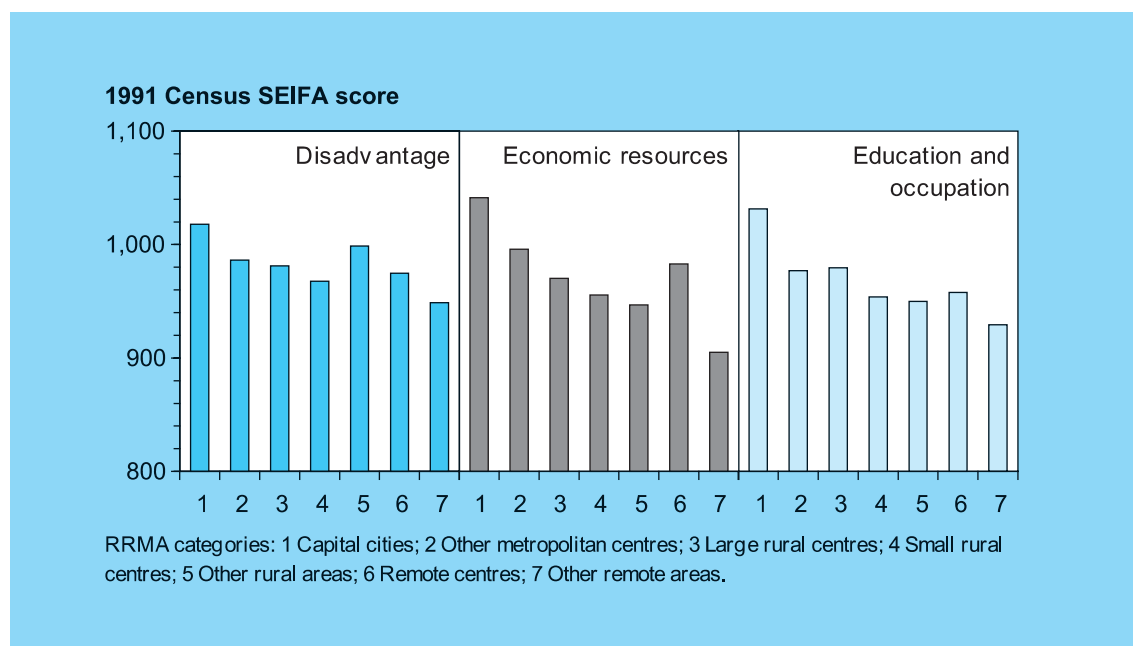
age of the Indigenous population, at 20.1 years, is 14 years less than for the overall population. Only 2% of the Indigenous population are aged 65 and over, compared with 12% for the overall population.

- Between 1991 and 1996, the Indigenous population increased 12%, compared with 6% for the overall population. The higher growth rate for the Indigenous population is due to a combination of a higher fertility rate and a larger proportion of the female population in the peak child-bearing ages.

For more information, see:

Australian Bureau of Statistics 1998. Experimental estimates of the Aboriginal and Torres Strait Islander population. ABS Cat. No. 3230.0. Canberra: AGPS.

Socioeconomic wellbeing



SEIFA index	Metropolitan		Rural			Remote	
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other
Disadvantage	1,018	986	981	968	999	975	949
Economic resources	1,041	996	970	956	947	983	905
Education and occupation	1,032	977	979	954	950	958	929

Source: 1991 Census—Socio-Economic Indexes for Areas (SEIFA) unit record file.

Socioeconomic wellbeing

- Socioeconomic wellbeing has been reported to have a strong association with the health status of a population (Mathers 1994).
- The Socio-Economic Indexes for Areas (SEIFA) are a set of summary indicators on socioeconomic wellbeing on a geographic basis. There are five indexes calculated: the urban index of advantage, the rural index of advantage, the index of disadvantage, the index of economic resources and the index of education and occupation. The indexes of rural and urban advantage cannot be used at the RRMA level, as the urban index of advantage is not calculated for the rural zone and the rural index of advantage is not calculated for the metropolitan zone. Note that the higher scores for socioeconomic disadvantage indicate more advantaged populations.
- All of the indexes are designed so that the Australian average is 1,000. Relatively advantaged areas have index values higher

than 1,000, and relatively disadvantaged areas have values lower than 1,000.

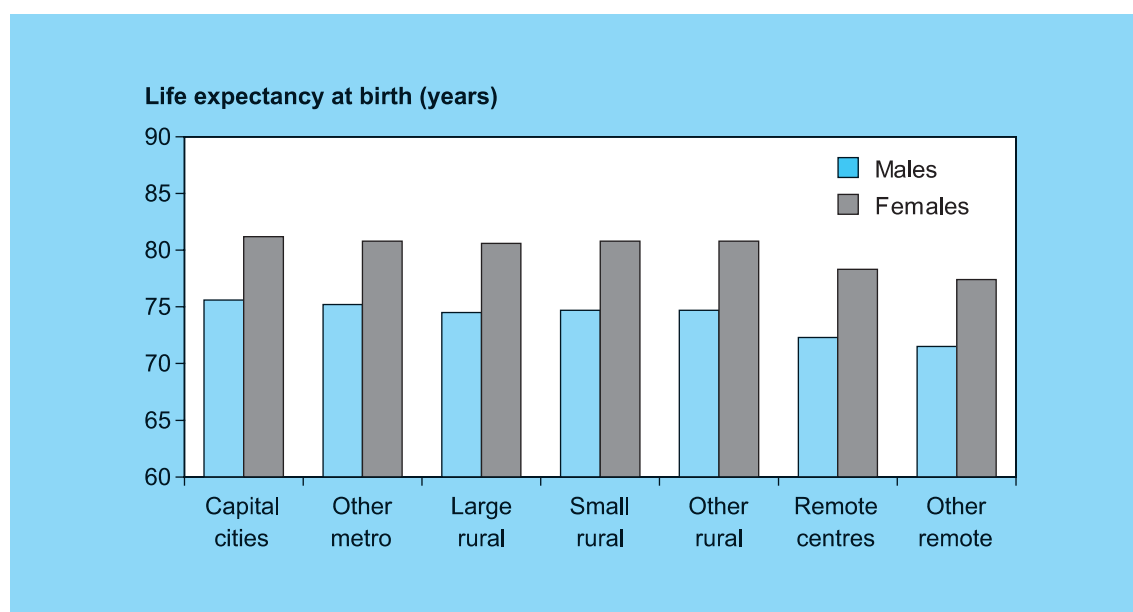
- All three indexes based on 1991 Census results are highest in 'capital cities' and lowest in 'other remote areas'. Despite the odd anomaly such as 'other rural areas' having the second highest socioeconomic disadvantage score and 'remote centres' having a relatively high economic resources score, the indexes generally show a pattern of increasing disadvantage as population density declines.

For more information, see:

Australian Bureau of Statistics 1993. Information paper: 1991 Census—Socio-Economic Indexes for Areas. ABS Cat. No. 2912.0. Canberra: AGPS.

Mathers CD 1994. Health differentials among adult Australians aged 25–64 years. Australian Institute of Health and Welfare: Health Monitoring Series No. 1. Canberra: AGPS.

Life expectancy, 1994–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	75.6	75.2	74.5	74.7	74.7	72.3	71.5	75.2
Females	81.2	80.8	80.6	80.8	80.8	78.3	77.4	81.1

Source: AIHW, based on 1994–96 Australian life tables constructed jointly by the Australian Government Actuary and ABS.

Life expectancy

- Life expectancy is the number of years that a person can expect to live assuming the death rates of a reference period. Based on 1994–96 mortality rates, Australian males can expect to live 75.2 years from birth, and females can expect to live 81.1 years. The marked reduction in death rates since the early 1980s has resulted in increases in life expectancy of 4 years for males and 2.8 years for females.
- People living in ‘capital cities’ enjoy greater longevity than people living in other areas of Australia. Based on death rates for the period 1994–96, males living in ‘capital cities’ can expect to live 1 year longer than those living in the rural zone, and 4 years longer than those living in ‘other remote areas’. Females living in ‘capital cities’ can expect to live around half

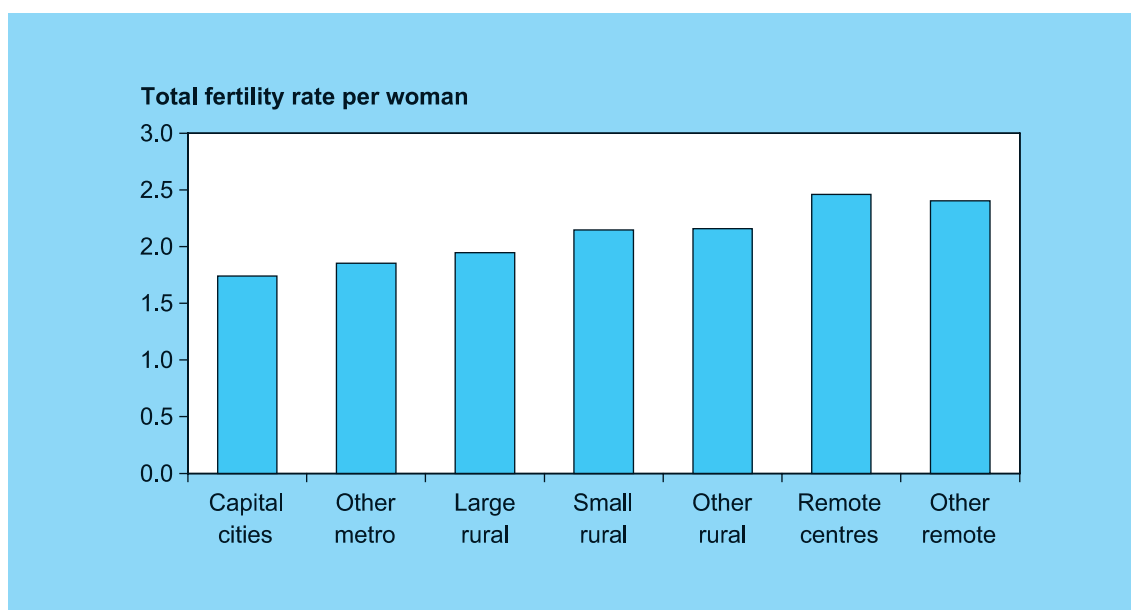
a year longer than those living in the rural zone, and, as with males, almost 4 years longer than those living in ‘other remote areas’.

- Life expectancy is consistently higher for females across all of the RRMA categories. The gap between male and female life expectancies at birth is larger in rural and remote zones (6 years), compared with 5.6 years for ‘capital cities’.

For more information, see:

Australian Bureau of Statistics 1997. Deaths Australia, 1996. ABS Cat. No. 3302.0. Canberra: AGPS.

Fertility rates, 1995



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Total fertility rate	1.7	1.9	1.9	2.1	2.2	2.5	2.4	1.9

Source: AIHW National Perinatal Statistics Unit.

Fertility

- Total fertility rate is a measure of the number of children each woman would bear if she experienced the fertility rates of the reference period throughout her reproductive life. The latest national fertility rates (ABS 1998a) show that women are now having an average of 1.8 children, compared with 2.9 children in 1971.
- Annual fertility rates from 1991 through to 1995 show a consistent pattern of higher levels in rural and remote zones when compared with the metropolitan zone. In 1995, 'large rural centres' experienced fertility rates 12% higher than for 'capital cities'. Rates in 'small rural centres' and 'other rural areas' are more than 20% higher than for 'capital cities'.
- Higher fertility rates have been reported for Indigenous women compared with non-Indigenous women. The remote zone, with relatively higher proportions of Indigenous people, had substantially higher fertility rates than the rural zone in 1995. 'Remote centres' experienced rates around 25% higher than 'large rural centres', and 40% higher than 'capital cities'.

For more information, see:

Day P, Lancaster P & Huang J 1997. Australia's mothers and babies 1995. Perinatal Statistics Series Number 6. Sydney: AIHW National Perinatal Statistics Unit.



3 Health status

Many determinants including social, economic, environmental and lifestyle factors contribute to the health of a population. Several other factors associated with living in rural and remote Australia indirectly affect health status. These include ethnicity, employment, the industry base of rural communities, demographic factors such as ageing populations, geography, climate, access to information and attitudes to health, illness and disability (Fragar et al. 1997). The effect of these factors varies within and between metropolitan, rural and remote communities and may contribute to differences in the prevalence of diseases, and rates of hospitalisation and mortality. This chapter focuses on direct measures of health status such as rates of mortality and morbidity. Differentials between metropolitan, rural and remote communities for these indicators provide a baseline for monitoring the health status of these communities.

With Australia's Indigenous population continuing to experience much poorer health than the general Australian population, it is important to quantify the impact of the health status of the Indigenous population on health differences between metropolitan, rural and remote Australians. This impact is largely determined by the proportion of Indigenous people in the population of each RRMA category. In this chapter, mortality data is used to show that as a consequence of low proportions of Indigenous people in the metropolitan and rural zones, the health of the Indigenous population has little impact on metropolitan/rural differentials, but impacts markedly on the remote zone health status. The Indigenous population forms only 1% of the metropolitan zone population and 3% of the rural zone population, but this proportion increases to 13% in 'remote centres' and 26% in 'other remote areas'.

Several types of health information are routinely used as indicators of the health of populations. Mortality rates for a range of causes of death including injury, diabetes, cardiovascular disease and cancers represent one set of indicators of health status. Other indicators include hospital separation rates for diseases and chronic conditions, cancer incidence rates, and preventive measures such as immunisation, dental visits, breast examinations and Pap smear tests.

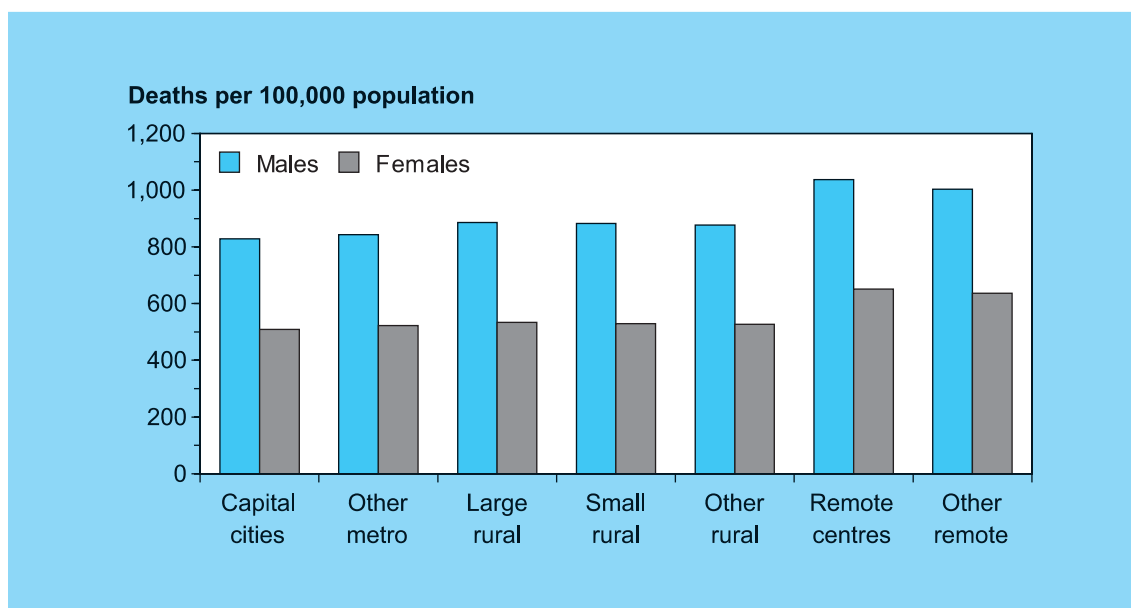
The mortality data used in this report is held in the AIHW National Mortality Database, which contains the cause of death information according to the ninth revision of the International Classification of Diseases (ICD-9). Only principal cause of death is coded in death statistics up to 1996. From 1997 onwards, multiple causes of death will be available for analysis. This is important for diseases such as diabetes where the identification of co-morbidities as the principal cause of death masks the contribution of diabetes.

Hospital separations are used as a substitute for morbidity. For diseases where hospitalisation is part of the usual treatment, hospital separations data may be preferable to self-reported measures of morbidity because they accord with diagnostic information that is coded using the International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM). Hospital separations refer to an episode of care which can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay that ends in a change of care (AIHW 1998a). For each episode of care, patients are assigned a principal diagnosis which is usually a disease, injury or poisoning but may also be a specific treatment of an already diagnosed disease (AIHW 1998a).

Cancer incidence data are from the AIHW National Cancer Registry Database. Registration of cancer cases is required by law in all States and Territories of Australia. The data are collected by cancer registries which compile clinical and demographic information about people with newly detected cancer. This information comes from hospitals, pathologists, radiation oncologists, cancer treatment centres, and nursing homes. Cancer registries combine information from these sources. The AIHW maintains a national collection of cancer data in the National Cancer Statistics Clearing House.

Total death

Total death rate 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	828	843	886	883	877	1,037	1,003	849
Females	509	522	534	529	527	651	636	518

Note: Age-standardised to the Australian population at 30 June 1991.

Source: Estimates based on data derived from the AIHW population database.

Mortality

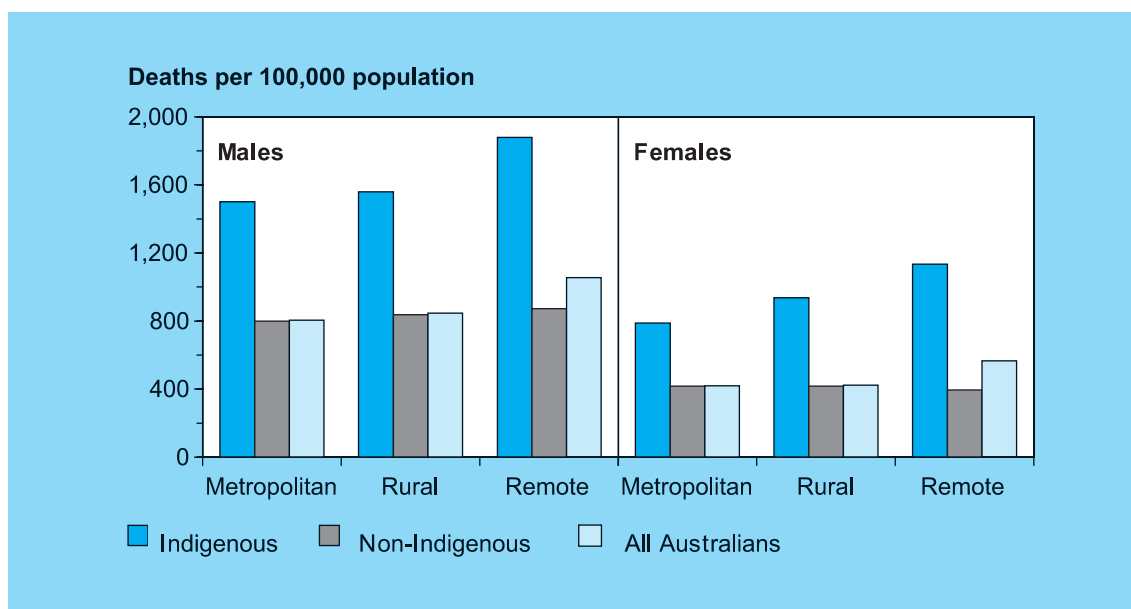
- The total death rate is the most frequently used indicator of the health and wellbeing of a population. For the 1992–96 period, the number of deaths per 100,000 population was 849 for males and 518 for females. These rates reflect the continuing sharp reduction in death rates which has occurred in recent years (AIHW 1998a).
- Death rates in 'capital cities' were lower than those in rural and remote zones for both males and females. The male death rate in 'capital cities' was 6% lower than the rate in 'large rural centres' and 20% less than the rate in 'remote centres'. For females, 'capital cities' experienced death rates 5% lower than 'large rural centres' and 22% lower than 'remote centres'.
- Despite marked differences in death rates between the metropolitan, rural and remote zones, the death rates for each RRMA category within each of the three zones were similar for both males and females.
- Female death rates in the 1992–96 period were consistently around 40% lower than male death rates in all regions.
- Indigenous death rates for the 1992–96 period were consistently around twice the rate of the non-Indigenous population for all RRMA categories and for both sexes.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Total death

Impact of the Indigenous population on the total death rate for all Australians, 1992–96



Population group	Metropolitan	Rural	Remote	Total
Males				
Indigenous	1,500.4	1,559.0*	1,879.2*	1,739.6
Non-Indigenous	800.0	836.9	873.5	811.0
All Australians	804.6	845.8	1,055.1*	830.5
Females				
Indigenous	983.9	1,170.2*	1,418.2*	1,273.9
Non-Indigenous	520.7	521.3	494.5	520.3
All Australians	524.4	528.1	708.5*	535.0

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Based on data for South Australia, Western Australia and the Northern Territory.

2. Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Indigenous mortality

- A pattern of increasing death rates with increasing remoteness is also seen in mortality rates for the Indigenous population. Reliable Indigenous mortality data for 1992–96 are available only for three States and Territories, South Australia, Western Australia and the Northern Territory. Because of the small number of Indigenous deaths, the seven category RRMA classification has been collapsed into metropolitan, rural and remote zones.
- Despite the large differences between the Indigenous and non-Indigenous death rates across all RRMA categories, the impact of the differences is negligible in the metropolitan and rural zones because of the low proportion of the total population which is Indigenous in these zones. The graph shows the small difference that Indigenous death rates make to death rates for 'All Australians' in these zones. Indigenous people comprise 1% of the total population living in the metropolitan zone and 3% in the rural zone.

- In the remote zone where the Indigenous population forms a higher proportion of the population (21%), the higher death rates of Indigenous people have a substantial impact, resulting in higher rates for the total population compared with those in the metropolitan and rural zones.
- The pattern discussed above of higher Indigenous death rates not affecting metropolitan/rural differentials but influencing remote zone differentials reflects the low proportion of Indigenous people living in metropolitan and rural zones, and the higher proportion living in the remote zone. It shows that the lower health status of Indigenous people has little impact on differences between metropolitan and rural zones, but does have an impact on remote zone differentials.
- Mortality data for South Australia, Western Australia, and the Northern Territory over the period 1992-96 support the results of an earlier study (Anderson et. al 1996) showing large differences between the Indigenous and non-Indigenous death rates for both sexes. The total Indigenous death rates are more than double that for the non-Indigenous population for both males and females, though the gap is larger for females.
- Indigenous death rates are higher for males than for females across all regions, with the differences ranging from 33% in the rural and remote zones to 52% in the metropolitan zone.
- There is a strong association between increasing remoteness and the total death rate for Indigenous females. Those living in the rural zone experience death rates 19% higher than those living in the metropolitan zone, while those living in the remote zone experience rates more than 40% higher than in the metropolitan zone.
- For Indigenous males, the association between the total death rate and increasing remoteness is less pronounced than for females, although the rates for the rural and remote zones are markedly higher than the rate for the metropolitan zone.
- Among the non-Indigenous population, there is also a pattern of higher death rates in the rural and remote zones for males, but not for females, who have similar rates over the three zones. For non-Indigenous males, the death rates for 1992-96 were 5% higher in the rural zone and 9% higher in the remote zone, compared with the rate for those living in the metropolitan zone.

For more information, see:

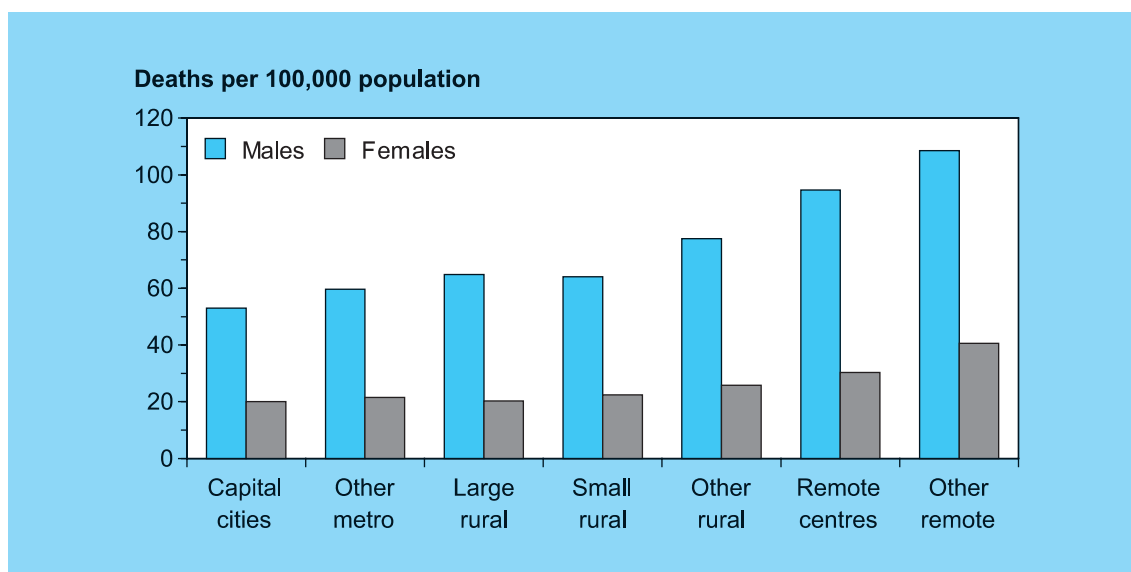
Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Australian Bureau of Statistics 1997. Deaths Australia, 1996. ABS Cat. No. 3302.0. Canberra: AGPS.

Australian Bureau of Statistics 1997. Causes of death Australia, 1996. ABS Cat. No. 3303.0. Canberra: AGPS.

All causes of injury

Death rates for all causes of injury, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	53.0	59.7	*64.8	*64.1	77.5	*94.6	*108.5	59.5
Females	20.0	21.5	20.3	22.3	*25.8	30.3	*40.6	21.4

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Causes of injury are classified according to the ICD-9 external cause codes E899 to E999. Codes relating to medical misadventure, complications of care etc. (external cause codes E870 to E879 and E930 to E949) have been omitted from this table.

Source: AIHW National Mortality Database.

Deaths from injury

- Injury is one of the major contributors to premature mortality in Australia, and was responsible for 7,469 deaths in 1996. The major causes of death from injury in rural and remote zones are suicide and motor vehicle accidents (ABS 1997a).
- Accidents with farm or mining equipment along with road transport-related deaths make work-related injuries a major cause of premature death in rural and remote zones. A survey of work-related injury (Harrison et al. 1989) found that the death rate was highest for hazardous occupations such as mining, transport and farm work. These occupations had the highest rate of workplace traffic deaths and the highest rate of fatal injury sustained travelling to and from work. Vehicle occupants make up the majority of deaths at the sites of road traffic accidents.
- Injury patterns vary with age (DHFS & AIHW 1998a). In early childhood, drowning causes most injury-related deaths. Young adults are the most frequent victims of self-harm and motor vehicle accidents. For the elderly, falls are the most common cause of death. Total injury death rates are highest for young adults and the elderly (DHFS & AIHW 1998a).
- Death rates from all causes of injury are more than twice as high in 'other remote areas' compared with 'capital cities'. Overall, the rates increase with increasing remoteness, suggesting that those living in rural and remote zones are at greater risk of death from injury than are those living in the metropolitan zone.

- Males are at greater risk of death from injury compared with females. This is evident from the death rate from injury for males which is almost three times the rate for females from the same RRMA category, a pattern which is consistent across all categories.
- Injury deaths for Indigenous males decreased at a rate of 2.3% per year from 1986 to 1994 (Anderson et al. 1996). The decreased death rate for Indigenous males was largely a result of declines in mortality due to road traffic accidents and homicides. As seen previously, the death rates for remote zone males are still higher than for those in rural and metropolitan zones, suggesting that Indigenous mortality from injury has not declined to rates approximating those of non-Indigenous males.

For more information, see:

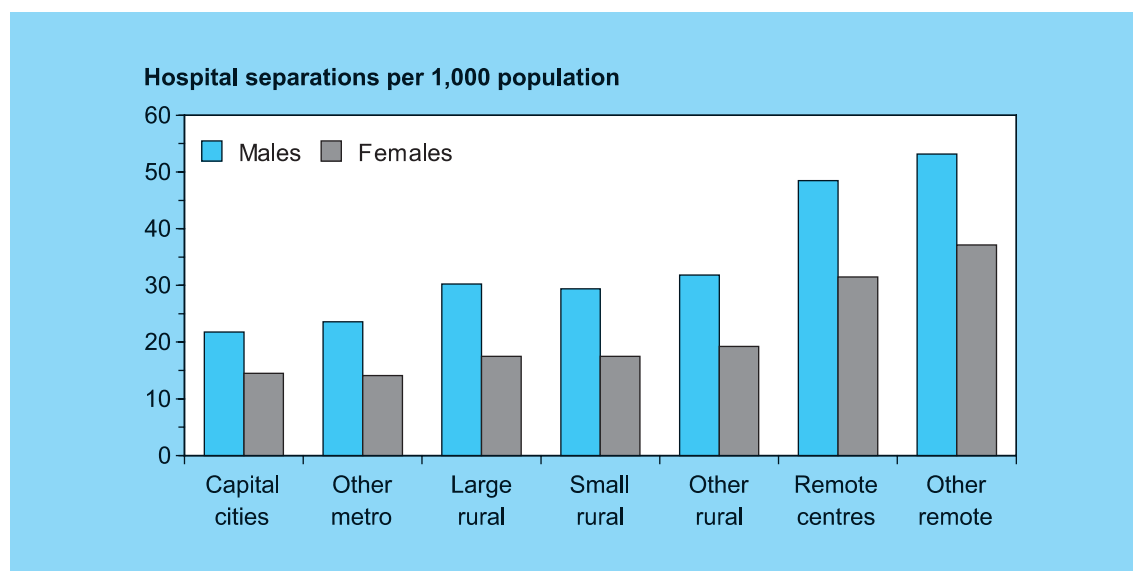
Australian Bureau of Statistics 1997. Causes of death Australia, 1996. ABS Cat. No. 3303.0. Canberra: AGPS.

Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Harrison JE, Frommer MS, Ruck EA & Blyth FM 1989. Death as a result of work-related injury in Australia, 1982-1984. *Med J Aust* 150: 118-125.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Hospital separation rates for all causes of injury, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	21.8	*23.6	*30.2	*29.4	*31.8	*48.5	*53.2	25.2
Females	14.5	14.1	*17.5	*17.5	*19.3	*31.5	*37.1	16.0

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were omitted from the analysis.
- Causes of injury are classified according to the ICD-9 external cause codes E899 to E999. Codes relating to medical misadventure, complications of care etc. (external cause codes E870 to E879 and E930 to E949) are not included here.
- Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

Hospitalisation for all causes of injury

- Injury is one of the leading causes of hospitalisation in Australia, accounting for 377,955 hospital separations in 1995–96 (DHFS & AIHW 1998a). For every injury-related death, at least 40 episodes of hospitalisation are estimated to occur.
- Young males (aged 15–24) and aged people (aged 65 and above) have the highest rates of hospitalisation due to external injury (DHFS & AIHW 1998a).
- In the metropolitan and rural zones, males are hospitalised for injury almost twice as often as females. However, this male/female difference is less in the remote zone, though the male rate of hospitalisation due to injury is still substantially higher than the female rate.
- For males, injury hospital separation rates in 'large rural centres' and 'remote centres' are respectively 39% and 145% higher than in 'capital cities'. The rates for males living in 'other metropolitan centres', as well as all rural and remote zones are significantly higher than the rates for males from 'capital cities'. The rates for females are also significantly higher in rural and remote zones compared with rates in 'capital cities'. The rates for females in the remote zone are more than twice as high as the rates in the metropolitan zone.
- The ratio of male to female injury death rates is higher than the ratio of male to female hospital separation rates. This suggests that males become involved in more severe accidents that result in death more often than

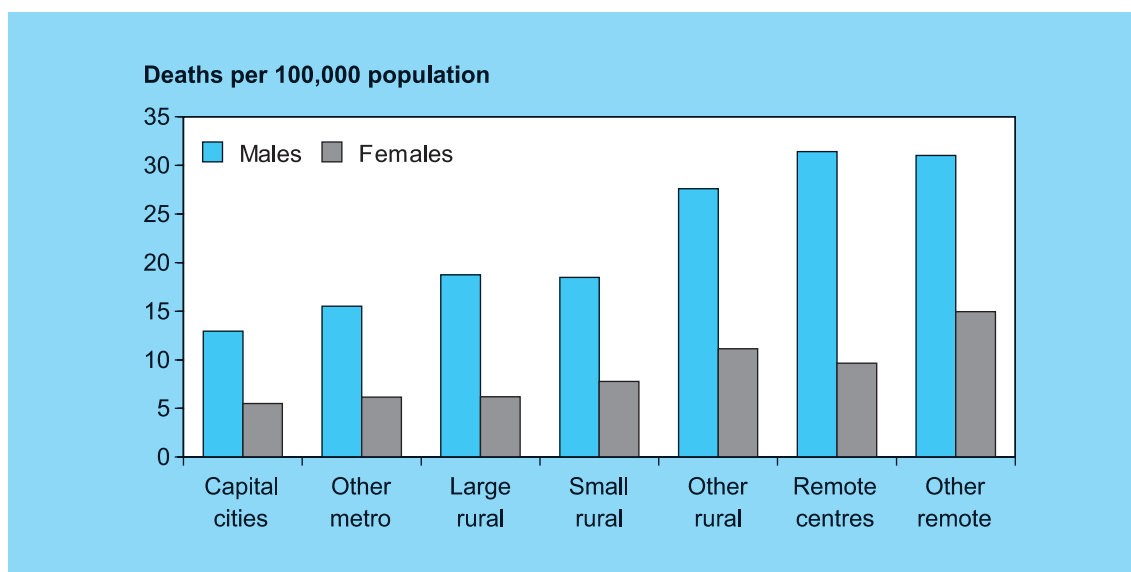
All causes of injury

do females. Additionally, males in the remote zone die from motor vehicle accidents at almost three times the rate of males in capital cities. The higher death rates in the remote zone may reflect a number of differences in traffic conditions in this zone, including road conditions, distances travelled and driver behaviour.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Death rates for road vehicle accidents, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	13.0	15.5	*18.7	*18.5	*27.6	*31.4	*31.0	16.2
Females	5.5	6.2	6.2	7.8	*11.2	9.7	*15.0	6.6

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from road vehicle accidents

- People living in rural and remote zones are exposed more to the hazards associated with long-distance, high-speed road travel on unsurfaced roads than those living in the metropolitan zone (AIHW & DHFS 1997). This, combined with the remoteness of the location of the accidents, which delays medical treatment, may result in more fatalities than if the accidents occurred in the metropolitan zone.
- In 1995, 1,420 males and 638 females died in traffic accidents. The death rates from road vehicle accidents for young adult males (aged 15 to 24) are almost three times that of the general population (DHFS & AIHW 1998a).
- The rate of fatal traffic accidents increases with increasing rurality and remoteness for males. Males from the remote zone die in traffic accidents at almost three times the rate of males from the metropolitan zone. Males from all zones are more than twice as likely to have a fatal vehicle accident compared with females from their corresponding zone.
- The rate of fatal traffic accidents increases with increasing rurality for females also, though not to the same extent as for males. Females from the remote zone are involved in fatal accidents at over twice the rate for females from the metropolitan zone.

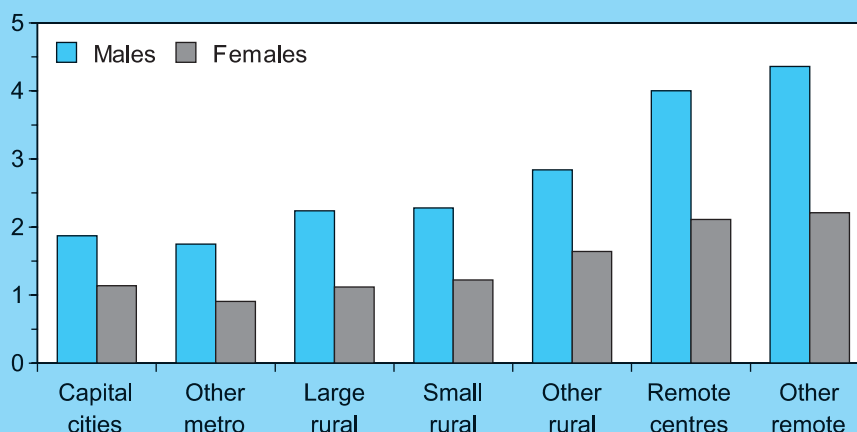
For more information, see:

Australian Institute of Health and Welfare & Commonwealth Department of Health and Family Services 1997. First report on National Health Priority Areas 1996. AIHW Cat. No. PHE 1. Canberra: AIHW & DHFS.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Hospital separation rates for road vehicle accidents, 1995–96

Separations per 1,000 population



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.9	1.8	*2.2	*2.3	*2.8	*4.0	*4.4	2.1
Females	1.1	0.9	1.1	1.2	*1.6	*2.1	*2.2	1.2

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were omitted from the analysis.
- Causes of road injury are classified according to the ICD-9 external cause codes E810 to E819 and E826 to E829.

Source: AIHW National Morbidity Database.

Hospitalisation due to road vehicle accidents

- There has been a slight increase in road injury over the past few years but police reports show that the accident rate is decreasing (O'Connor 1996). Males are more likely to be involved in fatal accidents than are females. Males aged 15–24 are most at risk from motor vehicle accidents and account for 20% of hospitalisations from this cause.
- Intake of alcohol above moderate levels is often associated with road traffic accidents. Drinking alcohol above moderate levels can result in poor coordination and judgement which can lead to traffic accidents (AIHW 1998a).
- Hospital separation rates due to road injury show a strong association with rurality. The rates are highest in the remote zone and 'other rural areas'. There is little difference between small and large 'rural centres' but the rates of

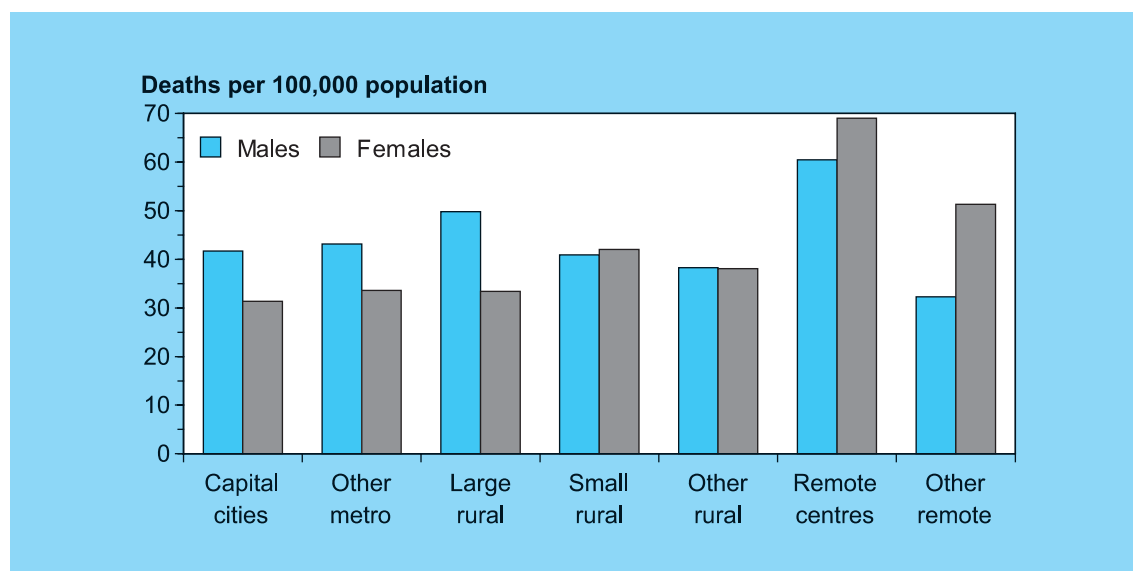
road injury for males from all rural and remote zones are significantly higher than the rates for males in 'capital cities'. Similar to road accident mortality, 'other rural areas' have higher rates of hospitalisation compared with large and small 'rural centres'.

- Factors similar to those involved in mortality from road traffic accidents, such as road quality and alcohol consumption, also contribute to increased hospitalisation from road traffic accidents in rural and remote zones compared with the metropolitan zone.

For more information, see:

O'Connor P J 1996. Road injury Australia: crashes resulting in hospitalisation. Adelaide: AIHW National Injury Surveillance Unit.

Death rates for falls among people aged 65 years and over, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	41.7	43.2	49.8	40.9	38.3	60.5	32.3	41.7
Females	31.4	33.6	33.4	42.1	38.1	69.1	51.3	33.6

Notes:

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significant from 'capital cities' at the 5% level.

Source: AIHW National Mortality Database.

Deaths from falls

- Falls are a leading cause of injury in people over the age of 65 years. Hip fractures are the main injury associated with falls in this age group. The main risk factors include disability, medication, chronic disease and environmental hazards (Graham-Clarke et al. 1998).
- Most deaths from external causes in the over 65 years age group are related to the after-effects of falls. Mortality resulting from falls increases with age from 15% of deaths from external causes in people 65–69 years to 75% of deaths from external causes in those aged 85 years and over.
- The death rate from falls is highest for both males and females in 'remote centres'. Females living in 'remote centres' have over twice the death rate from falls compared with those living in the metropolitan zone.

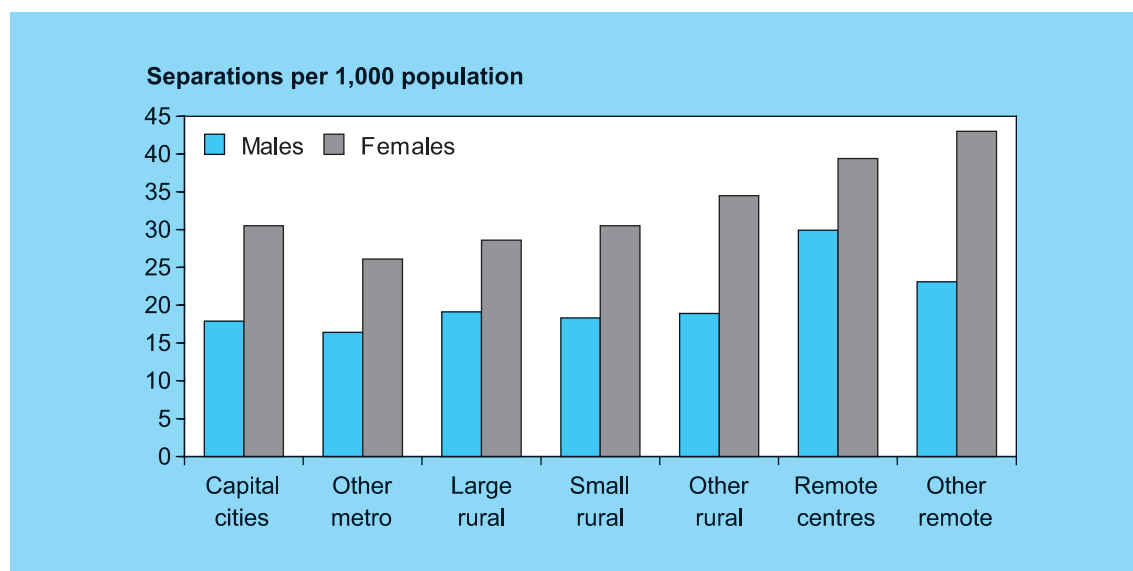
However, none of the death rates is significantly different from the rates for 'capital cities' at the 5% significance level.

- Males over 65 years have a higher death rate from falls compared with females in the metropolitan zone and 'large rural centres'. However, the picture is reversed in 'small rural centres' and the remote zone where females have the higher death rates. Overall, males have a 25% higher death rate from falls than do females.

For more information, see:

Graham-Clarke P, Fisher J & Elkington J 1998. Preventing injuries from falls in older people. Sydney: National Centre for Health Promotion, Sydney University & NSW Health Department.

Hospital separation rates for falls among people aged 65 years and over, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	17.9	16.4	*19.1	*18.3	*18.9	*29.9	*23.1	18.2
Females	30.5	*26.1	28.6	30.5	*34.5	*39.4	*43.0	30.7

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were eliminated from the analysis.
- Causes of injury are classified according to the ICD-9 external cause codes E880 to E888.

Source: AIHW National Morbidity Database.

Hospitalisation due to falls

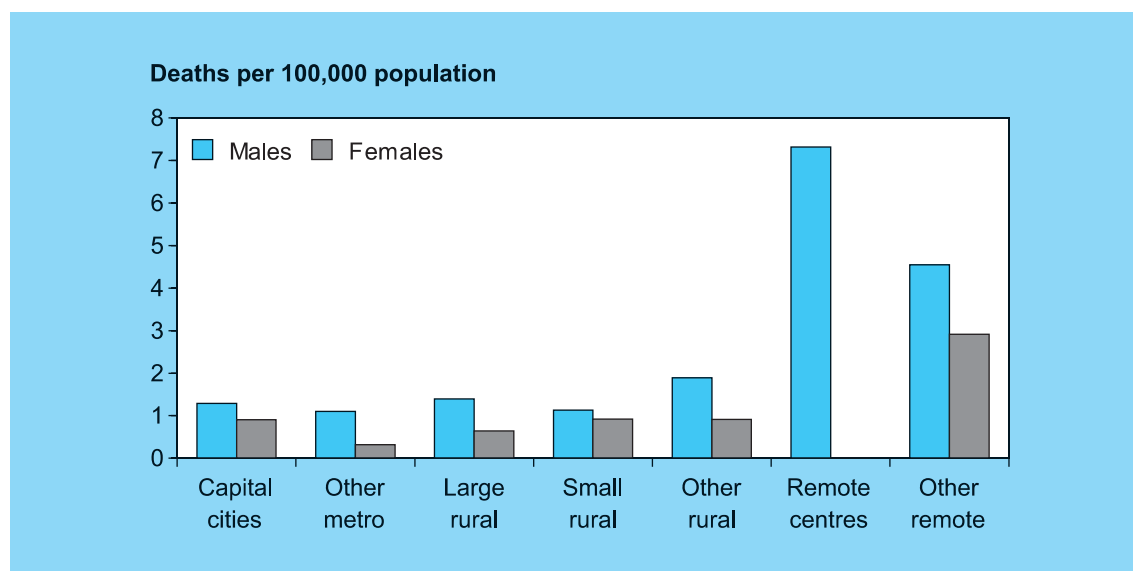
- Hospitalisation as a result of a fall is common in people over the age of 65 years. Fractures are the most common injury resulting from falls, with hip fractures the most serious in terms of mortality and functional impairment (Fildes 1994). Aged people are at risk of falls due to disability, medication and environmental hazards. Those living in rural and remote zones often live without direct access to the amenities taken for granted in urban zones such as plumbing, clean water and control over extremes in temperature. They may also live in greater social isolation than their metropolitan counterparts. These living conditions may expose aged people to more environmental risks that lead to falls.
- The rate of hospitalisation due to falls is similar for those living in metropolitan and rural zones. However, the rates are substantially higher for those in the remote zone.
- Males have a lower rate of hospitalisation from falls than do females for all RRMA categories. Across RRMA categories, the rates for male hospitalisation are around 60% of the corresponding rates for females. Osteoporosis in post-menopausal females greatly increases the risk of fracture and complications from falls (DHFS & AIHW 1998a).

For more information, see:

Fildes B 1994. Injury prevention among the elderly. Victorian Health Promotion Foundation Monograph Series. Melbourne: VicHealth.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Death rates for burns among people aged 55 years and over, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.3	1.1	1.4	1.1	1.9	7.3	4.6	1.4
Females	0.9	0.3	0.6	0.9	0.9	0.0	2.9	0.9

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

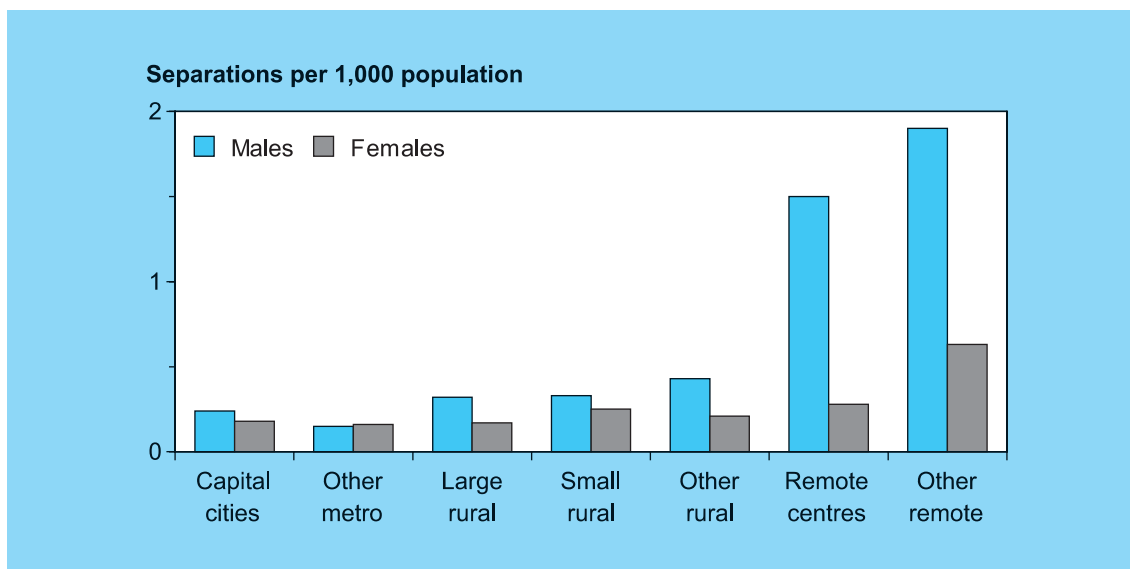
Deaths from burns

- Deaths from burns account for a small percentage (2%) of deaths from external injury. Older people and small children are most likely to be the victims of burns (DHFS & AIHW 1998a).
- The death rates from burns are similar for males from metropolitan and rural zones, but are substantially higher in the remote zone. Similarly, females in 'other remote areas' have three times the death rate due to burns compared to females from any other zone. However, these rates represent very small numbers of people and are not significantly different from 'capital cities' at the 5% level.
- Males have a higher death rate from burns compared to females. The rate of death for males from burns in 'remote centres' is more than five times that of males from 'capital cities' and is a striking contrast to the lack of females dying from burns in this area.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Hospital separation rates from fire, burns and scalds among people aged 55 years and over, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	0.24	*0.15	*0.32	*0.33	*0.43	*1.50	*1.94	0.31
Females	0.18	0.16	0.17	*0.25	0.21	0.28	*0.63	0.19

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were eliminated from the analysis.
- Causes of injury are classified according to the ICD-9 external cause codes E890 to E899, E924.0, E924.8 and E924.9.

Source: AIHW National Morbidity Database.

Hospitalisation due to burns

- Although burns are responsible for only 2% of deaths from external causes, burn victims often require prolonged hospitalisation. Caring for burn victims can be a substantial burden on the community.
- The hospital separation rate due to burns among males in 'other remote areas' is almost eight times the rate in 'capital cities'. The hospital separation rate due to burns among females in 'other remote areas' is three-and-a-half times the rate in 'capital cities'. Both males and females living in the rural zone are hospitalised for burns at around one-and-a-half times the corresponding rates in 'capital cities'.
- Males are more likely to be hospitalised as a result of their burns than females, with the difference between the sexes greatest in the remote zone. The hospital separation rate due to burns among males in 'capital cities' is 35% higher than the corresponding rate for females. In contrast, females in 'remote centres' have five times the male hospitalisation rate from burns.

- Aged Aboriginal and Torres Strait Islander people have been reported to have high rates of hospitalisation from fire burns (ABS & AIHW 1997). The high proportion of Indigenous people in the remote zone may account for the differential in hospitalisation rates due to burns.

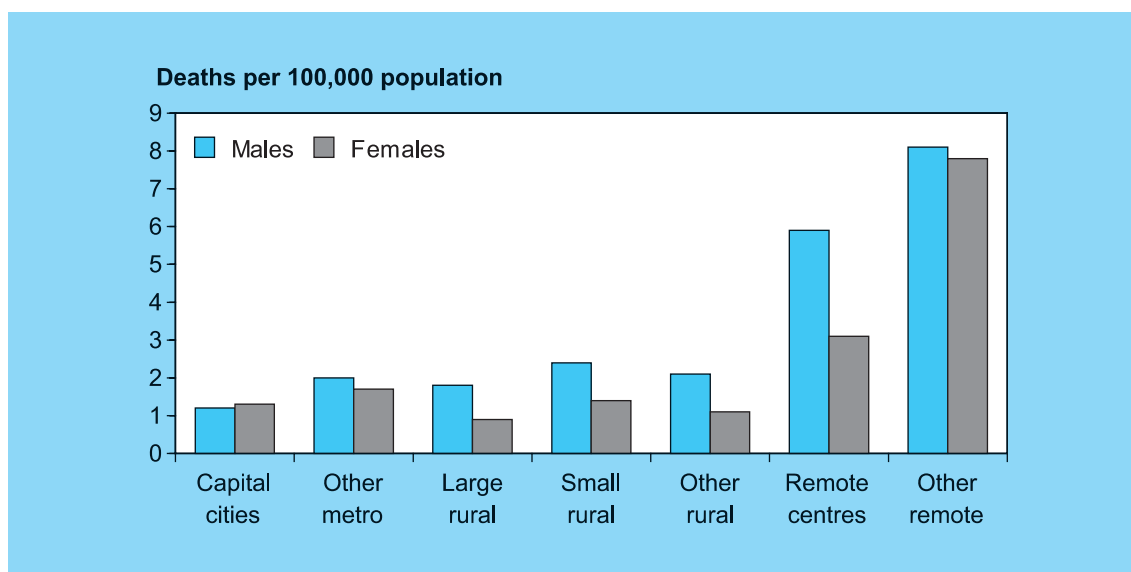
For more information, see:

Moller J, Dolinis J & Cripps R 1996. Aboriginal and Torres Strait Islander peoples injury-related hospitalisations 1991/92. A comparative overview. Adelaide: AIHW National Injury Surveillance Unit.

Australian Bureau of Statistics & Australian Institute of Health and Welfare 1997. The health and welfare of Australia's Aboriginal and Torres Straits Islander peoples. ABS Cat. No. 4704.0, AIHW Cat. No. IHW 2. Canberra: AGPS.

Interpersonal violence

Homicide rates, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.2	2.0	1.8	2.4	2.1	5.9	*8.1	2.3
Females	1.3	1.7	0.9	1.4	1.1	3.1	*7.8	1.4

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from interpersonal violence

- Interpersonal violence covers a range of injury types including homicide, sexual assault, assault and domestic violence (DHFS & AIHW 1998a).
- Death from homicide may be an indication of the level of violence in a community. However, homicide deaths are not distributed evenly across all parts of the community. Young people and Indigenous people have the highest rate of deaths from homicide (Anderson et al. 1996).
- The homicide rate in the remote zone is much greater than in all other zones for both males and females. In 'other remote areas' the homicide rate is six to seven times that of the metropolitan zone. This is largely explained by the higher death rates from interpersonal violence in the Indigenous community (Anderson et al. 1996).

- There is little variation between the homicide rates in rural and metropolitan zones for both males and females.

For more information, see:

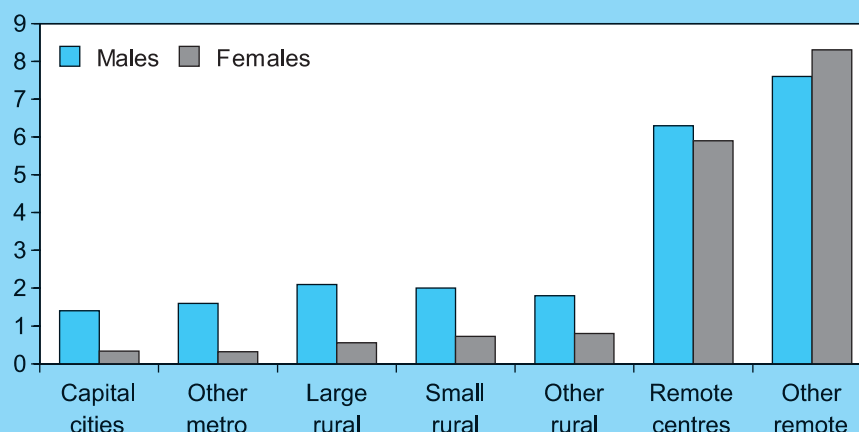
Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Moller J, Dolinis J & Cripps R 1996. Aboriginal and Torres Strait Islander peoples injury-related hospitalisations 1991/92. A comparative overview. Adelaide: AIHW National Injury Surveillance Unit.

Hospital separation rates for homicide and injury purposely inflicted by other people, 1995–96

Separations per 1,000 population



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.4	*1.6	*2.1	*2.0	*1.8	*6.3	*7.6	1.8
Females	0.3	0.3	*0.6	*0.7	*0.8	*5.9	*8.3	0.6

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Records with length of stay greater than 364 days were eliminated from the analysis.
2. Causes of homicide and injury purposely inflicted by other persons are classified according to the ICD-9 external cause codes E960 to E969.

Source: AIHW National Morbidity Database.

Hospitalisation due to interpersonal violence

- Better data are available for fatalities from interpersonal violence than for non-fatal outcomes because some interpersonal violence goes unrecorded or may be attributed to other causes. As a result, it is likely that the hospitalisation rates from this cause of injury are underestimated (DHFS & AIHW 1998b).
- Males from the remote zone have three to five times higher rates of hospitalisation due to interpersonal violence than do males in metropolitan and rural zones. Rural hospital separation rates are double the metropolitan rates for females and around one-third higher for males.
- Females from the remote zone have seven to 25 times higher rates of hospitalisation due to interpersonal violence compared with females from other zones. However, the result is

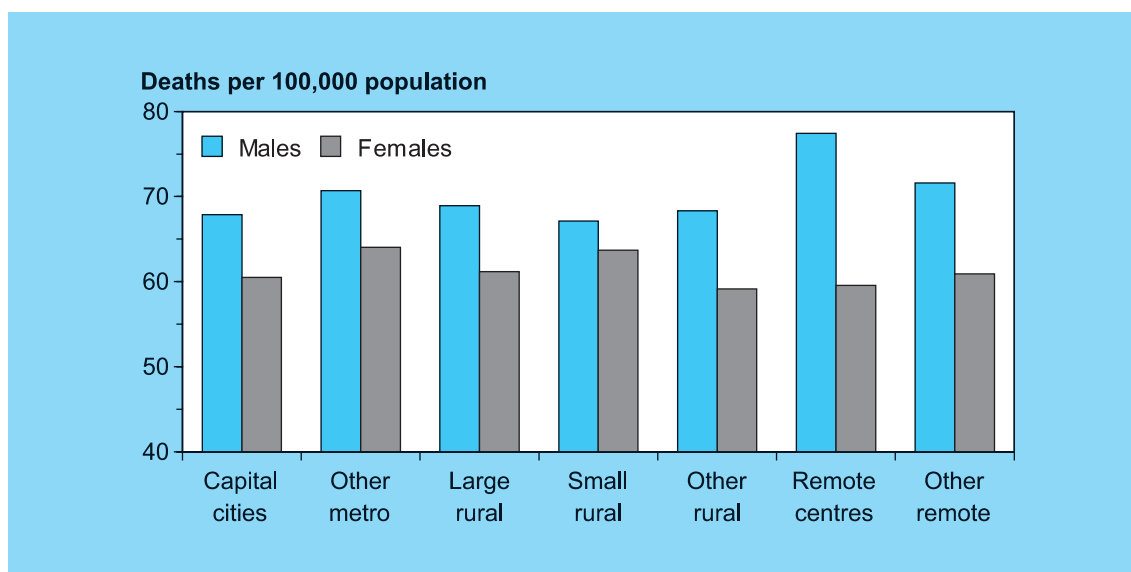
difficult to interpret because interpersonal violence against females in the non-Indigenous population is likely to be under-reported (Healthsharing Women 1994).

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Healthsharing Women 1994. Women, health and the rural decline in Victoria. In Franklin MA, Short LM & Teather EK (eds.). Country women at the crossroads. Armidale: University of New England Press, 92–98.

Death rates for stroke, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	67.9	70.9	68.9	67.1	68.3	77.4	71.6	68.3
Females	60.5	64.0	61.2	63.7	59.2	59.6	61.0	60.9

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths from stroke

- For the period 1992–96, stroke accounted for 10% of all deaths in Australia. Risk factors for stroke include increasing age, high blood pressure, smoking, high serum cholesterol, obesity, lack of exercise and heavy alcohol intake.
- Some 25% of stroke victims die within the first month after stroke and a further 40% die within 1 year (Anderson et al. 1994).
- Death rates from stroke are similar across all regions for both males and females. The differences that are shown between remote, rural and metropolitan zones are not significantly different from those of 'capital cities' at the 5% level.
- Males have a higher rate of death from stroke compared with females across all zones. Males also have a higher incidence rate of stroke than females. This is supported by studies of

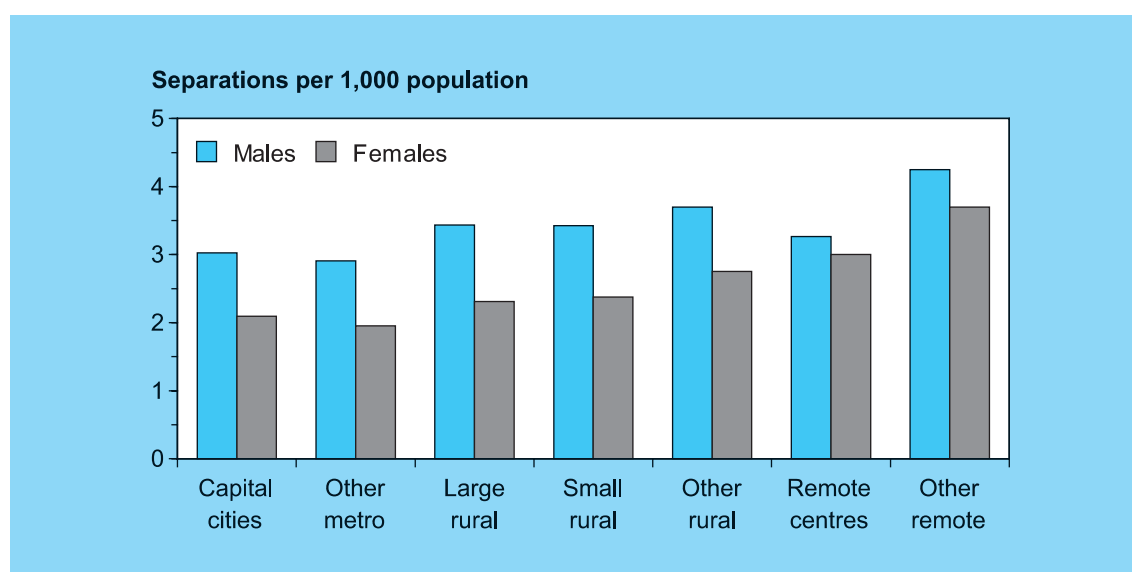
stroke incidence from Western Australia where age-adjusted rates were 132 per 100,000 for males and 77 per 100,000 for females (Anderson et al. 1993).

For more information, see:

Anderson C, Jamrozik K, Burvill P, Chakera T, Johnson G & Stewart-Wynne E 1993. Ascertaining the true incidence of stroke: experience from the Perth Community Stroke Study, 1989–1990. *Med J Aust* 158: 80–84.

Anderson C, Jamrozik K, Broadhurst R & Stewart-Wynne E 1994. Predicting survival among different subtypes of stroke: experience from the Perth Community Stroke Study, 1989–1990. *Stroke* 25: 1935–44.

Hospital separation rates for stroke, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	3.0	2.9	*3.4	*3.4	*3.7	3.3	*4.3	3.2
Females	2.1	2.0	*2.3	*2.4	*2.8	*3.0	*3.7	2.2

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

Hospitalisation due to stroke

- Hospitalisation rates from stroke are higher among males, as they are for death from stroke. This pattern is consistent across all seven RRMA categories.
- Unlike death rates, a clear pattern emerges for hospitalisation following stroke in the RRMA categories. Males and females from 'other remote areas' have the highest rate of hospitalisation due to stroke. The lowest rates are found in males and females in the metropolitan zone.
- The higher hospitalisation rates for stroke in rural and remote zones contrasts with the lack of significant differences between death rates in the metropolitan, rural and remote zones. The decision to hospitalise a patient for stroke may be based on factors such as the distance that he/she will have to travel to hospital

from home. Other considerations may include the availability of home-based nursing, nursing homes or community health services. Such services may be unavailable in remote communities, making hospitalisation the only option for long-term care of stroke victims.

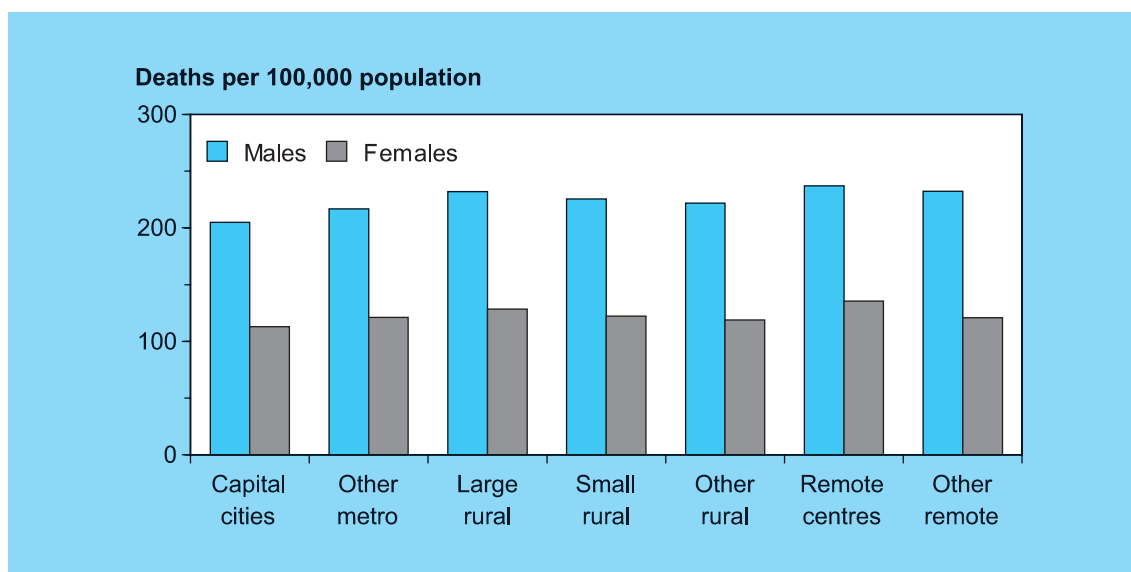
- As the average age of Australia's population increases, the incidence of stroke is also set to increase. An increase of 69% in the number of new stroke cases per year has been predicted by the year 2016 (NHMRC 1997).

For more information, see:

National Health and Medical Research Council 1997. Prevention of stroke. Clinical practice guidelines, December 1996. Canberra: AGPS.

Coronary heart disease

Death rates for coronary heart disease, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	205.0	216.7	*231.9	*225.6	*221.9	237.1	232.3	212.4
Females	113.0	*121.0	*128.6	*122.1	118.8	135.6	120.8	116.4

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from coronary heart disease

- Coronary heart disease is the most common form of cardiovascular disease and its cause is blockage of one or more of the coronary arteries that supply the heart with blood (Wise & Graham-Clarke 1994). The risk factors for coronary heart disease include being overweight or obese, having high serum cholesterol levels, smoking, high alcohol consumption and lack of regular exercise.
- Coronary heart disease is a major cause of mortality in Australia, accounting for 25% of all male deaths and 22% of all female deaths from 1992 to 1996. In 1996, 49,726 deaths were due to coronary heart disease alone.
- Death rates from coronary heart disease are higher in rural and remote zones compared with the metropolitan zone, for both sexes. The rates for the rural zone are significantly different from 'capital cities' at the 5% level.
- Across all zones, the male rate of death is twice that of the female rate. In general, cardiovascular disease is a greater health risk for males than for females. However, cardiovascular disease is still the leading cause of death in Australian females (Wise & Graham-Clarke 1994).

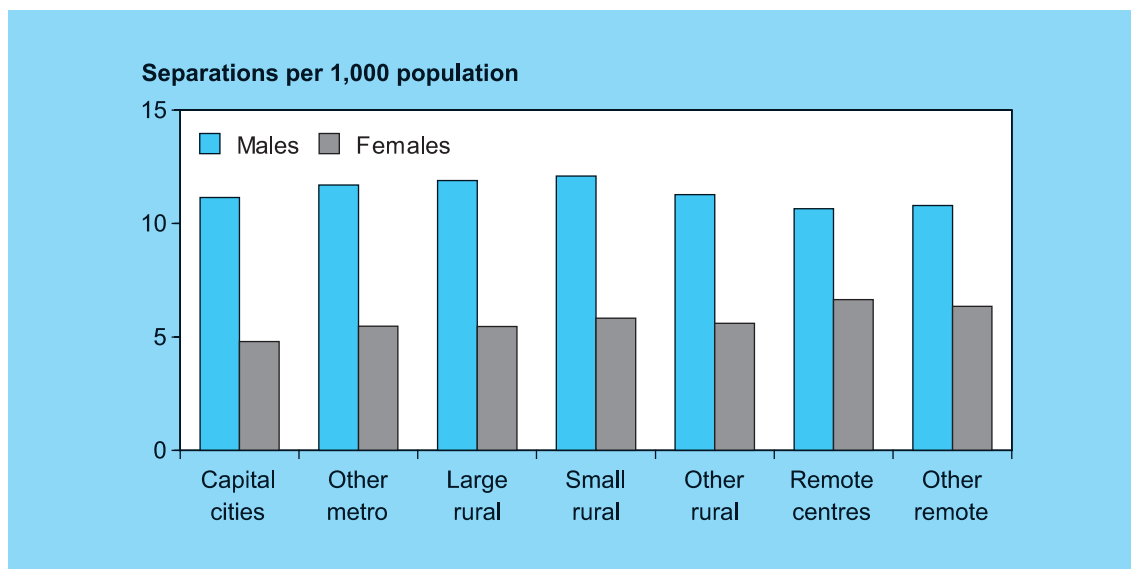
For more information, see:

Australian Bureau of Statistics 1997. Causes of death Australia, 1996. ABS Cat. No. 3303.0. Canberra: AGPS.

Australian Bureau of Statistics 1997. 1995 National Health Survey. Cardiovascular and related conditions Australia. ABS Cat. No. 4372.0. Canberra: AGPS.

Wise M & Graham-Clarke P 1994. Cardiovascular health in Australia. A review of current activities and future directions. Canberra: AGPS.

Hospital separation rates for coronary heart disease, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	11.1	11.7	*11.9	*12.1	11.3	10.7	10.8	11.3
Females	4.8	*5.5	*5.5	*5.8	*5.6	*6.7	*6.3	5.1

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

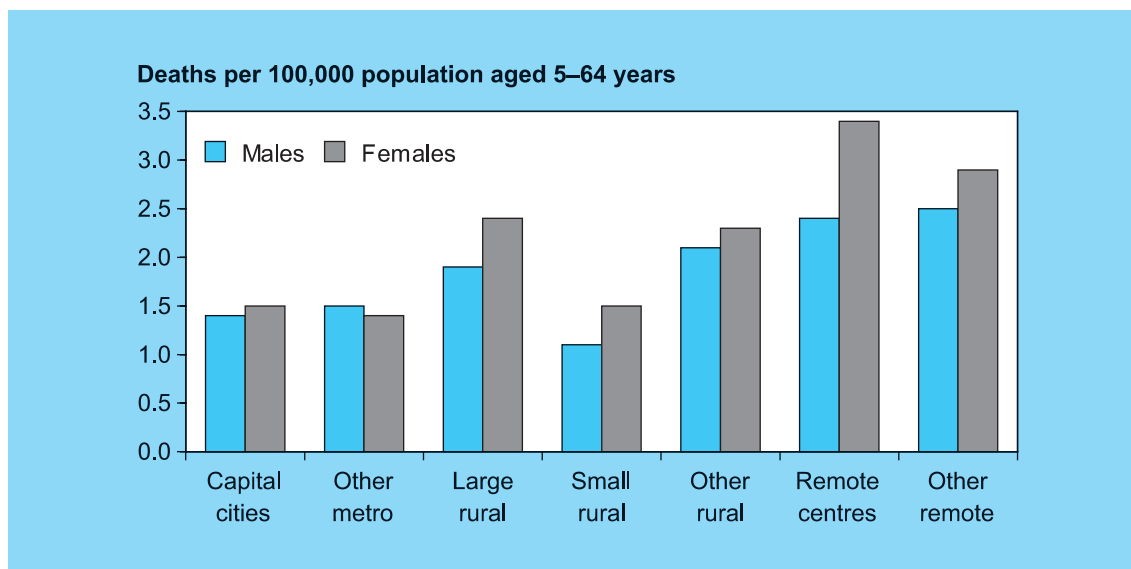
Hospitalisation due to coronary heart disease

- About 50% of all heart attack deaths occur before the victims reach hospital. However, once victims arrive at hospital, their chances of surviving improve substantially (Wise & Graham-Clarke 1994).
- The rates for hospital separations for coronary heart disease vary across the RRMA categories. The males living in 'large rural centres' and 'small rural centres' have significantly higher hospitalisation rates compared with those living in 'capital cities'. The rate for females living in 'capital cities' is significantly lower than the rates for all other RRMA categories.
- Females in the remote zone have slightly higher rates of hospital separations compared with females in other zones. Conversely, males in the remote zone have slightly lower rates of hospital separations compared with males from other zones. Males in the remote zone have higher death rates from coronary heart disease and their lower rate of hospitalisation may reflect fewer males surviving to be hospitalised in these zones. Another reason may be that males in the remote zone are at greater risk of premature death from injury, specifically road traffic accidents, than males in other zones. As a result, many may die from other causes before coronary heart disease can develop.
- Females have around half the hospital separation rate of males from the same zones. This reflects the lower risk of coronary heart disease for females relative to males also noted from the differences in death rates.

For more information, see:

Wise M & Graham-Clarke P 1994. Cardiovascular health in Australia. A review of current activities and future directions. Canberra: AGPS.

Death rates for asthma for persons aged 5–64 years, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.4	1.5	2.0	1.1	*2.1	2.4	2.5	1.6
Females	1.5	1.4	2.4	1.5	2.3	3.4	2.9	1.7

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from asthma

- Asthma is a chronic and debilitating disease that involves inflammation of the airways and results in wheezing, breathlessness, chest tightening and cough (Holgate 1997). It can cause death in the absence of medical intervention.
- The National Asthma Campaign (NAC) recommends the use of the age group 5–34 years for monitoring asthma deaths with the intention of preventing premature mortality. However, we report on a wider age group, 5–64 years, to provide a broad overview of asthma mortality in Australia.
- The remote zone has the highest death rates from asthma for both males and females. The rates are similar for the sexes in 'capital cities' and increase with remoteness to a similar extent. 'Small rural centres' are an exception to the higher rates in the rural zone as they have

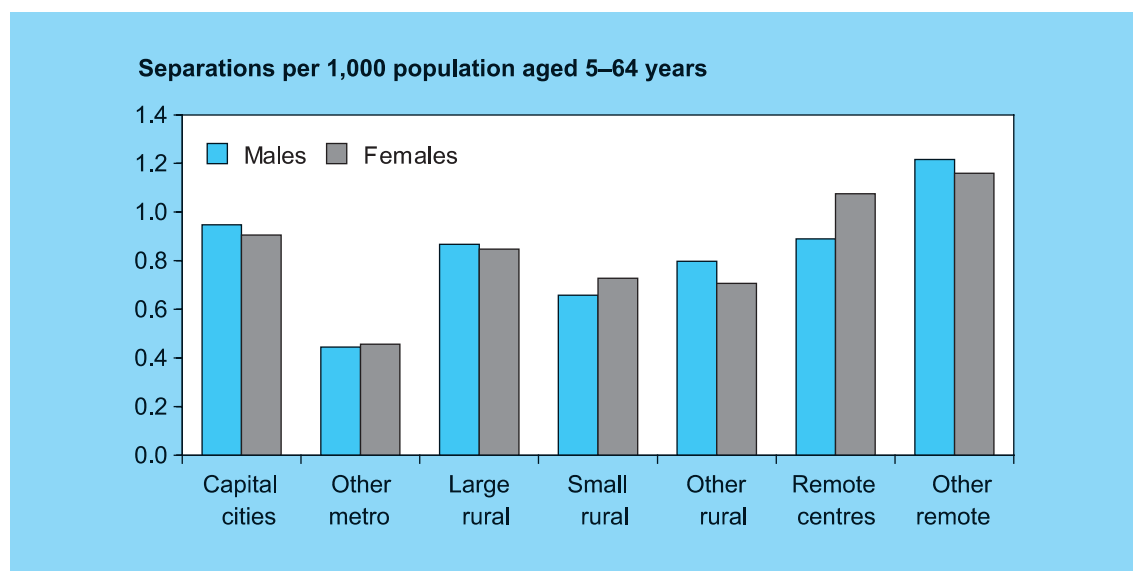
rates lower than that for males and females in 'capital cities'.

- The death rates from asthma among females are consistently higher than the male rates in all RRMA categories, except in 'other metropolitan centres'.
- People in rural and remote communities may not be monitoring their asthma to the same extent as people in the metropolitan zone with more direct access to health care. The result may be higher mortality from asthma in rural and remote zones compared with the metropolitan zone.

For more information, see:

Holgate ST 1997. Asthma: a dynamic disease of inflammation and repair. In Chadwick D & Cardew G (eds). The rising trends in asthma. Ciba Foundation Symposium 206. Chichester: John Wiley & Sons Ltd.

Hospital separation rates from asthma for persons aged 5–64 years, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.0	*0.4	0.9	*0.7	*0.8	0.9	1.2	0.9
Females	0.9	*0.5	0.9	*0.7	*0.7	1.1	*1.2	0.8

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

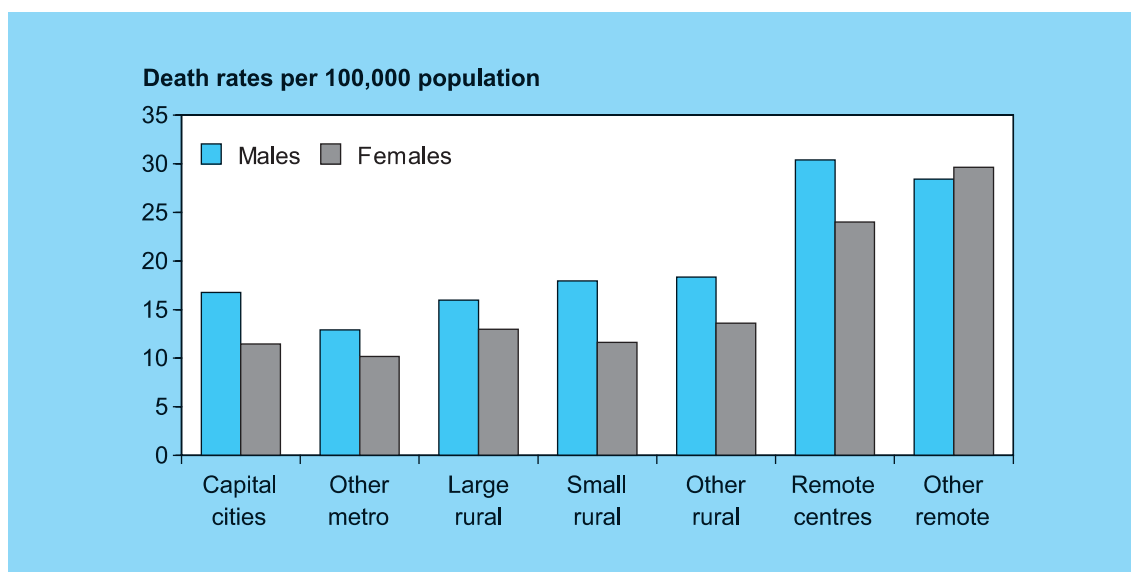
Hospital separations for asthma

- The prevalence of asthma, particularly in children and young adults, is increasing in Australia (Woolcock & Peat 1997). Risk factors for the development of asthma include being allergic to house dust mites, the mould *Alternaria*, or cats. Other risk factors are environmental tobacco smoke, diet and parental asthma (Woolcock & Peat 1997). Hospitalisation occurs for severe asthma attacks and asthma conditions that are not responding to the usual corticosteroid treatments.
- No clear RRMA pattern emerges for asthma hospitalisation, but interesting variation is noted in rates. Within the metropolitan zone, the hospitalisation rates in 'capital cities' are almost double the rates in 'other metropolitan centres'. The rates in 'small rural centres' and 'other rural areas' are also significantly lower than in 'capital cities'.
- Across all RRMA categories, there are no substantial differences between the male and female hospitalisation rates for asthma.
- Although the hospitalisation rates for asthma in the remote zone are higher than for other zones, interpreting hospitalisation for chronic conditions in the remote zone is difficult because individuals may be admitted to hospital if they have to travel long distances for follow-up treatment.

For more information, see:

Woolcock AJ & Peat JK 1997. Evidence for the increase in asthma world-wide. In Chadwick D & Cardew G (eds). The rising trends in asthma. Ciba Foundation Symposium 206. Chichester: John Wiley & Sons Ltd.

Death rates for diabetes, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	16.8	*12.9	16.0	18.0	18.3	30.4	*28.4	17.0
Females	11.5	10.2	13.0	11.6	*13.6	24.0	*29.7	12.1

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

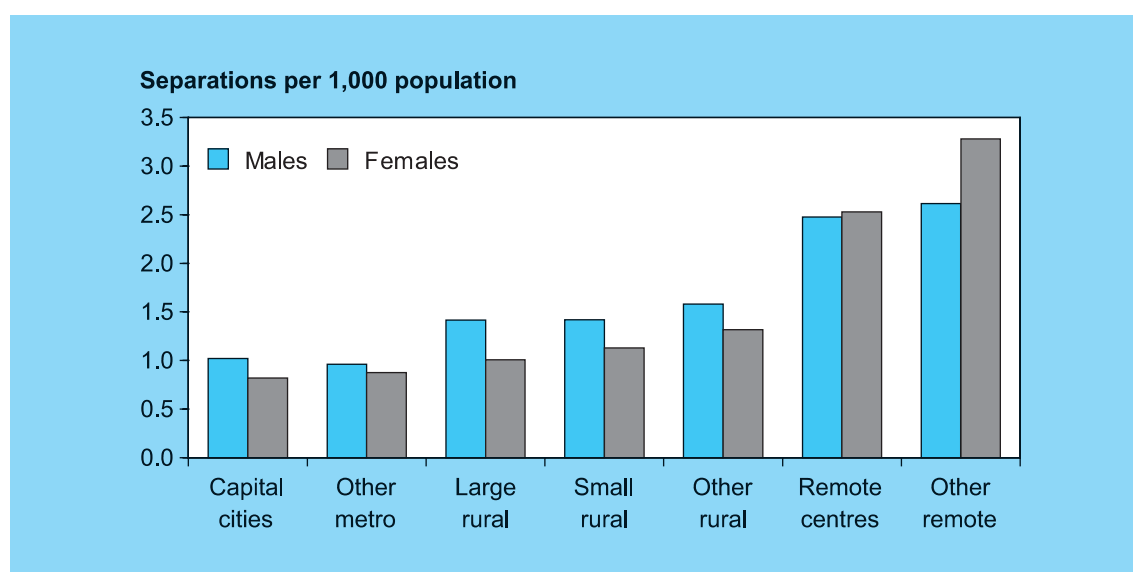
Deaths due to diabetes

- Diabetes results from the body's inability to properly metabolise glucose. The disease itself is not usually life-threatening but without proper medical supervision can lead to death.
- Diabetes is a risk factor for several diseases including cardiovascular disease and renal failure. These life-threatening diseases are often co-morbidities in people with diabetes and this makes ascertaining the cause of death difficult. Consequently, deaths from diabetes may be under-reported.
- Higher death rates are noted among males in comparison to females. This pattern is consistent across all RRMA categories except 'other remote areas'.
- Deaths from diabetes occur at higher rates in the remote zone than in the rural zone, which in turn have higher rates than those observed in the metropolitan zone. Males from 'other metropolitan centres' have significantly lower death rates compared with males from 'capital cities', whereas, males from 'other remote areas' have significantly higher death rates than males from 'capital cities'. In fact, males in the remote zone have almost twice the death rate from diabetes than males from the metropolitan zone and 'large rural centres'.
- Females from 'other rural areas' have significantly higher death rates from diabetes than females from 'capital cities'. Females in the remote zone have over twice the death rate from diabetes than females from the metropolitan and rural zones.
- The differential between those living in the remote zone and other zones could be influenced by a number of factors including access to and quality of health care services, availability of adequate management care plans and appropriate diets.

For more information, see:

McCarty J, Zimmet P, Dalton D, Segal L & Welborn T 1996. The rise and rise of diabetes in Australia. A review of statistical trends and costs. Canberra: Diabetes Australia.

Hospital separation rates for diabetes, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.0	1.0	*1.4	*1.4	*1.6	*2.5	*2.6	1.2
Females	0.8	0.9	*1.0	*1.1	*1.3	*2.5	*3.3	1.0

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

Hospital separations for diabetes

- Diabetes is a chronic condition that requires hospitalisation only in acute situations. Most people with diabetes manage their condition at diabetes clinics or with their general practitioners.
- Those living in the remote zone are hospitalised for diabetes at over twice the rate of their counterparts in the metropolitan zone. Males and females from the rural zone also have higher hospitalisation rates for diabetes. Rural males have rates 50% higher than those living in the metropolitan zone. Rural females have rates 25% higher than those living in the metropolitan zone.
- Females are hospitalised less often than males for diabetes. This pattern is consistent across all the RRMA categories except 'other remote areas'.
- The metabolic imbalance resulting from diabetes leads to a variety of complications, some of which require hospitalisation. In these

cases, diabetes is regarded as an associated rather than a principal diagnosis. Therefore, hospital separations resulting from diabetes are seriously underestimated.

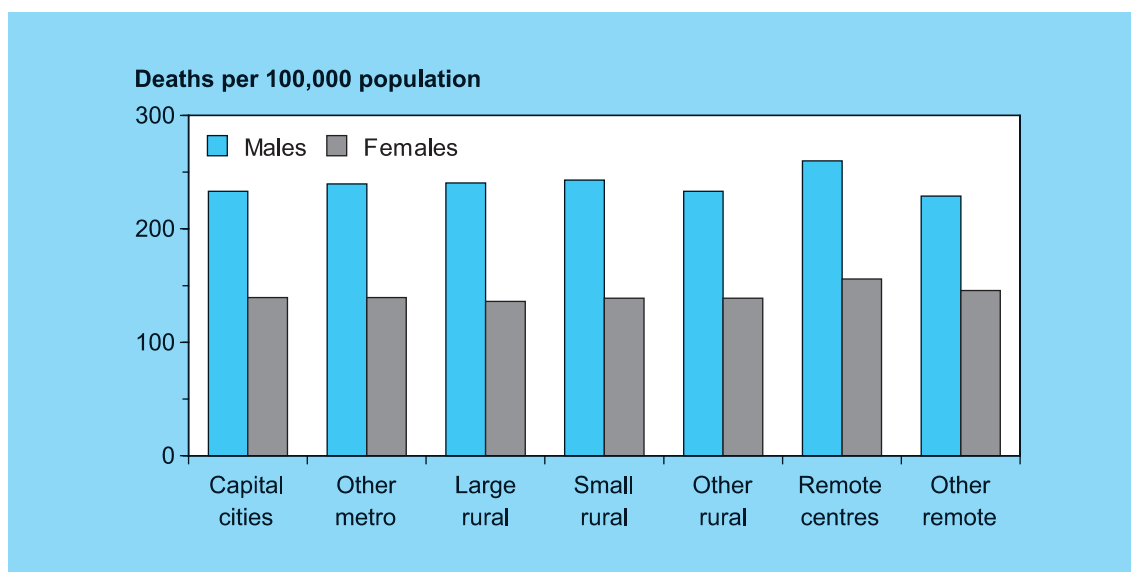
- Indigenous Australians have high prevalence rates of Type 2 (non-insulin-dependent) diabetes (AIHW & DHFS 1997). This may account for the higher hospital separation rates in the remote zone.

For more information, see:

Australian Institute of Health and Welfare & Commonwealth Department of Health and Family Services 1997. First report on National Health Priority Areas 1996. AIHW Cat. No. PHE 1. Canberra: AIHW & DHFS.
Colaguirri S, Colaguirri R & Ward J 1998. National diabetes strategy and implementation plan. Canberra: Diabetes Australia.

All cancer

Death rates for all cancers, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	233.1	239.6	240.4	243.1	233.2	260.0	228.9	234.8
Females	139.4	139.4	136.1	138.9	139.0	155.8	145.8	139.3

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths due to cancer

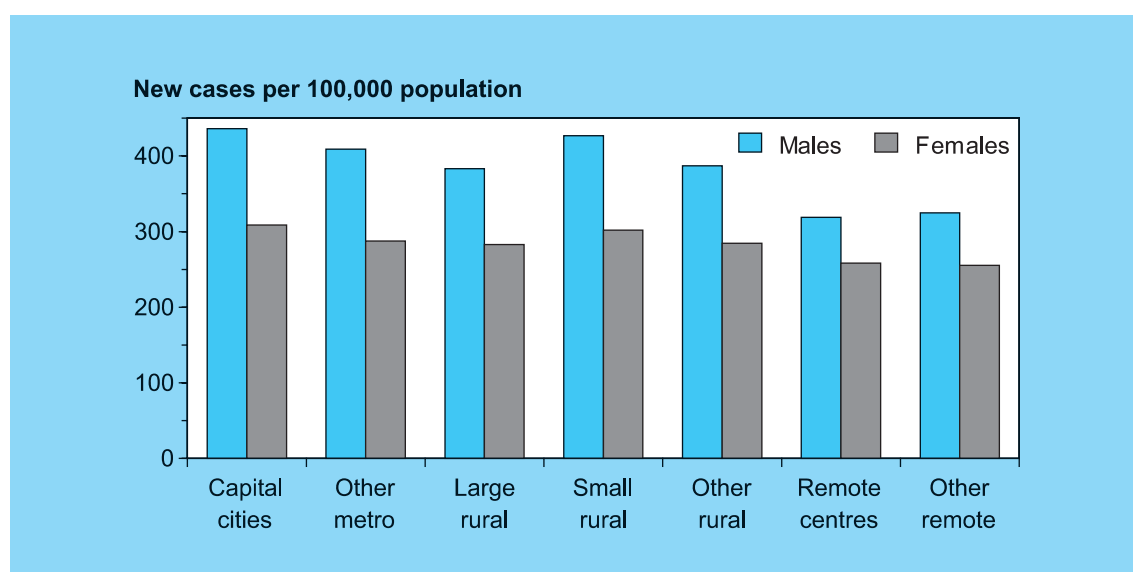
- Cancer is the leading cause of death in Australia. It is a varied group of diseases that are caused by the growth and spread of abnormal cells that are not regulated by normal cellular mechanisms. These cells can invade and destroy body tissue and spread to other organs (DHFS & AIHW 1998b). Each type of cancer has its own mechanisms for development and growth.
- In general, cancer occurs more commonly in males than in females, with one out of three males developing cancer compared with one out of four females (DHFS & AIHW 1998b). Males have a higher rate of death for every major cancer, except for cancers of the breast, gallbladder and thyroid (Jelfs et al. 1996).
- For all cancers combined, the death rate for males is higher than for females across all RRMA categories. Cancer death rates are highest for males and females from 'remote centres', although these rates are not significantly different from those of males and

females from 'capital cities' at the 5% level. Cancer death rates for females are similar for all zones except for the remote zone, where death rates are around 10% higher than other zones.

For more information, see:

Jelfs P, Coates M, Giles G et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW. Australian Institute of Health and Welfare & Australasian Association of Cancer Registries 1998. Cancer in Australia 1991–1994 (with projections to 1999). Cancer Series No. 7. AIHW Cat. No. CAN 2. Canberra: AIHW. Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat No. PHE 4. Canberra: DHFS & AIHW.

Cancer incidence, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	436.2	409.2	383.2	426.7	*387.1	*319.0	*324.6	419.8
Females	308.6	287.6	282.9	301.8	284.6	258.4	*255.4	300.6

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of cancers

- Cancer is a notifiable disease in all States and Territories. As a result, it is one disease for which almost complete incidence data is available. Cancer incidence increases with age and 55% of all cancers occur in those aged over 65 years of age. Better diagnosis of cancer has led to an increase in the incidence of cancer reported in recent years. Projections of new cancer cases in Australia have been estimated at 76,000 cases per annum by 1999 (DHFS & AIHW 1998b).
- For the period 1986–1994, there was a higher incidence of cancers in the metropolitan zone than in either the rural or remote zone. An exception was 'small rural centres', which had cancer incidence rates similar to those of 'capital cities' and higher than those for 'other metropolitan centres'. The higher incidence in the metropolitan zone may reflect better availability of diagnostic facilities. Males have a higher incidence of cancer than do females.

This is true for all RRMA categories. The lowest levels of cancer incidence are for males and females in 'remote centres' and 'other remote areas'. This is in contrast to the death rates for cancer, which are highest for males and females in 'remote centres'.

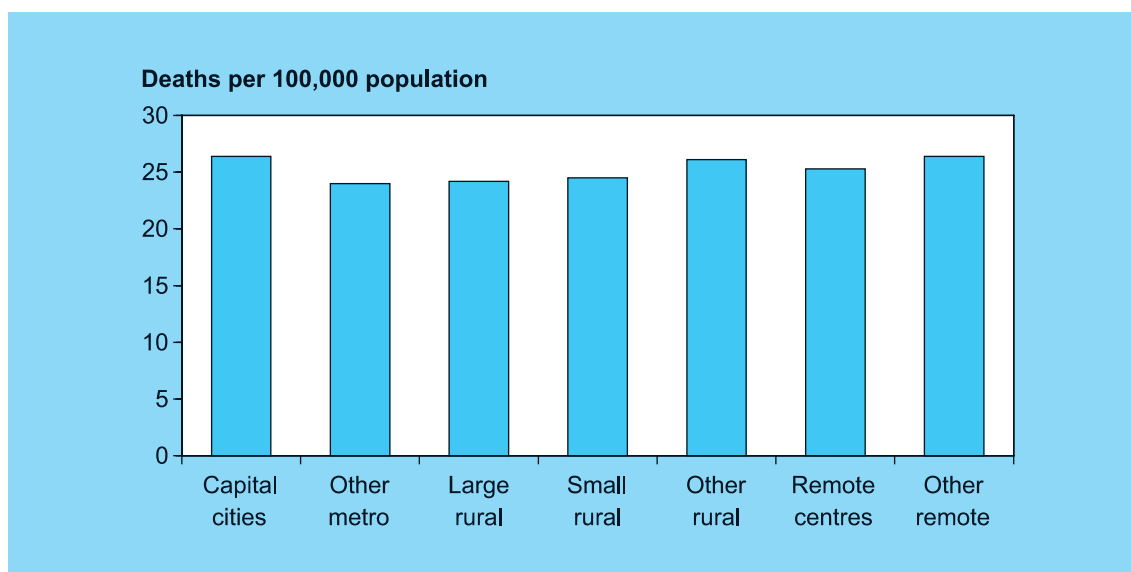
For more information, see:

Australian Institute of Health and Welfare & Australasian Association of Cancer Registries 1998. *Cancer in Australia 1991–1994 (with projections to 1999)*. Cancer Series No. 7. AIHW Cat. No. CAN 2. Canberra: AIHW.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. *National Health Priority Areas report. Cancer control 1997*. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Breast cancer

Death rates for breast cancer in women, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	26.4	24.0	24.2	24.5	26.1	25.3	26.4	25.9

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.

Source: AIHW National Mortality Database.

Deaths from breast cancer

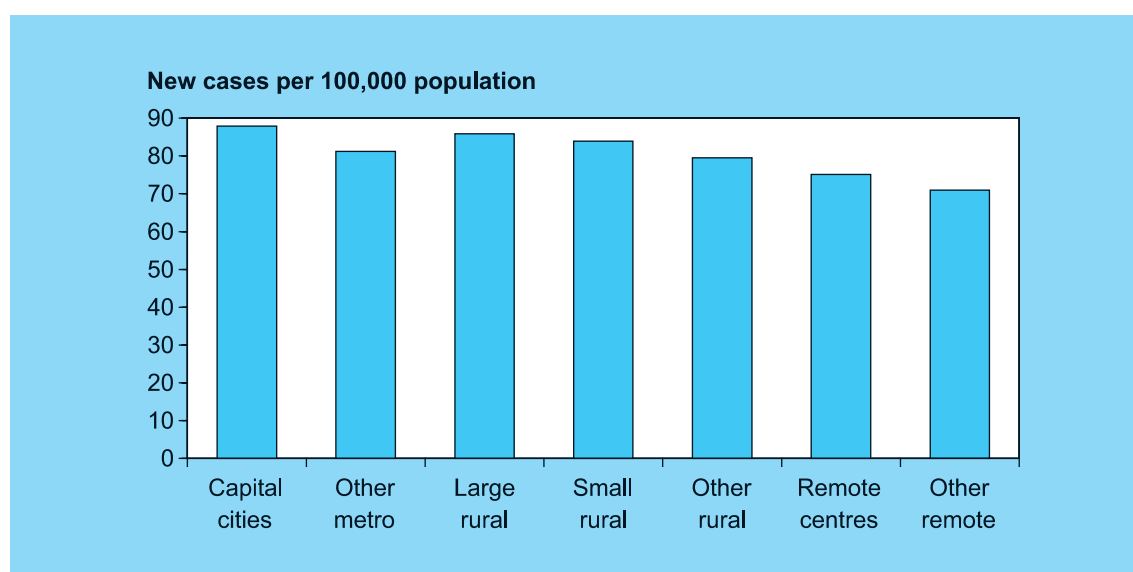
- Breast cancer is the most common cancer diagnosed in females in Australia apart from non-melanocytic skin cancers. It is also the most common cause of cancer-related death in Australian females. Over 2,500 females die from breast cancer yearly (DHFS & AIHW 1998b). The risk factors for breast cancer include age and family history of the disease.
- Prevention of mortality from breast cancer is currently achievable by early detection (via mammography) and early treatment. The 5-year relative survival rate for females with localised disease is 90% (Kricker & Jelfs 1996). Increased survival in recent years is a result of screening techniques such as mammography and breast examination by a doctor and advances in treatment.
- BreastScreen Australia provides free 2-yearly mammographic screening to females over the age of 40. The target group is females aged 50–69 years but females aged 40–49 years and over 70 years are also able to participate (DHFS & AIHW 1998b).
- RRMA category does not appear to be a factor in mortality from breast cancer, with death rates similar in all regions.

For more information, see:

Kricker A & Jelfs P 1996. Breast cancer in Australian women 1921–1994. AIHW Cancer Series No. 6. Canberra: AIHW.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Incidence of breast cancer in females, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	88.0	81.2	85.9	83.9	79.5	75.1	71.0	85.5

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.
3. Queensland data included.
4. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of breast cancer

- In 1994, there were 9,694 new cases of breast cancer registered in Australia (DHFS & AIHW 1998b). Breast cancer incidence has increased by 5.7% per year from 1990 to 1994 for females of all ages. For females aged 50–74 years the increase in incidence has been higher, 8.3% per year (DHFS & AIHW 1998b). It has been estimated that 1 in 14 females will develop breast cancer if they live to 75 years of age (Kricker & Jelfs 1996).
- Incidence of breast cancer is highest in females from 'capital cities' and lowest in females from 'other remote areas'. This is in contrast to the death rates for females from these two areas, which are similar.
- The differences in incidence rates between rural and remote zones and 'capital cities' are not significantly different at the 5% level. However, the lower rates in the remote zone

could be a result of differences in availability of and access to screening programs between the zones. Screening for breast cancer involves mammography and/or breast examination by a doctor. Mammography detects about 30% of all breast cancers (DHFS & AIHW 1998b).

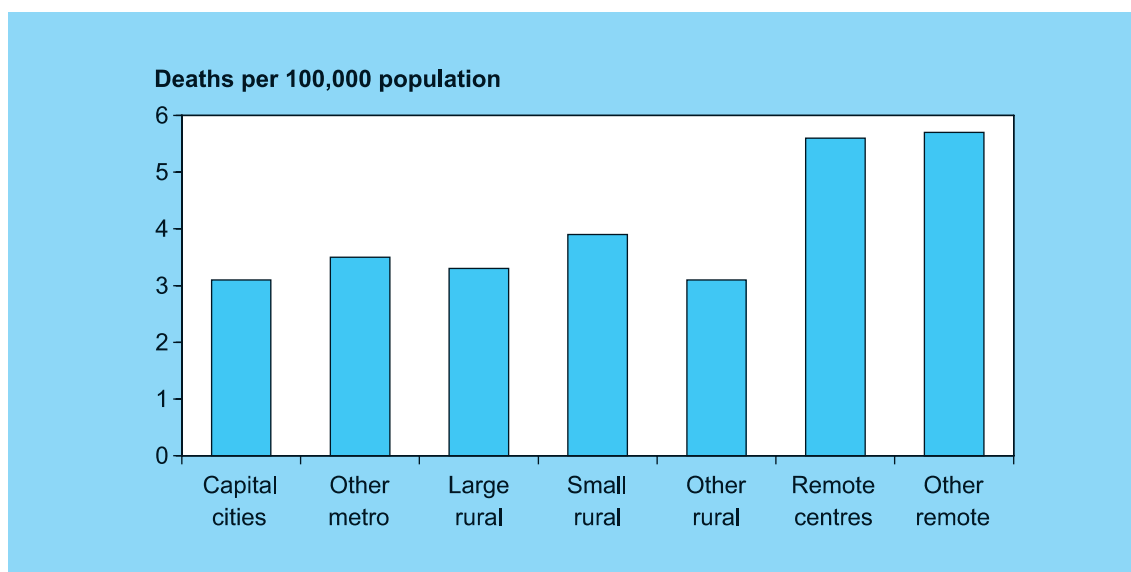
For more information, see:

Kricker A & Jelfs P 1996. Breast cancer in Australian women 1921–1994. AIHW Cancer Series No. 6. Canberra: AIHW.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Cervical cancer

Death rates for cervical cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	3.1	3.5	3.3	3.9	3.1	5.6	5.7	3.3

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.

Source: AIHW National Mortality Database.

Deaths from cervical cancer

- Cervical cancer is the eighth most common type of cancer in Australian females (AIHW & DHFS 1997). In 1994, 1,121 new cases of the disease were reported (DHFS & AIHW 1998b). Mortality from cervical cancer has continued to decline with the introduction and widespread use of the Papanicolaou (Pap) smear test. Pap smear tests are effective for identifying pre-cancerous abnormalities. The early stages of the disease are easy to treat, and prevent the occurrence of cancer.
- Females from the remote zone have higher death rates for cervical cancer than females from all other zones. Females from metropolitan and rural zones have similar death rates for cervical cancer. None of the rates for rural and remote zones is significantly different from 'capital cities' at the 5% level.
- Lack of screening tests in the remote zone may result in greater mortality from cervical cancer if the disease is diagnosed at a later stage. However, most States and Territories have

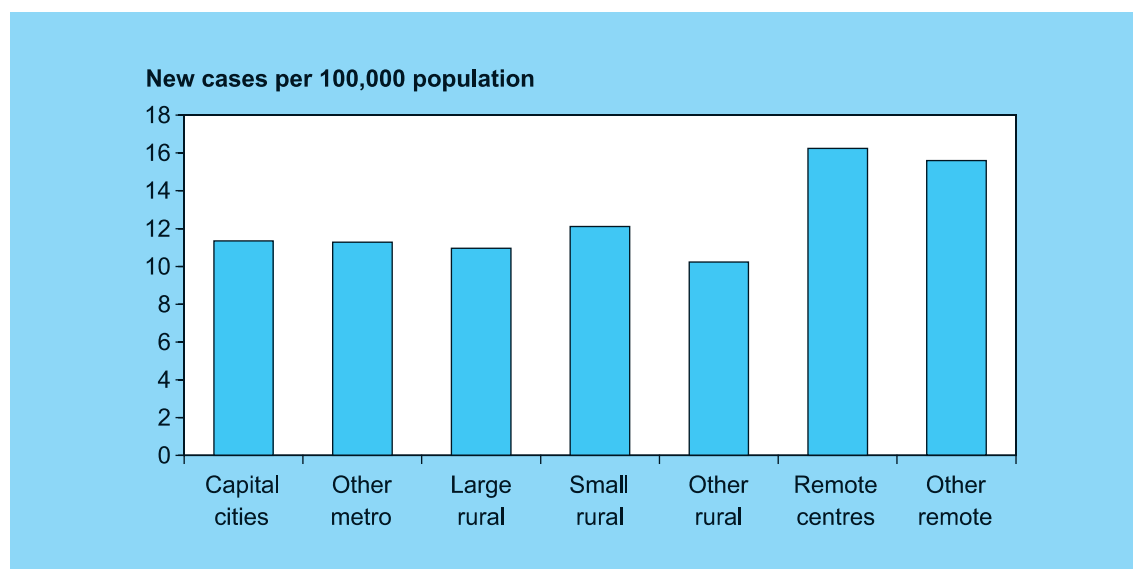
strategies in place to increase participation in screening programs (DHFS & AIHW 1998b). Despite these efforts, non-English-speaking and Indigenous females still have low rates of cervical cancer screening (DHFS & AIHW 1998b). This is a likely explanation for the eight times higher death rates from cervical cancer experienced by Indigenous females, compared with non-Indigenous females (Anderson et al. 1996).

For more information, see:

Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Incidence of cervical cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	11.3	11.3	11.0	12.1	10.2	16.2	15.6	11.3

Notes

- 1 Age-standardised to the Australian population at 30 June 1991.
- 2 Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
- 3 None of the rates is significantly different from 'capital cities' at the 5% level.
- 4 Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of cervical cancer

- The incidence of cervical cancer continues to fall in Australia largely as a result of the use of Pap smear tests for early detection of the cancer. The projected incidence for 1999 is 10.4 cases per 100,000 females (DHFS & AIHW 1998b). Cancer of the cervix is related to infection by the human papilloma virus (HPV) (DHFS & AIHW 1998b). Other risk factors include multiple sex partners, young age at first intercourse, smoking and low socio-economic status.
- The lowest incidence of cervical cancer is found in 'other rural areas'. Females in the metropolitan zone, 'large rural centres' and 'small rural centres' all have a similar incidence of cervical cancer.
- The incidence of cervical cancer is highest in the remote zone. Indigenous females have a higher incidence of cervical cancer than non-Indigenous females (d'Espaignet et al. 1996) and this may be reflected in the higher rates for the remote zone.

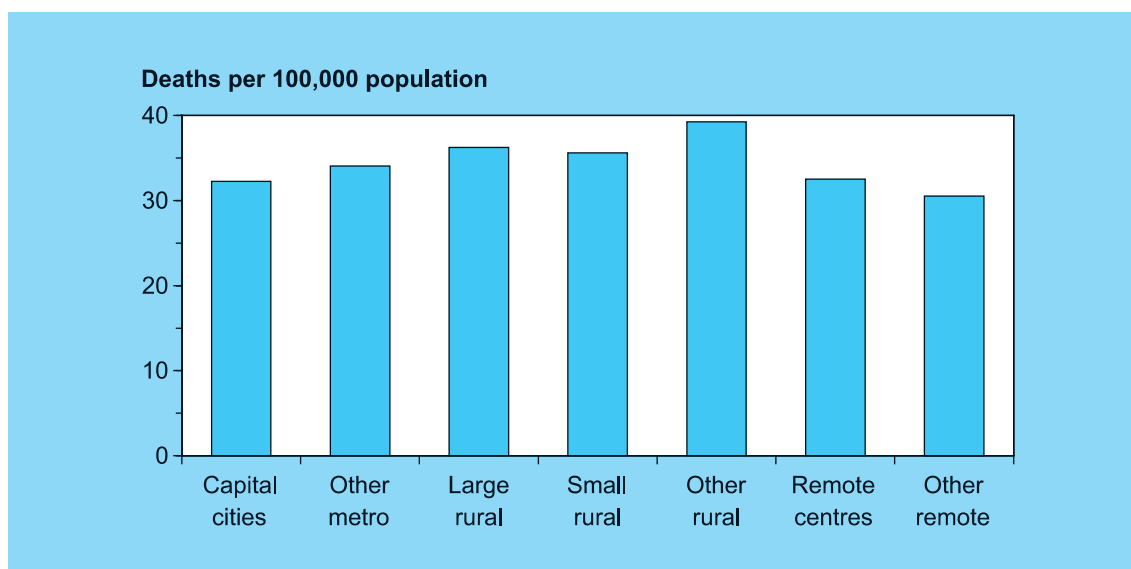
For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

d'Espaignet E, Measey M, Condon J et al. 1996. Cancer in the Northern Territory 1987–1993. Darwin: Northern Territory Health Services.

Prostate cancer

Death rates for prostate cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	32.3	34.1	36.2	35.6	*39.2	32.5	30.5	34.0

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

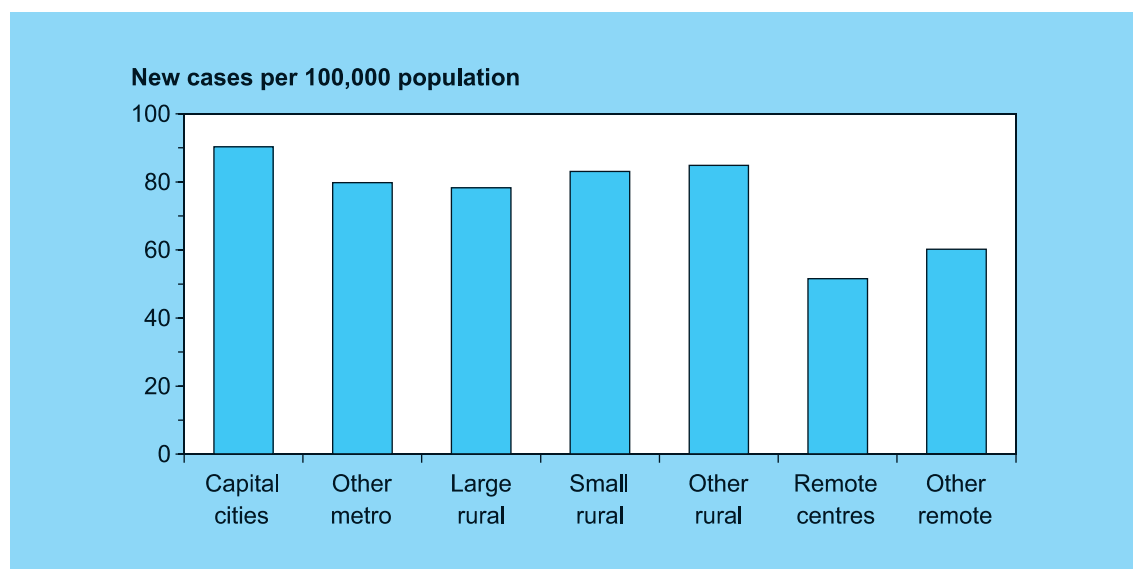
Deaths from prostate cancer

- Next to non-melanocytic skin cancer, prostate cancer is the most common cause of cancer in males. In 1996, 2,660 males died from prostate cancer (DHFS & AIHW 1998b). The 5-year survival rates for this cancer have been estimated to be 66% (DHFS & AIHW 1998b).
- Prostate cancer is a slow-growing cancer that occurs in over half of the male population over the age of 75. Many males who die of other conditions (e.g. cardiovascular diseases) are found at autopsy to have malignant cells in the prostate gland.
- Death rates from prostate cancer are similar across most RRMA groups but rates for 'other rural areas' are significantly higher than rates for 'capital cities'. In fact, males in 'other rural areas' have the highest death rate from prostate cancer. Males in the remote zone have similar or lower death rates compared with those in the metropolitan zone.
- Specific risk factors for this cancer are unclear. However, there is a strong association between advancing age and prostate cancer. Other possible risk factors may include high fat diet, large body mass, lack of physical activity and a family history of prostate cancer (NSW Public Health Division 1997).

For more information, see:

Jelfs P, Coates, M Giles, G et al. 1996. Cancer in Australia 1989-1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW. Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW. New South Wales Public Health Division 1997. The health of the people of NSW. Report of the Chief Health Officer. Sydney: New South Wales Health Department.

Incidence of prostate cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	90.3	79.8	78.3	83.1	84.9	*51.6	*60.2	86.7

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of prostate cancer

- Prostate cancer is the most commonly reported cancer in Australian males with 12,787 new cases diagnosed in 1994 (DHFS & AIHW 1998b). The highest incidence of prostate cancer occurs in males over the age of 60. This group accounts for 95% of detected prostate cancers (AIHW 1998a).
- The incidence of prostate cancer has risen rapidly since 1990 when prostate-specific antigen (PSA) testing and ultrasound techniques were introduced for detecting tumours in the prostate gland.
- Prostate cancer is a slow-growing cancer and males with tumours confined to the prostate are often asymptomatic. Patients that show symptoms will most likely have late-stage cancer that has spread beyond the prostate and is incurable (Coley et al. 1997). There is little evidence of mortality reduction as a result of screening for prostate cancer.
- While metropolitan and rural zones have similar rates, almost twice as much prostate cancer is recorded in these zones relative to

the remote zone. This is most likely to be a result of increased PSA screening by doctors in the metropolitan and rural zones.

- The similar incidence rates in the metropolitan and rural zones are in contrast with the higher death rates in the rural zone.

For more information, see:

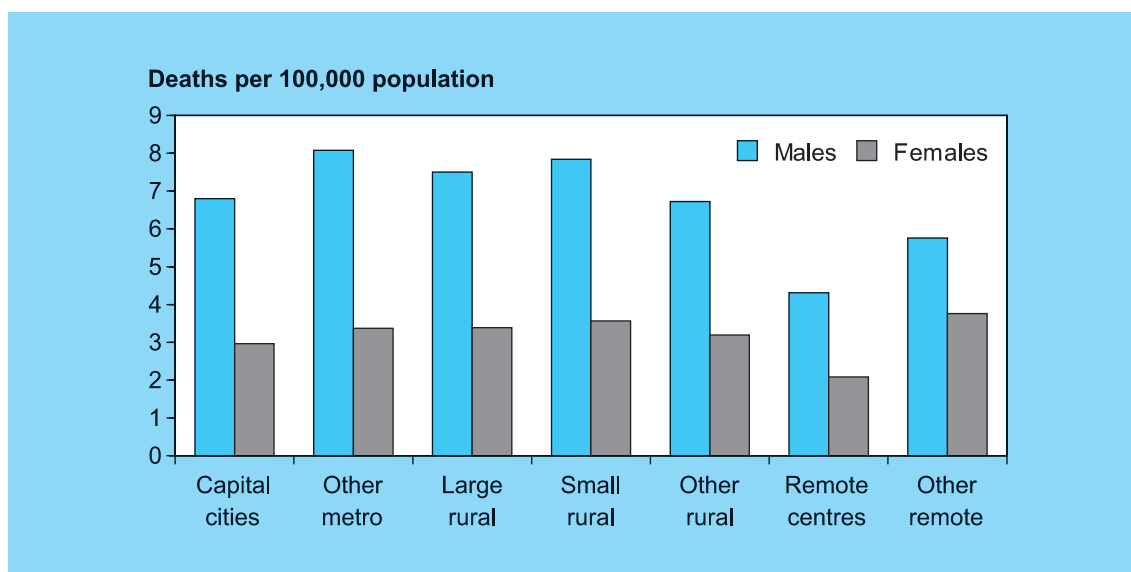
Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Coley CM, Barry MJ, Fleming C et al. 1997. Early detection of prostate cancer, part 2: estimating risks, benefits and costs. *Ann Int Med* 126: 468–79.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Melanoma

Death rates for melanoma, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	6.8	8.1	7.5	7.8	6.7	4.3	5.8	7.0
Females	3.0	3.4	3.4	3.6	3.2	2.1	3.8	3.1

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

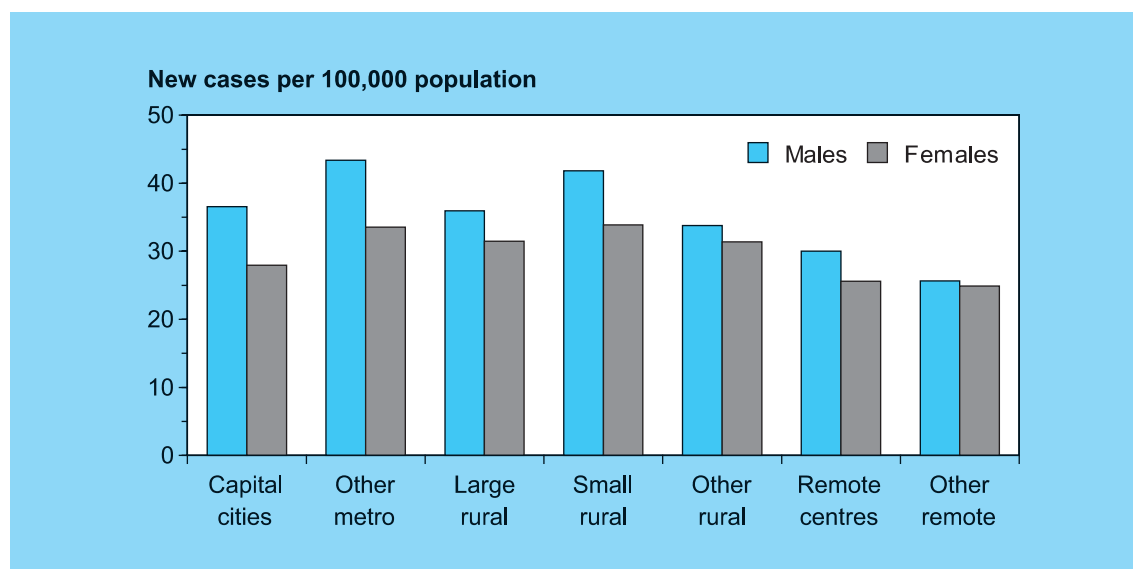
Deaths due to melanoma

- Melanomas are usually found on the skin but they can also occur on other parts of the body, notably in the eye and mucous membranes (Jelfs et al. 1996). For this report, melanoma refers only to melanoma of the skin. Melanoma, along with colorectal cancer, breast cancer and lung cancer, accounted for 47% of all registrable cancers in 1990 (Jelfs et al. 1996).
- Males have around twice the death rate for melanoma compared with females for all RRMA categories. Males from the remote zone have the lowest rate of death from melanoma compared to males from all other zones. However, these values are not significantly different from 'capital cities' at the 5% level.
- Females have similar death rates for melanoma across all RRMA categories, with females in 'remote centres' having the lowest rates. However, these differences are not significantly different from 'capital cities' at the 5% level.
- Risk factors for melanoma include fair skin, poor use of sun protection measures, and sun exposure under the age of 10 years. Survival rates for melanoma are good, as evidenced by the low death rate relative to the incidence rate.

For more information, see:

Jelfs P, Coates M, Giles G et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW.

Incidence of melanoma, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	36.6	*43.4	35.9	41.8	33.8	30.0	*25.7	36.6
Females	28.0	*33.5	31.5	*33.9	31.4	25.6	24.9	29.3

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of melanoma

- Melanoma is the fourth most common cause of cancer for males and the third most common cancer for females. Since the early 1980s, there has been a 66% increase in male melanoma incidence and a 26% increase in female melanoma incidence (DHFS & AIHW 1998b).
- The most common cancer in Australia is non-melanocytic skin cancer but cancer registries do not routinely collect incidence data for this cancer. Melanoma is a registerable cancer so good incidence data are available.
- Incidence of melanoma skin cancer is higher in metropolitan and rural zones than in the remote zone for both males and females. Males from 'other remote areas' have significantly lower rates of melanoma compared with males from 'capital cities'.
- These differences in incidence rates may be a reflection of the higher use of sun protection by both males and females in the remote zone

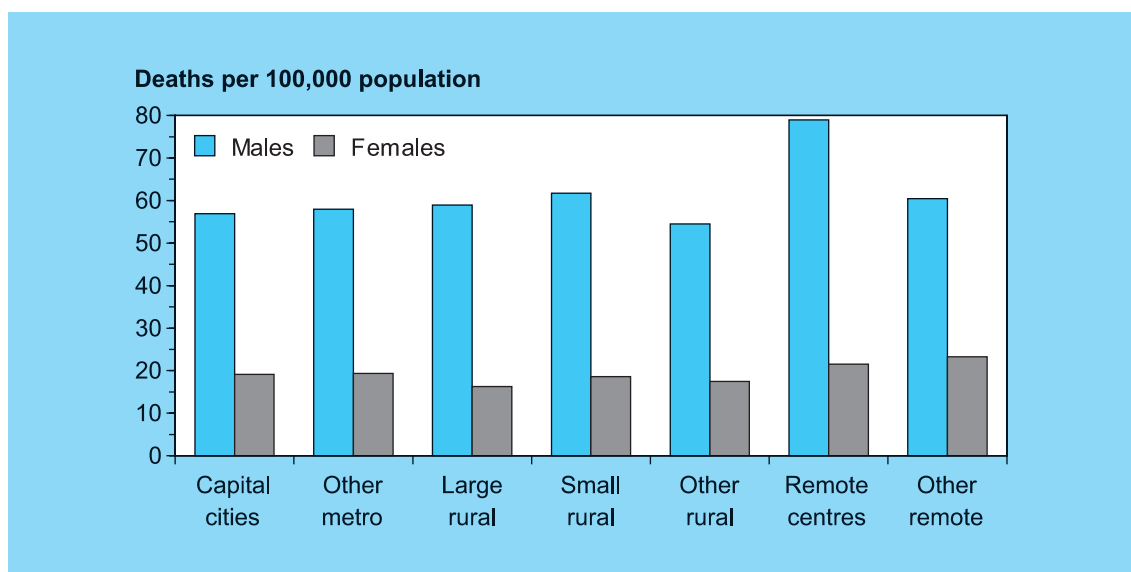
as measured by the 1995 National Health Survey. However, the lower incidence rates in the remote zone may also be due to less screening in those zones relative to the more urban areas. The relatively higher proportion of Indigenous people in the remote zone may provide another possible explanation for the lower incidence of melanoma. Indigenous people have negligible rates of melanoma as they are less susceptible to skin damage from the sun.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Lung cancer

Death rates for lung cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	56.9	58.0	58.9	61.7	54.5	78.9	60.4	57.3
Females	19.1	19.3	16.3	18.6	17.5	21.6	23.3	18.8

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths from lung cancer

- Lung cancer is one of the most common causes of cancer deaths in males and the fourth most common cause of cancer death in females (DHFS & AIHW 1998b). In 1996, it accounted for 20% of all cancer deaths for both sexes combined.
- The death rate from lung cancer is almost three times higher for males than for females. This is a consistent pattern across all RRMA categories. Males from 'remote centres' have the highest death rate but this rate is not significantly different from that for males from 'capital cities'. Death rates for males are similar across metropolitan and rural zones.
- Females from the remote zone have the highest death rates for lung cancer. In contrast to the similarity between the rates for metropolitan and rural males, the rates for

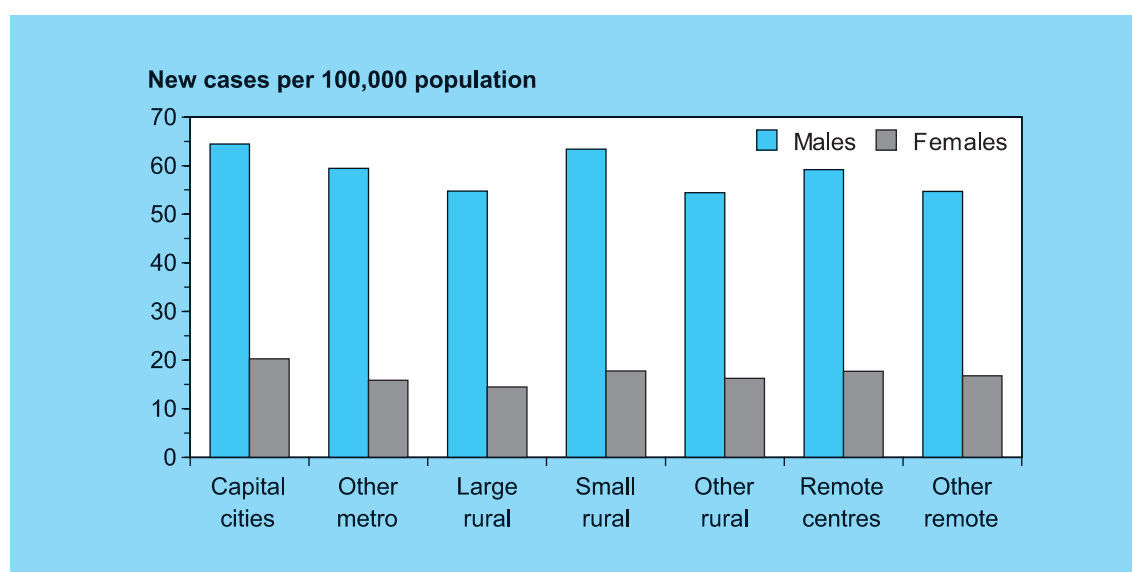
rural females are lower compared with the rates for metropolitan females.

- Cigarette smoking or exposure to cigarette smoke causes cancer of the lungs (including the trachea and bronchus). Differences in death rates from lung cancer may reflect different attitudes to smoking in different communities.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Incidence of lung cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	64.4	59.4	*54.8	63.4	*54.4	59.2	54.7	61.7
Females	20.3	*15.9	*14.5	17.8	*16.3	17.7	16.8	18.8

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

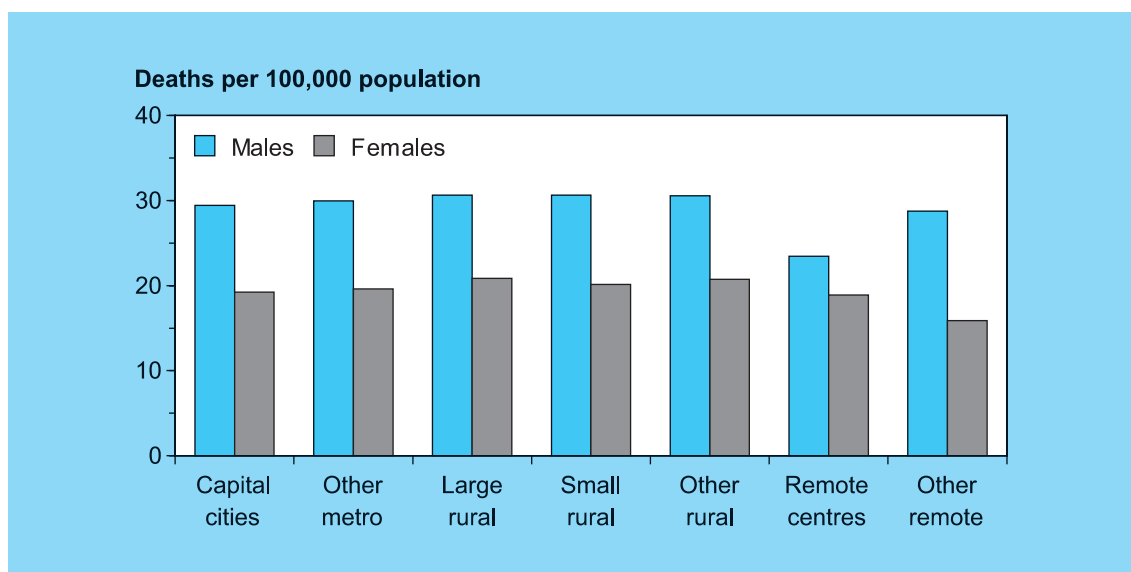
Incidence of lung cancer

- Since the early 1980s, there has been an 18% decrease in lung cancer incidence among males but a 23% increase in female lung cancer incidence (DHFS & AIHW 1998b). Projections show that the incidence of lung cancer for males will continue to decrease while the incidence for females will rise. Currently, lung cancer incidence and mortality are more than 3 times higher in males than in females.
- Tobacco smoking increases the risk of lung cancer and accounts for around 85% of new lung cancer cases (DHFS & AIHW 1998b).
- The incidence of lung cancer is similar across all areas for both males and females. Males and females in the remote zone have slightly lower incidence compared with males and females in the metropolitan zone but these rate differences are not significantly different from 'capital cities' at the 5% level.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Death rates for colorectal cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	29.4	30.0	30.6	30.6	30.6	23.5	28.8	29.7
Females	19.2	19.6	20.9	20.1	20.8	18.9	15.9	19.6

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths from colorectal cancer

- Colorectal cancer is the second most common cause of cancer-related death (DHFS & AIHW 1998b; AHTAC 1997). The 5-year survival rates for this cancer are around 55% but early detection does result in better survival (DHFS & AIHW 1998b).
- Primary prevention of colorectal cancer includes avoiding possible risk factors such as high-fat, low-fibre diets. There is also evidence that mortality can be reduced through a program of screening for colorectal cancer using faecal occult blood tests (FOBT) (AHTAC 1997).
- Males have 50% higher death rates than females for this type of cancer. Death rates for males are similar in metropolitan, rural and remote zones. The lowest death rates from colorectal cancer are for males from the remote zone.
- Death rates for females are lowest in 'remote centres' and 'other remote areas' although these rates are not significantly different from those of females in 'capital cities'. The rates for females in the rural zone are similar to the rates for females in the metropolitan zone.

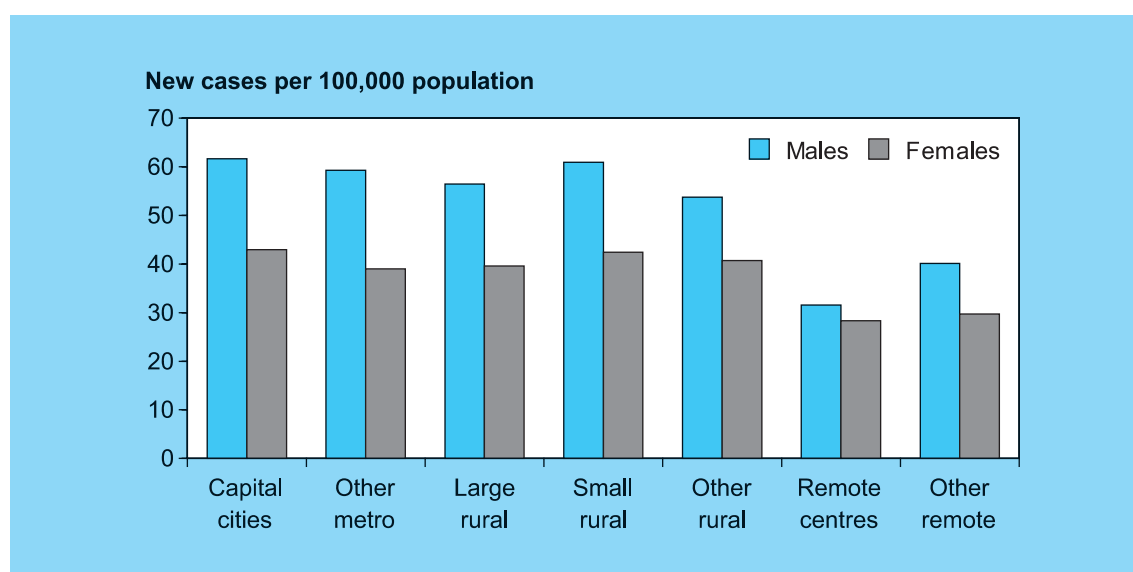
For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Jelfs P, Coates M, Giles G et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW.

Australian Health Technology Advisory Committee (AHTAC) 1997. Colorectal cancer screening. Canberra: Commonwealth Department of Health and Family Services.

Incidence of colorectal cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	61.7	59.3	56.4	60.9	*53.8	*31.6	*40.1	59.3
Females	42.9	39.0	39.6	42.4	40.7	28.3	*29.7	41.8

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of colorectal cancer

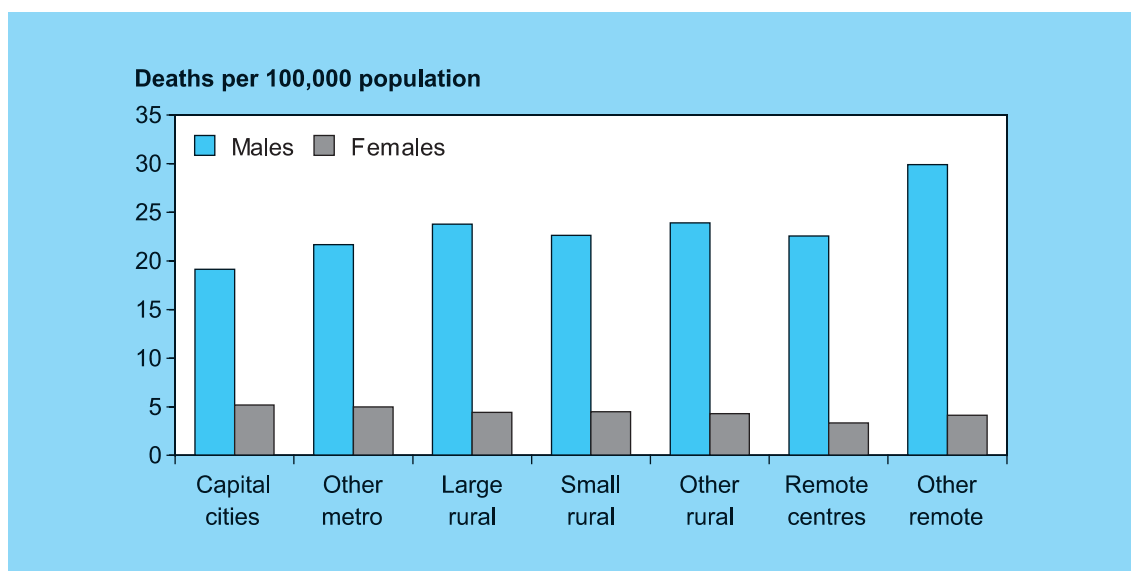
- For males and females combined, colorectal cancer is the second most common registered cancer. Since the early 1980s, both incidence and mortality rates have been relatively stable (DHFS & AIHW 1998b).
- Incidence of colorectal cancer is similar in metropolitan and rural zones and lower in the remote zone for both males and females. This may reflect increased use of screening techniques for colorectal cancers in metropolitan and rural zones relative to the remote zone. It could also reflect differences in diet, a risk factor, between the different zones.
- Colorectal cancer incidence is much higher for males than for females across all zones. This result is consistent with the death rate from colorectal cancer which is 50% higher for males than for females.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Suicide

Death rates for suicide and self-inflicted injury, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	19.2	21.7	*23.8	22.6	*23.9	22.6	*29.9	20.7
Females	5.2	5.0	4.4	4.5	4.3	3.3	4.1	4.9

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from suicide

- Suicide rates in Australia have remained fairly constant during the twentieth century (AIHW 1998a). However, there has been an increase in suicide by young adult males over the past 30 years. In 1996, there were 2,393 suicide deaths, accounting for 32% of all injury deaths in Australia (AIHW 1998a).
- Death from suicide is often underrecorded with only an estimated one-half of male suicides and three-quarters of female suicides officially recorded (O'Donnell & Farmer 1995). Risk factors for suicide include low socioeconomic status and unemployment, divorce or separation, and in-patient psychiatric diagnosis (Ellis & Collings 1997). Alcohol abuse is another factor that is related to suicide. A study of suicide in Western Australia found that one-third of people who had committed suicide had alcohol in their blood (Hayward et al. 1992).
- Youth suicide is a growing problem in Australia. This is highlighted by the fact that Australia and New Zealand are the only Western countries in which youth suicide rates are higher than the total suicide rates (Ellis & Collings 1997). Risk factors for youth suicide are depression, past attempt at suicide, substance abuse, conduct abuse, family history of discord, exposure to suicide, child abuse and academic failure (Dudley et al. 1997). Other factors thought to be involved in the decision to suicide include: youth unemployment, media depictions of suicide, availability of lethal methods (e.g. firearms) and problems with access to and use of psychiatric services (Dudley et al. 1997).
- The death rate from suicide is five times higher for males than for females in all areas. Young males are more likely to use firearms, hanging or motor vehicle exhaust as the means of committing suicide, whereas females are most likely to use drug overdose or poisons to commit suicide (DHFS 1997b).

- The highest male suicide rates are for males in 'large rural centres', and 'other remote areas'. The rates for these zones are significantly higher than the rates for males from 'capital cities'. In contrast to the picture for males, death rates for females are highest in the metropolitan zone and the lowest in the remote zone.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Commonwealth Department of Health and Family Services 1997. Youth suicide in Australia: a background monograph. Canberra: AGPS.

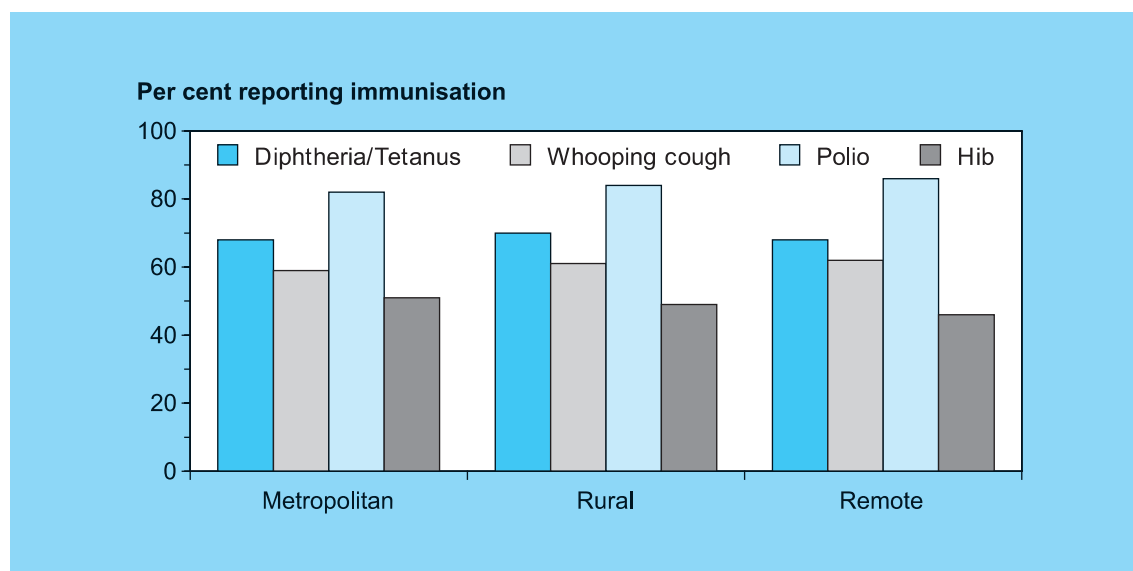
Dudley M, Kelk N, Florio T et al. 1997. Suicide among young rural Australians 1964-1993: a comparison with metropolitan trends. *Soc Psychiatry Psychiatr Epidemiol* 32: 251-60.

Ellis PM & Collings SCD 1997. Mental health in New Zealand from a public health perspective. Wellington: Ministry of Health.

Hayward L, Zubrick SR & Silburn S 1992. Blood alcohol levels in suicide cases. *J Epidemiol Community Health* 46: 256-60.

O'Donnell I & Farmer R 1995. The limitations of official suicide statistics. *Br J Psychiatry* 166: 458-61.

Proportion of children aged 0–6 years immunised for vaccine-preventable diseases, 1995



Disease	Metropolitan	Rural	Remote	Total
Diphtheria/Tetanus	68	70	68	69
Whooping cough	59	61	62	60
Polio	82	84	86	83
Hib	51	49	46	50

Notes

1. Table shows percentage of children fully immunised with reference to the current (1994) NHMRC Standard Childhood Vaccination Schedules.

2. The survey sample size was too small to allow the full seven-category RRMA breakdown.

Source: 1995 ABS Children's Immunisation and Health Screening Survey.

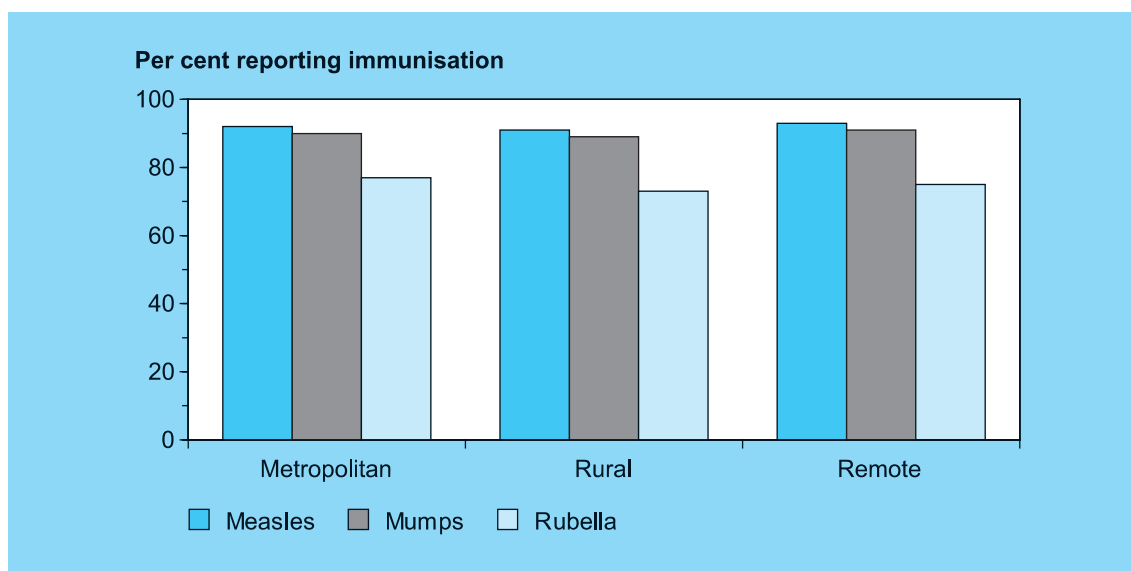
Immunisation against vaccine-preventable diseases

- Immunisation against vaccine-preventable diseases is an important public health measure aimed at reducing sickness and death from childhood diseases. In order to prevent transmission of a highly infectious disease, 92% to 95% of the population must have immunity to the disease (AIHW 1998a). The percentages vaccinated for diphtheria/tetanus, whooping cough, polio and *Haemophilus influenzae* type b (Hib) are too low to provide full immunity to the Australian population.
- Metropolitan, rural and remote zones all report similar proportions vaccinated for diphtheria/tetanus, whooping cough, polio and Hib.
- A high percentage of children from all areas are vaccinated against polio. In contrast, only 50% of children from all areas report a vaccination against Hib. Hib was added to the vaccination schedule for the first time in April 1993 and rates of vaccination are expected to increase in the future.
- Vaccination rates for diphtheria/tetanus, whooping cough and Hib are considerably lower than for the other communicable diseases across all areas. These are the vaccines that require multiple doses for complete immunisation. To be fully immunised according to the NHMRC Standard Childhood Vaccination Schedules, a child needs to receive vaccination at least five times, at 2, 4, 6, 18 and 60 months of age.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Proportion of children over one year of age vaccinated for measles, mumps and rubella, 1995



Disease	Metropolitan	Rural	Remote	Total
Measles	92	91	93	92
Mumps	90	89	91	90
Rubella	77	73	75	76

Notes

1. Table shows percentage of children fully immunised with reference to the current (1994) NHMRC Standard Childhood Vaccination Schedules.
 2. The survey sample size was too small to allow the full seven-category RRMA breakdown.
- Source: 1995 ABS Children's Immunisation and Health Screening Survey.

Vaccination for measles, mumps and rubella

- Vaccinations for measles, mumps and rubella are given with a combined measles, mumps and rubella (MMR) vaccine to children at 12 months of age (AIHW 1998a; NHMRC 1996). However, Indigenous children in the Northern Territory are vaccinated at 9 months of age (NHMRC 1996). A second dose is recommended at 10-16 years of age. Rubella requires re-vaccination and is particularly recommended for females of child-bearing age because rubella can cause blindness, deafness and congenital heart abnormalities in the fetuses of infected mothers.
- More than 90% of children over the age of 1 year are vaccinated against measles and mumps. A lower rate of vaccination is evident for rubella, with only around 75% of children fully vaccinated. The lower percentage of rubella vaccinations compared with the rates for measles and mumps is partly explained by

fewer males being fully immunised than females, reflecting a perception that rubella vaccination is required only for females (ABS 1998c).

- Immunisation rates for measles, mumps and rubella are similar across metropolitan, rural and remote zones.

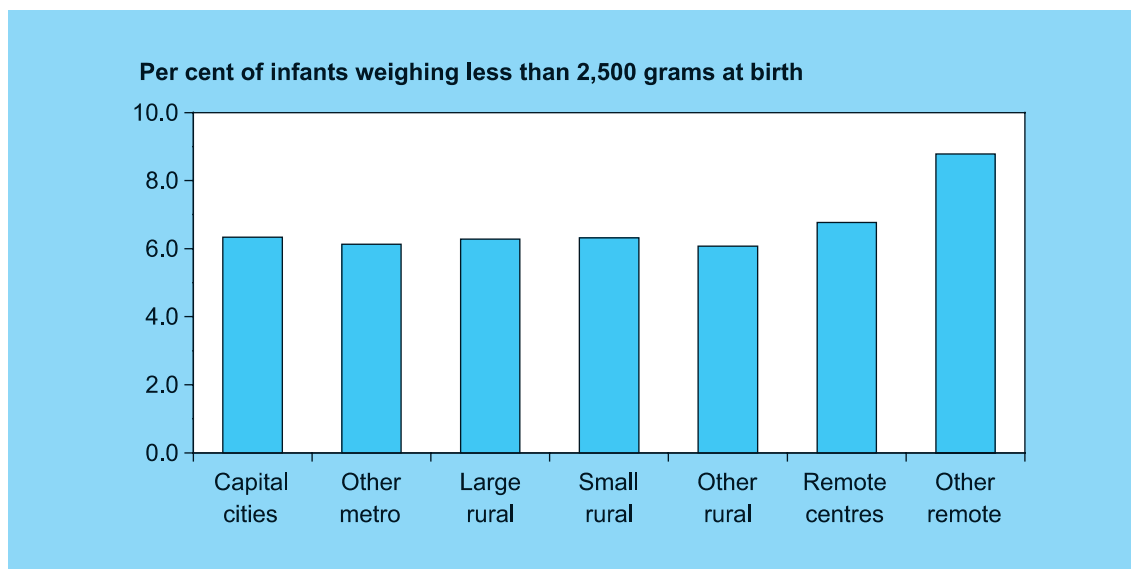
For more information, see:

Australian Bureau of Statistics 1998. Children's immunisation Australia, April 1995. ABS Cat. No. 4352.0. Canberra: AGPS.

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

National Health and Medical Research Council 1996. Measles. Guidelines for control of outbreaks in Australia. Canberra: AGPS.

Proportion of infants weighing less than 2,500 grams at birth, 1991–95



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Per cent low-birthweight	6.3	6.1	6.3	6.3	6.1	6.8	8.8	6.4

Source: AIHW National Perinatal Statistics Unit.

Low-birthweight

- Low-birthweight is an important indicator of infant health status and may result in poor health outcomes later in life. Low-birthweight infants are more likely to die or suffer illness compared with those of normal birthweight (Day et al. 1997). Low-birthweight is related to risk factors such as lack of prenatal care and inadequate maternal nutrition.
- In 1995, there were 16,571 infants of low-birthweight born in Australia (Day et al. 1997). Low-birthweight is more common in Indigenous babies, with 11.8% of Indigenous newborns in 1995 weighing less than 2,500 grams (Day et al. 1997).
- 'Other remote areas' have the highest proportion of low-birthweight babies. The relatively higher proportion of Indigenous babies in remote areas may explain this result because Indigenous Australians have twice

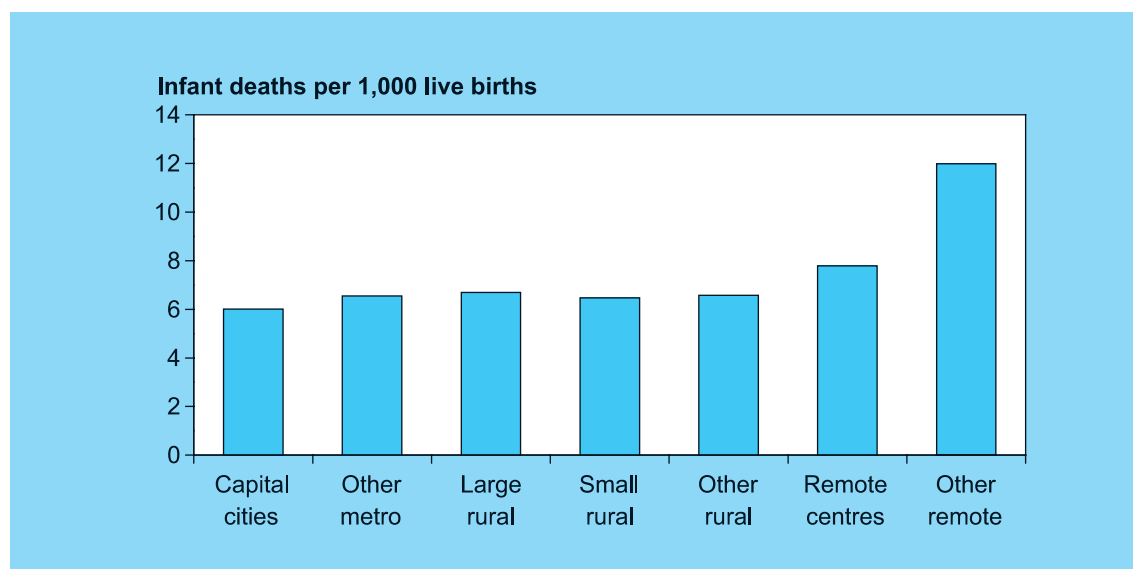
the rate of low-birthweight infants compared with non-Indigenous Australians. Females living in the remote zone may not have the same access to prenatal care as females living in metropolitan and rural zones.

- All other areas have similar proportions of low-birthweight infants.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.
Day P, Lancaster P & Huang J 1997. Australia's mothers and babies 1995. Perinatal Statistics Series No. 6. Sydney: AIHW National Perinatal Statistics Unit.

Infant mortality rates per 1,000 live births, 1991–95



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Infant mortality per 1,000 live births	6.0	6.6	6.7	6.5	6.6	7.8	12.0	6.3

Source: AIHW National Mortality Database.

Infant mortality

- Infant mortality is a traditional indicator of the health of a population. In the last two decades, infant mortality has declined dramatically in Australia. In 1996 the rate was 5.9 deaths per 1,000 live births (AIHW 1998a).
- Three main causes of infant mortality accounted for 76% of all infant deaths from 1980 to 1995. These are congenital anomalies, sudden infant death syndrome (SIDs), and perinatal conditions such as low birth-weight.
- Infants from 'other remote areas' have twice the mortality rates of other areas. This may be partially explained by the high proportion of Indigenous infants in this area of Australia.
- 'Remote centres' have slightly higher infant mortality rates than other regions but considerably lower rates than 'other remote

areas'. The lowest infant mortality rates are found in 'capital cities'.

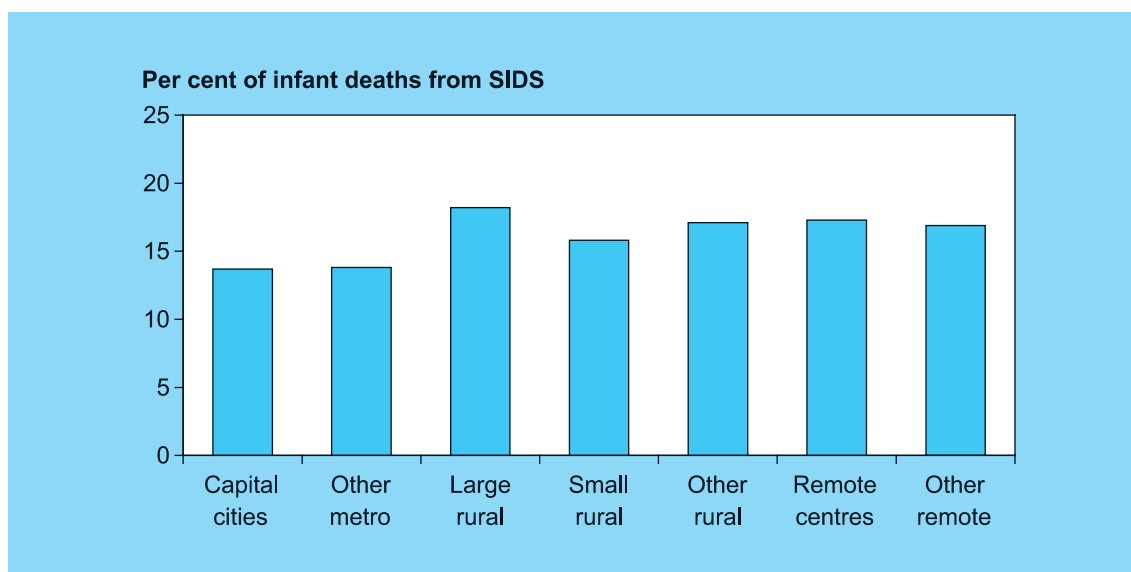
For more information, see:

Australian Institute of Health and Welfare 1998. *Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare*. Canberra: AIHW.

Australian Bureau of Statistics 1998. *Causes of infant and child deaths in Australia 1982–1996*. ABS Cat. No. 4398.0. Canberra: AGPS.

Mathers CD 1995. *Health differentials among Australian children*. Australian Institute of Health and Welfare: Health Monitoring Series No. 3. Canberra: AGPS.

Proportion of infant deaths from SIDS, 1992–96



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Per cent of infant deaths from SIDS	13.7	13.8	18.2	15.8	17.1	17.3	16.9	14.8

Source: AIHW National Mortality Database.

SIDS deaths

- Sudden infant death syndrome (SIDS) is one of the leading causes of death in infants in Australia. SIDS accounted for 14% of infant deaths in 1996 with a higher death rate for males than for females (AIHW 1998a).
- A decline in SIDS deaths since 1990 is attributed to the success of a national campaign, Reducing the Risks of SIDS. This campaign highlighted risk factors including sleeping posture, feeding practices and exposure of infants to passive smoking.
- Rural and remote zones have substantially higher rates of deaths due to SIDS than the metropolitan zone over the 5-year period 1992–96. The greater proportion of Indigenous infant deaths in the remote zone may explain the higher rate for SIDS in this zone. However,

caution must be used when interpreting these results because only a small number of infant deaths each year are attributable to SIDS. As a result, the differences between populations may not reflect actual differences in SIDS death rates between areas.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.
 Australian Bureau of Statistics, 1998. Causes of infant and child deaths in Australia 1982–1996. ABS Cat. No. 4398.0. Canberra: AGPS.

3 Health status

Many determinants including social, economic, environmental and lifestyle factors contribute to the health of a population. Several other factors associated with living in rural and remote Australia indirectly affect health status. These include ethnicity, employment, the industry base of rural communities, demographic factors such as ageing populations, geography, climate, access to information and attitudes to health, illness and disability (Fragar et al. 1997). The effect of these factors varies within and between metropolitan, rural and remote communities and may contribute to differences in the prevalence of diseases, and rates of hospitalisation and mortality. This chapter focuses on direct measures of health status such as rates of mortality and morbidity. Differentials between metropolitan, rural and remote communities for these indicators provide a baseline for monitoring the health status of these communities.

With Australia's Indigenous population continuing to experience much poorer health than the general Australian population, it is important to quantify the impact of the health status of the Indigenous population on health differences between metropolitan, rural and remote Australians. This impact is largely determined by the proportion of Indigenous people in the population of each RRMA category. In this chapter, mortality data is used to show that as a consequence of low proportions of Indigenous people in the metropolitan and rural zones, the health of the Indigenous population has little impact on metropolitan/rural differentials, but impacts markedly on the remote zone health status. The Indigenous population forms only 1% of the metropolitan zone population and 3% of the rural zone population, but this proportion increases to 13% in 'remote centres' and 26% in 'other remote areas'.

Several types of health information are routinely used as indicators of the health of populations. Mortality rates for a range of causes of death including injury, diabetes, cardiovascular disease and cancers represent one set of indicators of health status. Other indicators include hospital separation rates for diseases and chronic conditions, cancer incidence rates, and preventive measures such as immunisation, dental visits, breast examinations and Pap smear tests.

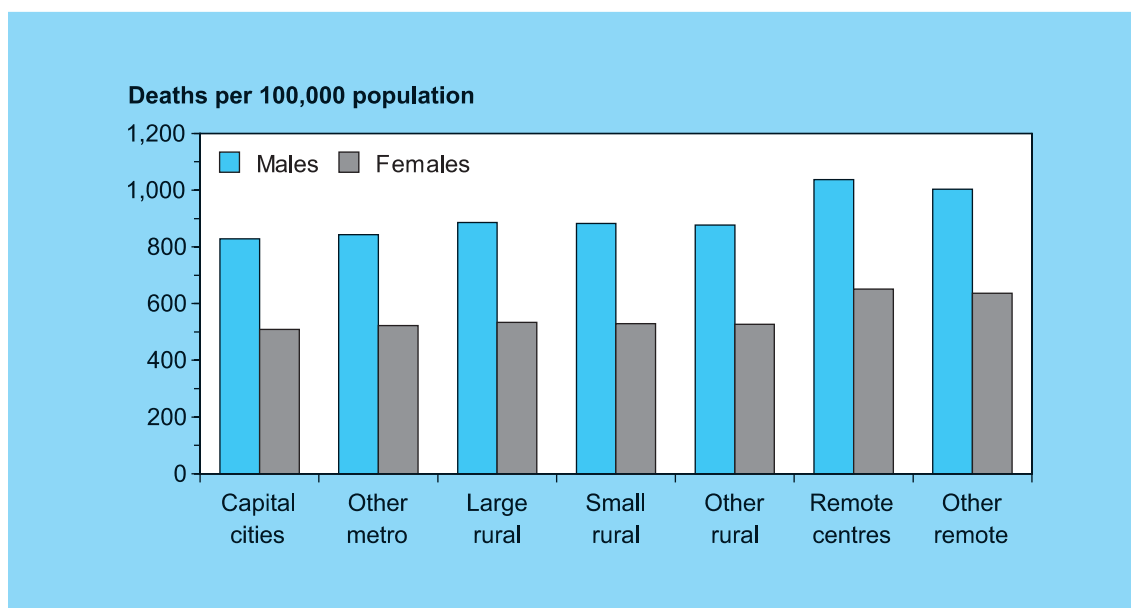
The mortality data used in this report is held in the AIHW National Mortality Database, which contains the cause of death information according to the ninth revision of the International Classification of Diseases (ICD-9). Only principal cause of death is coded in death statistics up to 1996. From 1997 onwards, multiple causes of death will be available for analysis. This is important for diseases such as diabetes where the identification of co-morbidities as the principal cause of death masks the contribution of diabetes.

Hospital separations are used as a substitute for morbidity. For diseases where hospitalisation is part of the usual treatment, hospital separations data may be preferable to self-reported measures of morbidity because they accord with diagnostic information that is coded using the International Classification of Diseases, 9th Revision, Clinical Modifications (ICD-9-CM). Hospital separations refer to an episode of care which can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay that ends in a change of care (AIHW 1998a). For each episode of care, patients are assigned a principal diagnosis which is usually a disease, injury or poisoning but may also be a specific treatment of an already diagnosed disease (AIHW 1998a).

Cancer incidence data are from the AIHW National Cancer Registry Database. Registration of cancer cases is required by law in all States and Territories of Australia. The data are collected by cancer registries which compile clinical and demographic information about people with newly detected cancer. This information comes from hospitals, pathologists, radiation oncologists, cancer treatment centres, and nursing homes. Cancer registries combine information from these sources. The AIHW maintains a national collection of cancer data in the National Cancer Statistics Clearing House.

Total death

Total death rate 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	828	843	886	883	877	1,037	1,003	849
Females	509	522	534	529	527	651	636	518

Note: Age-standardised to the Australian population at 30 June 1991.

Source: Estimates based on data derived from the AIHW population database.

Mortality

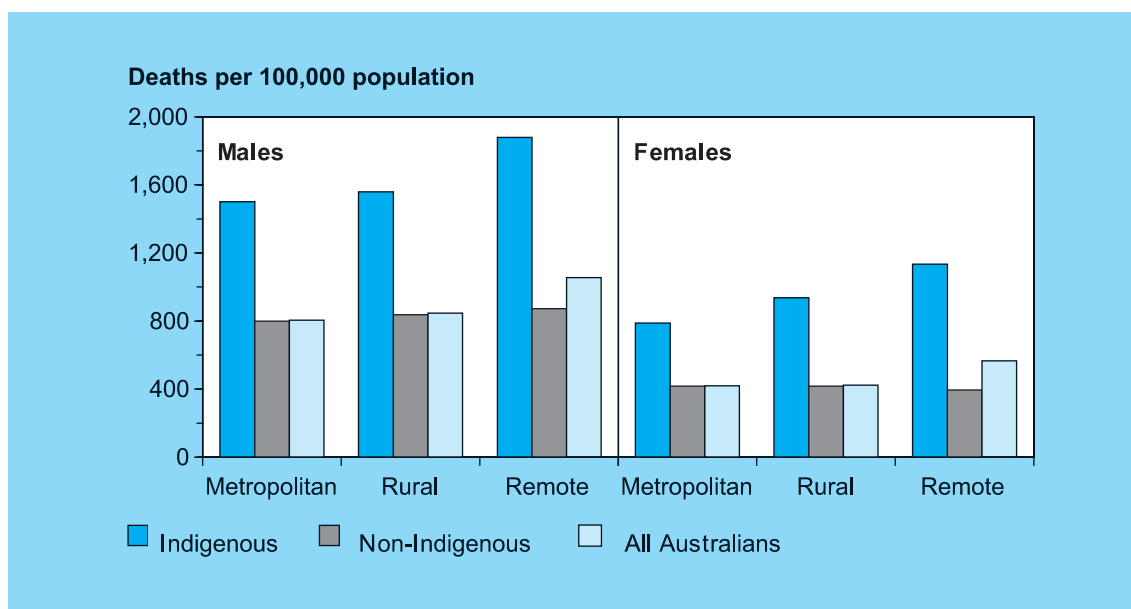
- The total death rate is the most frequently used indicator of the health and wellbeing of a population. For the 1992–96 period, the number of deaths per 100,000 population was 849 for males and 518 for females. These rates reflect the continuing sharp reduction in death rates which has occurred in recent years (AIHW 1998a).
- Death rates in 'capital cities' were lower than those in rural and remote zones for both males and females. The male death rate in 'capital cities' was 6% lower than the rate in 'large rural centres' and 20% less than the rate in 'remote centres'. For females, 'capital cities' experienced death rates 5% lower than 'large rural centres' and 22% lower than 'remote centres'.
- Despite marked differences in death rates between the metropolitan, rural and remote zones, the death rates for each RRMA category within each of the three zones were similar for both males and females.
- Female death rates in the 1992–96 period were consistently around 40% lower than male death rates in all regions.
- Indigenous death rates for the 1992–96 period were consistently around twice the rate of the non-Indigenous population for all RRMA categories and for both sexes.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Total death

Impact of the Indigenous population on the total death rate for all Australians, 1992–96



Population group	Metropolitan	Rural	Remote	Total
Males				
Indigenous	1,500.4	1,559.0*	1,879.2*	1,739.6
Non-Indigenous	800.0	836.9	873.5	811.0
All Australians	804.6	845.8	1,055.1*	830.5
Females				
Indigenous	983.9	1,170.2*	1,418.2*	1,273.9
Non-Indigenous	520.7	521.3	494.5	520.3
All Australians	524.4	528.1	708.5*	535.0

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Based on data for South Australia, Western Australia and the Northern Territory.

2. Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Indigenous mortality

- A pattern of increasing death rates with increasing remoteness is also seen in mortality rates for the Indigenous population. Reliable Indigenous mortality data for 1992–96 are available only for three States and Territories, South Australia, Western Australia and the Northern Territory. Because of the small number of Indigenous deaths, the seven category RRMA classification has been collapsed into metropolitan, rural and remote zones.
- Despite the large differences between the Indigenous and non-Indigenous death rates across all RRMA categories, the impact of the differences is negligible in the metropolitan and rural zones because of the low proportion of the total population which is Indigenous in these zones. The graph shows the small difference that Indigenous death rates make to death rates for 'All Australians' in these zones. Indigenous people comprise 1% of the total population living in the metropolitan zone and 3% in the rural zone.

- In the remote zone where the Indigenous population forms a higher proportion of the population (21%), the higher death rates of Indigenous people have a substantial impact, resulting in higher rates for the total population compared with those in the metropolitan and rural zones.
- The pattern discussed above of higher Indigenous death rates not affecting metropolitan/rural differentials but influencing remote zone differentials reflects the low proportion of Indigenous people living in metropolitan and rural zones, and the higher proportion living in the remote zone. It shows that the lower health status of Indigenous people has little impact on differences between metropolitan and rural zones, but does have an impact on remote zone differentials.
- Mortality data for South Australia, Western Australia, and the Northern Territory over the period 1992-96 support the results of an earlier study (Anderson et. al 1996) showing large differences between the Indigenous and non-Indigenous death rates for both sexes. The total Indigenous death rates are more than double that for the non-Indigenous population for both males and females, though the gap is larger for females.
- Indigenous death rates are higher for males than for females across all regions, with the differences ranging from 33% in the rural and remote zones to 52% in the metropolitan zone.
- There is a strong association between increasing remoteness and the total death rate for Indigenous females. Those living in the rural zone experience death rates 19% higher than those living in the metropolitan zone, while those living in the remote zone experience rates more than 40% higher than in the metropolitan zone.
- For Indigenous males, the association between the total death rate and increasing remoteness is less pronounced than for females, although the rates for the rural and remote zones are markedly higher than the rate for the metropolitan zone.
- Among the non-Indigenous population, there is also a pattern of higher death rates in the rural and remote zones for males, but not for females, who have similar rates over the three zones. For non-Indigenous males, the death rates for 1992-96 were 5% higher in the rural zone and 9% higher in the remote zone, compared with the rate for those living in the metropolitan zone.

For more information, see:

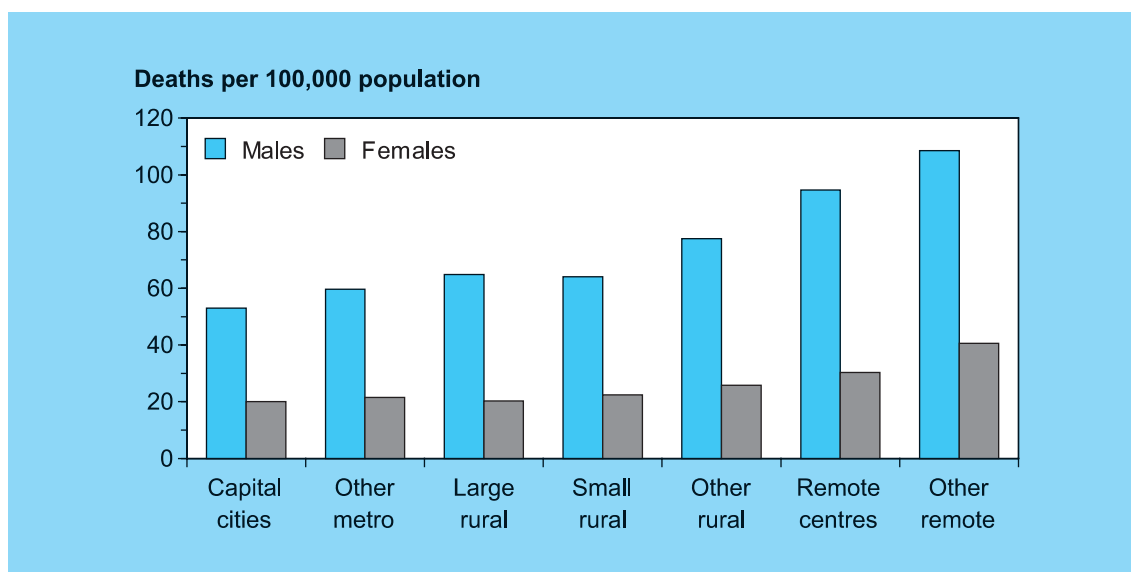
Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Australian Bureau of Statistics 1997. Deaths Australia, 1996. ABS Cat. No. 3302.0. Canberra: AGPS.

Australian Bureau of Statistics 1997. Causes of death Australia, 1996. ABS Cat. No. 3303.0. Canberra: AGPS.

All causes of injury

Death rates for all causes of injury, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	53.0	59.7	*64.8	*64.1	77.5	*94.6	*108.5	59.5
Females	20.0	21.5	20.3	22.3	*25.8	30.3	*40.6	21.4

* Significantly different from 'capital cities' at the 5% level.

Notes

- Age-standardised to the Australian population at 30 June 1991.
- Causes of injury are classified according to the ICD-9 external cause codes E899 to E999. Codes relating to medical misadventure, complications of care etc. (external cause codes E870 to E879 and E930 to E949) have been omitted from this table.

Source: AIHW National Mortality Database.

Deaths from injury

- Injury is one of the major contributors to premature mortality in Australia, and was responsible for 7,469 deaths in 1996. The major causes of death from injury in rural and remote zones are suicide and motor vehicle accidents (ABS 1997a).
- Accidents with farm or mining equipment along with road transport-related deaths make work-related injuries a major cause of premature death in rural and remote zones. A survey of work-related injury (Harrison et al. 1989) found that the death rate was highest for hazardous occupations such as mining, transport and farm work. These occupations had the highest rate of workplace traffic deaths and the highest rate of fatal injury sustained travelling to and from work. Vehicle occupants make up the majority of deaths at the sites of road traffic accidents.
- Injury patterns vary with age (DHFS & AIHW 1998a). In early childhood, drowning causes most injury-related deaths. Young adults are the most frequent victims of self-harm and motor vehicle accidents. For the elderly, falls are the most common cause of death. Total injury death rates are highest for young adults and the elderly (DHFS & AIHW 1998a).
- Death rates from all causes of injury are more than twice as high in 'other remote areas' compared with 'capital cities'. Overall, the rates increase with increasing remoteness, suggesting that those living in rural and remote zones are at greater risk of death from injury than are those living in the metropolitan zone.

- Males are at greater risk of death from injury compared with females. This is evident from the death rate from injury for males which is almost three times the rate for females from the same RRMA category, a pattern which is consistent across all categories.
- Injury deaths for Indigenous males decreased at a rate of 2.3% per year from 1986 to 1994 (Anderson et al. 1996). The decreased death rate for Indigenous males was largely a result of declines in mortality due to road traffic accidents and homicides. As seen previously, the death rates for remote zone males are still higher than for those in rural and metropolitan zones, suggesting that Indigenous mortality from injury has not declined to rates approximating those of non-Indigenous males.

For more information, see:

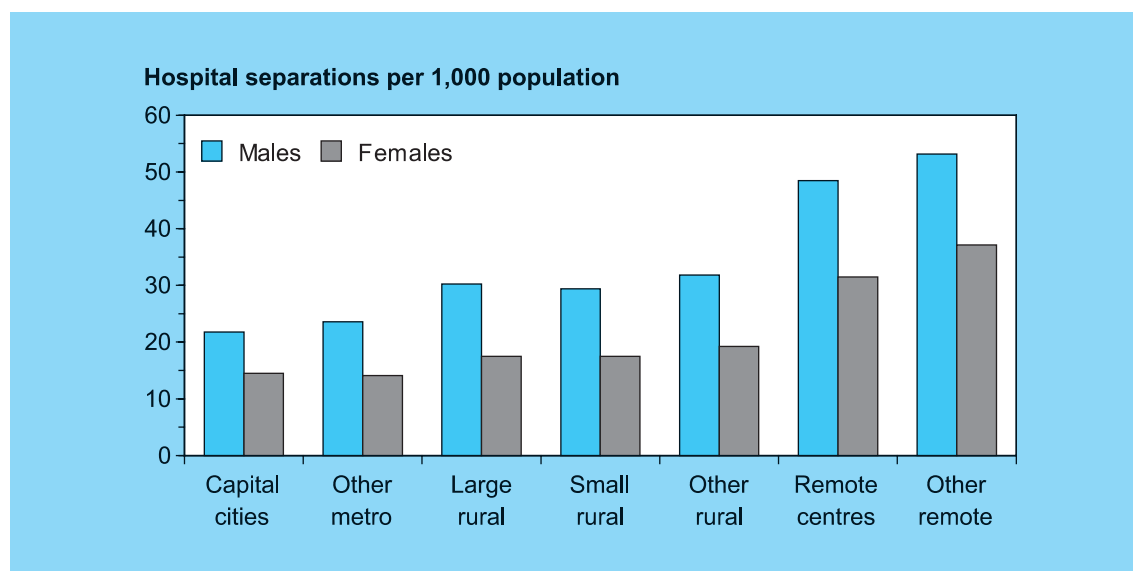
Australian Bureau of Statistics 1997. Causes of death Australia, 1996. ABS Cat. No. 3303.0. Canberra: AGPS.

Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Harrison JE, Frommer MS, Ruck EA & Blyth FM 1989. Death as a result of work-related injury in Australia, 1982-1984. *Med J Aust* 150: 118-125.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Hospital separation rates for all causes of injury, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	21.8	*23.6	*30.2	*29.4	*31.8	*48.5	*53.2	25.2
Females	14.5	14.1	*17.5	*17.5	*19.3	*31.5	*37.1	16.0

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were omitted from the analysis.
- Causes of injury are classified according to the ICD-9 external cause codes E899 to E999. Codes relating to medical misadventure, complications of care etc. (external cause codes E870 to E879 and E930 to E949) are not included here.
- Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

Hospitalisation for all causes of injury

- Injury is one of the leading causes of hospitalisation in Australia, accounting for 377,955 hospital separations in 1995–96 (DHFS & AIHW 1998a). For every injury-related death, at least 40 episodes of hospitalisation are estimated to occur.
- Young males (aged 15–24) and aged people (aged 65 and above) have the highest rates of hospitalisation due to external injury (DHFS & AIHW 1998a).
- In the metropolitan and rural zones, males are hospitalised for injury almost twice as often as females. However, this male/female difference is less in the remote zone, though the male rate of hospitalisation due to injury is still substantially higher than the female rate.
- For males, injury hospital separation rates in 'large rural centres' and 'remote centres' are respectively 39% and 145% higher than in 'capital cities'. The rates for males living in 'other metropolitan centres', as well as all rural and remote zones are significantly higher than the rates for males from 'capital cities'. The rates for females are also significantly higher in rural and remote zones compared with rates in 'capital cities'. The rates for females in the remote zone are more than twice as high as the rates in the metropolitan zone.
- The ratio of male to female injury death rates is higher than the ratio of male to female hospital separation rates. This suggests that males become involved in more severe accidents that result in death more often than

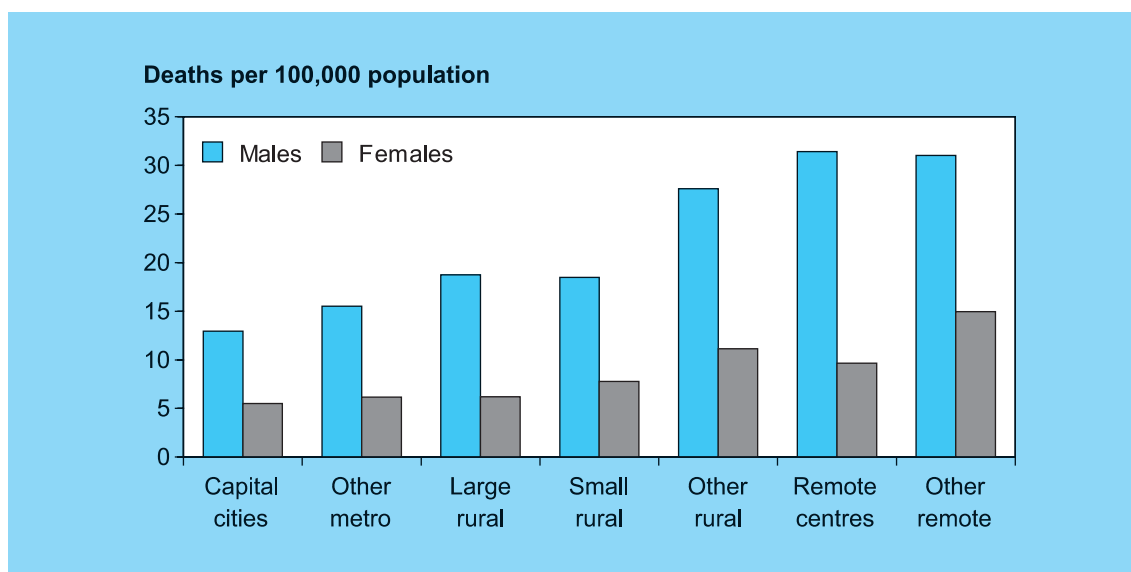
All causes of injury

do females. Additionally, males in the remote zone die from motor vehicle accidents at almost three times the rate of males in capital cities. The higher death rates in the remote zone may reflect a number of differences in traffic conditions in this zone, including road conditions, distances travelled and driver behaviour.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Death rates for road vehicle accidents, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	13.0	15.5	*18.7	*18.5	*27.6	*31.4	*31.0	16.2
Females	5.5	6.2	6.2	7.8	*11.2	9.7	*15.0	6.6

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from road vehicle accidents

- People living in rural and remote zones are exposed more to the hazards associated with long-distance, high-speed road travel on unsurfaced roads than those living in the metropolitan zone (AIHW & DHFS 1997). This, combined with the remoteness of the location of the accidents, which delays medical treatment, may result in more fatalities than if the accidents occurred in the metropolitan zone.
- In 1995, 1,420 males and 638 females died in traffic accidents. The death rates from road vehicle accidents for young adult males (aged 15 to 24) are almost three times that of the general population (DHFS & AIHW 1998a).
- The rate of fatal traffic accidents increases with increasing rurality and remoteness for males. Males from the remote zone die in traffic accidents at almost three times the rate of males from the metropolitan zone. Males from all zones are more than twice as likely to have a fatal vehicle accident compared with females from their corresponding zone.
- The rate of fatal traffic accidents increases with increasing rurality for females also, though not to the same extent as for males. Females from the remote zone are involved in fatal accidents at over twice the rate for females from the metropolitan zone.

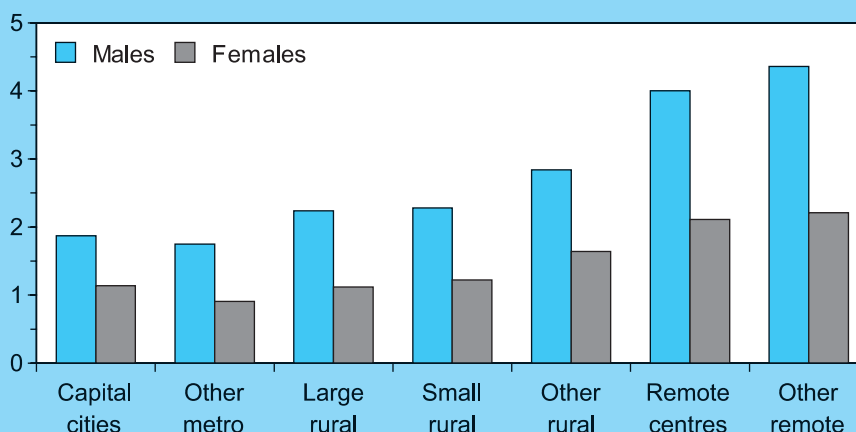
For more information, see:

Australian Institute of Health and Welfare & Commonwealth Department of Health and Family Services 1997. First report on National Health Priority Areas 1996. AIHW Cat. No. PHE 1. Canberra: AIHW & DHFS.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Hospital separation rates for road vehicle accidents, 1995–96

Separations per 1,000 population



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.9	1.8	*2.2	*2.3	*2.8	*4.0	*4.4	2.1
Females	1.1	0.9	1.1	1.2	*1.6	*2.1	*2.2	1.2

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were omitted from the analysis.
- Causes of road injury are classified according to the ICD-9 external cause codes E810 to E819 and E826 to E829.

Source: AIHW National Morbidity Database.

Hospitalisation due to road vehicle accidents

- There has been a slight increase in road injury over the past few years but police reports show that the accident rate is decreasing (O'Connor 1996). Males are more likely to be involved in fatal accidents than are females. Males aged 15–24 are most at risk from motor vehicle accidents and account for 20% of hospitalisations from this cause.
- Intake of alcohol above moderate levels is often associated with road traffic accidents. Drinking alcohol above moderate levels can result in poor coordination and judgement which can lead to traffic accidents (AIHW 1998a).
- Hospital separation rates due to road injury show a strong association with rurality. The rates are highest in the remote zone and 'other rural areas'. There is little difference between small and large 'rural centres' but the rates of

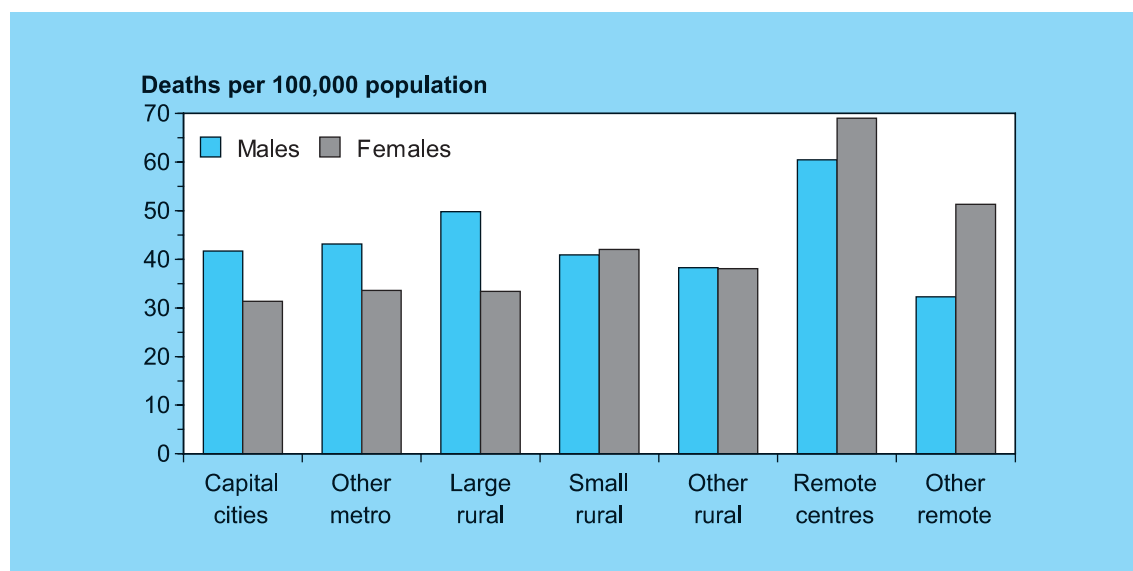
road injury for males from all rural and remote zones are significantly higher than the rates for males in 'capital cities'. Similar to road accident mortality, 'other rural areas' have higher rates of hospitalisation compared with large and small 'rural centres'.

- Factors similar to those involved in mortality from road traffic accidents, such as road quality and alcohol consumption, also contribute to increased hospitalisation from road traffic accidents in rural and remote zones compared with the metropolitan zone.

For more information, see:

O'Connor P J 1996. Road injury Australia: crashes resulting in hospitalisation. Adelaide: AIHW National Injury Surveillance Unit.

Death rates for falls among people aged 65 years and over, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	41.7	43.2	49.8	40.9	38.3	60.5	32.3	41.7
Females	31.4	33.6	33.4	42.1	38.1	69.1	51.3	33.6

Notes:

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significant from 'capital cities' at the 5% level.

Source: AIHW National Mortality Database.

Deaths from falls

- Falls are a leading cause of injury in people over the age of 65 years. Hip fractures are the main injury associated with falls in this age group. The main risk factors include disability, medication, chronic disease and environmental hazards (Graham-Clarke et al. 1998).
- Most deaths from external causes in the over 65 years age group are related to the after-effects of falls. Mortality resulting from falls increases with age from 15% of deaths from external causes in people 65–69 years to 75% of deaths from external causes in those aged 85 years and over.
- The death rate from falls is highest for both males and females in 'remote centres'. Females living in 'remote centres' have over twice the death rate from falls compared with those living in the metropolitan zone.

However, none of the death rates is significantly different from the rates for 'capital cities' at the 5% significance level.

- Males over 65 years have a higher death rate from falls compared with females in the metropolitan zone and 'large rural centres'. However, the picture is reversed in 'small rural centres' and the remote zone where females have the higher death rates. Overall, males have a 25% higher death rate from falls than do females.

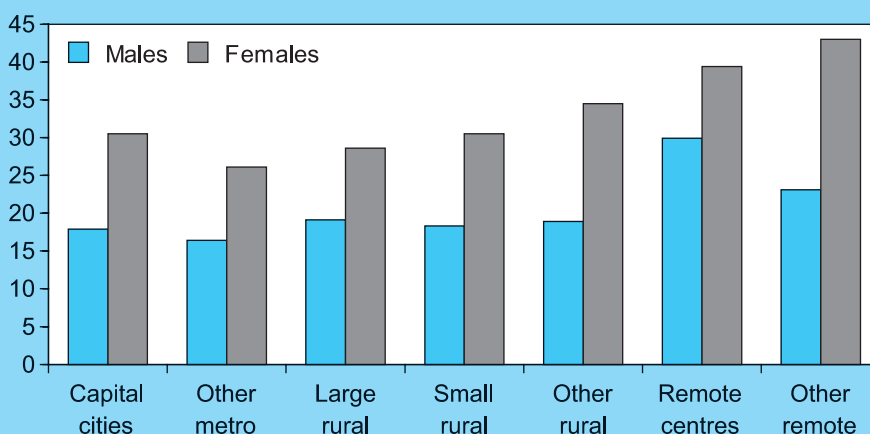
For more information, see:

Graham-Clarke P, Fisher J & Elkington J 1998. Preventing injuries from falls in older people. Sydney: National Centre for Health Promotion, Sydney University & NSW Health Department.

Falls

Hospital separation rates for falls among people aged 65 years and over, 1995–96

Separations per 1,000 population



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	17.9	16.4	*19.1	*18.3	*18.9	*29.9	*23.1	18.2
Females	30.5	*26.1	28.6	30.5	*34.5	*39.4	*43.0	30.7

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were eliminated from the analysis.
- Causes of injury are classified according to the ICD-9 external cause codes E880 to E888.

Source: AIHW National Morbidity Database.

Hospitalisation due to falls

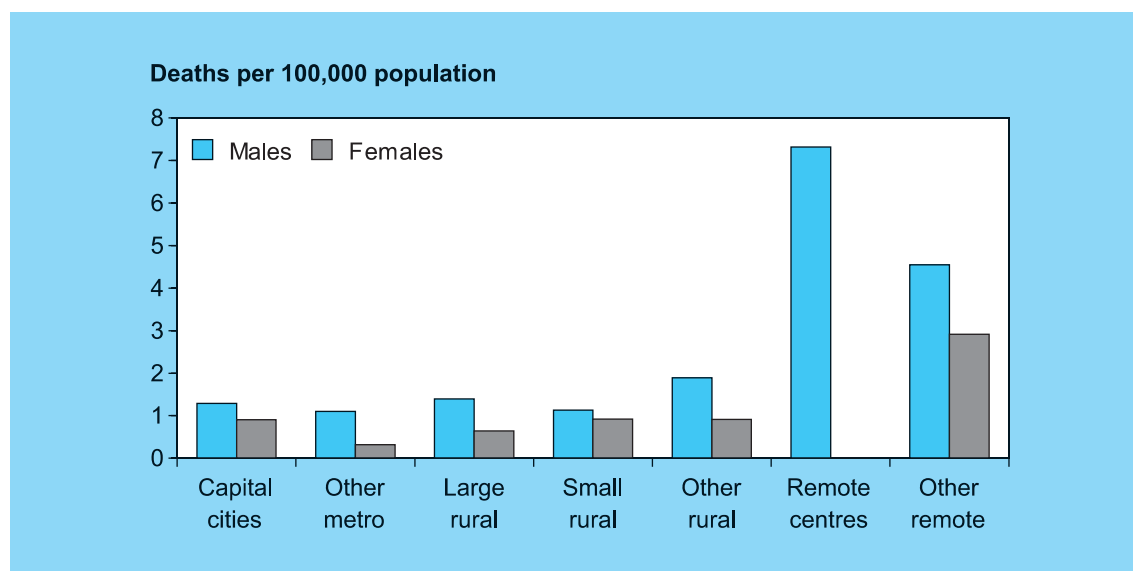
- Hospitalisation as a result of a fall is common in people over the age of 65 years. Fractures are the most common injury resulting from falls, with hip fractures the most serious in terms of mortality and functional impairment (Fildes 1994). Aged people are at risk of falls due to disability, medication and environmental hazards. Those living in rural and remote zones often live without direct access to the amenities taken for granted in urban zones such as plumbing, clean water and control over extremes in temperature. They may also live in greater social isolation than their metropolitan counterparts. These living conditions may expose aged people to more environmental risks that lead to falls.
- The rate of hospitalisation due to falls is similar for those living in metropolitan and rural zones. However, the rates are substantially higher for those in the remote zone.
- Males have a lower rate of hospitalisation from falls than do females for all RRMA categories. Across RRMA categories, the rates for male hospitalisation are around 60% of the corresponding rates for females. Osteoporosis in post-menopausal females greatly increases the risk of fracture and complications from falls (DHFS & AIHW 1998a).

For more information, see:

Fildes B 1994. Injury prevention among the elderly. Victorian Health Promotion Foundation Monograph Series. Melbourne: VicHealth.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Death rates for burns among people aged 55 years and over, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.3	1.1	1.4	1.1	1.9	7.3	4.6	1.4
Females	0.9	0.3	0.6	0.9	0.9	0.0	2.9	0.9

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.

Source: AIHW National Mortality Database.

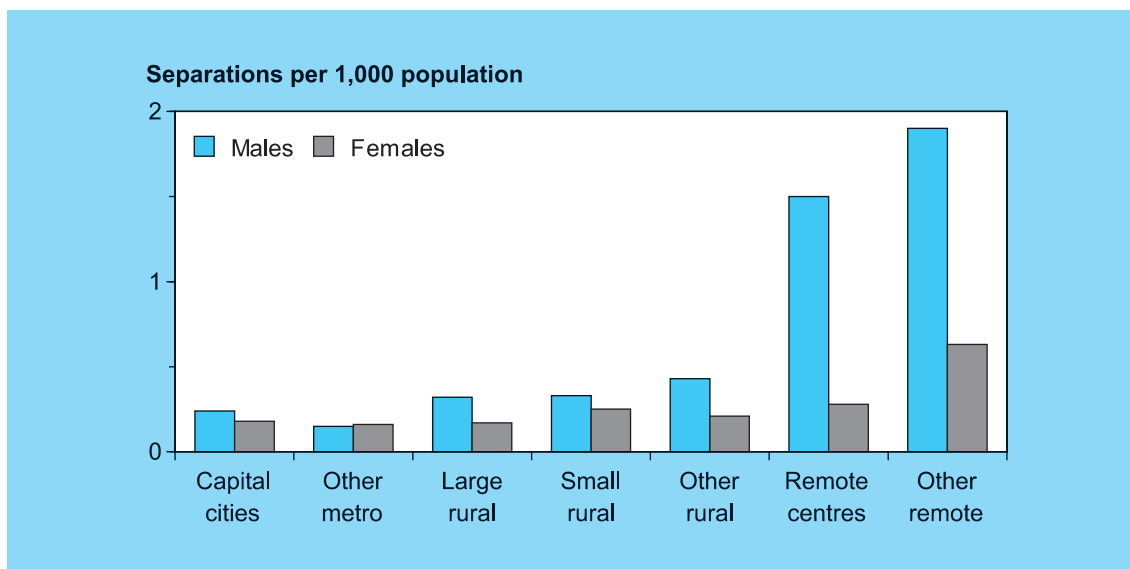
Deaths from burns

- Deaths from burns account for a small percentage (2%) of deaths from external injury. Older people and small children are most likely to be the victims of burns (DHFS & AIHW 1998a).
- The death rates from burns are similar for males from metropolitan and rural zones, but are substantially higher in the remote zone. Similarly, females in 'other remote areas' have three times the death rate due to burns compared to females from any other zone. However, these rates represent very small numbers of people and are not significantly different from 'capital cities' at the 5% level.
- Males have a higher death rate from burns compared to females. The rate of death for males from burns in 'remote centres' is more than five times that of males from 'capital cities' and is a striking contrast to the lack of females dying from burns in this area.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Hospital separation rates from fire, burns and scalds among people aged 55 years and over, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	0.24	*0.15	*0.32	*0.33	*0.43	*1.50	*1.94	0.31
Females	0.18	0.16	0.17	*0.25	0.21	0.28	*0.63	0.19

* Significantly different from 'capital cities' at the 5% level.

Notes

- Records with length of stay greater than 364 days were eliminated from the analysis.
- Causes of injury are classified according to the ICD-9 external cause codes E890 to E899, E924.0, E924.8 and E924.9.

Source: AIHW National Morbidity Database.

Hospitalisation due to burns

- Although burns are responsible for only 2% of deaths from external causes, burn victims often require prolonged hospitalisation. Caring for burn victims can be a substantial burden on the community.
- The hospital separation rate due to burns among males in 'other remote areas' is almost eight times the rate in 'capital cities'. The hospital separation rate due to burns among females in 'other remote areas' is three-and-a-half times the rate in 'capital cities'. Both males and females living in the rural zone are hospitalised for burns at around one-and-a-half times the corresponding rates in 'capital cities'.
- Males are more likely to be hospitalised as a result of their burns than females, with the difference between the sexes greatest in the remote zone. The hospital separation rate due to burns among males in 'capital cities' is 35% higher than the corresponding rate for females. In contrast, females in 'remote centres' have five times the male hospitalisation rate from burns.

- Aged Aboriginal and Torres Strait Islander people have been reported to have high rates of hospitalisation from fire burns (ABS & AIHW 1997). The high proportion of Indigenous people in the remote zone may account for the differential in hospitalisation rates due to burns.

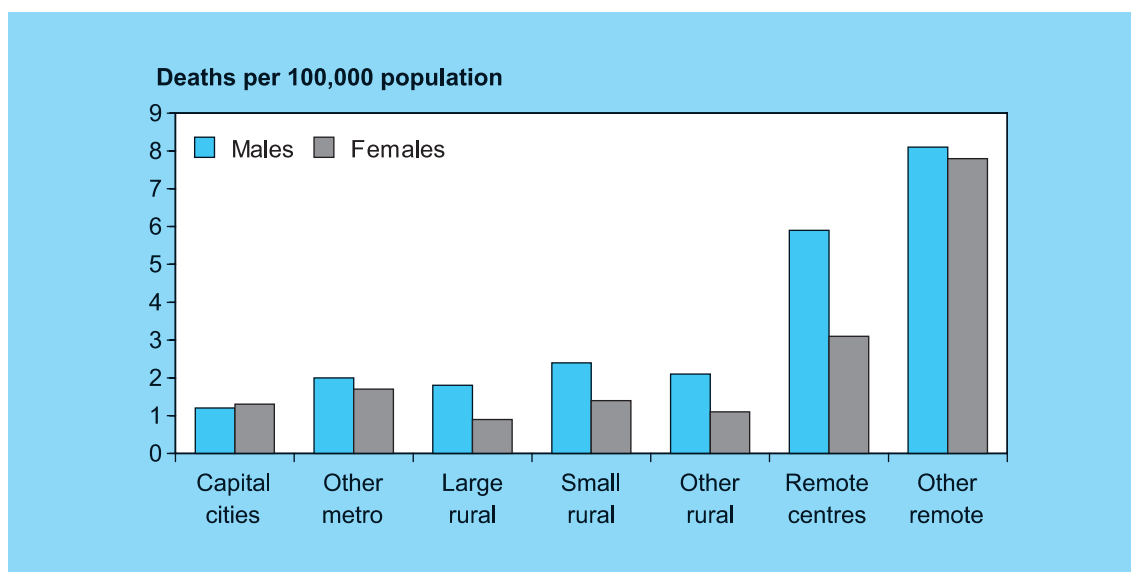
For more information, see:

Moller J, Dolinis J & Cripps R 1996. Aboriginal and Torres Strait Islander peoples injury-related hospitalisations 1991/92. A comparative overview. Adelaide: AIHW National Injury Surveillance Unit.

Australian Bureau of Statistics & Australian Institute of Health and Welfare 1997. The health and welfare of Australia's Aboriginal and Torres Straits Islander peoples. ABS Cat. No. 4704.0, AIHW Cat. No. IHW 2. Canberra: AGPS.

Interpersonal violence

Homicide rates, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.2	2.0	1.8	2.4	2.1	5.9	*8.1	2.3
Females	1.3	1.7	0.9	1.4	1.1	3.1	*7.8	1.4

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from interpersonal violence

- Interpersonal violence covers a range of injury types including homicide, sexual assault, assault and domestic violence (DHFS & AIHW 1998a).
- Death from homicide may be an indication of the level of violence in a community. However, homicide deaths are not distributed evenly across all parts of the community. Young people and Indigenous people have the highest rate of deaths from homicide (Anderson et al. 1996).
- The homicide rate in the remote zone is much greater than in all other zones for both males and females. In 'other remote areas' the homicide rate is six to seven times that of the metropolitan zone. This is largely explained by the higher death rates from interpersonal violence in the Indigenous community (Anderson et al. 1996).

- There is little variation between the homicide rates in rural and metropolitan zones for both males and females.

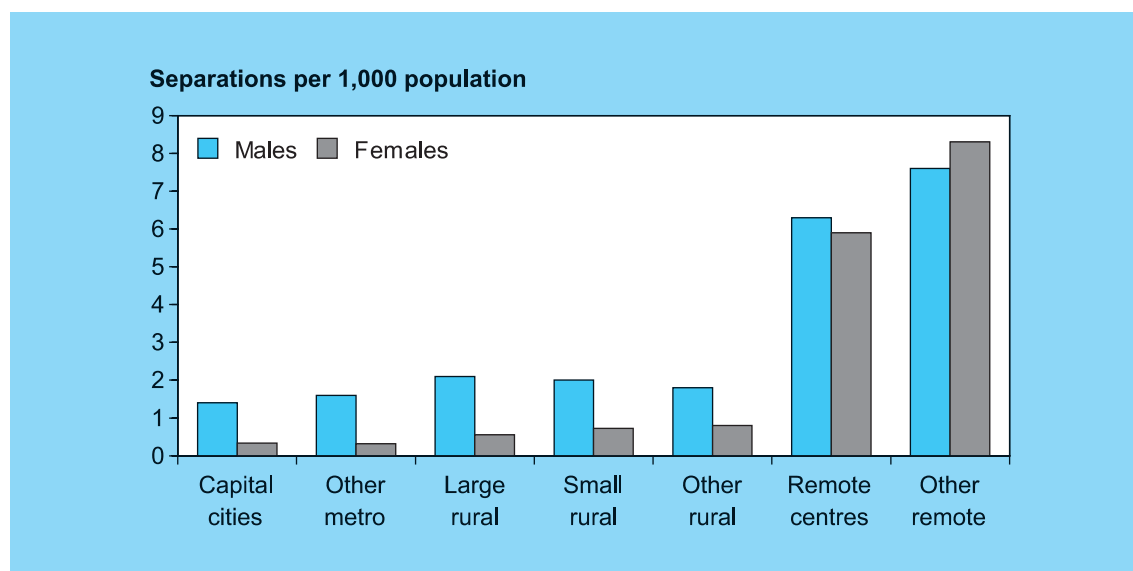
For more information, see:

Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Moller J, Dolinis J & Cripps R 1996. Aboriginal and Torres Strait Islander peoples injury-related hospitalisations 1991/92. A comparative overview. Adelaide: AIHW National Injury Surveillance Unit.

Hospital separation rates for homicide and injury purposely inflicted by other people, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.4	*1.6	*2.1	*2.0	*1.8	*6.3	*7.6	1.8
Females	0.3	0.3	*0.6	*0.7	*0.8	*5.9	*8.3	0.6

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Records with length of stay greater than 364 days were eliminated from the analysis.
2. Causes of homicide and injury purposely inflicted by other persons are classified according to the ICD-9 external cause codes E960 to E969.

Source: AIHW National Morbidity Database.

Hospitalisation due to interpersonal violence

- Better data are available for fatalities from interpersonal violence than for non-fatal outcomes because some interpersonal violence goes unrecorded or may be attributed to other causes. As a result, it is likely that the hospitalisation rates from this cause of injury are underestimated (DHFS & AIHW 1998b).
- Males from the remote zone have three to five times higher rates of hospitalisation due to interpersonal violence than do males in metropolitan and rural zones. Rural hospital separation rates are double the metropolitan rates for females and around one-third higher for males.
- Females from the remote zone have seven to 25 times higher rates of hospitalisation due to interpersonal violence compared with females from other zones. However, the result is

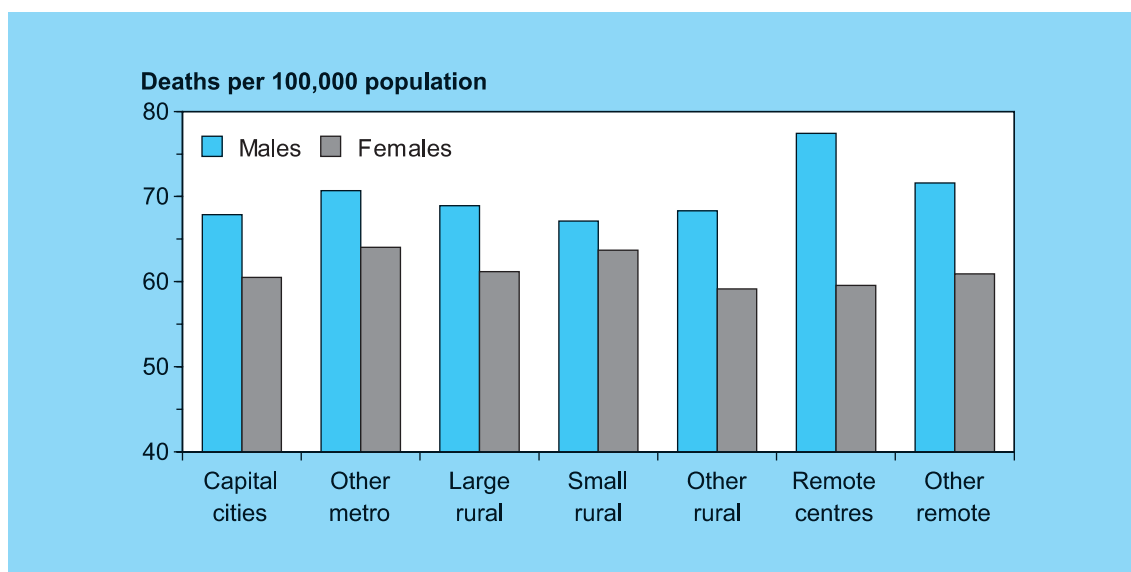
difficult to interpret because interpersonal violence against females in the non-Indigenous population is likely to be under-reported (Healthsharing Women 1994).

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Injury prevention and control 1997. AIHW Cat. No. PHE 3. Canberra: DHFS & AIHW.

Healthsharing Women 1994. Women, health and the rural decline in Victoria. In Franklin MA, Short LM & Teather EK (eds.). Country women at the crossroads. Armidale: University of New England Press, 92–98.

Death rates for stroke, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	67.9	70.9	68.9	67.1	68.3	77.4	71.6	68.3
Females	60.5	64.0	61.2	63.7	59.2	59.6	61.0	60.9

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths from stroke

- For the period 1992–96, stroke accounted for 10% of all deaths in Australia. Risk factors for stroke include increasing age, high blood pressure, smoking, high serum cholesterol, obesity, lack of exercise and heavy alcohol intake.
- Some 25% of stroke victims die within the first month after stroke and a further 40% die within 1 year (Anderson et al. 1994).
- Death rates from stroke are similar across all regions for both males and females. The differences that are shown between remote, rural and metropolitan zones are not significantly different from those of 'capital cities' at the 5% level.
- Males have a higher rate of death from stroke compared with females across all zones. Males also have a higher incidence rate of stroke than females. This is supported by studies of

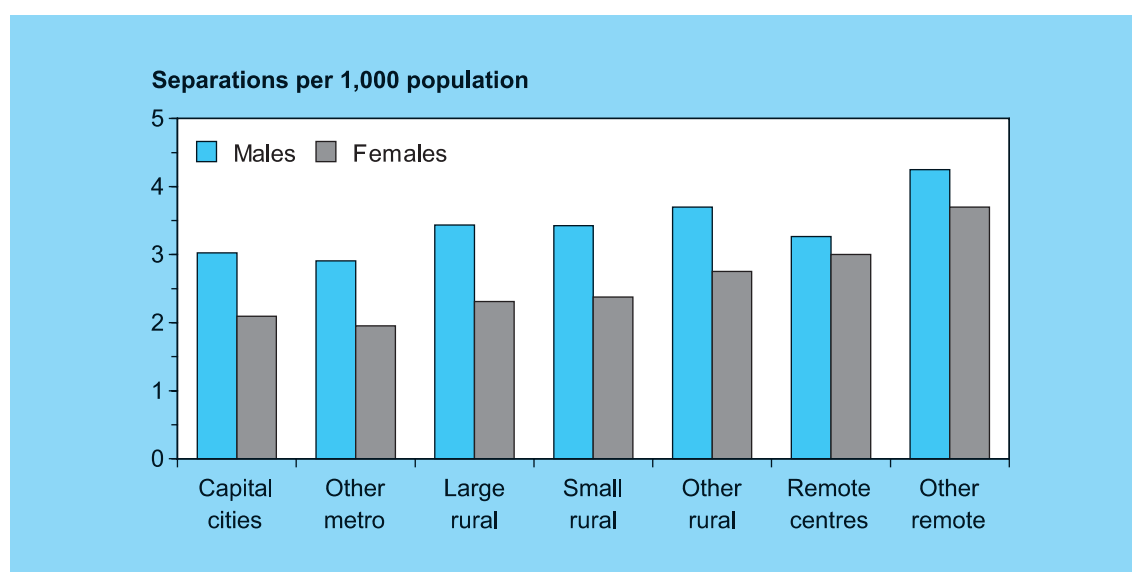
stroke incidence from Western Australia where age-adjusted rates were 132 per 100,000 for males and 77 per 100,000 for females (Anderson et al. 1993).

For more information, see:

Anderson C, Jamrozik K, Burvill P, Chakera T, Johnson G & Stewart-Wynne E 1993. Ascertaining the true incidence of stroke: experience from the Perth Community Stroke Study, 1989–1990. *Med J Aust* 158: 80–84.

Anderson C, Jamrozik K, Broadhurst R & Stewart-Wynne E 1994. Predicting survival among different subtypes of stroke: experience from the Perth Community Stroke Study, 1989–1990. *Stroke* 25: 1935–44.

Hospital separation rates for stroke, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	3.0	2.9	*3.4	*3.4	*3.7	3.3	*4.3	3.2
Females	2.1	2.0	*2.3	*2.4	*2.8	*3.0	*3.7	2.2

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

Hospitalisation due to stroke

- Hospitalisation rates from stroke are higher among males, as they are for death from stroke. This pattern is consistent across all seven RRMA categories.
- Unlike death rates, a clear pattern emerges for hospitalisation following stroke in the RRMA categories. Males and females from 'other remote areas' have the highest rate of hospitalisation due to stroke. The lowest rates are found in males and females in the metropolitan zone.
- The higher hospitalisation rates for stroke in rural and remote zones contrasts with the lack of significant differences between death rates in the metropolitan, rural and remote zones. The decision to hospitalise a patient for stroke may be based on factors such as the distance that he/she will have to travel to hospital

from home. Other considerations may include the availability of home-based nursing, nursing homes or community health services. Such services may be unavailable in remote communities, making hospitalisation the only option for long-term care of stroke victims.

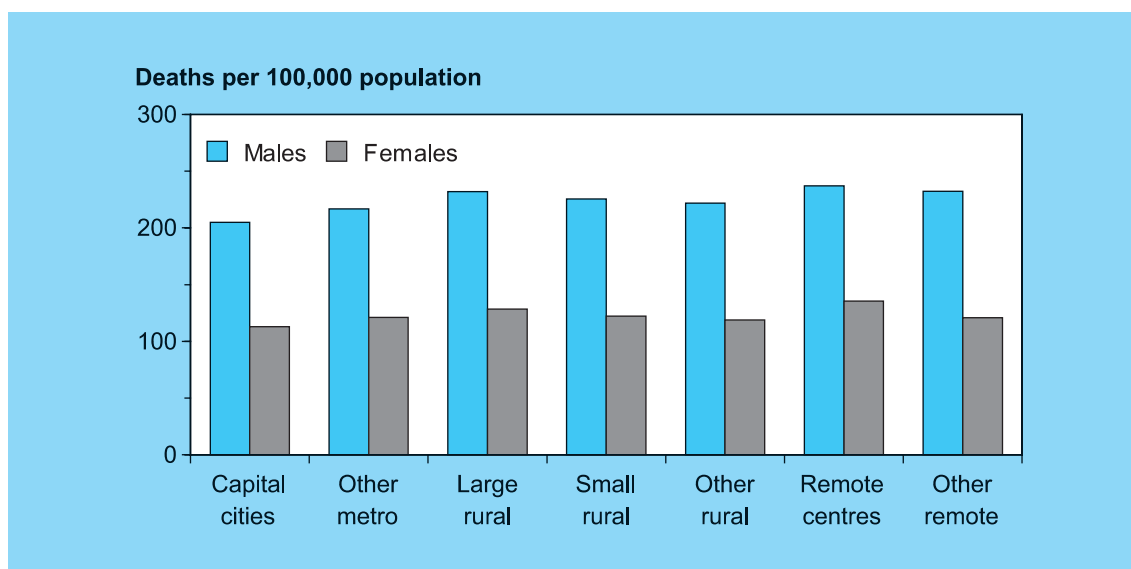
- As the average age of Australia's population increases, the incidence of stroke is also set to increase. An increase of 69% in the number of new stroke cases per year has been predicted by the year 2016 (NHMRC 1997).

For more information, see:

National Health and Medical Research Council 1997. Prevention of stroke. Clinical practice guidelines, December 1996. Canberra: AGPS.

Coronary heart disease

Death rates for coronary heart disease, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	205.0	216.7	*231.9	*225.6	*221.9	237.1	232.3	212.4
Females	113.0	*121.0	*128.6	*122.1	118.8	135.6	120.8	116.4

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from coronary heart disease

- Coronary heart disease is the most common form of cardiovascular disease and its cause is blockage of one or more of the coronary arteries that supply the heart with blood (Wise & Graham-Clarke 1994). The risk factors for coronary heart disease include being overweight or obese, having high serum cholesterol levels, smoking, high alcohol consumption and lack of regular exercise.
- Coronary heart disease is a major cause of mortality in Australia, accounting for 25% of all male deaths and 22% of all female deaths from 1992 to 1996. In 1996, 49,726 deaths were due to coronary heart disease alone.
- Death rates from coronary heart disease are higher in rural and remote zones compared with the metropolitan zone, for both sexes. The rates for the rural zone are significantly different from 'capital cities' at the 5% level.
- Across all zones, the male rate of death is twice that of the female rate. In general, cardiovascular disease is a greater health risk for males than for females. However, cardiovascular disease is still the leading cause of death in Australian females (Wise & Graham-Clarke 1994).

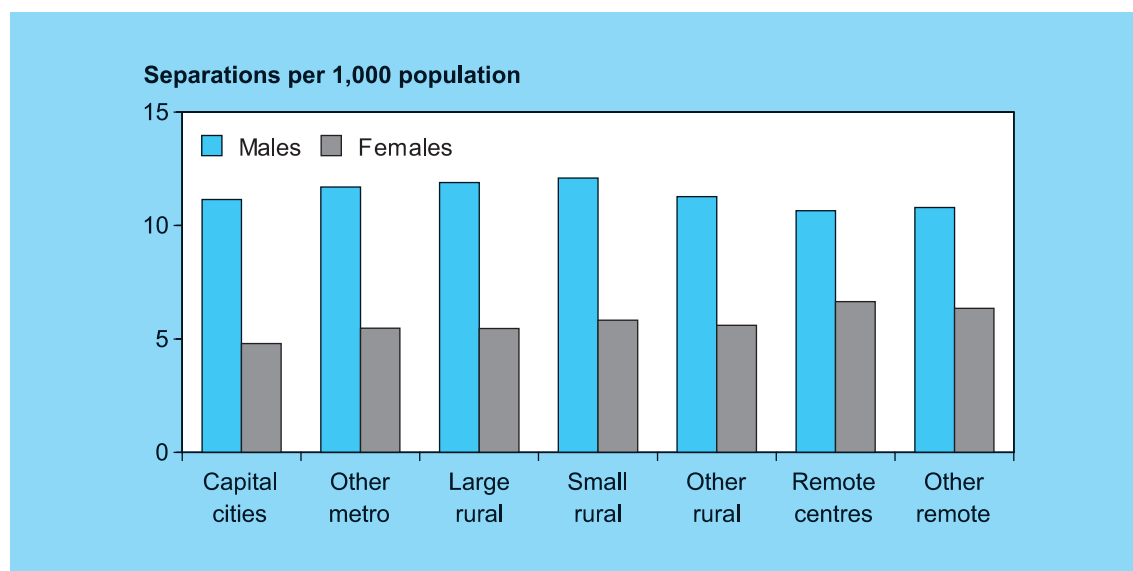
For more information, see:

Australian Bureau of Statistics 1997. Causes of death Australia, 1996. ABS Cat. No. 3303.0. Canberra: AGPS.

Australian Bureau of Statistics 1997. 1995 National Health Survey. Cardiovascular and related conditions Australia. ABS Cat. No. 4372.0. Canberra: AGPS.

Wise M & Graham-Clarke P 1994. Cardiovascular health in Australia. A review of current activities and future directions. Canberra: AGPS.

Hospital separation rates for coronary heart disease, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	11.1	11.7	*11.9	*12.1	11.3	10.7	10.8	11.3
Females	4.8	*5.5	*5.5	*5.8	*5.6	*6.7	*6.3	5.1

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

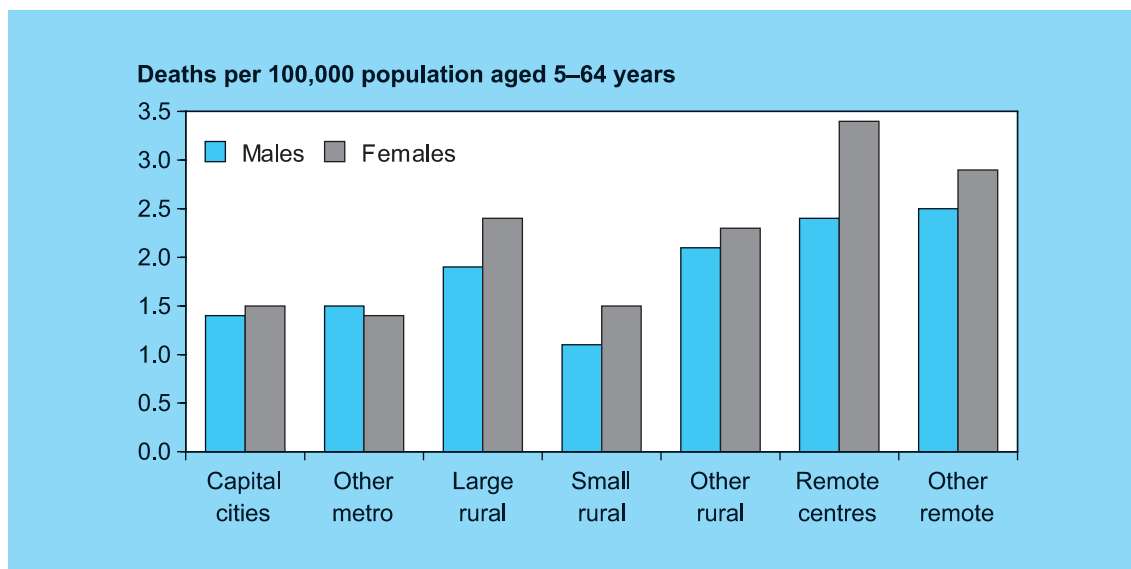
Hospitalisation due to coronary heart disease

- About 50% of all heart attack deaths occur before the victims reach hospital. However, once victims arrive at hospital, their chances of surviving improve substantially (Wise & Graham-Clarke 1994).
- The rates for hospital separations for coronary heart disease vary across the RRMA categories. The males living in 'large rural centres' and 'small rural centres' have significantly higher hospitalisation rates compared with those living in 'capital cities'. The rate for females living in 'capital cities' is significantly lower than the rates for all other RRMA categories.
- Females in the remote zone have slightly higher rates of hospital separations compared with females in other zones. Conversely, males in the remote zone have slightly lower rates of hospital separations compared with males from other zones. Males in the remote zone have higher death rates from coronary heart disease and their lower rate of hospitalisation may reflect fewer males surviving to be hospitalised in these zones. Another reason may be that males in the remote zone are at greater risk of premature death from injury, specifically road traffic accidents, than males in other zones. As a result, many may die from other causes before coronary heart disease can develop.
- Females have around half the hospital separation rate of males from the same zones. This reflects the lower risk of coronary heart disease for females relative to males also noted from the differences in death rates.

For more information, see:

Wise M & Graham-Clarke P 1994. Cardiovascular health in Australia. A review of current activities and future directions. Canberra: AGPS.

Death rates for asthma for persons aged 5–64 years, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.4	1.5	2.0	1.1	*2.1	2.4	2.5	1.6
Females	1.5	1.4	2.4	1.5	2.3	3.4	2.9	1.7

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from asthma

- Asthma is a chronic and debilitating disease that involves inflammation of the airways and results in wheezing, breathlessness, chest tightening and cough (Holgate 1997). It can cause death in the absence of medical intervention.
- The National Asthma Campaign (NAC) recommends the use of the age group 5–34 years for monitoring asthma deaths with the intention of preventing premature mortality. However, we report on a wider age group, 5–64 years, to provide a broad overview of asthma mortality in Australia.
- The remote zone has the highest death rates from asthma for both males and females. The rates are similar for the sexes in 'capital cities' and increase with remoteness to a similar extent. 'Small rural centres' are an exception to the higher rates in the rural zone as they have

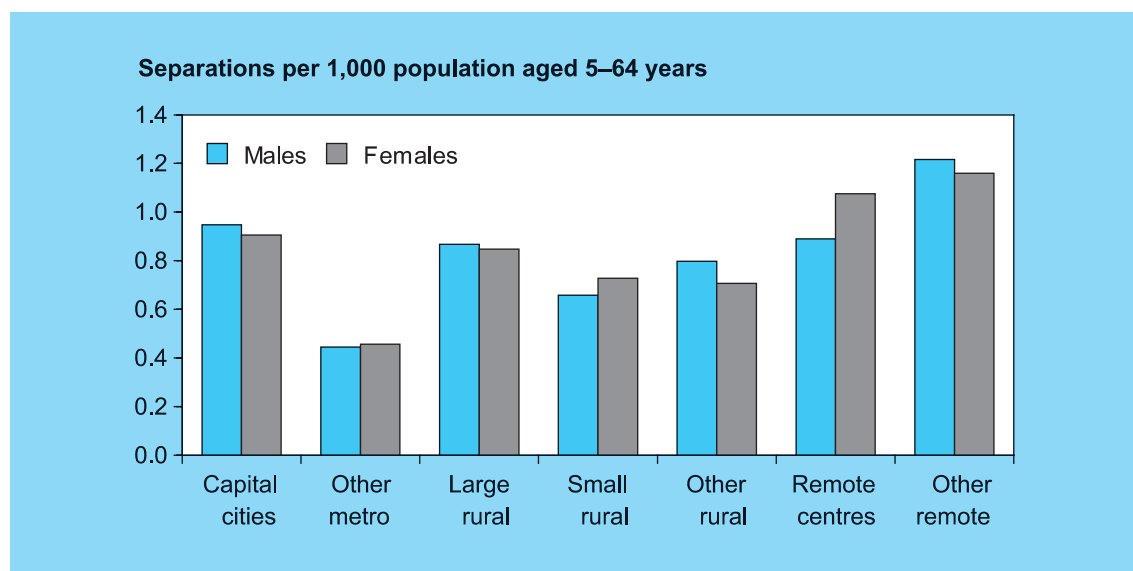
rates lower than that for males and females in 'capital cities'.

- The death rates from asthma among females are consistently higher than the male rates in all RRMA categories, except in 'other metropolitan centres'.
- People in rural and remote communities may not be monitoring their asthma to the same extent as people in the metropolitan zone with more direct access to health care. The result may be higher mortality from asthma in rural and remote zones compared with the metropolitan zone.

For more information, see:

Holgate ST 1997. Asthma: a dynamic disease of inflammation and repair. In Chadwick D & Cardew G (eds). The rising trends in asthma. Ciba Foundation Symposium 206. Chichester: John Wiley & Sons Ltd.

Hospital separation rates from asthma for persons aged 5–64 years, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.0	*0.4	0.9	*0.7	*0.8	0.9	1.2	0.9
Females	0.9	*0.5	0.9	*0.7	*0.7	1.1	*1.2	0.8

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

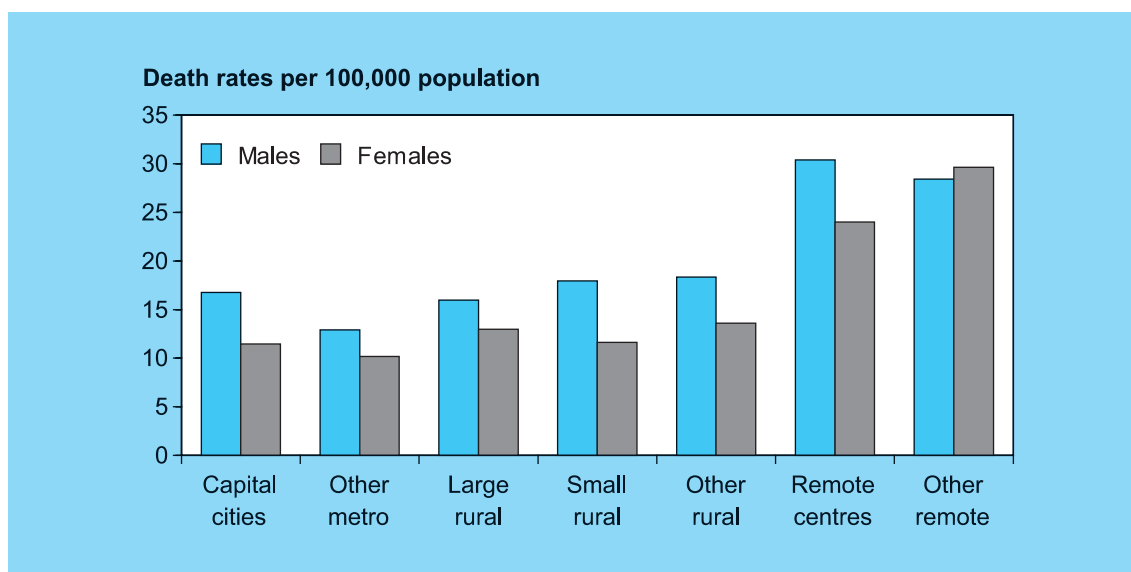
Hospital separations for asthma

- The prevalence of asthma, particularly in children and young adults, is increasing in Australia (Woolcock & Peat 1997). Risk factors for the development of asthma include being allergic to house dust mites, the mould *Alternaria*, or cats. Other risk factors are environmental tobacco smoke, diet and parental asthma (Woolcock & Peat 1997). Hospitalisation occurs for severe asthma attacks and asthma conditions that are not responding to the usual corticosteroid treatments.
- No clear RRMA pattern emerges for asthma hospitalisation, but interesting variation is noted in rates. Within the metropolitan zone, the hospitalisation rates in 'capital cities' are almost double the rates in 'other metropolitan centres'. The rates in 'small rural centres' and 'other rural areas' are also significantly lower than in 'capital cities'.
- Across all RRMA categories, there are no substantial differences between the male and female hospitalisation rates for asthma.
- Although the hospitalisation rates for asthma in the remote zone are higher than for other zones, interpreting hospitalisation for chronic conditions in the remote zone is difficult because individuals may be admitted to hospital if they have to travel long distances for follow-up treatment.

For more information, see:

Woolcock AJ & Peat JK 1997. Evidence for the increase in asthma world-wide. In Chadwick D & Cardew G (eds). The rising trends in asthma. Ciba Foundation Symposium 206. Chichester: John Wiley & Sons Ltd.

Death rates for diabetes, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	16.8	*12.9	16.0	18.0	18.3	30.4	*28.4	17.0
Females	11.5	10.2	13.0	11.6	*13.6	24.0	*29.7	12.1

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

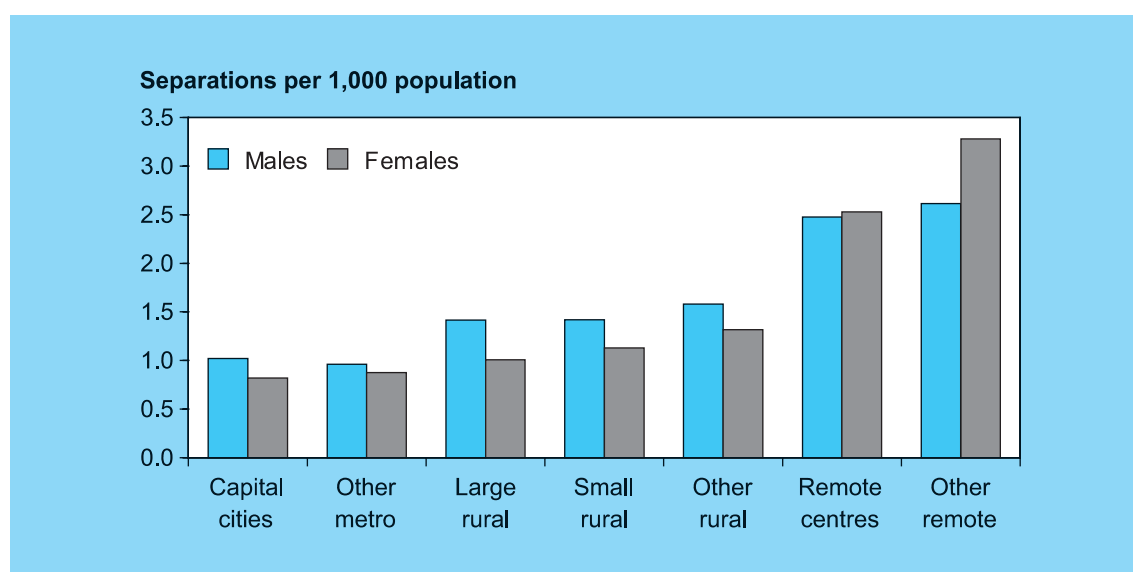
Deaths due to diabetes

- Diabetes results from the body's inability to properly metabolise glucose. The disease itself is not usually life-threatening but without proper medical supervision can lead to death.
- Diabetes is a risk factor for several diseases including cardiovascular disease and renal failure. These life-threatening diseases are often co-morbidities in people with diabetes and this makes ascertaining the cause of death difficult. Consequently, deaths from diabetes may be under-reported.
- Higher death rates are noted among males in comparison to females. This pattern is consistent across all RRMA categories except 'other remote areas'.
- Deaths from diabetes occur at higher rates in the remote zone than in the rural zone, which in turn have higher rates than those observed in the metropolitan zone. Males from 'other metropolitan centres' have significantly lower death rates compared with males from 'capital cities', whereas, males from 'other remote areas' have significantly higher death rates than males from 'capital cities'. In fact, males in the remote zone have almost twice the death rate from diabetes than males from the metropolitan zone and 'large rural centres'.
- Females from 'other rural areas' have significantly higher death rates from diabetes than females from 'capital cities'. Females in the remote zone have over twice the death rate from diabetes than females from the metropolitan and rural zones.
- The differential between those living in the remote zone and other zones could be influenced by a number of factors including access to and quality of health care services, availability of adequate management care plans and appropriate diets.

For more information, see:

McCarty J, Zimmet P, Dalton D, Segal L & Welborn T 1996. The rise and rise of diabetes in Australia. A review of statistical trends and costs. Canberra: Diabetes Australia.

Hospital separation rates for diabetes, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.0	1.0	*1.4	*1.4	*1.6	*2.5	*2.6	1.2
Females	0.8	0.9	*1.0	*1.1	*1.3	*2.5	*3.3	1.0

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Morbidity Database.

Hospital separations for diabetes

- Diabetes is a chronic condition that requires hospitalisation only in acute situations. Most people with diabetes manage their condition at diabetes clinics or with their general practitioners.
- Those living in the remote zone are hospitalised for diabetes at over twice the rate of their counterparts in the metropolitan zone. Males and females from the rural zone also have higher hospitalisation rates for diabetes. Rural males have rates 50% higher than those living in the metropolitan zone. Rural females have rates 25% higher than those living in the metropolitan zone.
- Females are hospitalised less often than males for diabetes. This pattern is consistent across all the RRMA categories except 'other remote areas'.
- The metabolic imbalance resulting from diabetes leads to a variety of complications, some of which require hospitalisation. In these

cases, diabetes is regarded as an associated rather than a principal diagnosis. Therefore, hospital separations resulting from diabetes are seriously underestimated.

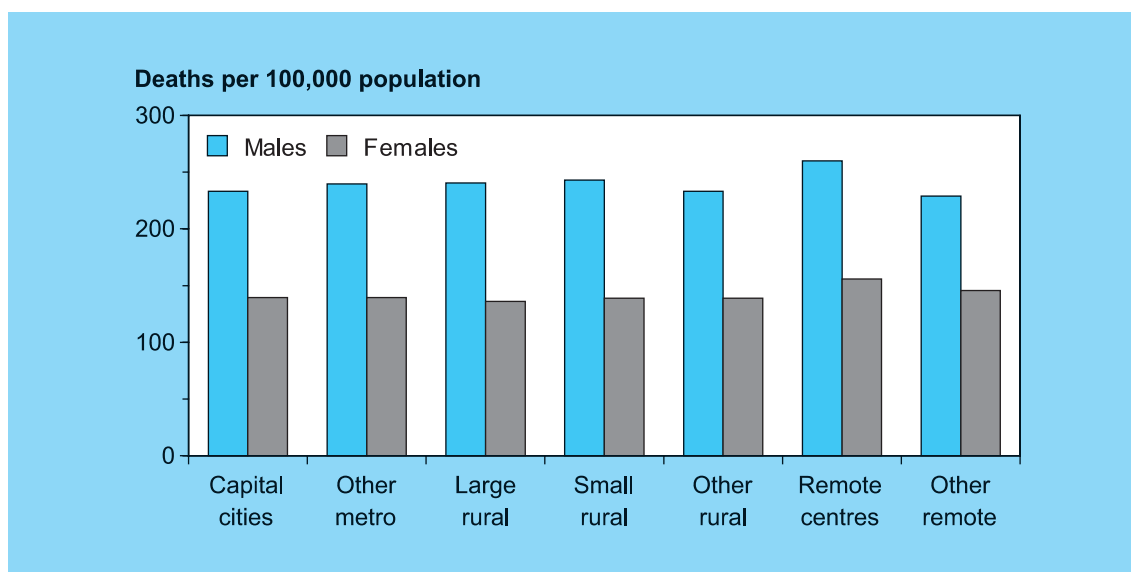
- Indigenous Australians have high prevalence rates of Type 2 (non-insulin-dependent) diabetes (AIHW & DHFS 1997). This may account for the higher hospital separation rates in the remote zone.

For more information, see:

Australian Institute of Health and Welfare & Commonwealth Department of Health and Family Services 1997. First report on National Health Priority Areas 1996. AIHW Cat. No. PHE 1. Canberra: AIHW & DHFS.
Colaguirri S, Colaguirri R & Ward J 1998. National diabetes strategy and implementation plan. Canberra: Diabetes Australia.

All cancer

Death rates for all cancers, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	233.1	239.6	240.4	243.1	233.2	260.0	228.9	234.8
Females	139.4	139.4	136.1	138.9	139.0	155.8	145.8	139.3

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths due to cancer

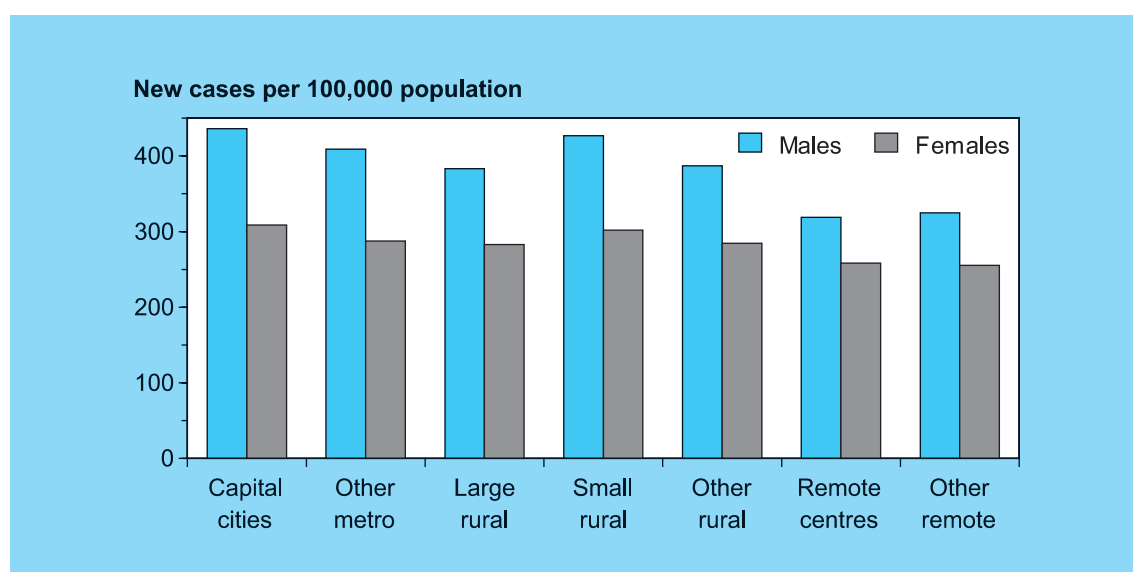
- Cancer is the leading cause of death in Australia. It is a varied group of diseases that are caused by the growth and spread of abnormal cells that are not regulated by normal cellular mechanisms. These cells can invade and destroy body tissue and spread to other organs (DHFS & AIHW 1998b). Each type of cancer has its own mechanisms for development and growth.
- In general, cancer occurs more commonly in males than in females, with one out of three males developing cancer compared with one out of four females (DHFS & AIHW 1998b). Males have a higher rate of death for every major cancer, except for cancers of the breast, gallbladder and thyroid (Jelfs et al. 1996).
- For all cancers combined, the death rate for males is higher than for females across all RRMA categories. Cancer death rates are highest for males and females from 'remote centres', although these rates are not significantly different from those of males and

females from 'capital cities' at the 5% level. Cancer death rates for females are similar for all zones except for the remote zone, where death rates are around 10% higher than other zones.

For more information, see:

Jelfs P, Coates M, Giles G et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW. Australian Institute of Health and Welfare & Australasian Association of Cancer Registries 1998. Cancer in Australia 1991–1994 (with projections to 1999). Cancer Series No. 7. AIHW Cat. No. CAN 2. Canberra: AIHW. Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat No. PHE 4. Canberra: DHFS & AIHW.

Cancer incidence, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	436.2	409.2	383.2	426.7	*387.1	*319.0	*324.6	419.8
Females	308.6	287.6	282.9	301.8	284.6	258.4	*255.4	300.6

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of cancers

- Cancer is a notifiable disease in all States and Territories. As a result, it is one disease for which almost complete incidence data is available. Cancer incidence increases with age and 55% of all cancers occur in those aged over 65 years of age. Better diagnosis of cancer has led to an increase in the incidence of cancer reported in recent years. Projections of new cancer cases in Australia have been estimated at 76,000 cases per annum by 1999 (DHFS & AIHW 1998b).
- For the period 1986–1994, there was a higher incidence of cancers in the metropolitan zone than in either the rural or remote zone. An exception was 'small rural centres', which had cancer incidence rates similar to those of 'capital cities' and higher than those for 'other metropolitan centres'. The higher incidence in the metropolitan zone may reflect better availability of diagnostic facilities. Males have a higher incidence of cancer than do females.

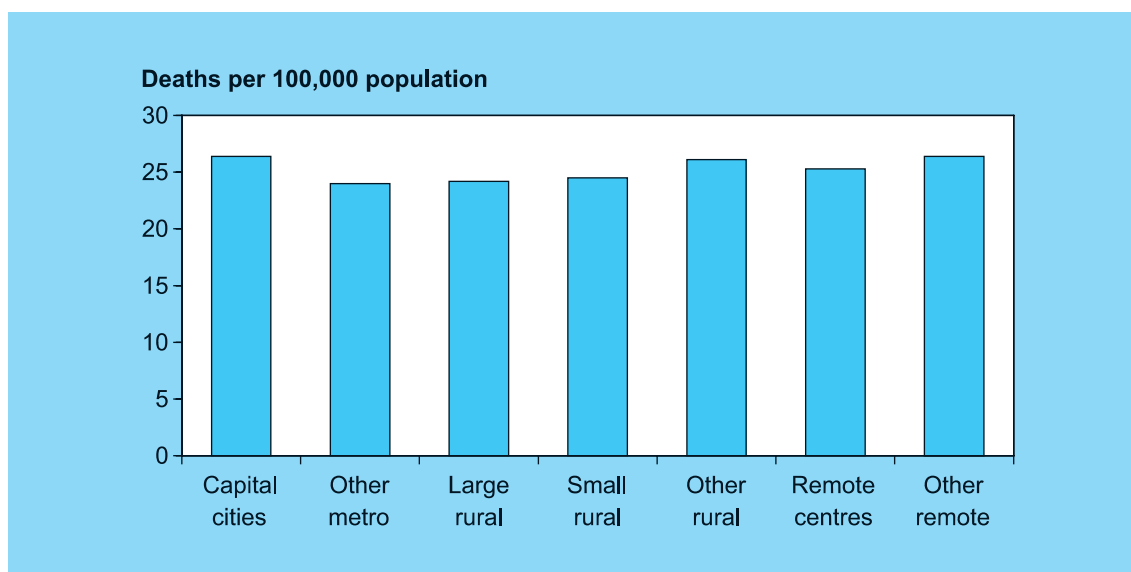
This is true for all RRMA categories. The lowest levels of cancer incidence are for males and females in 'remote centres' and 'other remote areas'. This is in contrast to the death rates for cancer, which are highest for males and females in 'remote centres'.

For more information, see:

Australian Institute of Health and Welfare & Australasian Association of Cancer Registries 1998. Cancer in Australia 1991–1994 (with projections to 1999). Cancer Series No. 7. AIHW Cat. No. CAN 2. Canberra: AIHW.
Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Breast cancer

Death rates for breast cancer in women, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	26.4	24.0	24.2	24.5	26.1	25.3	26.4	25.9

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.

Source: AIHW National Mortality Database.

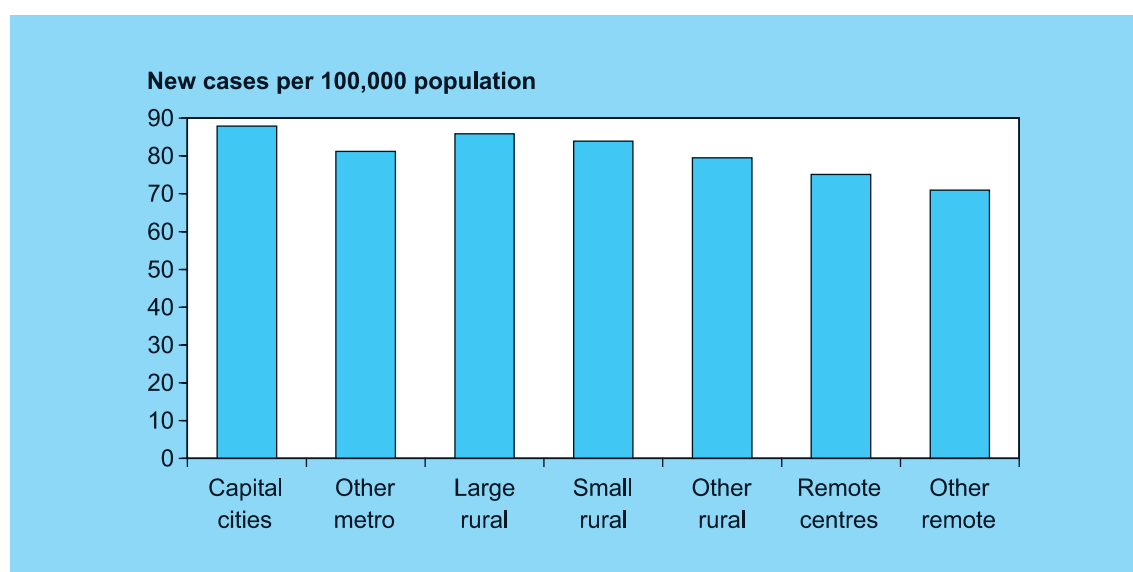
Deaths from breast cancer

- Breast cancer is the most common cancer diagnosed in females in Australia apart from non-melanocytic skin cancers. It is also the most common cause of cancer-related death in Australian females. Over 2,500 females die from breast cancer yearly (DHFS & AIHW 1998b). The risk factors for breast cancer include age and family history of the disease.
- Prevention of mortality from breast cancer is currently achievable by early detection (via mammography) and early treatment. The 5-year relative survival rate for females with localised disease is 90% (Kricker & Jelfs 1996). Increased survival in recent years is a result of screening techniques such as mammography and breast examination by a doctor and advances in treatment.
- BreastScreen Australia provides free 2-yearly mammographic screening to females over the age of 40. The target group is females aged 50–69 years but females aged 40–49 years and over 70 years are also able to participate (DHFS & AIHW 1998b).
- RRMA category does not appear to be a factor in mortality from breast cancer, with death rates similar in all regions.

For more information, see:

Kricker A & Jelfs P 1996. Breast cancer in Australian women 1921–1994. AIHW Cancer Series No. 6. Canberra: AIHW.
Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Incidence of breast cancer in females, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	88.0	81.2	85.9	83.9	79.5	75.1	71.0	85.5

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.
3. Queensland data included.
4. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of breast cancer

- In 1994, there were 9,694 new cases of breast cancer registered in Australia (DHFS & AIHW 1998b). Breast cancer incidence has increased by 5.7% per year from 1990 to 1994 for females of all ages. For females aged 50–74 years the increase in incidence has been higher, 8.3% per year (DHFS & AIHW 1998b). It has been estimated that 1 in 14 females will develop breast cancer if they live to 75 years of age (Kricker & Jelfs 1996).
- Incidence of breast cancer is highest in females from 'capital cities' and lowest in females from 'other remote areas'. This is in contrast to the death rates for females from these two areas, which are similar.
- The differences in incidence rates between rural and remote zones and 'capital cities' are not significantly different at the 5% level. However, the lower rates in the remote zone

could be a result of differences in availability of and access to screening programs between the zones. Screening for breast cancer involves mammography and/or breast examination by a doctor. Mammography detects about 30% of all breast cancers (DHFS & AIHW 1998b).

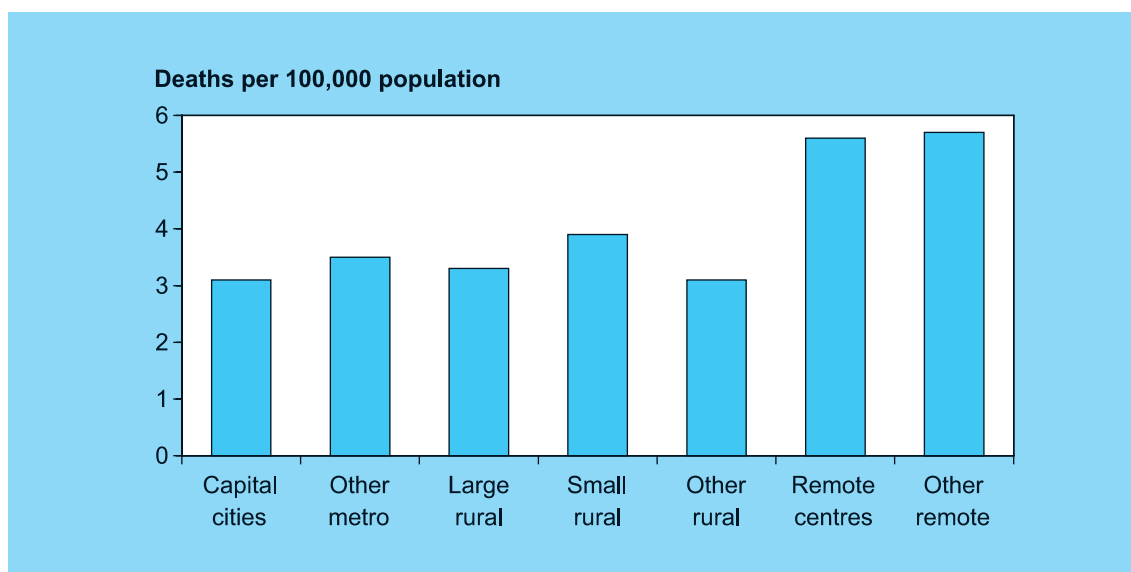
For more information, see:

Kricker A & Jelfs P 1996. Breast cancer in Australian women 1921–1994. AIHW Cancer Series No. 6. Canberra: AIHW.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Cervical cancer

Death rates for cervical cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	3.1	3.5	3.3	3.9	3.1	5.6	5.7	3.3

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.

Source: AIHW National Mortality Database.

Deaths from cervical cancer

- Cervical cancer is the eighth most common type of cancer in Australian females (AIHW & DHFS 1997). In 1994, 1,121 new cases of the disease were reported (DHFS & AIHW 1998b). Mortality from cervical cancer has continued to decline with the introduction and widespread use of the Papanicolaou (Pap) smear test. Pap smear tests are effective for identifying pre-cancerous abnormalities. The early stages of the disease are easy to treat, and prevent the occurrence of cancer.
- Females from the remote zone have higher death rates for cervical cancer than females from all other zones. Females from metropolitan and rural zones have similar death rates for cervical cancer. None of the rates for rural and remote zones is significantly different from 'capital cities' at the 5% level.
- Lack of screening tests in the remote zone may result in greater mortality from cervical cancer if the disease is diagnosed at a later stage. However, most States and Territories have

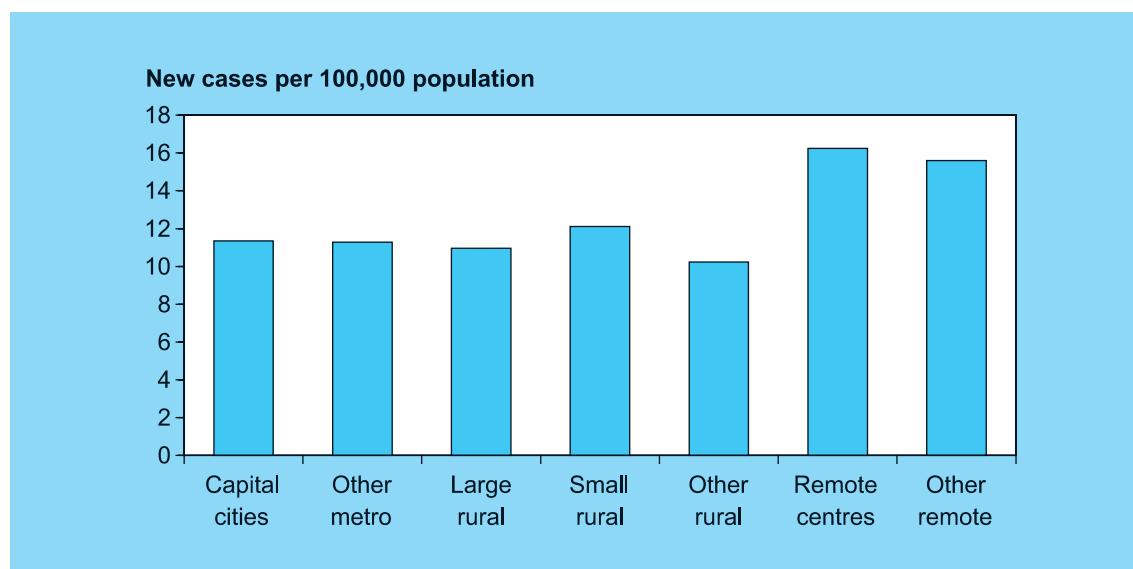
strategies in place to increase participation in screening programs (DHFS & AIHW 1998b). Despite these efforts, non-English-speaking and Indigenous females still have low rates of cervical cancer screening (DHFS & AIHW 1998b). This is a likely explanation for the eight times higher death rates from cervical cancer experienced by Indigenous females, compared with non-Indigenous females (Anderson et al. 1996).

For more information, see:

Anderson P, Bhatia K & Cunningham J 1996. Occasional paper: mortality of Indigenous Australians. ABS Cat. No. 3315.0, AIHW Cat. No. IHW 1. Canberra: AGPS.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Incidence of cervical cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Females	11.3	11.3	11.0	12.1	10.2	16.2	15.6	11.3

Notes

- 1 Age-standardised to the Australian population at 30 June 1991.
- 2 Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
- 3 None of the rates is significantly different from 'capital cities' at the 5% level.
- 4 Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of cervical cancer

- The incidence of cervical cancer continues to fall in Australia largely as a result of the use of Pap smear tests for early detection of the cancer. The projected incidence for 1999 is 10.4 cases per 100,000 females (DHFS & AIHW 1998b). Cancer of the cervix is related to infection by the human papilloma virus (HPV) (DHFS & AIHW 1998b). Other risk factors include multiple sex partners, young age at first intercourse, smoking and low socio-economic status.
- The lowest incidence of cervical cancer is found in 'other rural areas'. Females in the metropolitan zone, 'large rural centres' and 'small rural centres' all have a similar incidence of cervical cancer.
- The incidence of cervical cancer is highest in the remote zone. Indigenous females have a higher incidence of cervical cancer than non-Indigenous females (d'Espaignet et al. 1996) and this may be reflected in the higher rates for the remote zone.

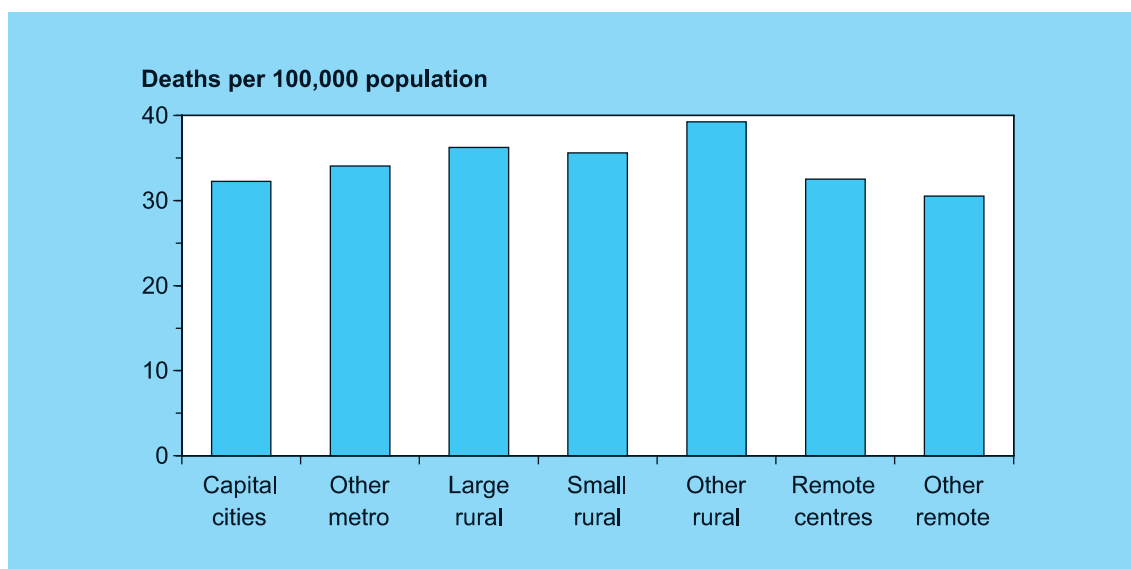
For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

d'Espaignet E, Measey M, Condon J et al. 1996. Cancer in the Northern Territory 1987–1993. Darwin: Northern Territory Health Services.

Prostate cancer

Death rates for prostate cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	32.3	34.1	36.2	35.6	*39.2	32.5	30.5	34.0

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from prostate cancer

- Next to non-melanocytic skin cancer, prostate cancer is the most common cause of cancer in males. In 1996, 2,660 males died from prostate cancer (DHFS & AIHW 1998b). The 5-year survival rates for this cancer have been estimated to be 66% (DHFS & AIHW 1998b).
- Prostate cancer is a slow-growing cancer that occurs in over half of the male population over the age of 75. Many males who die of other conditions (e.g. cardiovascular diseases) are found at autopsy to have malignant cells in the prostate gland.
- Death rates from prostate cancer are similar across most RRMA groups but rates for 'other rural areas' are significantly higher than rates for 'capital cities'. In fact, males in 'other rural areas' have the highest death rate from prostate cancer. Males in the remote zone have similar or lower death rates compared with those in the metropolitan zone.
- Specific risk factors for this cancer are unclear. However, there is a strong association between advancing age and prostate cancer. Other possible risk factors may include high fat diet, large body mass, lack of physical activity and a family history of prostate cancer (NSW Public Health Division 1997).

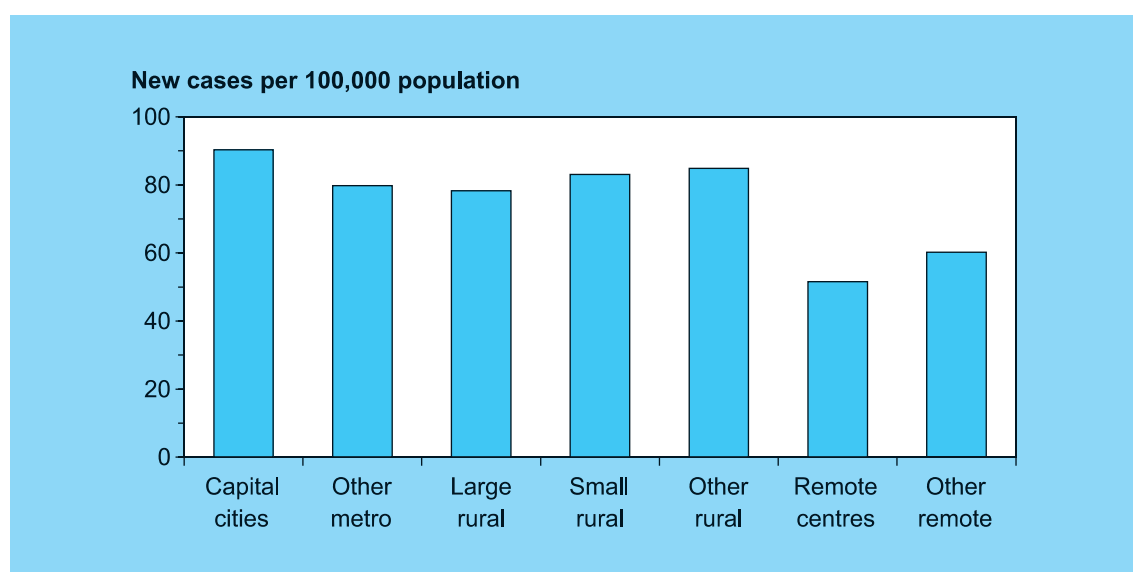
For more information, see:

Jelfs P, Coates, M Giles, G et al. 1996. Cancer in Australia 1989-1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

New South Wales Public Health Division 1997. The health of the people of NSW. Report of the Chief Health Officer. Sydney: New South Wales Health Department.

Incidence of prostate cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	90.3	79.8	78.3	83.1	84.9	*51.6	*60.2	86.7

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of prostate cancer

- Prostate cancer is the most commonly reported cancer in Australian males with 12,787 new cases diagnosed in 1994 (DHFS & AIHW 1998b). The highest incidence of prostate cancer occurs in males over the age of 60. This group accounts for 95% of detected prostate cancers (AIHW 1998a).
- The incidence of prostate cancer has risen rapidly since 1990 when prostate-specific antigen (PSA) testing and ultrasound techniques were introduced for detecting tumours in the prostate gland.
- Prostate cancer is a slow-growing cancer and males with tumours confined to the prostate are often asymptomatic. Patients that show symptoms will most likely have late-stage cancer that has spread beyond the prostate and is incurable (Coley et al. 1997). There is little evidence of mortality reduction as a result of screening for prostate cancer.
- While metropolitan and rural zones have similar rates, almost twice as much prostate cancer is recorded in these zones relative to

the remote zone. This is most likely to be a result of increased PSA screening by doctors in the metropolitan and rural zones.

- The similar incidence rates in the metropolitan and rural zones are in contrast with the higher death rates in the rural zone.

For more information, see:

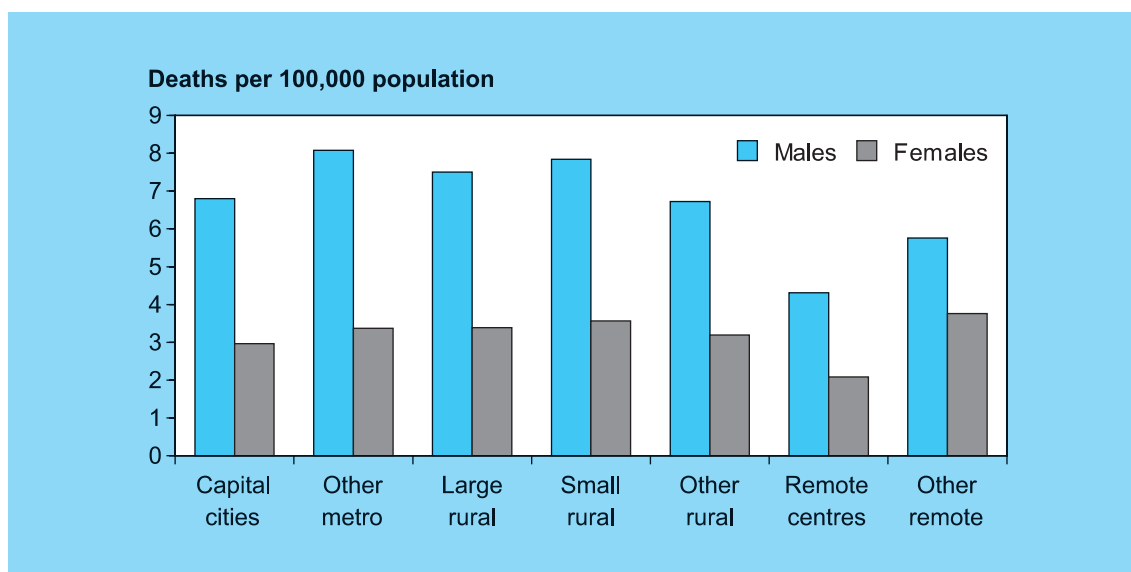
Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Coley CM, Barry MJ, Fleming C et al. 1997. Early detection of prostate cancer, part 2: estimating risks, benefits and costs. *Ann Int Med* 126: 468–79.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Melanoma

Death rates for melanoma, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	6.8	8.1	7.5	7.8	6.7	4.3	5.8	7.0
Females	3.0	3.4	3.4	3.6	3.2	2.1	3.8	3.1

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

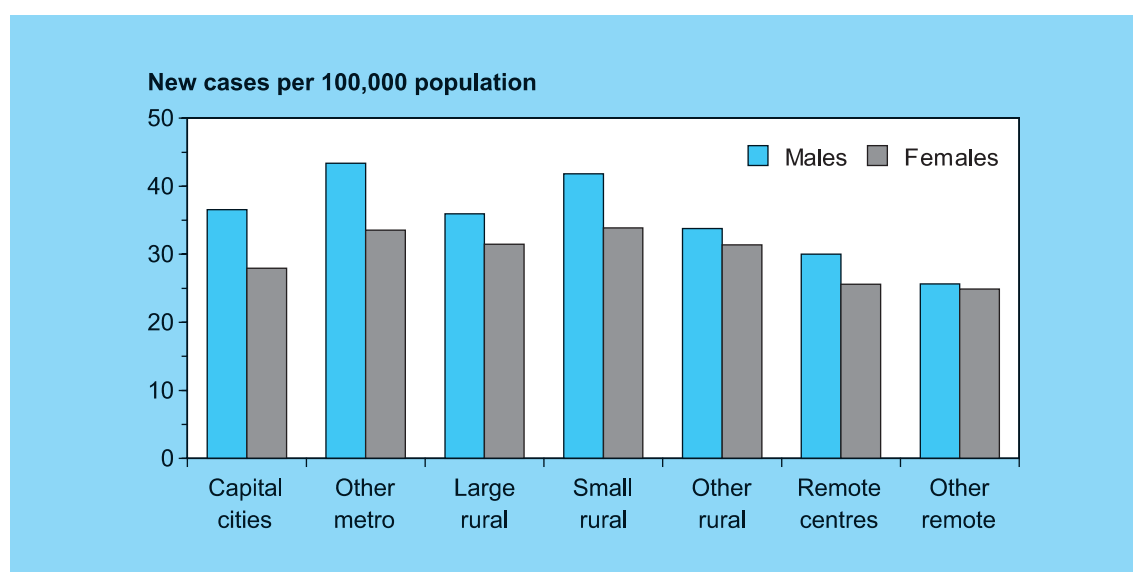
Deaths due to melanoma

- Melanomas are usually found on the skin but they can also occur on other parts of the body, notably in the eye and mucous membranes (Jelfs et al. 1996). For this report, melanoma refers only to melanoma of the skin. Melanoma, along with colorectal cancer, breast cancer and lung cancer, accounted for 47% of all registrable cancers in 1990 (Jelfs et al. 1996).
- Males have around twice the death rate for melanoma compared with females for all RRMA categories. Males from the remote zone have the lowest rate of death from melanoma compared to males from all other zones. However, these values are not significantly different from 'capital cities' at the 5% level.
- Females have similar death rates for melanoma across all RRMA categories, with females in 'remote centres' having the lowest rates. However, these differences are not significantly different from 'capital cities' at the 5% level.
- Risk factors for melanoma include fair skin, poor use of sun protection measures, and sun exposure under the age of 10 years. Survival rates for melanoma are good, as evidenced by the low death rate relative to the incidence rate.

For more information, see:

Jelfs P, Coates M, Giles G et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW.

Incidence of melanoma, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	36.6	*43.4	35.9	41.8	33.8	30.0	*25.7	36.6
Females	28.0	*33.5	31.5	*33.9	31.4	25.6	24.9	29.3

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of melanoma

- Melanoma is the fourth most common cause of cancer for males and the third most common cancer for females. Since the early 1980s, there has been a 66% increase in male melanoma incidence and a 26% increase in female melanoma incidence (DHFS & AIHW 1998b).
- The most common cancer in Australia is non-melanocytic skin cancer but cancer registries do not routinely collect incidence data for this cancer. Melanoma is a registerable cancer so good incidence data are available.
- Incidence of melanoma skin cancer is higher in metropolitan and rural zones than in the remote zone for both males and females. Males from 'other remote areas' have significantly lower rates of melanoma compared with males from 'capital cities'.
- These differences in incidence rates may be a reflection of the higher use of sun protection by both males and females in the remote zone

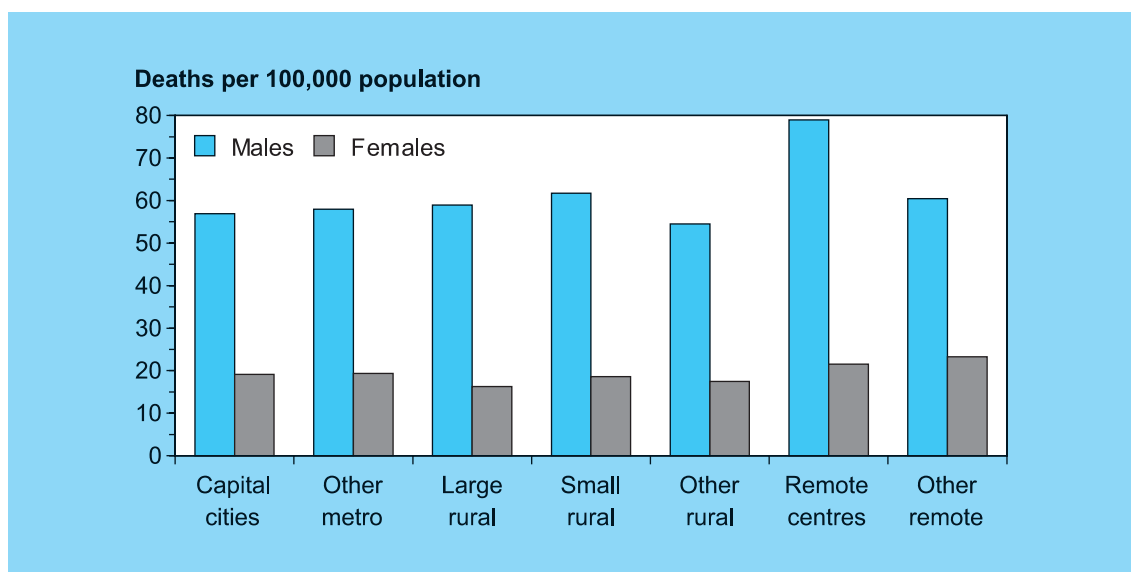
as measured by the 1995 National Health Survey. However, the lower incidence rates in the remote zone may also be due to less screening in those zones relative to the more urban areas. The relatively higher proportion of Indigenous people in the remote zone may provide another possible explanation for the lower incidence of melanoma. Indigenous people have negligible rates of melanoma as they are less susceptible to skin damage from the sun.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Lung cancer

Death rates for lung cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	56.9	58.0	58.9	61.7	54.5	78.9	60.4	57.3
Females	19.1	19.3	16.3	18.6	17.5	21.6	23.3	18.8

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths from lung cancer

- Lung cancer is one of the most common causes of cancer deaths in males and the fourth most common cause of cancer death in females (DHFS & AIHW 1998b). In 1996, it accounted for 20% of all cancer deaths for both sexes combined.
- The death rate from lung cancer is almost three times higher for males than for females. This is a consistent pattern across all RRMA categories. Males from 'remote centres' have the highest death rate but this rate is not significantly different from that for males from 'capital cities'. Death rates for males are similar across metropolitan and rural zones.
- Females from the remote zone have the highest death rates for lung cancer. In contrast to the similarity between the rates for metropolitan and rural males, the rates for

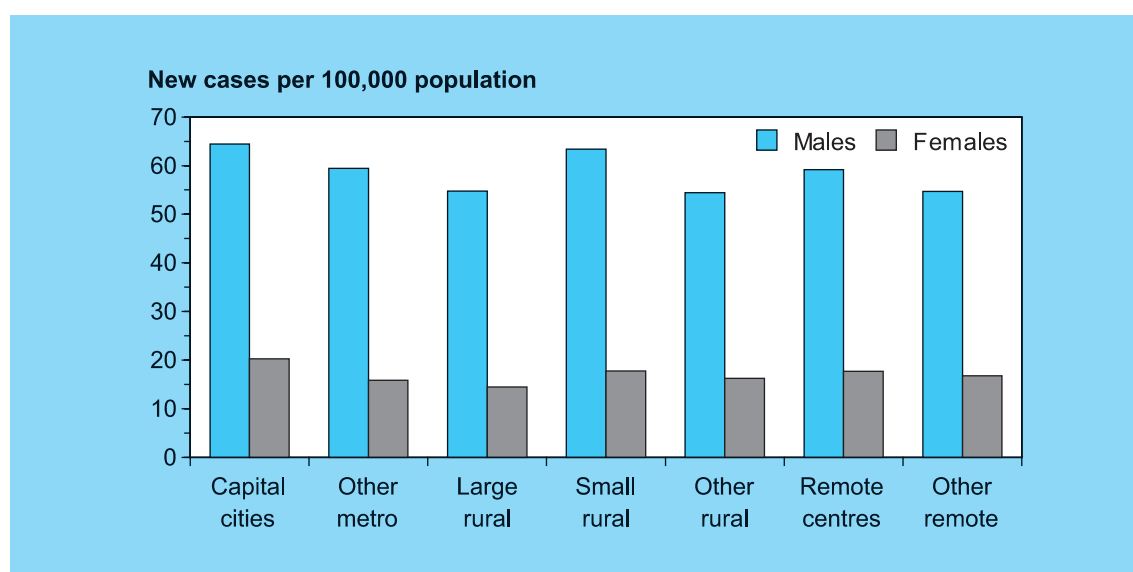
rural females are lower compared with the rates for metropolitan females.

- Cigarette smoking or exposure to cigarette smoke causes cancer of the lungs (including the trachea and bronchus). Differences in death rates from lung cancer may reflect different attitudes to smoking in different communities.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Incidence of lung cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	64.4	59.4	*54.8	63.4	*54.4	59.2	54.7	61.7
Females	20.3	*15.9	*14.5	17.8	*16.3	17.7	16.8	18.8

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of lung cancer

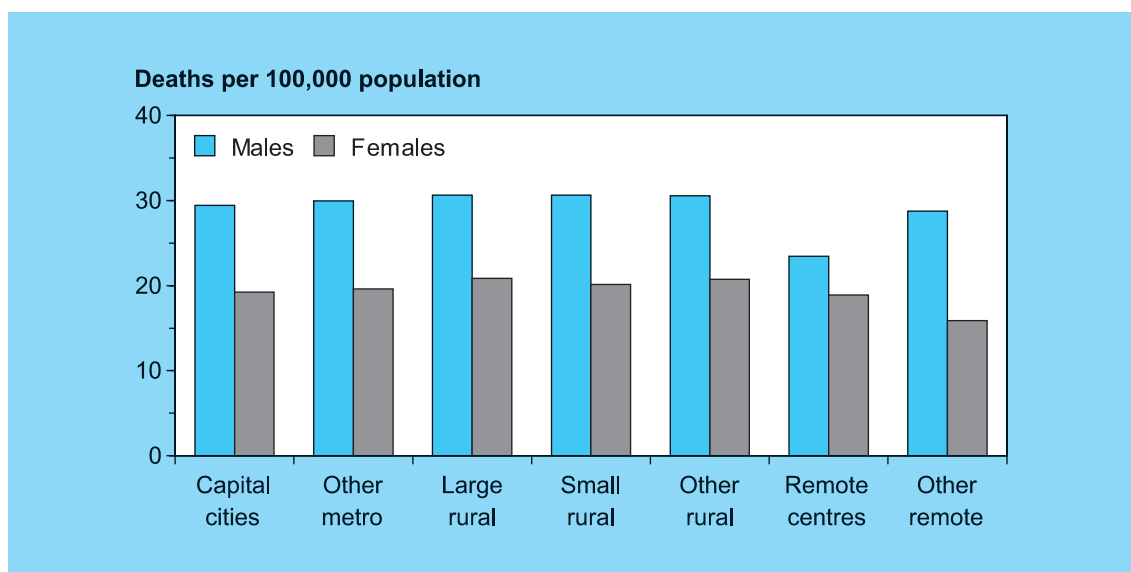
- Since the early 1980s, there has been an 18% decrease in lung cancer incidence among males but a 23% increase in female lung cancer incidence (DHFS & AIHW 1998b). Projections show that the incidence of lung cancer for males will continue to decrease while the incidence for females will rise. Currently, lung cancer incidence and mortality are more than 3 times higher in males than in females.
- Tobacco smoking increases the risk of lung cancer and accounts for around 85% of new lung cancer cases (DHFS & AIHW 1998b).
- The incidence of lung cancer is similar across all areas for both males and females. Males and females in the remote zone have slightly lower incidence compared with males and females in the metropolitan zone but these rate differences are not significantly different from 'capital cities' at the 5% level.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Colorectal cancer

Death rates for colorectal cancer, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	29.4	30.0	30.6	30.6	30.6	23.5	28.8	29.7
Females	19.2	19.6	20.9	20.1	20.8	18.9	15.9	19.6

Notes

1. Age-standardised to the Australian population at 30 June 1991.
 2. None of the rates is significantly different from 'capital cities' at the 5% level.
- Source: AIHW National Mortality Database.

Deaths from colorectal cancer

- Colorectal cancer is the second most common cause of cancer-related death (DHFS & AIHW 1998b; AHTAC 1997). The 5-year survival rates for this cancer are around 55% but early detection does result in better survival (DHFS & AIHW 1998b).
- Primary prevention of colorectal cancer includes avoiding possible risk factors such as high-fat, low-fibre diets. There is also evidence that mortality can be reduced through a program of screening for colorectal cancer using faecal occult blood tests (FOBT) (AHTAC 1997).
- Males have 50% higher death rates than females for this type of cancer. Death rates for males are similar in metropolitan, rural and remote zones. The lowest death rates from colorectal cancer are for males from the remote zone.
- Death rates for females are lowest in 'remote centres' and 'other remote areas' although these rates are not significantly different from those of females in 'capital cities'. The rates for females in the rural zone are similar to the rates for females in the metropolitan zone.

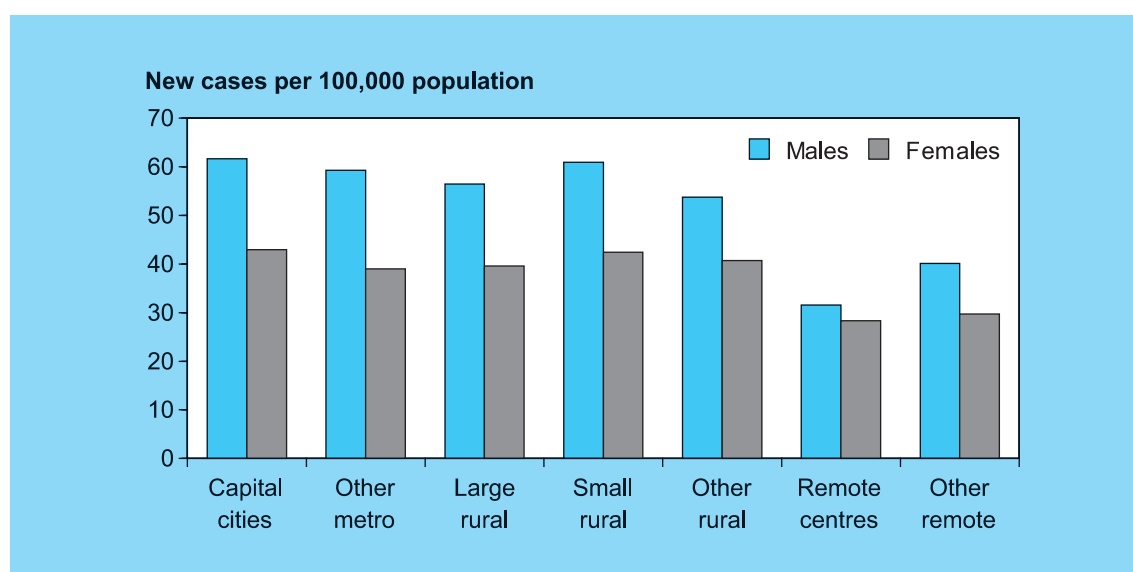
For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Jelfs P, Coates M, Giles G et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995). AIHW Cancer Series No. 5. Canberra: AIHW.

Australian Health Technology Advisory Committee (AHTAC) 1997. Colorectal cancer screening. Canberra: Commonwealth Department of Health and Family Services.

Incidence of colorectal cancer, 1986–94



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	61.7	59.3	56.4	60.9	*53.8	*31.6	*40.1	59.3
Females	42.9	39.0	39.6	42.4	40.7	28.3	*29.7	41.8

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Data for Queensland were unavailable for 1992–94 at the time of analysis and are excluded.
3. Some Victorian data may be incorrect for place of residence at diagnosis.

Source: AIHW National Cancer Statistics Clearing House.

Incidence of colorectal cancer

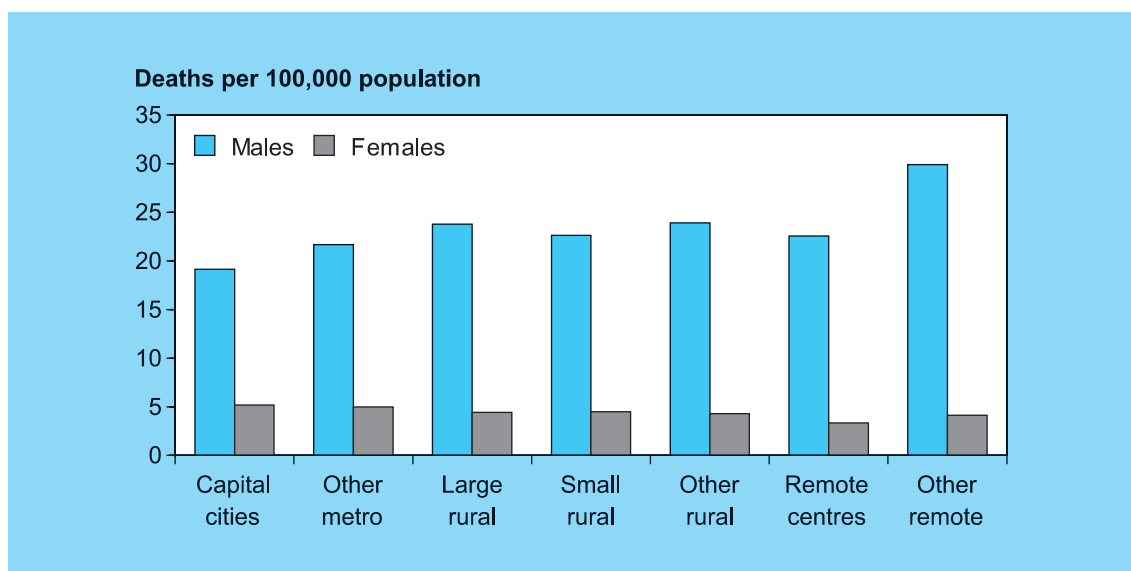
- For males and females combined, colorectal cancer is the second most common registered cancer. Since the early 1980s, both incidence and mortality rates have been relatively stable (DHFS & AIHW 1998b).
- Incidence of colorectal cancer is similar in metropolitan and rural zones and lower in the remote zone for both males and females. This may reflect increased use of screening techniques for colorectal cancers in metropolitan and rural zones relative to the remote zone. It could also reflect differences in diet, a risk factor, between the different zones.
- Colorectal cancer incidence is much higher for males than for females across all zones. This result is consistent with the death rate from colorectal cancer which is 50% higher for males than for females.

For more information, see:

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Suicide

Death rates for suicide and self-inflicted injury, 1992–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	19.2	21.7	*23.8	22.6	*23.9	22.6	*29.9	20.7
Females	5.2	5.0	4.4	4.5	4.3	3.3	4.1	4.9

* Significantly different from 'capital cities' at the 5% level.

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Mortality Database.

Deaths from suicide

- Suicide rates in Australia have remained fairly constant during the twentieth century (AIHW 1998a). However, there has been an increase in suicide by young adult males over the past 30 years. In 1996, there were 2,393 suicide deaths, accounting for 32% of all injury deaths in Australia (AIHW 1998a).
- Death from suicide is often underrecorded with only an estimated one-half of male suicides and three-quarters of female suicides officially recorded (O'Donnell & Farmer 1995). Risk factors for suicide include low socioeconomic status and unemployment, divorce or separation, and in-patient psychiatric diagnosis (Ellis & Collings 1997). Alcohol abuse is another factor that is related to suicide. A study of suicide in Western Australia found that one-third of people who had committed suicide had alcohol in their blood (Hayward et al. 1992).
- Youth suicide is a growing problem in Australia. This is highlighted by the fact that Australia and New Zealand are the only Western countries in which youth suicide rates are higher than the total suicide rates (Ellis & Collings 1997). Risk factors for youth suicide are depression, past attempt at suicide, substance abuse, conduct abuse, family history of discord, exposure to suicide, child abuse and academic failure (Dudley et al. 1997). Other factors thought to be involved in the decision to suicide include: youth unemployment, media depictions of suicide, availability of lethal methods (e.g. firearms) and problems with access to and use of psychiatric services (Dudley et al. 1997).
- The death rate from suicide is five times higher for males than for females in all areas. Young males are more likely to use firearms, hanging or motor vehicle exhaust as the means of committing suicide, whereas females are most likely to use drug overdose or poisons to commit suicide (DHFS 1997b).

- The highest male suicide rates are for males in 'large rural centres', and 'other remote areas'. The rates for these zones are significantly higher than the rates for males from 'capital cities'. In contrast to the picture for males, death rates for females are highest in the metropolitan zone and the lowest in the remote zone.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Commonwealth Department of Health and Family Services 1997. Youth suicide in Australia: a background monograph. Canberra: AGPS.

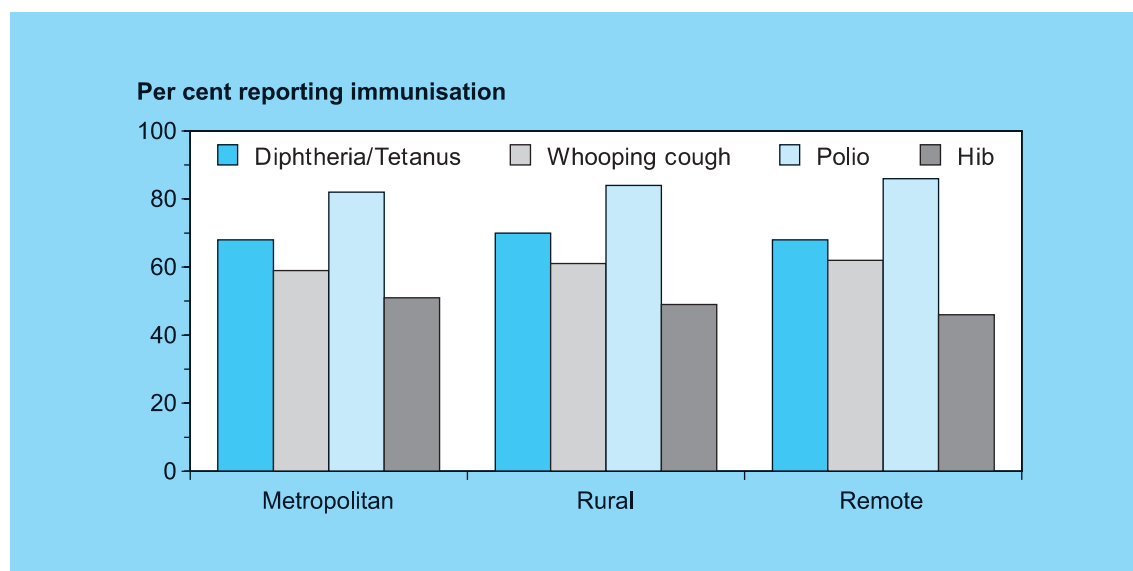
Dudley M, Kelk N, Florio T et al. 1997. Suicide among young rural Australians 1964-1993: a comparison with metropolitan trends. *Soc Psychiatry Psychiatr Epidemiol* 32: 251-60.

Ellis PM & Collings SCD 1997. Mental health in New Zealand from a public health perspective. Wellington: Ministry of Health.

Hayward L, Zubrick SR & Silburn S 1992. Blood alcohol levels in suicide cases. *J Epidemiol Community Health* 46: 256-60.

O'Donnell I & Farmer R 1995. The limitations of official suicide statistics. *Br J Psychiatry* 166: 458-61.

Proportion of children aged 0–6 years immunised for vaccine-preventable diseases, 1995



Disease	Metropolitan	Rural	Remote	Total
Diphtheria/Tetanus	68	70	68	69
Whooping cough	59	61	62	60
Polio	82	84	86	83
Hib	51	49	46	50

Notes

1. Table shows percentage of children fully immunised with reference to the current (1994) NHMRC Standard Childhood Vaccination Schedules.

2. The survey sample size was too small to allow the full seven-category RRMA breakdown.

Source: 1995 ABS Children's Immunisation and Health Screening Survey.

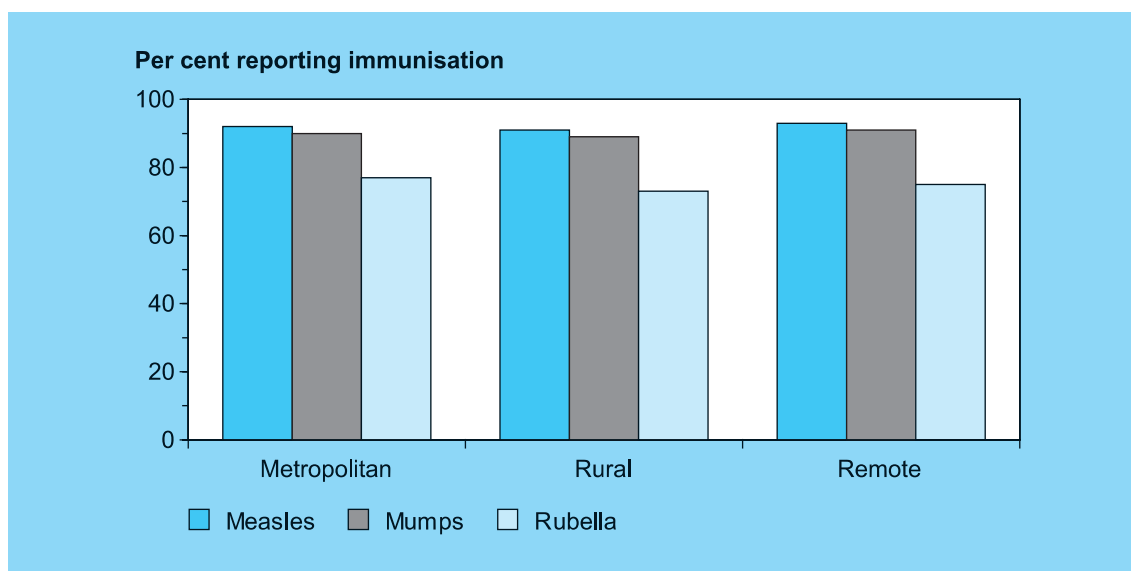
Immunisation against vaccine-preventable diseases

- Immunisation against vaccine-preventable diseases is an important public health measure aimed at reducing sickness and death from childhood diseases. In order to prevent transmission of a highly infectious disease, 92% to 95% of the population must have immunity to the disease (AIHW 1998a). The percentages vaccinated for diphtheria/tetanus, whooping cough, polio and *Haemophilus influenzae* type b (Hib) are too low to provide full immunity to the Australian population.
- Metropolitan, rural and remote zones all report similar proportions vaccinated for diphtheria/tetanus, whooping cough, polio and Hib.
- A high percentage of children from all areas are vaccinated against polio. In contrast, only 50% of children from all areas report a vaccination against Hib. Hib was added to the vaccination schedule for the first time in April 1993 and rates of vaccination are expected to increase in the future.
- Vaccination rates for diphtheria/tetanus, whooping cough and Hib are considerably lower than for the other communicable diseases across all areas. These are the vaccines that require multiple doses for complete immunisation. To be fully immunised according to the NHMRC Standard Childhood Vaccination Schedules, a child needs to receive vaccination at least five times, at 2, 4, 6, 18 and 60 months of age.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Proportion of children over one year of age vaccinated for measles, mumps and rubella, 1995



Disease	Metropolitan	Rural	Remote	Total
Measles	92	91	93	92
Mumps	90	89	91	90
Rubella	77	73	75	76

Notes

1. Table shows percentage of children fully immunised with reference to the current (1994) NHMRC Standard Childhood Vaccination Schedules.
 2. The survey sample size was too small to allow the full seven-category RRMA breakdown.
- Source: 1995 ABS Children's Immunisation and Health Screening Survey.

Vaccination for measles, mumps and rubella

- Vaccinations for measles, mumps and rubella are given with a combined measles, mumps and rubella (MMR) vaccine to children at 12 months of age (AIHW 1998a; NHMRC 1996). However, Indigenous children in the Northern Territory are vaccinated at 9 months of age (NHMRC 1996). A second dose is recommended at 10-16 years of age. Rubella requires re-vaccination and is particularly recommended for females of child-bearing age because rubella can cause blindness, deafness and congenital heart abnormalities in the fetuses of infected mothers.
- More than 90% of children over the age of 1 year are vaccinated against measles and mumps. A lower rate of vaccination is evident for rubella, with only around 75% of children fully vaccinated. The lower percentage of rubella vaccinations compared with the rates for measles and mumps is partly explained by

fewer males being fully immunised than females, reflecting a perception that rubella vaccination is required only for females (ABS 1998c).

- Immunisation rates for measles, mumps and rubella are similar across metropolitan, rural and remote zones.

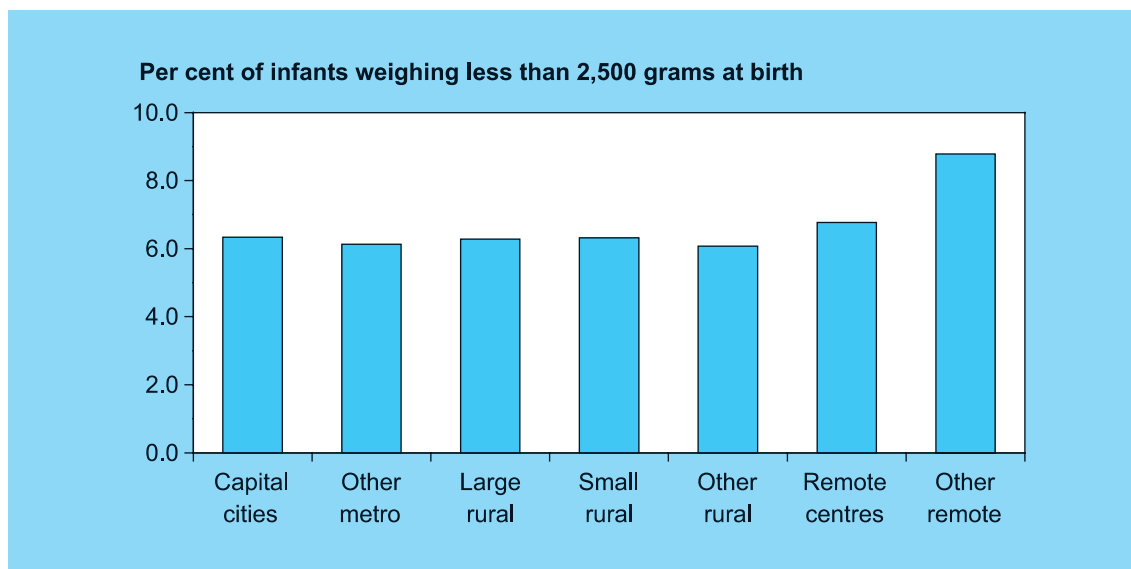
For more information, see:

Australian Bureau of Statistics 1998. Children's immunisation Australia, April 1995. ABS Cat. No. 4352.0. Canberra: AGPS.

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

National Health and Medical Research Council 1996. Measles. Guidelines for control of outbreaks in Australia. Canberra: AGPS.

Proportion of infants weighing less than 2,500 grams at birth, 1991–95



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Per cent low-birthweight	6.3	6.1	6.3	6.3	6.1	6.8	8.8	6.4

Source: AIHW National Perinatal Statistics Unit.

Low-birthweight

- Low-birthweight is an important indicator of infant health status and may result in poor health outcomes later in life. Low-birthweight infants are more likely to die or suffer illness compared with those of normal birthweight (Day et al. 1997). Low-birthweight is related to risk factors such as lack of prenatal care and inadequate maternal nutrition.
- In 1995, there were 16,571 infants of low-birthweight born in Australia (Day et al. 1997). Low-birthweight is more common in Indigenous babies, with 11.8% of Indigenous newborns in 1995 weighing less than 2,500 grams (Day et al. 1997).
- 'Other remote areas' have the highest proportion of low-birthweight babies. The relatively higher proportion of Indigenous babies in remote areas may explain this result because Indigenous Australians have twice

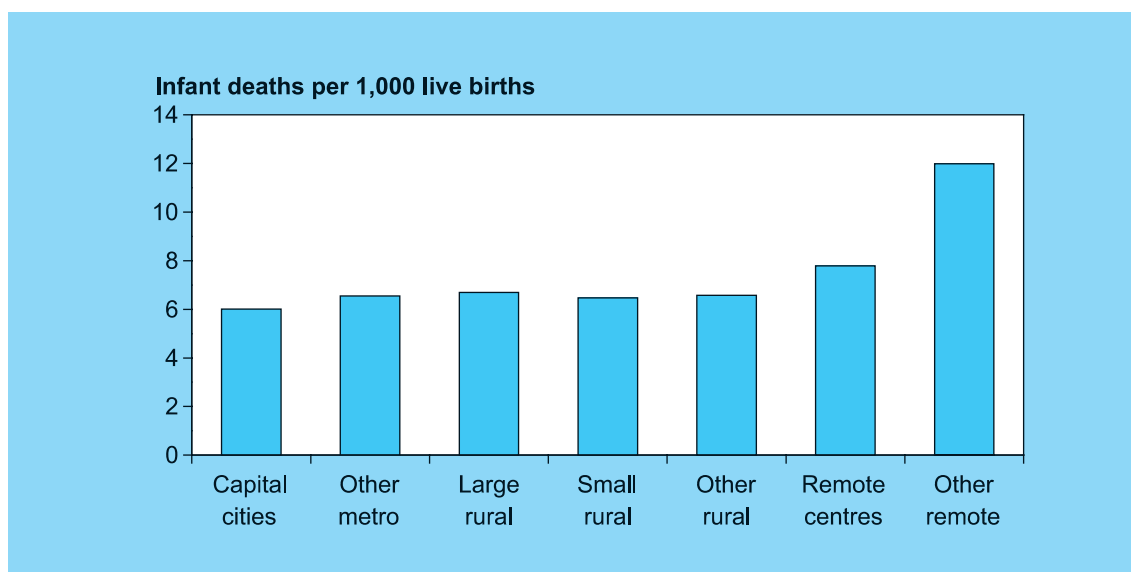
the rate of low-birthweight infants compared with non-Indigenous Australians. Females living in the remote zone may not have the same access to prenatal care as females living in metropolitan and rural zones.

- All other areas have similar proportions of low-birthweight infants.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.
Day P, Lancaster P & Huang J 1997. Australia's mothers and babies 1995. Perinatal Statistics Series No. 6. Sydney: AIHW National Perinatal Statistics Unit.

Infant mortality rates per 1,000 live births, 1991–95



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Infant mortality per 1,000 live births	6.0	6.6	6.7	6.5	6.6	7.8	12.0	6.3

Source: AIHW National Mortality Database.

Infant mortality

- Infant mortality is a traditional indicator of the health of a population. In the last two decades, infant mortality has declined dramatically in Australia. In 1996 the rate was 5.9 deaths per 1,000 live births (AIHW 1998a).
- Three main causes of infant mortality accounted for 76% of all infant deaths from 1980 to 1995. These are congenital anomalies, sudden infant death syndrome (SIDs), and perinatal conditions such as low birth-weight.
- Infants from 'other remote areas' have twice the mortality rates of other areas. This may be partially explained by the high proportion of Indigenous infants in this area of Australia.
- 'Remote centres' have slightly higher infant mortality rates than other regions but considerably lower rates than 'other remote

areas'. The lowest infant mortality rates are found in 'capital cities'.

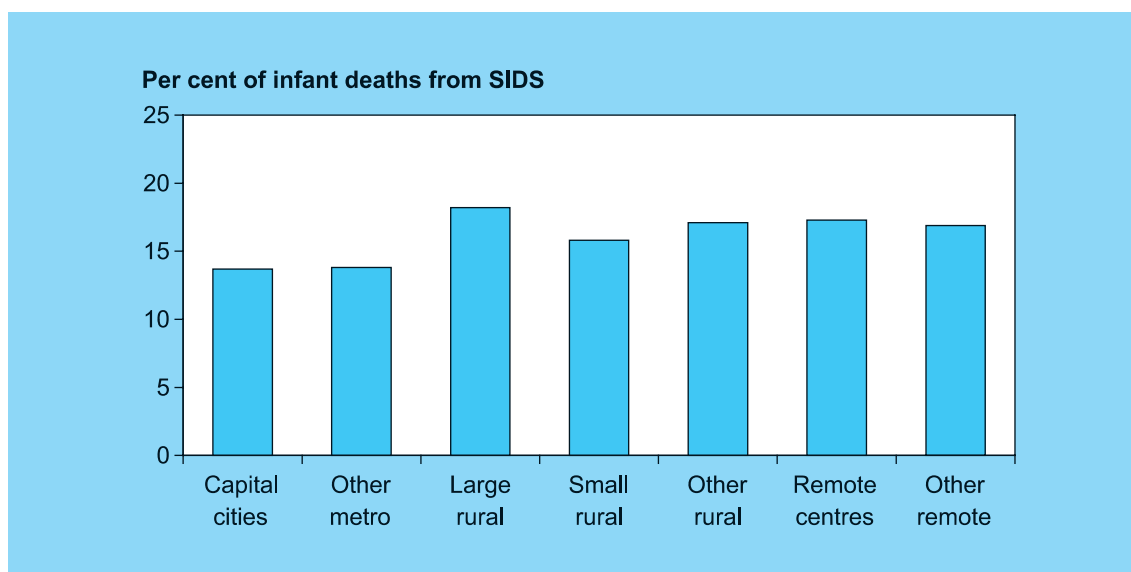
For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Australian Bureau of Statistics 1998. Causes of infant and child deaths in Australia 1982-1996. ABS Cat. No. 4398.0. Canberra: AGPS.

Mathers CD 1995. Health differentials among Australian children. Australian Institute of Health and Welfare: Health Monitoring Series No. 3. Canberra: AGPS.

Proportion of infant deaths from SIDS, 1992–96



Indicator	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Per cent of infant deaths from SIDS	13.7	13.8	18.2	15.8	17.1	17.3	16.9	14.8

Source: AIHW National Mortality Database.

SIDS deaths

- Sudden infant death syndrome (SIDS) is one of the leading causes of death in infants in Australia. SIDS accounted for 14% of infant deaths in 1996 with a higher death rate for males than for females (AIHW 1998a).
- A decline in SIDS deaths since 1990 is attributed to the success of a national campaign, Reducing the Risks of SIDS. This campaign highlighted risk factors including sleeping posture, feeding practices and exposure of infants to passive smoking.
- Rural and remote zones have substantially higher rates of deaths due to SIDS than the metropolitan zone over the 5-year period 1992–96. The greater proportion of Indigenous infant deaths in the remote zone may explain the higher rate for SIDS in this zone. However,

caution must be used when interpreting these results because only a small number of infant deaths each year are attributable to SIDS. As a result, the differences between populations may not reflect actual differences in SIDS death rates between areas.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.
 Australian Bureau of Statistics, 1998. Causes of infant and child deaths in Australia 1982–1996. ABS Cat. No. 4398.0. Canberra: AGPS.

4 Health risk factors and preventive measures

Health risk is the likelihood that an individual exposed to certain factors will develop disease. Risk factors are attributes or exposures associated with an increased probability of disease. These include factors in the physical environment, such as toxins and infectious agents, as well as factors in the social environment, such as family disruption, which are associated with increased rates of disease. Behavioural factors such as smoking or physical inactivity are also associated with increased rates of disease. For example, cigarette smokers have an increased risk of developing lung cancer and cardiovascular disease.

Risk factors are often used as predictors of disease in individuals if the causal link between the factor and the disease is established. More often, especially when the disease is uncommon, risk factors are useful as predictors of disease in populations. For example, there are elderly people with a long history of cigarette smoking but no lung cancer, and their survival is often touted as evidence that cigarette smoking is not related to lung cancer. However, when a population of long-term cigarette smokers is compared with a population of people who have never smoked, it becomes immediately apparent that smokers have an increased risk of lung cancer.

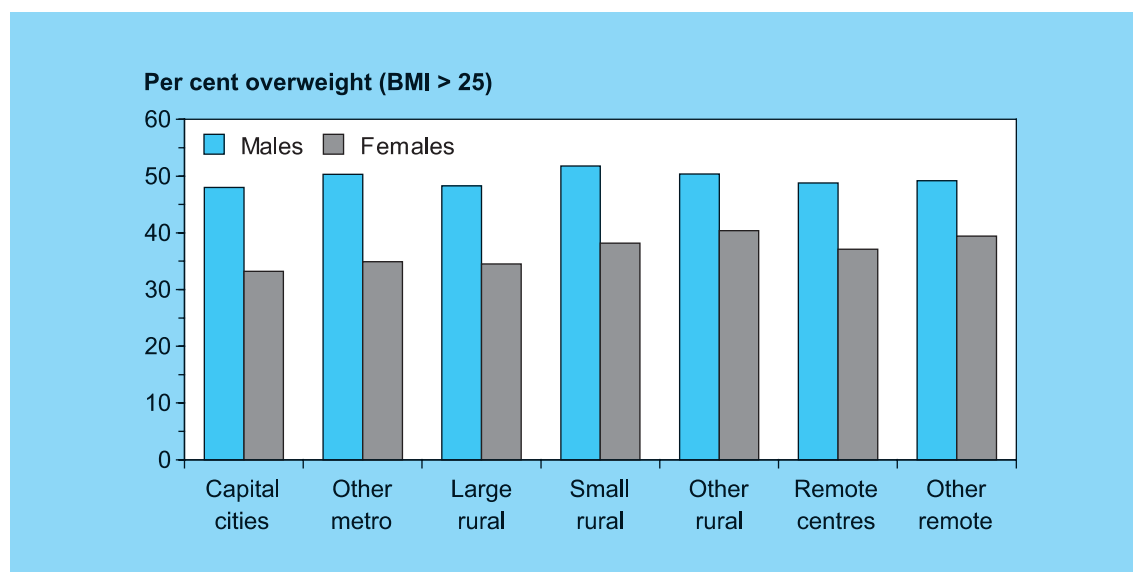
In some cases, a risk factor may not cause the disease directly but instead may be associated with the causal factor. In this case, the risk factor becomes a marker for the disease because it 'marks' an increased probability of developing the disease. For example, a low level of maternal education may be a marker for infant malnutrition if mothers are not fully aware of food constituents. Educating women in a community may make them more aware of the types of nutritious foods that they need to feed their infants.

Risk factors for chronic conditions such as cardiovascular disease may be difficult to determine. Often there is a long time lag between exposure to a risk factor and development of the disease. There may also be more than one cause of a disease and therefore, several different risk factors may need to be examined. Cardiovascular disease is a good example of a disease that is associated with many different risk factors including being overweight, smoking, physical inactivity, high blood pressure and high serum cholesterol. Any one or a combination of these factors can put an individual at higher risk of developing the disease.

The 1995 National Health Survey asked Australians about their specific disease-related risk factors. This chapter uses the survey information to determine if there are risk factor differences between metropolitan, rural and remote population groups. Understanding the differences in risk factors between rural, remote and metropolitan populations of Australia is the first step to introducing preventive measures in these communities.

Body weight

Overweight and obesity, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	48.0	50.3	48.3	51.8	50.4	48.8	49.2	48.8
Females	33.2	34.9	34.5	*38.2	*40.4	37.1	39.4	*34.8

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Ages 15 and over reporting BMI > 25.

Source: 1995 ABS National Health Survey.

Body weight

- Being overweight is a risk factor for several disabling and/or life-threatening diseases and conditions including diabetes, stroke and ischaemic heart disease. When energy intake is greater than energy expenditure over a long period, body weight increases and can result in an individual becoming overweight or obese (Lester 1994).
- Body Mass Index (BMI) is the ratio of self-reported weight to self-reported height squared ($\text{weight}/(\text{height})^2$). The range of BMI associated with the lowest mortality and morbidity is greater than 20 and less than 25. A BMI of greater than 25 is used as a measure of overweight.
- Self-reported height and weight may differ significantly from measured height and weight and the deviations will result in biased BMI estimates. Waters (1993) has found that average self-reported height is greater than average measured height for males of most ages but only for females over the age of 45. Both males and females tend to underestimate their weight. Smaller proportions of females than males misreport their weight. However, those females that do misreport weight do so to a greater extent than do males.
- During the 1995 survey a lower percentage of females from all areas of Australia reported being overweight compared with males. However, because weight and height are self-reported measures of BMI and males and females may over- or underestimate weight and height to different degrees, comparisons between the sexes are difficult to interpret.
- Approximately 50% of males from all RRMA categories reported being overweight in the 1995 survey, with no significant differences between the proportions of any one RRMA category.

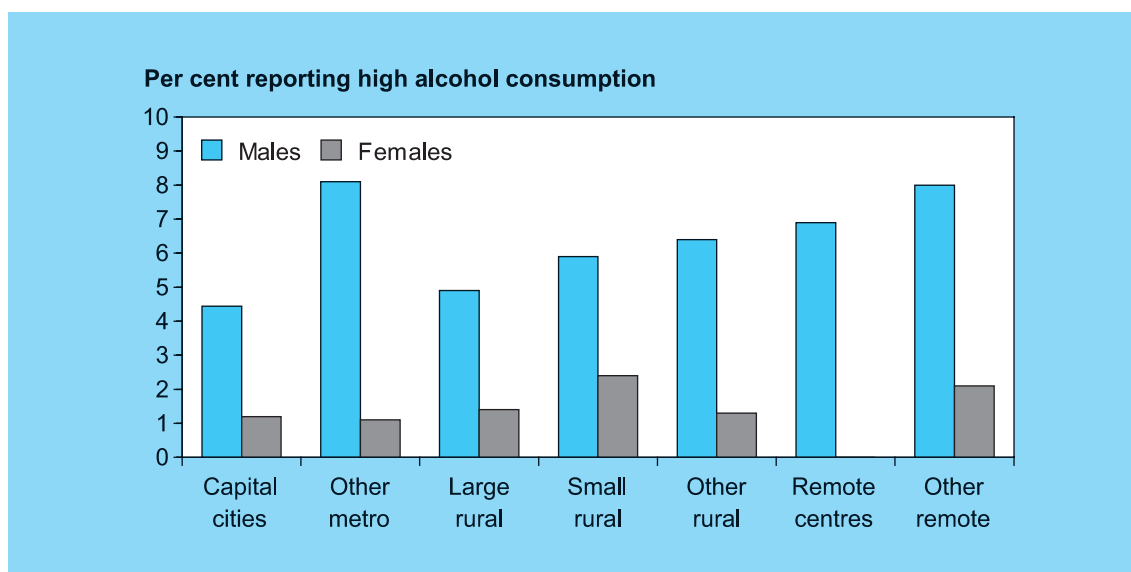
- Around 40% of females from 'small rural centres', 'other remote areas' and 'other rural areas' report being overweight in contrast to one-third of females from 'capital cities', 'other metropolitan centres' and 'large rural centres'.

For more information, see:

Lester I 1994. Australia's food and nutrition. Canberra: AGPS.

Waters AM 1993. Assessment of self-reported height and weight and their use in the determination of body mass index. Canberra: AIHW.

Self-reported high alcohol consumption, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	4.4	*8.1	4.9	5.9	*6.4	6.9	*8.0	*5.2
Females	1.2	1.1	1.4	*2.4	1.3	*0.0	2.1	1.4

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Ages 25–64 reporting high alcohol consumption.

Source: 1995 ABS National Health Survey.

High alcohol consumption

- Heavy alcohol consumption is a risk factor for coronary heart disease (Lester 1994). Consumption of alcoholic beverages is also associated with increased risk of several types of cancer including cancers of the breast, stomach, colon, pancreas, rectum and liver (Abraham et al. 1995). Long-term heavy alcohol consumption leads to cirrhosis of the liver and may lead to alcohol-related brain damage.
- High alcohol consumption can also be a risk factor for non-disease-related mortality and morbidity. For example, it is the leading cause of road traffic accidents. It is also associated with mental problems, in particular depression.
- The National Health and Medical Research Council (1987) recommends that high alcohol consumption be defined as greater than 50 ml for females or greater than 75 ml of alcohol

per day for males. By this definition, four standard glasses of wine or three-and-a-half (300 ml) glasses of beer per day places a female above the limit. A male drinking six standard glasses of wine or five (300 ml) glasses of beer per day would be considered a high alcohol consumer.

- Information on high alcohol consumption in the National Health Survey is self-reported. This may lead to an underestimate of high alcohol consumption especially if high alcohol consumers do not report the amount of alcohol they consume.
- For all regions, the greatest proportion consuming high levels of alcohol are men. The highest proportions of these males are from 'other metropolitan centres' and 'other remote areas'. The lowest proportions reporting high alcohol consumption are from 'capital cities' and 'large rural centres'.

- Males from 'other metropolitan centres', 'other rural areas' and 'other remote areas' report significantly greater proportions of heavy alcohol consumption compared with males from 'capital cities'. The highest high alcohol consumption for females is reported by females from 'small rural centres'. 'Remote centres' have significantly lower rates of females consuming high levels of alcohol than do 'capital cities'.

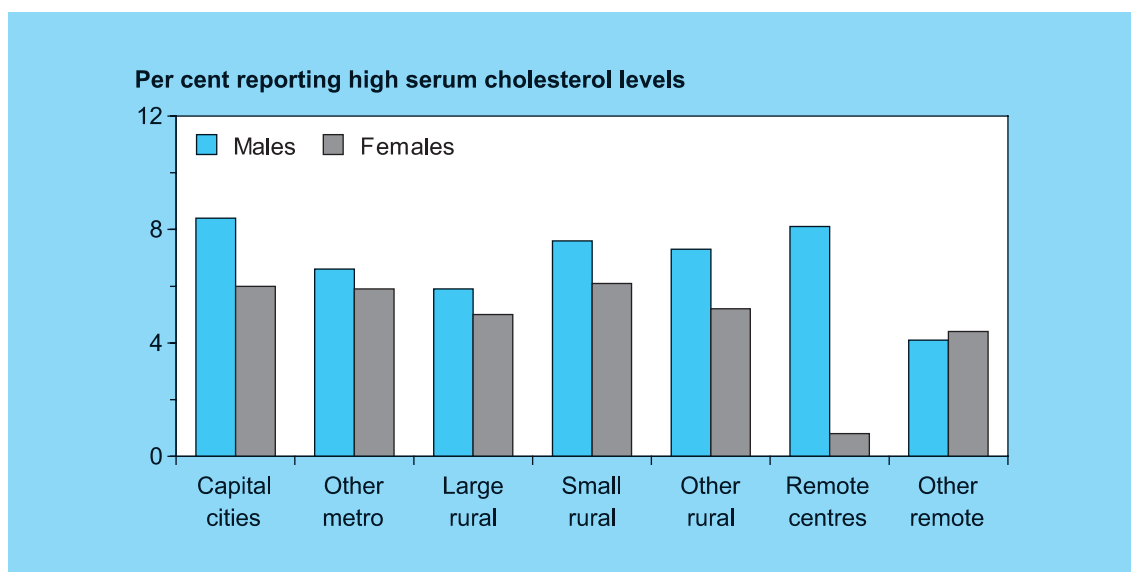
For more information, see:

Abraham B, d'Espaignet ET & Stevenson C 1995. Australian health trends 1995. Canberra: AIHW.

Lester I 1994. Australia's food and nutrition. Canberra: AGPS.

Mathers CD 1994. Health differentials among adult Australians aged 25-64 years. Australian Institute of Health and Welfare: Health Monitoring Series No. 1. Canberra: AGPS.

Self-reported high serum cholesterol levels, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	8.4	*6.6	*5.9	7.6	7.3	8.1	*4.1	7.9
Females	6.0	5.9	5.0	6.1	5.2	*0.8	4.4	5.7

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Ages 25–64 years reporting high serum cholesterol.

Source: 1995 ABS National Health Survey.

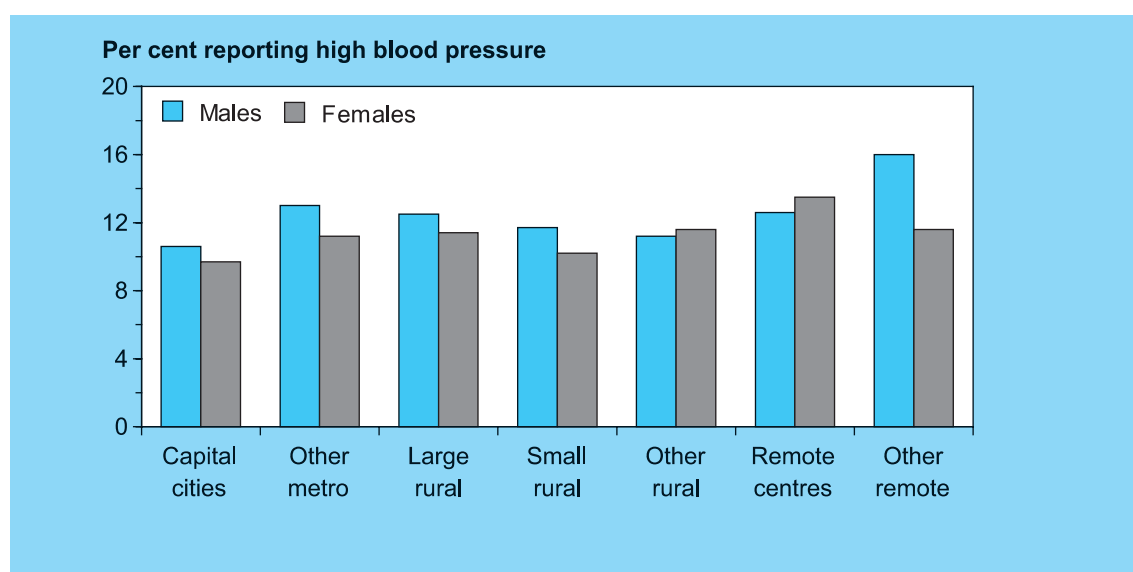
High serum cholesterol

- High serum cholesterol is a risk factor for developing atherosclerosis, which leads to coronary heart disease. Data from the Multiple Risk Factor Intervention Trial (MRFIT) shows that a 1% increase in serum cholesterol can lead to a 2% increase in risk of coronary heart disease (Lester 1994).
- Up to 12% of respondents report having high cholesterol. Self-reported serum cholesterol levels may not reflect the true level of high serum cholesterol in the population because only people who have visited their doctor recently for a test are able to report high serum cholesterol levels. People living in the remote zone may not have been tested for high serum cholesterol, thus leading to underestimation or overestimation of the risk in these areas.
- More males from most RRMA categories report having high cholesterol than do females. Males from 'capital cities', 'small rural centres', 'other rural areas' and 'remote centres' have the highest percentage of self-reported high serum cholesterol, at between 7–8.5%. In contrast, about 4.0–6.6% of males from 'other remote areas', 'other metropolitan centres' and 'large rural centres' report having high cholesterol.
- Over 5% of females from 'capital cities', 'other metropolitan centres', 'small rural centres' and 'other rural areas' report having high serum cholesterol levels and this is contrasted with rates of between 0.8% from 'remote centres' to 4.4% from 'other remote areas'. Females from 'remote centres' report high serum cholesterol significantly less often than their counterparts in 'capital cities'.

For more information, see:

Lester I 1994. Australia's food and nutrition. Canberra: AGPS.

Self-reported high blood pressure, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	10.6	*13.0	12.5	11.7	11.2	12.6	*16.0	11.1
Females	9.7	11.2	11.4	10.2	*11.6	13.5	11.6	10.3

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Ages 25–64 years reporting high blood pressure.

Source: 1995 ABS National Health Survey.

High blood pressure

- High blood pressure is an independent risk factor for total mortality, death from coronary heart disease and death from stroke in both males and females (Lester 1994). High blood pressure is also associated with high serum cholesterol and non-insulin-dependent diabetes mellitus. People who have diets high in salt, or who are heavy alcohol users or overweight are at increased risk of developing high blood pressure.
- Females show lower rates of self-reported high blood pressure than males for all areas except for 'other rural areas' and 'remote centres'. Females from the remote zone, particularly 'remote centres', report the highest prevalence of high blood pressure.
- 'Other rural areas' had significantly higher rates of females self-reporting high blood pressure than females in 'capital cities'. 'Large rural centres', 'other metropolitan centres' and

'other remote areas' had the highest proportion of males reporting high blood pressure. 'Other remote areas' had significantly higher rates of males reporting high blood pressure than males in 'capital cities'.

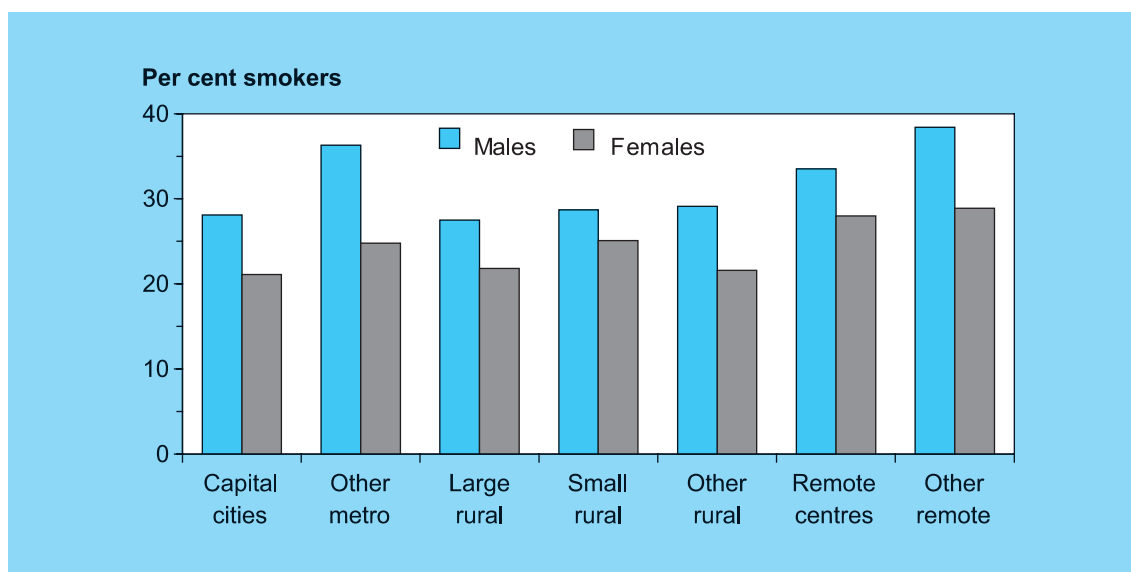
- The 1995 National Health Survey measures self-reported high blood pressure, so accurate measures may only be available for people who have seen a medical practitioner recently. Many other factors affect the reporting of high blood pressure, including use of medication to relieve high blood pressure and time between measurements by a doctor.

For more information, see:

Lester I 1994. Australia's food and nutrition. Canberra: AGPS.

Tobacco smoking

People who smoke, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	28.1	*36.3	27.5	28.7	29.1	*33.5	*38.4	29.0
Females	21.1	*24.8	21.8	*25.1	21.6	28.0	*28.9	21.9

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. Ages 25–64 years reporting tobacco smoking.

Source: 1995 ABS National Health Survey.

Smoking

- Cigarette smoking is a leading cause of mortality and morbidity in Australia (AIHW 1998a). It is a risk factor that has been causally linked to several serious diseases including lung cancer, heart attack and stroke. Smokers are more likely to report fair/poor health and unhappiness, and to have significantly more days of reduced activity relative to non-smokers (Mathers 1994).
- Rates of smoking have declined in Australia since the 1980s (DHFS & AIHW 1998b). However, recent estimates indicate that there are still 3.2 million adult smokers in Australia (DHFS 1995).
- Lung cancer is a particularly serious outcome of long-term cigarette smoking. In 1996, lung cancer resulted in 4,773 male and 2,054 female deaths. The 5-year survival rates for lung cancer are only 10% for both males and females (DHFS & AIHW 1998b).
- The highest proportion of smokers in Australia are in the age group 25–29 years. After age 30, smoking decreases in both males and females (AIHW 1998a). Tobacco smoking is more common in Indigenous population groups who are twice as likely to be regular smokers than are non-Indigenous people (AIHW 1998a).
- The remote zone reports the highest proportions of male and female smokers. Approximately one in three living in remote areas report smoking compared with just over one in four males and one in five females from 'capital cities'. These rates are significantly higher than those for people living in 'capital cities'. The rural zone reports proportions of smokers that are similar to those in 'capital cities'. However, 'other metropolitan centres' have a significantly higher proportion of smokers than 'capital cities'.

- Females from all RRMA categories report less smoking when compared with males. However, nationally, a higher percentage of young females between the ages of 16 and 29 years report being current smokers (AIHW 1998a). The rate of smoking in young females is increasing. Subsequent increases in lung cancer and cardiovascular disease for females may be the result in years to come.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

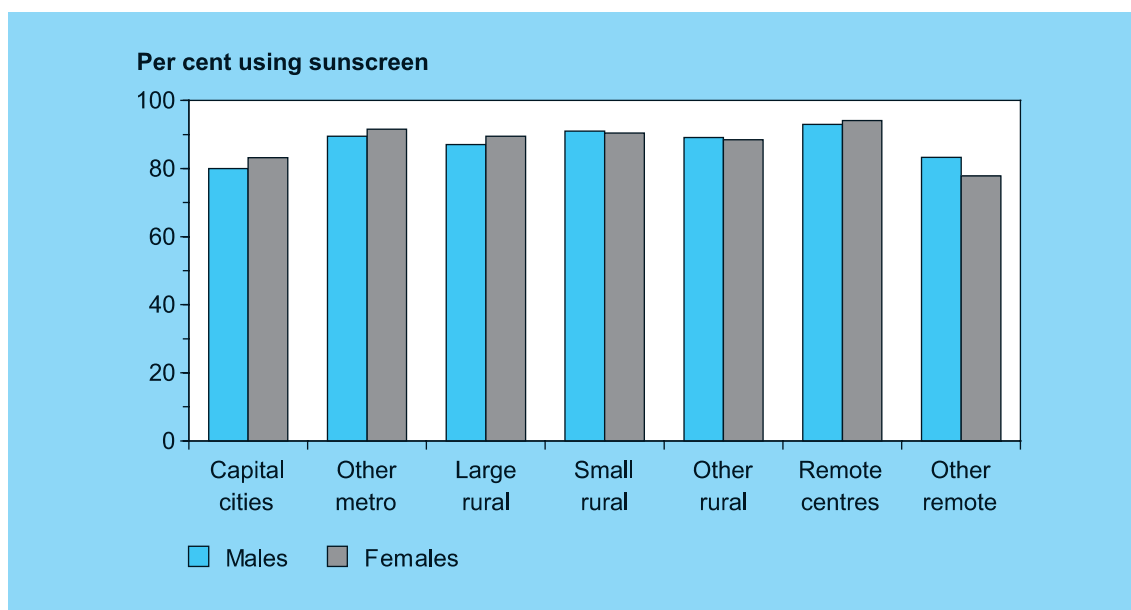
Commonwealth Department of Health and Family Services 1995. National drug strategy household survey. Canberra: AGPS.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Mathers CD 1994. Health differentials among adult Australians aged 25–64 years. Australian Institute of Health and Welfare: Health Monitoring Series No. 1. Canberra: AGPS.

Sun protection

Use of sun protection, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	80.0	*89.5	*87.1	*91.0	*89.1	*93.0	83.3	*83.4
Females	83.2	*91.6	*89.5	*90.4	*88.5	94.1	77.8	*85.5

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.

2. Ages 5 and over reporting use of sun protection.

Source: 1995 ABS National Health Survey.

Sun protection

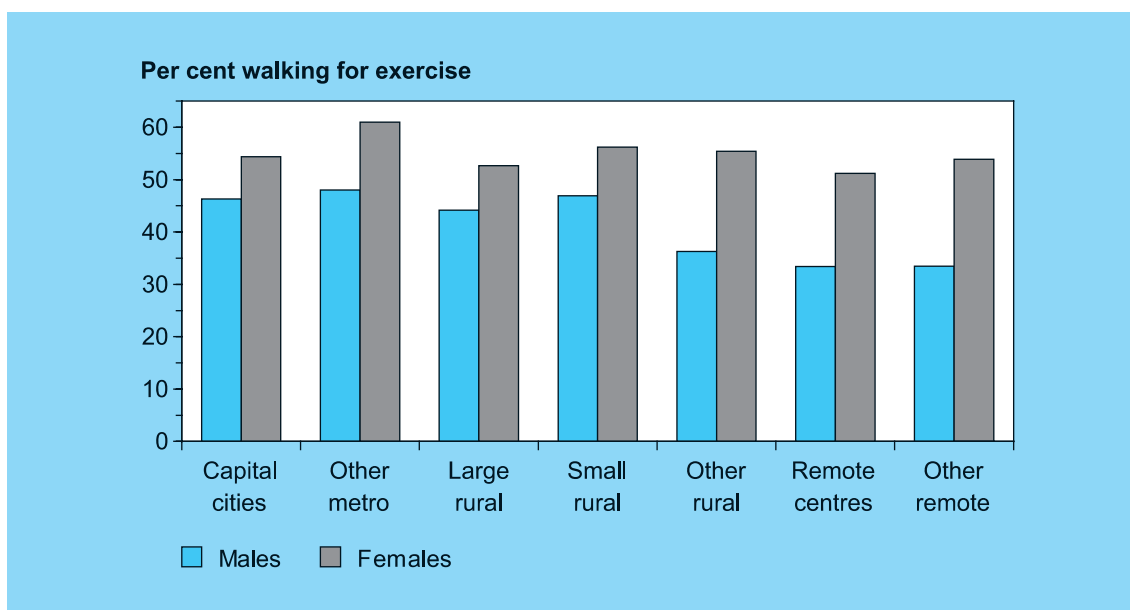
- Excessive sun exposure leads to melanoma and other skin cancers as well as premature ageing of the skin (AIHW 1998a). Use of sun protection measures such as hats, sunscreen with sun protective factor 15 or higher and sunglasses reduce the risk of melanoma by preventing sunburn. Other risk factors for melanoma include having fair skin, not using sun protection and exposure to the sun under the age of 10.
- For people with fair skin and children under the age of 10, use of sun protection is particularly important to prevent the occurrence of skin cancers. Overexposure to the sun during the first two decades of life appears to be an important predictor of melanoma (DHFS & AIHW 1998b).
- Males and females from all areas report similar levels of use of sun protection, although significantly higher sun protection use was reported for males in 'other metropolitan centres', the rural zone and 'remote centres' when compared with males from 'capital cities'. Females in 'other metropolitan centres' and the rural zone also report significantly higher rates of sun protection use compared with women in 'capital cities'.
- Over 90% of males and females from 'remote centres' report that they use sun protection measures. All areas report high use of sun protection. However, care must be taken when interpreting these results because many people regard wearing a hat to be adequate sun protection. Such protection may not reduce overall sun exposure or prevent sunburn, which are the aims of prevention (DHFS & AIHW 1998b).
- Males from 'capital cities' and 'other remote areas' report the least (approximately 78-83%) usage of sun protection measures. In fact, males and females from 'capital cities' report

significantly less use of sun protection than do all Australians combined. Females from 'other remote areas' report the lowest use of sun protection measures, although their rates do not differ significantly from the rates of females living in 'capital cities'.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Walking for exercise, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	46.3	48.0	44.2	46.9	*36.3	*33.4	*33.5	*44.6
Females	54.4	*61.0	52.7	56.2	55.4	51.2	53.9	55.1

* Significantly different from 'capital cities' at the 5% level.

Notes

1. Age-standardised to the Australian population at 30 June 1991.

2. Ages 25–64 years reporting walking for exercise.

Source: ABS 1995 National Health Survey.

Walking for exercise

- Walking is the type of low-intensity exercise that lowers the risk of cardiovascular disease. Walking for exercise is an indicator of a healthy lifestyle. Exercise that allows an individual to expend more than 800 kilocalories per week is 'adequate' exercise (AIHW 1998a). Twenty minutes of light exercise three times a week increases cardiovascular fitness and decreases weight gain for both males and females.
- Walking for exercise has increased in popularity in Australia with greater numbers of males and females reporting walking for exercise in the 1995 National Health Survey compared with the 1989–90 National Health Survey. However, the proportions of males and females undertaking 'adequate' exercise still decline with increasing age (AIHW 1998a). However, walking for exercise may not be an accurate indicator of physical activity, particularly for people engaging in more vigorous exercise.
- Over half the females surveyed report walking for exercise compared with only a third of males from the remote zone and less than half of males from other zones. Females from all areas report walking for exercise in similar proportions, with the highest proportion of females walking for exercise from 'other metropolitan centres'. The rates for these females are significantly higher than the rates for females from 'capital cities'. However, the rates for females walking for exercise in rural and remote communities are not significantly different from the rates for females in 'capital cities'. Females in rural and

remote zones may take on employment that is physically demanding and may not feel the need to report walking for exercise as a means of keeping physically fit.

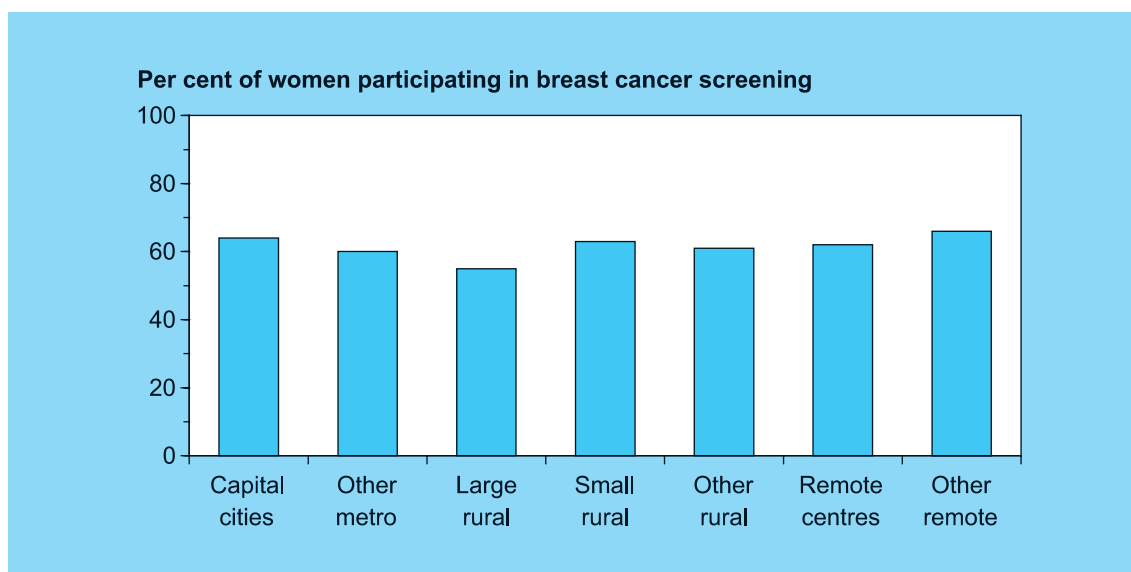
- Significantly fewer males from the remote zone and 'other rural areas' report walking for exercise compared with males from 'capital cities'. Males from the remote zone and 'other rural areas' may be employed in jobs that require a high level of physical activity and, as a result, may not feel the need to walk to get 'adequate' exercise.

- For rural and remote communities, 'walking for exercise' may not be an appropriate indicator of physical fitness for either males or females.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Breast cancer screening, 1995



Sex/ Age group	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Women aged 40 years and over	64	60*	*55	63	61	62	66	63

* Significantly different from 'capital cities' at the 5% level.

Note:

1. Age-standardised to the Australian population at 30 June 1991.

Source: ABS 1995 National Health Survey.

Breast cancer screening

- Apart from non-melanocytic skin cancers, breast cancer is the most common cancer detected in Australian women (AIHW 1998a). Mammographic screening is regarded as the most cost-effective method for identifying early breast cancer and reducing mortality (Kricger & Jelfs 1996).
- Breast cancer screening as reported during the ABS 1995 National Health Survey involves both mammography and breast examination by a doctor. Participation in breast cancer screening is measured by counting those who have had either a mammograph in the last 5 years and/or those who have had a breast examination by a doctor in the last 2 years.
- Death rates for breast cancer have remained stable from the early 1980s to 1994 (AIHW 1998a). The death rate was 26.6 per 100,000 women in 1994 and is projected to fall to 25 per 100,000 women by 1999 (AIHW 1998a).
- Over 50% of women from all areas have participated in some form of breast cancer screening program. There is little difference in participation rates between those living in

metropolitan, rural and remote zones. However, women from 'other metropolitan centres' and 'large rural centres' report significantly less participation in breast cancer screening than those living in 'capital cities'. Overall, most women seem to be familiar with the importance of breast cancer screening for the prevention of death from breast cancer.

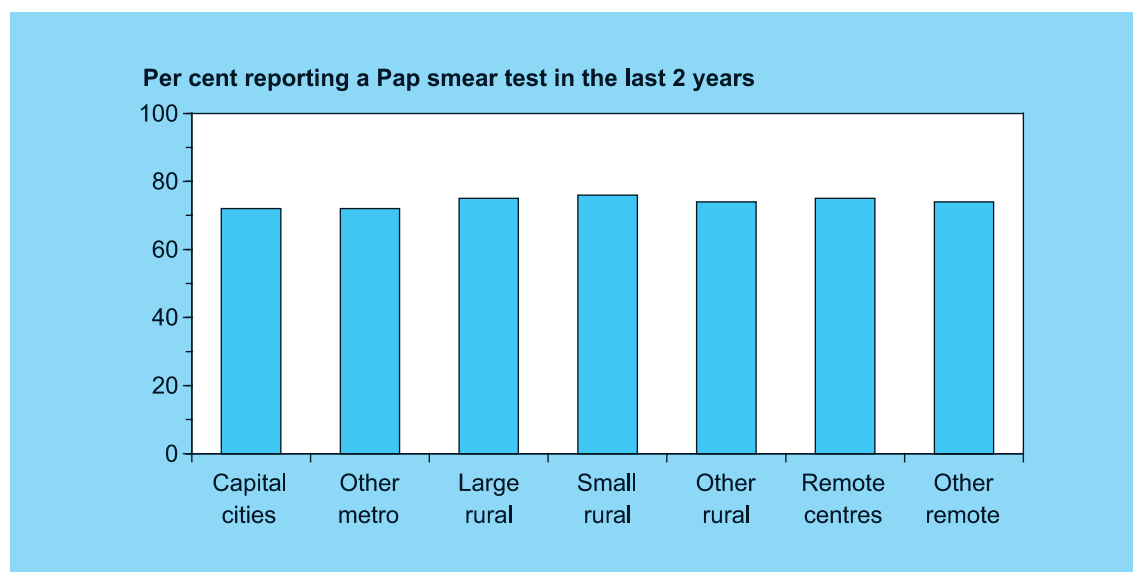
For more information, see:

Australian Institute of health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Commonwealth Department of Health and Family Services & Australian Institute of Health and Welfare 1998. National Health Priority Areas report. Cancer control 1997. AIHW Cat. No. PHE 4. Canberra: DHFS & AIHW.

Kricger A & Jelfs P 1996. Breast cancer in Australian women 1921-1994. AIHW Cancer Series No. 6. Canberra: AIHW.

Pap smear tests, 1995



Sex/ Age group	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Women aged 18–69 years	72	72	75	76	74	75	74	73

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.

Source: ABS 1995 National Health Survey.

Pap smear tests for women

- Cervical cancer is the ninth most common cancer in Australian women (AIHW 1998a). Rates of cervical cancer have declined in recent years because of improved detection and management of precursor lesions and early disease.
- The most common form of cervical cancer, squamous cell carcinoma, is preceded by a number of non-malignant abnormalities that can be detected by Pap smear tests before they develop into a malignant condition. Pap smear tests are recommended at an interval of every 2 years for women who are sexually active.
- Cervical cancer is related to infection by the human papilloma virus (HPV). Risk factors for cervical cancer include not having regular Pap smear tests, early age at first sexual intercourse and multiple sex partners.
- The risk of cervical cancer increases with age and 50% of new cases are diagnosed in women over the age of 50 (AIHW 1998a).

However, the lifetime risk of a woman developing cervical cancer before the age of 75 years is 1 in 101.

- Incidence data from the Northern Territory indicate that the rate of cervical cancer for Indigenous women is higher than for non-Indigenous women (d'Espaignet et al. 1996). Women from many cultures, including Indigenous women, may be reluctant to have a Pap smear test performed by a male GP, especially on their first visit to that GP (Healthsharing Women 1994). A recent survey of women's satisfaction with GP consultations found that young women in particular prefer being examined by a female GP (Young et al. 1998).
- The participation rates in screening programs are not high among women of non-English-speaking backgrounds or among Indigenous women (AIHW & DHFS 1997). Culturally sensitive screening practices may enable more women to feel comfortable with the Pap smear test and make it a part of their routine check-up.

Disease prevention

- All areas report a similar percentage of women undertaking Pap smear tests in the last 2 years. The percentage of women reporting a recent Pap smear test is relatively high. This indicates that the importance of screening for cervical cancer is well known across all areas of Australia.

For more information, see:

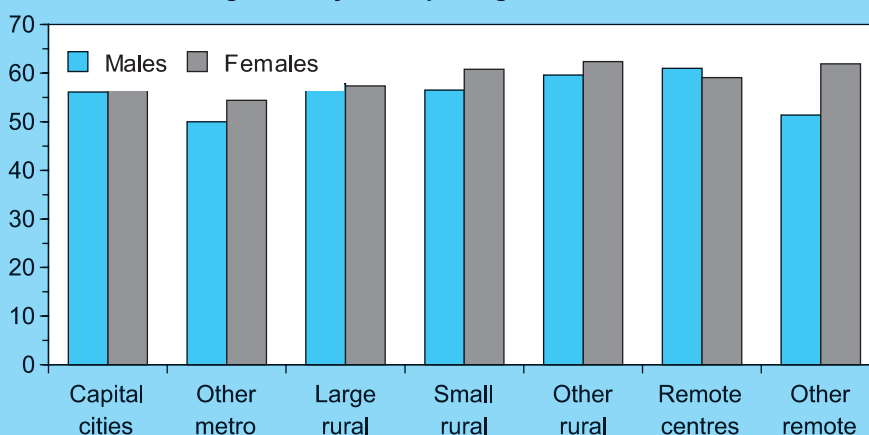
Australian Institute of health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AGPS.

d'Espaignet E, Measey M, Condon J et al. 1996. Cancer in the Northern Territory 1987-1993. Darwin: Northern Territory Health Services.

Healthsharing Women 1994. Women, health and the rural decline in Victoria. In Franklin MA, Short LM & Teather EK (eds). Country women at the crossroads. Armidale: University of New England Press, 92-98.

Dental visits for those aged 2–19 years, 1995

Per cent of those aged 2–19 years reporting a dental visit



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	56.1	50.0	57.8	56.5	59.6	61.0	51.4	56.3
Females	58.1	54.4	57.4	60.8	62.4	59.1	61.9	58.8

Notes

1. Age-standardised to the Australian population at 30 June 1991.
2. None of the rates is significantly different from 'capital cities' at the 5% level.
3. Ages 2–19 years reporting visits to a dentist in the last 12 months.

Source: ABS 1995 National Health Survey.

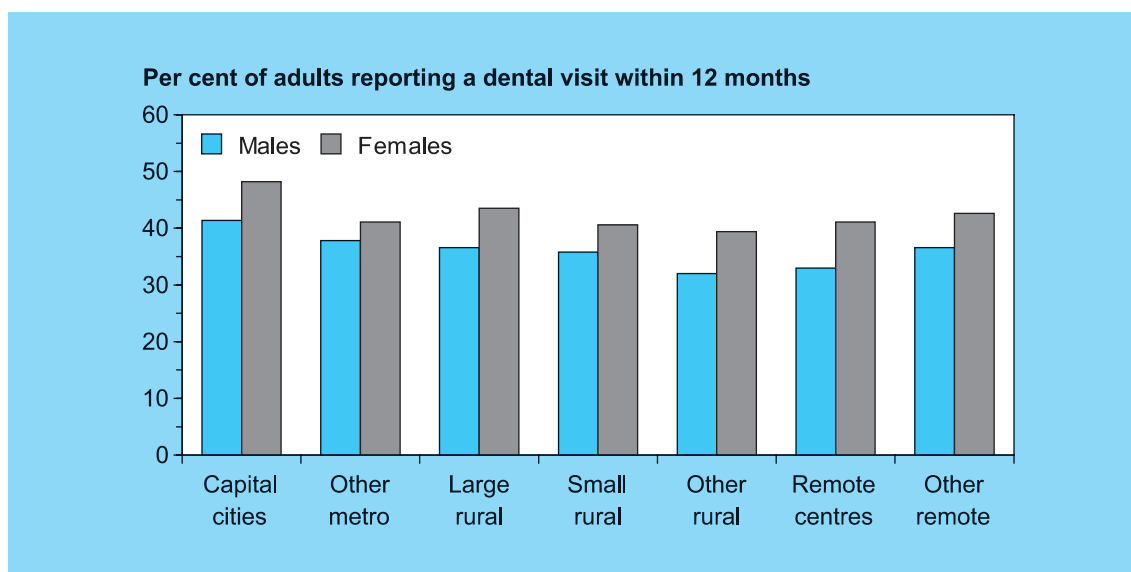
Visits to the dentist

- Children and young adults aged 2–19 years were more likely to consult a dentist in 1996 than were adults (AIHW 1998a). There has been a large increase in young adult visits to the dentist in recent years due to the increase in orthodontal services (AIHW 1998a).
- Youths from rural and remote zones report seeing a dentist in the last 12 months at a similar rate to those from the metropolitan zone. Less than 60% of males and females report going to a dentist over a 12-month period. Frequent visits to the dentist may prevent loss of natural teeth to decay or periodontal (gum) disease later in life. The relatively low levels of dental visits reported here indicate that this age group may be missing the benefits of regular dental check-ups.
- Higher proportions of females from all areas except 'remote centres' and 'large rural centres' report visiting the dentist compared with males. Males from 'other metropolitan centres' had a substantially lower percentage of reported dental consultations for the 12-month period than males from 'capital cities'. The highest percentages of dental consultations occurred in the rural and remote zones.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Dental consultations among adults, 1995



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	41.4	37.8	36.6	*35.8	*32.0	33.0	36.6	*39.0
Females	48.2	*41.1	43.5	*40.6	*39.4	41.1	42.6	45.5

* Significantly different from 'capital cities' at the 5% level.

Note: Ages 20 years and over reporting visits to a dentist in the last 12 months.

Source: 1995 ABS National Health Survey.

Visits to the dentist

- Frequent dental visits ensure better overall oral health and reduced loss of natural teeth. However, less than a quarter of adult males reported visiting a dentist in the last 12 months compared with less than a third of females.
- Financial burden is often cited as a reason for avoiding or delaying visits to the dentist. Nearly 25% of people surveyed stated that they delayed dental visits due to the cost of the service and a further 19% reported being prevented from having necessary dental work done because of the cost (AIHW 1998a).
- Females from 'capital cities' recorded the highest percentage of visits to a dentist within the 12-month period. Males from the

metropolitan zone had the highest percentage reporting a visit to the dentist within 12 months, whereas males from the rural and remote zones had much lower proportions than their counterparts in 'capital cities'. Males from 'small rural centres' and 'other rural areas' had significantly lower proportions compared with males from 'capital cities'.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

5 Health resources

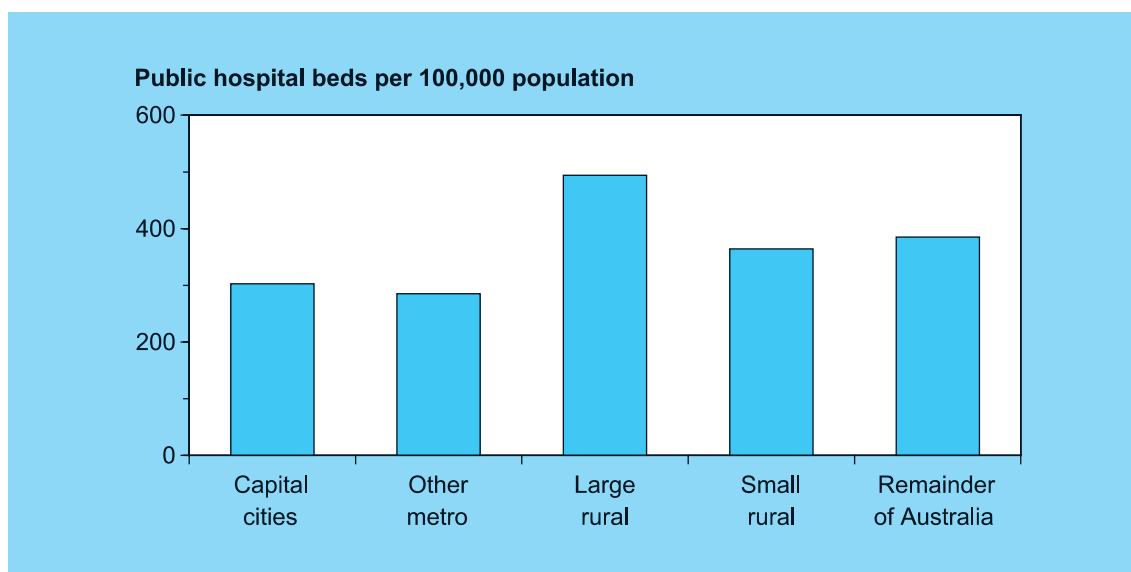
People living in rural and remote zones are considered to have lower access to health care compared with those living in the metropolitan zone. Access difficulties due to distance, time, cost and transport availability in rural and remote zones can be compounded by shortages and uneven distributions of health facilities and health professionals.

Access to health care facilities and health care professionals in rural and remote zones is critical to minimising variation in health outcomes between people living in the metropolitan zone and those living in rural and remote zones. The importance people place on access to a general practitioner (GP) as the first point of contact for any health problem is illustrated by the fact that in 1995, on average, Australians made 5.6 visits to a GP through the year. In light of this emphasis, the General Practice Rural Incentives Scheme was formed to help attract more GPs to set up practice in rural and remote areas. Other points of contact for professional health care such as nurses, pharmacists and physiotherapists are also important to the provision of health services.

Hospital facilities in rural and remote zones can be less accessible than in the metropolitan zone. On average, people living in rural and remote zones need to travel larger distances to receive hospital treatment. People needing more specialised treatments must travel even further to the larger towns and cities or wait longer for these services to come to them on a rotation basis. This leads to a wider role for acute care hospitals in rural and remote zones compared with hospitals in the metropolitan zone. For example, people with chronic conditions such as diabetes and asthma may be hospitalised more frequently in rural and remote zones if they are required to travel long distances for follow-up treatment. Similarly, in communities where no nursing homes are available, the care of nursing-home-type patients often falls to the local hospital, making the role of that hospital broader than that of the usual acute care hospital. This broader use of acute care hospitals is probably reflected in the provision of a higher number of beds in non-metropolitan zones, 484 per 100,000 population, compared with 457 for 'capital cities' and 423 for 'other metropolitan centres'.

This chapter attempts to quantify variation in the supply of health resources between metropolitan, rural and remote Australia by using indicators on hospital services and the availability of key health labour force personnel such as GPs, pharmacists and nurses. Indicators measuring access to health services are also provided. The chapter also examines both public and private hospital expenditure by RRMA category.

Number of hospital beds, 1995–96



Sector	Metropolitan		Rural and remote			Total
	Capital cities	Other	Large centres	Small centres	Remainder of Australia ^(b)	
Private ^(a)	154	139	241	76	26	132
Public ^(a)	303	285	494	364	385	331
Total	457	423	735	439	411	462

(a) Due to privacy restrictions, information on beds available in private hospitals in remote zones is not provided separately.

(b) 'Remainder of Australia' includes 'other rural areas', 'remote centres' and 'other remote areas'.

Notes

1. Based on daily average available beds for 1995–96 where available, and beds at 30 June 1996 where not available.

2. Includes Same Day Facility beds.

Source: AIHW Hospital Establishments database; unpublished ABS data on private hospitals.

Hospital beds

- The number of available beds in acute care hospitals per 100,000 population provides a measure of the capacity of a region to supply acute care hospital facilities. However, variation between hospitals in the areas they serve and the types of services they provide need to be taken into account when interpreting this indicator. For example, large hospitals in central locations serve patients from more remote locations. Also, many rural and remote zone hospitals have a high proportion of nursing-home-type patients who, in metropolitan locations, would be cared for in nursing homes or hostels (AIHW 1997d).
- Acute care hospitals are establishments which provide at least minimal medical, surgical or obstetric services for in-patient treatment and/or care, and which provide round-the-clock comprehensive qualified nursing service. Other necessary professional services may also be available at these facilities.
- The supply of public beds in acute care hospitals per head of population is highest in the rural and remote zones. In 1995–96, 'large rural centres' had 63% more public beds per head of population than 'capital cities', and 35% more than 'small rural centres' and 'other rural areas'. 'Other remote areas' also had a high number of public hospital beds per head of population, with a rate similar to that for 'large rural centres'. The remote zone also records greater lengths of stay for patients (see page 99, Casemix-adjusted average length of stay in hospitals, 1995–96).

- Private hospital bed supply per head of population is the highest in 'large rural centres' and the metropolitan zone, with these types of beds making up one-third of all beds in acute care hospitals in these areas in 1995-96. In contrast, private hospital beds were only 17% and 6% of total acute care hospital beds in 'small rural centres' and 'remainder of Australia' respectively.
- The high rate of beds in acute care hospitals per head of population in 'large rural centres' may be a result of these hospitals supplying specialised services to the other rural areas, which do not have the population numbers

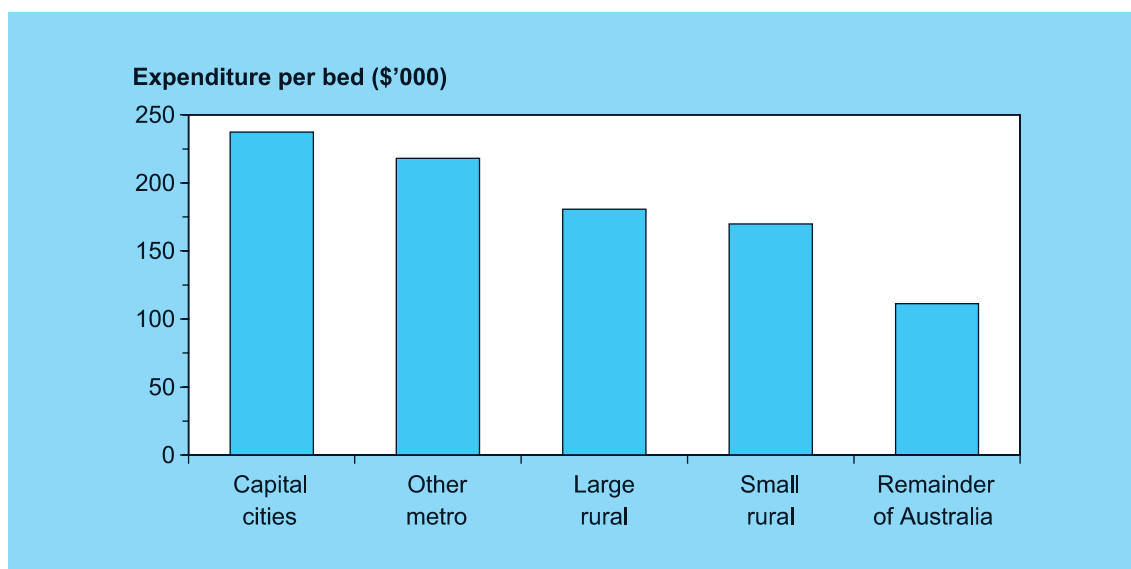
sufficient to justify such specialist facilities. Other reasons include a higher percentage of nursing-home-type patients, higher morbidity, and differences in medical practice in 'large rural centres' compared with other areas.

For more information, see:

Reid M & Soloman S 1992. Improving Australia's rural health and aged care services. National Health Strategy Background Paper No. 11. Melbourne: Department of Health, Housing and Community Services.

Health service expenditure

Expenditure per available hospital bed, 1995–96 (\$'000)



Sector	Metropolitan		Rural and remote			Total
	Capital cities	Other	Large centres	Small centres	Remainder of Australia ^(b)	
Private ^(a)	127.7	120.6	114.9	90.5	58.9	122.1
Public ^(a)	237.4	218.1	180.6	169.8	111.2	202.0
Total	200.5	186.1	159.1	156.1	107.9	179.3

(a) Due to privacy restrictions, information on expenditure per available bed is not separately available for private hospitals in remote zones.

(b) 'Remainder of Australia' includes 'other rural areas', 'remote centres' and 'other remote areas'.

Notes

1. Based on daily average available beds for 1995–96 where available, and beds at 30 June 1996 where not available.
2. Includes expenditure on out-patient activity.

Sources: AIHW Hospital Establishments database; unpublished ABS data on private hospitals.

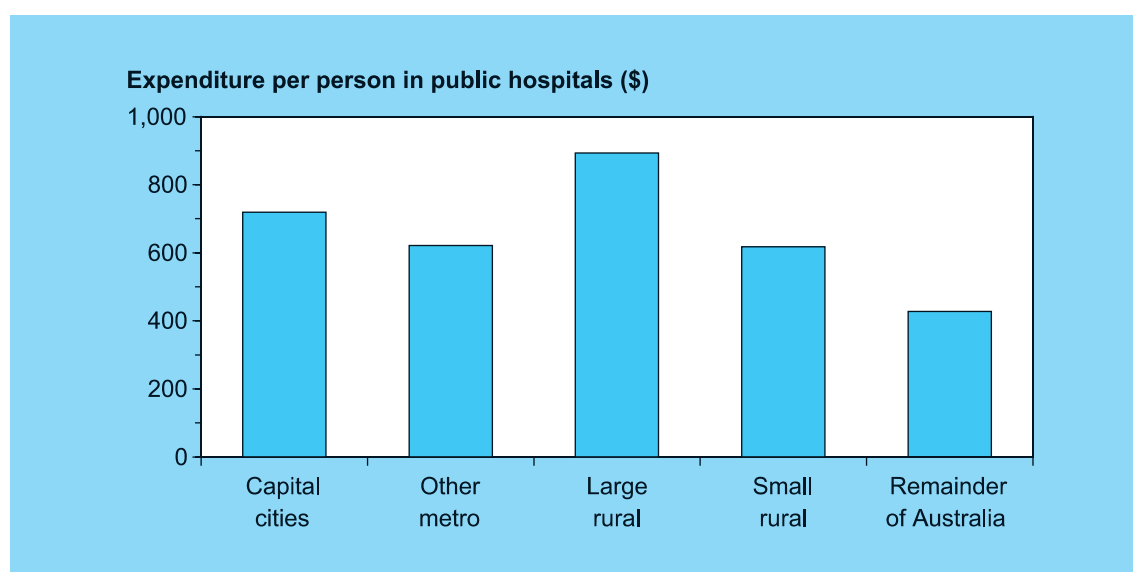
Hospital expenditure

- Expenditure per available bed measures the reported recurrent expenditure for acute care hospitals. It provides an indication of the cost of the services provided by acute care hospitals to their patients.
- Differences across regions largely reflect the different types of services provided in each region. The provision of specialist services in large hospitals for more serious cases, and the use of acute care beds for nursing-home-type patients in rural and remote zones are examples of different uses of hospital facilities. The level of hospital expenditure attributed to in-patients (admitted patients) also affects expenditure as a proportion of the number of available beds.
- The level of expenditure per available hospital bed in acute care hospitals declines sharply with increasing rurality, for both public and private hospitals. In 1995–96, the rate of expenditure in comparison to 'capital cities' was 20% less in 'large rural centres' and 54% less in 'remainder of Australia'.

For more information, see:

Cooper-Stanbury M, Solon R & Cook M 1994. Hospital utilisation and costs study 1991–92. Volume 1. A survey of public hospitals and related data. AIHW Health Services Series No. 5. Canberra: AGPS.

Acute care hospital expenditure per person, 1995–96 (\$)



Sector	Metropolitan		Rural and remote			Total
	Capital cities	Other	Large centres	Small centres	Remainder of Australia ^(b)	
Private ^(a)	196	167	277	69	15	161
Public ^(a)	719	621	893	618	428	668
Total	915	788	1,169	686	444	828

(a) Due to privacy restrictions, information on expenditure per available bed is not separately available for private hospitals in remote zones.

(b) 'Remainder of Australia' includes 'other rural areas', 'remote centres' and 'other remote areas'.

Notes

1. Based on daily average available beds for 1995–96 where available, and beds at 30 June 1996 where not available.
2. Includes expenditure on out-patient activity.
3. Based on patients' area of residence, not location of hospital.

Sources: AIHW Hospital Establishments database; unpublished ABS data on private hospitals.

Expenditure on acute hospital care

- Acute care hospitals include public, private and psychiatric hospitals that provide at least minimal medical, surgical or obstetric services for in-patient treatment and care. These hospitals also provide round-the-clock comprehensive qualified nursing service as well as other necessary professional services.
- Acute care hospital expenditure is a major component of the total resources allocated to the health sector. In 1994–95, 34% of total health expenditure was spent on acute care hospitals.
- Hospital expenditure per person in 'large rural centres' is the highest of the RRMA categories, and is 27% higher than that for 'capital cities'. This large difference is partly because the hospitals located in 'large rural centres' serve a much wider area (including 'small rural centres' and the remote zone) than their denominator population base would suggest. Availability of services for more expensive diagnosis-related groups (DRGs) at these hospitals may also add to these costs. Also, economies of scale are much more difficult to achieve in rural hospitals than in larger metropolitan hospitals.
- Hospital expenditure per person in 'small rural centres' is only 75% of the level in 'capital cities', with 'remainder of Australia' less than half the 'capital cities' rate.

Health service expenditure

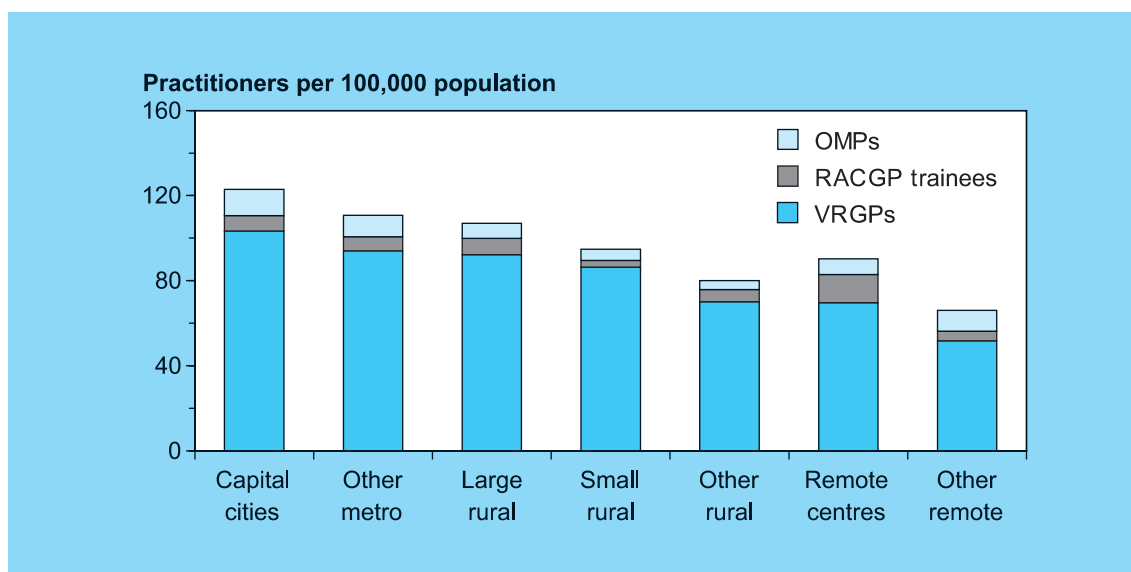
- The highest private hospital expenditure per person was also in 'large rural centres'. However, the level of private hospital expenditure in 'small rural centres' and 'remainder of Australia' is only a fraction of the levels in the metropolitan zone and 'large rural centres'.

For more information, see:

Cooper-Stanbury M, Solon R & Cook M 1994. Hospital utilisation and costs study 1991-92. Volume 1. A survey of public hospitals and related data. AIHW Health Services Series No. 5. Canberra: AGPS.

Australian Institute of Health and Welfare 1997. Health Expenditure Bulletin No. 13. Canberra: AIHW.

Primary care medical practitioners, 1996



Doctors per 100,000 population	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Vocationally registered general practitioners (VRGPs)	103.4	94.0	92.2	86.4	70.1	69.6	51.8	95.1
General practitioner trainees (RACGP trainees)	7.1	6.6	7.7	3.1	5.7	13.3	4.5	6.7
Other medical practitioners (OMPs)	12.4	10.2	7.1	5.4	4.2	7.3	9.8	10.2
Total	122.9	110.8	107.0	94.8	80.0	90.2	66.0	112.1

Source: AIHW.

Medical practitioners

- Inaccessibility of general practitioners (GPs) remains the greatest source of disadvantage for most rural residents (Humphreys et al. 1997). The RRMA distribution of primary care practitioners fits well the known pattern of undersupply of the health labour force in rural and remote areas and oversupply in metropolitan areas (AIHW 1998b).
- The AIHW National Medical Labour Force Survey classifies medical practitioners under three groups: vocationally registered general practitioners (VRGPs) with appropriate training and registration, Royal Australian College of General Practitioners (RACGP) trainees who are being trained as VRGPs, and other medical practitioners (OMPs).
- In 1996 there was almost double the number of practitioners providing services in 'capital cities' per head of population, compared with 'other remote areas'.
- The supply of primary care practitioners per head of population falls sharply in rural areas. In 'large rural centres' the supply rate was 13% below that of 'capital cities', whereas 'small rural centres' and 'other rural areas' had supply rates 23% and 35% respectively less than 'capital cities'. Distances travelled to visit practitioners in the more sparsely settled areas may add further to the rural and remote zone disadvantage.
- The distribution of all three groups of primary care medical practitioners shows a similar pattern of decreasing supply with increasing rurality, though in the case of OMPs and RACGP trainees supply rates in the remote zone are generally higher than in the rural zone. For example, in 'remote centres' the supply of OMPs is 130% higher than that in

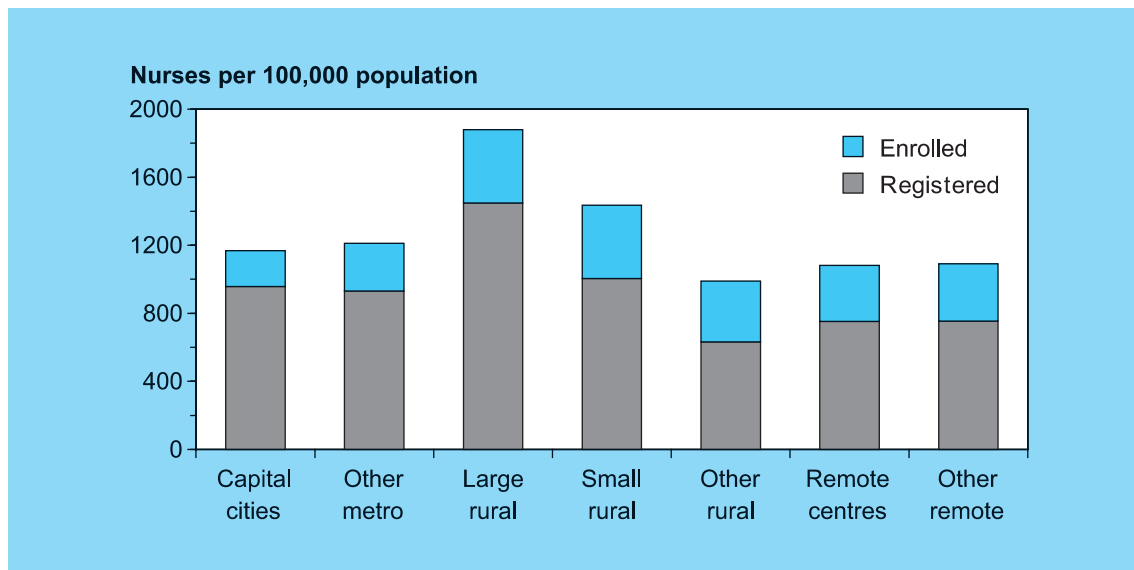
'other rural areas' and the number of RACGP trainees per head of population in 'other remote areas' is 130% higher than that in 'other rural areas'.

For more information, see:

Australian Institute of Health and Welfare 1998. Medical labour force 1996. National Health Labour Force Series No. 13. AIHW Cat. No. HWL 10. Canberra: AIHW.

Australian Institute of Health and Welfare & Australian Medical Workforce Advisory Committee 1996. Australian medical workforce benchmarks. AMWAC Report 1996.1. Canberra: AGPS.

Distribution of nurses, 1995



Nurses per 100,000 population	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Registered nurses	957.4	930.9	1,448.6	1,004.6	631.5	751.8	755.1	938.3
Enrolled nurses	210.8	281.2	429.9	430.9	359.0	330.1	336.8	267.1
Total	1,168.2	1,212.1	1,878.6	1,435.6	990.5	1,082.0	1,091.9	1,205.3

Source: AIHW.

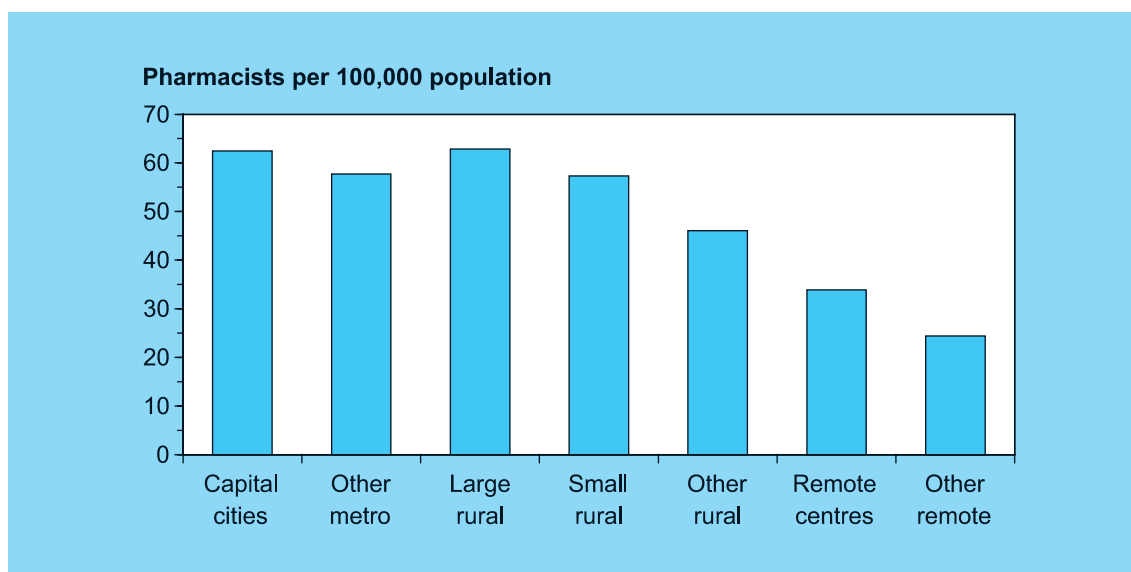
Nurses

- In 1995, there were 171,774 registered nurses and 48,892 enrolled nurses in Australia. Registered nurses have a minimum requirement of a 3-year degree from a tertiary education institution or equivalent from a registered hospital-based program. Enrolled nurses require a 1-year diploma from a tertiary education institution or equivalent from a registered hospital-based program.
- In 1995, almost two-thirds of registered nurses were employed in acute and psychiatric hospitals, with 12% working in nursing homes. Unlike the distribution of primary care practitioners, the distribution of nurses is more even across zones, and closely follows the pattern of hospital bed supply.
- 'Large rural centres' have the largest per capita supply of nurses of all areas. This reflects the relatively large proportion of hospital beds in these areas, which provide high-level hospital services to other rural areas as well.
- Enrolled nurses form a higher proportion of the total nursing workforce in rural and remote zones, compared with the proportion in 'capital cities'. In 'small rural centres', 'other rural areas' and the remote zone, around 30% of nurses were enrolled nurses, compared with 18% in 'capital cities'.
- The higher proportion of nurses working in rural and remote Australia, when compared with GPs, confirms that nurses provide a higher proportion of health care in rural and remote Australia than in the metropolitan zone (AIHW 1998c).

For more information, see:

Australian Institute of Health and Welfare 1998. Nursing labour force 1995. National Health Labour Force Series No. 11. AIHW Cat. No. HWL 6. Canberra: AIHW.

Distribution of community (retail) pharmacists, 1995



Pharmacists per 100,000 population	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Community (retail) pharmacists	62.5	57.7	62.9	57.3	46.1	33.9	24.4	58.6

Note: Community pharmacists do not include pharmacists employed as hospital/clinic pharmacists in their main job.

Source: State and Territory Pharmacy Registration Boards.

Pharmacists

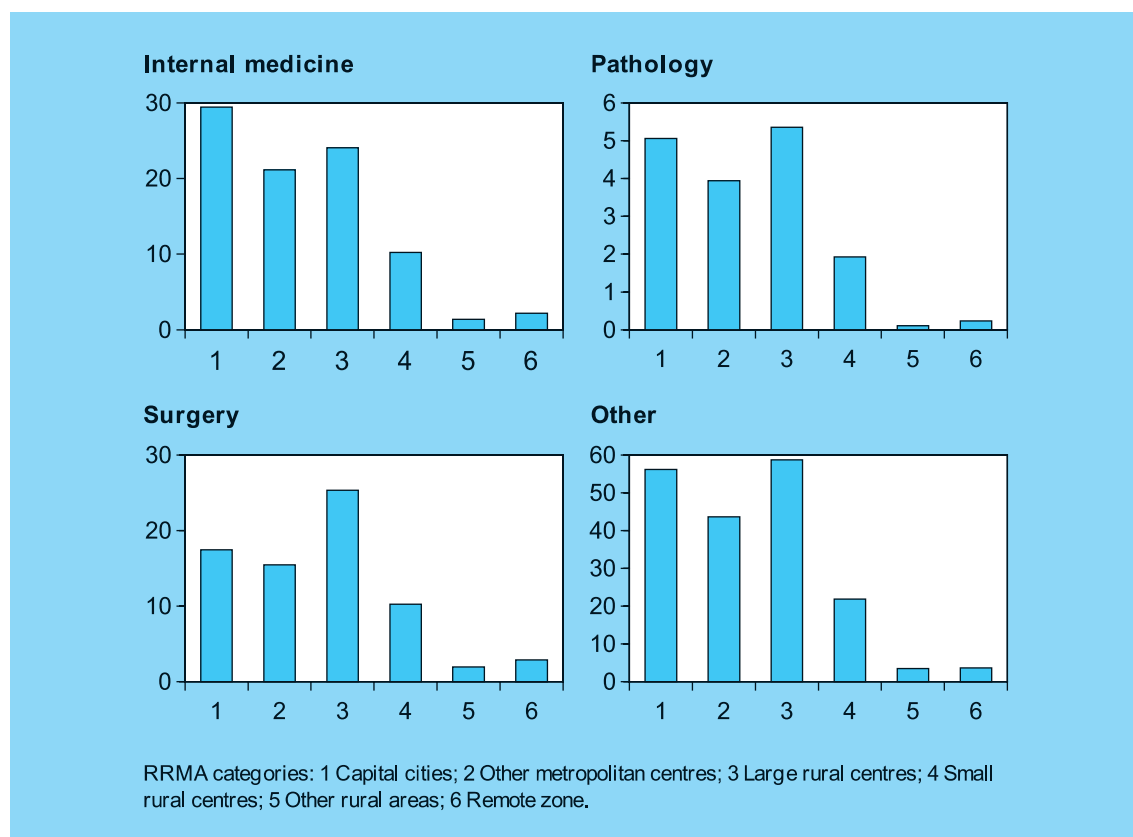
- Pharmacists have an important role in complementing the health services provided by general practitioners and specialists.
- Of employed pharmacists in Australia in 1995, 80% were community (retail) pharmacists. The remainder includes hospital and clinic pharmacists, industrial pharmacists, and those in other pharmacy-related employment including administration and education.
- The supply of pharmacists across regions is similar between the metropolitan zone, 'large rural centres' and 'small rural centres', but is substantially lower in 'other rural areas' and

the remote zone. 'Other rural areas' are served by 26% less pharmacists per capita than 'capital cities', and the remote zone has around half the number of pharmacists in 'capital cities' per capita.

For more information, see:

Australian Institute of Health and Welfare 1998. Pharmacy labour force 1995. National Health Labour Force Series No. 12. AIHW Cat. No. HWL 9. Canberra: AIHW.

Medical specialists per 100,000 population, 1995



Medical specialisation	Metropolitan		Rural			Remote	Total
	Capital cities	Other	Large centres	Small centres	Other		
Internal medicine	29.4	21.2	24.0	10.2	1.4	2.2	22.7
Pathology	5.1	3.9	5.4	1.9	0.1	0.2	4.0
Surgery	17.4	15.4	25.3	10.3	2.0	2.9	14.8
Other specialties	56.2	43.7	58.7	21.8	3.5	3.7	44.6
Total	108.1	84.2	113.4	44.3	7.0	9.0	86.0

Source: AIHW.

Medical specialists

- Specialists can be grouped into four main types: internal medicine (non-surgical medicine involving diagnosis and treatment of diseases involving the internal organs, for example cardiologists and neurologists), pathology, surgery, and 'other'. Anaesthesia, psychiatry, and obstetrics and gynaecology are the largest specialties in the 'other' group.
- In 1996, the number of specialists per head of population was fairly similar in the metropolitan zone and 'large rural centres', but substantially lower in 'small rural centres', 'other rural areas' and the remote zone.

Compared with 'capital cities', 'small rural centres' have less than half the supply per capita of specialists. 'Other rural areas' and the remote zone have less than 10% of the number of specialists per capita in 'capital cities'.

- Of all specialists, surgeons have the highest numbers per capita practising in rural and remote zones. However, the supply of surgeons in 'small rural centres', 'other rural areas', and the remote zone is still only 59%, 11%, and 17% respectively of the corresponding supply in 'capital cities'.

Health labour force

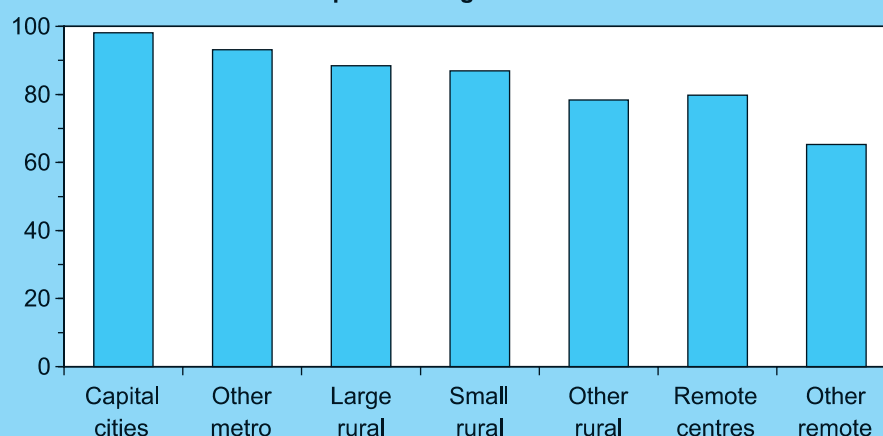
- The numbers above do not reflect outreach services provided by metropolitan-based specialists to rural and remote zones. These outreach services include telemedicine services, as well as periodic visits to rural centres to conduct consultation clinics and/or undertake surgical procedures.

For more information, see:

Australian Institute of Health and Welfare 1998. Medical labour force 1996. National Health Labour Force Series No. 13. AIHW Cat. No. HWL 10. Canberra: AIHW.

General practice consultations 1995–96: a matrix of provider region versus patient’s region

Per cent of consultations in patient's region of residence



Patient's region	Provider region							Total
	Metropolitan		Rural			Remote		
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Capital cities	98.1	0.6	0.3	0.4	0.6	0.1	0.1	100.0
Other metropolitan	4.7	93.1	0.4	0.7	0.9	0.1	0.1	100.0
Large rural centres	5.1	1.0	88.4	1.9	3.1	0.2	0.2	100.0
Small rural centres	6.2	1.5	1.6	86.9	3.2	0.2	0.3	100.0
Other rural areas	9.5	1.7	5.4	4.4	78.4	0.3	0.3	100.0
Remote centres	8.9	1.1	2.6	1.0	3.8	79.8	2.6	100.0
Other remote areas	11.7	1.3	3.0	5.0	8.5	5.4	65.2	100.0
Total	70.4	7.8	5.6	5.8	9.0	0.7	0.7	100.0

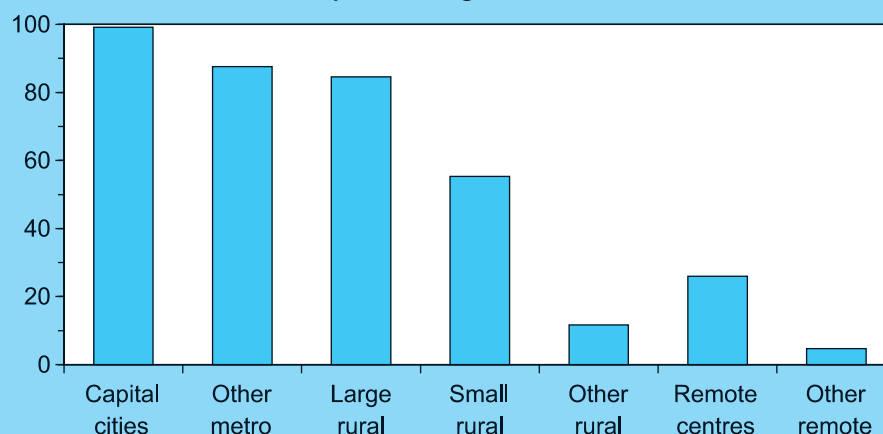
Source: Unpublished Medicare data from DHFS.

GP consultations

- The degree to which patients travel outside their region of residence to visit a general practitioner (GP) provides a measure of the mobility required to overcome access problems.
- Although the data given above include only private practice consultations, they illustrate the higher mobility required of rural and remote patients in visiting GPs, when compared with metropolitan patients. Compared with 'capital cities', where more than 98% of patient visits are to doctors in 'capital cities', only 88% of patient visits for those living in 'large rural centres' are to doctors in the same region. This proportion progressively declines with increasing rurality to a level of 65% in 'other remote areas'.
- GPs in 'capital cities' provide more than 5% of visits by people living in rural and remote Australia. They provide some of these services as locums travelling to rural areas. People visiting the city make up the remainder of rural and remote patients treated by 'capital city' GPs. This proportion is around 10% for people living in 'other rural areas' and the remote zone.

Specialist consultations 1995–96: provider region versus patient's region

Per cent of consultations in patient's region of residence



Patient's region	Provider region							Total
	Metropolitan		Rural			Remote		
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Capital cities	99.2	0.4	0.2	0.1	0.1	0.0	0.0	100.0
Other metropolitan	11.4	87.6	0.3	0.5	0.2	0.0	0.0	100.0
Large rural centres	12.2	1.1	84.6	1.6	0.4	0.0	0.0	100.0
Small rural centres	23.2	6.8	12.7	55.3	1.9	0.0	0.0	100.0
Other rural areas	40.4	5.9	29.9	12.1	11.7	0.1	0.1	100.0
Remote centres	32.9	11.0	24.7	1.4	2.7	26.0	2.7	100.0
Other remote areas	47.2	1.9	21.7	16.0	1.9	6.6	4.7	100.0
Total	78.1	7.9	8.1	4.4	1.3	0.2	0.0	100.0

Note: Specialist consultations include Commonwealth Medicare Benefits Scheme Item Groups A3 specialist attendances, A6 psychiatric group therapy attendances and A8 consultant psychiatrist attendances.

Source: Unpublished Medicare data from DHFS.

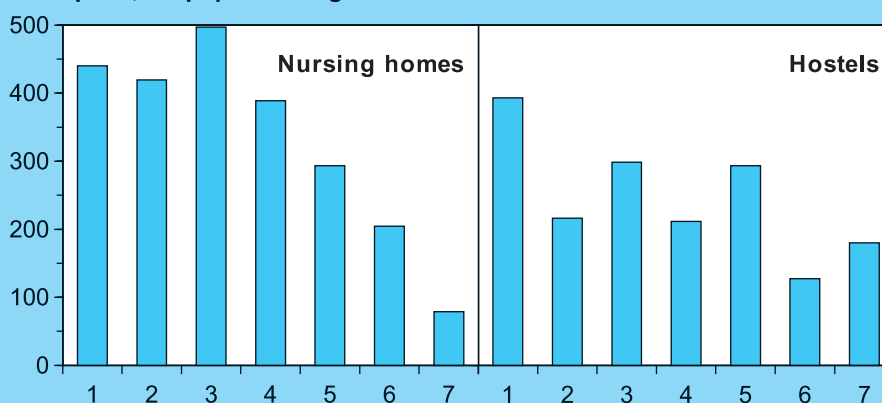
Specialist consultations

- While the distribution of specialists across RRMA categories provides information on the availability in each region, the effectiveness of this availability can be determined by examining the extent to which patients travel outside their region of residence to consult specialists.
- Only private practice specialist consultations are included in this analysis, but they show that rural and remote patients require an even higher level of mobility to visit specialists, compared with that required to visit general practitioners.
- Whereas the proportion of visits for patients living in 'large rural centres' to specialists from the same region is 85%, in 'small rural centres' and 'other rural areas' the corresponding proportions are only 55% and 12% respectively. For people living in the remote zone these proportions are also very low, being 26% for people living in 'remote centres' and 5% for people living in 'other remote areas'.

- Most of the visits to specialists outside a patient's area of residence are to 'capital cities'. For patients living in 'other rural areas', more than 40% of visits to specialists in 1995-96 were to those based in 'capital cities'. This percentage was even higher at 47% for people living in 'other remote areas'.

Nursing home places and hostel beds, 1996

Beds per 1,000 population aged 70 and over



RRMA categories: 1 Capital cities; 2 Other metropolitan centres; 3 Large rural centres; 4 Small rural centres; 5 Other rural areas; 6 Remote centres; 7 Other remote areas.

Type of accommodation	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Nursing home	440.3	419.5	497.0	388.8	293.3	204.7	78.8	409.7
Hostel	393.3	216.5	298.6	211.5	293.7	127.3	180.0	342.1

Source: Commonwealth Department of Health and Family Services databases on approved nursing homes and hostels for the aged.

Aged care

- Since the mid-1980s there has been a shift away from the resource-intensive nursing home aged care services to the less resource-intensive hostel care system (AIHW 1997f). These changes are a part of government policy to achieve a level of provision of 400 nursing home beds, 500 hostel places and 100 community aged care packages (per 100,000 people aged 70 and over) by the year 2011.
- 'Capital cities', 'other metropolitan centres' and 'large rural centres' have supplies of nursing home beds which exceed 400 per 100,000 persons aged 70 and over as at 30 June 1996. However, in the other rural and remote RRMA categories there is a sharp drop in the supply of nursing home beds. 'Other rural areas' have one-third fewer beds per head of population aged 70 and over than 'capital cities', and 'remote centres' have less than half the rate of nursing home beds of 'capital cities'. Acute care hospital beds are used to compensate for the lower supply of nursing

home beds in rural and remote zones, with nursing-home-type patients (NHTP) occupying around 20% of hospital beds (Reid & Solomon 1992).

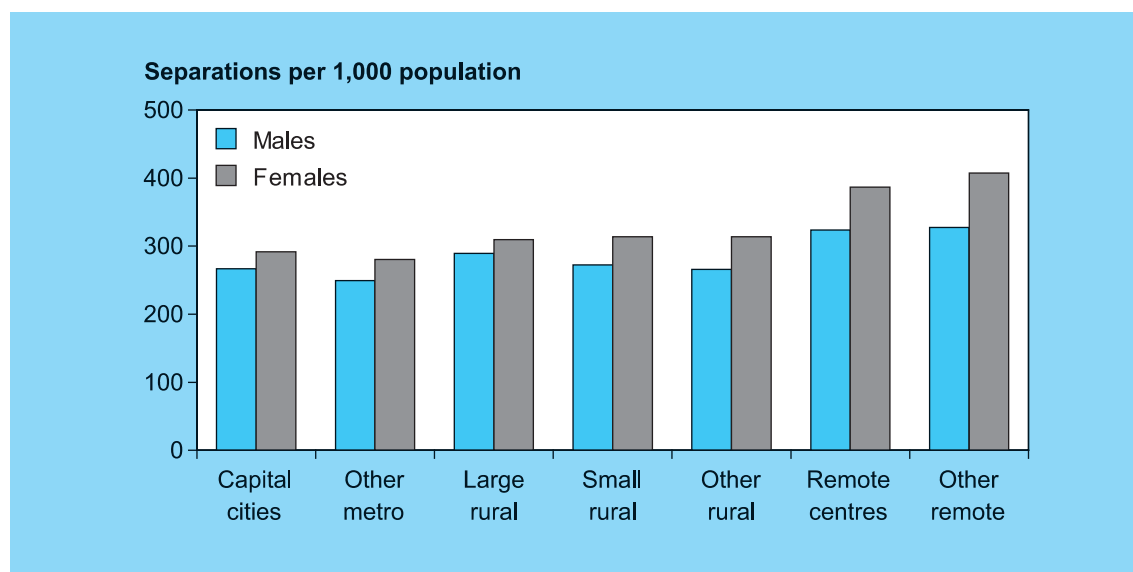
- 'Capital cities' also have the highest rate of hostel places of all areas, with a rate more than 30% higher than that for the rural zone, and more than three times the rate for 'remote centres'.

For more information, see:

Australian Institute of Health and Welfare 1997. Hostels in Australia 1995-96: a statistical overview. Aged Care Statistics Series No. 2. AIHW Cat. No. AGE 7. Canberra: AIHW & DHFS.

Australian Institute of Health and Welfare 1997. Nursing homes in Australia 1995-96: a statistical overview. Aged Care Statistics Series No. 1. AIHW Cat. No. AGE 6. Canberra: AIHW & DHFS.

Hospital separation rates, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	266.8	249.5	289.4	272.6	265.9	323.7	327.4	269.0
Females	291.8	280.3	309.7	313.8	313.7	386.5	407.4	298.5

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Hospital Morbidity Database.

Hospital utilisation

- Hospital separation rates provide a measure of the number of hospital care episodes per person and may include same-day episodes when the patient is admitted (Abraham et al. 1995). There were 5.2 million hospital separations (excluding public psychiatric hospitals) in 1995–96 (AIHW 1997a).
- The rate of hospitalisation increases from metropolitan to remote zones. ‘Other remote areas’ have the highest rates of hospitalisation of any area for males and females.
- For males, hospital separation rates in ‘large rural centres’ and ‘remote centres’ are respectively 8% and 21% higher than in ‘capital cities’.
- The separation rates for females are higher than for males. This difference in separation rates is a result of females being hospitalised for childbirth.
- Factors that could contribute to higher admission rates in rural and remote zones include higher morbidity and rural patients being more likely to be admitted to hospital than treated as out-patients because of travel distances (Harvey & Mathers 1988).

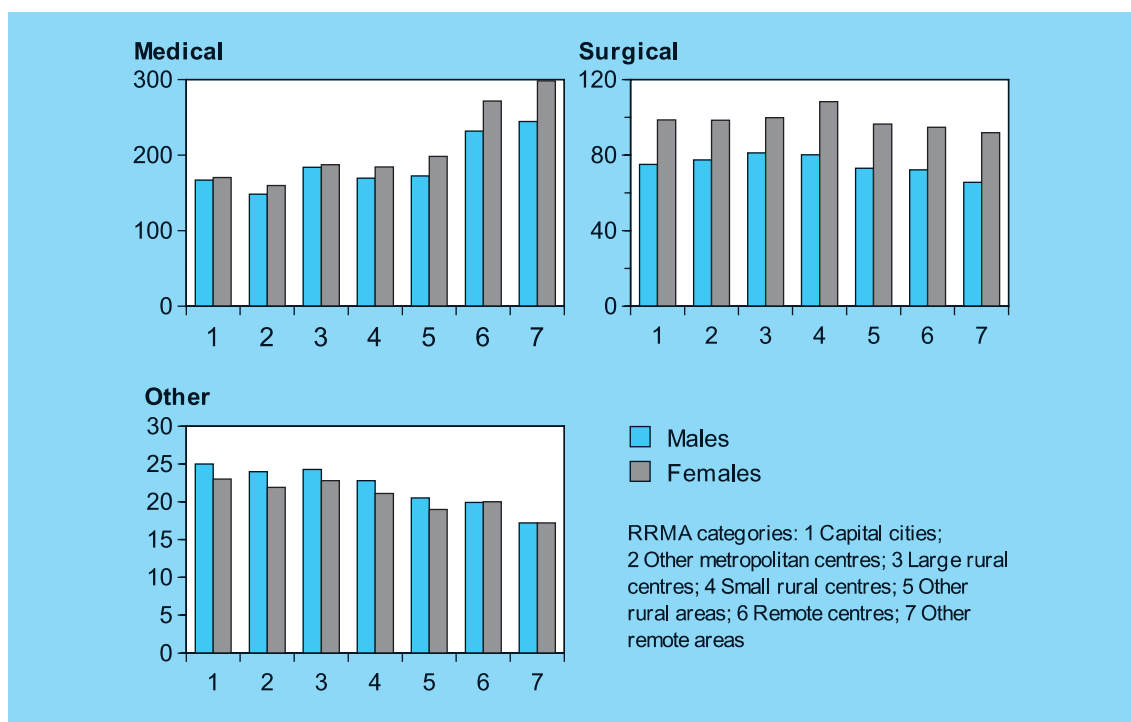
For more information, see:

Australian Institute of Health and Welfare 1997. Australian hospital statistics 1995–96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

Harvey R & Mathers C 1988. Hospital utilisation and costs study. Volume 1: commentary. Canberra: AIHW.

Abraham B, d’Espaignet ET & Stevenson C 1995. Australian health trends 1995. Canberra: AIHW.

Hospital separation rates by procedure, 1995–96



Type of procedure	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Medical								
Males	166.8	148.2	183.9	169.6	172.4	231.6	244.5	169.6
Females	170.2	159.8	187.2	184.5	198.1	271.7	298.4	177.7
Surgical								
Males	75.1	77.4	81.2	80.2	73.0	72.2	65.6	75.5
Females	98.6	98.5	99.8	108.3	96.5	94.8	91.9	98.7
Other								
Males	25.0	24.0	24.3	22.8	20.5	19.9	17.2	23.9
Females	23.0	21.9	22.8	21.1	19.0	20.0	17.2	22.1

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Hospital Morbidity Database.

Hospital separations

- All episodes of care are assigned to a surgical, medical or 'other' category on the basis of the Australian National Diagnosis Related Group (AN-DRG) classification. The AN-DRG is a patient classification system that organises illnesses into similar clinical categories with similar costs. Medical DRGs are assigned from principal diagnosis, whereas surgical DRGs are defined as operating room procedures. 'Other' DRGs include those that are defined as procedures not requiring surgery but using some invasive technique (i.e. endoscopy). AN-DRGs are used to compare hospitals by relating the number and type of patients treated by a hospital to the resources required by that hospital (AIHW 1997a).
- Compared with the rate for 'capital cities', medical separation rates are slightly lower for 'other metropolitan centres' but then increase across rural and remote zones. This increase is

greater for females than for males. In 'capital cities' the rates for males and females are fairly similar, but in 'other remote areas', the female rates are 22% higher than the male rates.

- Surgical separations are lower for both males and females in the remote zone than in rural or metropolitan zones. This suggests that people in the remote zone may have less access to surgical care than do people in rural and metropolitan zones. 'Large rural centres' and 'small rural centres' have slightly higher rates for surgical separations than the metropolitan zone.
- The separations for 'other' procedures have the highest rates in 'capital cities'. The rates in 'other metropolitan centres' and 'large rural centres' are similar to the rates in 'capital cities'. However, the rates then drop with increasing rurality. In 'other remote areas', the male and female rates are 69% and 75% respectively of the corresponding 'capital cities' rates. 'Other' separations represent procedures that require specialised medical equipment and skills that may not be available to medical practitioners in the remote zone.
- Medical separations could be higher in rural and remote zones for a number of reasons. The higher ratio of acute beds in rural and remote zones may contribute to the greater use of these beds as predicted by Roemer's Law: 'a bed built is a bed filled'.

- Rural acute hospitals function in a broader role than metropolitan acute hospitals and use beds for long-stay nursing-home-type patients (NHTPs) (Harvey & Mathers 1988; Reid & Solomon 1992). As a result, in rural and remote zones, NHTPs often occupy approximately 20% of acute care hospital beds (Reid & Solomon 1992). These patients would be accommodated in nursing homes or hostels in the metropolitan zone. The use of acute beds by NHTPs makes it appear that the rural zone has more acute care hospital beds available than actually exist.

For more information, see:

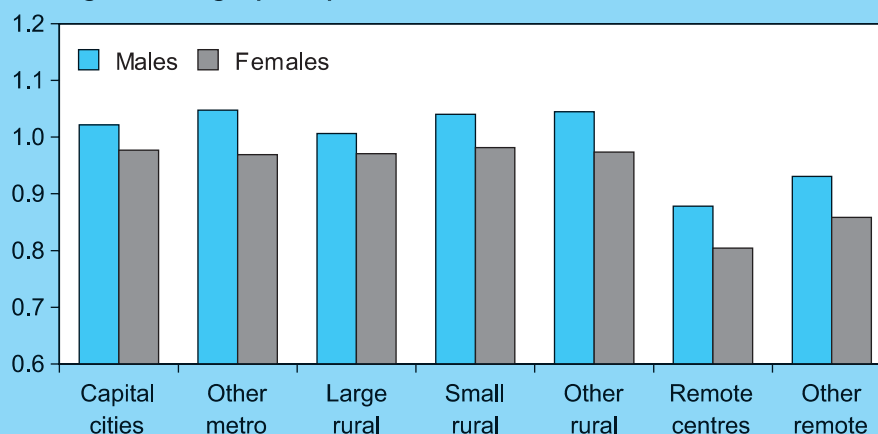
Australian Institute of Health and Welfare 1997. Australian hospital statistics 1995-96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

Harvey R & Mathers C 1988. Hospital utilisation and costs study. Volume 1: commentary. Canberra: AIHW.

Reid M & Solomon S 1992. Improving Australia's rural health and aged care services. National Health Strategy Background Paper No. 11. Canberra: Department of Health, Housing and Community Services.

Diagnosis Related Group (DRG) cost weights for hospital separations, 1995–96

Average cost weight per separation



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.02	1.05	1.01	1.04	1.04	0.88	0.93	1.02
Females	0.98	0.97	0.97	0.98	0.97	0.80	0.86	0.97

Note: Cost weights are also known as average caseweights.

Source: AIHW National Hospital Morbidity Database.

Cost weights for hospital separations

- Cost weights identify the relative cost of hospitalisation for patients in each diagnosis group (Kliwer & Butler 1995). The average cost weight of a group of individuals is a measure of the cost of their care when admitted and it serves as a substitute for the severity of illnesses treated by a hospital. The cost weight is derived at a national level and is based on national averages.
- There is very little difference in the cost of hospital care for people from rural and metropolitan zones. The cost of hospital care for people in the remote zone is relatively low. This could be a consequence of less complex surgical procedures being performed in the remote zone.
- The lower cost weights for females compared with males from the same area indicate that the hospital treatment for females is less complex than for males. The average national cost weight per male in 1995–96 was 1.01 for public hospitals and 0.99 for private hospitals excluding free-standing day facilities (DHFS 1997). This compares with average

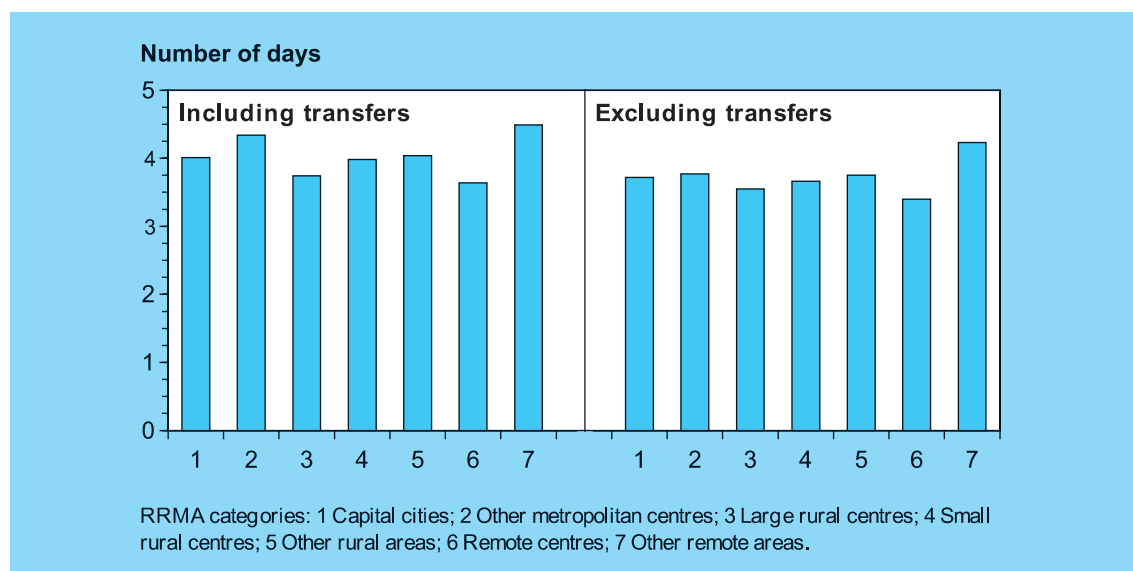
national cost weights per woman of 0.95 for public as well as private hospitals, indicating that hospital treatment for women are on average less expensive (DHFS 1997a).

- Cost weights derived at a national level may not reflect the entire cost of medical care in rural and remote zones because there may be differences in the length of stay between rural and remote zones. If the length of stay is longer for the rural zone, then the relative costs may in fact be higher in rural and remote zones than expected.

For more information, see:

Kliwer EV & Butler JRG 1995. Hospital morbidity patterns and costs of immigrants in Australia. Canberra: National Centre for Epidemiology and Population Health.
Commonwealth Department of Health and Family Services 1997. Australian casemix report on hospital activity 1995–96. Canberra: DHFS.

Casemix-adjusted average length of stay in hospitals, 1995–96



Type of hospital stay	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Including hospital transfers								
Observed	4.01	4.34	3.74	3.98	4.04	3.64	4.49	4.36
Expected ^(a)	4.04	4.19	3.97	4.09	3.97	3.68	3.97	4.31
Excluding transfers								
Observed	3.72	3.77	3.55	3.66	3.75	3.40	4.23	4.07
Expected ^(a)	3.72	3.73	3.75	3.79	3.68	3.44	3.70	4.03

(a) The expected length of stay is based on the average length of stay for the DRG across Australia for the year.

Source: AIHW National Hospital Morbidity Database.

Length of hospital stays

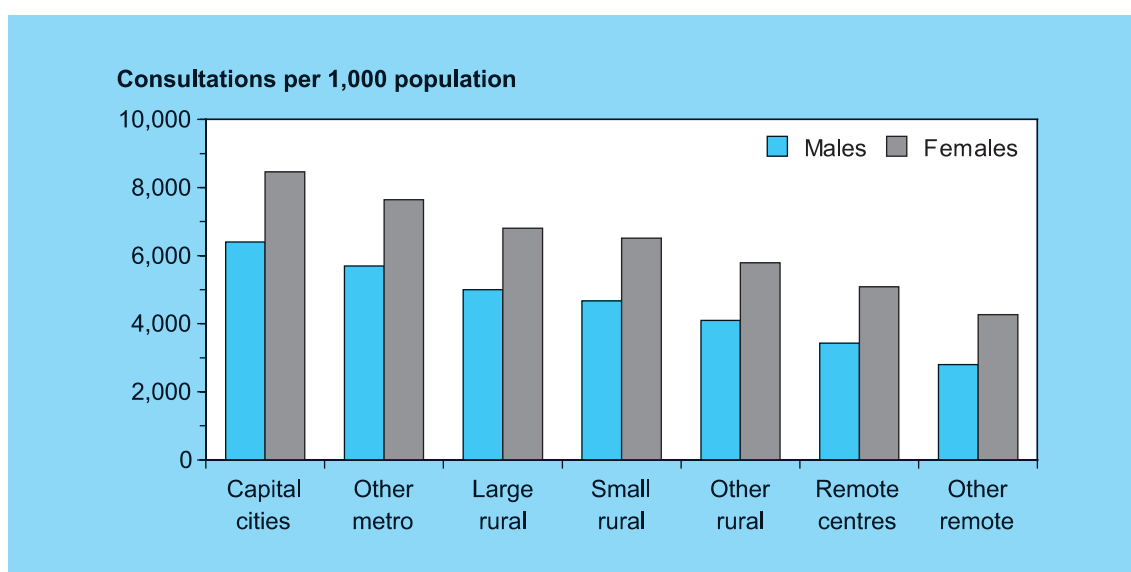
- Previous reports have noted a 26% decline in length of stay in hospital from the period 1985–86 to 1991–92 (Abraham et al. 1995). This decline has been attributed to better use of antibiotics and anaesthetics, use of less invasive surgical techniques and the expansion of early discharge programs that allow patients to return home to receive follow-up care.
- Hospitals are mainly concentrated in the metropolitan zone, rural centres and remote centres. There is little difference between observed and expected lengths of stay at these centres. The largest difference between observed and expected stays occurs in 'other

remote areas' for both males and females. This difference may be explained by the extra distance that people in the remote zones may have to travel to hospital. Diagnosis of illness may take place in hospital to avoid the patient having to travel great distances for repeat visits. Likewise, patients may remain in hospital for follow-up care because of travel distance to hospital.

For more information, see:

Abraham B d'Espaignet ET & Stevenson C 1995. Australian health trends 1995. Canberra: AIHW.

Medicare utilisation rates for GP consultations, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	6,404	5,699	5,003	4,667	4,095	3,425	2,798	5,719
Females	8,466	7,646	6,805	6,516	5,787	5,082	4,265	7,711

Note: Age-standardised to the Australian population at 30 June 1991.

Source: Unpublished Medicare data from DHFS.

Medicare usage for GP consultations

- Data on the operation of Medicare provide information on the use of private medical services. These include services provided outside of hospital as well as medical services for private admitted patients in public and private hospitals. Excluded are services for public patients in hospital, for eligible veterans, and for those who are covered by compensation for which interim benefits have not been paid (AIHW 1998a).
- Those living in rural and remote zones use less Medicare for GP consultations compared with those living in metropolitan areas. Males and females from 'capital cities' have 90% and 67% greater use of Medicare for GP visits compared with their counterparts in 'remote centres'. An explanation for this higher usage in 'capital cities' may be that the greater availability of GPs in the metropolitan zone encourages more frequent use of their

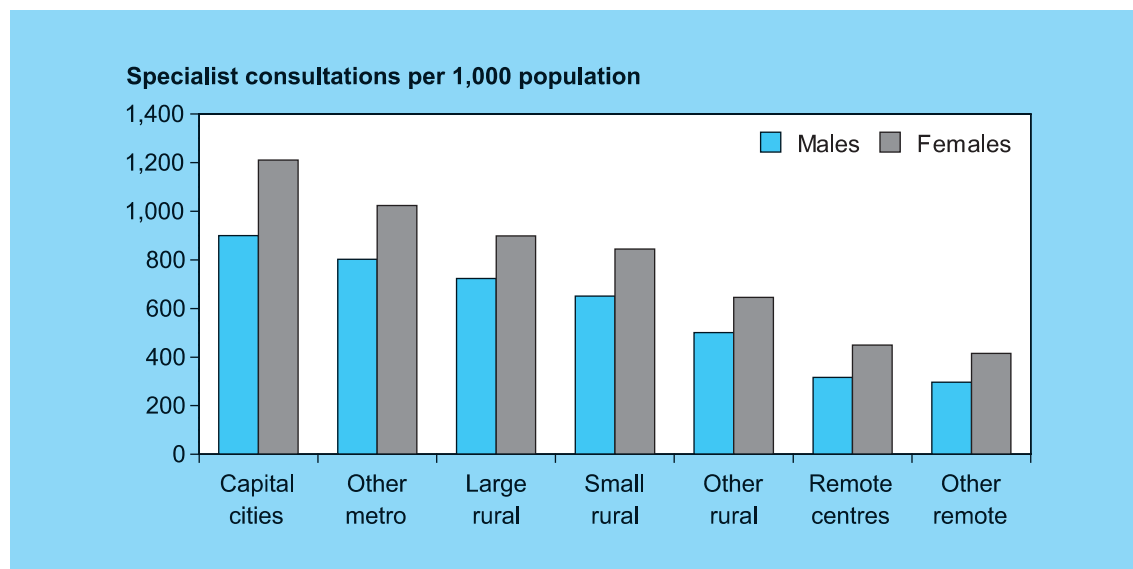
services. Also, in rural and remote zones where there are fewer GPs, the distance travelled for a visit may be greater, making frequent visits to the GP more difficult.

- Females from all zones have higher use of Medicare for GP services when compared with their male counterparts, with females in the remote zone having almost twice as much use of Medicare for GP services compared to males in the remote zone. These differences reflect the increased use of GPs by females for antenatal check-ups. Children may also be on their mother's Medicare card and this would increase the rate of Medicare usage for GP consultations for females relative to males.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Medicare utilisation rates for specialist, psychiatric and consultant visits, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	900	802	723	651	501	317	297	790
Females	1,211	1,023	899	844	645	449	415	1,059

Notes

1. Includes Medicare Item Groups A3 special conditions, A4 consultant, A6 group therapy and A8 psychiatrists.
2. Age-standardised to the Australian population at 30 June 1991.

Source: Unpublished Medicare data from DHFS.

Medicare usage for specialist consultations

- Medicare is Australia’s universal system of health insurance, and provides benefits for services provided by qualified medical practitioners, consultations by participating optometrists, and certain services performed by eligible dental practitioners (AIHW 1998a). This indicator provides a measure of the usage of private specialist services across RRMA categories.
- The usage of specialist services is strongly associated with rurality. People living in ‘large rural centres’ use around 20% less specialist services than those living in ‘capital cities’, whereas for ‘other rural areas’ the difference is almost 50%. Those living in ‘remote centres’ use around 65% less specialist services than those living in ‘capital cities’.
- The lower usage of specialists in rural and remote zones probably reflects the lower numbers per head of population practising in

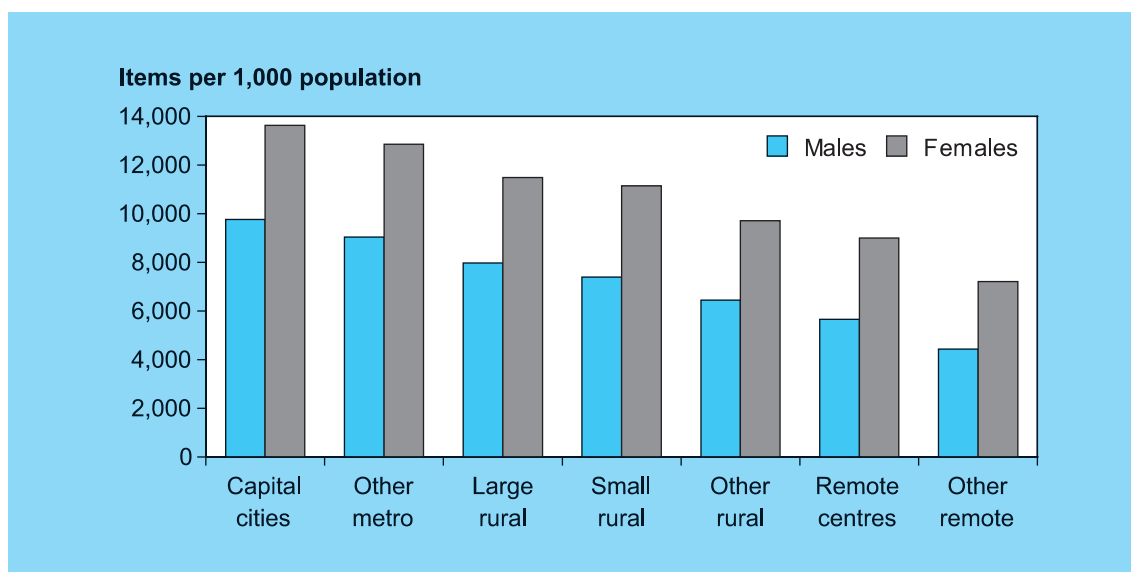
these zones. This may mean that those living in rural and remote zones rely more on the public system than those living in the metropolitan zone.

- Across all RRMA categories, females use more Medicare for specialist services than do males, reflecting their use of specialist consultations for ante- and postnatal care. For females in the remote zone, the difference in Medicare use for specialist services is almost 50% higher than that of men in these areas, and is the highest of all RRMA categories.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia’s health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Medicare utilisation rates for all services, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	9,769	9,045	7,971	7,391	6,443	5,660	4,436	8,828
Females	13,633	12,855	11,495	11,145	9,711	9,007	7,210	12,605

Note: Age-standardised to the Australian population at 30 June 1991.

Source: Unpublished Medicare data from DHFS.

Medicare utilisation for all services

- Medicare pays providers directly for services on a fee-for-service basis or reimburses patients for expenses at a set schedule fee.
- Those living in rural and remote zones use fewer Medicare services per person. Males in the remote zone use 40% to 50% less Medicare for all services compared to males in 'capital cities'. Males in the rural zone use 20% to 30% less Medicare for all services compared with those in 'capital cities'.
- Females in 'capital cities' have the highest usage of Medicare for all services, and usage declines as areas become more remote, similar to the picture for males.
- Across all RRMA categories, females use more Medicare services compared with males in all areas. Females in the remote zone use

Medicare services at almost twice the rate of males in the same zones.

- Medicare data seriously underestimate the usage of services in rural and remote areas because State-provided clinics and Aboriginal Medical Services are not reimbursed by Medicare. Consequently, the use of these services is not reported in the Medicare system.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

5 Health resources

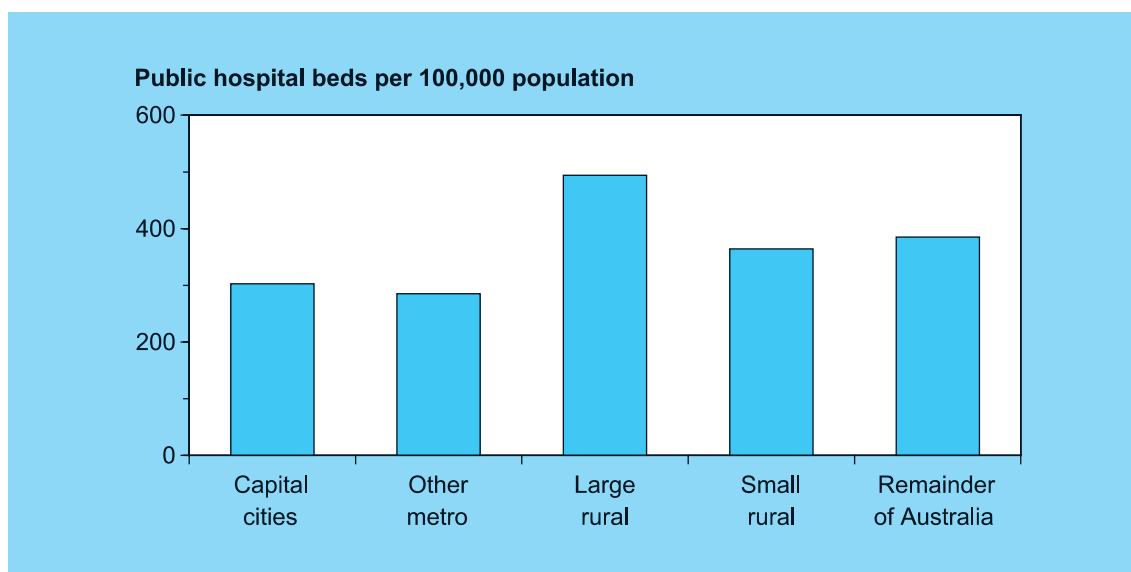
People living in rural and remote zones are considered to have lower access to health care compared with those living in the metropolitan zone. Access difficulties due to distance, time, cost and transport availability in rural and remote zones can be compounded by shortages and uneven distributions of health facilities and health professionals.

Access to health care facilities and health care professionals in rural and remote zones is critical to minimising variation in health outcomes between people living in the metropolitan zone and those living in rural and remote zones. The importance people place on access to a general practitioner (GP) as the first point of contact for any health problem is illustrated by the fact that in 1995, on average, Australians made 5.6 visits to a GP through the year. In light of this emphasis, the General Practice Rural Incentives Scheme was formed to help attract more GPs to set up practice in rural and remote areas. Other points of contact for professional health care such as nurses, pharmacists and physiotherapists are also important to the provision of health services.

Hospital facilities in rural and remote zones can be less accessible than in the metropolitan zone. On average, people living in rural and remote zones need to travel larger distances to receive hospital treatment. People needing more specialised treatments must travel even further to the larger towns and cities or wait longer for these services to come to them on a rotation basis. This leads to a wider role for acute care hospitals in rural and remote zones compared with hospitals in the metropolitan zone. For example, people with chronic conditions such as diabetes and asthma may be hospitalised more frequently in rural and remote zones if they are required to travel long distances for follow-up treatment. Similarly, in communities where no nursing homes are available, the care of nursing-home-type patients often falls to the local hospital, making the role of that hospital broader than that of the usual acute care hospital. This broader use of acute care hospitals is probably reflected in the provision of a higher number of beds in non-metropolitan zones, 484 per 100,000 population, compared with 457 for 'capital cities' and 423 for 'other metropolitan centres'.

This chapter attempts to quantify variation in the supply of health resources between metropolitan, rural and remote Australia by using indicators on hospital services and the availability of key health labour force personnel such as GPs, pharmacists and nurses. Indicators measuring access to health services are also provided. The chapter also examines both public and private hospital expenditure by RRMA category.

Number of hospital beds, 1995–96



Sector	Metropolitan		Rural and remote			Total
	Capital cities	Other	Large centres	Small centres	Remainder of Australia ^(b)	
Private ^(a)	154	139	241	76	26	132
Public ^(a)	303	285	494	364	385	331
Total	457	423	735	439	411	462

(a) Due to privacy restrictions, information on beds available in private hospitals in remote zones is not provided separately.

(b) 'Remainder of Australia' includes 'other rural areas', 'remote centres' and 'other remote areas'.

Notes

1. Based on daily average available beds for 1995–96 where available, and beds at 30 June 1996 where not available.

2. Includes Same Day Facility beds.

Source: AIHW Hospital Establishments database; unpublished ABS data on private hospitals.

Hospital beds

- The number of available beds in acute care hospitals per 100,000 population provides a measure of the capacity of a region to supply acute care hospital facilities. However, variation between hospitals in the areas they serve and the types of services they provide need to be taken into account when interpreting this indicator. For example, large hospitals in central locations serve patients from more remote locations. Also, many rural and remote zone hospitals have a high proportion of nursing-home-type patients who, in metropolitan locations, would be cared for in nursing homes or hostels (AIHW 1997d).
- Acute care hospitals are establishments which provide at least minimal medical, surgical or obstetric services for in-patient treatment and/or care, and which provide round-the-clock comprehensive qualified nursing service. Other necessary professional services may also be available at these facilities.
- The supply of public beds in acute care hospitals per head of population is highest in the rural and remote zones. In 1995–96, 'large rural centres' had 63% more public beds per head of population than 'capital cities', and 35% more than 'small rural centres' and 'other rural areas'. 'Other remote areas' also had a high number of public hospital beds per head of population, with a rate similar to that for 'large rural centres'. The remote zone also records greater lengths of stay for patients (see page 99, Casemix-adjusted average length of stay in hospitals, 1995–96).

- Private hospital bed supply per head of population is the highest in 'large rural centres' and the metropolitan zone, with these types of beds making up one-third of all beds in acute care hospitals in these areas in 1995-96. In contrast, private hospital beds were only 17% and 6% of total acute care hospital beds in 'small rural centres' and 'remainder of Australia' respectively.
- The high rate of beds in acute care hospitals per head of population in 'large rural centres' may be a result of these hospitals supplying specialised services to the other rural areas, which do not have the population numbers

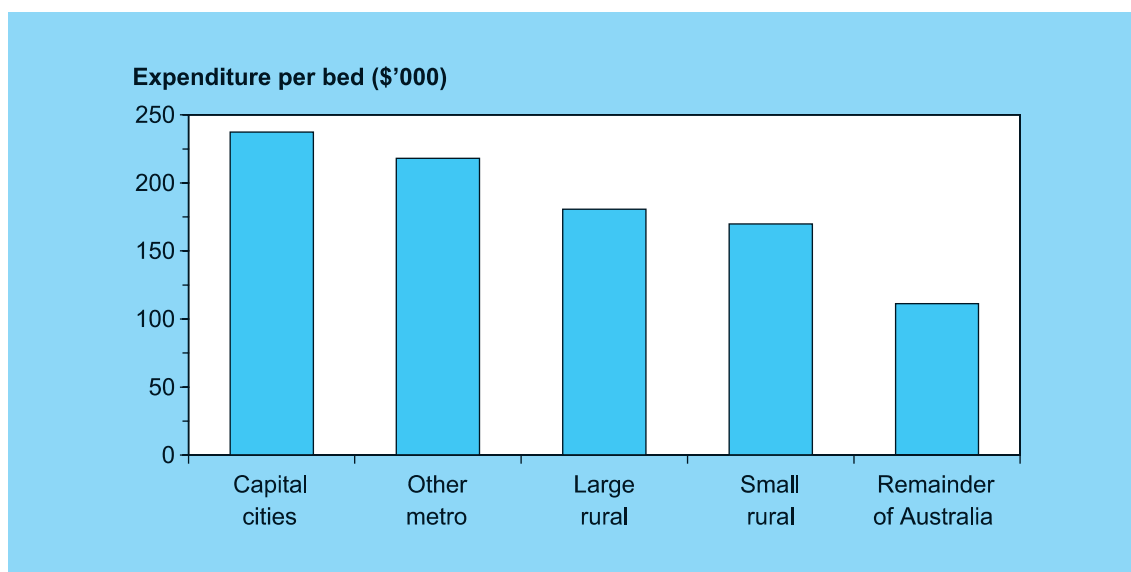
sufficient to justify such specialist facilities. Other reasons include a higher percentage of nursing-home-type patients, higher morbidity, and differences in medical practice in 'large rural centres' compared with other areas.

For more information, see:

Reid M & Soloman S 1992. Improving Australia's rural health and aged care services. National Health Strategy Background Paper No. 11. Melbourne: Department of Health, Housing and Community Services.

Health service expenditure

Expenditure per available hospital bed, 1995–96 (\$'000)



Sector	Metropolitan		Rural and remote			Total
	Capital cities	Other	Large centres	Small centres	Remainder of Australia ^(b)	
Private ^(a)	127.7	120.6	114.9	90.5	58.9	122.1
Public ^(a)	237.4	218.1	180.6	169.8	111.2	202.0
Total	200.5	186.1	159.1	156.1	107.9	179.3

(a) Due to privacy restrictions, information on expenditure per available bed is not separately available for private hospitals in remote zones.

(b) 'Remainder of Australia' includes 'other rural areas', 'remote centres' and 'other remote areas'.

Notes

1. Based on daily average available beds for 1995–96 where available, and beds at 30 June 1996 where not available.

2. Includes expenditure on out-patient activity.

Sources: AIHW Hospital Establishments database; unpublished ABS data on private hospitals.

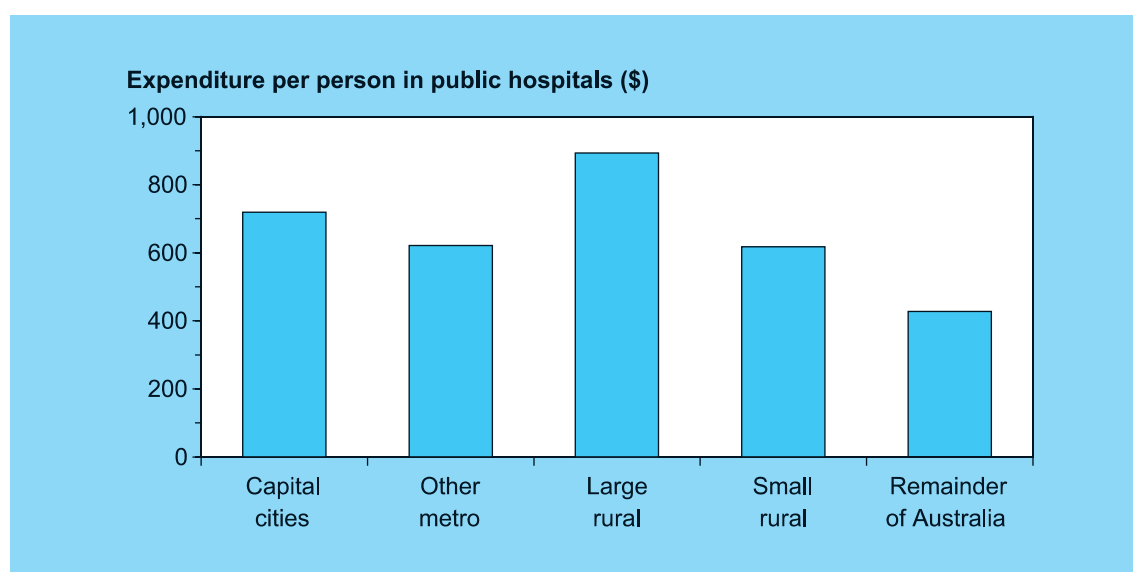
Hospital expenditure

- Expenditure per available bed measures the reported recurrent expenditure for acute care hospitals. It provides an indication of the cost of the services provided by acute care hospitals to their patients.
- Differences across regions largely reflect the different types of services provided in each region. The provision of specialist services in large hospitals for more serious cases, and the use of acute care beds for nursing-home-type patients in rural and remote zones are examples of different uses of hospital facilities. The level of hospital expenditure attributed to in-patients (admitted patients) also affects expenditure as a proportion of the number of available beds.
- The level of expenditure per available hospital bed in acute care hospitals declines sharply with increasing rurality, for both public and private hospitals. In 1995–96, the rate of expenditure in comparison to 'capital cities' was 20% less in 'large rural centres' and 54% less in 'remainder of Australia'.

For more information, see:

Cooper-Stanbury M, Solon R & Cook M 1994. Hospital utilisation and costs study 1991–92. Volume 1. A survey of public hospitals and related data. AIHW Health Services Series No. 5. Canberra: AGPS.

Acute care hospital expenditure per person, 1995–96 (\$)



Sector	Metropolitan		Rural and remote			Total
	Capital cities	Other	Large centres	Small centres	Remainder of Australia ^(b)	
Private ^(a)	196	167	277	69	15	161
Public ^(a)	719	621	893	618	428	668
Total	915	788	1,169	686	444	828

(a) Due to privacy restrictions, information on expenditure per available bed is not separately available for private hospitals in remote zones.

(b) 'Remainder of Australia' includes 'other rural areas', 'remote centres' and 'other remote areas'.

Notes

1. Based on daily average available beds for 1995–96 where available, and beds at 30 June 1996 where not available.
2. Includes expenditure on out-patient activity.
3. Based on patients' area of residence, not location of hospital.

Sources: AIHW Hospital Establishments database; unpublished ABS data on private hospitals.

Expenditure on acute hospital care

- Acute care hospitals include public, private and psychiatric hospitals that provide at least minimal medical, surgical or obstetric services for in-patient treatment and care. These hospitals also provide round-the-clock comprehensive qualified nursing service as well as other necessary professional services.
- Acute care hospital expenditure is a major component of the total resources allocated to the health sector. In 1994–95, 34% of total health expenditure was spent on acute care hospitals.
- Hospital expenditure per person in 'large rural centres' is the highest of the RRMA categories, and is 27% higher than that for 'capital cities'. This large difference is partly

because the hospitals located in 'large rural centres' serve a much wider area (including 'small rural centres' and the remote zone) than their denominator population base would suggest. Availability of services for more expensive diagnosis-related groups (DRGs) at these hospitals may also add to these costs. Also, economies of scale are much more difficult to achieve in rural hospitals than in larger metropolitan hospitals.

- Hospital expenditure per person in 'small rural centres' is only 75% of the level in 'capital cities', with 'remainder of Australia' less than half the 'capital cities' rate.

Health service expenditure

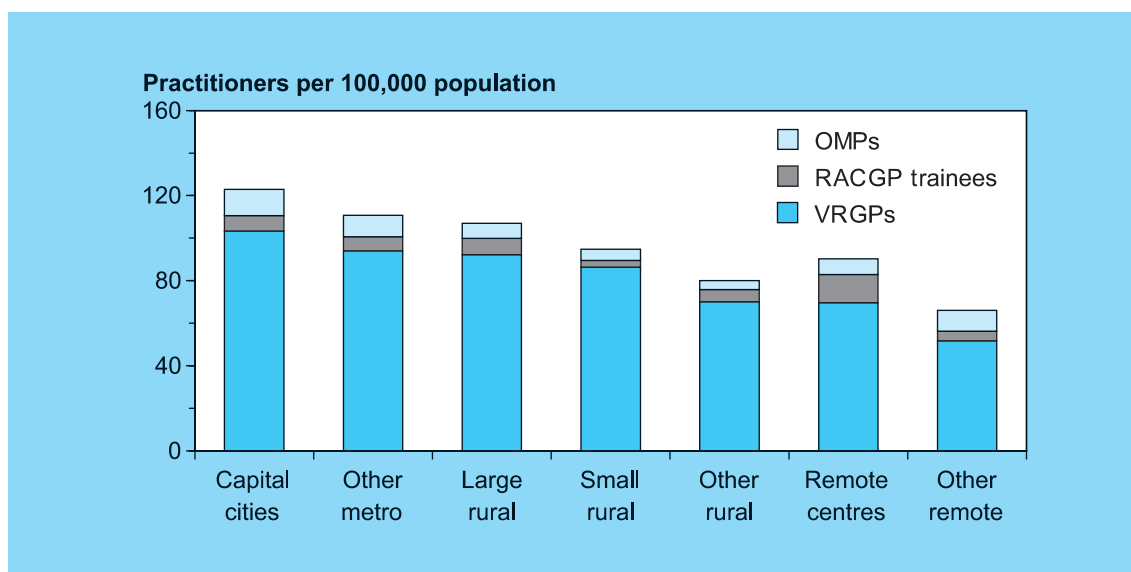
- The highest private hospital expenditure per person was also in 'large rural centres'. However, the level of private hospital expenditure in 'small rural centres' and 'remainder of Australia' is only a fraction of the levels in the metropolitan zone and 'large rural centres'.

For more information, see:

Cooper-Stanbury M, Solon R & Cook M 1994. Hospital utilisation and costs study 1991-92. Volume 1. A survey of public hospitals and related data. AIHW Health Services Series No. 5. Canberra: AGPS.

Australian Institute of Health and Welfare 1997. Health Expenditure Bulletin No. 13. Canberra: AIHW.

Primary care medical practitioners, 1996



Doctors per 100,000 population	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Vocationally registered general practitioners (VRGPs)	103.4	94.0	92.2	86.4	70.1	69.6	51.8	95.1
General practitioner trainees (RACGP trainees)	7.1	6.6	7.7	3.1	5.7	13.3	4.5	6.7
Other medical practitioners (OMPs)	12.4	10.2	7.1	5.4	4.2	7.3	9.8	10.2
Total	122.9	110.8	107.0	94.8	80.0	90.2	66.0	112.1

Source: AIHW.

Medical practitioners

- Inaccessibility of general practitioners (GPs) remains the greatest source of disadvantage for most rural residents (Humphreys et al. 1997). The RRMA distribution of primary care practitioners fits well the known pattern of undersupply of the health labour force in rural and remote areas and oversupply in metropolitan areas (AIHW 1998b).
- The AIHW National Medical Labour Force Survey classifies medical practitioners under three groups: vocationally registered general practitioners (VRGPs) with appropriate training and registration, Royal Australian College of General Practitioners (RACGP) trainees who are being trained as VRGPs, and other medical practitioners (OMPs).
- In 1996 there was almost double the number of practitioners providing services in 'capital cities' per head of population, compared with 'other remote areas'.
- The supply of primary care practitioners per head of population falls sharply in rural areas. In 'large rural centres' the supply rate was 13% below that of 'capital cities', whereas 'small rural centres' and 'other rural areas' had supply rates 23% and 35% respectively less than 'capital cities'. Distances travelled to visit practitioners in the more sparsely settled areas may add further to the rural and remote zone disadvantage.
- The distribution of all three groups of primary care medical practitioners shows a similar pattern of decreasing supply with increasing rurality, though in the case of OMPs and RACGP trainees supply rates in the remote zone are generally higher than in the rural zone. For example, in 'remote centres' the supply of OMPs is 130% higher than that in

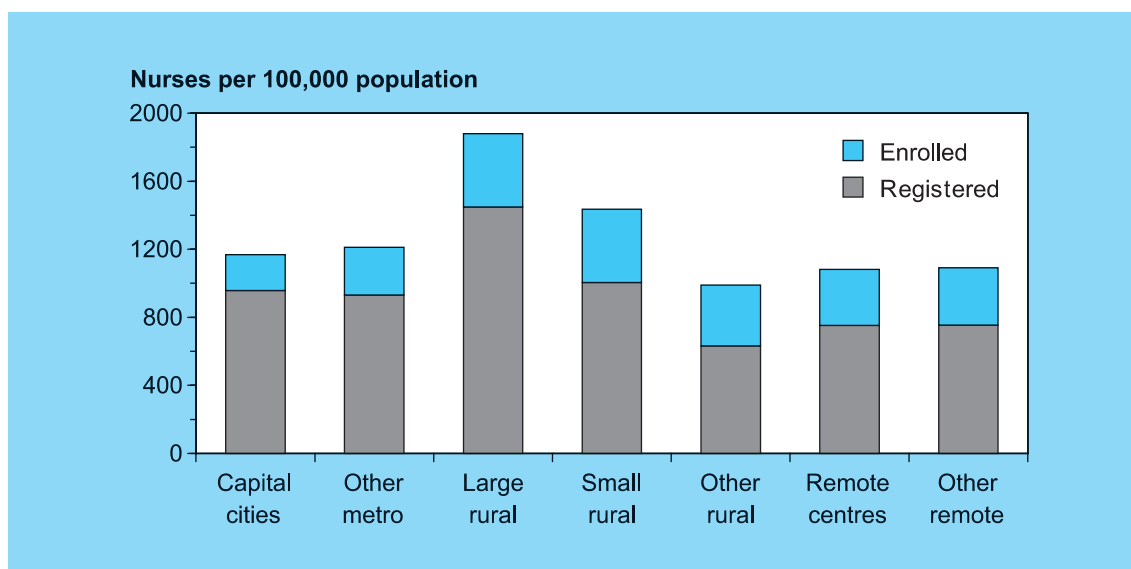
'other rural areas' and the number of RACGP trainees per head of population in 'other remote areas' is 130% higher than that in 'other rural areas'.

For more information, see:

Australian Institute of Health and Welfare 1998. Medical labour force 1996. National Health Labour Force Series No. 13. AIHW Cat. No. HWL 10. Canberra: AIHW.

Australian Institute of Health and Welfare & Australian Medical Workforce Advisory Committee 1996. Australian medical workforce benchmarks. AMWAC Report 1996.1. Canberra: AGPS.

Distribution of nurses, 1995



Nurses per 100,000 population	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Registered nurses	957.4	930.9	1,448.6	1,004.6	631.5	751.8	755.1	938.3
Enrolled nurses	210.8	281.2	429.9	430.9	359.0	330.1	336.8	267.1
Total	1,168.2	1,212.1	1,878.6	1,435.6	990.5	1,082.0	1,091.9	1,205.3

Source: AIHW.

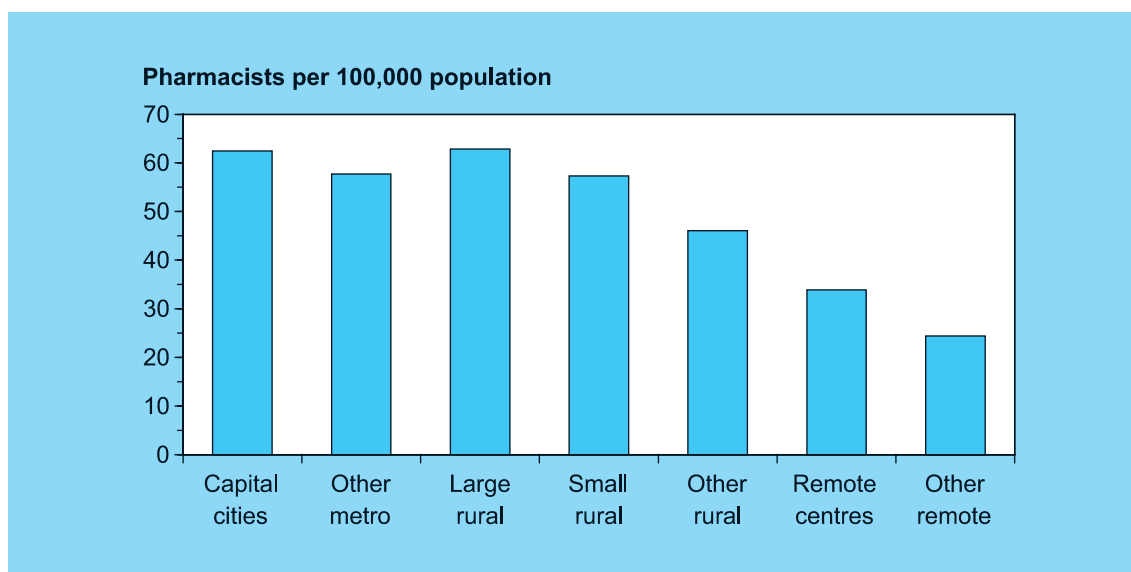
Nurses

- In 1995, there were 171,774 registered nurses and 48,892 enrolled nurses in Australia. Registered nurses have a minimum requirement of a 3-year degree from a tertiary education institution or equivalent from a registered hospital-based program. Enrolled nurses require a 1-year diploma from a tertiary education institution or equivalent from a registered hospital-based program.
- In 1995, almost two-thirds of registered nurses were employed in acute and psychiatric hospitals, with 12% working in nursing homes. Unlike the distribution of primary care practitioners, the distribution of nurses is more even across zones, and closely follows the pattern of hospital bed supply.
- 'Large rural centres' have the largest per capita supply of nurses of all areas. This reflects the relatively large proportion of hospital beds in these areas, which provide high-level hospital services to other rural areas as well.
- Enrolled nurses form a higher proportion of the total nursing workforce in rural and remote zones, compared with the proportion in 'capital cities'. In 'small rural centres', 'other rural areas' and the remote zone, around 30% of nurses were enrolled nurses, compared with 18% in 'capital cities'.
- The higher proportion of nurses working in rural and remote Australia, when compared with GPs, confirms that nurses provide a higher proportion of health care in rural and remote Australia than in the metropolitan zone (AIHW 1998c).

For more information, see:

Australian Institute of Health and Welfare 1998. Nursing labour force 1995. National Health Labour Force Series No. 11. AIHW Cat. No. HWL 6. Canberra: AIHW.

Distribution of community (retail) pharmacists, 1995



Pharmacists per 100,000 population	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Community (retail) pharmacists	62.5	57.7	62.9	57.3	46.1	33.9	24.4	58.6

Note: Community pharmacists do not include pharmacists employed as hospital/clinic pharmacists in their main job.

Source: State and Territory Pharmacy Registration Boards.

Pharmacists

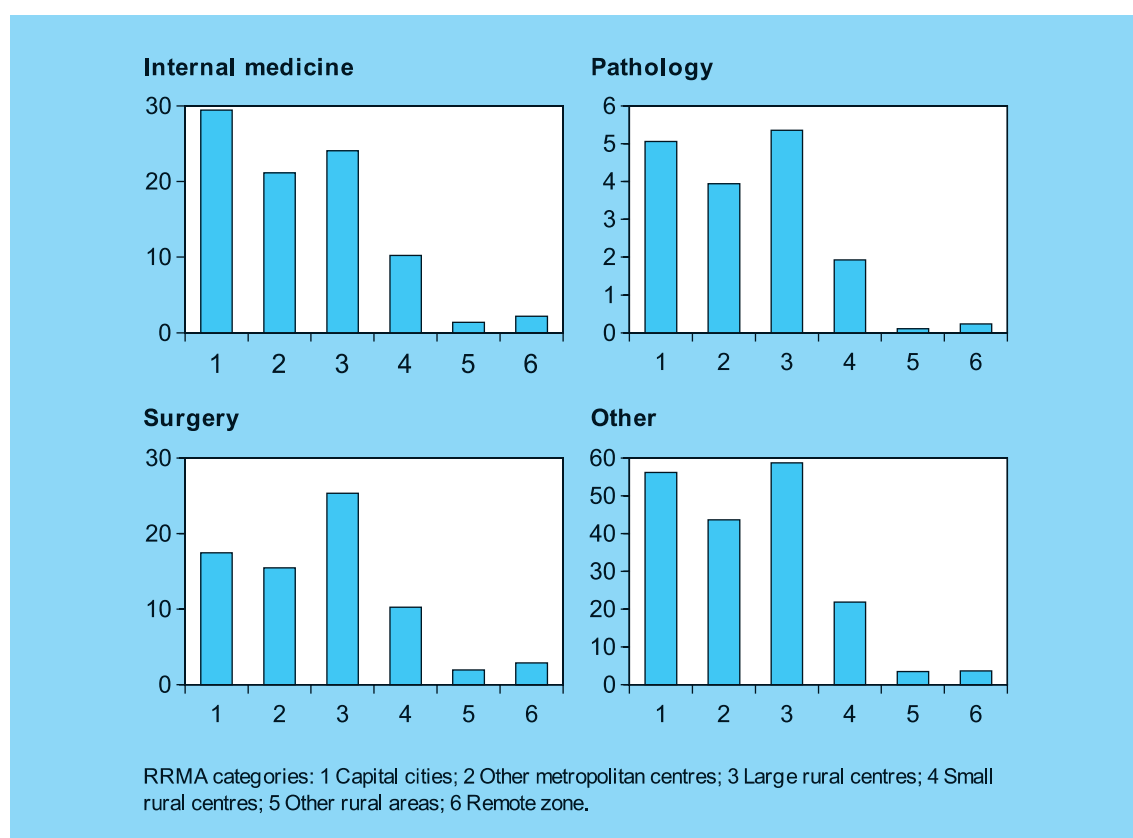
- Pharmacists have an important role in complementing the health services provided by general practitioners and specialists.
- Of employed pharmacists in Australia in 1995, 80% were community (retail) pharmacists. The remainder includes hospital and clinic pharmacists, industrial pharmacists, and those in other pharmacy-related employment including administration and education.
- The supply of pharmacists across regions is similar between the metropolitan zone, 'large rural centres' and 'small rural centres', but is substantially lower in 'other rural areas' and

the remote zone. 'Other rural areas' are served by 26% less pharmacists per capita than 'capital cities', and the remote zone has around half the number of pharmacists in 'capital cities' per capita.

For more information, see:

Australian Institute of Health and Welfare 1998. Pharmacy labour force 1995. National Health Labour Force Series No. 12. AIHW Cat. No. HWL 9. Canberra: AIHW.

Medical specialists per 100,000 population, 1995



Medical specialisation	Metropolitan		Rural			Remote	Total
	Capital cities	Other	Large centres	Small centres	Other		
Internal medicine	29.4	21.2	24.0	10.2	1.4	2.2	22.7
Pathology	5.1	3.9	5.4	1.9	0.1	0.2	4.0
Surgery	17.4	15.4	25.3	10.3	2.0	2.9	14.8
Other specialties	56.2	43.7	58.7	21.8	3.5	3.7	44.6
Total	108.1	84.2	113.4	44.3	7.0	9.0	86.0

Source: AIHW.

Medical specialists

- Specialists can be grouped into four main types: internal medicine (non-surgical medicine involving diagnosis and treatment of diseases involving the internal organs, for example cardiologists and neurologists), pathology, surgery, and 'other'. Anaesthesia, psychiatry, and obstetrics and gynaecology are the largest specialties in the 'other' group.
- In 1996, the number of specialists per head of population was fairly similar in the metropolitan zone and 'large rural centres', but substantially lower in 'small rural centres', 'other rural areas' and the remote zone.

Compared with 'capital cities', 'small rural centres' have less than half the supply per capita of specialists. 'Other rural areas' and the remote zone have less than 10% of the number of specialists per capita in 'capital cities'.

- Of all specialists, surgeons have the highest numbers per capita practising in rural and remote zones. However, the supply of surgeons in 'small rural centres', 'other rural areas', and the remote zone is still only 59%, 11%, and 17% respectively of the corresponding supply in 'capital cities'.

Health labour force

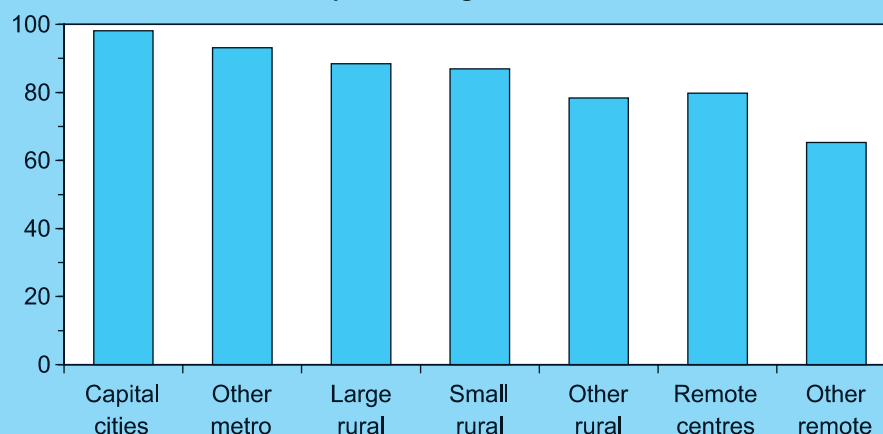
- The numbers above do not reflect outreach services provided by metropolitan-based specialists to rural and remote zones. These outreach services include telemedicine services, as well as periodic visits to rural centres to conduct consultation clinics and/or undertake surgical procedures.

For more information, see:

Australian Institute of Health and Welfare 1998. Medical labour force 1996. National Health Labour Force Series No. 13. AIHW Cat. No. HWL 10. Canberra: AIHW.

General practice consultations 1995–96: a matrix of provider region versus patient's region

Per cent of consultations in patient's region of residence



Patient's region	Provider region							Total
	Metropolitan		Rural			Remote		
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Capital cities	98.1	0.6	0.3	0.4	0.6	0.1	0.1	100.0
Other metropolitan	4.7	93.1	0.4	0.7	0.9	0.1	0.1	100.0
Large rural centres	5.1	1.0	88.4	1.9	3.1	0.2	0.2	100.0
Small rural centres	6.2	1.5	1.6	86.9	3.2	0.2	0.3	100.0
Other rural areas	9.5	1.7	5.4	4.4	78.4	0.3	0.3	100.0
Remote centres	8.9	1.1	2.6	1.0	3.8	79.8	2.6	100.0
Other remote areas	11.7	1.3	3.0	5.0	8.5	5.4	65.2	100.0
Total	70.4	7.8	5.6	5.8	9.0	0.7	0.7	100.0

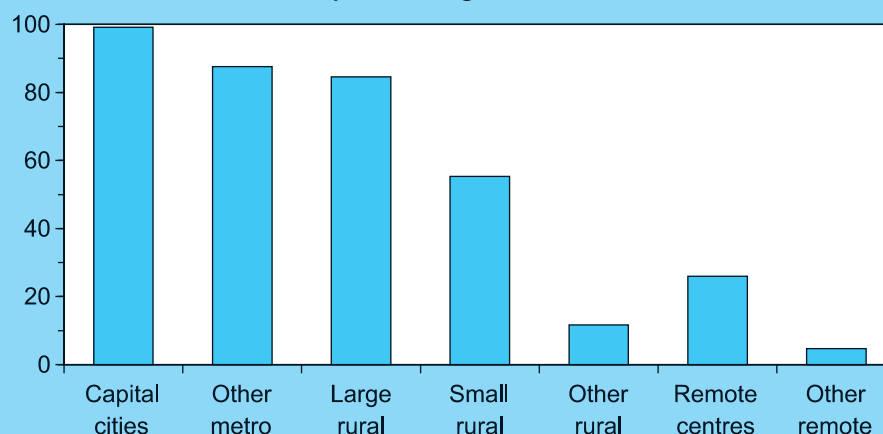
Source: Unpublished Medicare data from DHFS.

GP consultations

- The degree to which patients travel outside their region of residence to visit a general practitioner (GP) provides a measure of the mobility required to overcome access problems.
- Although the data given above include only private practice consultations, they illustrate the higher mobility required of rural and remote patients in visiting GPs, when compared with metropolitan patients. Compared with 'capital cities', where more than 98% of patient visits are to doctors in 'capital cities', only 88% of patient visits for those living in 'large rural centres' are to doctors in the same region. This proportion progressively declines with increasing rurality to a level of 65% in 'other remote areas'.
- GPs in 'capital cities' provide more than 5% of visits by people living in rural and remote Australia. They provide some of these services as locums travelling to rural areas. People visiting the city make up the remainder of rural and remote patients treated by 'capital city' GPs. This proportion is around 10% for people living in 'other rural areas' and the remote zone.

Specialist consultations 1995–96: provider region versus patient's region

Per cent of consultations in patient's region of residence



Patient's region	Provider region							Total
	Metropolitan		Rural			Remote		
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Capital cities	99.2	0.4	0.2	0.1	0.1	0.0	0.0	100.0
Other metropolitan	11.4	87.6	0.3	0.5	0.2	0.0	0.0	100.0
Large rural centres	12.2	1.1	84.6	1.6	0.4	0.0	0.0	100.0
Small rural centres	23.2	6.8	12.7	55.3	1.9	0.0	0.0	100.0
Other rural areas	40.4	5.9	29.9	12.1	11.7	0.1	0.1	100.0
Remote centres	32.9	11.0	24.7	1.4	2.7	26.0	2.7	100.0
Other remote areas	47.2	1.9	21.7	16.0	1.9	6.6	4.7	100.0
Total	78.1	7.9	8.1	4.4	1.3	0.2	0.0	100.0

Note: Specialist consultations include Commonwealth Medicare Benefits Scheme Item Groups A3 specialist attendances, A6 psychiatric group therapy attendances and A8 consultant psychiatrist attendances.

Source: Unpublished Medicare data from DHFS.

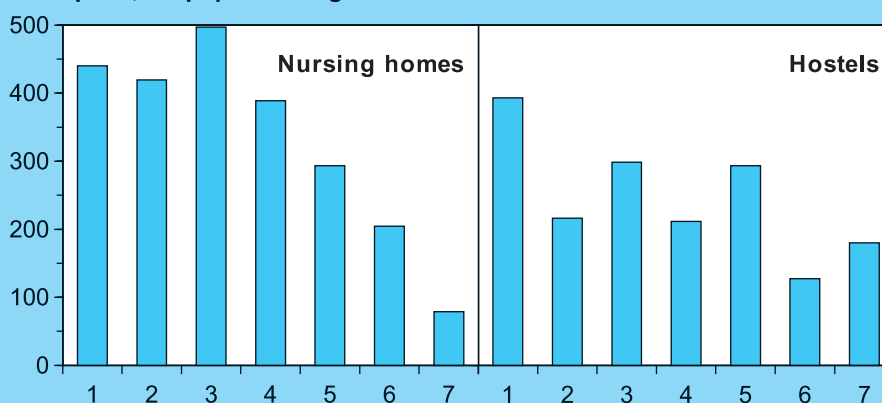
Specialist consultations

- While the distribution of specialists across RRMA categories provides information on the availability in each region, the effectiveness of this availability can be determined by examining the extent to which patients travel outside their region of residence to consult specialists.
- Only private practice specialist consultations are included in this analysis, but they show that rural and remote patients require an even higher level of mobility to visit specialists, compared with that required to visit general practitioners.
- Whereas the proportion of visits for patients living in 'large rural centres' to specialists from the same region is 85%, in 'small rural centres' and 'other rural areas' the corresponding proportions are only 55% and 12% respectively. For people living in the remote zone these proportions are also very low, being 26% for people living in 'remote centres' and 5% for people living in 'other remote areas'.

- Most of the visits to specialists outside a patient's area of residence are to 'capital cities'. For patients living in 'other rural areas', more than 40% of visits to specialists in 1995-96 were to those based in 'capital cities'. This percentage was even higher at 47% for people living in 'other remote areas'.

Nursing home places and hostel beds, 1996

Beds per 1,000 population aged 70 and over



RRMA categories: 1 Capital cities; 2 Other metropolitan centres; 3 Large rural centres; 4 Small rural centres; 5 Other rural areas; 6 Remote centres; 7 Other remote areas.

Type of accommodation	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Nursing home	440.3	419.5	497.0	388.8	293.3	204.7	78.8	409.7
Hostel	393.3	216.5	298.6	211.5	293.7	127.3	180.0	342.1

Source: Commonwealth Department of Health and Family Services databases on approved nursing homes and hostels for the aged.

Aged care

- Since the mid-1980s there has been a shift away from the resource-intensive nursing home aged care services to the less resource-intensive hostel care system (AIHW 1997f). These changes are a part of government policy to achieve a level of provision of 400 nursing home beds, 500 hostel places and 100 community aged care packages (per 100,000 people aged 70 and over) by the year 2011.
- 'Capital cities', 'other metropolitan centres' and 'large rural centres' have supplies of nursing home beds which exceed 400 per 100,000 persons aged 70 and over as at 30 June 1996. However, in the other rural and remote RRMA categories there is a sharp drop in the supply of nursing home beds. 'Other rural areas' have one-third fewer beds per head of population aged 70 and over than 'capital cities', and 'remote centres' have less than half the rate of nursing home beds of 'capital cities'. Acute care hospital beds are used to compensate for the lower supply of nursing

home beds in rural and remote zones, with nursing-home-type patients (NHTP) occupying around 20% of hospital beds (Reid & Solomon 1992).

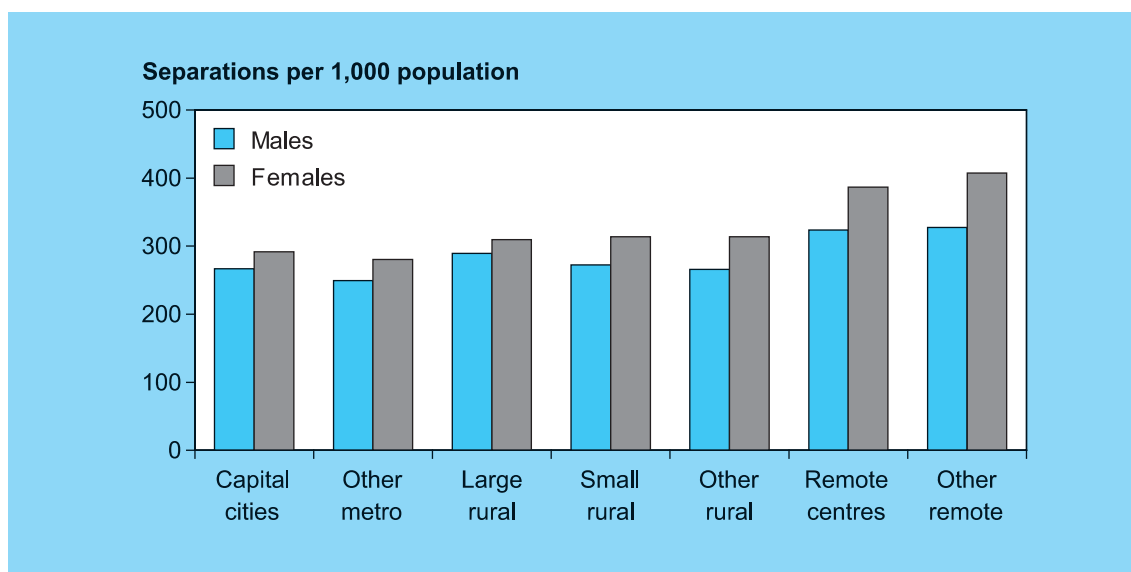
- 'Capital cities' also have the highest rate of hostel places of all areas, with a rate more than 30% higher than that for the rural zone, and more than three times the rate for 'remote centres'.

For more information, see:

Australian Institute of Health and Welfare 1997. Hostels in Australia 1995-96: a statistical overview. Aged Care Statistics Series No. 2. AIHW Cat. No. AGE 7. Canberra: AIHW & DHFS.

Australian Institute of Health and Welfare 1997. Nursing homes in Australia 1995-96: a statistical overview. Aged Care Statistics Series No. 1. AIHW Cat. No. AGE 6. Canberra: AIHW & DHFS.

Hospital separation rates, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	266.8	249.5	289.4	272.6	265.9	323.7	327.4	269.0
Females	291.8	280.3	309.7	313.8	313.7	386.5	407.4	298.5

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Hospital Morbidity Database.

Hospital utilisation

- Hospital separation rates provide a measure of the number of hospital care episodes per person and may include same-day episodes when the patient is admitted (Abraham et al. 1995). There were 5.2 million hospital separations (excluding public psychiatric hospitals) in 1995–96 (AIHW 1997a).
- The rate of hospitalisation increases from metropolitan to remote zones. ‘Other remote areas’ have the highest rates of hospitalisation of any area for males and females.
- For males, hospital separation rates in ‘large rural centres’ and ‘remote centres’ are respectively 8% and 21% higher than in ‘capital cities’.
- The separation rates for females are higher than for males. This difference in separation rates is a result of females being hospitalised for childbirth.
- Factors that could contribute to higher admission rates in rural and remote zones include higher morbidity and rural patients being more likely to be admitted to hospital than treated as out-patients because of travel distances (Harvey & Mathers 1988).

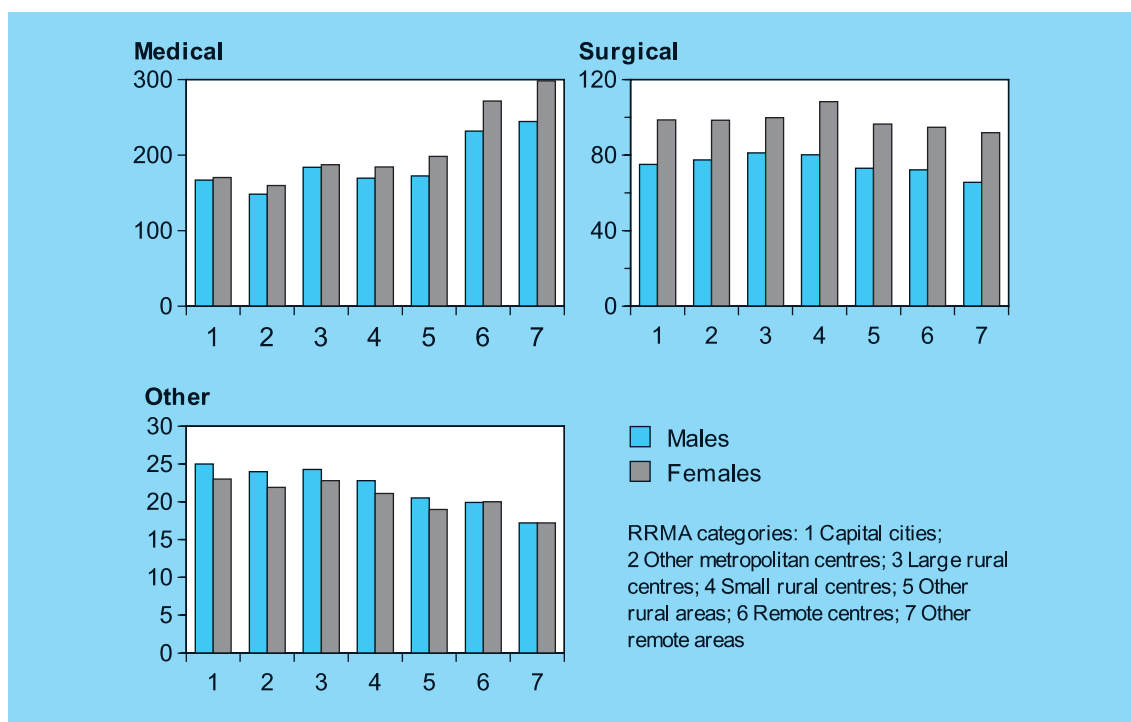
For more information, see:

Australian Institute of Health and Welfare 1997. Australian hospital statistics 1995–96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

Harvey R & Mathers C 1988. Hospital utilisation and costs study. Volume 1: commentary. Canberra: AIHW.

Abraham B, d’Espaignet ET & Stevenson C 1995. Australian health trends 1995. Canberra: AIHW.

Hospital separation rates by procedure, 1995–96



Type of procedure	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Medical								
Males	166.8	148.2	183.9	169.6	172.4	231.6	244.5	169.6
Females	170.2	159.8	187.2	184.5	198.1	271.7	298.4	177.7
Surgical								
Males	75.1	77.4	81.2	80.2	73.0	72.2	65.6	75.5
Females	98.6	98.5	99.8	108.3	96.5	94.8	91.9	98.7
Other								
Males	25.0	24.0	24.3	22.8	20.5	19.9	17.2	23.9
Females	23.0	21.9	22.8	21.1	19.0	20.0	17.2	22.1

Note: Age-standardised to the Australian population at 30 June 1991.

Source: AIHW National Hospital Morbidity Database.

Hospital separations

- All episodes of care are assigned to a surgical, medical or 'other' category on the basis of the Australian National Diagnosis Related Group (AN-DRG) classification. The AN-DRG is a patient classification system that organises illnesses into similar clinical categories with similar costs. Medical DRGs are assigned from principal diagnosis, whereas surgical DRGs are defined as operating room procedures. 'Other' DRGs include those that are defined as procedures not requiring surgery but using some invasive technique (i.e. endoscopy). AN-DRGs are used to compare hospitals by relating the number and type of patients treated by a hospital to the resources required by that hospital (AIHW 1997a).
- Compared with the rate for 'capital cities', medical separation rates are slightly lower for 'other metropolitan centres' but then increase across rural and remote zones. This increase is

greater for females than for males. In 'capital cities' the rates for males and females are fairly similar, but in 'other remote areas', the female rates are 22% higher than the male rates.

- Surgical separations are lower for both males and females in the remote zone than in rural or metropolitan zones. This suggests that people in the remote zone may have less access to surgical care than do people in rural and metropolitan zones. 'Large rural centres' and 'small rural centres' have slightly higher rates for surgical separations than the metropolitan zone.
- The separations for 'other' procedures have the highest rates in 'capital cities'. The rates in 'other metropolitan centres' and 'large rural centres' are similar to the rates in 'capital cities'. However, the rates then drop with increasing rurality. In 'other remote areas', the male and female rates are 69% and 75% respectively of the corresponding 'capital cities' rates. 'Other' separations represent procedures that require specialised medical equipment and skills that may not be available to medical practitioners in the remote zone.
- Medical separations could be higher in rural and remote zones for a number of reasons. The higher ratio of acute beds in rural and remote zones may contribute to the greater use of these beds as predicted by Roemer's Law: 'a bed built is a bed filled'.

- Rural acute hospitals function in a broader role than metropolitan acute hospitals and use beds for long-stay nursing-home-type patients (NHTPs) (Harvey & Mathers 1988; Reid & Solomon 1992). As a result, in rural and remote zones, NHTPs often occupy approximately 20% of acute care hospital beds (Reid & Solomon 1992). These patients would be accommodated in nursing homes or hostels in the metropolitan zone. The use of acute beds by NHTPs makes it appear that the rural zone has more acute care hospital beds available than actually exist.

For more information, see:

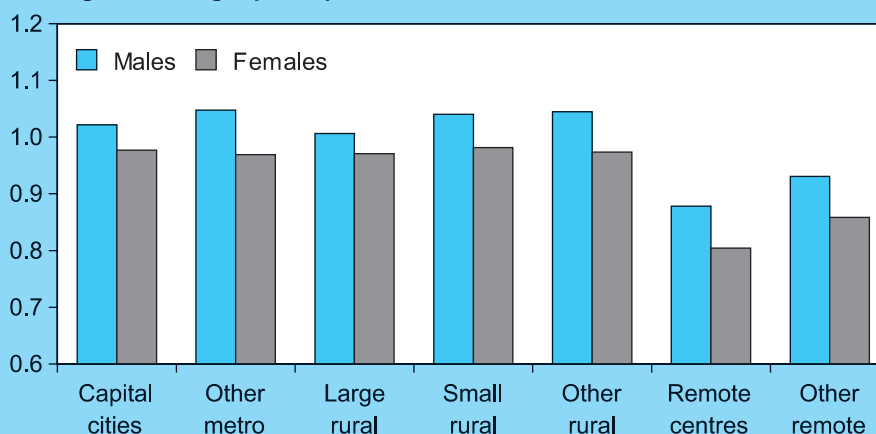
Australian Institute of Health and Welfare 1997. Australian hospital statistics 1995-96. Health Services Series No. 10. AIHW Cat. No. HSE 3. Canberra: AIHW.

Harvey R & Mathers C 1988. Hospital utilisation and costs study. Volume 1: commentary. Canberra: AIHW.

Reid M & Solomon S 1992. Improving Australia's rural health and aged care services. National Health Strategy Background Paper No. 11. Canberra: Department of Health, Housing and Community Services.

Diagnosis Related Group (DRG) cost weights for hospital separations, 1995–96

Average cost weight per separation



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	1.02	1.05	1.01	1.04	1.04	0.88	0.93	1.02
Females	0.98	0.97	0.97	0.98	0.97	0.80	0.86	0.97

Note: Cost weights are also known as average caseweights.

Source: AIHW National Hospital Morbidity Database.

Cost weights for hospital separations

- Cost weights identify the relative cost of hospitalisation for patients in each diagnosis group (Kliwer & Butler 1995). The average cost weight of a group of individuals is a measure of the cost of their care when admitted and it serves as a substitute for the severity of illnesses treated by a hospital. The cost weight is derived at a national level and is based on national averages.
- There is very little difference in the cost of hospital care for people from rural and metropolitan zones. The cost of hospital care for people in the remote zone is relatively low. This could be a consequence of less complex surgical procedures being performed in the remote zone.
- The lower cost weights for females compared with males from the same area indicate that the hospital treatment for females is less complex than for males. The average national cost weight per male in 1995–96 was 1.01 for public hospitals and 0.99 for private hospitals excluding free-standing day facilities (DHFS 1997). This compares with average

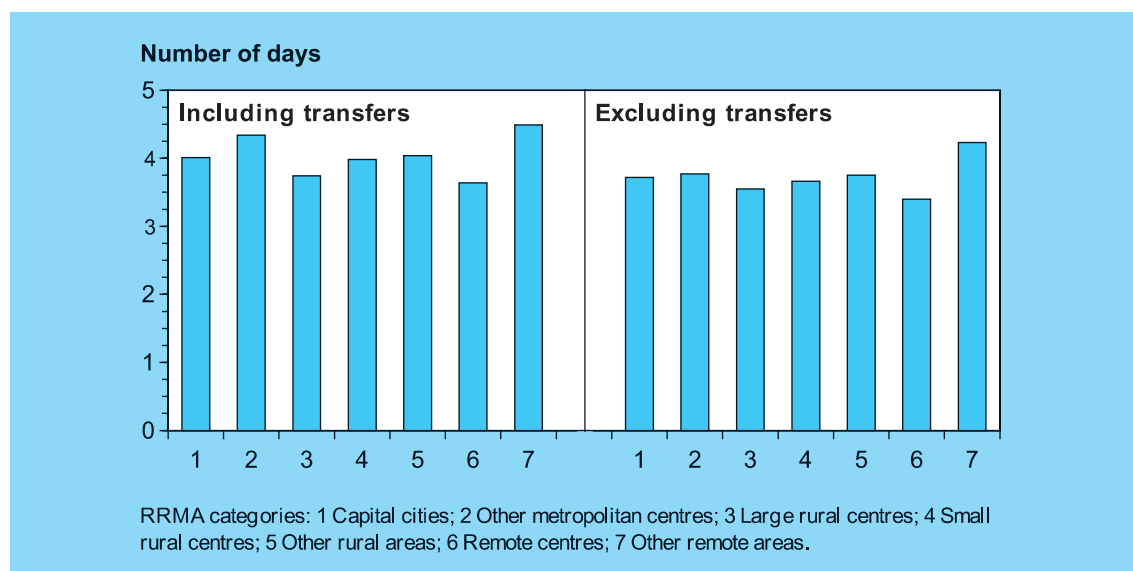
national cost weights per woman of 0.95 for public as well as private hospitals, indicating that hospital treatment for women are on average less expensive (DHFS 1997a).

- Cost weights derived at a national level may not reflect the entire cost of medical care in rural and remote zones because there may be differences in the length of stay between rural and remote zones. If the length of stay is longer for the rural zone, then the relative costs may in fact be higher in rural and remote zones than expected.

For more information, see:

Kliwer EV & Butler JRG 1995. Hospital morbidity patterns and costs of immigrants in Australia. Canberra: National Centre for Epidemiology and Population Health.
Commonwealth Department of Health and Family Services 1997. Australian casemix report on hospital activity 1995–96. Canberra: DHFS.

Casemix-adjusted average length of stay in hospitals, 1995–96



Type of hospital stay	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Including hospital transfers								
Observed	4.01	4.34	3.74	3.98	4.04	3.64	4.49	4.36
Expected ^(a)	4.04	4.19	3.97	4.09	3.97	3.68	3.97	4.31
Excluding transfers								
Observed	3.72	3.77	3.55	3.66	3.75	3.40	4.23	4.07
Expected ^(a)	3.72	3.73	3.75	3.79	3.68	3.44	3.70	4.03

(a) The expected length of stay is based on the average length of stay for the DRG across Australia for the year.

Source: AIHW National Hospital Morbidity Database.

Length of hospital stays

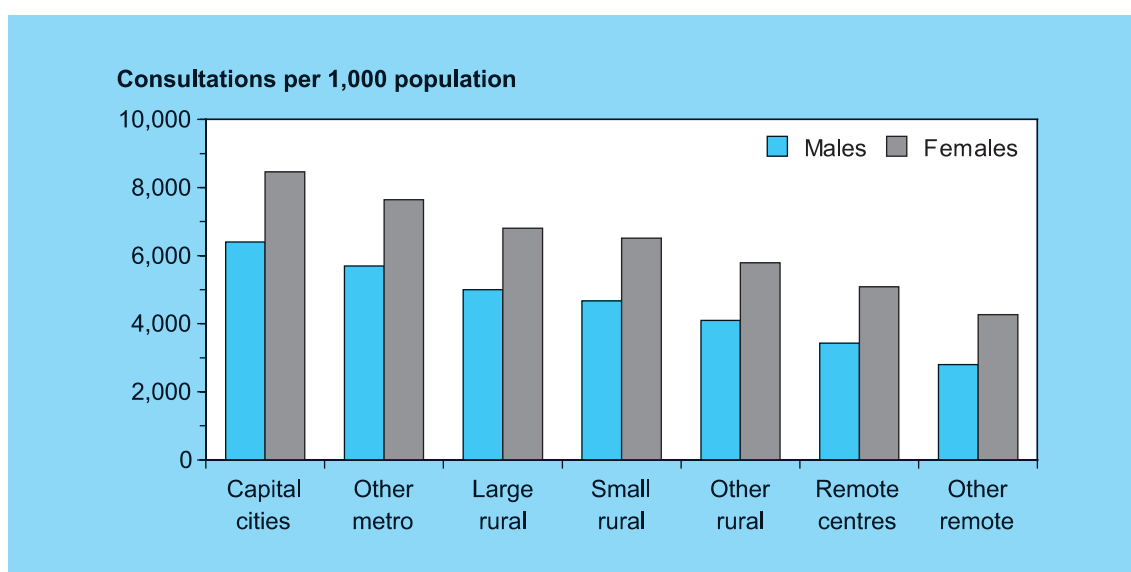
- Previous reports have noted a 26% decline in length of stay in hospital from the period 1985–86 to 1991–92 (Abraham et al. 1995). This decline has been attributed to better use of antibiotics and anaesthetics, use of less invasive surgical techniques and the expansion of early discharge programs that allow patients to return home to receive follow-up care.
- Hospitals are mainly concentrated in the metropolitan zone, rural centres and remote centres. There is little difference between observed and expected lengths of stay at these centres. The largest difference between observed and expected stays occurs in 'other

remote areas' for both males and females. This difference may be explained by the extra distance that people in the remote zones may have to travel to hospital. Diagnosis of illness may take place in hospital to avoid the patient having to travel great distances for repeat visits. Likewise, patients may remain in hospital for follow-up care because of travel distance to hospital.

For more information, see:

Abraham B d'Espaignet ET & Stevenson C 1995. Australian health trends 1995. Canberra: AIHW.

Medicare utilisation rates for GP consultations, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	6,404	5,699	5,003	4,667	4,095	3,425	2,798	5,719
Females	8,466	7,646	6,805	6,516	5,787	5,082	4,265	7,711

Note: Age-standardised to the Australian population at 30 June 1991.

Source: Unpublished Medicare data from DHFS.

Medicare usage for GP consultations

- Data on the operation of Medicare provide information on the use of private medical services. These include services provided outside of hospital as well as medical services for private admitted patients in public and private hospitals. Excluded are services for public patients in hospital, for eligible veterans, and for those who are covered by compensation for which interim benefits have not been paid (AIHW 1998a).
- Those living in rural and remote zones use less Medicare for GP consultations compared with those living in metropolitan areas. Males and females from 'capital cities' have 90% and 67% greater use of Medicare for GP visits compared with their counterparts in 'remote centres'. An explanation for this higher usage in 'capital cities' may be that the greater availability of GPs in the metropolitan zone encourages more frequent use of their

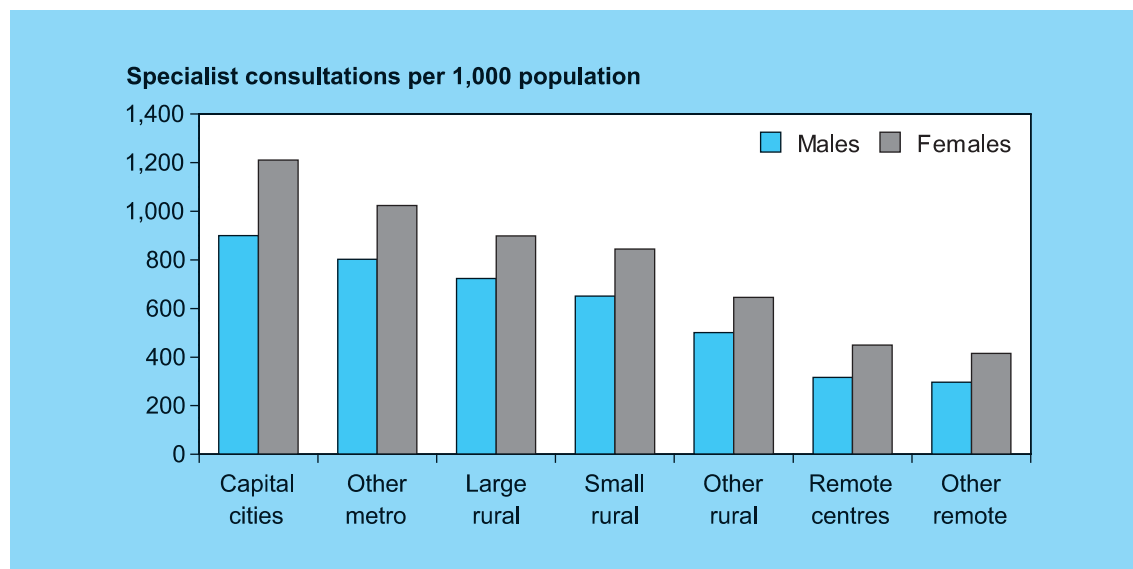
services. Also, in rural and remote zones where there are fewer GPs, the distance travelled for a visit may be greater, making frequent visits to the GP more difficult.

- Females from all zones have higher use of Medicare for GP services when compared with their male counterparts, with females in the remote zone having almost twice as much use of Medicare for GP services compared to males in the remote zone. These differences reflect the increased use of GPs by females for antenatal check-ups. Children may also be on their mother's Medicare card and this would increase the rate of Medicare usage for GP consultations for females relative to males.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Medicare utilisation rates for specialist, psychiatric and consultant visits, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	900	802	723	651	501	317	297	790
Females	1,211	1,023	899	844	645	449	415	1,059

Notes

1. Includes Medicare Item Groups A3 special conditions, A4 consultant, A6 group therapy and A8 psychiatrists.
2. Age-standardised to the Australian population at 30 June 1991.

Source: Unpublished Medicare data from DHFS.

Medicare usage for specialist consultations

- Medicare is Australia’s universal system of health insurance, and provides benefits for services provided by qualified medical practitioners, consultations by participating optometrists, and certain services performed by eligible dental practitioners (AIHW 1998a). This indicator provides a measure of the usage of private specialist services across RRMA categories.
- The usage of specialist services is strongly associated with rurality. People living in ‘large rural centres’ use around 20% less specialist services than those living in ‘capital cities’, whereas for ‘other rural areas’ the difference is almost 50%. Those living in ‘remote centres’ use around 65% less specialist services than those living in ‘capital cities’.
- The lower usage of specialists in rural and remote zones probably reflects the lower numbers per head of population practising in

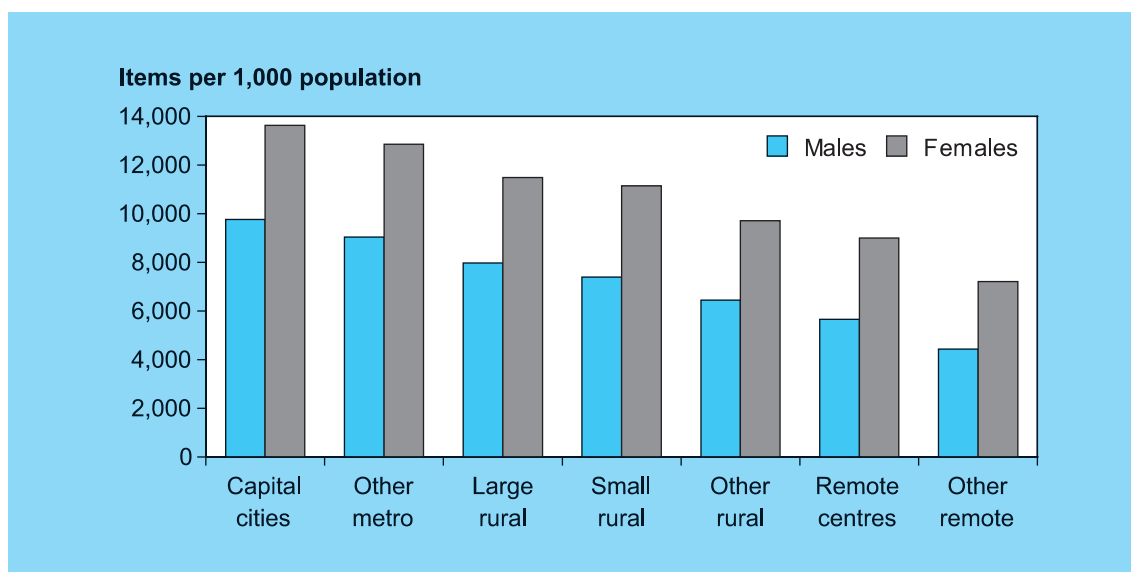
these zones. This may mean that those living in rural and remote zones rely more on the public system than those living in the metropolitan zone.

- Across all RRMA categories, females use more Medicare for specialist services than do males, reflecting their use of specialist consultations for ante- and postnatal care. For females in the remote zone, the difference in Medicare use for specialist services is almost 50% higher than that of men in these areas, and is the highest of all RRMA categories.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia’s health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

Medicare utilisation rates for all services, 1995–96



Sex	Metropolitan		Rural			Remote		Total
	Capital cities	Other	Large centres	Small centres	Other	Centres	Other	
Males	9,769	9,045	7,971	7,391	6,443	5,660	4,436	8,828
Females	13,633	12,855	11,495	11,145	9,711	9,007	7,210	12,605

Note: Age-standardised to the Australian population at 30 June 1991.

Source: Unpublished Medicare data from DHFS.

Medicare utilisation for all services

- Medicare pays providers directly for services on a fee-for-service basis or reimburses patients for expenses at a set schedule fee.
- Those living in rural and remote zones use fewer Medicare services per person. Males in the remote zone use 40% to 50% less Medicare for all services compared to males in 'capital cities'. Males in the rural zone use 20% to 30% less Medicare for all services compared with those in 'capital cities'.
- Females in 'capital cities' have the highest usage of Medicare for all services, and usage declines as areas become more remote, similar to the picture for males.
- Across all RRMA categories, females use more Medicare services compared with males in all areas. Females in the remote zone use

Medicare services at almost twice the rate of males in the same zones.

- Medicare data seriously underestimate the usage of services in rural and remote areas because State-provided clinics and Aboriginal Medical Services are not reimbursed by Medicare. Consequently, the use of these services is not reported in the Medicare system.

For more information, see:

Australian Institute of Health and Welfare 1998. Australia's health 1998: the sixth biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

6 Emerging issues

Population groups living in rural and remote zones have unique health concerns that relate directly to their living conditions, social isolation and distance from health services. In particular, Indigenous Australians and aged people have special health concerns. Issues that concern these groups include adequate provision of health services, occupational health and injury prevention, and access to health care information.

Chapters 2 to 5 illustrate some of the health disadvantages experienced by people living in rural and remote zones. This chapter will review some of the issues identified in these chapters. Some of these issues are well recognised and are the focus of established public health activity. Others are not currently the focus of public health activity but are emerging as targets for future intervention in rural and remote zones.

Men's health

On average, males in developed countries do not live as long as females and have higher mortality rates for most causes of death (Mathers 1994). However, many studies in developed countries report that males use health services at a lower rate and report less illness than females. This apparent contradiction may be explained by the finding that females have higher rates of acute illnesses and of many non-fatal chronic conditions but males have higher prevalence rates of the leading fatal conditions (i.e. coronary heart disease) (Mathers 1994). Males have poorer health-related behaviours than females and engage in risk-taking behaviours to a greater extent. Reckless driving, smoking and high alcohol consumption are risk-taking behaviours that are more prevalent among males.

The health of males living in rural and remote Australia is comparatively worse than for those living in metropolitan Australia. This health differential is notable for several causes of death and hospitalisation, specifically injury, homicide and interpersonal violence, and diabetes. Several different factors may contribute to this lower health status. Males in rural and remote zones have fewer positive health-related behaviours than their female counterparts. For example, the GP consultation rate among males declines almost linearly from 'capital cities' to 'other remote areas' with males in the remote zone visiting their GPs 35% less often than females in the remote zone. Lower access to health services in rural and remote zones may influence the use of these services. Also, many rural residents accept injury and illness as part of normal life and this attitude can lead many not to seek help for chronic conditions (Humphreys et al. 1996).

Injury, in particular transport-related accidents, impacts disproportionately upon the health of males. In 1995 alone, there were 5,130 male injury deaths in Australia in comparison to 2,227 female deaths. The male death rate for injury remains at 2.7 times the female death rate despite significant overall decline in injury death rates over the past two-and-a-half decades (AIHW & DHFS 1997). This ratio rises to 3:1 in parts of rural and remote Australia. Despite reductions to road transport-related fatalities in recent years, mortality and hospitalisation rates for males remain at substantially higher levels than for females. This pattern applies to all parts of Australia, but rates in rural and remote zones are much higher than in the metropolitan zone. Suicide is the other main cause of injury-related deaths in Australia where males have much higher rates than females. Some of this differential may be due to under-reporting in the female population and the propensity for males to use more reliable methods, such as firearms. However, the differential in suicide rates between males from the metropolitan zone and those living in rural and remote zones is striking. The highest suicide rates are noted among males from 'large rural centres' and 'other remote areas'. In contrast to this pattern, the highest suicide

Emerging issues

rates in the female population are found in the metropolitan zone. Many factors including high unemployment and less access to or use of mental health facilities in rural and remote zones may lead to increased male suicide in these zones. Males in rural and remote zones may also have better access to firearms as a means of suicide.

Mortality data also reveal that homicide is a major cause of premature mortality among males in rural and remote zones. The male homicide rate in 'other remote areas' is four times the rate of 'capital cities'. Although there may be reporting biases for violence, it is clear that interpersonal violence results in deaths significantly more often among males in the remote zone. Indigenous males suffer the highest homicide rates in these zones and the rates in the Indigenous population influence the overall higher rates for males in the remote zone population. The hospital separation rates for interpersonal violence are also five times higher in 'other remote areas' than in 'capital cities', reflecting the pattern in homicide rates.

Diabetes is another source of premature mortality that affects males from rural and remote zones more than males from metropolitan areas. Males from the remote zone experience twice the death rates from diabetes than do their metropolitan counterparts. Diabetes is a chronic condition and patients need to follow a management plan involving a healthy diet and exercise program to control their disease. Management of diabetes also involves access to health services and allied health services such as nutritionists. People in rural and remote zones may not have sufficient access to a reasonably priced supply of fresh fruit and vegetables to help them control their diets appropriately. Other specialist health services important to people with diabetes such as ophthalmologists and podiatrists may be in short supply in rural and remote zones.

Males, in general, engage in fewer health-related actions than do females. However, those living in rural and remote zones appear to be taking those actions much less often than males in the metropolitan zone. Indications that males in rural and remote zones are paying less attention to health-related behaviours are found in the results of health surveys such as the ABS 1995 National Health Survey. A higher proportion of males in rural and remote zones report smoking, being overweight, consuming excessive amounts of alcohol, and having high levels of serum cholesterol compared with females in the same zones. Much of the high mortality and morbidity of males in rural and remote zones could be prevented with improved health behaviours and better access to health services.

Women's health

As discussed above, the health of females is generally better than the health of males from the same zones. This is reflected in overall lower mortality and morbidity for females. Females also show better health-related behaviours with fewer females reporting high alcohol consumption, high serum cholesterol, tobacco smoking, or being overweight. On the other hand, females have higher rates of acute illness and non-fatal chronic conditions than males (Mathers 1994). As a result, they use health services more than males do. However, many females in rural and remote zones do not attend support groups for dealing with chronic conditions or stress-related illness because they are too far away (Healthsharing Women 1994).

Domestic violence is a serious problem for females in rural communities. Statistics on interpersonal violence clearly reveal that females from the remote zone have 7 to 25 times higher rates of hospitalisation due to interpersonal violence than do females from other areas. Females from rural and remote zones are reluctant to involve the police if they suffer from domestic violence for several reasons. They often know the police socially and may be embarrassed about their situation becoming known to others in the community (Healthsharing Women 1994). In small rural towns where employment opportunities for women are few, females may not have financial independence (Healthsharing Women 1994). Females in rural communities list concern for economic survival as one of the top reasons for not leaving a violent domestic situation. Other reasons include fear of partner's threats, no means to leave, no place to go, no help to get away, family and community pressures to stay and little or no assistance from police (Healthsharing Women 1994).

Females in rural and remote communities often take on the responsibility for caring for the ill or disabled (Thomas 1994). Females with these commitments in rural communities are often carrying most of the burden of care that would be handled by an outside agency in urban communities. The stresses imposed by providing this care may translate into poorer health for the carers, especially if respite care is not usually available. Females in these roles have identified mental health as a high priority on their list of needs (Thomas 1994). Counselling services offering information on stress management, conflict resolution and communication skills are needed for rural females who provide support to families, communities, the aged or the disabled.

Indigenous females in rural and remote zones have special health needs that may not be met even though a medical practitioner may be available to the community. Gynaecological examinations can be a particular problem for Indigenous females who may find it impossible to discuss women's business with a male GP (Healthsharing Women 1994). This means that these females may not have equal access to disease-preventing practices such as Pap smear testing, breast examination by a doctor, or ante and postnatal check-ups. This in turn may be one explanation why Indigenous females suffer a higher burden of illness compared with other Australian females.

The distribution of health information can also be a problem for females in rural and remote zones (Healthsharing Women 1994). Females in these areas often lack basic information about health. A survey of rural women's health needs has identified short courses on health care topics, first-aid, reproductive health and menopause, educating children about reproduction, family planning, safety in the workplace and home, and accident prevention as important needs of females in rural communities (Thomas 1994). The positive aspects of good health education are evident in the statistics relating to breast and cervical cancer screening in Australia. In recent years, there has been widespread health education campaigns targeting these screening programs. As a result, over 70% of females from all localities report having a Pap smear test once every 2 years and approximately 60% of females from all localities report recently having either a mammograph or breast examination by a doctor. These statistics indicate that females, regardless of rural, remote or metropolitan status, recognise the importance of these screening techniques to reducing mortality from breast and cervical cancer.

Health services

In much of rural Australia, medical care is provided through lower average numbers of consultations with GPs in private practice and increased use of other services. These include hospital in-patient and out-patient services, salaried community medical services (especially Aboriginal health services), and substitute primary care providers (Aboriginal health workers and registered nurses). However, the interaction between the make-up of the health labour force and the health status of the population in rural and remote zones is not a simple one. Models of medical care in rural and remote zones are different from those for large urban centres because of travel distances for doctor, community care nurse or patient. This distance factor greatly increases rates of hospital admission and length of stay. Registered nurses and Aboriginal health workers are, for a significant number of isolated rural communities, the first avenue of a limited range of primary care functions, which in the metropolitan zone would be provided by GPs and alternative health professionals including chiropractors, naturopaths and osteopaths.

Innovative methods are used in rural and remote zones to provide health services, including emergency medical care, to those in need. Telehealth in Australia has been practised in a variety of ways for more than 100 years (Parliament of the Commonwealth of Australia 1997). The telegraph was the first technology to be used to deliver health services to the remote zone. It provided a link to health care in the remote zone where the telephone was not available. The Royal Flying Doctor Service was established in 1929 in north-west Queensland to provide a much-needed health service to rural and remote zones that were difficult to cover with the telephone technology of the time. Today, modern technology has a role to play in solving some of the problems of access to health care in rural and remote zones. For example,

Emerging issues

telecommunication centres have been set up specifically for the delivery of health care services in the remote zone and are termed 'telemedicine'. Telemedicine can provide diagnosis, treatment and some health services without the need for patients to travel for the treatment (Humphreys et al. 1996). However, the costs of the telecommunications infrastructure is substantial for rural and remote populations. Communities in rural and remote zones may not be able to afford the infrastructure costs of telemedicine. As a result, people living in these zones of Australia do not have access to a beneficial health service (Parliament of the Commonwealth of Australia 1997).

Indigenous settlements are among the most disadvantaged by the high costs of telecommunications. In fact, because of the high cost of current telecommunications services, at least one Indigenous community finds it cheaper to fly three health workers in from Alice Springs than pay for 20 hours of tuition via teleconferencing links (Parliament of the Commonwealth of Australia 1997). Improvement in telecommunications facilities to remote areas is needed before telemedicine can be a cost-effective way of providing an equitable distribution of health resources throughout Australia.

In contrast to the situation in rural and remote zones, the metropolitan zone has the highest use of health services across all RRMA categories. The metropolitan zone has 24 hour access to health services with relatively short waiting times for GP services. Most of the metropolitan zone has high levels of doctor supply, and increasing subspecialisation of medical primary care. People in the metropolitan zone may be more aware of preventive health campaigns, and attend GPs for general check-ups and routine preventive tests.

The level of health in the rural zone does not rely solely on the supply of medical practitioners. Though the scope for improving health in the rural zone is greater than in the metropolitan zone, this does not imply that simply increasing the overall supply of health education or supply of GPs will automatically flow through to improvements in the rural zone. For example, there are many areas in Australia that already have an apparent oversupply of doctors. Local communities need to be consulted directly about their specific health service needs and how to make those services accessible to people in their geographic area. If consultation does not take place, the health services provided may not be used by people in the community. As international comparisons show, single-factor solutions are not always appropriate. For example, the supply of doctors in Japan is far less than in Australia, yet life expectancy in Japan is greater than in Australia. Programs that target promoting healthy lifestyles and better recognition of disease prevention may do more to improve the health of all Australians.

The health of Indigenous Australians

Indigenous Australians living in rural and remote zones face the same problems of poor access to health services and health care information that are faced by non-Indigenous people in these areas. However, the low socioeconomic status of Indigenous Australians adds to the problems of health care access as many people cannot afford to travel the distances necessary to participate in the health care system. As a result, Australia's Indigenous populations have well-documented health problems (Jeuken 1995; Humphreys et al. 1997) and face the hazards of a harsh physical environment compounded by poverty. Mortality data from South Australia, Western Australia and the Northern Territory show that the death rates for all causes of death are more than double that of the non-Indigenous population for both males and females. The major causes of ill health in the Indigenous population are injury, coronary heart disease, diabetes and homicide.

Road transport-related accidents, homicide and suicide account for 70% of all injury-related Indigenous deaths. In fact, almost 20% of the deaths from injury in the Indigenous population are due to homicide, compared with only 4% in the non-Indigenous population. Regardless of cause, male death rates from injury are twice as high in the Indigenous population in the remote zone than in the non-Indigenous population. However, the gap narrows in rural and metropolitan zones, where Indigenous and non-Indigenous males have similar injury-related death rates. Males in general suffer from premature mortality due to injury, but this problem has more impact in the Indigenous population in rural and remote zones.

The picture for coronary heart disease and diabetes in Indigenous populations is just as grim. Diabetes death rates are substantially higher for Indigenous males and females than for their non-Indigenous counterparts in the same RRMA category. Indigenous males have 4 to 8 times higher mortality rates from diabetes compared with non-Indigenous males, and Indigenous females suffer 7 to 15 times higher mortality from diabetes than non-Indigenous females. This suggests that the problem may not simply be lack of access to health services in rural and remote zones, but also lack of access to culturally appropriate management plans and treatments for this population group across all areas of Australia. This point is further illustrated by examining the mortality data for coronary heart disease. Over the past 25 years, the non-Indigenous population has shown continuing improvement in decreasing mortality from coronary heart disease. However, the Indigenous population has not followed this trend. In fact, Indigenous people have death rates from coronary heart disease 50% higher than the non-Indigenous population. Risk factors such as low socioeconomic status resulting in poor diet and living conditions may be the cause of some of this differential. However, the differential occurs across all RRMA categories, suggesting that economic factors are not the only factors involved.

Aged care

The aged and those with chronic diseases are often over-represented in rural areas, especially in country towns (Humphreys et al. 1997). The health needs of these people may be difficult to meet because they may be unable to travel great distances to seek the care that they need. The rural zone often does not have facilities nearby to care for the frail, aged person. Physically isolated patients may also be socially isolated from their friends and family and this could affect the course of their disease as well as their quality of life.

Specific health-related issues for the aged population include mortality and hospitalisation due to injury, specifically burns and falls. Mortality resulting from burns makes up only 2% of deaths from external causes, but it disproportionately affects those over 55 years of age. The death rate due to burns increases with increasing distance from the metropolitan zone and is highest in remote RRMA categories. Aged Indigenous people are at particular risk of death from burns. The numbers dying from burns are small compared with the numbers of aged people who die from the after-effects of falls. Most deaths from injury in the over 65 years age group are related to the after-effects of falls. Females are particularly at risk because osteoporosis is often a cause of falls and their related fractures. Females living in 'remote centres' have twice the death rate from falls compared with their metropolitan counterparts. The higher mortality rates from falls and burns in the rural and remote aged compared with the metropolitan aged suggests that the health needs of aged people in rural and remote communities are not being met. Preventing falls and burns in this population in rural and remote zones will involve making sure that aged people have access not only to health care services but also to friends and family.

Up to 20% of acute hospital beds in rural and remote zones are occupied by nursing-home-type patients (Reid & Solomon 1992). The types of services provided to these patients are often not as good as the services they would have in a metropolitan nursing home. Federal government outcome standards for nursing home or residential care for the aged do not apply to nursing-home-type patients in acute care hospitals (Reid & Solomon 1992). Federal government nursing home outcome standards include optimal health care, social independence, freedom of choice, home-like environment, privacy and dignity, variety of experience, and safety of residents, visitors and staff (AIHW 1997d). For an acute care hospital facility to meet all of these standards would be difficult. These difficulties have led to pressure from State governments to close some acute care facilities because the majority of their patients were nursing-home-type patients. Another problem presented by the use of acute hospital beds by nursing-home-type patients is the perceived inefficient use of acute care beds, which can lead to the belief that people are being incorrectly placed in hospitals for long periods of time.

Conclusion

There are many positive aspects of the health of people in rural and remote zones of Australia. The ABS 1995 National Health Survey data suggest that Australians, regardless of geographic location, understand the need for disease-preventive measures such as sun protection, Pap smear tests and light exercise. However, the health of rural and remote Australians is worse than their metropolitan counterparts on many measures. These include injury mortality, specifically road-transport, homicide and suicide, as well as mortality from diabetes and coronary heart disease. The Indigenous population contributes substantially to the health differentials for mortality between urban and remote populations with regards to diabetes, homicide, suicide and coronary heart disease. The distribution of Indigenous people throughout Australia is such that they contribute the most to health differentials in 'remote centres' and 'other remote areas', but not to the rural zone. However, the Indigenous population across RRMA categories still has higher mortality rates from all causes of death compared with the non-Indigenous population.

7 Data sources, developments and deficiencies

A large number of data sources were analysed to produce this report. This chapter provides information on the data sources used, and discusses the adjustments made in analysing these data at the seven category RRMA level. There are a number of deficiencies in these data sources, and these are also discussed where they impact on the analysis.

Australian Bureau of Statistics (ABS) population estimates

Population estimates by Rural, Remote and Metropolitan Area categories (RRMA) were derived from annual ABS population estimates for Statistical Local Area (SLAs). The seven-category RRMA classification (DPIE & DSHS 1994) was used to convert population estimates by Statistical Local Area to estimates for each of the seven RRMA categories. This classification allocates an RRMA category to each SLA listed in the 1991 Australian Standard Geographical Classification (ASGC).

For years other than 1991, SLA/RRMA concordances were derived after taking account of previous and subsequent boundary changes to SLAs. These boundary changes include amalgamations of SLAs, or various splits and combinations of parts of SLAs to form new or redefined SLAs. In most of the States and Territories, there were few SLA boundary changes between 1986 and 1996. However, in Victoria, Queensland and Tasmania there were substantial changes introduced between 1991 and 1996.

National Mortality Database

Registration of deaths in Australia is the responsibility of the State and Territory Registrars of Births, Deaths and Marriages. Information on the cause of death is supplied by the medical practitioner certifying the death or by a coroner. Other information about the deceased is supplied by a relative or other person acquainted with the deceased, or by an official institution where the death occurred. Registration of death is a legal requirement in Australia, and compliance is virtually complete.

The Registrars provide deaths data to the ABS for coding and compilation into national statistics. The AIHW also holds these data without unique identifiers in a national mortality database.

Mortality data are coded by ABS to the SLA of usual residence of the deceased, using the latest ASGC boundaries. These boundaries are updated annually by ABS. As a consequence, annual mortality data cannot be directly compared at the SLA level in cases where SLAs have changed boundaries.

To enable time series comparisons of mortality data at the RRMA level, SLA/RRMA concordances were developed for each ASGC version used to code mortality data to RRMA categories over the period 1986–96.

Indigenous identification on death certificates is poor in many States. Only South Australia, Western Australia, the Northern Territory and the Australian Capital Territory are currently considered to have more than 90% coverage of Indigenous deaths in the registration of deaths (ABS 1997b).

The causes of death on all death records for the period 1986–96 are coded according to the ninth revision of the International Classification of Diseases (ICD-9). Only the principal cause of death is coded prior to 1997. Multiple causes of death will be available from 1997 onwards. As a result, co-morbidities and chronic conditions which lead to death can be documented.

National Hospital Morbidity Database

The National Hospital Morbidity Database is an electronic compilation of summary records from the admitted patient morbidity systems in public and private hospitals. Almost all hospitals in Australia are included. The exceptions are public hospitals not within the jurisdiction of a State or Territory health authority or the Department of Veterans' Affairs. In addition, data were not supplied for 1995–96 for the one private hospital in the Northern Territory, the private freestanding day hospital facilities in the Australian Capital Territory and the public psychiatric hospitals in Queensland (AIHW 1997a).

Hospitals collect clinical and administrative information about the patients they treat, including sociodemographic, diagnostic and duration of stay data and the procedures performed. The data is coded by principle diagnosis or principle procedure according to the ICD-9 Clinical Modification. The data are collated, on an in-patient basis, by the various State and Territory health authorities, and by the Department of Veterans' Affairs. The AIHW receives the collections from these agencies, and maintains them without unique identifiers in a National Hospital Morbidity Database. A person may have multiple episodes in hospital, so each hospitalisation recorded may not be unique to a single patient.

A perceived deficiency in hospitalisation data is in the level of identification of Indigenous status on hospital records. This is likely to vary considerably. The hospital separation rate in 1995–96 for the Indigenous population (440 per 1,000) was much higher than for the overall population (285 per 1,000), but large variations among the States and Territories cast doubt on the coverage of Indigenous hospitalisations. Within States and Territories, there may also be significant variation in identification levels between metropolitan, rural and remote zones, which limits the usefulness of comparisons between these zones.

National Cancer Statistics Clearing House Database

Since 1982, the registration of cancer has been required by law in all States and Territories. The data are collected by cancer registries and include clinical and demographic information about people with newly diagnosed cancer. This information is obtained from hospitals, pathologists, radiation oncologists, cancer treatment centres and nursing homes. Information on cancer deaths is available from the National Mortality Database.

The AIHW is responsible for the national collection of cancer statistics through the National Cancer Statistics Clearing House. In conjunction with the State and Territory cancer registries, the AIHW produces regular statistics on cancer incidence and mortality in Australia.

National Health Surveys

A series of 5-yearly health surveys, conducted by the ABS, provides national benchmark information on a range of health issues. The surveys collect information about illness and injury experience, episodes of hospitalisation, medical consultations, risk factors and a variety of women's health issues. Data from the ABS 1995 National Health Survey have been used in this report.

Two major limitations are evident in the use of National Health Survey data for rural health analysis. First, self-reported information, such as level of cholesterol and prevalence of hypertension, is difficult to assess because people have varying degrees of awareness of their own health status. Second, sample sizes in the rural and remote zones are too small to provide accurate estimates of health status and risk factors.

Perinatal statistics

The AIHW National Perinatal Statistics Unit produces a range of statistics based on a national perinatal minimum data set first introduced in 1979. This dataset is produced from notification forms for each birth, which are completed by midwives, and sometimes by medical practitioners. Data items collected include: sociodemographic characteristics of the mother; previous pregnancies; the current pregnancy; labour, delivery and the puerperium; and the infant, including birth status, sex, birthweight, Apgar scores, resuscitation, neonatal morbidity and congenital malformations (Day et al. 1997).

Health labour force

In 1990, the Australian Health Ministers' Advisory Council (AHMAC) commissioned the AIHW to develop national health labour force statistics about the major registrable health professions (AIHW 1998b). Since 1993, a survey of the medical labour force has been conducted each year in conjunction with the annual re-registration of medical practitioners. Information on both the nursing and pharmacist workforce is also obtained from a survey questionnaire sent out as part of the annual registration renewal process. For States and Territories where an annual registration renewal process is not conducted, or the survey is not conducted, estimates are made based on the best alternative information available.

The Health Insurance Commission (HIC) also maintains medical workforce information as part of its provider database. These data have been linked to Medicare patient data by the Department of Health and Family Services (DHFS), which enables useful data to be extracted on the relative location of doctors versus patients.

Child immunisation and health screening survey

In April 1995, the ABS conducted a child immunisation and health screening survey. Previous information on child immunisation was collected in the 1989–90 National Health Survey and the 1983 Children's Immunisation Survey.

The 1995 survey provided information on the coverage of children against diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, measles, mumps, rubella and Hib (*Haemophilus influenzae* type b). The immunisation levels were calculated using the NHMRC Standard Childhood Vaccination Schedule, introduced in August 1994.

Nursing homes and hostels

Nursing homes and hostels data are available through the Nursing Home Payment System (NHPS) and Commonwealth Hostel Information Payment System (CHIPS). These are both held by the Commonwealth Department of Health and Family Services (DHFS). Data collected include a large range of demographic information including date of birth, sex, marital status, Indigenous status, country of birth, and residents' usual residence before admission.

Mental health

Only very limited national data are currently available on the incidence and prevalence of mental illness, and on the outcomes of care. Hospitalisation and death data relating to mental disorders provide some data on suicide and self-harm. The ABS 1995 National Health Survey provides estimates of the number of people suffering from a mental health condition either as a recent or long-term condition. The ABS National Survey of Mental Health and Wellbeing will provide information on the prevalence of mental health disorders, measures of mental health, functional impairment, service utilisation and exposure to risk (including social factors, physical health, mental health of parents and self-harm behaviours). This survey is being conducted in parts. The adult survey component was conducted in 1997; the child component is currently in the field.

Health information for Indigenous people

Health data for the Indigenous population is either inadequately reported or not reported at all (AHMAC & AIHW 1997). The capacity of Commonwealth, State and Territory governments to report on issues such as the health status, service use and access to services by Indigenous peoples is totally reliant on being able to accurately identify Indigenous clients (AHMAC & AIHW 1997). Without this ability, it is not possible to monitor changes in Indigenous health status, service use and access to services over time or to make accurate comparisons between Indigenous people living in different parts of Australia. It is also not possible to separate Indigenous Australians from other Australians in the RRMA categories or to make accurate comparisons between them.

Deficiencies in Indigenous health data occur in all data sources. As discussed above, only South Australia, Western Australia, the Northern Territory and the Australian Capital Territory are considered to have more than 90% coverage of Indigenous deaths for the National Mortality Database. Hospitalisation data, which can be used as an indicator of the morbidity of a population, is also considered to be deficient in the coverage between States and Territories. Population survey data, even from the large national surveys conducted by the ABS, such as the National Health Survey, do not provide reliable estimates for the Indigenous population. Ensuring a large and representative sample of the Indigenous community in surveys is important in providing reliable estimates of the Indigenous population. Collecting the health information also needs to be done in a manner appropriate to the Indigenous community being sampled (AHMAC & AIHW 1997).

The Aboriginal and Torres Strait Islander Information Plan (AHMAC & AIHW 1997) provides a set of recommendations aimed at overcoming the poor coverage of health and welfare data for the Indigenous population. Included among these recommendations is the inclusion of accurate Indigenous identification on all major health and related collections. These collections include vital statistics such as births and deaths, hospital separations, perinatal collections and cancer registrations. Another key recommendation is the commitment to regular Indigenous surveys at appropriate frequencies to ensure statistics of sufficient quality to enable national and State and Territory estimates to be derived. In response to these recommendations, the National Health Information Management Group is overseeing work by the Australian Bureau of Statistics, the Australian Institute of Health and Welfare and other organisations to develop a strategy to obtain better statistics on the Indigenous population.

Appendix I: Statistical methods

This section describes the methods used to calculate the estimates presented in this publication. All estimates are age-standardised to the 1991 (final) Australian population in this report. However, crude rates and age-specific rates are necessary precursors to obtaining age-standardised rates. Therefore, we present information on how to produce these measures even though they are not presented in this report.

Crude rates

A crude death rate is defined as the number of deaths from a specific cause over a specified period of time (e.g. a year) divided by the total population. A crude cancer incidence rate is similarly defined as the number of new cases of cancer in a specified period of time divided by the population at risk. Likewise, a crude hospital separation rate is defined as the number of individuals who complete an episode of hospital care within a specified period of time divided by the total population. Crude death rates and cancer incidence rates are usually expressed as annual rates per 100,000 population and may be calculated for males, females, persons or some subset of the population. Hospital separation rates are generally expressed per 1,000 population.

Age-specific rates

Age-specific rates are calculated by dividing the number of deaths, cancer cases or hospital separations occurring in each specified age group by the corresponding population in the same age group. The rates are expressed per 100,000 population for deaths and cancer incidence and per 1,000 population for hospital separations.

Age-standardised rates (ASR)

Age-standardised rates enable comparisons to be made between populations which have different age structures. In this publication, we use direct standardisation in which the age-specific rates are multiplied by a constant population. This effectively removes the influence of the age structure on the summary rate. All rates are age-standardised to the 1991 (final) Australian population using the direct standardisation technique. The method used for this calculation is composed of three steps:

- Step 1:* Calculate the age-specific rate for each age group.
- Step 2:* Calculate the expected number of cases in each 5-year age group by multiplying the age-specific rates by the corresponding standard population and dividing by 100,000 to get the expected number of cases.
- Step 3:* Sum the expected number of cases in each age group and divide by the total of the standard population and multiply by 100,000 (or 1,000 for hospital separations).

Confidence intervals

Statistical tests were carried out on the calculated rates to determine the degree to which the differences between 'capital cities' and each of the other RRMA categories are greater than would be expected by chance.

For estimates derived from the ABS 1995 National Health Survey, standard errors were approximated by using the sample size in the survey for each RRMA category and multiplying it by the relative standard error. Relative standard errors were obtained by size of estimate from the ABS technical note in *1995 National Health Survey: Summary of Results* (ABS 1997d). The resulting standard errors were applied to the derived proportions from the ABS 1995 National Health Survey to calculate t-values relative to the value for 'capital cities' for each RRMA category. The t-values were calculated as follows:

$$\frac{r_1 - r_2}{se(r_1) + se(r_2)}$$

where r_1 is the rate for any one of the seven RRMA categories and r_2 is the rate for 'capital cities'. The t-values with p-values of 0.05 or lower were considered to be significantly different from 'capital cities'.

For all other health indicators, the variance in the age-standardised rates was calculated according to the formula:

$$Var(ASR) = \sum_{i=1}^A \frac{[a_i w_i^2 (100,000 - a_i)]}{\left(\sum_{i=1}^A w_i \right)^2}$$

where a_i represents the age-specific rate in the i th age group and w_i is the population present in the i th age group of the standard population. The standard error of the ASR ($se(ASR)$) was then calculated as:

$$se(ASR) = \sqrt{Var(ASR)}$$

The standard error of the age-standardised rate was used to calculate 95% confidence intervals for the rates according to the formula:

$$ASR \pm 1.96 \times (se(ASR))$$

These confidence intervals represent a range of values within which it is 95% certain that the true value of the rate is present. If the 95% confidence interval includes one (unity), then the rate is deemed not to be statistically significantly different from the rate for 'capital cities'.

Interpretation of statistics

The RRMA classification breaks Australia's population into seven categories with the majority of the population distributed in the two metropolitan zone categories, 'capital cities' and 'other metropolitan areas'. The population sizes in rural and especially remote categories are considerably smaller, and this has an effect on the power of statistical tests to detect a difference between rates in 'capital cities' and those for the remaining RRMA categories. This is especially

the case for the ABS 1995 National Health Survey data. Sample sizes in rural and remote zones for the survey were considerably smaller than for the metropolitan zone RRMA categories. Therefore, apparent differences between 'capital cities' and rural and remote categories may not be statistically significant at the 5% level and we cannot determine if the differences are real or are random variations. The statistical tests used in this study may not have the power to detect even large differences because of the relatively small sample sizes in rural and remote zones. As a result, caution should be used when making inferences about the data in this report.



Appendix II: Statistical Local Areas by State by RRMA classification

Abbreviations

B	Borough	RC	Rural City
C	City	S	Shire
CGC	Community Government Council	SSD-Bal	Statistical Subdivision (Balance)
DC	District Council	T	Town
M	Municipality		

New South Wales

Capital cities

Ashfield (M)	Leichhardt (M)
Auburn (M)	Liverpool (C)
Bankstown (C)	Manly (M)
Baulkham Hills (S)	Marrickville (M)
Blacktown (C)	Mosman (M)
Blue Mountains (C)	North Sydney (M)
Botany (M)	Parramatta (C)
Burwood (M)	Penrith (C)
Camden (M)	Randwick (M)
Campbelltown (C)	Rockdale (M)
Canterbury (M)	Ryde (M)
Concord (M)	South Sydney (C)
Drummoyne (M)	Strathfield (M)
Fairfield (C)	Sutherland (S)
Gosford (C)	Sydney (C)—Inner
Hawkesbury (C)	Sydney (C)—Remainder
Holroyd (C)	Warringah (S)
Hornsby (S)	Waverley (M)
Hunter's Hill (M)	Willoughby (C)
Hurstville (C)	Wollondilly (S)
Kogarah (M)	Woollahra (M)
Ku-ring-gai (M)	Wyong (S)
Lane Cove (M)	

Other metropolitan centres

Cessnock (C)	Maitland (C)
Kiama (M)	Newcastle (C)—Inner
Lake Macquarie (C)	Newcastle (C)—Remainder

Port Stephens (S)
Queanbeyan (C)
Shellharbour (M)

Large rural centres

Albury (C)
Dubbo (C)
Hastings (M)
Lismore (C)

Small rural centres

Armidale (C)
Ballina (S)
Bathurst (C)
Broken Hill (C)
Casino (M)
Coffs Harbour (C)
Goulburn (C)
Grafton (C)
Great Lakes (S)

Other rural areas

Barraba (S)
Bega Valley (S)
Bellingen (S)
Berrigan (S)
Bingara (S)
Bland (S)
Blayney (S)—Pt A
Blayney (S)—Pt B
Bombala (S)
Boorowa (S)
Byron (S)
Cabonne (S)—Pt A
Cabonne (S)—Pt B
Cabonne (S)—Pt C
Conargo (S)
Coolah (S)
Coolamon (S)
Cooma-Monaro (S)
Coonabarabran (S)
Coonamble (S)
Cootamundra (S)
Copmanhurst (S)
Corowa (S)
Cowra (S)
Crookwell (S)
Culcairn (S)
Deniliquin (M)
Dumaresq (S)
Dungog (S)
Eurobodalla (S)

Tweed (S)—Pt A
Wollongong (C)

Orange (C)
Tamworth (C)
Wagga Wagga (C)

Greater Lithgow (C)
Greater Taree (C)
Griffith (C)
Moree Plains (S)
Murray (S)
Muswellbrook (S)
Shoalhaven (C)
Singleton (S)

Evans (S)—Pt A
Evans (S)—Pt B
Forbes (S)
Gilgandra (S)
Glen Innes (M)
Gloucester (S)
Gundagai (S)
Gunnedah (S)
Gunning (S)
Guyra (S)
Harden (S)
Holbrook (S)
Hume (S)
Inverell (S)—Pt A
Inverell (S)—Pt B
Jerilderie (S)
Jonee (S)
Kempsey (S)
Kyogle (S)
Leeton (S)
Lockhart (S)
Maclean (S)
Manilla (S)
Merriwa (S)
Mudgee (S)
Mulwaree (S)
Murrumbidgee (S)
Murrurundi (S)
Nambucca (S)
Narrabri (S)

Narrandera (S)
 Narromine (S)
 Nundle (S)
 Nymboida (S)
 Oberon (S)
 Parkes (S)
 Parry (S)
 Quirindi (S)
 Richmond River (S)
 Rylstone (S)
 Scone (S)
 Severn (S)
 Snowy River (S)
 Tallaganda (S)
 Temora (S)
 Tenterfield (S)

Other remote areas

Balranald (S)
 Bogan (S)
 Bourke (S)
 Brewarrina (S)
 Carrathool (S)
 Central Darling (S)
 Cobar (S)
 Hay (S)

Tumbarumba (S)
 Tumut (S)
 Tweed (S)—Pt B
 Ulmarra (S)
 Uralla (S)
 Urana (S)
 Walcha (S)
 Warren (S)
 Weddin (S)
 Wellington (S)
 Wingecarribee (S)
 Yallaro (S)
 Yarrowlumla (S)
 Yass (S)
 Young (S)

Lachlan (S)
 Lord Howe Island
 Off-Shore Areas & Migratory
 Unincorp. Far West
 Wakool (S)
 Walgett (S)
 Wentworth (S)
 Windouran (S)

Victoria

Capital cities

Altona (C)
 Berwick (C)
 Box Hill (C)
 Brighton (C)
 Broadmeadows (C)
 Brunswick (C)
 Bulla (S)
 Camberwell (C)
 Caulfield (C)
 Chelsea (C)
 Coburg (C)
 Collingwood (C)
 Cranbourne (S)
 Croydon (C)
 Dandenong (C)
 Diamond Valley (S)
 Doncaster & Templestowe (C)
 Eltham (S)
 Essendon (C)
 Fitzroy (C)
 Flinders (S)

Footscray (C)
 Frankston (C)
 Hastings (S)
 Hawthorn (C)
 Healesville (S)
 Heidelberg (C)
 Keilor (C)
 Kew (C)
 Knox (C)
 Lillydale (S)
 Malvern (C)
 Melbourne (C)—Inner
 Melbourne (C)—Remainder
 Melton (S)
 Moorabbin (C)
 Mordialloc (C)
 Mornington (S)
 Northcote (C)
 Nunawading (C)
 Oakleigh (C)
 Pakenham (S)

Appendix II

Port Melbourne (C)
Prahran (C)
Preston (C)
Richmond (C)
Ringwood (C)
Sandringham (C)
Sherbrooke (S)
South Melbourne (C)

Other metropolitan centres

Bannockburn (S)—Pt A
Barrabool (S)—Pt A
Bellarine (RC)—Pt A
Corio (S)—Pt A

Large rural centres

Ballarat (C)
Ballarat (S)—Pt A
Bendigo (C)
Bungaree (S)—Pt A
Buninyong (S)—Pt A
Eaglehawk (B)
Grenville (S)—Pt A

Small rural centres

Bairnsdale (C)
Bellarine (RC)—Pt B
Colac (C)
Colac (S)
Echuca (C)
Horsham (C)
Mildura (C)
Mildura (S)—Pt A
Moe (C)

Other rural areas

Alberton (S)
Alexandra (S)
Arapiles (S)
Ararat (C)
Ararat (S)
Avoca (S)
Avon (S)
Bacchus Marsh (S)
Bairnsdale (S)—Pt A
Bairnsdale (S)—Pt B
Ballan (S)
Ballarat (S)—Pt B
Bannockburn (S)—Pt B
Barrabool (S)—Pt B
Bass (S)
Beechworth (S)

Springvale (C)
St Kilda (C)
Sunshine (C)
Upper Yarra (S)—Pt A
Waverley (C)
Werribee (C)
Whittlesea (C)
Williamstown (C)

Geelong (C)
Geelong West (C)
Newtown (C)
South Barwon (C)—Pt A

Huntly (S)—Pt A
Marong (RC)—Pt A
Rodney (S)—Pt A
Sebastopol (B)
Shepparton (C)
Strathfieldsaye (S)—Pt A
Wodonga (RC)

Morwell (C)—Pt A
Narracan (S)—Pt A
Portland (C)
Sale (C)
South Barwon (C)—Pt B
Traralgon (C)
Wangaratta (C)
Warrnambool (C)

Belfast (S)
Benalla (C)
Benalla (S)
Bet Bet (S)
Birchip (S)
Bright (S)
Broadford (S)
Buln Buln (S)
Bungaree (S)—Pt B
Buninyong (S)—Pt B
Camperdown (T)
Castlemaine (C)
Charlton (S)
Chiltern (S)
Cobram (S)
Cohuna (S)

Corio (S)—Pt B
 Creswick (S)
 Daylesford & Glenlyon (S)
 Deakin (S)
 Dimboola (S)
 Donald (S)
 Dundas (S)
 Dunmunkle (S)
 East Loddon (S)
 Euroa (S)
 Gisborne (S)
 Glenelg (S)
 Gordon (S)
 Goulburn (S)
 Grenville (S)—Pt B
 Hamilton (C)
 Hampden (S)
 Heytesbury (S)
 Heywood (S)
 Huntly (S)—Pt B
 Kara Kara (S)
 Karkaroc (S)
 Kerang (B)
 Kerang (S)
 Kilmore (S)
 Korong (S)
 Korumburra (S)
 Kowree (S)
 Kyabram (T)
 Kyneton (S)
 Lady Julia Percy & Towerhill
 Leigh (S)
 Lexton (S)
 Lowan (S)
 Maffra (S)
 Maldon (S)
 Mansfield (S)
 Marong (RC)—Pt B
 Maryborough (C)
 Mclvor (S)
 Metcalfe (S)
 Minhamite (S)
 Mirboo (S)
 Mortlake (S)
 Morwell (C)—Pt B
 Mount Rouse (S)
 Myrtleford (S)
 Narracan (S)—Pt B
 Nathalia (S)
 Newham & Woodend (S)
 Newstead (S)
 Numurkah (S)
 Omeo (S)
 Otway (S)
 Oxley (S)
 Phillip Island (S)
 Port Fairy (B)
 Pyalong (S)
 Queenscliffe (B)
 Ripon (S)
 Rochester (S)
 Rodney (S)—Pt B
 Romsey (S)
 Rosedale (S)
 Rutherglen (S)
 Seymour (S)
 Shepparton (S)—Pt A
 Shepparton (S)—Pt B
 South Gippsland (S)
 St Arnaud (T)
 Stawell (C)
 Stawell (S)
 Strathfieldsaye (S)—Pt B
 Swan Hill (C)
 Swan Hill (S)
 Talbot & Clunes (S)
 Tallangatta (S)—Pt A
 Tallangatta (S)—Pt B
 Tambo (S)—Pt A
 Tambo (S)—Pt B
 Traralgon (S)—Pt A
 Traralgon (S)—Pt B
 Tullaroop (S)
 Tungamah (S)
 Upper Murray (S)
 Upper Yarra (S)—Pt B
 Violet Town (S)
 Wangaratta (S)
 Wannon (S)
 Waranga (S)
 Warracknabeal (S)
 Warragul (S)
 Warrnambool (S)
 Wimmera (S)
 Winchelsea (S)
 Wonthaggi (B)
 Woorayl (S)
 Wycheproof (S)
 Yackandandah (S)
 Yallourn Works Area
 Yarrawonga (S)
 Yea (S)

Appendix II

Other remote areas

Bass Strait Islands
French Island
Kaniva (S)
Mildura (S)—Pt B

Off-Shore Areas & Migratory
Orbost (S)
Walpeup (S)

Queensland

Capital cities

Acacia Ridge
Albany Creek
Albert (S) Bal in BSD
Albion
Alderley
Alexandra Hills
Algester
Annerley
Anstead (incl. Moggill SF)
Arana Hills
Archerfield
Ascot
Ashgrove
Aspley
Bald Hills
Balmoral
Banyo
Bardon
Beaudesert (S) Bal in BSD
Beenleigh
Bellbird Park
Bellbowrie
Belmont-Mackenzie
Berrinba
Bethania-Waterford
Birkdale
Boondall
Bowen Hills
Bracken Ridge
Bray Park
Bridgeman Downs
Brighton
Brookfield (incl. Mt C'tha Pk)
Browns Plains
Bulimba
Burbank
Caboolture (S)—Pt A
Calamvale
Camira
Camp Hill
Cannon Hill
Capalaba

Capalaba West
Carbrook-Cornubia
Carina
Carina Heights
Carindale
Carole Park
Carseldine
Chandler
Chapel Hill
Chelmer
Chermside
Chermside West
City—Inner
City—Remainder
Clayfield
Cleveland
Coopers Plains
Coorparoo
Corinda
Daisy Hill-Priestdale
Darra-Sumner
Deagon
Doolandella
Durack
Dutton Park
Eagleby
East Brisbane
Edens Landing-Holmview
Eight Mile Plains
Ellen Grove
Enoggera (incl. Mltry Camp)
Everton Hills
Everton Park
Fairfield
Ferny Grove
Ferny Hills
Fig Tree Pocket
Fortitude Valley—Inner
Fortitude Valley—Remainder
Geebung
Graceville
Grange

Greenbank—Pt A	Murarrie
Greenbank—Pt B	Nathan
Greenslopes	New Farm
Gumdale	Newmarket
Hamilton	Newstead
Hawthorne	Norman Park
Hemmant-Lytton	Northgate
Hendra	Nudgee
Herston	Nudgee Beach
Highgate Hill	Nundah
Holland Park	Ormiston
Holland Park West	Oxley
Inala	Paddington
Indooroopilly	Pallara-Heathwood-Larapinta
Ipswich (C)	Parkinson-Drewvale
Jamboree Heights	Petrie
Jindalee	Pine Rivers (S) Bal
Kallangur	Pinjarra Hills
Kangaroo Point	Pinkenba-Eagle Farm
Karalee	Pullenvale
Karawatha	Ransome
Kedron	Red Hill
Kelvin Grove	Redcliffe (C)
Kenmore	Redland (S) Bal
Kenmore Hills	Redland Bay
Keperra	Richlands
Kingston	Riverhills
Kuraby	Robertson
Lawnton	Rochedale
Logan (C) Bal	Rochedale South
Loganholme	Rocklea
Loganlea	Runcorn
Lota	Salisbury
Lutwyche	Sandgate
MacGregor	Seventeen Mile Rocks
Manly	Shailer Park
Manly West	Sheldon-Mt Cotton
Mansfield	Sherwood
Marsden	Slacks Creek
McDowall	South Brisbane
Middle Park	Spring Hill
Milton	Springwood
Mitchelton	St Lucia
Moggill	Stafford
Moorooka	Stafford Heights
Moreton (S) Bal in BSD—Nth	Strathpine
Moreton (S) Bal in BSD—Sth	Stretton
Moreton Island	Sunnybank
Morningside	Sunnybank Hills
Mount Gravatt	Taigum-Fitzgibbon
Mount Gravatt East	Tanah Merah
Mount Ommaney	Taringa
Mt Warren Park	Tarragindi

Appendix II

The Gap (incl. Enoggera SF)
Thornside
Thornlands
Tingalpa
Toowong
Underwood—Pt A
Underwood—Pt B
Upper Brookfield
Upper Kedron
Upper Mount Gravatt
Victoria Point
Virginia
Wacol
Wakerley
Waterford West
Wavell Heights

Other metropolitan centres

Aitkenvale
Albert (S)—Pt B Bal
Arundel
Ashmore
Benowa
Biggera Waters
Bilinga
Broadbeach
Broadbeach Waters
Bundall
Burleigh Heads
Burleigh Waters
Carrara-Merrimac
City
Coolangatta
Coombah
Cranbrook
Currajong
Currumbin
Currumbin Waters
Douglas
Elanora
Ernest-Molendinar
Garbutt
Gulliver
Heatley
Helensvale
Hermit Park
Hollywell
Hope Island
Hyde Park-Mysterton
Kelso
Kerrydale-Stephens
Kirwan
Labrador

Wellington Point
West End
Westlake
Willawong
Wilston
Windaroo-Bannockburn
Windsor
Wishart
Woodridge
Woolloongabba
Wooloowin
Wynnum
Wynnum West
Yeerongpilly
Yeronga
Zillmere

Magnetic Island
Main Beach-Broadwater
Mermaid Beach
Mermaid Waters
Miami
Mt Louisa-Mt St John-Bohle
Mudgeeraba
Mundingburra
Murray
Nerang
North Ward-Castle Hill
Oonoonba-Idalia-Cluden
Oxenford
Pallarenda-Shelley Beach
Palm Beach
Paradise Point
Parkwood
Pimlico
Railway Estate
Robina-Clear Island Waters
Rosslea
Rowes Bay-Belgian Gardens
Runaway Bay
South Townsville
Southport
Stuart-Roseneath
Surfers Paradise
Thuringowa (C)—Pt A Bal
Townsville (C) Bal
Tugun
Vincent
West End
Worongary-Tallai
Wulguru

Large rural centres

Bundaberg (C)
 Cairns (C)
 Gooburrum (S)—Pt A
 Mackay (C)
 Maroochy (S)—Pt A

Mulgrave (S)—Pt A
 Pioneer (S)—Pt A
 Rockhampton (C)
 Toowoomba (C)
 Woongarra (S)—Pt A

Small rural centres

Caloundra (C)—Pt A
 Gladstone (C)
 Gympie (C)
 Hervey Bay (C)

Maryborough (C)
 Noosa (S)—Pt A
 Noosa (S)—Pt B
 Warwick (C)

Other rural areas

Allora (S)
 Atherton (S)
 Banana (S)
 Beaudesert (S)—Pt B
 Biggenden (S)
 Boonah (S)
 Burdekin (S)
 Caboolture (S)—Pt B
 Calliope (S)—Pt A
 Calliope (S)—Pt B
 Caloundra (C)—Pt B
 Cambooya (S)
 Cardwell (S)
 Charters Towers (C)
 Chinchilla (S)
 Clifton (S)
 Crow's Nest (S)
 Dalby (T)
 Douglas (S)
 Eacham (S)
 Esk (S)
 Fitzroy (S)—Pt A
 Fitzroy (S)—Pt B
 Gatton (S)
 Gayndah (S)
 Glengallan (S)
 Gooburrum (S)—Pt B
 Goondiwindi (T)
 Hinchinbrook (S)
 Inglewood (S)
 Isis (S)
 Johnstone (S)

Jondaryan (S)
 Kilcoy (S)
 Kilkivan (S)
 Kingaroy (S)
 Kolan (S)
 Laidley (S)
 Livingstone (S)
 Maroochy (S)—Pt B
 Millmerran (S)
 Mirani (S)
 Miriam Vale (S)
 Monto (S)
 Moreton (S)—Pt B
 Mount Morgan (S)
 Mulgrave (S)—Pt B
 Mundubbera (S)
 Murgon (S)
 Nanango (S)
 Pioneer (S)—Pt B
 Pittsworth (S)
 Rosalie (S)
 Rosenthal (S)
 Sarina (S)
 Stanthorpe (S)
 Thuringowa (C)—Pt B
 Tiaro (S)
 Wambo (S)
 Whitsunday (S)
 Widgee (S)
 Wondai (S)
 Woocoo (S)
 Woongarra (S)—Pt B

Remote centres

Belyando (S)
 Bowen (S)
 Duarina (S)
 Emerald (S)

Mareeba (S)
 Mount Isa (C)
 Roma (T)

Appendix II

Other remote areas

Aramac (S)
Aurukun (S)
Balonne (S)
Barcaldine (S)
Barcoo (S)
Bauhinia (S)
Bendemere (S)
Blackall (S)
Booringa (S)
Boulia (S)
Broadsound (S)
Bulloo (S)
Bungil (S)
Burke (S)
Carpentaria (S)
Cloncurry (S)
Cook (S) (excl. Weipa)
Cook (S)—Weipa only
Croydon (S)
Dalrymple (S)
Diamantina (S)
Eidsvold (S)
Etheridge (S)
Flinders (S)
Herberton (S)
Ilfracombe (S)
Isisford (S)
Jericho (S)
Longreach (S)
McKinlay (S)
Mornington (S)
Murilla (S)
Murweh (S)
Nebo (S)
Off-Shore Areas & Migratory
Paroo (S)
Peak Downs (S)
Perry (S)
Quilpie (S)
Richmond (S)
Tambo (S)
Tara (S)
Taroom (S)
Torres (S)
Unincorp. Islands
Waggamba (S)
Warroo (S)
Winton (S)

South Australia

Capital cities

Adelaide (C)
Brighton (C)
Burnside (C)
Campbelltown (C)
East Torrens (DC)
Elizabeth (C)
Enfield (C)—Pt A
Enfield (C)—Pt B
Gawler (M)
Glenelg (C)
Happy Valley (C)
Henley & Grange (C)
Hindmarsh (M)
Kensington & Norwood (C)
Marion (C)
Mitcham (C)
Munno Para (C)
Noarlunga (C)
Payneham (C)
Port Adelaide (C)
Prospect (C)
Salisbury (C)
St Peters (M)
Stirling (DC)
Tea Tree Gully (C)
Thebarton (M)
Unincorp. Western
Unley (C)
Walkerville (M)
West Torrens (C)
Willunga (DC)
Woodville (C)

Large rural centres

Whyalla (C)

Small rural centres

Mount Gambier (C)
Murray Bridge (DC)

Port Augusta (C)

Port Lincoln (C)

Other rural areas

Angaston (DC)

Barmera (DC)

Barossa (DC)

Beachport (DC)

Berri (DC)

Blyth-Snowtown (DC)

Burra Burra (DC)

Bute (DC)

Central Yorke Peninsula (DC)

Clare (DC)

Cleve (DC)

Coonalpyn Downs (DC)

Crystal Brook-Redhill (DC)

Eudunda (DC)

Franklin Harbor (DC)

Hallett (DC)

Hawker (DC)

Jamestown (DC)

Kanyaka-Quorn (DC)

Karoonda-East Murray (DC)

Kimba (DC)

Lacepede (DC)

Lameroo (DC)

Light (DC)

Lower Eyre Peninsula (DC)

Loxton (DC)

Lucindale (DC)

Mallala (DC)

Mannum (DC)

Meningie (DC)

Millicent (DC)

Minlaton (DC)

Morgan (DC)

Mount Barker (DC)

Mount Gambier (DC)

Mount Pleasant (DC)

Other remote areas

Browns Well (DC)

Carrieton (DC)

Coober Pedy (DC)

Dudley (DC)

Elliston (DC)

Kingscote (DC)

Le Hunte (DC)

Murat Bay (DC)

Off-Shore Areas & Migratory

Peterborough (DC)

Port Pirie (C)

Mount Remarkable (DC)

Naracoorte (DC)

Naracoorte (M)

Northern Yorke Peninsula (DC)

Onkaparinga (DC)

Orroroo (DC)

Paringa (DC)

Peake (DC)

Penola (DC)

Peterborough (M)

Pinnaroo (DC)

Pirie (DC)

Port Broughton (DC)

Port Elliot & Goolwa (DC)

Port MacDonnell (DC)

Renmark (M)

Ridley (DC)

Riverton (DC)

Robe (DC)

Robertstown (DC)

Rocky River (DC)

Saddleworth & Auburn (DC)

Spalding (DC)

Strathalbyn (DC)

Tanunda (DC)

Tatiara (DC)

Truro (DC)

Tumby Bay (DC)

Unincorp. Murray Mallee

Victor Harbor (DC)

Waikerie (DC)

Wakefield Plains (DC)

Walleroo (M)

Warooka (DC)

Yankalilla (DC)

Yorke town (DC)

Roxby Downs (M)

Streaky Bay (DC)

Unincorp. Far North

Unincorp. Flinders Ranges

Unincorp. Lincoln

Unincorp. Pirie

Unincorp. Riverland

Unincorp. West Coast

Unincorp. Whyalla

Unincorp. Yorke

Western Australia

Capital cities

Armadale (C)
Bassendean (T)
Bayswater (C)
Belmont (C)
Canning (C)
Claremont (T)
Cockburn (C)
Cottesloe (T)
East Fremantle (T)
Fremantle (C)—Inner
Fremantle (C)—Remainder
Gosnells (C)
Kalamunda (S)
Kwinana (T)
Melville (C)
Mosman Park (T)
Mundaring (S)
Nedlands (C)
Peppermint Grove (S)
Perth (C)—Inner
Perth (C)—North
Perth (C)—Outer
Perth (C)—South
Perth (C)—Wembley-Coastal
Rockingham (C)
Serpentine-Jarrahdale (S)
South Perth (C)
Stirling (C)—Central
Stirling (C)—South-Eastern
Stirling (C)—West
Subiaco (C)
Swan (S)
Wanneroo (C)

Small rural centres

Albany (S)
Albany (T)
Bunbury (C)
Geraldton (C)
Greenough (S)
Mandurah (C)

Other rural areas

Augusta-Margaret River (S)
Beverley (S)
Boddington (S)
Boyup Brook (S)
Bridgetown-Greenbushes (S)
Brookton (S)
Busselton (S)
Capel (S)
Chittering (S)
Collie (S)
Corrigin (S)
Cuballing (S)
Cunderdin (S)
Dandaragan (S)
Dardanup (S)
Denmark (S)
Donnybrook-Balingup (S)
Dowerin (S)
Gingin (S)
Goomalling (S)
Harvey (S)
Irwin (S)
Katanning (S)
Kellerberrin (S)
Kojonup (S)
Manjimup (S)
Moora (S)
Murray (S)
Nannup (S)
Narrogin (S)
Narrogin (T)
Northam (S)
Northam (T)
Pingelly (S)
Plantagenet (S)
Quairading (S)
Tambellup (S)
Tammin (S)
Toodyay (S)
Victoria Plains (S)
Wagin (S)
Wandering (S)
Waroona (S)
West Arthur (S)
Williams (S)
Wongan-Ballidu (S)
Wyalkatchem (S)
York (S)

Remote centres

Broome (S)
 Carnarvon (S)
 East Pilbara (S)
 Esperance (S)

Kalgoorlie/Boulder (C)
 Port Hedland (T)
 Roebourne (S)

Other remote areas

Ashburton (S)
 Broomehill (S)
 Bruce Rock (S)
 Carnamah (S)
 Chapman Valley (S)
 Coolgardie (S)
 Coorow (S)
 Cranbrook (S)
 Cue (S)
 Dalwallinu (S)
 Derby-West Kimberley (S)
 Dumbleyung (S)
 Dundas (S)
 Exmouth (S)
 Gnowangerup (S)
 Halls Creek (S)
 Jerramungup (S)
 Kent (S)
 Kondinin (S)
 Koorda (S)
 Kulin (S)
 Lake Grace (S)
 Laverton (S)
 Leonora (S)
 Meekatharra (S)
 Menzies (S)

Merredin (S)
 Mingenew (S)
 Morawa (S)
 Mount Magnet (S)
 Mount Marshall (S)
 Mukinbudin (S)
 Mullewa (S)
 Murchison (S)
 Narembeen (S)
 Northampton (S)
 Nungarin (S)
 Off-Shore Areas & Migratory
 Perenjori (S)
 Ravensthorpe (S)
 Sandstone (S)
 Shark Bay (S)
 Three Springs (S)
 Trayning (S)
 Upper Gascoyne (S)
 Westonia (S)
 Wickepin (S)
 Wiluna (S)
 Woodanilling (S)
 Wyndham-East Kimberley (S)
 Yalgoo (S)
 Yilgarn (S)

Tasmania**Capital cities**

Brighton (M)—Pt A
 Clarence (C)
 Glenorchy (C)
 Hobart (C)—Inner

Hobart (C)—Remainder
 Kingborough (M)—Pt A
 New Norfolk (M)—Pt A
 Sorell (M)—Pt A

Large rural centres

Baconsfield (M)—Pt A
 Launceston (C)—Inner

Launceston (C)—Pt B
 Westbury (M)—Pt A

Small rural centres

Burnie (C)—Pt A
 Devonport (C)

Wynyard (M)—Pt A

Appendix II

Other rural areas

Beaconsfield (M)—Pt B
Bothwell (M)
Brighton (M)—Pt B
Bruny (M)
Burnie (C)—Pt B
Campbell Town (M)
Circular Head (M)
Deloraine (M)
Esperance (M)
Evandale (M)—Pt A
Evandale (M)—Pt B
Fingal (M)
George Town (M)—Pt A
George Town (M)—Pt B
Glamorgan (M)
Green Ponds (M)
Hamilton (M)
Huon (M)
Kentish (M)
Kingborough (M)—Pt B
Latrobe (M)—Pt A
Latrobe (M)—Pt B
Launceston (C)—Pt C

Longford (M)—Pt A
Longford (M)—Pt B
Lyell (M)
New Norfolk (M)—Pt B
Oatlands (M)
Penguin (M)—Pt A
Penguin (M)—Pt B
Port Cygnet (M)
Portland (M)
Richmond (M)
Ringarooma (M)
Ross (M)
Scottsdale (M)
Sorell (M)—Pt B
Spring Bay (M)
Tasman (M)
Ulverstone (M)—Pt A
Ulverstone (M)—Pt B
Waratah (M)
Westbury (M)—Pt B
Wynyard (M)—Pt B
Zeehan (M)

Other remote areas

Flinders (M)
King Island (M)

Off-Shore Areas & Migratory
Strahan (M)

Northern Territory

Capital cities

Alawa
Anula
Brinkin
City—Inner
City—Remainder
Coconut Grove
Driver
East Arm
Fannie Bay
Gray
Jingili
Karama
Larrakeyah
Leanyer
Lee Point-Leanyer Swamp
Ludmilla
Malak
Marrara

Millner
Moil
Moulden
Nakara
Narrows
Nightcliff
Palmerston (T)—Bal
Parap
Rapid Creek
Stuart Park
The Gardens
Tiwi
Wagaman
Wanguri
Winnellie
Woodroffe
Wulagi

Other rural areas

Coomalie (CGC)
Litchfield (S)—Pt A

Litchfield (S)—Pt B

Remote centres

Alice Springs (T)

Katherine (T)

Other remote areas

Bathurst-Melville
Cox-Finiss
Daly
East Arnhem—Bal
Elsey—Bal
Groote Eylandt
Gulf
Jabiru (T)
Nhulunbuy
Off-Shore Areas & Migratory

Petermann
Sandover—Bal
South Alligator
Tableland
Tanami
Tennant Creek (T)
Tennant Creek—Bal
Victoria
West Arnhem

Australian Capital Territory**Capital cities**

Acton
Ainslie
Aranda
Barton
Belconnen Town Centre
Belconnen—SSD Bal
Bonython
Braddon
Bruce
Calwell
Campbell
Chapman
Charnwood
Chifley
Chisholm
City
Cook
Curtin
Deakin
Dickson
Downer
Duffy
Duntroon
Evatt
Fadden
Farrer
Fisher
Florey
Flynn

Forrest
Fraser
Fyshwick
Garran
Gilmore
Giralang
Gordon
Gowrie
Greenway
Griffith
Gungahlin
Hackett
Hall
Harman
Hawker
Higgins
Holder
Holt
Hughes
Hume
Isaacs
Isabella Plains
Jerrabomberra
Kaleen
Kambah
Kingston
Kowen
Latham
Lyneham

Appendix II

Lyons
Macarthur
Macgregor
Macquarie
Majura
Mawson
McKellar
Melba
Mitchell
Monash
Narrabundah
Oaks Estate
O'Connor
O'Malley
Oxley
Page
Parkes
Pearce
Phillip
Pialligo
Red Hill

Other rural areas

Jervis Bay Territory

Reid
Richardson
Rivett
Russell
Scullin
Spence
Stirling
Stromlo
Symonston
Theodore
Torrens
Tuggeranong—SSD Bal
Turner
Wanniassa
Waramanga
Watson
Weetangera
Weston
Weston Creek—SSD Bal
Yarralumla

Remainder of ACT

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