

RURAL HEALTH SERIES

Number 2

Rural, regional and remote health

A study on mortality

October 2003

Australian Institute of Health and Welfare
Canberra

AIHW cat. no. PHE 45

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This publication is part of the Australian Institute of Health and Welfare's Rural Health Series. A complete list of the Institute's publications is available from the Publications Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601, or via the Institute's web site (<http://www.aihw.gov.au>).

ISSN 1448-9775

ISBN 1 74024 319 6

Suggested citation

AIHW (Australian Institute of Health and Welfare) 2003. Rural, regional and remote health: a study on mortality. AIHW cat. no. PHE 45. Canberra: AIHW (Rural Health Series no. 2).

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Published by Australian Institute of Health and Welfare

Printed by Pirion

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Acknowledgments

This report was commissioned by the Office of Rural Health (ORH) in the Department of Health and Ageing.

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ARIA	Accessibility/Remoteness Index of Australia
ASGC	Australian Standard Geographical Classification
COPD	chronic obstructive pulmonary disease
DoHA	Department of Health and Ageing
DPIE	Department of Primary Industries and Energy
ICD-10	International Classification of Diseases, 10th revision
ICD-9	International Classification of Diseases, 9th revision
IHD	ischaemic heart disease
MVA	motor vehicle accidents
NHMRC	National Health and Medical Research Council
OATSIH	Office for Aboriginal and Torres Strait Islander Health
ORH	Office of Rural Health
RHD	rheumatic heart disease
RHIAC	Rural Health Information Advisory Committee
RRMA	Rural, Remote and Metropolitan Areas (Classification)
SLA	Statistical Local Area
SMR	Standardised mortality ratio
WHO	World Health Organisation

Abbreviations of places

ACT	Australian Capital Territory
Aust	Australia
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
SA	South Australia
Tas	Tasmania
Vic	Victoria
WA	Western Australia

Accessibility/Remoteness Index of Australia

HA	Highly Accessible
A	Accessible
MA	Moderately Accessible
R	Remote
VR	Very Remote

ASGC Remoteness structure

MC	Major Cities
IR	Inner Regional
OR	Outer Regional
R	Remote
VR	Very Remote

Symbols used in the tables and figures

–	nil or rounded to zero
. .	not applicable
n.a.	not available
n.p.	not published in this report
n.e.d.	not elsewhere described

Background

This report is the second in a series of reports on the health status of Australians who live in regional and remote areas. The principal aim of the report is to answer the question 'do mortality rates increase with remoteness?'

A description of mortality is simply one measure of health. Other important aspects of health include how 'well' people feel, levels of fitness, the prevalence of risk factors such as smoking, measures of disability, disease rates, visits to medical practitioners, rates of surgical intervention and so on. These have not been described in this report but have been addressed, at least in part, in the development of a framework for rural health information by the Institute (AIHW 2003d) under the guidance of the Rural Health Information Advisory Committee (RHIAC).

Data quality and analytical methods

Previous descriptions of mortality, and other measures of health, have shown poorer outcomes in more remote areas (AIHW 1998), but it is possible that a lot of this difference is a result of poor Indigenous health. To assess whether the poorer health in more remote areas reflects the influence of remoteness or Indigenous health, ideally mortality for the Indigenous and non-Indigenous populations should be reported alongside mortality for the total population. However two issues affect the reporting of data for Indigenous people:

- Concerns about the inter-regional differences in the accuracy of the recording of Indigenous deaths prevent reporting on Indigenous mortality separately for the five regions used in this report. Reporting of differences between areas may reflect accuracy of the records rather than real differences in mortality. Consequently overall, rather than regional, mortality rates for Indigenous people are presented.
- Identification of Indigenous mortality was considered to be most reliable in the Northern Territory, South Australia, Western Australia and Queensland during the study period. Overall mortality rates for Indigenous people have been calculated using data from these jurisdictions only.

Because a 'non-Indigenous' person has been defined in this report as someone who is not identified as Indigenous, under-identification of Indigenous people will necessarily mean over-reporting of non-Indigenous people in the mortality data. However the effect on reporting by area will be much less than for Indigenous people (minimal in Major Cities and in regional areas), because non-Indigenous persons comprise the vast majority of the population.

Frequently, death rates for elderly non-Indigenous people from remote areas appear substantially lower than for their Major Cities counterparts, while rates for younger people from remote areas are higher than for those in Major Cities. It is possible that this effect is due to elderly people in poorer health migrating to less remote areas where they can access services, leaving the healthier individuals, who have lower death rates. To control for this apparent effect, death rates for some populations younger than 65 years have been presented alongside those for the total population.

Several analytical concepts have been used to compare mortality rates across the regions. There are two in particular that are crucial to understanding the discussion that follows. While these and other concepts are explained more fully in Chapter 2, they are, briefly:

- **standardised mortality ratio (SMR)** – the ratio of the actual number of deaths in an area to the number expected if Major Cities death rates for the relevant group (see Chapter 2) had applied in that area; and
- **‘excess’ deaths** – the difference between the actual number of deaths in an area and the number that would have occurred if Major Cities death rates had applied. The term does not imply in any way that these deaths are flippantly regarded, or that deaths in Major Cities are less important, or that death rates anywhere are not subject to reduction.

Indirect age standardisation involved the use of:

- age-specific death rates for people living in Major Cities as the standard for calculating the expected numbers of deaths in each area; and
- age-specific death rates for non-Indigenous people living in Major Cities as the standard for calculating the expected numbers of deaths of non-Indigenous people in each area and of Indigenous people in South Australia, Western Australia, the Northern Territory and Queensland.

‘Excess’ deaths have been reported because although SMRs provide a measure of inequity, they do not provide a measure of magnitude (that is, an understanding of the absolute size of disadvantage for particular causes of death in each region in terms of human lives lost).

Age-specific death rates have been reported throughout the report because summary measures like SMRs can sometimes mask important patterns.

Report structure

This report is structured as follows:

- The main findings are outlined in ‘Key points’ on page 5. They are grouped under six headings: Demography; Overall death rates; Life expectancy; Changes in death rates, 1992–1999; Broad causes of death; and Specific causes of death. These introduce and distil the main findings.
- ‘Comments on the findings’ (page 13) briefly describes areas for data development or improvement and the importance of Indigenous mortality data and of other data on health outcomes apart from death. It also suggests areas for further research.
- The characteristics of rural and remote populations are described in Chapter 1.
- Technical issues are discussed in Chapter 2.
- The body of the report begins at Chapter 3. Mortality is described for the total and for the non-Indigenous populations by region, and for the Indigenous population in South Australia, Western Australia, the Northern Territory and Queensland as a whole. Numbers of deaths, ratios of observed to expected deaths (SMRs), age-specific death rates and the difference between the observed and expected numbers of deaths (‘excess deaths’) are described for all deaths, for broad causes of death and for specific causes of death. Trends in death rate over time are described for all deaths and for broad causes of death. Variations in mortality within broad geographic regions are described for all deaths.

- Appendices start on page 288, describing standardised mortality ratios and their 95% confidence intervals, numbers of 'excess' deaths by age, sex, region, Indigenous status and cause, age-specific death rates for broad causes of death, ICD-10 codes used in analyses, and population tables.

Context

In comparing death rates in regional and remote areas with those in metropolitan areas, two questions are of interest:

- Are death rates amongst people who live outside Major Cities higher than for those who live in Major Cities?
- For any individual, whether old or young, rich or poor, more educated or less educated, male or female, Indigenous or non-Indigenous, smoker or non-smoker: is their chance of death higher if they live outside a Major City?

This report answers only the first question, and it is important that readers understand this.

Higher death rates in more remote areas may reflect higher prevalence of smoking, inactivity and poor diet as well as any impact of the rural environment (for example, different patterns of access to health services). For example, even though drinking undoubtedly increases the risk of fatal motor vehicle accidents, and people who live outside Major Cities are more likely to drink heavily, higher death rates outside Major Cities could also result from higher speeds, poorer road conditions, animals on the road and longer retrieval times for the injured.

A number of broad issues potentially affect death rates:

- the personal characteristics of the population;
- the risk imposed by the environment; and
- access to health services to reduce the chances of becoming ill, to sustain the patient while ill or to help the patient make a full recovery afterwards.

Health services are meant here to include services provided by the full range of health workers (for example, medical practitioners, Aboriginal health workers, allied health workers, and facilities or services such as hospitals and ambulance).

It is not possible for this report to differentiate between the contribution of each of these three factors to overall higher rates of death outside Major Cities.

Personal characteristics

Compared to those who live in Major Cities, individuals who live in regional and remote areas are more likely to be smokers, are more likely to drink alcohol in hazardous quantities, are more likely to be overweight or obese and are more likely to be physically inactive (AIHW 2002b). They are also more likely to have poorer access to work, particularly to work requiring skilled or professional labour. Household incomes and educational levels are also lower (Garnaut et al. 2001). All of these characteristics increase the risk of poor health and of death. On a positive note, people from rural areas are less likely to report unhappiness (AIHW: Mathers 1994) and women from rural and remote areas report lower levels of stress than women from metropolitan areas (Brown et al. 1999).

Also, people living outside Major Cities, particularly those living in remote areas, are more likely to be Indigenous.

Environment

The environment outside Major Cities is frequently stereotyped as 'outback', sparsely populated, hot, dry, populated by farmers, and isolated from population centres. In reality it is extremely diverse.

Non-metropolitan populations can live in coastal or inland areas, within commuting distance of Major Cities, in mixed farming or extensive grazing areas, or in areas dominated by forestry, fishing or mining. One in ten people in the non-metropolitan workforce is engaged in agriculture (BRS 1999). Many areas outside Major Cities, predominantly on the coast, attract older people in retirement.

Many of the occupations in regional and remote areas (for example mining, transport, forestry, commercial fishing and farming) entail higher levels of risk than other occupations (AIHW: 1998).

Health services

Those who live away from Major Cities and for whom access to health services is restricted may be disadvantaged because of different access to:

- preventive services such as immunisation and information allowing healthy life choices;
- health management and monitoring;
- specialist surgery and medical care;
- emergency care, for example ambulance;
- rehabilitation services after medical or surgical intervention;
- aged care services.

These could reflect different patterns of access to health workers and health facilities (for example, hospitals). The lower numbers of doctors in rural areas is frequently mentioned (AIHW 2003c), but supply of other workers such as nurses and allied health workers, pharmacists and dentists can also be, and frequently is, an issue (AIHW 2003e).

A substantial challenge in providing equitable access to people living in regional and remote areas is that, unlike Major Cities, non-metropolitan populations are dispersed and clustered. Towns exactly the right size to support one, two or three doctors, nurses or allied health workers are very rare – more usually they would support a fraction of a health worker, or, for example, more than one but less than two. In these situations, a single worker may practise in one town and also service one or more others. Either way, someone has to travel, with routine and emergency access potentially compromised and/or the health worker spending substantial amounts of time travelling rather than consulting with patients.

Key points

Demography

- Two-thirds (66%) of the population lives in Major Cities, with 21%, 11%, 2% and 1% living in Inner Regional, Outer Regional, Remote and Very Remote areas respectively.
- Whereas only 1% of the population of Major Cities are Indigenous, this increases to 2% and 5% in Inner and Outer Regional areas, 12% in Remote areas and 45% in Very Remote areas.
- Males outnumber females in almost all age groups in the more remote areas. This is largely influenced by the non-Indigenous population; the number of Indigenous males in each area is similar to the number of females.
- Remote area populations tend to have proportionally more children and working age males, and fewer elderly people than other areas.
- Regional areas have proportionally lower numbers of people aged 25–44 years, higher numbers of people aged 45–74 years and similar or slightly lower numbers of people older than 75 years than other areas. In regional areas, children make up a higher proportion than in Major Cities, but lower than in remote areas.

Overall death rates

- There was an annual average of 128,200 deaths between 1997 and 1999. Of these, 64% were in Major Cities, and 22%, 11%, 1% and 1% were in Inner and Outer Regional, Remote and Very Remote areas, respectively.
- Death rates increased with remoteness, and were 10% (1.1 times) higher in regional and Remote areas compared with Major Cities, and 50% (1.5 times) higher in Very Remote areas.
- Outside Major Cities, there were 3,303 more deaths each year than would have been expected ('excess' deaths) if Major Cities death rates had applied in these areas. Of these, 46%, 37%, 6%, and 10% were in Inner and Outer Regional, Remote and Very Remote areas, respectively.
- On average there were 1,459 deaths each year of Indigenous people in the four jurisdictions (South Australia, Western Australia, the Northern Territory and Queensland) for which identification is considered more reliable. This was 993 more than would be expected if age-specific death rates for non-Indigenous people from Major Cities had applied for Indigenous people in those jurisdictions.
- Death rates for Indigenous people across South Australia, Western Australia, the Northern Territory and Queensland (jurisdictions in which identification is considered more reliable in 1997–1999) were 3.1 times those for non-Indigenous people who lived in Major Cities of Australia. Indigenous deaths are thought to be more under-reported than census counts of the Indigenous population. Consequently, it is likely that the overall Indigenous death rates reported here are lower than actual death rates.

- The high death rate for the total population in Very Remote areas is likely to reflect the high proportion of the population in these areas who are Indigenous and the higher rate of mortality for Indigenous people overall in Australia.
- Inter-regional comparisons of the death rate for Indigenous people cannot be presented because of the strong likelihood of differences by remoteness in the accuracy of identification of deaths of Indigenous people. This means that calculated differences in death rates between regions could be an artefact of variations in identification, rather than a portrayal of real differences.
- Annually, there were 2,414 more deaths of non-Indigenous people outside Major Cities than expected if death rates for non-Indigenous people from Major Cities had applied in those areas. Of these, 57%, 42% and 2% were in Inner and Outer Regional and Remote areas, respectively, but there were 23 fewer deaths than expected annually in Very Remote areas.
- Death rates for the non-Indigenous population were up to 10% higher in areas outside Major Cities (but not clearly higher in Very Remote areas).
 - Some degree of over-estimation of non-Indigenous death rates is a consequence of the under-identification of Indigenous deaths (with some Indigenous deaths being counted amongst the non-Indigenous). Reported death rates for non-Indigenous people are likely to be affected by between minus 2% and plus 2% for Major Cities and regional areas, but may be inflated in remote areas by up to 10% (AIHW 2003a). The exact magnitude of the effect within this range is unclear.
- Death rates for non-Indigenous people who were younger than 65 years were about 10% higher in regional and Remote areas, and about 20% higher in Very Remote areas than they were in Major Cities. For males, rates were 10% higher in Inner Regional areas and 20% higher in the other areas. For females, rates were 10% higher in regional areas, but not significantly higher in remote areas.
 - Conversely, death rates for those over 65 years were frequently lower than in Major Cities. It is possible that in order to access health and other services (including aged care), the frail-aged migrate to larger, less remote centres leaving behind the healthier individuals, who live longer.
- Within the broad geographic zones utilised in this report, there is substantial variation in mortality from community to community.
 - The average death rate in Very Remote areas was substantially elevated by a relatively small number of Statistical Local Areas (SLAs) with very high death rates – some SLAs had relatively low death rates. This was also true to a lesser extent in Remote areas, but not for Major Cities and regional areas, where death rates were more likely to cluster around an average value.
- Poor identification of Indigenous people in data collections generally, and specifically in the mortality data collection, hampers the ability to report on health not only of Indigenous people overall, but also of both Indigenous and non-Indigenous people who live in regional and remote Australia.
- This report shows higher death rates in regional and remote areas. These higher rates are evident after taking inter-regional differences in age, sex, Indigenous status, and to some extent the possible migration of the frail elderly into account. The remaining differences in mortality could be due to a range of different influences including lower socioeconomic status and poorer risk factors (for example, higher smoking rates), different access to services, and other aspects of living outside Major Cities (for example,

possible greater hazards associated with occupations such as farming and with driving in rural areas). It is not within the scope of this report to explain why these remaining differences occur.

Life expectancy

- Life expectancy generally declined with increasing remoteness, but was lower for males in each area than for females. Life expectancy for males was 77.9, 76.7, 76.0, 75.3 and 72.2 years in Major Cities, Inner and Outer Regional, Remote and Very Remote areas, respectively, and for females was 83.9, 83.3, 82.6, 82.7 and 78.5 years.
- These figures may be strongly affected by two factors: Indigenous mortality and potential migration of the frail aged:
 - Life expectancy for Indigenous people has been reported as 56 years for males and 63 years for females, compared to 76 and 82 years for Australian males and females generally (ABS 2001c). A relatively large proportion of the remote area population is Indigenous, acting to lower average life expectancy there.
 - Possible migration of the frail aged towards less remote areas is likely to increase calculated average life expectancy in remote areas.
- The effect of remoteness on life expectancy is best illustrated as the probability of non-Indigenous people reaching 65 years of age in each area.
- The probability of non-Indigenous males and females living to 65 years of age is highest in Major Cities (85% and 91%), decreasing gradually with remoteness (to 82% and 89% in Very Remote areas respectively).

Changes in death rates, 1992–1999

- Since 1992, death rates in all except Very Remote areas have decreased by about 3% per year for males and by about 2% for females. In Very Remote areas, death rates have decreased more rapidly – by about 10% for males and females per year over the same period.
- The major contributor to the overall decrease in all areas was a reduction in circulatory disease mortality. While responsible for between 67% and 80% of the overall reduction in most areas, decreases in circulatory disease mortality was responsible for a smaller proportion (45%) of the substantial overall reduction in Very Remote areas.
- Reductions in respiratory disease mortality were responsible for 9% of the overall mortality decrease in Major Cities, increasing with remoteness to 25% of the overall decrease in Very Remote areas.
- Reductions in cancer death rates were generally responsible for about 15% of the overall decline in each of the areas.
- Injury death rates changed very little, and in some areas increased over the study period.
- ‘Other’ causes (see page 42) contributed little to the decline in most areas, but to 13% of the decrease in Very Remote areas.

Broad causes of death

- The major causes of death for the Australian population are circulatory diseases (41%), neoplasms (28% – mainly cancers), respiratory diseases (8%) and injury (6%). This pattern holds across most areas, but in Very Remote areas neoplasms are relatively less important causes of death, and injury and ‘other’ causes are relatively more important.
- Those major causes most responsible for the 3,303 ‘excess’ deaths outside Major Cities were circulatory diseases (42%), injury (24%), ‘other’ causes (13%), neoplasms (11%) and respiratory diseases (10%). This pattern changed with remoteness, circulatory diseases and neoplasms becoming relatively less important, and ‘other’ causes becoming relatively more important.
- In regional areas, most ‘excess’ deaths occurred in people (mainly males) older than 50 years, although there were also appreciable numbers of extra deaths of males from younger age groups. In remote areas, the ‘excess’ deaths were mainly of males from a broad range of age groups.
- For Indigenous people, 60–70% of the ‘excess’ deaths occurred in those aged 25–64 years. Circulatory diseases (30%), injury (17%) and ‘other’ causes (36%) were responsible for most of this excess (while respiratory diseases accounted for 9% and neoplasms for 7%).
- For non-Indigenous people in regional areas, the ‘excess’ deaths were mainly in the older age groups, and were mainly male. For non-Indigenous people from remote areas, there were small numbers of ‘excess’ deaths in each age group up to age 70, but fewer than expected for people older than this.
- For non-Indigenous people, injury was either the only, or by far the major, cause of the ‘excess’ deaths outside Major Cities for people aged less than 45 years. For those older than this, circulatory disease and neoplasms (and to an extent respiratory disease) contributed the great majority of extra deaths. In remote areas, while circulatory diseases and neoplasms were important for those aged over 45 years, injury was also important as a cause of extra deaths for older age groups.

Specific causes of death

Outlined below are the ten major specific causes of death, which together were responsible for 88% of the ‘excess’ deaths outside Major Cities (that is, those in excess of what would be expected if Major Cities rates had applied in each area). With a few exceptions, death rates were higher outside the Major Cities and increased with increasing remoteness.

- **Ischaemic heart disease** was responsible for 755 ‘excess’ deaths each year outside Major Cities. Rates were 10% higher in all areas outside Major Cities except Very Remote areas, where they were 30% higher. There were 3.3 times as many deaths of Indigenous people as expected (9.3 times as many for 0–64-year-olds). For younger non-Indigenous people (aged 0–64 years), rates were 10%, 20%, 20% and 30% higher in Inner Regional, Outer Regional, Remote and Very Remote areas.
- **‘Other’ circulatory diseases** (circulatory disease excluding ischaemic heart disease, stroke and rheumatic heart disease) were responsible for 518 ‘excess’ deaths each year outside Major Cities. Rates ranged from 10% higher than in Major Cities in Inner Regional areas, to 30% higher in Very Remote areas. There were 3.0 times as many deaths of Indigenous people as expected (6.6 times as many for 0–64-year-olds). For non-

Indigenous people aged 0–64 years, rates were 10% and 30% higher in Inner and Outer Regional areas (with rates elevated, but not significantly higher, in remote areas).

- There were about 374 ‘excess’ deaths (mainly male) due to **chronic obstructive pulmonary disease** each year; overall rates in Inner Regional, Outer Regional, Remote and Very Remote areas were 1.2, 1.3, 1.3 and 1.9 times those in Major Cities. Rates for Indigenous people were 3.4 times higher than expected (and 8.8 times higher for 0–64-year-olds). Death rates for non-Indigenous people aged 0–64 years were 1.3, 1.6, 1.8 and 2.8 times higher in the four areas outside Major Cities.
- There were 368 ‘excess’ deaths due to **motor vehicle accidents** annually, of which 70% were male. Rates were substantially elevated outside Major Cities for all groups examined. Indigenous death rates due to this cause were 4.1 times higher than expected. Rates for non-Indigenous people aged 0–64 years were 1.8, 2.0, 2.1 and 2.4 times higher in the four areas outside the Major Cities.
- **Diabetes** was responsible for 191 ‘excess’ deaths outside Major Cities annually where it was reported as the underlying cause of death¹. However, there were another 169 ‘excess’ deaths of people outside Major Cities where diabetes was mentioned on the death certificate as an associated cause of death (making up 360 altogether). Although most of the 191 deaths were of people older than 75 years, about one-third were aged between 35 and 74 years, and about 60–70% were females. Death rates in the four areas were 1.1, 1.3, 1.7 and 3.8 times higher than in Major Cities. There were 13.3 times as many deaths of Indigenous people as expected (and 28.2 times as many for 0–64-year-olds). For non-Indigenous people, there were 1.05, 1.2 and 1.2 times as many deaths as expected in Inner Regional, Outer Regional and Remote areas, while rates in Very Remote areas were not significantly different from those in Major Cities. For non-Indigenous people aged 0–64 years, rates were lower (in Inner Regional areas), or not significantly higher (in the other areas).
- There were 184 ‘excess’ deaths due to **suicide** annually, and practically all were male. Rates in the four areas were 1.2, 1.2, 1.4 and 1.6 times the rate in Major Cities. Indigenous death rates due to this cause were 2.9 times higher than expected. Rates for non-Indigenous people were 1.2 times higher in Inner Regional, Outer Regional and Remote areas than in Major Cities, with all age groups between 15 and 64 years contributing, but similar in Very Remote areas to those in Major Cities. Rates for non-Indigenous people aged 0–64 years from Inner and Outer Regional areas were 1.3 and 1.2 times higher than in Major Cities.
- There were 214 ‘excess’ deaths annually due to ‘other’ injuries. This is a broad group of causes including **non-traffic motor vehicle accidents, drownings and falls**. The main population groups affected were young children, men in age groups between 15 and 64 years and elderly women, but 70% of this group were male. Rates increased with remoteness: in the four areas, rates were 1.1, 1.3, 1.6 and 2.1 times those in Major Cities. There were 3.3 times as many deaths of Indigenous people as expected. Rates for non-Indigenous people (including those aged 0–64 years) also increased with remoteness.

¹ The underlying cause of death is the main disease or injury initiating the sequence of events leading directly to death. Associated causes of death are the other diseases or injuries recorded on the death certificate that contributed to the death. Details of deaths where diabetes was recorded as an associated cause of death are included in Appendix A.

- There were 131 'excess' deaths annually due to **prostate cancer**. There were about as many deaths of Indigenous men as expected due to this cause. Rates for non-Indigenous men were 10% and 20% higher in Inner and Outer Regional areas, and 40% higher for men aged 0–64 years in these areas.
- **Colorectal cancer** was responsible for 117 'excess' deaths annually. Rates were 10% higher in regional areas, but lower in remote areas than in Major Cities. There were about half as many deaths of Indigenous people as expected. There were about 20% more deaths of non-Indigenous people aged 0–64 years as expected in regional areas.
- **Lung cancer** was responsible for 52 'excess' deaths annually outside Major Cities (60 fewer deaths than expected for those older than 70 years, but 112 more than expected for those younger than 70 years). Rates were 10% and 30% higher in Remote and Very Remote areas than in Major Cities, and there were 2.1 times as many deaths of Indigenous people as expected (3.2 times as many for 0–64-year-olds). Rates for non-Indigenous people aged 0–64 years were 10% higher in regional areas and 80% higher in Very Remote areas than in Major Cities.

Specific causes of death responsible for the higher death rates outside Major Cities are described in Table 1.

Table 1: Leading specific causes of 'excess' deaths, 1997–1999

Specific cause of death	Annual 'excess' deaths	Per cent of total 'excess'
Ischaemic heart disease (IHD)	755	23
'Other' circulatory diseases (but not stroke or RHD)	518	16
Chronic obstructive pulmonary disease (COPD)	374	11
Motor vehicle accidents (MVA)	368	11
Diabetes	191 (360 ^(a))	6 (11 ^(a))
Suicide	184	6
'Other' injuries ^(b)	214	6
Prostate cancer	131	4
Colorectal cancer	117	4
Lung cancer	52 (112 ^(c))	2 (6 ^(c))
All other causes	399	12
All causes	3,303	100

(a) There were 360 'excess' deaths for which diabetes was a contributing factor (associated cause). In 191 of these, diabetes was recorded as the principal cause of death. The principal causes of the remaining 169 are distributed among the remaining categories in the table. In 11% of all 'excess' deaths, diabetes was implicated as an associated cause of death.

(b) 'Other' injuries include all injuries except motor vehicle accidents, suicide, homicide and accidental shooting.

(c) There were 52 excess deaths due to lung cancer overall (this was made up of 112 'excess' deaths of those younger than 70 years outside Major Cities and 60 fewer than expected for those who were 70 years and older). While it accounted for 2% of all 'excess' deaths, lung cancer accounted for 6% of 'excess' deaths of people younger than 65 years.

Source: AIHW National Mortality Database.

Other specific causes

Details of the other causes of death described in this report are included below. These causes are listed in no particular order.

- **Stroke and rheumatic heart disease (RHD)** were responsible for 85 and 18 extra deaths annually, on average, outside Major Cities. Death rates due to stroke were broadly similar in all areas, while rates for RHD were much higher (to 7 times Major Cities rates) in remote areas, reflecting large numbers of Indigenous people in these areas, and high rates in the overall Indigenous population (24 times as many deaths as expected). There were 2.6 times as many deaths of Indigenous people due to stroke; while for 0–64-year-old Indigenous people, there were 6.5 and 50.2 times as many deaths as expected due to stroke and RHD respectively.
- Outside Major Cities, there were about as many deaths as expected due to **breast cancer**, and slightly more deaths than expected due to **cervical cancer**. For Indigenous women, there were about as many deaths due to breast cancer as expected, but 6.5 times as many deaths as expected due to cervical cancer. There was no clear difference in rates of breast and cervical cancer in non-Indigenous women in each of the areas.
- There were 36 extra deaths annually outside Major Cities due to **melanoma**. Rates for Indigenous people were relatively low. Rates for non-Indigenous people were 20–30% higher in regional areas.
- There were about as many deaths as expected due to **‘other’ neoplasms**, but 1.7 times as many for Indigenous people generally. Rates for non-Indigenous people were lower in remote areas largely because of relatively low rates in those older than 70 years. In Inner Regional areas, there were about 10% more deaths of young (0–64 years) non-Indigenous people than expected due to ‘other’ neoplasms.
- There were fewer deaths overall than expected due to **pneumonia**, although remote area rates were 1.3 and 2.3 times as high as in Major Cities. There were 7.2 times as many deaths of Indigenous people than expected (23.7 times as many for 0–64-year-olds). There were fewer than, or about as many, deaths of non-Indigenous people as expected in the areas outside Major Cities.
- There were 21 more deaths than expected due to **asthma** annually outside Major Cities, with 1.2 and 1.5 times as many deaths as expected in Outer Regional and Remote areas. Rates for Indigenous people were 3.0 times as high as expected (3.8 times as high for 0–64-year-olds). Asthma death rates were not significantly higher for non-Indigenous people (although the numbers of deaths were elevated), while the asthma death rate for young (0–64 years) non-Indigenous people was 30% higher in Outer Regional areas and not significantly higher in the other areas.
- There were 27 extra deaths due to **influenza** annually outside Major Cities. Death rates were 1.6, 1.9 and 3.2 times as high in Inner Regional, Outer Regional and Remote areas, with rates similarly elevated for non-Indigenous people. There were relatively few deaths of Indigenous people due to influenza.
- There were 78 fewer deaths than expected due to **‘other’ respiratory** diseases, largely as a consequence of low death rates for elderly non-Indigenous people in regional areas. Rates for Indigenous people were 5.2 times as high as expected (12.5 times as high for 0–64-year-olds). There were about as many deaths of younger (0–64 years) non-

Indigenous people as expected due to this cause in each of the areas outside Major Cities.

- There were nine extra deaths on average due to **interpersonal violence** outside Major Cities annually (mainly female); rates were 0.8 times the Major Cities rate in Inner Regional areas, similar in Outer Regional areas and 2.0 and 5.4 times as high in Remote and Very Remote areas. There were 7.4 times as many deaths of Indigenous people as expected (7.6 times as many for 0–64-year-olds), and it is these deaths that are mainly responsible for the higher rate in remote areas. For non-Indigenous people, rates were lower in Inner Regional areas, not significantly different in Outer Regional and Remote areas, and 2.3 times as high in Very Remote areas (although based on small numbers).
- There was an average of 16 deaths annually due to **accidental shooting** in areas outside Major Cities (almost all male), 12 of these were in excess of the number expected; rates in Inner Regional, Outer Regional, Remote and Very Remote areas were 3.7, 4.6, 7.7 and 15.5 times those in Major Cities. There were essentially no deaths of Indigenous people from this cause in the study period.
- There were 33 extra deaths annually due to **renal diseases**, and 70% were female. Rates were similar in all areas, or at least were not significantly different from those in Major Cities. However, in Very Remote areas, there were 2.6 times as many deaths as expected due to this cause. There were 7.1 times as many deaths of Indigenous people as expected, and 25.1 times as many deaths as expected for 0–64-year-old Indigenous people. Rates for non-Indigenous people were not significantly different in any area from those in Major Cities.
- **Other causes 'not elsewhere described'** is a group that excludes cardiovascular and respiratory diseases, neoplasms, injuries, diabetes and renal disease, but includes diverse causes, ranging from pregnancy related, through infectious diseases, conditions originating in the perinatal period, diseases of the digestive system (including liver), and others. There were 210 more deaths than expected due to these causes annually (practically all female, one-third younger than 5 years, the rest older than 50 years). Rates were similar to those in Major Cities in regional areas, but 1.1 and 1.7 times as high in remote areas. Indigenous death rates due to this cause were 3.5 times as high as expected (4.1 times as high for 0–64-year-olds). Rates for non-Indigenous people in Inner Regional, Outer Regional, Remote and Very Remote areas were similar in regional areas, but in remote areas were lower than (0.9 and 0.8 times) those in Major Cities.

Comments on the findings

- Improvements in the identification of Indigenous people in the mortality data collection are crucial to being able to describe differences in mortality across remoteness in the future.
- Estimates of the accuracy of Indigenous identification in each area are critical for the utilisation of current and historical mortality data to assess differences in mortality for Indigenous people in each area.
- Descriptions of regional mortality rely on relatively clumsy allocation of regional category on the basis of Statistical Local Area (SLA), because the boundaries of SLAs and Remoteness categories seldom coincide exactly. Geocoding of residential location would allow more precise allocation, and would also facilitate more powerful epidemiological work (for example, identification of disease clusters), however a move to geocoding would need to incorporate substantial confidentiality safeguards.
- While all of the causes of death described in this report are significant, two broad causes stand out as being of particular importance: circulatory disease and injury. Circulatory disease is important because of the large number of deaths involved, while injury is important because of the large number of 'excess' deaths outside Major Cities, the young age of many of the people affected and the trend for rates to remain unchanged or to increase over time. These two broad causes are responsible for 66% of all the 'excess' deaths that occur outside Major Cities.
- For many of the causes of death examined, rates for Indigenous people are much higher than for non-Indigenous people from any area. Elevated death rates in remote areas may be a consequence of the proportionally large number of Indigenous people in those areas, and high overall Indigenous mortality. Because of the proportionally lower numbers of Indigenous people in regional areas, the impact of high overall Indigenous mortality on death rates in these areas is probably relatively small.
- While access to health services, the higher risks associated with some occupations and with country driving likely to contribute to higher death rates outside Major Cities, other issues are also likely to be relevant. Strong influences on health outcomes are also likely to result from higher rates of smoking, physical inactivity, risky alcohol consumption and poorer nutrition, and lower rates of employment, income and education. At least for Indigenous people, disadvantages with regard to these issues, and issues around the social environment, lack of control over aspects of one's life, potentially leading to a sense of hopelessness, have been cited as possible reasons for poorer health outcomes (ABS 2001c).

- Although comparison of death rates tells us something about gross health conditions, it tells little about other important issues. There may be substantial differences between areas, for example:
 - accessing speech therapy services for a young child;
 - getting an elderly person to rehabilitation services on a regular basis;
 - logistic and financial difficulties when a family member needs specialist care in a Major Cities hospital; and
 - whether people are living happy and fulfilling lives.
- The lower death rates of the aged in remote areas is assumed, in this report, to be due to the migration of the frail aged to less remote areas where they can access services. There is much anecdote, but little that has been published to support this hypothesis.
- This report does not include information on deaths due to occupational accidents. This is an important issue that requires further investigation.
- This report touches briefly on intra-regional variation in rates of death, that is, differences in mortality between areas within broad geographic zones. Further investigation of small area mortality patterns may be useful in better targeting interventions.
- The effect of income and education on regional differences in mortality has not been explored in this report. It is possible that these factors would explain some of the regional differences in mortality.
- Although this report describes, amongst others, high death rates due to ischaemic heart disease, 'other' circulatory disease, and motor vehicle accidents, it is not clear whether these differences are due to higher overall risk, or due to lower levels of access to health services or both. Further work to identify the contribution of risk and access would be useful.

1 Introduction

Australians as a whole enjoy a very high standard of living. By most summary measures of social wellbeing, Australia compares well, even against other developed countries such as the United States, Canada, Japan and the United Kingdom. For example, we are highly educated (in 1996, we ranked highly among OECD countries on the basis of the percentage of the population holding a degree); we have high employment (in 1999 our labour force participation was on a par with most OECD countries and our unemployment rate was lower than those of Italy, France, Greece and Canada) and we are healthy (in 1999 we had one of the lowest infant mortality rates among OECD countries and an average life expectancy at birth which compared well with other OECD countries) (ABS 2001a). Measures of the health of a population reflect other aspects of social wellbeing, including socioeconomic status: they are all linked.

Summary measures of an entire population rarely tell the whole story, however. In most countries, various groups within the population fare relatively better than average and others relatively worse in at least some aspects, and this is true of Australia. For example, our Indigenous population is not so well off as the rest of the population in almost all important areas of social concern (Table 1.1): their participation in education and levels of educational attainment fall far short of the rest of the population; their labour force participation is lower and their unemployment rate higher; and their infant mortality rate is much higher and life expectancy much lower than the rest of the population (ABS 1999; ABS 2001c). Other measures of their health paint much the same picture.

Table 1.1: Comparison of selected characteristics of Indigenous and non-Indigenous people

Characteristic	Indigenous	Non-Indigenous
Percentage of 15–64-year-olds unemployed (1996)	23%	9%
Percentage older than 15 years who were still attending school or had left school aged 17 years or older (1996)	27%	41%
Percentage older than 15 years possessing Bachelors degree or higher (1996)	2%	11%
Median weekly income		
Males older than 15 years (1996)	\$189	\$415
Females older than 15 years (1996)	\$190	\$224
Own or purchasing own home	31%	71%

Source: ABS 1999.

It is also true that, on average, people living in more inaccessible regions of Australia are disadvantaged with regard to educational and employment opportunities, income (Garnaut et al. 2001; Bray 2000), access to goods and services and in some areas access to what most of us regard as basic necessities, such as clean water and fresh food (ABS 1990, PHS 2001). These disadvantages are reflected in their overall less favourable indicators of social wellbeing, including indicators of health. This report aims to assess the mortality of people living in regional and remote Australia and compare with those living in major population centres.

In Australia, about two-thirds of all people live in the major cities. The remainder live in what are loosely referred to as regional and remote areas (see page 29). Regional and remote

areas are not all located in so-called 'outback' Australia, and they are not all as subject to the above aspects of disadvantage as some might assume: many are in coastal regions and some are in regions where there is a major industry such as wine production, farming, mining or tourism – but they are all some distance away from major population centres. Measures of health status and other social indicators relating to rural and remote areas need to be interpreted with this in mind.

1.1 Characteristics of rural and remote populations

Rural and remote populations share some common demographic characteristics that differ from those of cities. They tend to have larger families, but lower proportions of people aged 15–34 years or 65 years and over; they have fewer one-parent families; they are less likely to pay rent and more likely to live in houses (rather than flats or apartments); they are more likely to own a car; more likely to have both partners of a marriage in the labour force; and those who are working are more likely to be employers (ABS 1998).

Any study that attempts to determine the effect of distance on the health of a population must take these differences into account. One way of adjusting for different age profiles in the various populations is the use of age standardisation. How this technique is applied in this study is explained in 'Age standardisation' on page 26. In addition, particular attention needs to be paid to the population aged 65 years and over, given their higher death rates, incidence of disease and the relatively low proportion of people living in remote areas who are in that age group. Why this is a feature of remote areas, and how it is handled in the analyses, are discussed in full in Chapter 2.

Another characteristic that is common among rural and remote populations is their relatively high proportions of Indigenous people compared to capital cities and major metropolitan cities – the more remote the region, the higher is this proportion. This means that the further away a region is from a major population centre, the greater is the impact of Indigenous wellbeing on overall measures of wellbeing in that area.

Ideally, a study on health differentials across different regions should examine the effects of distance on the Indigenous and non-Indigenous populations separately, although doing so presents a number of challenges. These include: the extent to which Indigenous people are correctly identified, both within the total population and on other records such as death certificates and hospital admissions; the very small size of the Indigenous population in total; and the usual address of itinerant members of that population. These limitations are also discussed in more detail later in Chapter 2.

At present these challenges regarding Indigenous data have not been met to a degree that gives confidence in drawing definite conclusions. This report therefore largely restricts analysis of health status differentials by geographical area to the non-Indigenous and total populations living there. At first glance, it might seem that this approach would be subject to the same limitations – how can a poorly identified population be 'subtracted' from the total population to form a group that can be analysed with any confidence? The solution to this paradox is two-fold. Firstly, in large population centres, where Indigenous identification is the least reliable, the proportion of Indigenous people is so very small (less than 1% of the population) that they have an insignificant effect on any overall measures of social wellbeing of either the total population or the non-Indigenous component. Secondly, in populations outside of the cities, it is thought that identification is much more reliable (and the more remote, the more reliable the identification), so that the Indigenous and non-Indigenous

components can be distinguished from each other. The reasons why this is thought to be so, and the extent to which identification varies across geographic regions, are discussed in the section on Indigenous identification in Chapter 2 (see page 21).

Because of the importance of the issue of Indigenous health, primarily as a result of the poor health outcomes associated with social conditions and elevated risk factors, it is important for this report to also describe the overall health of Indigenous people (even if it is not possible to report for each region).

This study uses a number of different sets of assumptions about the variation in Indigenous identification (Models 1, 2, 3 and 4) to test the robustness of calculating non-Indigenous death rates. These are also discussed in Chapter 2 (see page 22). While Model 1 appears implausible, the assumptions made in Models 2, 3 and 4 appear plausible, with Model 4 a linear average of the other two, being perhaps the simplest and most conservative model. If the assumptions made under Model 4 are correct, then the rates for non-Indigenous people described in this report underestimate the true rates by 0–1% in Major Cities, Inner Regional and Outer Regional areas, and by 4–7% in remote areas. However, until the accuracy of identification is actually measured or estimated in each area, the degree of error will remain unclear and interpretation of analyses based on this approach should be treated with caution.

In the discussion so far, the terms ‘regional’ and ‘remote’ have been used loosely. In order to study the effects of distance on wellbeing, however, the populations under analysis need to be defined more precisely. This is done in Chapter 2 (see page 29).

Demography

Australians are one of the most urbanised populations in the world, with about 70% of people living in capital or major industrial cities. Of the remainder, about 45% live in regional cities or large country or coastal towns and surrounding agricultural areas, about 45% live in small country or coastal towns and their surrounding agricultural areas, and about 10% live in remote areas (AIHW 2002b).

Non-metropolitan areas include not only inland agricultural and remote areas, but also coastal areas. In fact, of the people who live outside the major cities, but not in remote areas, just under 50% live within 80 km of the coast (Garnaut et al. 2001).

The ASGC Remoteness structure has been used in this description of regional and remote demography. Additional demographic data is provided in Appendix E.

In 2001, the majority (66%) of the Australian population lived in Major Cities. Of the remainder, 21% and 10% lived in Inner and Outer Regional areas, while 2% and 1% lived in Remote and Very Remote areas (Figure 1.1, Table 1.2).

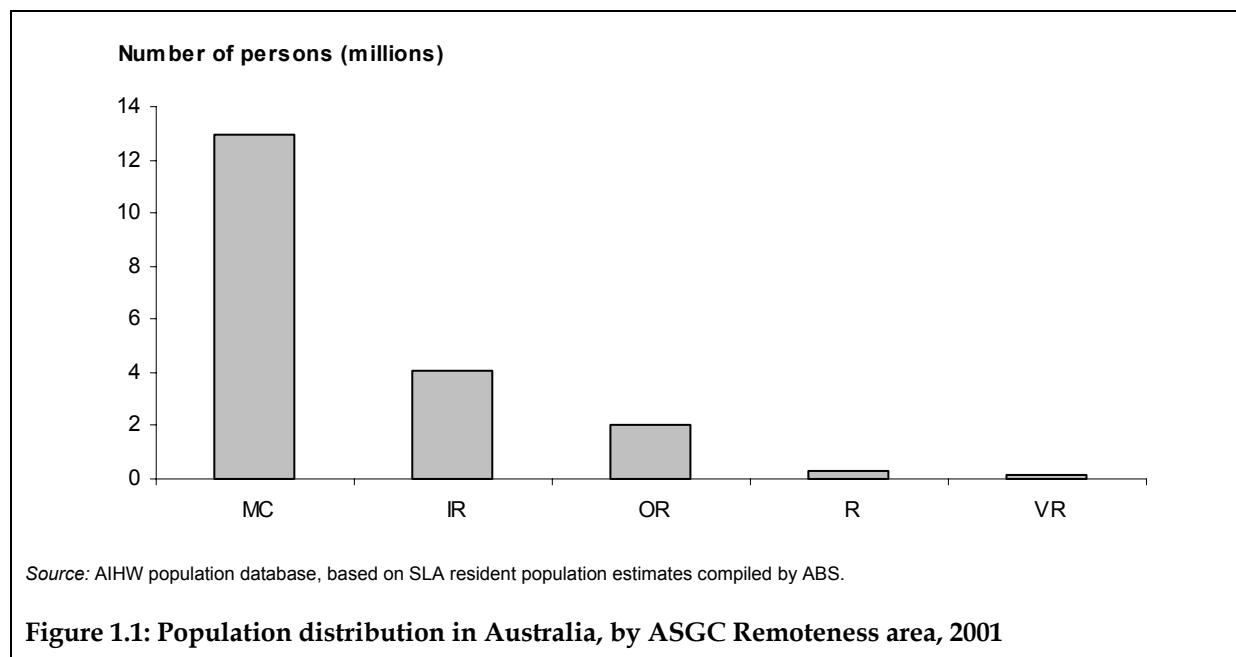


Table 1.2: Indigenous and total populations within each ASGC Remoteness area, 2001

		MC	IR	OR	R	VR	Total
Population		('000)					
Indigenous	Male	68	46	52	20	41	227
	Female	71	46	54	20	40	231
	Persons	138	93	106	40	81	458
Total	Male	6,344	1,995	1,025	172	95	9,631
	Female	6,527	2,030	989	153	83	9,783
	Persons	12,871	4,026	2,014	324	179	19,413
		(per cent)					
Indigenous							
% of regional population		1	2	5	12	45	2
% of national Indigenous population		30	20	23	9	18	100
Total population							
% of national population		66	21	10	2	1	100

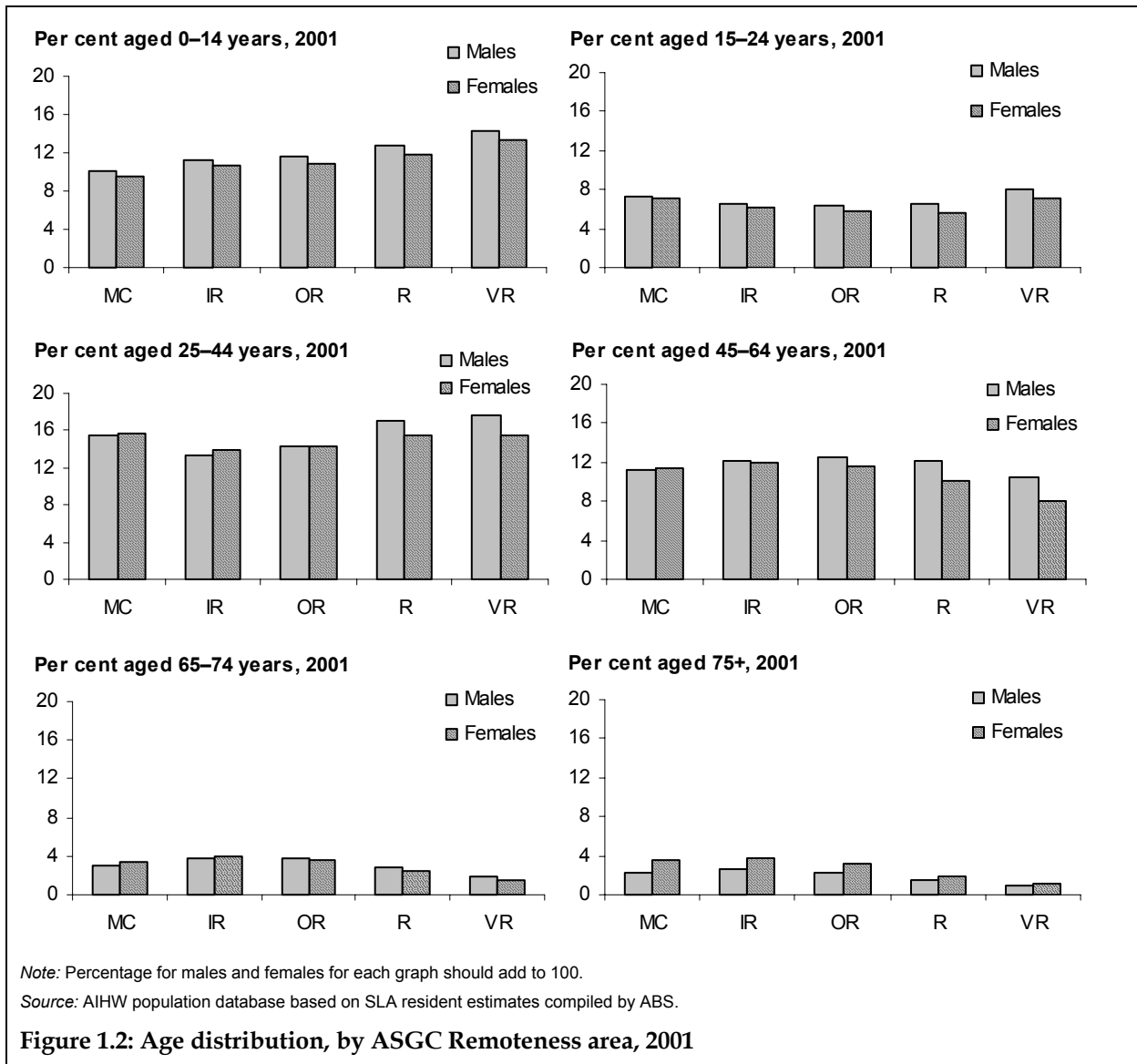
Source: AIHW population database, based on SLA resident population estimates compiled by ABS.

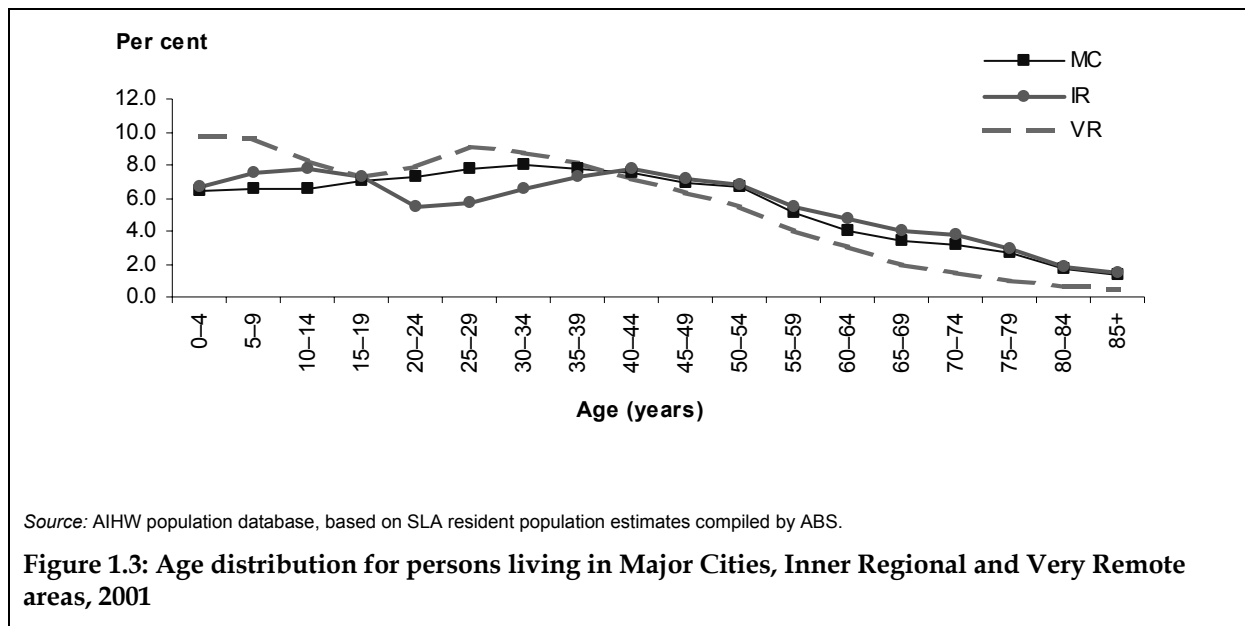
The population of regional areas is smaller than that in Major Cities, but still substantial; the population in remote areas is very small in comparison.

The percentage of the population who are Indigenous varies substantially with remoteness; 1% of the population in Major Cities are Indigenous, 2–5% are Indigenous in regional areas, rising to 12% in Remote areas and 45% in Very Remote areas (Table 1.2).

As well as these differences, there are substantial differences in the age and sex structure of the populations (Figures 1.2 and 1.3). In the Australian population, there are slightly more males than females; only in older age does the situation change as females outlive their male counterparts. However, in Remote (and especially Very Remote) areas, the number of males

is substantially greater than the number of females (Table 1.3), with the numbers of males and females tending to become similar in old age (Figure 1.2).





In remote areas, there are proportionally more children, people aged 15–24 years and to a lesser extent people aged 25–44 years, than there are in Major Cities. There are proportionally fewer people older than 44 years, and substantially fewer people older than 65 years in Remote areas.

In regional areas the proportion of people in each age group is similar to that in Major Cities, with the exception that there are proportionally more children, but fewer people aged 25–44 years.

Table 1.3: Male to female population ratio, by ASGC Remoteness area, 2001

	MC	IR	OR	R	VR	Total
	(number)					
Non-Indigenous	0.97	0.98	1.04	1.14	1.28	0.98
Indigenous	0.96	1.00	0.98	1.01	1.01	0.99
Total persons	0.97	0.98	1.04	1.12	1.15	0.98

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

2 Technical notes

2.1 Indigenous data quality issues

Of the issues to be considered when attempting to understand the health of regional and remote populations, Indigenous health is the most critical. However, identification of Indigenous people in data collections is frequently poor.

Overall, identification of Indigenous deaths in Australia is estimated to be no better than 60% (ABS 1999; ABS 2001c). Identification of Indigenous people in the National Mortality database for the period 1997–1999 is estimated to be more reliable in South Australia, Western Australia, the Northern Territory and Queensland than in the other jurisdictions (ABS 1999; ABS 2001b); identification is estimated at between 60% and almost 100%.

It could be that identification of Indigenous deaths is more accurate in areas where Indigenous people make up a larger proportion of the population, and poorer where they are a small minority. It is therefore possible that identification of Indigenous deaths in Very Remote areas (where Indigenous people constitute 45% of the population) is very good, but this hypothesis has not yet been rigorously tested. Reasons for assuming that identification is likely to be better in more remote areas include:

- the deceased (or their family) may be more likely to be known by the person completing certification;
- the importance of Indigenous health issues and of the need for accurate identification may be appreciated in remote areas where Indigenous people are more common;
- identification of Indigenous people in hospital morbidity data collections has been shown to be better in areas with higher proportions of Indigenous people in catchment areas (ABS & AIHW 1999);
- the ABS has found better coverage of the Indigenous population in deaths data for the states or territories with more remote areas such as Western Australia, South Australia, the Northern Territory and Queensland (ABS 2000); and
- mathematical modelling strongly suggests that similar accuracy in the identification of Indigenous deaths at each level of remoteness is highly unlikely (see 'Model 1', page 23).

Therefore, we conclude that there could be different rates of identifying Indigenous people by region, and hence regional data for Indigenous people have not been presented.

If Indigenous people in the Mortality Database are under-identified, then non-Indigenous people will be over-identified and consequently over-represented (as a consequence of some Indigenous people being incorrectly counted as non-Indigenous). At a national level, this is unlikely to have a significant impact on the calculation of rates for non-Indigenous people. The effect on calculated rates for Major Cities and regional areas is also likely to be small. However, the effect in an analysis of mortality in remote areas could be significant and is investigated in the next section. The remote area data for the non-Indigenous population should therefore be treated with caution.

2.2 Population data and calculation of death rates

The other important source of data for this report is the size of the populations in regional and remote areas. Data for this is based on the 1996 ABS Census, and developed at AIHW to reflect the total population in 1997, 1998 and 1999. The available Indigenous population data was the ABS estimate of the number of Indigenous people living in each SLA in 1996.

For simplicity and for the purposes of calculating death rates for the period 1997–1999, the non-Indigenous population is taken to be the average population in 1997–1999 minus the Indigenous population in 1996. This is not ideal, but is unlikely to affect comparisons between geographic regions for non-Indigenous people.

Current lack of Indigenous population data for each of the areas defined by the ASGC Remoteness Structure for years other than 1996 prevents calculation of trends in mortality for non-Indigenous people for the period 1991–1999. As populations grow over time, subtraction of a static (1996) estimate for the Indigenous population from an estimate of the total population which is larger in 1999 than it was in 1996, could result in rates apparently decreasing more quickly than is in fact the case. While trends for the total population are presented, separate trends for the Indigenous and non-Indigenous populations are not.

In addition, ABS estimates of the Indigenous population have been adjusted upwards by ABS, to allow for an estimated modest under-count of Indigenous people at the census. In the more remote areas, where Indigenous people may greatly outnumber non-Indigenous people, there is the possibility that the adjusted number of Indigenous people could be greater than the estimate for the total population (as the adjustment was across the board). This possible effect is estimated to be very small, with negligible impact in Major Cities, Inner and Outer Regional areas and in Remote areas. In Very Remote areas, calculated death rates for non-Indigenous people may appear higher by less than 0.5% (personal communication, Michael Roden, Demography section, ABS).

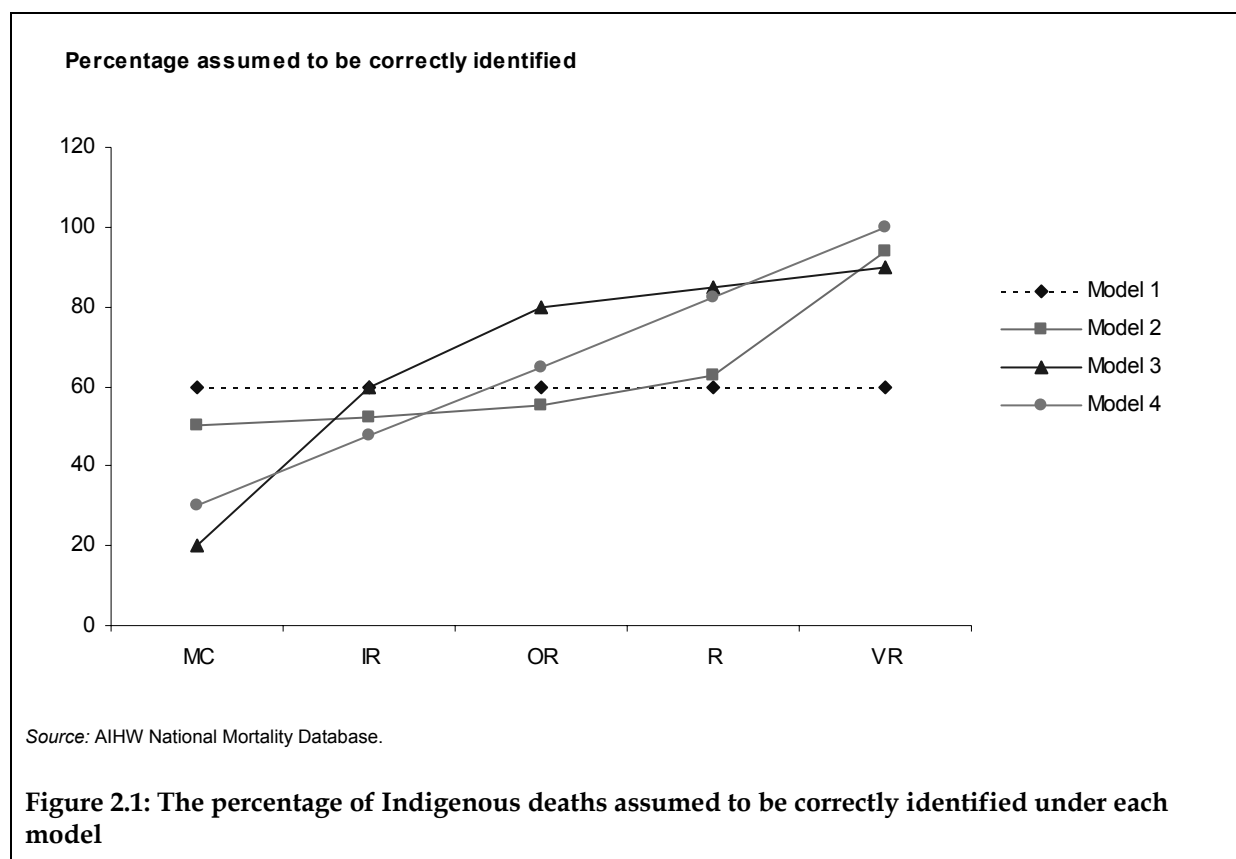
2.3 Effect of Indigenous data quality on reporting non-Indigenous deaths in this report

As mentioned earlier, reporting of Indigenous deaths is for the jurisdictions in which identification is considered more reliable (South Australia, Western Australia, the Northern Territory and Queensland). For non-Indigenous people, it was decided to report nationally rather than for the jurisdictions that had better identification of Indigenous people. This decision was made on the basis that coverage would be more representative of the Australian (rather than the South Australia, Western Australia, Northern Territory and Queensland) population.

In the AIHW Mortality Database, deaths are identified as Indigenous or non-Indigenous. In the years for which analysis has been conducted in this report, ABS estimates that approximately 60% of deaths of Indigenous people have actually been identified as such in the database (ABS 2001c). This leaves 40% of Indigenous deaths incorrectly classified as deaths of non-Indigenous people and resulting calculations of Indigenous death rates for Australia as a whole are therefore likely to be underestimates. This could however mean that reported non-Indigenous death rates will be higher than they really are.

This section assesses the size and direction of this error. For this purpose (that is, as a sensitivity analysis), four models, each making different assumptions, have been developed (Figure 2.1, Table 2.1):

- Model 1 assumes that only 60% of Indigenous deaths are correctly identified as such in all geographical regions.
- Model 2 assumes that accuracy of identification is 50% in Major Cities, increasing gradually with remoteness (52%, 55% and 63% in Inner Regional, Outer Regional and Remote areas) then improves substantially to 94% in Very Remote areas, yielding an average national rate of accurate identification under this model of 61%.
- Model 3 assumes that the accuracy of identification is 20% in Major Cities, then rises rapidly at first (60% and 80% in Inner and Outer Regional areas), improvement slowing with remoteness (85% and 90% in Remote and Very Remote areas), yielding an average national rate of accurate identification under this model of 61%.
- Model 4 assumes that the accuracy of identification improves constantly with increasing remoteness, from 35% in Major Cities, to 50% and 65% in Inner and Outer Regional areas, to 80% and 95% in Remote and Very Remote areas, yielding an average national rate of accurate identification under this model of 60%.



Model 1

The first model assumes that 60% of Indigenous people are identified as such across all geographic areas (that is, 40% are misclassified as non-Indigenous). Under this model, estimated standardised mortality ratios (SMRs) for non-Indigenous males and females will be the same in Major Cities and Inner Regional areas, 2% higher in Outer Regional areas, and 11–12% and 72–101% higher in Remote and Very Remote areas respectively than if identification of Indigenous deaths was perfectly accurate. These results from Very Remote

areas are unlikely in the first case, impossible in the second; in fact this model predicts a negative death rate in Very Remote area females (see Table 2.1). As a consequence, this model must be viewed as implausible, and consequently the accuracy of identification has to be assumed to improve with remoteness.

Model 2

The second model assumes that the accuracy of identification increases gradually at first, from 50% in Major Cities, to 52% in Inner Regional, 55% in Outer Regional, 63% in Remote, to 94% in Very Remote areas. Under these assumptions, presented mortality for non-Indigenous males and females will be the same in Major Cities and Inner Regional areas, 2% higher in Outer Regional areas, and 9–11% and 6–9% higher in Remote and Very Remote areas respectively than if identification of Indigenous deaths was perfectly accurate. If the accuracy of identification of Indigenous deaths does in fact follow this pattern, real rates for non-Indigenous people may be lower than described in this report by less than 2% in regional areas and by 6–11% in remote areas.

Model 3

The third model assumes that the accuracy of identification increases markedly for regional areas, from 20% in Major Cities, to 60% in Inner Regional, 80% in Outer Regional, 85% in Remote, to 90% in Very Remote areas. Under these assumptions, presented mortality for non-Indigenous males and females will be the same in Major Cities, 1–2% and 1% lower in Inner and Outer Regional areas, and 0–1% and 9–15% higher in Remote and Very Remote areas respectively than if identification of Indigenous deaths was perfectly accurate. If the accuracy of identification of Indigenous deaths does in fact follow this pattern, real rates for non-Indigenous people may be higher than reported by 1–2% in regional areas, up to 1% lower in Remote areas and 9–15% lower in Very Remote areas.

Model 4

The fourth model assumes that 35% of Indigenous deaths are identified as such in Major Cities (that is, 65% are misclassified as non-Indigenous), and 95% are identified in the most remote areas, with identification in intermediate areas between the two (50%, 65% and 80% in Inner Regional, Outer Regional and Remote areas respectively). Under these assumptions, presented mortality for non-Indigenous males and females will be the same in Major Cities and Inner Regional areas, 1% higher in Outer Regional areas, 3–4% and 4–7% higher in Remote and Very Remote areas respectively than if identification of Indigenous deaths was perfectly accurate. If the accuracy of identification of Indigenous deaths does in fact follow this pattern, real rates for non-Indigenous people will be the same in Major Cities and Inner Regional areas, 1% lower in Outer Regional areas and 3–7% lower in remote areas than reported.

Some degree of over-estimation of non-Indigenous death rates is a consequence of the under-identification of Indigenous deaths (with some Indigenous deaths being counted amongst the non-Indigenous). Reported death rates for non-Indigenous people are likely to be affected by between minus 2% and plus 2% for Major Cities and regional areas, but may be inflated in remote areas by up to 10%. The exact magnitude of the effect within this range is unclear. Results for the Remote and Very Remote areas should be accepted cautiously until

the relationship between remoteness and identification of Indigenous people in the mortality data collection is clearly understood.

Table 2.1: Comparison of the size of the over-estimates in non-Indigenous death rate predicted in each of the four models

			ASGC Remoteness area				
			MC	IR	OR	R	VR
Type			SMR				
Model 1	Males	Observed	100	107	110	107	100
		Adjusted	100	107	108	95	28
		% difference	0	0	2	11	72
	Females	Observed	100	103	106	98	87
		Adjusted	100	103	104	86	-1
		% difference	0	0	2	12	101
Model 2	Males	Observed	100	107	110	107	100
		Adjusted	100	106	107	97	94
		% difference	0	0	2	9	6
	Females	observed	100	103	106	98	87
		Adjusted	100	103	103	88	79
		% difference	0	0	2	11	9
Model 3	Males	Observed	100	107	110	107	100
		Adjusted	100	108	111	107	90
		% difference	0	-2	-1	0	9
	Females	Observed	100	103	106	98	87
		Adjusted	100	104	107	97	74
		% difference	0	-1	-1	1	15
Model 4	Males	Observed	100	107	110	107	100
		Adjusted	100	107	109	104	95
		% difference	0	0	1	3	4
	Females	Observed	100	103	106	98	87
		Adjusted	100	103	105	94	81
		% difference	0	0	1	4	7

Note: SMRs presented here are the ratio of observed to expected deaths multiplied by 100.

Source: AIHW Mortality Database, AIHW Population Database.

2.4 Statistical methods

Throughout the report, estimates are provided with 95% confidence intervals. Reported statistics are taken to be significantly different if 95% confidence intervals do not overlap. In the text, rates described as 'significantly different' can be taken to be statistically significantly different at the 95% level. The small size of the population in Remote and Very Remote areas restricts the amount of data available to calculate rates; the level of uncertainty associated

with rates calculated for these areas is certainly greater than for areas with large populations (such as Major Cities). Consequently, confidence intervals have been calculated and accompany presented rates so that the level of uncertainty associated with rates is clearly expressed. These confidence intervals do not describe the uncertainty associated with potential bias, for example, the uncertainty in identification of Indigenous deaths.

Numerical values for figures are provided in Appendix A.

The slopes of trend lines for describing the change in death rates over time have been calculated using weighted least squares; confidence intervals for the slope are calculated using the standard error of the slope.

Confidence intervals for rates have been calculated on the basis of the number of observed deaths using the square-root transform described in Breslow and Day (1987 pp. 70–71).

Life expectancy is calculated using life tables (Pollard et al. 1975, pp. 30–47).

Description of the relative rates of death in the different areas has been made by comparing the number of deaths that actually occurred with the number that would be expected if Major Cities rates applied in each area. 'Excess' deaths have been expressed as the difference between the number of deaths observed and the number expected (Armitage & Berry 1987, pp. 403–405).

The relative contributions of each of the broad causes of death to the overall decrease in the death rate were calculated using linear regression of the number of 'excess' deaths attributed to each cause, over time, using the method described in Armitage & Berry 1987, pp. 143–150).

Data quality and analytical methods (including the selection of standards for reporting against total and Indigenous/non-Indigenous mortality) are further discussed on page 1.

Age standardisation

Each population has its own characteristics. For example, Indigenous populations tend to have proportionally larger numbers of children and smaller numbers of older people than non-Indigenous populations. Similarly, there are differences between the age structure and the proportions of males and females living in metropolitan, rural and remote populations (see page 17). Comparison of crude death rates (that is, the total number of deaths divided by the total population) may simply reflect the different age and sex structures of populations rather than any difference in the likelihood of death.

It is usual for the Institute to report rates that have been directly age standardised to the Australian population as it was in 1991. This involves applying the rates of disease or death for each sex and age group in the population of interest, to the number of people in the whole Australian population in 1991; the total number is then expressed as a rate. This approach works well when the population of interest is large, but works less well with small populations, especially if the disease or cause of death is relatively rare. In such situations it is better to use indirect rather than direct age standardisation.

For this report, the indirect method of standardisation has been used because several of the populations of interest are small and the numbers of deaths in these areas for some diseases are also relatively small. This method involves the following steps:

- calculation of age-specific rates for the standard population (that is, the total and non-Indigenous Major Cities population);
- calculation of the number of deaths expected to occur, if the standard age-specific rates applied to the population in each area;

- comparison of the total number of deaths observed in the population of each area to the number expected (that is, the ratio of observed to expected deaths).

One method is to then multiply the crude rate (total deaths divided by total population) by the ratio (of observed to expected cases) to obtain the 'indirect age-standardised rate'.

However, it then becomes more difficult to report for males and females separately while also describing differences between areas. Consequently, the simple ratio of the observed to expected number of deaths (the standardised mortality ratio (SMR)) has been used in this report, rather than the 'indirect age-standardised rate'.

Standard populations

In this report, the annual death rate for each five-year age group of males and females from Major Cities in the period 1997–1999 has been used as the standard. People who live in Major Cities of Australia have the lowest death rates and so are a useful standard population for this report. National age-specific rates were not used because this would entail comparison of mortality, not with the lowest rates in Australia, but with an average rate for Australians. This would have made comparisons between areas more difficult.

In describing mortality for Indigenous and non-Indigenous populations, it has been necessary to use the annual death rate for each five-year age group of non-Indigenous males and females from Major Cities in the period 1997–1999 as the standard. This second standard has been used for evaluating differences in mortality for Indigenous and non-Indigenous people for several reasons:

- It was felt more logical to compare mortality for non-Indigenous people in each area with that for non-Indigenous people in Major Cities. Use of this standard ensures that SMRs in Major Cities will always be equal to 'one', making comparison between the other areas and Major Cities easier. Use of this standard also reflects a logical comparison: that Indigenous and non-Indigenous people, irrespective of where they live, should reasonably expect to experience the same level of mortality as their Major Cities counterparts.
- Comparison with the 'best' rates in Australia (that is, those of non-Indigenous people from Major Cities) was thought to be potentially more useful than comparison with 'average' rates (that is, those of all people from Major Cities).
- Use of only one standard immediately encourages readers to subtract numbers of observed and expected deaths for the non-Indigenous population from the total population to yield the number of observed and expected Indigenous deaths in each area. Because of data quality issues pertaining to identification of Indigenous deaths, we believe the results of such subtraction are likely to yield misleading results (see page 21); use of two different (but very similar) standards discourages such subtraction.

So, two standards have been used in this report:

- When describing mortality differentials for the total (Indigenous plus non-Indigenous) populations, age-specific death rates for the total populations of males and females living in Major Cities have been used (separately) as the standard.
- When describing mortality differentials for the Indigenous and the non-Indigenous populations, age-specific death rates for the *non-Indigenous* populations of males and females living in Major Cities have been used (separately) as the standard.

The difference between the age-specific rates for each of these groups is small, because, proportionally, there are very few Indigenous people living in Major Cities (1%).

Use of these standards allows comparison of the observed number of deaths with the number expected if the lowest rates of death experienced by the largest proportion of the Australian population (those living in Major Cities) were to also be experienced by Indigenous people and by other people who live in regional and remote areas.

Expression of the ratio as a rate

Because the ratio of the observed to expected deaths is exactly the same as the ratio of the 'indirect age-standardised rates' in each area to that in Major Cities, the difference between the mortality in one area and that in Major Cities can be expressed either as:

- one rate is 'so many times as high as another'; or
- there are 'so many times more deaths than expected'.

For example, if 100 deaths were observed in an area, and only 50 were expected, then there were 2 times as many deaths as expected, or, the death rate in the area was 2 times that in Major Cities.

Statistical significance

Because of the influence of chance and natural variation, calculated rates will vary a little from year to year. What may appear to be a slightly higher rate in one year, may be the same (or a slightly lower) rate a year later. To assist in determining whether calculated rates are meaningfully different from one another, confidence intervals have been provided where possible. Where confidence intervals overlap, the rates are assumed to be not significantly different, but where they miss each other completely, the differences are considered to be statistically significant. In addition, data for the three years 1997–1999 have been aggregated throughout these analyses: the larger numbers increase our ability to calculate a more statistically stable rate.

Where there are exactly as many deaths as expected, the ratio or SMR will be 'one'.

In tables presented in this report, ratios of observed to expected deaths that are significantly greater than 'one' are in bold print and accompanied by an asterisk. This indicates that the difference exhibited in the years 1997–1999 is likely to be a real difference that will be reflected in analyses of data from other years (unless there are other relevant changes that affect death rates).

Frequently the difference between the number of observed and expected deaths is not statistically significant (that is, the difference could have occurred by chance, and may not be due to any real difference in the death rates of the two populations). This can be due to the fact that there is little difference in the numbers of observed and expected deaths, or because the numbers of observed and expected deaths are so small as to make it next to impossible to distinguish a statistically significant difference.

In a number of places, ratios of observed to expected deaths that are *not* significantly different to 'one' have been included (and identified) in tables. However, all such non-significant figures should be treated cautiously.

Some graphs and tables show large fluctuations over time or between age groups. Many of the differences are not significant, the fluctuation a result of rates being influenced by chance events (in relatively small populations). Additionally, 'random' events (for example, the Port Arthur shootings) can have a substantial impact on reported rates, particularly when the cause of death is usually uncommon.

2.5 Geographic classification

Until recently, rurality had been described almost exclusively by the seven-level categoric Rural, Remote and Metropolitan Areas (RRMA) classification. This classification is based on the size of the local population centre as well as a measure of remoteness (DPIE & DSHS 1994).

Work by the National Key Centre for the Social Applications of Geographical Information Systems (GISCA) from 1996 saw the development of improved measures of remoteness: the Accessibility/Remoteness Index of Australia (ARIA), a continuous variable with a remoteness score of 0–12; and its successor, ARIA+ (with a remoteness score of 0–15).

From ARIA, DoHA developed its five-level categoric classification (also called ARIA), and from ARIA+, ABS developed its six-level categoric classification, the ASGC Remoteness structure (DHAC & GISCA 1999; ABS 2001b).

Remoteness in this report has been defined using the ASGC Remoteness structure (Figure 2.2) recently released by ABS, rather than the previous RRMA or the DoHA ARIA classification (Table 2.2). This decision was made after consultation with the Rural Health Information Advisory Committee (RHIAC), DoHA and ABS.

The advantages of the ASGC Remoteness structure over the other classifications are that:

- having been developed by ABS, it is likely to be adopted in a wide range of disciplines. Consequently it is likely to be of use to a greater number of users and compatible with other future analyses; and
- it is similar to the DoHA ARIA classification, but classifies only 66% (rather than 81%) of the Australian population in its least remote category.

The disadvantages are that :

- a significant amount of development work was required to develop population data for the total and Indigenous populations, and to adapt and develop appropriate concordances that allow allocation of individual deaths to one of the five specific remoteness categories;
- previous work describing rural and remote area health has used RRMA or DoHA ARIA. Use of ASGC Remoteness in this work precludes incorporation of previous findings in this report; and
- health data can currently be reported by Statistical Local Area or by postcode. ASGC Remoteness category is allocated on the basis of the smaller Census Collection District; consequently, different parts of an SLA may be classified as being in more than one remoteness category. This makes analysis more difficult and cumbersome.

Table 2.2: Remoteness classifications, 1996 population estimates

RRMA			DoHA ARIA			ASGC Remoteness		
Category	Population ('000,000)	%	Category	Population ('000,000)	%	Category	Population ('000,000)	%
Capital Cities	11.6	64	Highly Accessible	14.9	81	Major Cities	12.1	66
Other Metropolitan centres	1.4	8						
Large Rural centres	1.1	6	Accessible	2.2	12	Inner Regional	3.8	21
Small Rural centres	1.2	7				Outer Regional	2.0	11
Other Rural areas	2.4	13	Moderately Accessible	0.8	4			
Remote centres	0.2	1	Remote	0.2	1	Remote	0.3	2
Other Remote areas	0.3	2	Very Remote	0.2	1	Very Remote	0.2	1
						Migratory	<0.1	

Notes

1. This table is a rough guide only, the various classes in each classification are not equivalent.
2. Data pertains to the 1996 ABS Census.

Source: AIHW Population Estimates.

Remoteness area in this report was allocated on the basis of the postcode of the residential address of the deceased on the death certificate. As the boundaries of remoteness areas and postcodes do not match exactly, deaths from postcodes straddling the boundaries of remoteness areas were allocated proportionally to remoteness categories on the basis of population concordances.

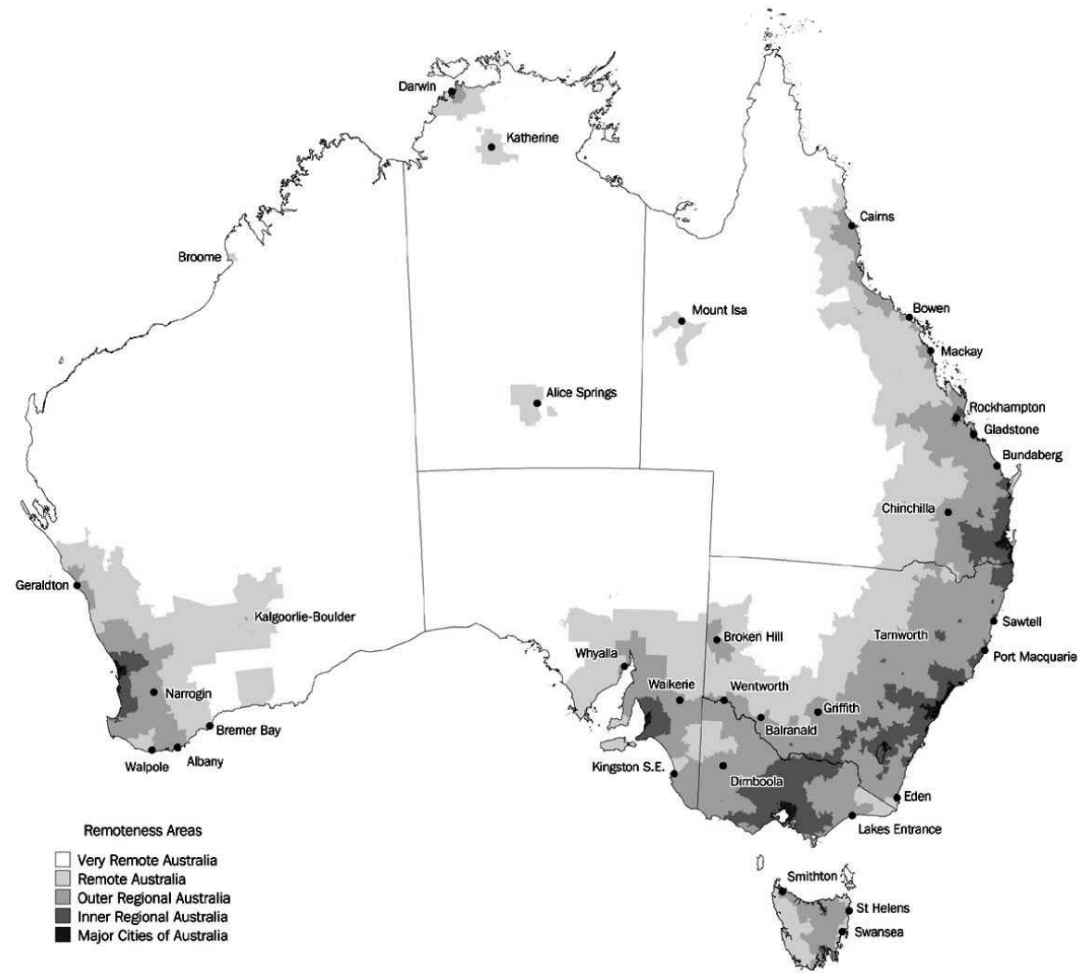
In figures and tables throughout this report, Major Cities, Inner Regional, Outer Regional, Remote and Very Remote categories have been abbreviated as MC, IR, OR, R and VR.

For more information on the various remoteness classifications please refer to the AIHW publication *Rural, Regional and Remote Health: A Guide to Remoteness Classifications based on 2001 Statistical Local Area Boundaries* (AIHW 2003b).

2.6 Cause of deaths

Unless otherwise stated, the cause of death reported is the underlying cause of death. Causes of death were classified using ICD-10, and the ICD-10 categories used to present the data are defined in Appendix D.

For deaths described as due to injury or poisoning, the cause reported is the external cause (such as suicide or motor vehicle accident), rather than the nature of the injury, although the term 'injury' has been often used.



Source: ABS.

Figure 2.2: Remoteness areas of Australia

2.7 Notes on data presentation

1. Percentages or numbers in tables may not add to 100 or the total due to rounding.
2. ICD codes for the described causes of death are listed in Appendix D.
3. All standardisation of death rates has been indirect using Major Cities rates for males and females for the period 1997–1999, or Major Cities rates for non-Indigenous males and females for the period 1997–1999. The former have been used to standardise rates for the total (Indigenous plus non-Indigenous) population, while the latter have been used to standardise rates for Indigenous and non-Indigenous populations separately.
4. In this report, names of specific areas defined by the Australian Standard Geographical Classification have been capitalised (for example, Inner Regional, Remote, Very Remote). Where reference has been made to generic ‘regional’ or ‘remote’ areas, the terms have been left un-capitalised (for example, regional, remote).
5. ‘Excess’ deaths are calculated by subtracting the expected number of deaths from the number observed. Expected deaths are the number of deaths expected annually if death rates found in Major Cities are applied to the populations living in each of the other areas. ‘Excess’ deaths provide an indication of the extra burden of mortality in each area.
6. Where there were fewer deaths than expected, this report states either (for example) 5 fewer deaths than expected annually, or -5 ‘excess’ deaths annually; both expressions mean the same thing.
7. All statements about rates of death in this report are based on the ratio of observed to expected deaths. If there are twice as many deaths as expected, then the rate of death can be assumed to be twice that of the comparison population.
8. Where rates are statistically significantly different from one another, they are referred to in the text as significantly different; if rates are not statistically significantly different they are not said to be significantly different. Statistical significance is at the 95% level.
9. In order to reduce tediousness in the text, where reference is made to ‘Major Cities, Inner Regional, Outer Regional, Remote and Very Remote areas’, the term ‘the five areas’ has been used. Where there is reference to ‘Inner Regional, Outer Regional, Remote and Very Remote areas’, the term ‘the four areas outside Major Cities’ has been used.
10. Graphs are presented as bar charts with error bars (for example, Figure 3.1). These error bars indicate the values of the lower and upper 95% confidence levels. We can be 95% sure that, if the underlying rates remained the same and we calculated the death rate in the preceding year or the next year, the calculated rate would lie somewhere between the two presented error bars. In the graph, the top of the column (between the two error bars) indicates our best point estimate with the available data. There is one chance in twenty that the true value lies outside the error bars. Error bars do not provide any indication of the level of uncertainty due to bias in the data (for example, potential bias as a result of different accuracy in the identification of Indigenous deaths in each area). Columns representing estimates of SMRs for non-Indigenous people from Remote and Very Remote areas have a dashed outline, indicating uncertainty about identification issues discussed on pages 21 and 22.
11. Statistically significant figures are indicated in tables as bold and with an asterisk.

3 All cause mortality

There is a common perception that health decreases and mortality increases with increasing remoteness; in other words, that people who live in more remote locations have poorer health and higher death rates. However, this view may be an over-simplification of the true situation. A number of factors, such as the effect of Indigenous health, differences in the socioeconomic status of remote area and metropolitan residents, different age structures, access to health services and the rural environment may all have an effect on health in general and on mortality in particular.

The primary data source used for this work is the AIHW National Mortality Database.

This section describes death rates for the total (Indigenous plus non-Indigenous) population, the Indigenous and non-Indigenous populations, and the Indigenous and non-Indigenous populations younger than 65 years of age. As previously discussed on page 21, there are concerns that comparisons of Indigenous mortality across the different levels of remoteness may lead to invalid conclusions, and consequently details for Indigenous populations have not been described by remoteness.

Death rates of the population who are younger than 65 years have been reported. It is possible that death rates for people 65 years and older may be substantially lowered by the migration to less remote areas of people requiring access to health facilities (that is, people in poorer health leaving remote areas, the healthier older people remaining). It should be stressed that, while it is clear that death rates for older people in remote areas are lower than for people in other areas, pending further work, it is unclear why this is so.

Summary of findings

This report shows that death rates are about 10% (1.1 times) higher in Inner and Outer Regional and Remote areas than in Major Cities, but 50% (1.5 times) higher in Very Remote areas (Table 3.1).

The death rate for Indigenous people is 3 times the rate for non-Indigenous people. There is a substantial difference in remote areas between the death rate for the total population and that for the non-Indigenous population. It is likely that the large proportion of the remote area population who are Indigenous, coupled with high overall Indigenous death rates, are the main causes of the higher overall death rate in these areas. In regional areas, these high Indigenous death rates would be less likely to influence the overall death rate for the total population because the proportion of the population who are Indigenous is relatively small.

Rates of death for Indigenous people are substantially higher than for non-Indigenous people, and indicate much greater inequity for Indigenous people compared to non-Indigenous people, than for non-Indigenous people who live outside Major Cities compared to non-Indigenous people who live inside Major Cities.

Concerns about likely differences in the accuracy of identification of Indigenous deaths in Major Cities, regional and remote areas, have prevented reporting of regional differences in Indigenous mortality. A sensitivity analysis (page 22) has shown that these problems are likely to have a substantially smaller effect on the reporting of inter-regional differences for non-Indigenous people.

For non-Indigenous people, death rates are about 10% higher in Inner and Outer Regional areas and not significantly different in remote areas from those in Major Cities. These overall death rates in remote areas are strongly affected by relatively low death rates amongst the elderly in these areas, rates that are at odds with the relatively high death rates in younger age groups in these areas. For those younger than 65 years of age however, rates for non-Indigenous males are over 10% higher in Inner Regional areas and around 20% higher in other areas; rates for non-Indigenous females are almost 10% higher in regional areas, but not significantly higher in remote areas.

Table 3.1: The ratio of observed deaths to those expected if Major Cities^(a) rates applied to the relevant population in each of the four ASGC Remoteness areas outside Major Cities, 1997–1999

	Male ratio				Female ratio			
	IR	OR	R	VR	IR	OR	R	VR
Total population	*1.07	*1.11	*1.17	*1.49	*1.04	*1.07	*1.09	*1.51
Non-Indigenous population	*1.07	*1.10	*1.07	1.00	*1.03	*1.06	0.98	*0.87
Non-Indigenous population aged 0–64 years	*1.12	*1.17	*1.17	*1.22	*1.09	*1.09	1.06	1.16

* Significantly different from 1 (that is, rates are significantly different from those for people in Major Cities).

(a) While the number of expected deaths for the total population is based on the death rates of the total population from Major Cities, the expected number of deaths for the non-Indigenous population is based on the death rates of the non-Indigenous population from Major Cities. Because non-Indigenous people comprise the overwhelming majority (99%) of the population in Major Cities, these two standards are very similar, but not identical. This means that the ratios for the three population groups are not strictly comparable.

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes.

Source: AIHW National Mortality Database.

It is possible that the movement of older people in poor health to areas where they can better access health care results in a concentration of the healthier individuals from amongst the elderly in these areas (who consequently have lower death rates).

One-third (34%) of the population live outside Major Cities, while 36% of deaths are of people who reside outside Major Cities: of these, nearly all (94%) occur in regional areas (where the population is), the rest in remote areas (Table 3.2). Of the 3,303 ‘excess’ deaths that occur annually outside Major Cities, 83% occur in regional areas, and 17% in remote areas. On average, these deaths are of younger people than in Major Cities.

Because the five areas differ so much in the size of their populations, both rates of death and numbers of deaths are compared. This shows that rates of death are generally higher in regional and remote areas, but the numbers of people affected are smaller in remote areas than in either regional areas or Major Cities (Tables 3.1 and 3.2).

Table 3.2: Annual numbers of deaths and 'excess' deaths, 1997–1999

Annual	MC	IR	OR	R	VR	Total
Deaths	82,321	28,836	14,201	1,830	1,000	128,188
'Excess' deaths	0	1,524	1,233	214	333	3,303
% of deaths that are non-Indigenous	100 ^(a)	99	97	85	45	99

(a) Less than 0.5% of Major Cities deaths are Indigenous (that is, more than 99.5% are non-Indigenous).

Note: 'Excess' deaths are based on comparison of the number of observed deaths with the number expected if age-specific rates for people from Major Cities were to apply in each area.

Source: AIHW National Mortality Database.

In South Australia, Western Australia, the Northern Territory and Queensland alone there were 1,459 deaths of Indigenous people on average each year; this is 993 more deaths of Indigenous people than there would have been if their death rates had been the same as those for non-Indigenous people from Major Cities.

In comparison, there were 2,414 more deaths of non-Indigenous people from rural, regional and remote areas than expected if these same (Major Cities non-Indigenous) death rates had applied. Of these, 57%, 42% and 2% were in Inner and Outer Regional and Remote areas, respectively, but there were 23 fewer deaths than expected annually in Very Remote areas.

There is substantial variation, within broad areas, of the death rates in individual communities, particularly in Very Remote areas where the average death rate was substantially elevated by a relatively small number of Statistical Local Areas with very high death rates. This is true to a lesser extent in Remote areas, but not for the other areas, where death rates were more likely to cluster around an average value (page 46).

Death rates decreased in all areas over the period 1992–1999, particularly in Very Remote areas. In Very Remote areas, death rates decreased annually by 9% for males and 10% for females, while in all other areas rates decreased annually by about 3–3.5% for males and 2–3% for females.

These decreases have been driven primarily by decreases in death rates due to circulatory diseases (65–80% of the decrease was due to decreases in circulatory diseases death rates), but in Very Remote areas circulatory diseases explained only 45% of the decrease. Injury death rates changed very little over the period, and in fact tended to rise slightly in most areas. Decreases in cancer death rates contributed to 15% of the overall decrease in most areas. The contribution of decreases in rates of respiratory related death to the overall decrease varied from just under 10% in Major Cities to 25% in Very Remote areas. Changes in the rate of death due to 'other causes' contributed little in most areas, but 13% in Very Remote areas.

The main specific causes of higher death rates outside Major Cities are listed in Table 1: ischaemic heart disease and 'other circulatory diseases', chronic obstructive pulmonary disease, motor vehicle accidents, diabetes, suicide, 'other injuries', and prostate, colorectal and lung cancer. Many of these causes are largely preventable.

It is known that death rates are linked to socioeconomic status (that is, to income and educational level), itself associated with the prevalence of risk factors such as smoking and overweight (AIHW 2002b). The high death rates for Indigenous people are likely to be a reflection of lower socioeconomic status, higher levels of risk behaviour (for example, smoking), poorer housing and the social environment, including levels of control over their

own lives (ABS 2001c). Socioeconomic issues are likely to influence inter-regional comparisons of mortality for non-Indigenous people as well.

Analyses in this report have not taken socioeconomic issues into account.

Broad causes of death

The four broad groupings of causes of death described in this report – circulatory and respiratory diseases, neoplasms and injury – are responsible for 41%, 8%, 28% and 6% of all deaths nationally (Table 3.3). However, in areas outside Major Cities, these broad causes were responsible for 42%, 10%, 11% and 24% of the ‘excess’ deaths respectively that occurred as a result of higher death rates outside Major Cities. Thus circulatory disease is the major cause of death and the major contributor to ‘excess’ deaths, while injury, although less important nationally, is responsible for a large proportion of the ‘excess’ deaths outside Major Cities. As mentioned previously, mortality due to circulatory disease (which contributes largely to ‘excess’ mortality of older people) decreased over the period 1992–1999, while injury death rates (which contribute the bulk of the excess mortality in those younger than 45 years) remained unchanged or increased slightly over the same period.

Table 3.3: Summary table of deaths due to broad cause for all persons, 1997–1999

Broad cause	Annual deaths outside Major Cities			Annual ‘excess’ deaths outside Major Cities			Age groups in which the ‘excess’ occurs
	No.	%	% male	No.	%	% male	
Circulatory diseases	18,639	41%	51%	1,378	42%	60%	45–59: 20% 60+: 74%
Neoplasms	12,549	27%	59%	373	11%	>100%	50–70: 80%
Respiratory diseases	3,591	8%	59%	330	10%	84%	30–55: 15% 55–65: 20% 65–80: 60%
Injury	3,213	7%	71%	788	24%	76%	15–49: 70%
‘Other’ causes	7,874	17%	49%	434	13%	17%	0–4: 14% 55+: 80%
All causes	45,867	100%	55%	3,303	100%	65%	25–44: 12% 45–64: 32% 65+: 46%

Note: Descriptions of the age groups within which the ‘excess’ occurs apply only to the total population.

Source: AIHW National Mortality Database.

Table 3.4: The ratio of observed deaths to those expected if Major Cities^(a) rates applied in each ASGC Remoteness area, 1997–1999

Broad cause	Population	IR	OR	R ^(b)	VR ^(b)	National ^(c)
Circulatory diseases	All persons	*1.1	*1.1	*1.1	*1.3	n.p.
	Non-Indigenous	*1.1	*1.1	1.0	*0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.2	*1.2	*1.3	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.2
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*8.6
Neoplasms	All persons	*1.0+	*1.0+	1.0	1.0	n.p.
	Non-Indigenous	*1.0+	*1.0+	1.0	*0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.1	1.0	1.0	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*1.5
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*1.9
Respiratory diseases	All persons	*1.0+	*1.2	*1.3	*1.9	n.p.
	Non-Indigenous	*1.0+	*1.1	*1.1	1.1	n.p.
	Non-Indigenous 0–64	*1.2	*1.4	*1.5	*1.9	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*4.4
	Indigenous 0–64	n.p.	n.p.	n.p.	n.p.	*10.7
Injury	All persons	*1.2	*1.4	*1.7	*2.4	n.p.
	Non-Indigenous	*1.2	*1.3	*1.5	*1.5	n.p.
	Non-Indigenous (aged 0–64 years)	*1.3	*1.4	*1.5	*1.7	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.5
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*3.7
'Other' causes	All persons	1.0	*1.1	*1.2	*2.0	n.p.
	Non-Indigenous	1.0	*1.1	0.9	*0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*1.0–	1.0	0.9	0.9	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*4.4
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*5.2
All causes	All persons	*1.1	*1.1	*1.1	*1.5	n.p.
	Non-Indigenous	*1.1	*1.1	*1.0+	1.0	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.1	*1.1	*1.2	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.1
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*4.5

(a) While the number of expected deaths for the total population is based on the death rates of the total population from Major Cities, the expected number of deaths for the non-Indigenous population is based on the death rates of the non-Indigenous population from Major Cities. Because non-Indigenous people comprise the overwhelming majority (99%) of the population in Major Cities, these two standards are very similar, but not identical. This means that the ratios for the five population groups are not strictly comparable.

(b) Ratios calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

(c) The ratios for Indigenous persons are for SA, WA, NT and Qld combined. Data for the total and non-Indigenous populations for this (SA, WA, NT and Qld) area add little relevant information and have not been published (n.p.). Because of concerns about the quality of the data, ratios for Indigenous people have not been published (n.p.) for each area.

Notes

1. Ratios that are significantly different to 1.0 are bold and with an asterisk.
2. 1.0+ indicates that there were slightly (but significantly) more deaths than expected (but less than 1.05 times more).
3. 1.0– indicates that there were slightly (but significantly) fewer deaths than expected (but more than 0.95 times as many).

Source: AIHW National Mortality Database.

For almost all broad causes of death, males contributed more than half of the deaths and two-thirds or more of the 'excess' deaths (in fact three-quarters of the 'excess' injury deaths and about 85% and 100% of the respiratory and neoplasms 'excess' deaths respectively). However, only 17% of 'excess' deaths due to 'other' causes were male.

For circulatory disease, respiratory disease and injury, death rates were higher outside Major Cities and were progressively higher with increasing remoteness, both for the total population and for the non-Indigenous population younger than 65 years (Table 3.4).

- In regional areas, death rates were 1.1, 1.0-1.2 and 1.2-1.4 times those in Major Cities, while for non-Indigenous people younger than 65 years, rates were 1.1-1.2, 1.2-1.4 and 1.3-1.4 times those in Major Cities for these three broad causes respectively.
- In remote areas, death rates were 1.1-1.3, 1.3-1.9 and 1.7-2.4 times those in Major Cities, while for non-Indigenous people younger than 65 years, rates were 1.2-1.3, 1.5-1.9 and 1.5-1.7 times those in Major Cities for these three broad causes respectively.

For neoplasms, death rates were 5% (1.05 times) higher for males and similar for females in regional areas than in Major Cities. In remote areas, rates were similar to those in Major Cities. For non-Indigenous people younger than 65 years, the pattern was similar, with 1.1 times as many deaths as expected in regional areas, and about as many as expected in remote areas.

Death rates due to 'other' causes were 1.0-1.1 times as high in regional areas as in Major Cities, and in remote areas were 1.2-2.0 times as high. For non-Indigenous people younger than 65 years, death rates were slightly lower for males and not significantly different for females in regional areas, and similar or lower in remote areas than in Major Cities.

In remote areas, there were substantially fewer deaths of elderly non-Indigenous people due to circulatory diseases, neoplasms and 'other' causes than expected, possibly as a result of migration of the frail aged to areas where services are more accessible.

While it is not possible at a national level to describe how death rates for Indigenous people vary with different levels of remoteness, it is clear that death rates for Indigenous people overall are much higher than for non-Indigenous people irrespective of the area in which the latter live. For Indigenous people there were 3.2, 1.5, 4.4, 3.5 and 4.4 times as many deaths due to circulatory diseases, neoplasms, respiratory diseases, injury and 'other' causes than expected if rates for non-Indigenous people from Major Cities applied to the Indigenous population. Because of the relatively large numbers of Indigenous people in remote areas, these high rates of death for Indigenous people overall appear to have a marked effect in raising death rates in these remote areas.

Specific causes of death primarily responsible for the higher death rates outside Major Cities are described in Table 1.

3.1 Overview

Between 1997 and 1999, an annual average of 128,188 Australians died, comprising 67,332 males and 60,856 females (Table 3.5). Most of these (82,321) occurred in Major Cities, with a further 43,037 in Inner and Outer Regional areas, and the remaining 2,830 in Remote and Very Remote areas.

There were 1,524, 1,233, 214 and 333 (a total of 3,303) more deaths than expected each year in the Inner and Outer Regional, Remote and Very Remote areas respectively. Between 60% and 75% of the 'excess' were deaths of males.

Table 3.5: Average annual deaths, 1997–1999

	MC	IR	OR	R	VR	Total
Males (no.)	42,161	15,531	7,916	1,103	621	67,332
Females (no.)	40,160	13,305	6,285	727	379	60,856
Persons (no.)	82,321	28,836	14,201	1,830	1,000	128,188
Non-Indigenous males ^(a) (proportion)	99	99	97	85	48	98
Non-Indigenous females ^(a) (proportion)	100	99	97	84	40	99
Non-Indigenous persons^(a) (proportion)	100	99	97	85	45	99
Non-Indigenous males (0–64 yrs) (no.)	11,105	3,867	2,149	344	136	17,601
Non-Indigenous females (0–64 yrs) (no.)	6,220	2,125	1,051	144	49	9,589
Non-Indigenous persons (0–64 yrs) (no.)	17,325	5,992	3,200	488	185	27,190
Indigenous persons^(b) (no.)	n.p.	n.p.	n.p.	n.p.	n.p.	1,459

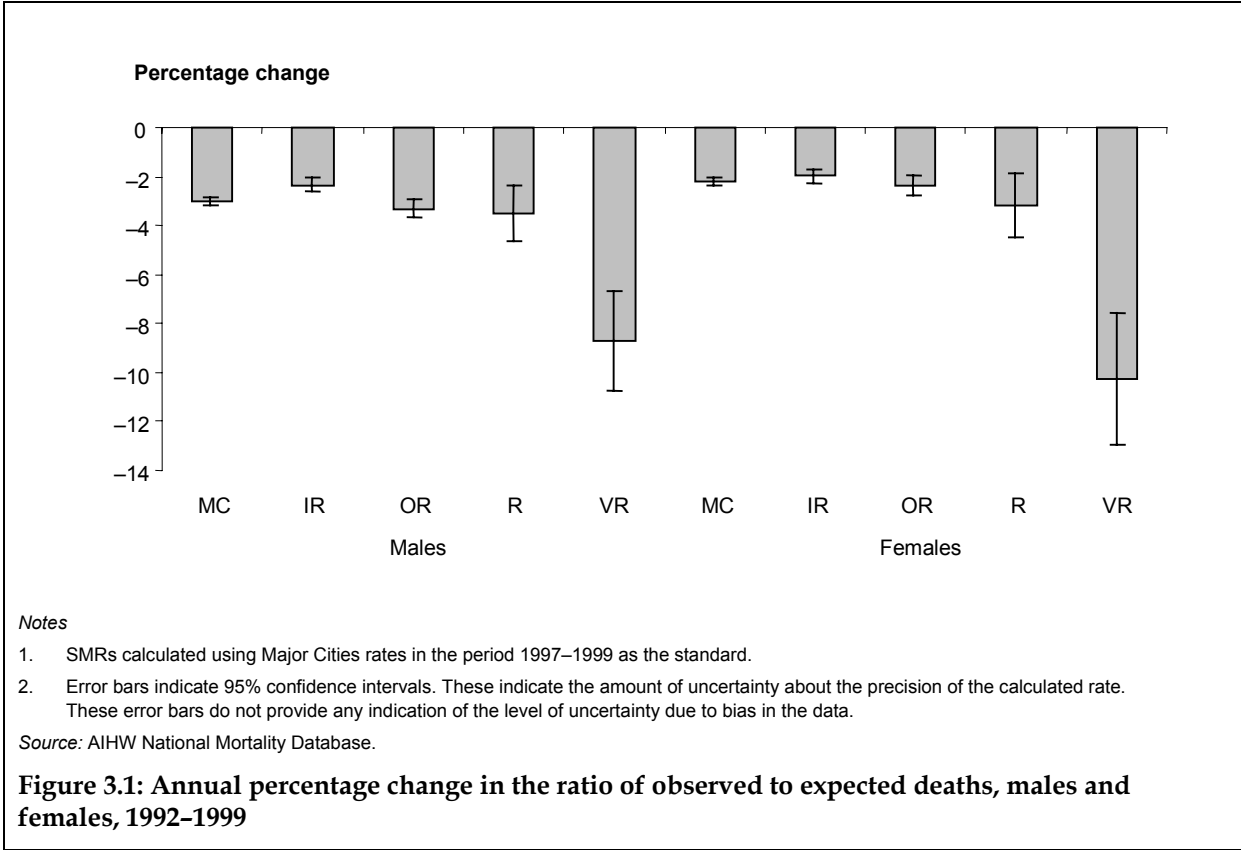
(a) Percentages and counts of deaths are rounded to the nearest whole number.

(b) The number of Indigenous deaths is the average annual number registered in SA, WA, NT and Qld in the period 1997–1999. An average of a further 458 were registered annually in the other jurisdictions. Counts of deaths have not been reported for Indigenous people by area because of concerns about data accuracy.

Source: AIHW National Mortality Database.

3.2 Trends in mortality

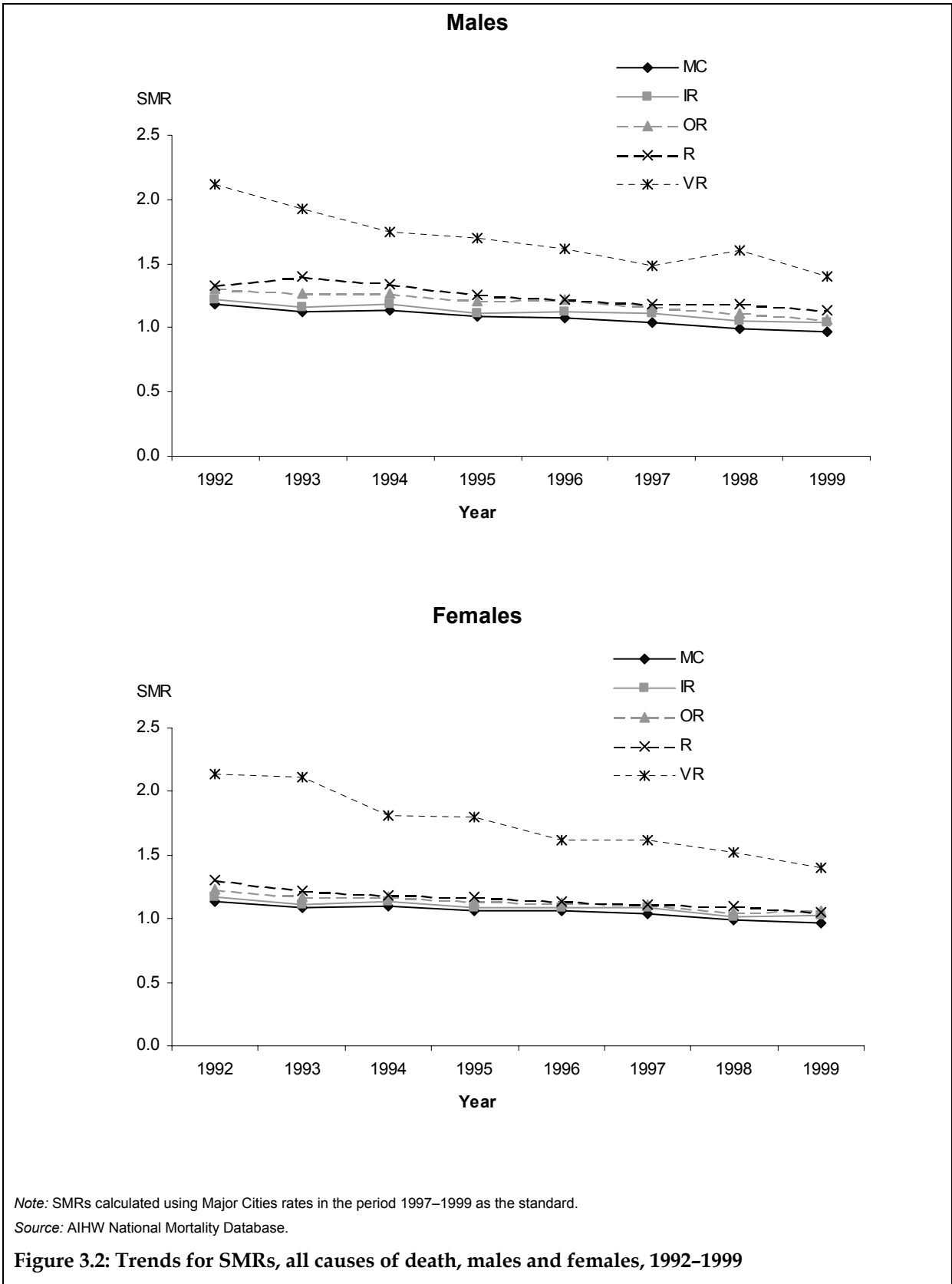
Because of the lack of access to reliable Indigenous population estimates on a yearly basis for 1992–1999, trends for death rates have been calculated for the total population only.



Death rates for both males and females decreased over time in all areas over the period 1992–1999 (Figures 3.1 and 3.2).

Rates of decrease for males in Major Cities, Outer Regional and Remote areas were between 3% and 3.5% per annum (that is, the ratio of observed to expected deaths decreased by 3–3.5% each year). Death rates for males in Inner Regional areas decreased at a lower rate than in Major Cities and Outer Regional areas (by 2.3% per annum). In Very Remote areas, rates decreased for males at almost 9% per annum, significantly faster than in any other area.

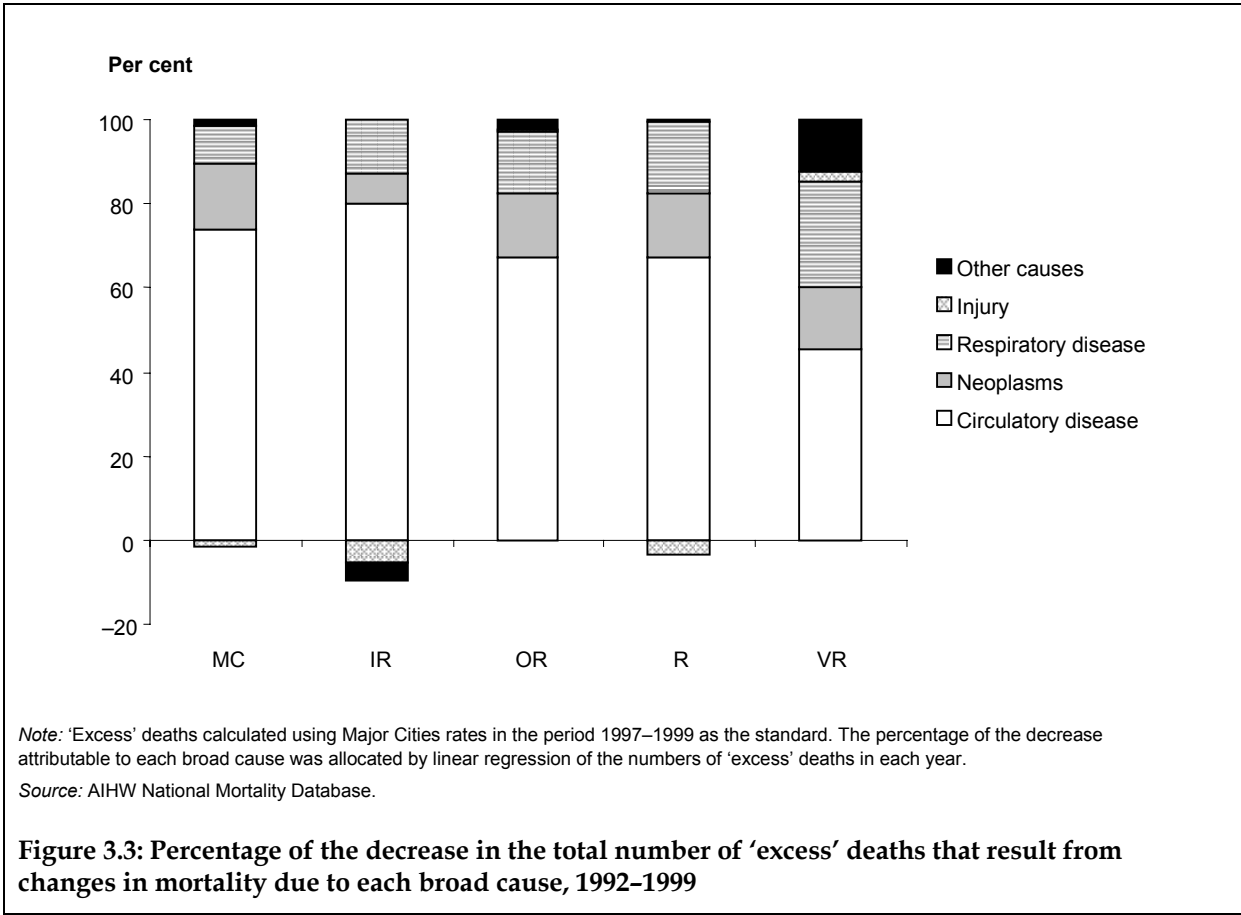
Rates of decrease for females in Major Cities, Inner and Outer Regional and Remote areas were similar at between 2% and 3% per annum, although in the less remote areas they tended towards 2%. In Very Remote areas, rates decreased for females at about 10% per annum, significantly faster than in any other area (as for males).



Trends in broad causes

Circulatory diseases contributed most to the reduction in the number of 'excess' deaths. In Major Cities and Inner Regional areas, reductions in mortality due to circulatory diseases were responsible for 74% and 80% of the overall reduction in 'excess' deaths (Figure 3.3 and Table 3.6). In Outer Regional and Remote areas, this figure was 67%. In Very Remote areas, where the overall decrease in the rate of death was greatest, the contribution of the other causes of death to reductions in the 'excess' were greater, leaving circulatory disease responsible for only 45% of the overall reduction.

About 15% of the reductions in the number of 'excess' deaths were due to decreases in neoplasm death rates, except in Inner Regional areas where neoplasms contributed 7% to the decrease in the overall 'excess'.



The contribution of changes in respiratory disease death rates to the reduction in the overall number of 'excess' deaths was greater in more remote areas. Decreases in death rates due to respiratory diseases were responsible for 9%, 13%, 15%, 17% and 25% of the reduction in the overall number of 'excess' deaths in the five areas respectively.

In most areas, death rates as a result of injury increased slightly. In Major Cities, Inner Regional and Remote areas, injury was responsible for a slowing of the overall decrease in death rate. If there had been no overall change in injury death rates in these areas, the number of 'excess' deaths in these areas would have decreased by a further 1%, 5% and 4% respectively. In Outer Regional areas, injury did not contribute to the reduction in the

number of 'excess' deaths, while in Very Remote areas, a reduction in injury mortality was responsible for 2% of the reduction in the overall number of 'excess' deaths.

Table 3.6: Percentage of the decrease in the total number of 'excess' deaths that result from changes in mortality of each broad cause, 1992-1999

Broad cause of death	MC	IR	OR	R	VR
	(per cent)				
Circulatory disease	74	80	67	67	45
Neoplasms	16	7	15	15	15
Respiratory disease	9	13	15	17	25
Injury	-1	-5	0	-4	2
Other causes	1	-4	2	1	13

Note: 'Excess' deaths calculated using Major Cities rates in the period 1997-1999 as the standard. The percentage of the decrease attributable to each broad cause was allocated by linear regression of the numbers of 'excess' deaths in each year. Negative numbers indicate increases in the number of excess deaths over time, due to that cause.

Source: AIHW National Mortality Database.

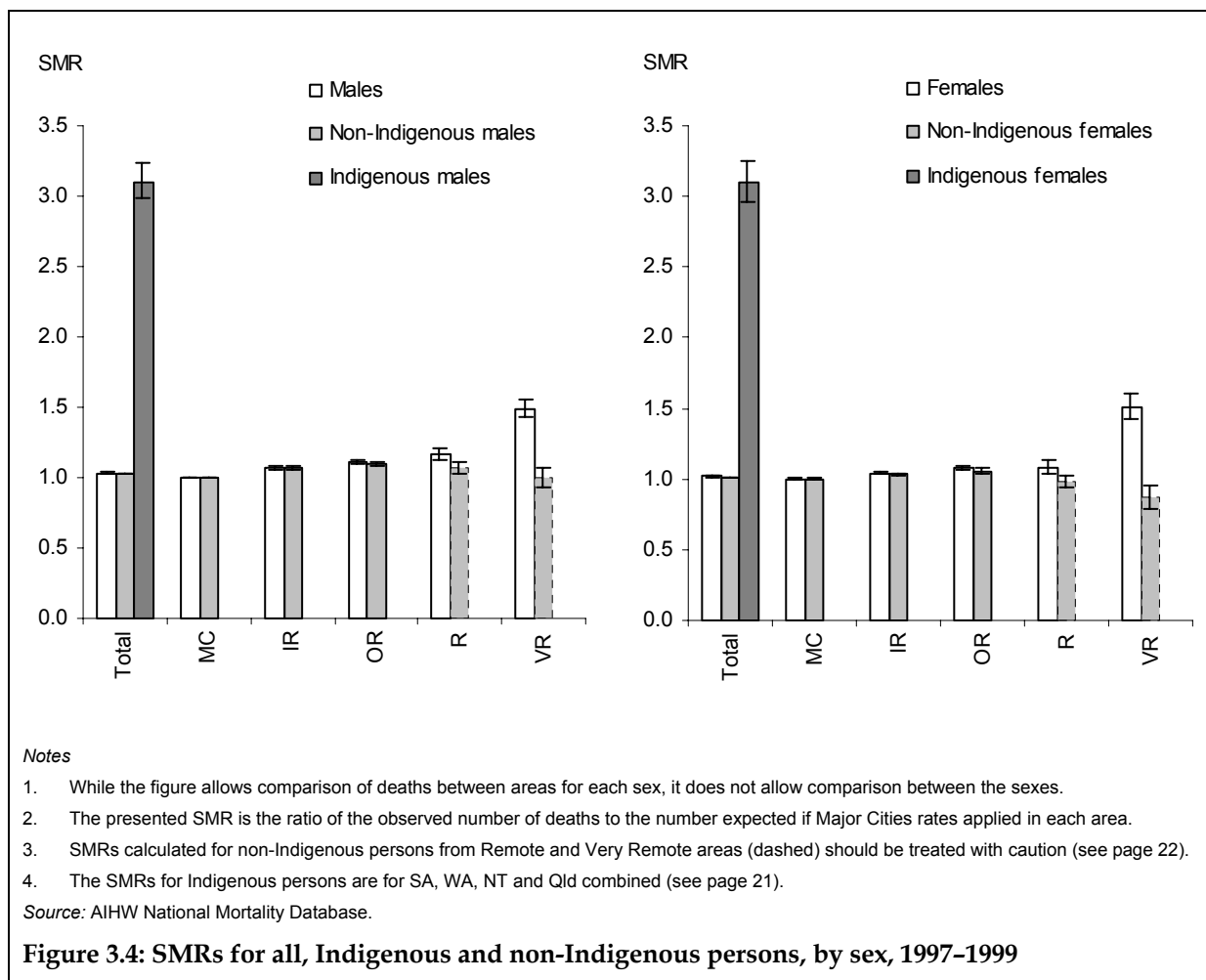
3.3 Death rates

Mortality was higher for people living outside Major Cities.

The death rate for males and females increased with increasing remoteness. Figure 3.4 and Table 3.8 show that for males living outside Major Cities, there were 1.1, 1.1, 1.2 and 1.5 times as many deaths as expected in Inner Regional, Outer Regional, Remote and Very Remote areas than in Major Cities. For females, there were 1.05, 1.05, 1.1 and 1.5 times as many deaths in these areas as expected respectively. Death rates for both sexes were significantly higher in each successive remoteness zone. Age-specific death rates tended to be higher for males than for females: in Major Cities, rates for males were 1.2-1.3, 2.2-2.6 and 1.7-1.8 times the rate for females in the 0-4 and 75+, 15-44 and 45-74 years age groups respectively.

Mortality for Indigenous people overall was substantially higher than for the 'total' population and for non-Indigenous people from any of the five areas. While it is not possible to compare rates of death for Indigenous people from each of the five areas, it is possible that in the more remote areas where they constitute a large proportion of the population, overall high rates of mortality for Indigenous people influence the higher death rates.

These figures would appear, on the surface, to show that all-cause mortality increases with increasing remoteness. As stated, however, these rates are probably influenced by the number of Indigenous people living outside Major Cities and the high overall mortality of Indigenous people (about three times the non-Indigenous Major Cities mortality rate). Without examining the mortality of the Indigenous and non-Indigenous populations separately, therefore, it is premature to draw the conclusion that remoteness is a factor influencing the health of Australians.



Indigenous people

In 1997-1999, there were approximately three times (Table 3.9) as many deaths in the Indigenous population as expected (3.1 times more deaths for both Indigenous males and females). In the four jurisdictions for which data is considered to be more reliable, there was a total of 4,378 deaths (2,515 males and 1,863 females) registered in the three years 1997-1999. Of these, 30% were due to circulatory disease, 13% from neoplasms, 8% from respiratory disease, 16% from injury and 32% from other diseases.

The high death rates for Indigenous people are likely to be affected by lower socioeconomic status, higher levels of risk behaviour (for example, smoking), poorer housing, and the social environment, including levels of control over their own lives (AIHW 2002b).

Data from national surveys in 1994 and 1995 show that Indigenous people were more likely than non-Indigenous people to smoke, consume alcohol at hazardous levels, be exposed to violence, and be categorised as obese, all of which are significant health risk factors (ABS 2001c).

As discussed on page 21, uncertainty about the accuracy of identification of Indigenous deaths prevents reporting of Indigenous mortality in rural and remote areas.

Non-Indigenous people

Death rates for non-Indigenous people are higher in regional areas, but tend to be similar or lower in remote areas than for those in Major Cities; that is, although higher in regional areas, mortality does not continue to rise with increasing remoteness (Figure 3.4 and Table 3.9).

For non-Indigenous males, there were 1.1 times as many deaths as expected in Inner and Outer Regional and Remote areas. There were as many deaths as expected for males in Very Remote areas.

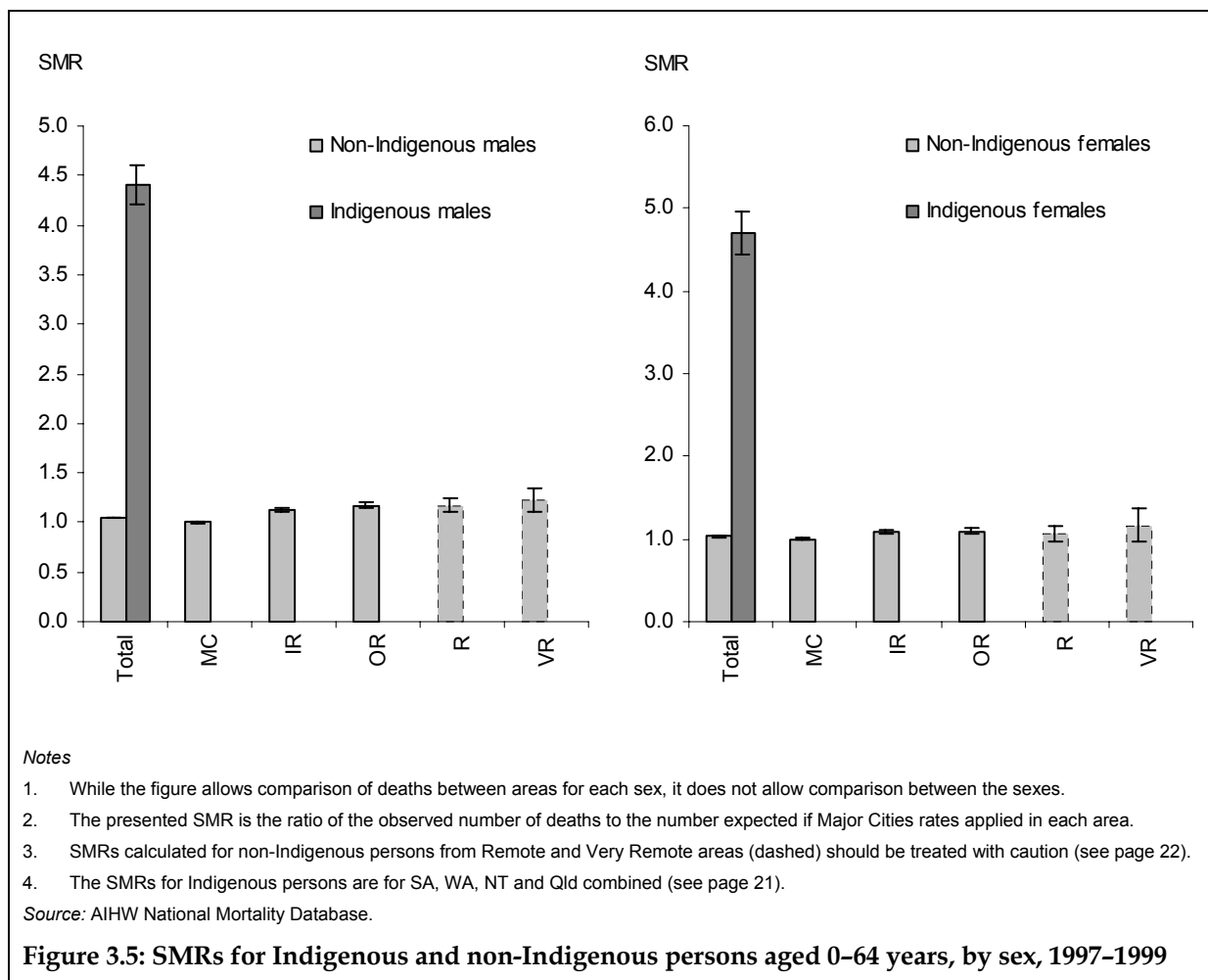
For non-Indigenous females, there were 1.05 times as many deaths as expected in Inner and Outer Regional areas, but 0.85 times as many deaths as expected (that is, fewer than expected) in Very Remote areas. There were about as many deaths of females as expected in Remote areas.

People aged 0–64 years

Death rates of older non-Indigenous people from Remote and Very Remote areas are found to be substantially lower than those of similar aged people living in other areas, possibly reflecting a movement of older people with known health conditions into more populated areas to receive treatment, and eventually dying there. These lower rates can substantially affect the summary statistic described for non-Indigenous people above. For this reason, rates for persons younger than 65 years are also presented in this report.

Death rates for Indigenous males and females younger than 65 years were 4.4 and 4.7 times those for non-Indigenous males and females of the same age from Major Cities.

Death rates for non-Indigenous males younger than 65 years in the four areas were 1.1, 1.2, 1.2 and 1.2 times those for similar non-Indigenous males in Major Cities. For non-Indigenous females in this age group, there were 1.1 times as many deaths in Inner and Outer Regional areas as expected, but in remote areas, although there were more deaths than expected, the number was not significantly higher (Figure 3.5 and Table 3.9).



3.4 Variation within areas

For the sake of simplicity in this report, average rates and SMRs have been used to describe mortality in each of the five areas (Major Cities, Inner Regional, Outer Regional, Remote and Very Remote) and to answer the question of whether mortality in regional and remote areas is higher than in Major Cities. However, there is, in fact, considerable variation between communities within each of these five areas. For example, mortality in some parts of Major Cities is high, while some Very Remote populations have low mortality.

So as to raise awareness of the differences within the five remoteness zones used in this report (the five areas), the number of observed and expected deaths in each Statistical Local Area (SLA) for the period 1993-1999 have been calculated and the results summarised in (Table 3.7 and Figure 3.6). The longer period (1993-1999) has been used because SLAs are small and estimates of the SMR had to be as robust as possible. Standard rates used were the age-specific death rates for males and females from Major Cities in the period 1993-1999.

In a number of cases, SLAs straddled the boundary between one remoteness area and another. In these cases, the SLA was allocated to the remoteness category in which most of its population fell or, if the population was fairly evenly shared by the two remoteness categories, then the category was randomly allocated. This process was necessary, but different to the method used for the other analyses in this report.

Table 3.7: Variation in the SMR in Statistical Local Areas (SLAs) within each ASGC Remoteness area, 1993–1999

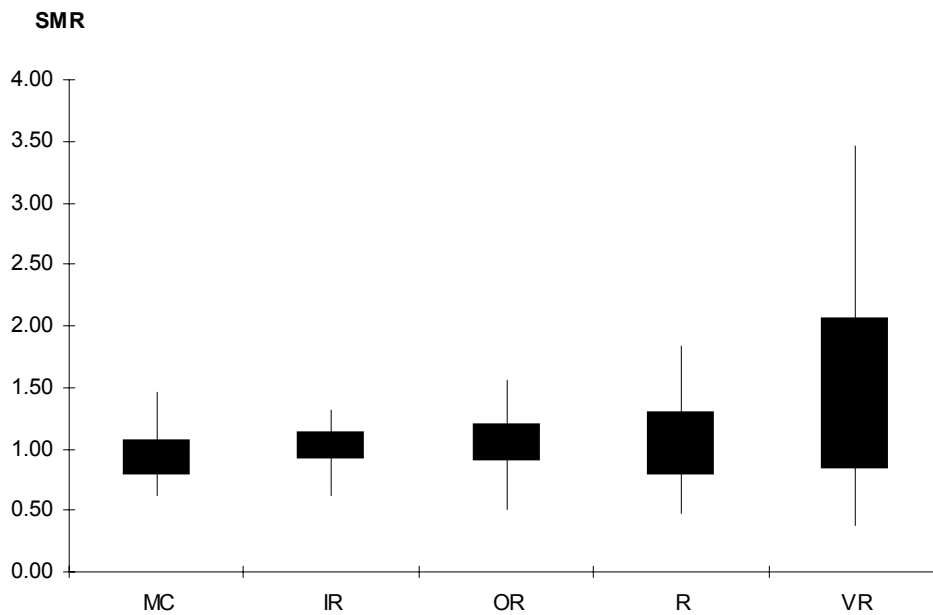
Quantile	MC	IR	OR	R	VR
	(SMR ^(a))				
95th percentile SMR	1.47	1.32	1.56	1.83	3.47
75th percentile SMR	1.07	1.14	1.20	1.30	2.06
Median SMR	0.91	1.03	1.05	0.96	1.16
25th percentile SMR	0.78	0.91	0.90	0.78	0.83
5th percentile SMR	0.61	0.61	0.51	0.47	0.38
Mean SMR	0.96	1.02	1.06	1.03	1.54
SMR for the area ^(b)	1.00	1.05	1.09	1.15	1.61
	(number)				
No. SLAs with SMR > 75th percentile ^{(c),(e)}	138	71	85	23	18
No. SLAs with SMR > 75th percentile of MCs ^{(d),(e)}	138	113	152	34	39
Total number of SLAs^(e)	572	274	333	91	74

- (a) SMRs (standardised mortality ratios) are calculated as the ratio of observed deaths in each SLA between 1993 and 1999 to the expected number in that period if age-specific Major Cities death rates for that period applied in each SLA.
- (b) The ratio of the number of observed deaths to the number expected if age-specific Major Cities death rates for that period applied in each Remoteness area. This is conceptually the same as that reported throughout the rest of this report.
- (c) The number of SLAs with an SMR greater than three-quarters of all those SLAs in that Remoteness area.
- (d) The number of SLAs with an SMR greater than three-quarters of all those SLAs in Major Cities.
- (e) The numbers in the last three rows should be treated cautiously and interpreted as indicative only (not actual counts). There have been many SLA boundary changes over the period of analysis and the number of SLAs varies from year to year. Many SLAs do not neatly fit into any one Remoteness category.

Source: AIHW National Mortality Database.

The results of this analysis of intra-regional variation should be interpreted with caution. There are a number of limitations with this analysis, including the difficulties of allocating SLAs to Remoteness categories and the fact that SLAs can have markedly different sized populations. However it is sound enough to draw the following conclusions:

- There is substantial variation in mortality within broad zones of remoteness, particularly in Very Remote areas. Although SLAs are not necessarily ‘communities’, there are likely to be substantial similarities in the environments experienced by people who live in the same SLA.
- The distribution is substantially skewed in Remote and particularly Very Remote areas, with a number of SLAs dragging the ‘average’ SMR upwards because of their very high levels of mortality.



Note: The five boxes represent the range of SMRs calculated for the middle 50% of SLAs in each Remoteness area. The line vertically above each box indicates the range between the 75th and 95th percentile of SMRs (that is, SLAs with the highest mortality in that Remoteness area). The line vertically below each box indicates the range between the 5th and the 25th percentile of SMRs (that is, SLAs with the lowest mortality in that Remoteness area).

Source: AIHW National Mortality Database.

Figure 3.6: Intra-zonal variation of death rates: 5th and 95th, 25th and 75th percentiles of the SMRs calculated for each Statistical Local Area within each ASGC Remoteness area, 1993–1999.

3.5 Variation by age group

Analysis of age-specific death rates gives more detailed information about each age group to confirm and supplement findings resulting from the broad analysis using SMRs alone.

Age-specific death rates are important in this analysis for two reasons:

- Summary measures, such as SMRs, can hide differences between areas, while age-specific rates have more power to expose particular differences.
- Age-specific rates provide better information for targeting interventions. Not only is it important to know which conditions are contributing most to mortality, but for which sex and at what age the differential between areas is greatest.

For both sexes, the death rate for each age group tended to be higher in more remote zones, although in older age groups, death rates in the two most remote zones tended to be substantially lower than in any of the other zones (Table 3.8 and Figures 3.7 and 3.8).

In regional areas:

- There were typically 1.1 or 1.2 times as many deaths in each age group as expected in Inner and Outer Regional areas.
- For males aged 15–24 years in the Inner and Outer Regional areas there were 1.3–1.4 times as many deaths as expected. For females of the same age there were 1.2 times as

many deaths as expected. For males and females who were 75 years or older, there were 1.03 to 1.05 times as many deaths as expected in these areas.

Table 3.8: The ratio of observed deaths to those expected if Major Cities rates applied in each area, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	132	*1.09	*1.29	*1.38	*2.59	110	1.01	1.05	*1.35	*2.94
5–14	15	1.10	1.17	*1.89	*3.68	11	1.06	*1.30	1.55	*4.28
15–24	90	*1.34	*1.45	*2.09	*2.66	35	*1.23	*1.21	*2.16	*2.67
25–44	142	*1.10	*1.20	*1.55	*2.61	66	*1.10	*1.14	*1.55	*3.14
45–64	519	*1.11	*1.22	*1.33	*2.15	312	*1.09	*1.19	*1.40	*2.65
65–74	2552	*1.06	*1.13	*1.19	*1.42	1413	1.02	*1.11	*1.26	*1.68
75+	8470	*1.05	*1.03	*0.93	*0.71	6734	*1.04	*1.04	*0.91	*0.80
Total	..	*1.07	*1.11	*1.17	*1.49	..	*1.04	*1.07	*1.09	*1.51

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

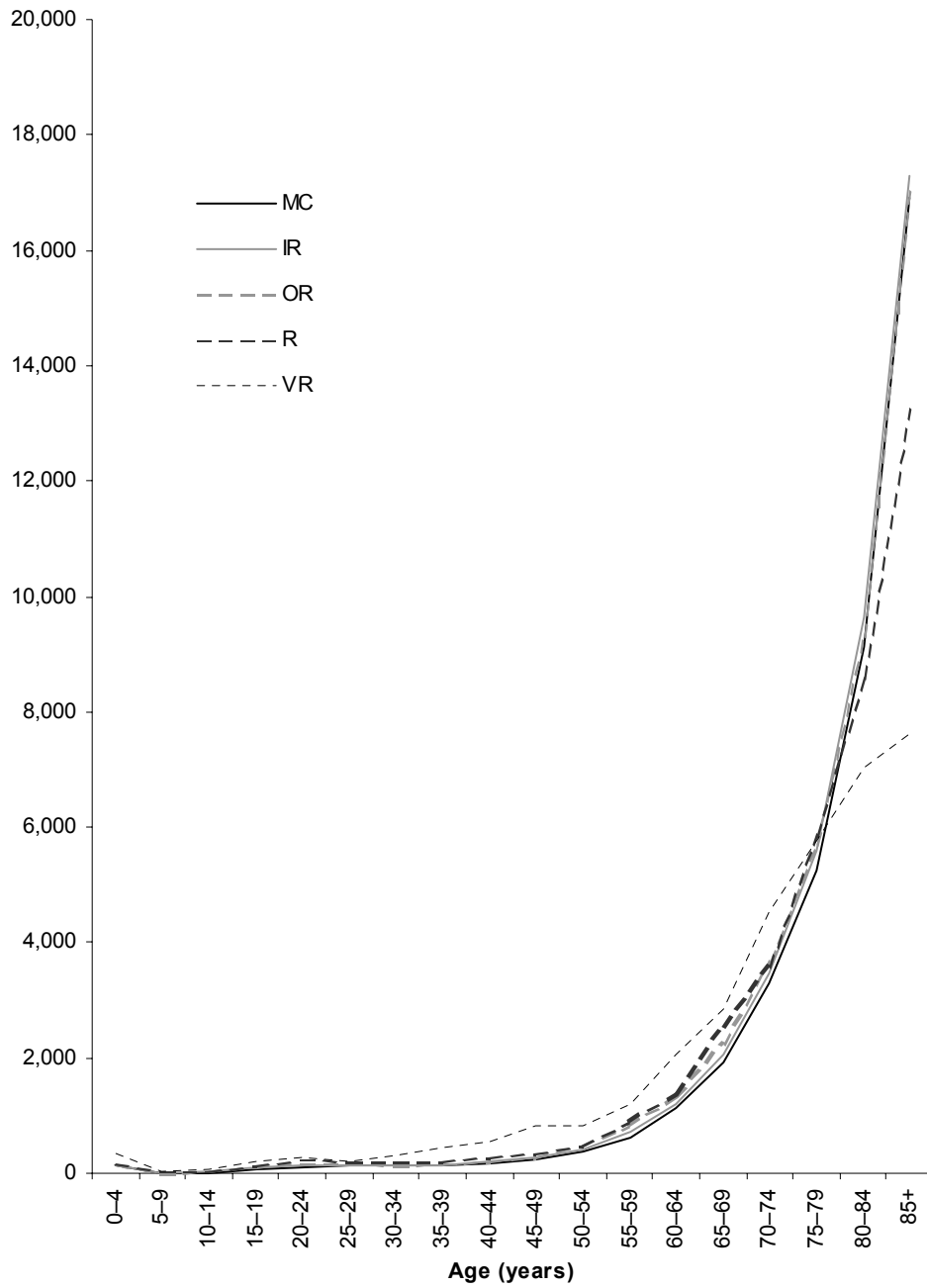
1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Remote and Very Remote areas:

- for those younger than 45 years there were (respectively) for males 1.4–2.1 and 2.6–3.7 times, and for females 1.4–2.2 times and 2.7–4.3 times, as many deaths as expected;
- for those 45–74 years there were respectively for males 1.2–1.3 and 1.4–2.2 times, and for females 1.3–1.4 and 1.7–2.7 times, as many deaths as expected; and
- for those 75 years and over, there were fewer deaths than expected (respectively 0.9 and 0.7 times for males and 0.9 and 0.8 times for females).

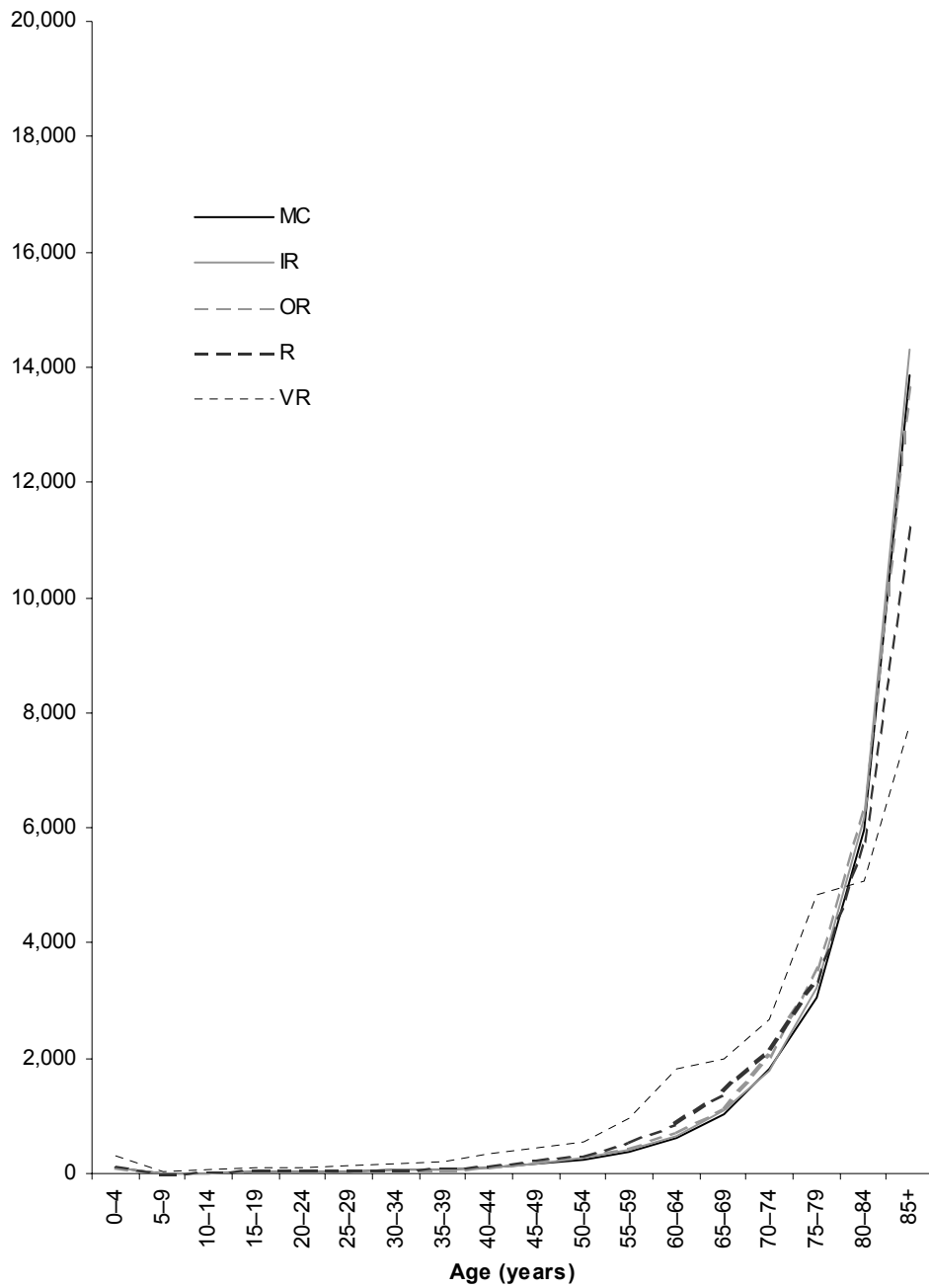
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 3.7: Age-specific death rates, by ASGC Remoteness area for males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 3.8: Age-specific death rates, by ASGC Remoteness area for females, 1997-1999

Indigenous people

It is clear that death rates of Indigenous people are much greater than for non-Indigenous people. Indigenous males and females were more likely to die at younger ages than the total population. The 'majority of deaths among Indigenous males (76%) and Indigenous females (65%) occurred before the age of 65 years. The reverse is true for non-Indigenous deaths...' (ABS 2001c).

There were significantly more deaths of Indigenous males and females than expected in every age group (Table 3.9 and Figures 3.9 and 3.10).

- The greatest relative differences occurred in the 25–64 year age group, where there were, for males and females respectively, 5 and 5–6 times as many deaths as expected.
- For those younger than 25 years, there were 3–3.5 times as many deaths as expected.
- For males and females 65–74 years there were 2 and 3 times as many deaths as expected.
- For males and females who were 75 years and over, there were 1.2 and 1.4 times as many deaths as expected.

Non-Indigenous people

Because of the scale used to show Indigenous rates in Figures 3.9 and 3.10, it is difficult to distinguish the differences between areas for non-Indigenous people. Table 3.9 describes the differences more clearly.

Removal of the Indigenous population from the analysis would be expected to affect the death rates in the younger age groups to a greater extent and rates in the older age groups to a lesser extent. This is a consequence of both the younger general age of the Indigenous population and also the (related) higher mortality, particularly in what would otherwise be considered 'middle age'.

In almost all age groups there were more deaths than expected outside Major Cities. There is some tendency for rates to be a little higher in remote areas than in regional areas.

- Typically, there were more deaths than expected for those younger than 15 years outside Major Cities, although the difference in each area was usually not significant.
- For males 15–24 years, there were 1.3–1.4 and 1.7 times as many deaths as expected in Inner and Outer Regional, and Remote areas. For females of the same age, there were only significantly more deaths than expected in Inner Regional areas (1.25 times as many deaths as expected), although numbers were elevated in the other areas.
- For males 25–74 years, there were typically 1.1–1.2 times as many deaths as expected. For females of this age, numbers were similarly elevated, but statistical significance was infrequent, with rates tending to be closer to 1.1 times as high.
- For elderly (75+) males and females in regional areas, there were 1.02–1.05 times as many deaths as expected. In remote areas, there were fewer deaths than expected; 0.9 times as many for females from Remote areas and 0.7 times as many for males and females from Very Remote areas.

Table 3.9: The ratio of observed deaths to those expected if Major Cities non-Indigenous rates applied to the non-Indigenous population in each area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	130	1.08	*1.15	1.14	1.17	*3.0	109	1.00	0.96	1.01	0.86	*2.8
5–14	15	1.12	1.13	1.48	*2.62	*2.9	11	1.09	1.24	1.20	1.92	*3.6
15–24	89	*1.34	*1.39	*1.74	1.46	*3.5	34	*1.25	1.10	1.39	1.53	*3.3
25–44	139	*1.10	*1.12	1.09	1.11	*5.3	65	*1.10	1.03	0.88	0.89	*6.0
45–64	517	*1.11	*1.18	*1.14	*1.24	*4.8	309	*1.08	*1.12	1.10	*1.27	*5.3
65–74	2,550	*1.06	*1.12	*1.15	*1.17	*2.4	1,410	1.02	*1.09	*1.13	0.99	*3.3
75+	8,468	*1.04	*1.05	0.95	*0.70	*1.2	6,732	*1.02	*1.04	*0.91	*0.72	*1.4
Total	..	*1.07	*1.10	*1.07	1.00	*3.1	..	*1.03	*1.06	0.98	*0.87	*3.1
0–64	..	*1.12	*1.17	*1.17	*1.22	*4.4	..	*1.09	*1.09	1.06	1.16	*4.7

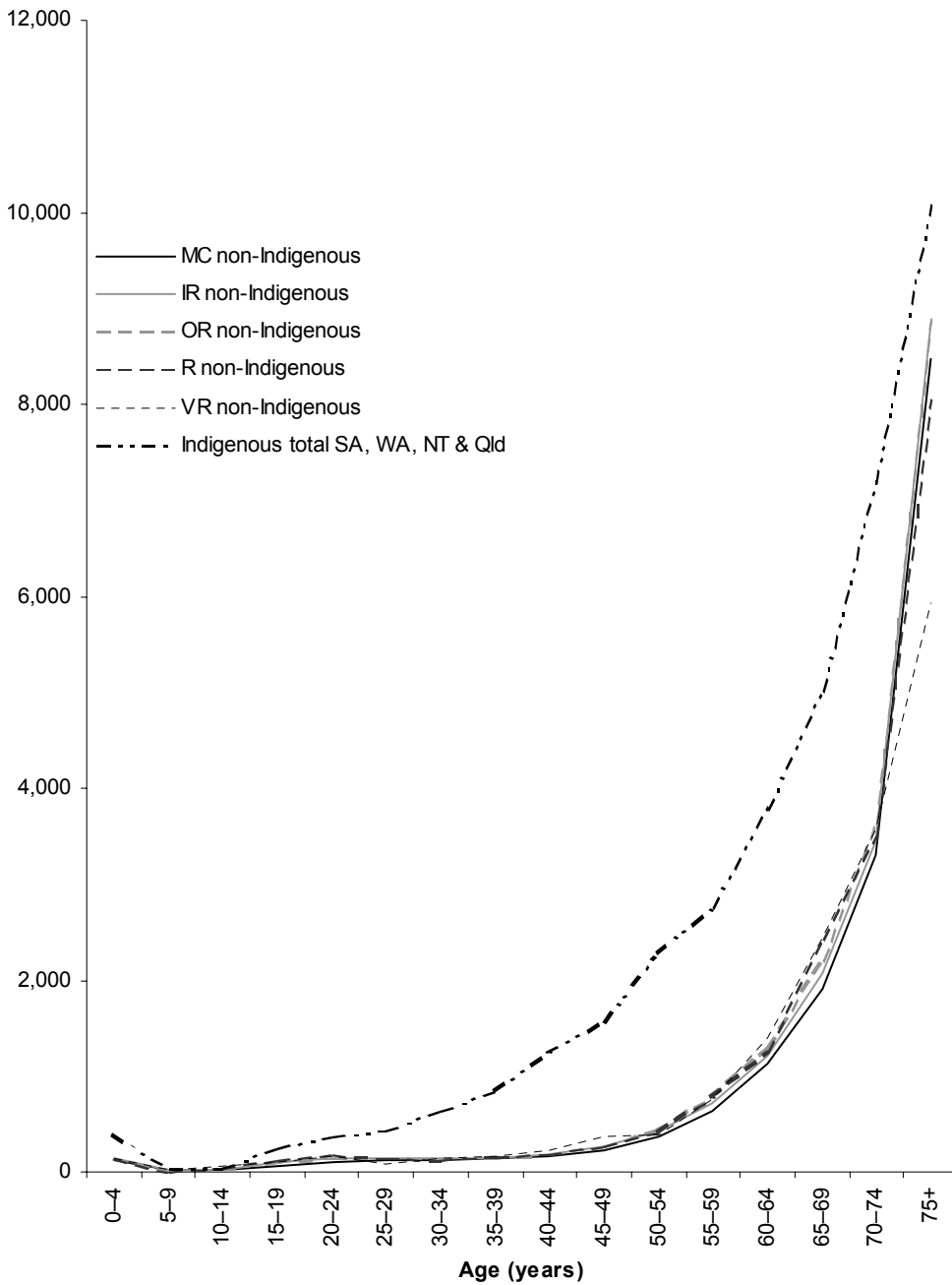
* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

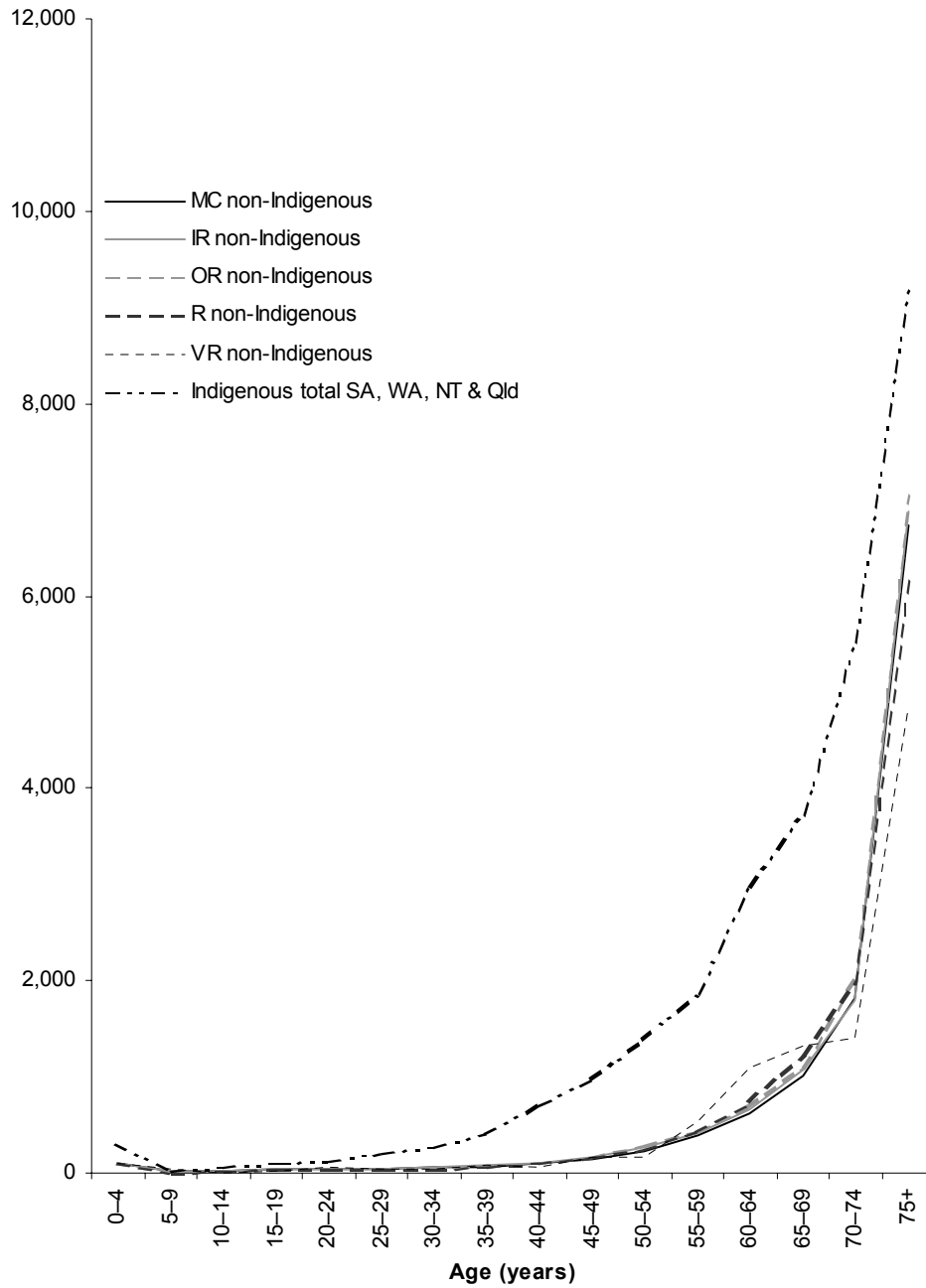
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 3.9: Age-specific death rates, by ASGC Remoteness area for non-Indigenous males and in SA, WA, NT and Qld for Indigenous males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 3.10: Age-specific death rates, by ASGC Remoteness area for non-Indigenous females and in SA, WA, NT and Qld for Indigenous females, 1997-1999

3.6 'Excess' deaths

Another way of reporting the differential between Major Cities and the areas outside them is to subtract the number of deaths that would have occurred in each of those areas if Major Cities rates had applied in all areas, from the number of deaths that did occur (Table 3.6). This also gives a measure of the absolute number of 'extra' people who died outside Major Cities, and places these in perspective against the ratios shown in Tables 3.4 and 3.5. For example, although the ratio of observed deaths to those expected if Major Cities had applied may have been relatively high in a particular area, it may not have involved a large number of people. Conversely, a low ratio in another area may translate into a relatively large number of 'excess' deaths because of a larger base population.

Both statistics – 'how many times more deaths were there than expected?' and 'how many more deaths were there than expected?' – are important. The former describes issues of equity; it identifies population groups for whom the risk of death is substantially greater. However, the latter describes the burden (in terms of absolute numbers of deaths) contributed by each area and population group resulting from each of a range of causes.

The number of 'excess' deaths provides an idea of the absolute magnitude of the differential in terms of human lives lost each year.

To display the distribution of 'excess' deaths, ten-year age groups (0–9, 10–19 etc.) have been used. These age groups have not been used in the rest of the report, but are used in Figures 3.11, Table 3.11 and Appendix B. Five-year age groups have not been used because the resultant pattern is difficult to recognise; nor have life stage age groups (for example, 0–4, 5–14, 15–24) been used as these are of unequal duration (distorting the pattern). Life stages have been used to describe 'excess' Indigenous deaths because of the relatively small numbers involved.

On average during the period 1997–1999, there were 3,303 more deaths of people who lived outside Major Cities than expected each year (Table 3.10). Two-thirds of these were males, one-third female.

Of these 3,303 'excess' deaths, 1,524, 1,233, 214 and 333 occurred in Inner Regional, Outer Regional, Remote and Very Remote areas, which is 46%, 37%, 7% and 10% respectively of the 'excess' deaths that occurred in the populations outside Major Cities.

The 'excess' deaths described in these figures show the following pattern (Figure 3.11 and Table 3.11):

- In Inner and Outer Regional areas, while there was some 'excess' death in the younger age groups, the bulk was in the older age groups.
- In the Remote and Very Remote areas, the 'excess' death was more evenly distributed across the age groups, with a higher proportion of deaths in the younger age groups than in Inner and Outer Regional areas. This pattern may be influenced by the higher death rate of younger Indigenous people and may also reflect greater risks of accidental death associated with the rural environment.
- While the number of 'excess' deaths in Inner Regional areas remained high for people 70 years and older, in the other areas outside Major Cities the number of 'excess' deaths decreased; in addition there were fewer deaths than expected for people approximately 80 years and older in the more remote areas. It is possible that this may be due to the migration of the frail aged to facilities in less remote locations (hence boosting the death rate in these areas), leaving healthier aged people to continue residing in the more remote areas (and consequently reducing the death rate for this age group in these areas).

Although this may occur, we have been unable to identify any study that confirms this hypothesis.

Specific points include:

- the approximately 100 'excess' deaths annually of children less than 5 years old outside Major Cities (predominantly in Outer Regional and Very Remote areas);
- the approximately 230 'excess' deaths annually of people aged 15–29 years (of whom 85% were male) in the Inner Regional and Outer Regional areas. There were also approximately 90 'excess' deaths annually of people of the same age in the Remote and Very Remote areas (70% were male); and
- in the Inner Regional and Outer Regional areas, compared to the large number of 'excess' deaths in the 15–29 year age group, there were lower numbers of 'excess' deaths in the 5–14 year and 30–39 year age groups.

While most of the 'excess' deaths in the Inner Regional and Outer Regional zones occurred in the older age groups, in the Remote and Very Remote zones, approximately half of the 'excess' deaths in those younger than 85 years occurred among those younger than 50 years (Figure 3.11).

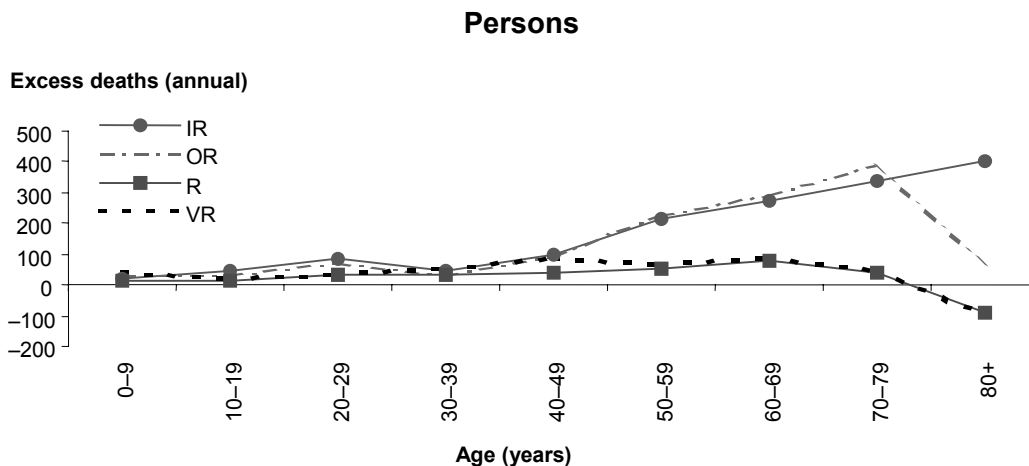
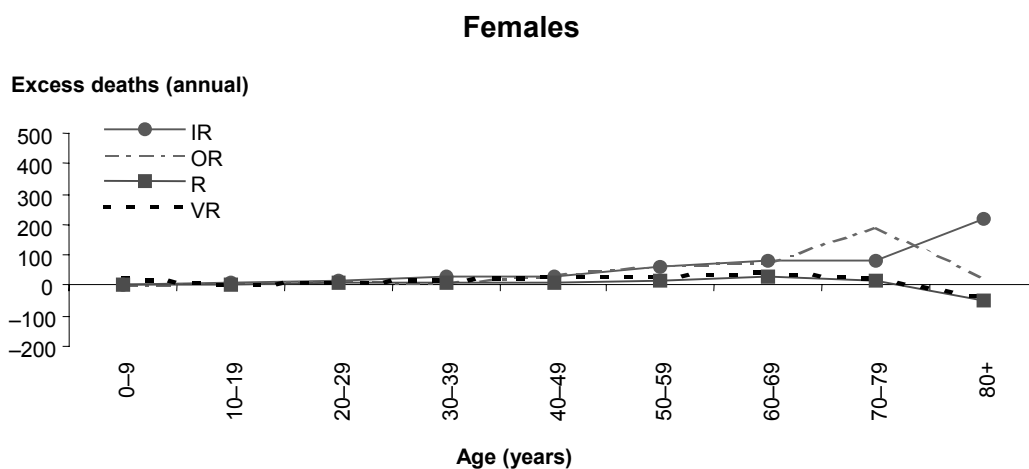
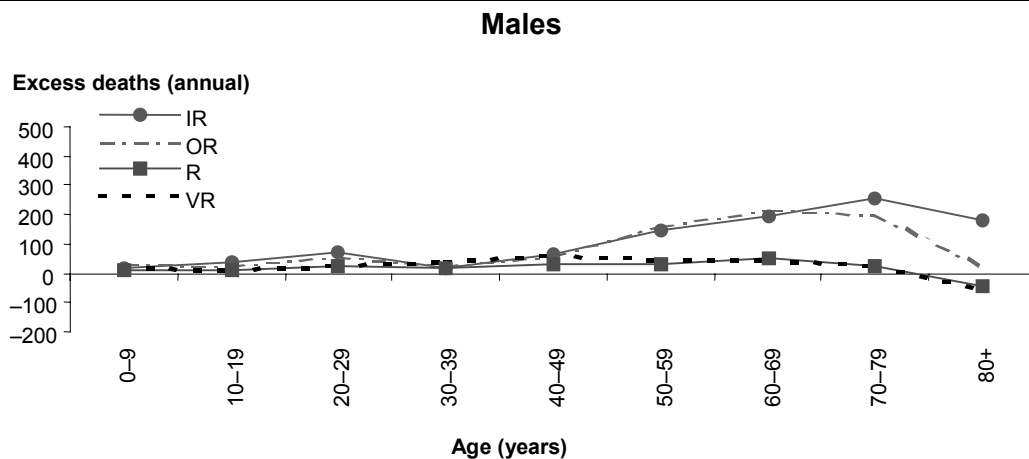
Appendix B details the numbers of 'excess' deaths by region, sex, age and cause.

Table 3.10: The annual number of 'excess' deaths outside Major Cities as a result of each major group of causes, and the percentage of all 'excess' deaths attributable to that cause, 1997–1999

	Annual number of 'excess' deaths			Per cent of 'excess' deaths (%)		
	Males	Females	Persons	Males	Females	Persons
Neoplasms	379	–6	373	18	–1	11
Circulatory disease	825	552	1,377	38	48	42
Respiratory disease	277	53	330	13	5	10
Injury	602	186	788	28	16	24
Other causes	73	362	435	3	32	13
All causes	2,156	1,147	3,303	100	100	100

Note: Negative numbers indicate fewer deaths than expected.

Source: AIHW National Mortality Database.



Note: Negative numbers indicate fewer deaths than expected.

Source: AIHW National Mortality Database.

Figure 3.11: 'Excess' deaths by age group, persons, males and females, 1997-1999

For people who are:

- younger than 30 years (except the very young, for whom a substantial proportion of the 'excess' is a result of other causes), injury was by far the predominant cause of 'excess' death;
- aged 30–39 and 40–49 years, injury remained important (responsible for 70% and 40% of 'excess' deaths respectively), but other causes start to make substantial contributions (circulatory disease 24% and 35% and neoplasms 10% and 15% respectively of 'excess' deaths in these age groups);
- aged 50–69 years, injury was responsible for about 10%, circulatory disease for 35%, neoplasms for about 30% and respiratory disease for 10–20% of the 'excess' deaths;
- aged 70–79 years, circulatory diseases were responsible for 60% of 'excess' deaths and respiratory disease for 20% of 'excess' deaths;
- older than 80 years, circulatory disease (mainly) and injury (to a lesser extent) were responsible for the 'excess', with fewer deaths than expected as a result of neoplasms and respiratory disease.

This pattern holds more or less true for each sex with the exception that for 30–39-year-old males, injury remains by far the largest contributor to 'excess' deaths.

The situation across areas differs in the following ways:

- For males, while neoplasms were more important with age as a contributor to 'excess' deaths in all areas, its importance was greatest in Inner Regional areas (peaking for 50–59-year-olds, where it was responsible for over 50% of 'excess' deaths) and least important in Very Remote areas (at most about 10% of 'excess' deaths). The contribution of neoplasms to 'excess' death in the other areas is intermediate and tends to be inversely proportional to remoteness. The proportional contribution of neoplasms to 'excess' death in the older ages tends to decrease such that neoplasms contribute as many or fewer deaths than expected in those older than 70 or 80 years (although, in Inner Regional areas, neoplasms contribute about 10% of the 'excess' for males in these areas).
- For females, neoplasms are more important as a contributor to 'excess' death in Inner Regional areas, where neoplasms are responsible for over 20% (and up to 40%) of 'excess' deaths for females who were 30–69 years. Neoplasms contributed proportionally less to the overall 'excess' in the other areas, seldom contributing more than 10% of the 'excess' in any age group.
- Diseases of the circulatory system contributed very little to 'excess' death for younger males, with the importance of circulatory disease more proportionally important for those aged 30–39 years, and the most important contributor for those older than 70 years. In those age groups where circulatory disease was important as a cause of death, the proportional contribution of circulatory disease to 'excess' deaths of males was somewhat similar in all areas.
- For females, the contribution of circulatory diseases to 'excess' death followed much the same pattern as for males (although there were fewer deaths of females older than 80 years than expected in Outer Regional areas). In those younger than 50 years, circulatory disease contributed proportionally more in the more remote areas, and in those older than 60 years, proportionally less in the more remote areas.

It is difficult to clearly discern for males or females any major differences across areas in the contribution of respiratory disease to 'excess' death.

For both males and females, the contribution of injury to 'excess' deaths is greatest in younger people (about 75% of the annual 'excess' injury deaths occur in people younger than 50 years). More than 100% of 'excess' deaths of 10–39-year-old males in Inner and Outer Regional areas were a result of injury, the contribution for this age group in Remote and Very Remote areas being 30–80% (typically more than 50%). This pattern is repeated for females. In all ages, the contribution of injury as a proportion of all 'excess' deaths was smaller in the more remote areas, primarily because of the high rate of death due to other causes in remote areas.

Table 3.11: Annual 'excess' deaths by age group, all persons, 1997–1999

Age group (years)	Males				Females				Persons			
	IR	OR	R	VR	IR	OR	R	VR	IR	OR	R	VR
	(number)											
0–9	19	31	9	21	1	5	5	20	20	37	14	41
10–19	39	25	11	12	9	8	5	6	48	33	16	18
20–29	73	59	24	22	14	13	8	12	87	71	31	35
30–39	20	26	21	39	26	9	11	16	46	35	32	55
40–49	68	60	28	59	29	33	12	26	97	92	40	84
50–59	148	159	34	42	64	66	18	26	212	226	52	68
60–69	193	213	49	44	80	76	27	39	274	289	76	82
70–79	254	198	24	21	81	193	19	24	335	391	43	45
80+	182	26	–43	–55	221	32	–47	–41	403	58	–90	–97
Total	997	798	156	205	526	435	57	128	1,524	1,233	214	333

Note: Negative values indicate a lower number of observed deaths compared with expected deaths.

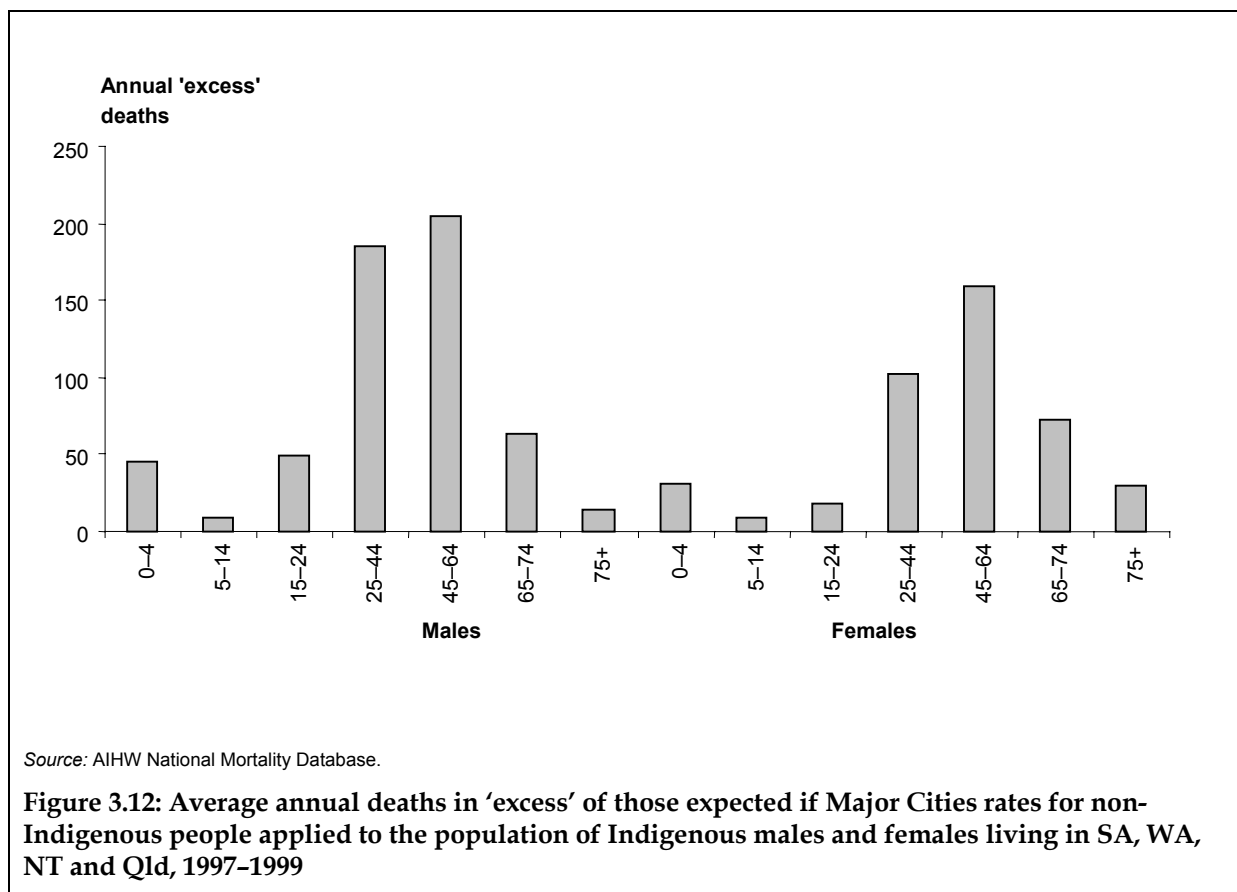
Source: AIHW National Mortality Database.

Indigenous people

In the Indigenous population there were 838 deaths of males and 621 deaths of females annually: of these, 571 were 'excess' deaths of males and 422 were 'excess' deaths of females. These were calculated on the basis that Major Cities rates for non-Indigenous people had applied to the Indigenous population living in South Australia, Western Australia, the Northern Territory and Queensland.

The majority of these deaths occurred in relatively young age groups: for Indigenous males, 32% and 36% occurred in 25–44 and 45–64-year-olds; for Indigenous females the pattern was similar with 24% and 38% in 25–44 and 45–64-year-olds. Almost 10% of the 'excess' were in 0–4-year-old children (Figure 3.12 and Appendix B).

Unlike the situation for the total population, the disease groups responsible for the 'excess' were fairly diverse. Of the total 'excess', 7% was due to neoplasms, 30% to circulatory disease, 9% to respiratory disease, 17% to injury and 36% to other causes.



Non-Indigenous people

On average during the period 1997-1999, there were 2,414 more deaths of non-Indigenous people who lived outside Major Cities than expected each year. Of these, about 70% were male, 30% female.

Each year, there were 1,374, 1,015 and 49 more deaths than expected in Inner Regional, Outer Regional and Remote areas, which is 57%, 42% and 2% of the 'excess' deaths that occurred in the populations outside Major Cities. There were 23 fewer deaths than expected in Very Remote areas (Table 3.12, Figure 3.13 and Appendix B).

However, for those who were 75 years or older who lived outside Major Cities, there were fewer deaths than expected (53 fewer males, 66 fewer females). Again, the smaller number of deaths may be a consequence of migration of the frail aged to larger population centres. Of the 1,696 'excess' deaths of people younger than 75 years, 853, 698, 102 and 43 (50%, 41%, 6% and 3%) were in Inner and Outer Regional, Remote and Very Remote areas.

The 'excess' deaths described in these figures reveal important regional differences.

In Inner and Outer Regional areas:

- While there was some 'excess' death in the younger age groups, the bulk was in the older age groups, that is, the pattern was very similar to that for the total population.
- 60-70% of the 'excess' deaths occurred in those 60 years or older, about 15% in those aged 50-59 years, and 7-10% in those aged 15-29 years.

In the Remote and Very Remote areas:

- There were very few 'excess' deaths in most age groups, with some 'excess' in those aged 55–69 years. This is quite different to the situation for the total population (that is, including Indigenous people).
- For those people who were 70 years and older, there were substantially fewer deaths (42 fewer males, 66 fewer females) than expected.

Specific points include:

- Although it is not possible to deduce the exact number of 'excess' deaths of Indigenous people who live outside Major Cities from the data provided in this report, it is possible that Indigenous people constitute a large proportion of the 'excess' deaths outside Major Cities, particularly in Remote and Very Remote areas, because of the relatively high proportion in these areas who are Indigenous, and the overall high mortality for Indigenous people.
- There were approximately 30 'excess' deaths annually of non-Indigenous children less than 5 years old outside Major Cities (predominantly in Inner and Outer Regional areas).
- There were approximately 199 'excess' deaths annually of non-Indigenous people aged 15–29 years (of whom 85% were male) in the Inner Regional and Outer Regional areas. There were also approximately 20 'excess' deaths annually of non-Indigenous people of the same age in the Remote and Very Remote areas (again, 85% were male).
- For those 30–44 years old, there were 112 'excess' deaths (70% male), of which 107 were in regional areas.
- For those 45–64 years old, there were 708 'excess' deaths (70% male), of which 650 were in regional areas.
- For those 65–74 years old, there were 611 'excess' deaths (80% male), of which 555 were in regional areas.
- For those 75 years and older, there were 718 'excess' deaths (60% male), of which 837 were in regional areas (there were 119 fewer deaths than expected in remote areas).

Appendix B details the numbers of 'excess' deaths by region, sex, age and cause.

Table 3.12: Annual 'excess' deaths by age group, non-Indigenous persons, 1997–1999

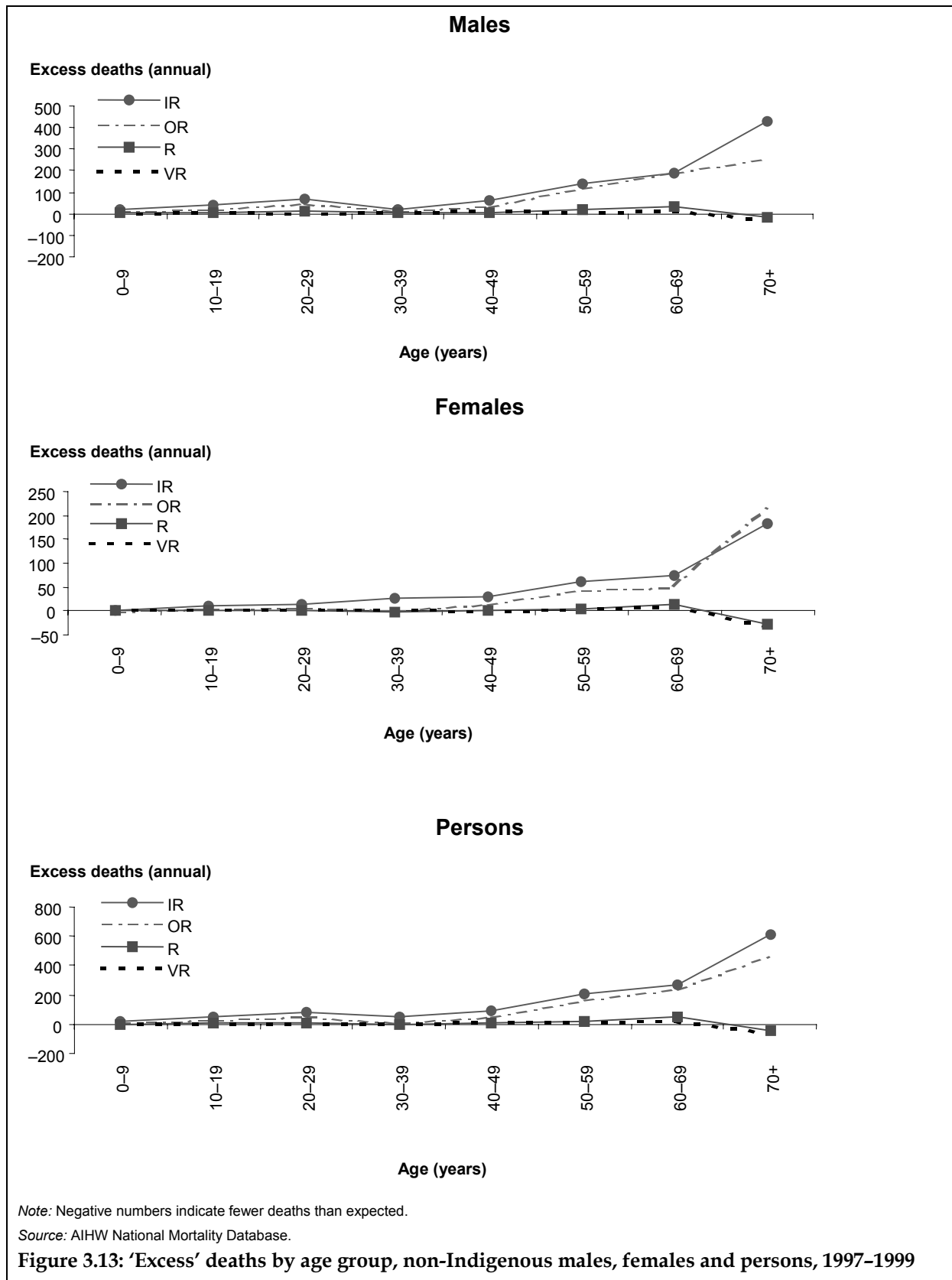
Age group (years)	Males				Females				Persons			
	IR	OR	R	VR	IR	OR	R	VR	IR	OR	R	VR
	(number)											
0–9	17	14	2	1	1	–3	0	0	18	11	1	1
10–19	37	20	7	3	10	5	3	0	48	25	10	2
20–29	71	44	11	0	15	7	0	2	86	51	11	2
30–39	22	10	2	2	26	1	–2	0	48	10	–1	2
40–49	64	34	5	9	30	12	0	–1	95	46	5	8
50–59	142	121	16	5	61	43	3	1	203	164	19	5
60–69	190	189	33	14	74	49	13	9	264	238	46	23
70+	428	252	–14	–34	184	217	–28	–32	612	470	–42	–66
Total	971	683	61	0	402	331	–12	–22	1,374	1,015	49	–23

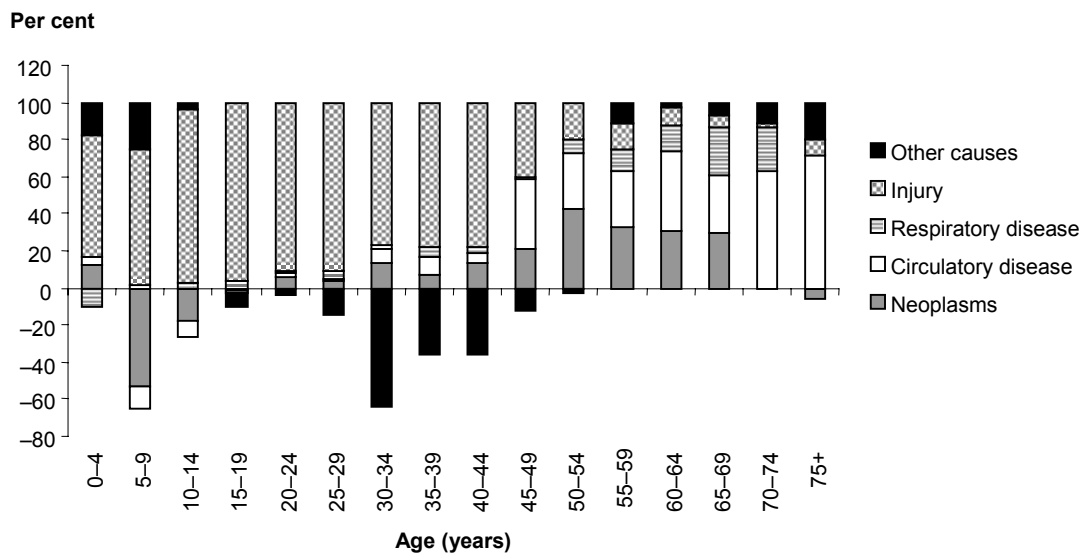
Note: Negative values indicate a lower number of observed deaths compared with expected deaths.

Source: AIHW National Mortality Database.

For non-Indigenous people, the major contributors to 'excess' death in each life stage are described in the following dot points (Figure 3.14). For people who are:

- younger than 45 years (except the very young, for whom a substantial proportion of the 'excess' is a result of 'other' causes), injury was by far the predominant cause of 'excess' death, responsible for most (if not all) of the 'excess' mortality. For this age group, there were also fewer deaths due to neoplasms or 'other' causes;
- aged 45–69 years, circulatory disease and neoplasms were the main contributors to the 'excess', each contributing approximately equally, with injury decreasing in importance and respiratory disease increasing in importance with age;
- aged 70 years and older, circulatory disease is by far the greatest contributor to 'excess' death outside Major Cities.





Note: This graph illustrates the relative contribution of each major cause of death to the 'excess' deaths outside Major Cities. For all those causes for which there were more deaths than expected, the number of 'excess' deaths have been expressed as a percentage of the total number of 'excess' deaths. In situations where there were fewer deaths than expected, these have been expressed as a percentage of the same total. For example, in the 40-44 year age group, there were 29 fewer deaths due to 'other' causes than expected, and 81 more deaths than expected due to injury, neoplasms, and circulatory and respiratory diseases combined; of these 81 'excess' deaths, injury accounted for 63 'excess' deaths (or 78%). In comparison, the 29 fewer deaths due to 'other causes' correspond to -35% on the same scale. The net number of 'excess' deaths for this age group would be 52 (81 minus 29).

Source: AIHW National Mortality Database.

Figure 3.14: Percentage of 'excess' deaths outside Major Cities due to each major cause, non-Indigenous people, 1997-1999

This pattern holds true for non-Indigenous people from Inner and Outer Regional areas, however, in remote areas:

- Injury is the predominant cause of 'excess' deaths for those younger than 45 years, with a tendency for fewer deaths than expected due to neoplasms and 'other' causes. For those aged 45-69 years however, injury, although decreasing in importance, remains a substantial contributor, and neoplasms and circulatory disease, although important contributors, appear to be responsible for a lower proportion of the 'excess' than in regional areas.
- For non-Indigenous people aged 70 years and older, circulatory disease is the main contributor to any 'excess'. For those 75 years and older in remote areas, for whom there are fewer than expected deaths, circulatory disease (and to a lesser extent neoplasms) are the main contributors to the deficit.

3.7 Life expectancy

Life expectancy is simply another way of looking at mortality, and provides a measure which is perhaps more understandable.

Life expectancy refers to the average number of years a person can expect to live, if current age-specific death rates continue to apply throughout that person's lifetime. In this analysis, life expectancy has been calculated for newborn males and females (that is, how long can a newborn expect to live on average), for the total population, the Indigenous population and also for the non-Indigenous population. Life expectancy reported here does not make any implications about the quality of life in those expected years of life.

Because of the substantially lower mortality for older people in more remote areas, compared to those in less remote areas (an issue which could affect the comparison between geographic areas), the probability of reaching 65 years of age has also been calculated. This statistic describes the probability of a newborn living to age 65 years, and thus avoids any problems that could be caused by lower death rates in the older population, potentially a consequence of migration rather than health status.

Summary of findings

Life expectancy for males was 1.1 and 1.9, and 2.5 and 5.6 years less, and for females was 0.6 and 1.3 and 1.2 and 5.4 years less in regional and remote areas respectively than it was in Major Cities. Lower life expectancies for Indigenous people tend to lower the overall life expectancies in these areas (especially remote areas), while the lower death rates for the elderly in remote areas tend to increase life expectancy in these areas.

The probability of living to 65 years of age was less by 2%, 3%, 5% and 15% for males and 1%, 2%, 4% and 14% for females in the four areas outside Major Cities than for those who lived in Major Cities.

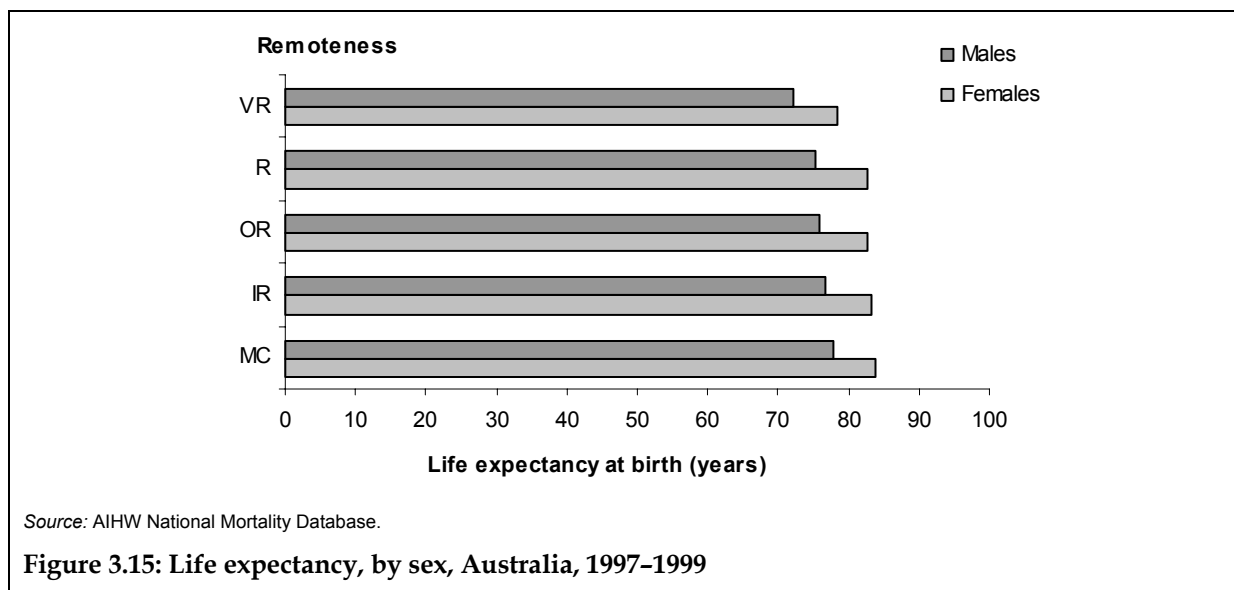
Life expectancy for Indigenous males and females was 56 and 63 years compared to 76 and 82 years for Australian males and females generally.

For non-Indigenous people, the probabilities of living to 65 years of age were less by 1.6%, 2.4%, 2.3% and 3.2% for males and less by 0.7%, 0.8%, 0.7% and 2.5% for females in the four areas respectively than for non-Indigenous people from Major Cities.

Life expectancy in the total population

Life expectancies for males were 1.1, 1.9, 2.5 and 5.6 years and for females were 0.6, 1.3, 1.2 and 5.4 years less in the four areas outside Major Cities respectively than for males and females from Major Cities (Figure 3.15 and Table 3.13).

The outcome for remote areas is likely to be affected by two substantial issues, their effects working in opposition to each other. On the one hand, high Indigenous mortality, with an effect likely to be strongly felt in the more remote areas because of the large numbers of Indigenous people who live there, would tend to reduce life expectancy there. Working counter to this is the relatively low death rates of older non-Indigenous people (at least lower when compared to the death rates of their counterparts in Major Cities). This phenomenon would tend to increase the apparent life expectancy for people living in more remote areas.



The probabilities of a newborn living to 65 years were less by 1.6%, 3.2%, 5.4% and 15.5% for males and 0.7%, 1.5%, 3.7% and 14.0% for females in the four areas respectively, than in Major Cities (Figure 3.16 and Table 3.13). The substantially lower probability of people from more remote areas living to 65 years is a consequence of higher death rates for the non-Indigenous people outside Major Cities and potentially the effect of higher Indigenous mortality over all areas.

Table 3.13: Life expectancy for persons, Australia, 1997–1999

	MC	IR	OR	R	VR
Life expectancy at birth (years)					
Males	77.9	76.7	76.0	75.3	72.2
Females	83.9	83.3	82.6	82.7	78.5
Probability of living to age 65 years (%)					
Males	84.8	83.2	81.6	79.4	69.3
Females	91.1	90.3	89.6	87.4	77.0

Source: AIHW National Mortality Database.

Indigenous people

Life expectancy for Indigenous people is substantially lower than for non-Indigenous people.

'In the period 1997–99, the life expectancy at birth for the Indigenous population was estimated to be 56 years for males and 63 years for females. In contrast, the life expectancy at birth for all Australians was 76 years for males and 82 years for females. The 1997–99 Indigenous life expectancies are similar to life expectancy for the total male population in 1901–1910, and for the total female population in 1920–22' (ABS 2001c).

The same issues that prevent reporting of Indigenous mortality in each area also prevent reporting of Indigenous life expectancy in each area (see page 21).

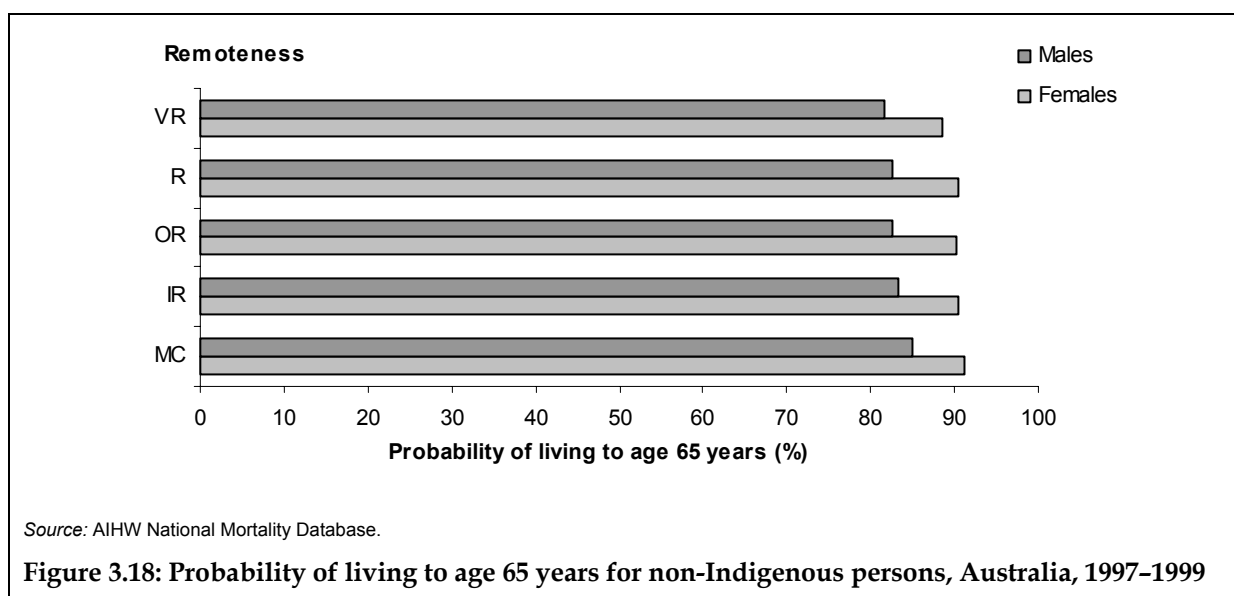
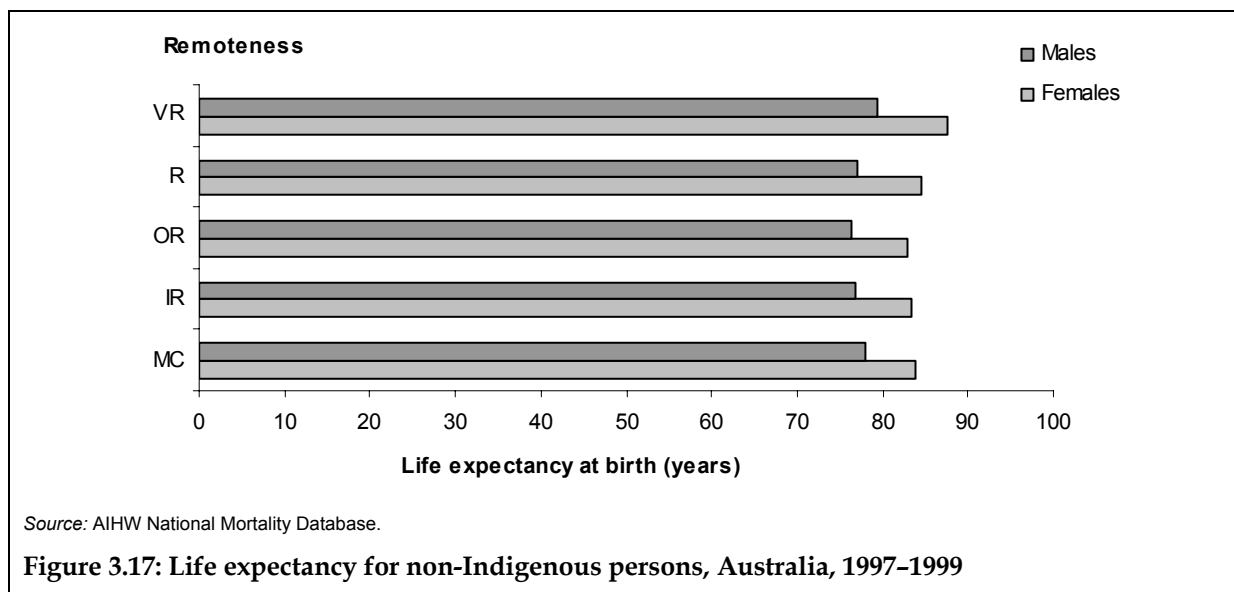
Non-Indigenous people

For non-Indigenous people, the situation is substantially different from that for the total population.

Life expectancies at birth for non-Indigenous males from Inner Regional, Outer Regional and Remote areas were 1.1, 1.5 and 1.0 years less than for males from Major Cities, but life expectancy for non-Indigenous males from Very Remote areas was 1.4 years longer than it was for those from Major Cities (Figure 3.17 and Table 3.14).

Life expectancies for non-Indigenous females from Inner Regional and Outer Regional areas were 0.6 and 0.9 years less than for females from Major Cities. Life expectancies for non-Indigenous females from Remote and Very Remote areas were 0.5 and 3.8 years longer than for non-Indigenous females from Major Cities.

This tendency for life expectancy to be greater in more remote areas is likely to be largely influenced by the lower death rates in the older age groups.



The most valid picture of predicted life expectancy and the impact on it of remoteness may be the probability of non-Indigenous people reaching 65 years of age (Figure 3.18 and Table 3.14). The probability of living to 65 years is lower in regional and Remote areas and lower again in Very Remote areas. For non-Indigenous males, the probability was less by 1.6%, 2.4%, 2.3% and 3.2% in the four areas outside Major Cities than it was for non-Indigenous males from Major Cities. For non-Indigenous females the probability of reaching this age was less by 0.7%, 0.8%, 0.7% and 2.5% in the four areas than it was for non-Indigenous females from Major Cities.

Table 3.14: Life expectancy for non-Indigenous persons, Australia, 1997–1999

	MC	IR	OR	R	VR
Life expectancy at birth (years)					
Males	77.9	76.8	76.4	77.0	79.3
Females	83.9	83.4	83.0	84.5	87.7
Probability of living to age 65 years (%)					
Males	84.9	83.3	82.5	82.6	81.7
Females	91.1	90.4	90.3	90.4	88.6

Source: AIHW National Mortality Database.

3.8 Mortality due to specific causes

The following chapters discuss the major causes of death at the broad level, followed by a discussion of the more specific causes of death.

For Australia as a whole, four major broad disease groupings account for over 80% of deaths (Figure 3.19):

1. diseases of the circulatory system 41%;
2. neoplasms 28%;
3. diseases of the respiratory system 8%;
4. external causes of injury and poisoning (referred to as injury) 6%.

In addition, 'endocrine, nutritional and metabolic disorders' and 'diseases of the digestive system' together account for another 6% of all deaths. Between them, these six major causes account for approximately 90% of all deaths.

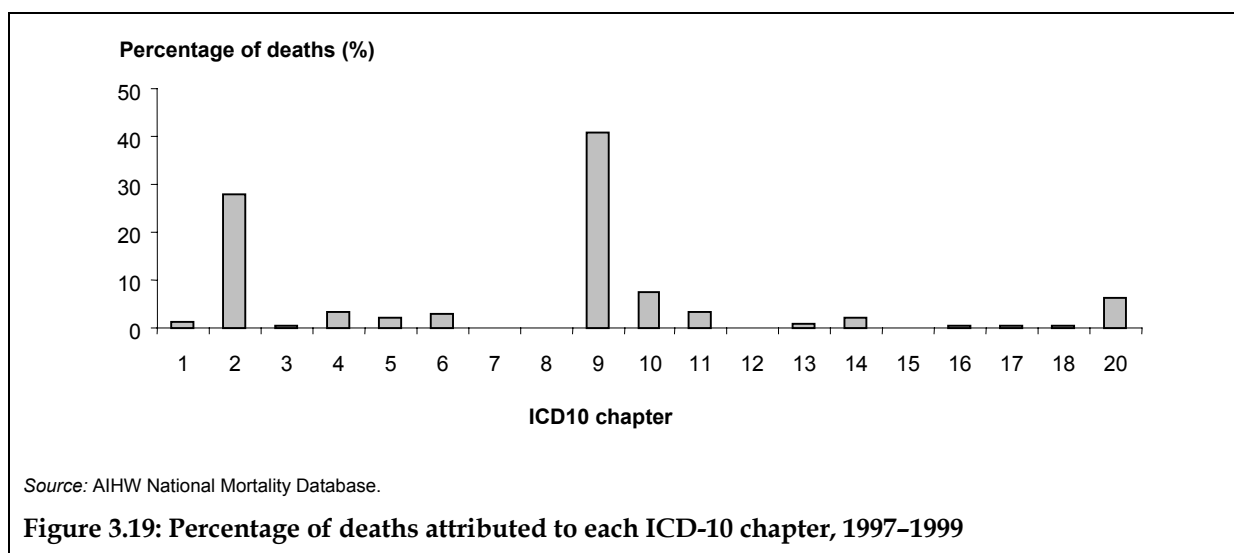


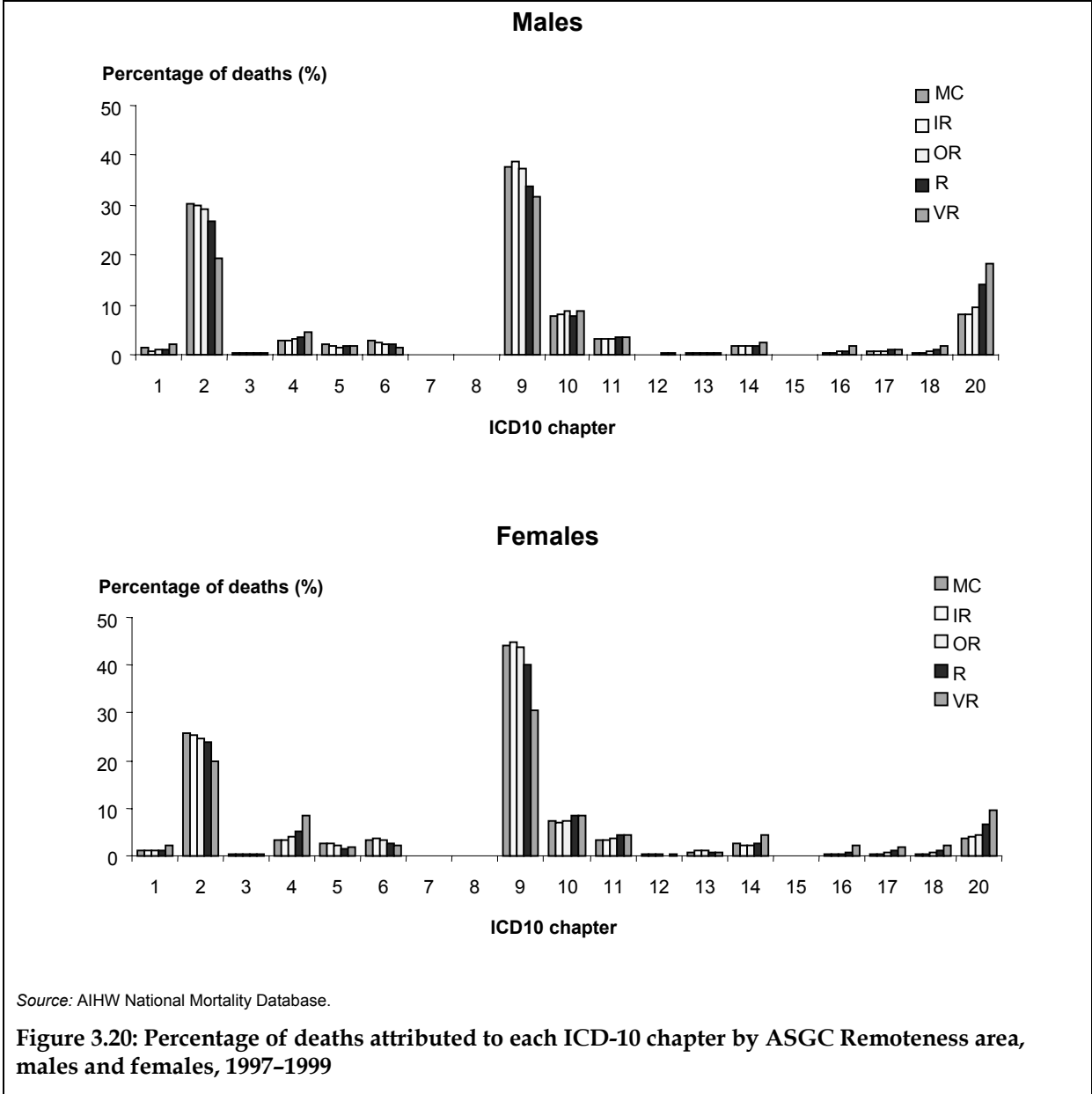
Table 3.15: Key for Figures 3.19 and 3.20

Chapter number	Chapter title	Chapter number	Chapter title
1	Infectious and parasitic diseases	11	Diseases of the digestive system
2	Neoplasms	12	Diseases of the skin and subcutaneous tissue
3	Diseases of the blood	13	Musculoskeletal and connective tissue diseases
4	Endocrine, nutritional, metabolic diseases	14	Genitourinary diseases
5	Mental and behavioural disorders	15	Pregnancy, childbirth, puerperium
6	Diseases of the nervous system	16	Conditions originating in the perinatal period
7	Diseases of the eye and adnexa	17	Congenital, deformations, chromosomal abnormalities
8	Diseases of the ear and mastoid process	18	Diseases and conditions not elsewhere classified
9	Circulatory diseases	20	External causes of injury and poisoning
10	Respiratory diseases		

Note: Chapters refer to those for the WHO International Classification of Diseases, 10th Revision.

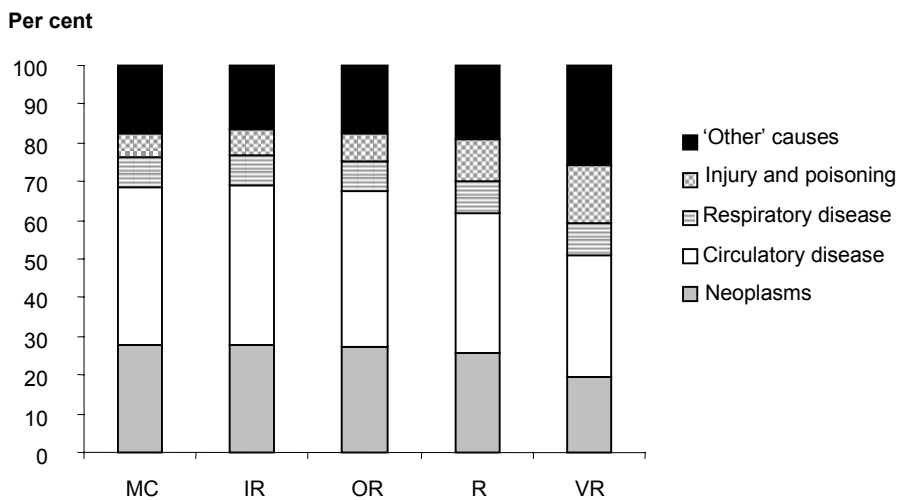
Source: WHO 1992.

In more remote areas, the percentage of deaths that are due to injury and 'endocrine, nutritional and metabolic disorders', as well as some of the other causes of death (for example, due to infectious diseases and diseases of the genitourinary system) tend to be greater than in less remote areas. Consequently, the percentage of deaths that are due to neoplasms and circulatory disease tend to decline with remoteness. This is illustrated more clearly in Figure 3.20.



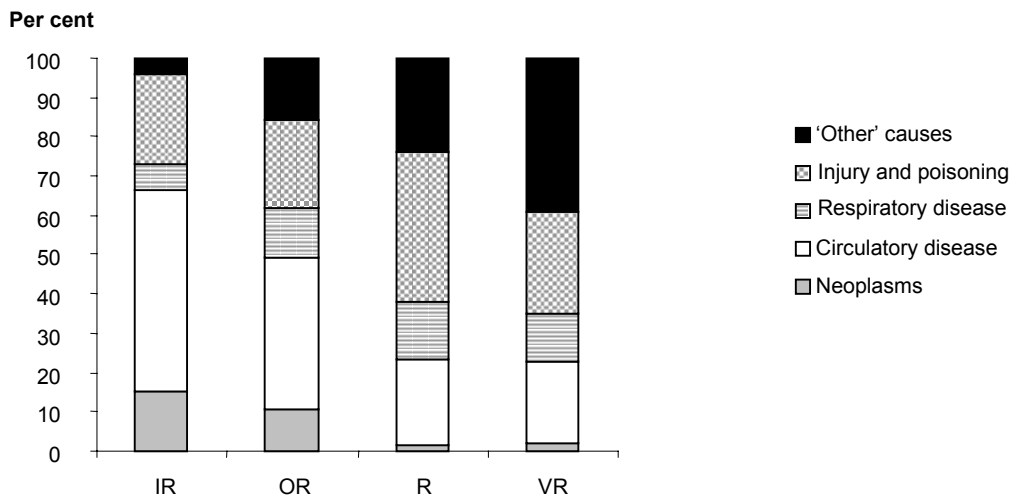
The major difference between the sexes appears to be the greater relative importance of injury as a cause of death for males than is the case for females.

Figure 3.21 describes the percentage of all deaths attributable to the broad causes described in this report. Figure 3.22 describes the percentage of all 'excess' deaths attributable to these broad causes.



Source: AIHW National Mortality Database.

Figure 3.21: Percentage of deaths attributed to the main causes in each ASGC Remoteness area, 1997-1999



Source: AIHW National Mortality Database.

Figure 3.22: Percentage of 'excess' deaths attributed to the main causes in each ASGC Remoteness area, 1997-1999

There are some substantial differences between Figures 3.21 and 3.22.

- While the percentage of deaths due to 'other' causes is similar across all areas, the percentage of 'excess' deaths due to 'other' causes is small in Inner Regional areas, but increases to approximately 40% in Very Remote areas.
- The percentage of all deaths due to circulatory disease is similar in all areas (slightly smaller in Very Remote areas), however, the percentage of 'excess' deaths due to circulatory disease is much smaller in remote areas than in regional areas.
- The percentage of deaths due to injury increases with remoteness, however, the percentage is fairly small in all areas. The percentage of 'excess' deaths due to injury is considerably larger in all areas.

4 Circulatory disease

This chapter discusses mortality due to the broad category of circulatory disease (ICD-10 chapter 9, codes I00–I99). It then provides further analysis of specific diseases within this broad category. The specific circulatory diseases included are:

1. ischaemic heart disease (coronary heart disease);
2. cerebrovascular disease (stroke);
3. rheumatic heart disease; and
4. other circulatory diseases.

These specific diseases were chosen because ischaemic heart disease and cerebrovascular disease are the most frequent causes of death resulting from circulatory disease; and rheumatic heart disease is much more frequent as a cause of death in Australia's Aboriginal and Torres Strait Islander populations.

Summary of findings

The overall mortality of Australians due to circulatory diseases increased with increasing remoteness (Table 4.2). Compared to those in Major Cities, death rates from circulatory diseases are:

- 1.05–1.1 times as high in regional areas; and
- 1.1–1.4 times as high in remote areas.

This broad observation does not take into account two factors previously stated on page 33, namely the likely effect on rates of high Indigenous mortality coupled with their greater representation outside Major Cities, and the possible effect of the migration of the frail aged. When analysis is restricted to non-Indigenous Australians under the age of 65 years, there is still a relationship between remoteness and mortality for circulatory diseases as described below.

Indigenous mortality from circulatory diseases is about 3 times as high as that for non-Indigenous people from Major Cities, which is likely to influence rates for the total population in remote areas. Death rates are higher in most age groups younger than 75 years, with rates for 25–44-year-olds and 45–64-year-olds about 14 and 6–10 times respectively the rates for their non-Indigenous counterparts from Major Cities.

Compared to death rates in Major Cities, death rates for non-Indigenous people due to circulatory disease were, respectively:

- 1.1 times as high for males in regional areas but not significantly different in remote areas; and
- 1.05 times as high for females in regional areas, not significantly different in Remote areas and lower (0.8 times) in Very Remote areas.

Death rates for both the total and non-Indigenous populations aged 75 years and older were lower (towards 0.9 and 0.7 times the Major Cities rates) in Remote and Very Remote areas.

When analysis is restricted to those who are younger than 65 years of age, death rates for non-Indigenous:

- males were 1.1, 1.2 and 1.2 times as high in Inner and Outer Regional and Remote areas and not significantly higher in Very Remote areas compared to Major Cities; and
- females were 1.2 and 1.3 times as high in Inner and Outer Regional areas, and not significantly higher in Remote or Very Remote areas compared to Major Cities.

Death rates for Indigenous males and females younger than 65 years of age were 8 and 10 times as high respectively than for their non-Indigenous counterparts from Major Cities.

Between 1992 and 1999, the rate of death due to circulatory diseases decreased in nearly all areas (including Major Cities) by about 5.5% for males and 4.5% for females each year. In Very Remote areas, the decrease was larger at about 11% per year for both sexes.

Annually, there were 1,378 'excess' deaths due to circulatory disease outside Major Cities (784, 477, 47 and 70 in each of the four areas). Of these people, 20% were aged 45–59 years, 20% were aged 60–69 years, and 50% were aged 70–84 years. About 60% were male. For non-Indigenous people, the percentages in the older age groups were higher, while for Indigenous people, 27% were aged 25–44 years, 50% were aged 45–64 years and 22% were 65 years or older.

Circulatory disease accounts for 41% of all deaths (and 42% of 'excess' deaths) and about 30% of Indigenous deaths (and 30% of the 'excess' Indigenous deaths). Because of this substantial contribution they make to the higher rates of death in regional and remote areas, circulatory diseases are an important target for intervention.

Summary/discussion of individual causes of death reviewed in this chapter

Total population

Ischaemic heart disease was responsible for 55% of the deaths (10,208 per year) as well as 55% of the 'excess' deaths (755 per year) due to circulatory disease (Table 4.1). Stroke and 'other' circulatory diseases were responsible for 23% and 22% of deaths (4,215 and 4,128 per year) from circulatory disease respectively, however while stroke was responsible for only 6% of the 'excess' deaths (85 per year), 'other' circulatory diseases were responsible for 38% of the 'excess' deaths (518 per year) from circulatory disease. Rheumatic heart disease accounted for less than 1% of deaths and for 1% of the 'excess' deaths due to this broad cause.

There were 1.1–1.3 times as many deaths due to ischaemic heart disease and 'other' circulatory diseases as expected, and about the same number of deaths due to stroke as expected in the four areas outside Major Cities (that is, except for stroke, death rates increased with remoteness). The death rate due to rheumatic heart disease increased rapidly with remoteness, with about as many deaths as expected in Inner Regional areas, rising to 6.8 times as many as expected in Very Remote areas.

Table 4.1: Summary table of deaths due to circulatory diseases for all persons, 1997–1999

Cause	Annual deaths outside Major Cities			Annual 'excess' deaths outside Major Cities			Age groups in which the 'excess' occurs
	No.	%	% male	No.	%	% male	
Ischaemic heart disease	10,208	55%	57%	755	55%	69%	21%: 45–59 72%: 60–84
Stroke	4,215	23%	43%	85	6%	75%	80%: 60–84
Rheumatic heart disease	102	<1%	35%	18	1%	44%	50%: 20–49 50%: 60–79
'Other' circulatory diseases	4,128	22%	47%	518	38%	46%	50%: 60–84 33%: 85+
Total circulatory diseases	18,639	100%	51%	1,378	100%	60%	20%: 45–59 74%: 60+

Note: Descriptions of the age groups within which the 'excess' occurs apply only to the total population.

Source: AIHW National Mortality Database.

The bulk of the deaths and 'excess' deaths occur in the elderly, however a substantial proportion of the 'excess' was also found amongst the middle aged (in the case of ischaemic and rheumatic heart disease). Of note is that there were fewer deaths than expected as a result of ischaemic heart disease and stroke for elderly people from Outer Regional and remote areas.

More than half of the 'excess' deaths due to rheumatic heart disease occurred in remote areas, the rest of the 'excess' occurred in Outer Regional areas.

Indigenous population

Mortality of Indigenous people as a result of circulatory disease was 3.2 times as high, and for those younger than 65 years of age 8.6 times as high as for non-Indigenous people from Major Cities (Table 4.2). For the main causes of circulatory disease death, namely ischaemic heart disease, stroke and 'other' circulatory diseases, the rates for Indigenous people were respectively 3.3, 2.6 and 3.0 times those for non-Indigenous people who lived in Major Cities.

Death rates for Indigenous people due to rheumatic heart disease were 24 times as high as for their non-Indigenous counterparts from Major Cities, with the differential greater for younger age groups.

Annually there were 250, 81, 89 and 19 deaths of Indigenous people due to ischaemic heart disease, stroke, 'other' circulatory diseases and rheumatic heart disease. Of these, 175, 50, 59 and 18 respectively were in 'excess' of the number expected. These deaths were of Indigenous people from South Australia, Western Australia, the Northern Territory and Queensland only (where identification during this period was more reliable).

Table 4.2: The ratio of observed deaths from circulatory diseases to those expected if Major Cities^(a) rates applied in each ASGC Remoteness area, 1997–1999

Broad cause	Population	IR	OR	R ^(b)	VR ^(b)	National ^(c)
Ischaemic heart disease	All persons	*1.1	*1.1	*1.1	*1.3	n.p.
	Non-Indigenous	*1.1	*1.1	1.0	0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.2	*1.2	*1.3	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.3
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*9.3
Stroke	All persons	*1.0+	1.0	0.9	1.2	n.p.
	Non-Indigenous	1.0	1.0	*0.9	0.8	n.p.
	Non-Indigenous (aged 0–64 years)	1.0	1.1	1.0	1.4	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*2.6
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*6.5
Rheumatic heart disease	All persons	1.0	*1.4	*2.5	*6.8	n.p.
	Non-Indigenous	1.0	1.2	1.2	0.9	n.p.
	Non-Indigenous 0–64	0.9	1.3	2.0	0.3	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*23.9
	Indigenous 0–64	n.p.	n.p.	n.p.	n.p.	*50.2
'Other' circulatory diseases	All persons	*1.1	*1.2	*1.2	*1.3	n.p.
	Non-Indigenous	*1.1	*1.2	*1.1	0.8	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.3	1.3	1.1	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.0
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*6.6
Total circulatory diseases	All persons	*1.1	*1.1	*1.1	*1.3	n.p.
	Non-Indigenous	*1.1	*1.1	1.0	*0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.2	*1.2	*1.3	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.2
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*8.6

(a) While the number of expected deaths for the total population is based on the death rates of the total population from Major Cities, the expected number of deaths for the non-Indigenous population is based on the death rates of the non-Indigenous population from Major Cities. Because non-Indigenous people comprise the overwhelming majority (99%) of the population in Major Cities, these two standards are very similar, but not identical. This means that the ratios for the five population groups are not strictly comparable.

(b) Ratios calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

(c) The ratios for Indigenous persons are for SA, WA, NT and Qld combined. Data for the total and non-Indigenous populations for this (SA, WA, NT & Qld) area adds little relevant information and have not been published (n.p.). Because of concerns about the quality of the data, ratios for Indigenous people have not been published (n.p.) for each area.

Notes

1. Bold text and asterisk indicates that ratios are significantly different from 1 at the 95% level.
2. 1.0+ indicates that there were slightly (but significantly) more deaths than expected (but less than 1.05 times more).
3. 1.0– indicates that there were slightly (but significantly) fewer deaths than expected (but more than 0.95 times as many).

Source: AIHW National Mortality Database.

Non-Indigenous population

For nearly all specific causes of circulatory disease, the high mortality of Indigenous people, coupled with their greater representation outside Major Cities, is influential in elevating death rates in remote areas.

For the two main causes of death (ischaemic heart disease and 'other' circulatory diseases) there were 1.1–1.2 times more deaths of non-Indigenous people than expected in regional areas (Table 4.2), but about as many as expected in remote areas (although this pattern is affected by lower death rates for the aged in remote areas).

Death rates due to ischaemic heart disease for non-Indigenous people younger than 65 years of age showed an increase from 1.1 times in Inner Regional areas to 1.3 times in Very Remote areas the rate for their non-Indigenous counterparts from Major Cities. This pattern was similar for 'other' circulatory disease, for which rates were 1.1 and 1.3 times the Major Cities rates in Inner and Outer Regional areas, but were not significantly different in remote areas. There was no such clear increase with remoteness for death rates due to stroke or rheumatic heart disease in non-Indigenous people younger than 65 years.

4.1 Overview—circulatory diseases

Between 1997 and 1999, an annual average of 52,229 Australians died as a result of a disease of the circulatory system, comprising 25,360 males and 26,869 females (Table 4.3). Most of these (33,590) occurred in Major Cities, with a further 17,661 in Inner and Outer Regional areas, and the remaining 978 in Remote and Very Remote areas.

Circulatory diseases were responsible for 41% of all deaths nationally, and 42% of the 'excess' deaths in areas outside Major Cities.

Table 4.3: Average annual deaths due to circulatory diseases, 1997–1999

	MC	IR	OR	R	VR	Total
Males (no.)	15,820	6,010	2,950	370	200	25,360
Females (no.)	17,770	5,950	2,750	290	120	26,870
Persons (no.)	33,590	11,960	5,700	660	310	52,230
Non-Indigenous males ^(a) (per cent)	99	99	97	86	50	99
Non-Indigenous females ^(a) (per cent)	99	99	97	88	47	99
Non-Indigenous persons^(a) (per cent)	99	99	97	87	49	99
Non-Indigenous males (0–64 yrs) (no.)	2,464	880	500	79	30	3,953
Non-Indigenous females (0–64 yrs) (no.)	882	330	180	23	8	1,423
Non-Indigenous persons (0–64 yrs) (no.)	3,346	1,210	680	103	38	5,377
Indigenous persons^(b) (no.)	n.p.	n.p.	n.p.	n.p.	n.p.	439

(a) Percentages and counts are rounded to the nearest whole number.

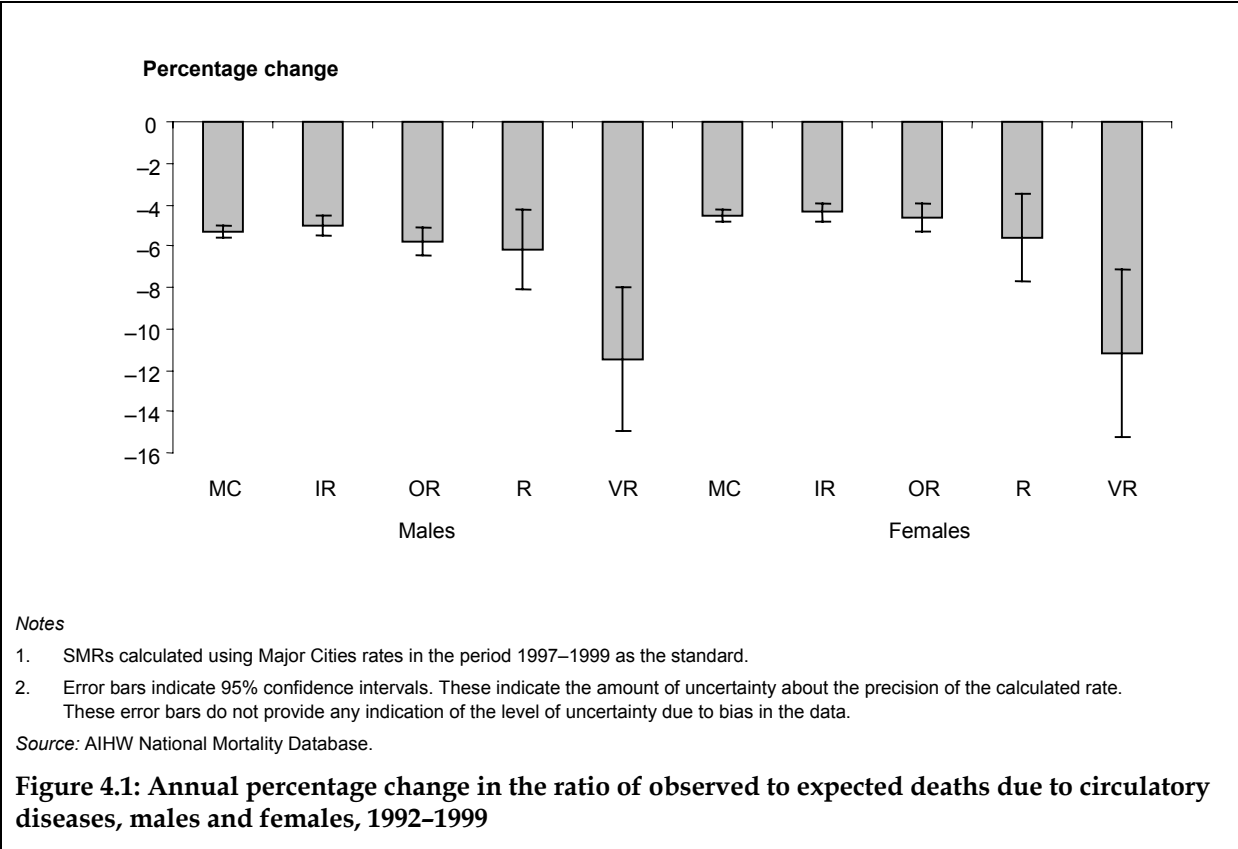
(b) The number of Indigenous deaths is the average annual number registered in SA, WA, NT and Qld in the period 1997–1999. An average of a further 149 were registered annually in the other jurisdictions. Counts of deaths have not been reported for Indigenous people by area because of concerns about data accuracy.

Source: AIHW National Mortality Database.

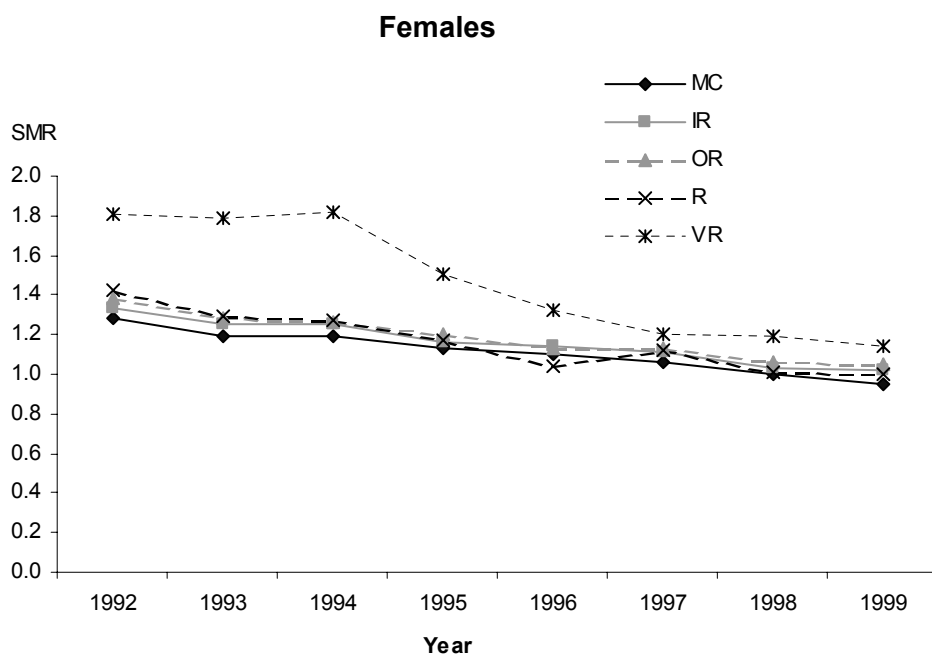
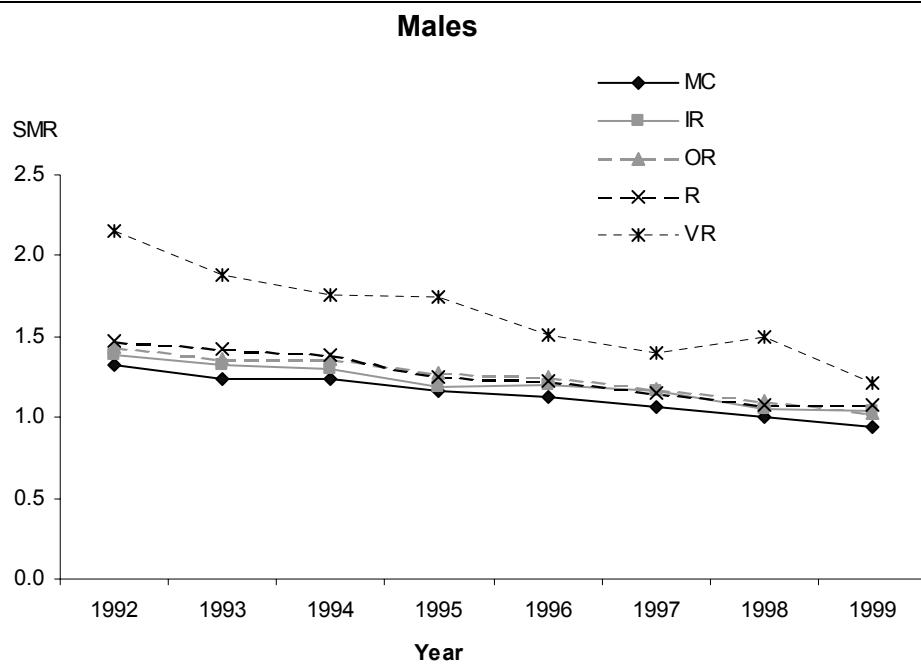
Trends in mortality due to diseases of the circulatory system

Death rates from this cause for both males and females fell in all areas between 1992 and 1999.

For males, annual percentage decreases were 5–6% in Major Cities, regional and Remote areas, but 11% in Very Remote areas. For females annual percentage decreases were slightly lower at 4.5–5% in Major Cities, regional and Remote areas, and 11% in Very Remote areas (Figures 4.1 and 4.2).



The lower rates of death due to circulatory disease in each of the areas have made major contributions to the overall decrease in death rates in these areas. In Major Cities, regional and Remote areas, decreases in death rates due to circulatory disease were responsible for between almost 70% and 80% of the overall reduction in ‘excess’ deaths. In Very Remote areas, the figure is lower at 45% of the overall reduction.



Note: SMRs calculated using Major Cities rates in the period 1997–1999 as the standard.

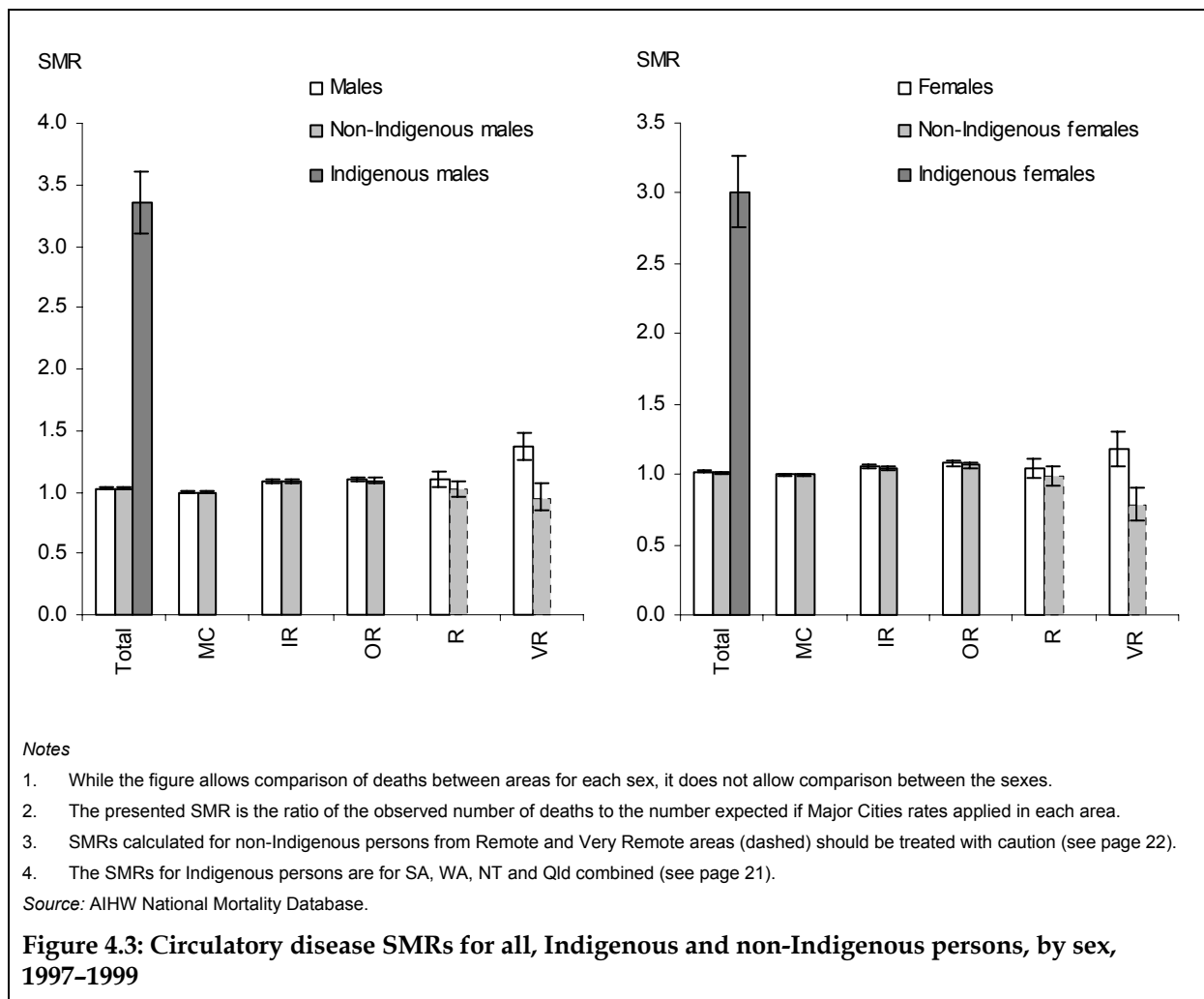
Source: AIHW National Mortality Database.

Figure 4.2: Trends in SMRs, circulatory disease, males and females, 1992–1999

Death rates due to circulatory diseases

Mortality due to circulatory diseases was higher for people living outside Major Cities. Figure 4.3 and Tables 4.4 and 4.5 show that:

- For males in regional and Remote areas, rates were 1.1 times those in Major Cities.
- For females in regional areas, rates were 1.05 times those in Major Cities, however rates in Remote areas were not significantly different from those in Major Cities.
- For males in Very Remote areas, rates were 1.4 times rates in Major Cities and higher than in any of the other areas.
- For females in Very Remote areas, rates were 1.15 times rates in Major Cities, but not significantly different from rates in any of the other areas.
- Mortality for Indigenous people was substantially higher than for the 'total' population and for non-Indigenous people in any of the areas; this higher mortality raises the average death rate, particularly in the more remote areas.



These figures would appear, on the surface, to show that mortality increases with increasing remoteness.

These rates, however, are influenced by the number of Indigenous people living outside Major Cities and the high overall mortality of Indigenous people (about three times the non-Indigenous mortality rate for circulatory disease). Without examining the mortality of the Indigenous and non-Indigenous populations separately, therefore, it is premature to draw the conclusion that remoteness is a factor influencing this aspect of the health of Australians.

Mortality of Indigenous people

Based on 1997–1999 death registrations, the leading cause of death for Indigenous people living in Queensland, South Australia, Western Australia and the Northern Territory was circulatory diseases. These diseases accounted for 30% of Indigenous deaths in these jurisdictions. Circulatory diseases were also the leading cause of death among the Australian population as a whole, accounting for 41% of all deaths. However, Indigenous males and females had higher death rates from this cause than the total population (Figure 4.3).

In 1997–1999, there were approximately three times as many deaths in the Indigenous population than expected (3.4 times more deaths for Indigenous males and 3.0 times more deaths for Indigenous females). Over half (57%) of these deaths were attributable to ischaemic heart disease (heart attack, angina), a further 18% were due to cerebrovascular disease (stroke), 4% were due to rheumatic heart disease and 20% were due to ‘other’ diseases of the circulatory system. According to an ABS report, ‘Risk factors contributing to the comparatively high incidence of cardiovascular disease among Aboriginal and Torres Strait Islander peoples include their high rates of smoking, obesity and diabetes. In addition, it has been argued that low infant birth weight predisposes a person to cardiovascular disease in later life. Thus the high rate of heart disease in Indigenous adults may be due in part to the relatively high proportion of Indigenous babies with low birth weight’ (ABS 2002).

As discussed on page 21, uncertainty about the accuracy of identification of Indigenous deaths prevents reporting of Indigenous mortality in rural and remote areas.

Mortality of non-Indigenous people

In contrast to the total population, mortality from circulatory diseases did not rise consistently with increasing remoteness for the non-Indigenous population.

Death rates for non-Indigenous males and females from Inner and Outer Regional areas resulting from circulatory diseases were higher than for those from Major Cities (Figure 4.3 and Table 4.5). For non-Indigenous males, however, death rates from this cause in Remote and Very Remote areas were similar to rates in Major Cities. For non-Indigenous females, death rates in Remote areas were similar to those in Major Cities, but in Very Remote areas were lower (0.8 times the Major Cities rate).

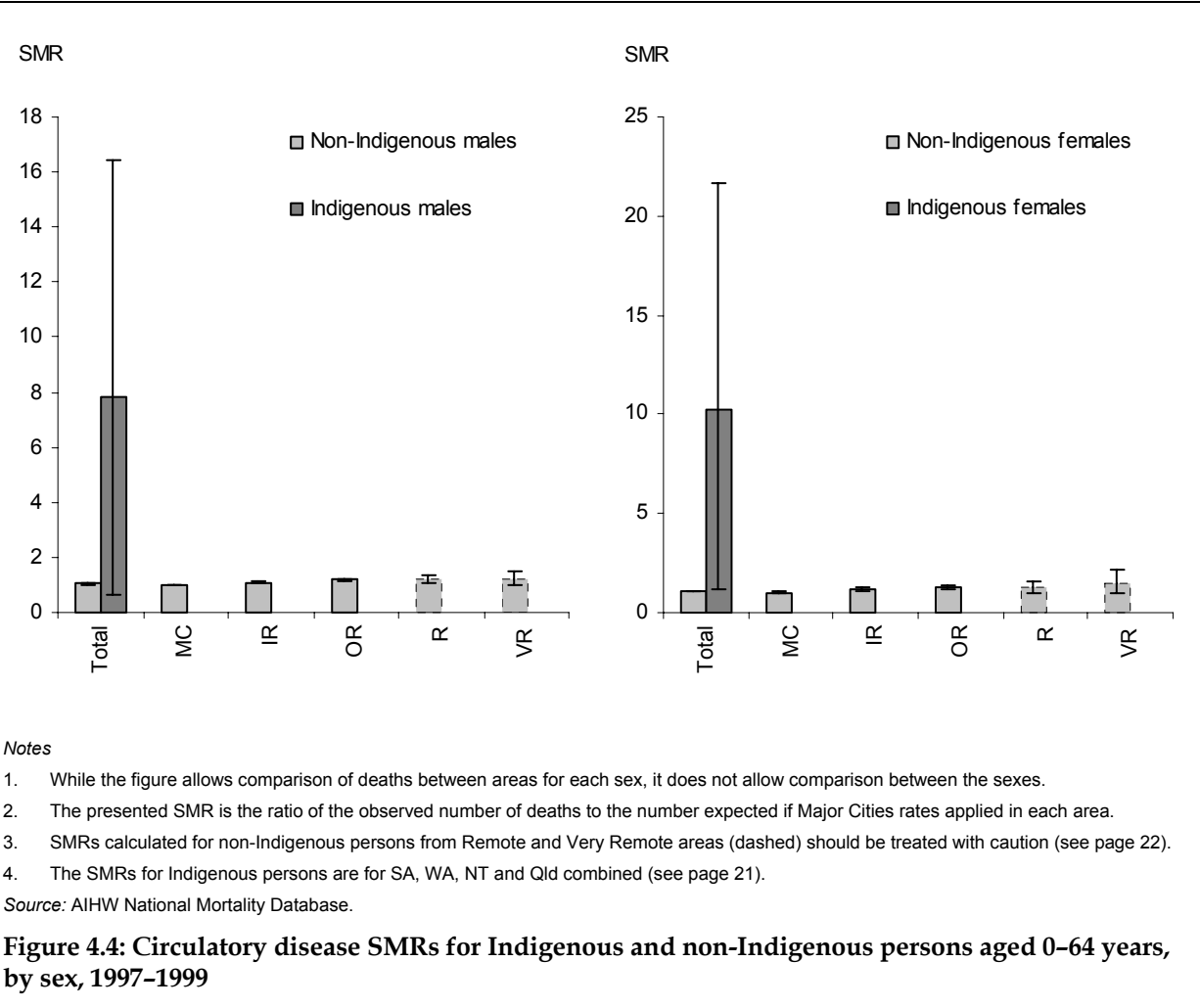
Mortality of people aged 0–64 years

Frequently, death rates of older non-Indigenous people from Remote and Very Remote areas are found to be substantially lower than those of similar aged people living in other areas, possibly reflecting a movement of older people with known health conditions into more populated areas to receive treatment, and eventually dying there.

These lower rates can substantially affect the summary statistic described for non-Indigenous people above. For this reason, rates for 0–64-year-old people are also presented here.

Death rates due to circulatory disease for Indigenous males and females who were younger than 65 years were 8 and 10 times as high respectively as rates for non-Indigenous males and females of the same age from Major Cities (Figure 4.4).

Death rates due to circulatory diseases for non-Indigenous males younger than 65 years were 1.1, 1.2 and 1.2 times as high in Inner Regional, Outer Regional and Remote areas respectively, as for similar males in Major Cities and, although elevated, were not significantly higher in Very Remote areas than in Major Cities. For non-Indigenous females in this age group, the rates were 1.15 and 1.3 times as high in Inner and Outer Regional areas, but, although elevated, not significantly higher in Remote and Very Remote areas than in Major Cities.



Variation by age group: circulatory diseases

An analysis of age-specific death rates gives more detailed information about each age group to confirm and supplement findings resulting from the broad analysis using ratios of observed to expected deaths alone.

Death rates in 1997–1999 from circulatory disease for both sexes were higher for most age groups in most regional and remote areas than in Major Cities. For both males and females,

death rates were negligible until age 25 years. For males the rates then rose to reach 200 deaths per 100,000 per year at age 55–59 years and 8,500 deaths per 100,000 per year for those 85 years and older. For females the pattern was similar: rates rose to 8,100 deaths per 100,000 per year for those 85 years and older.

Table 4.4: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, circulatory disease, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	2	1.64	1.98	1.03	4.71	2	0.92	0.67	1.08	0.00
5–14	1	0.61	0.36	0.00	*13.55	1	0.31	0.85	0.68	3.44
15–24	3	1.10	1.37	2.26	*3.99	2	0.97	*2.17	2.21	*6.65
25–44	17	*1.13	*1.21	*2.32	*5.36	7	1.06	*1.38	*2.54	*6.52
45–64	159	*1.11	*1.27	*1.48	*2.48	55	*1.20	*1.49	*1.85	*4.42
65–74	934	*1.08	*1.15	*1.13	*1.53	467	1.02	*1.18	*1.32	*1.58
75+	3,918	*1.08	*1.04	*0.90	*0.65	3,614	*1.06	*1.04	*0.92	*0.70
Total	..	*1.08	*1.10	*1.10	*1.36	..	*1.06	*1.08	1.04	*1.18

* Significantly different from 1 (that is, rates are significantly different from those for people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

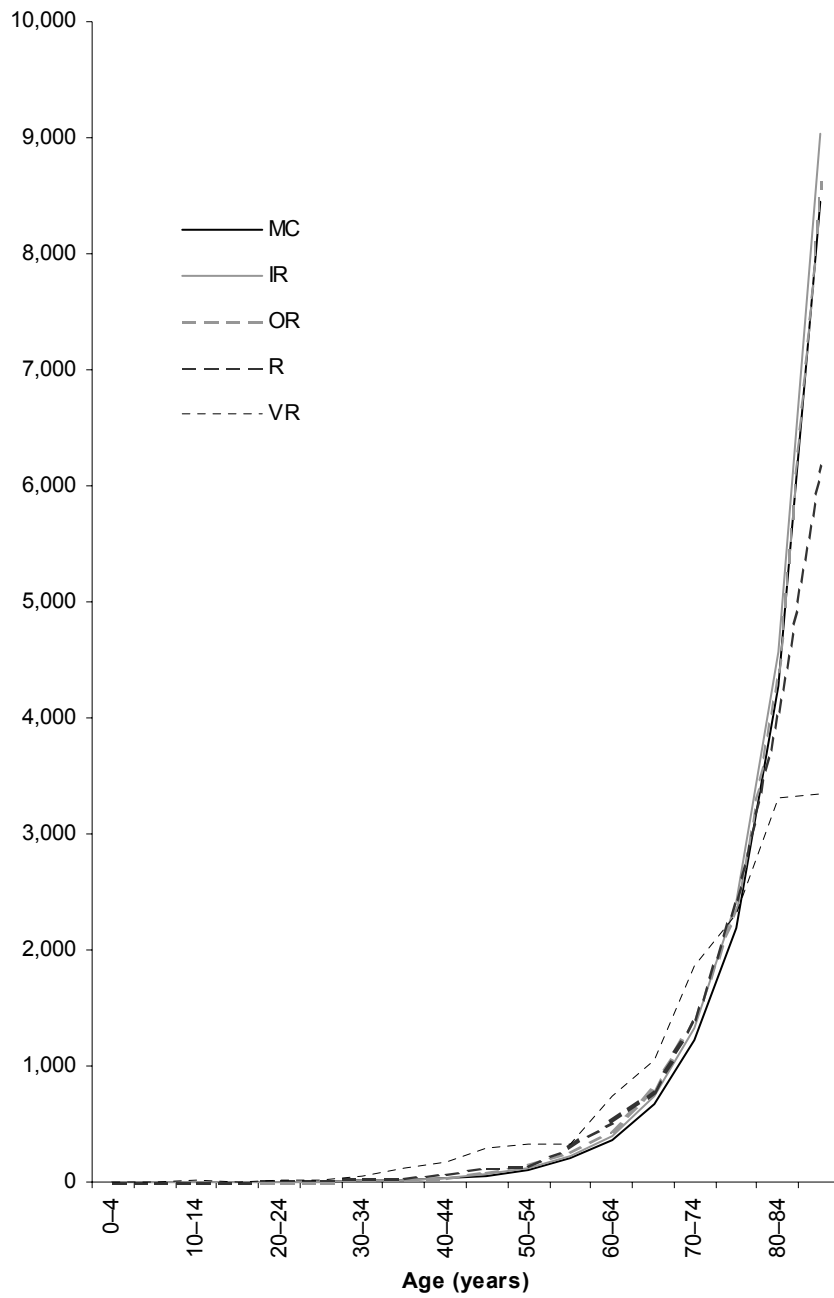
Death rates as a result of circulatory disease were higher in regional and remote areas at practically every age, except for those aged 75 years and over (Figures 4.5 and 4.6). In this age group, death rates in Remote and Very Remote areas were lower than those in Major Cities.

For males aged 25–74 years, death rates were substantially higher outside Major Cities, such that rates in Inner Regional areas were about 1.1 times as high, and those in Outer Regional areas 1.15–1.3 times as high. In remote areas, rates were higher again, particularly amongst 25–44-year-olds (up to 5 times as high) and 45–64-year-olds (up to 2.5 times as high).

For females aged 25–74 years, the pattern was similar to that for males, except the differential was a little greater.

For males and females 75 years and older, death rates in regional areas were 1.05–1.1 as high as in Major Cities, while in remote areas rates were 0.65–0.9 times (that is, lower than) those in Major Cities.

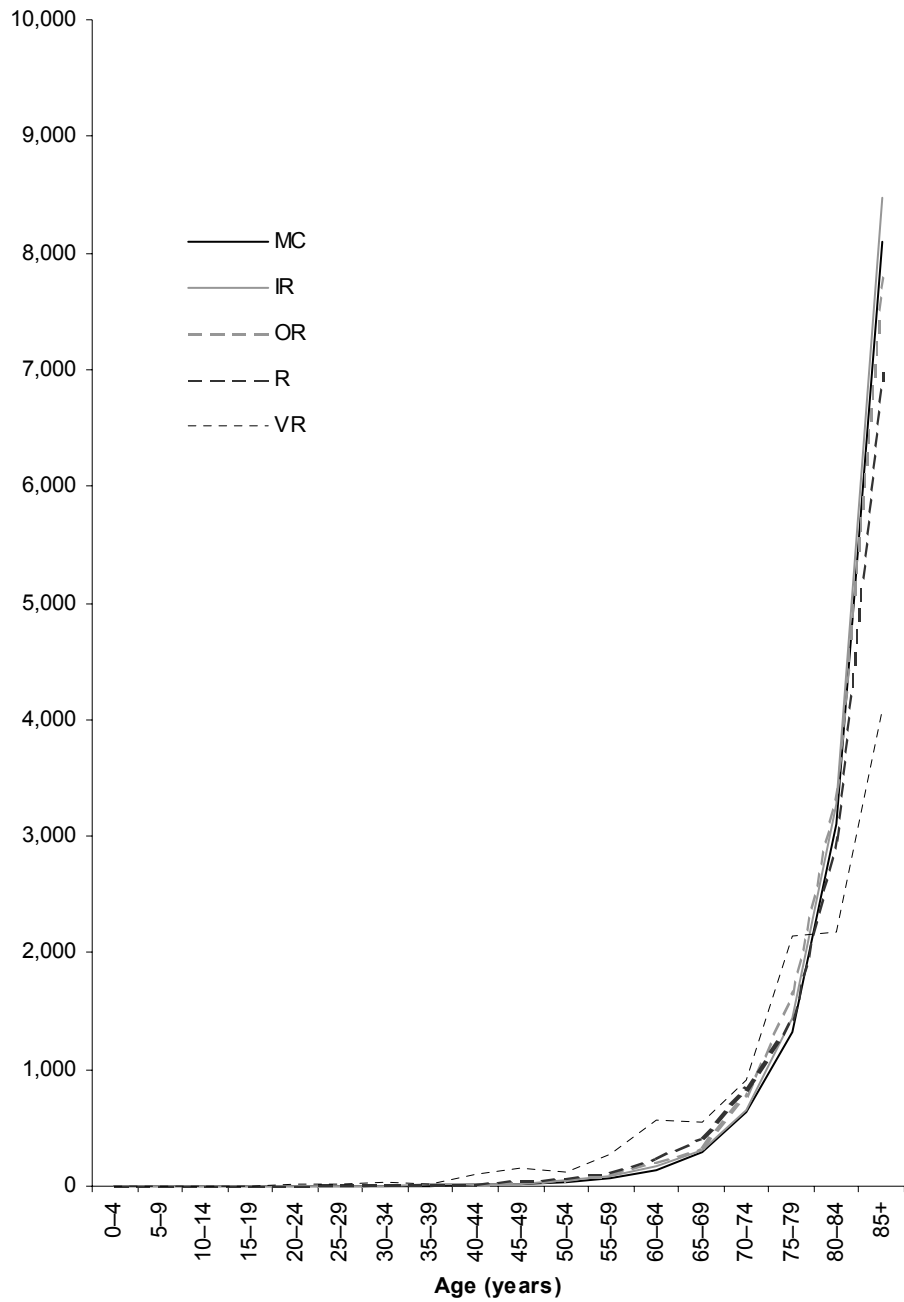
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 4.5: Age-specific death rates due to circulatory diseases, by ASGC Remoteness area, for males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 4.6: Age-specific death rates due to circulatory diseases, by ASGC Remoteness area, for females, 1997-1999

Age-specific rates for Indigenous people

Death rates of Indigenous people are much greater than for non-Indigenous people, irrespective of where the latter live. Indigenous males and females were more likely to die at younger ages from circulatory diseases than the total population (Table 4.5 and Figures 4.7 and 4.8). According to the ABS, the 'median age for deaths of Indigenous males from cardiovascular disease was 58 years, compared with 78 years for the total male population. For Indigenous females, the median age of death from this cause was 65 years, compared with 84 years for all females' (ABS 2002).

Age-specific death rates were clearly higher for Indigenous males and females than for non-Indigenous males and females in every age group except the youngest and oldest. The greatest relative differences occurred in the 25–44 year age group. In this age group, the death rate for Indigenous males was 13.6 times the rate for non-Indigenous males in Major Cities, and for Indigenous females the rate was 13.9 times as high as for non-Indigenous females in Major Cities. In the 45–64 year age group, the mortality rate for Indigenous males was 6.4 times that for non-Indigenous males in Major Cities, and the corresponding rate for Indigenous females was 9.9 times as high (Table 4.5).

Table 4.5: The ratio of observed deaths to those expected as a result of circulatory disease if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			(ratio)	IR	OR	R		VR	(ratio)
0–4	2	1.53	1.60	0.95	5.19	2.3	2	0.85	0.75	1.34	0.00	0.9
5–14	1	0.62	0.39	0.00	0.00	*7.1	1	0.32	0.53	0.80	0.00	1.8
15–24	3	1.02	1.24	1.64	2.02	*8.0	2	0.86	1.64	0.69	0.62	*7.2
25–44	16	1.12	1.00	1.10	1.27	*13.6	7	1.05	1.03	0.99	0.90	*13.9
45–64	158	*1.10	*1.20	*1.22	1.21	*6.4	54	*1.19	*1.34	1.31	*1.66	*9.9
65–74	932	*1.08	*1.14	1.08	*1.31	*2.6	466	1.02	*1.14	1.13	0.95	*4.4
75+	3,918	*1.08	*1.05	0.93	*0.68	1.0	3,614	*1.04	*1.04	0.94	*0.69	1.1
Total	..	*1.08	*1.09	1.02	0.95	*3.4	..	*1.04	*1.07	0.98	*0.78	*3.0
0–64	..	*1.10	*1.18	*1.21	1.23	*7.9	..	*1.16	*1.29	1.24	1.46	*10.2

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people

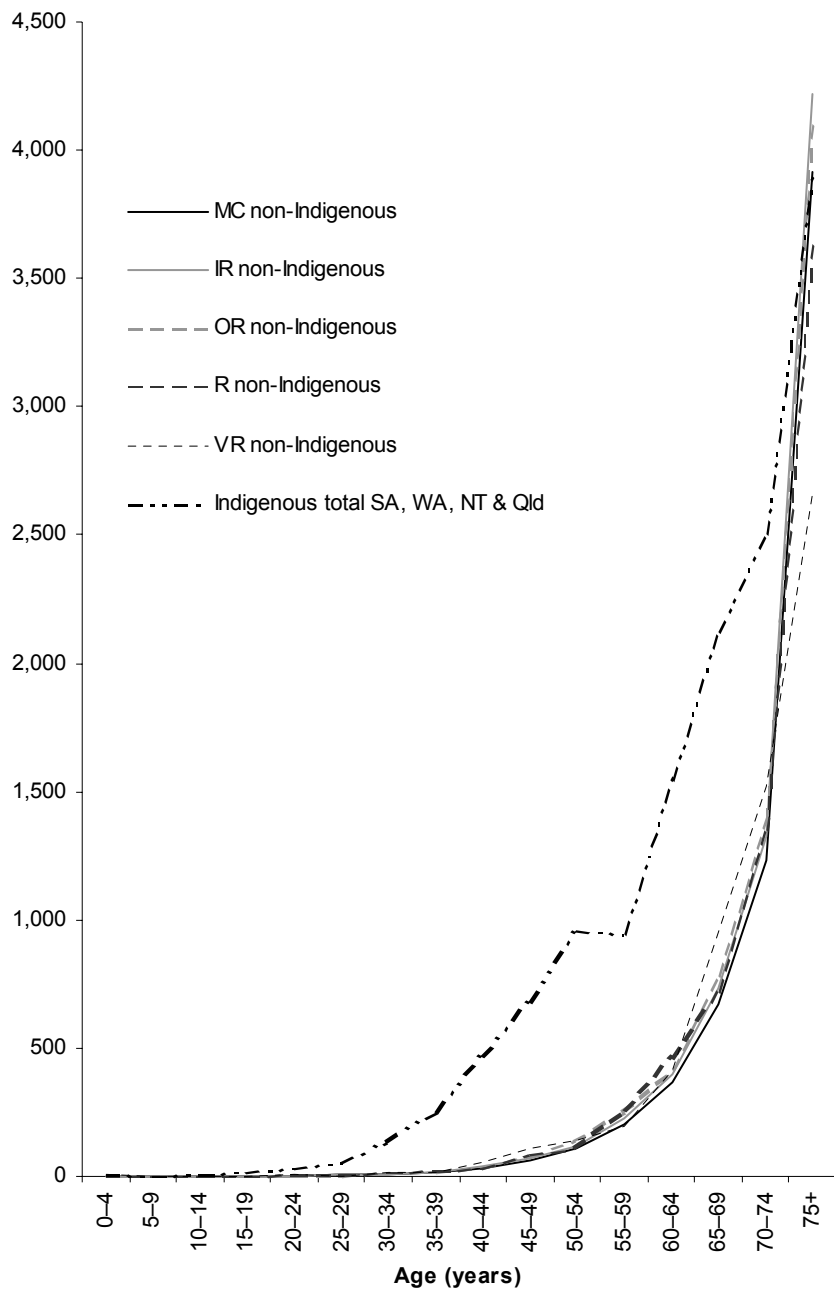
For non-Indigenous people, death rates due to circulatory disease, although higher outside Major Cities (Table 4.5 and Figures 4.7 and 4.8), show less variation from Major Cities rates than the total population (Table 4.4).

This implies that the large differentials for the total population are influenced by the high death rates for Indigenous people, which were substantially and significantly higher in most age groups than those of non-Indigenous people in Major Cities (and indeed in other areas). For non-Indigenous people, death rates were significantly higher than for those who live inside Major Cities in older age groups. For example, for those aged 45–74 years, death rates were about 1.1–1.2 times as high in Inner Regional areas, 1.15–1.35 times as high in Outer Regional areas, up to 1.30 times as high in Remote areas, and higher (perhaps to 1.3–1.7 times as high) in Very Remote areas.

For those aged 75 years or older, death rates were 1.05–1.1 times as high for males and 1.05 times as high for females in regional areas; and in Remote and Very Remote areas 0.9 and 0.7 times the rate for those in Major Cities (that is, lower).

This confirms the previous conclusion that death rates in the non-Indigenous population tend to be higher outside Major Cities, except for those in the oldest age groups in remote areas. When the effects of the possible movement of the frail aged to more populated areas and the mortality of Indigenous people are taken into account, death rates due to circulatory disease are higher outside Major Cities and appeared to increase with remoteness.

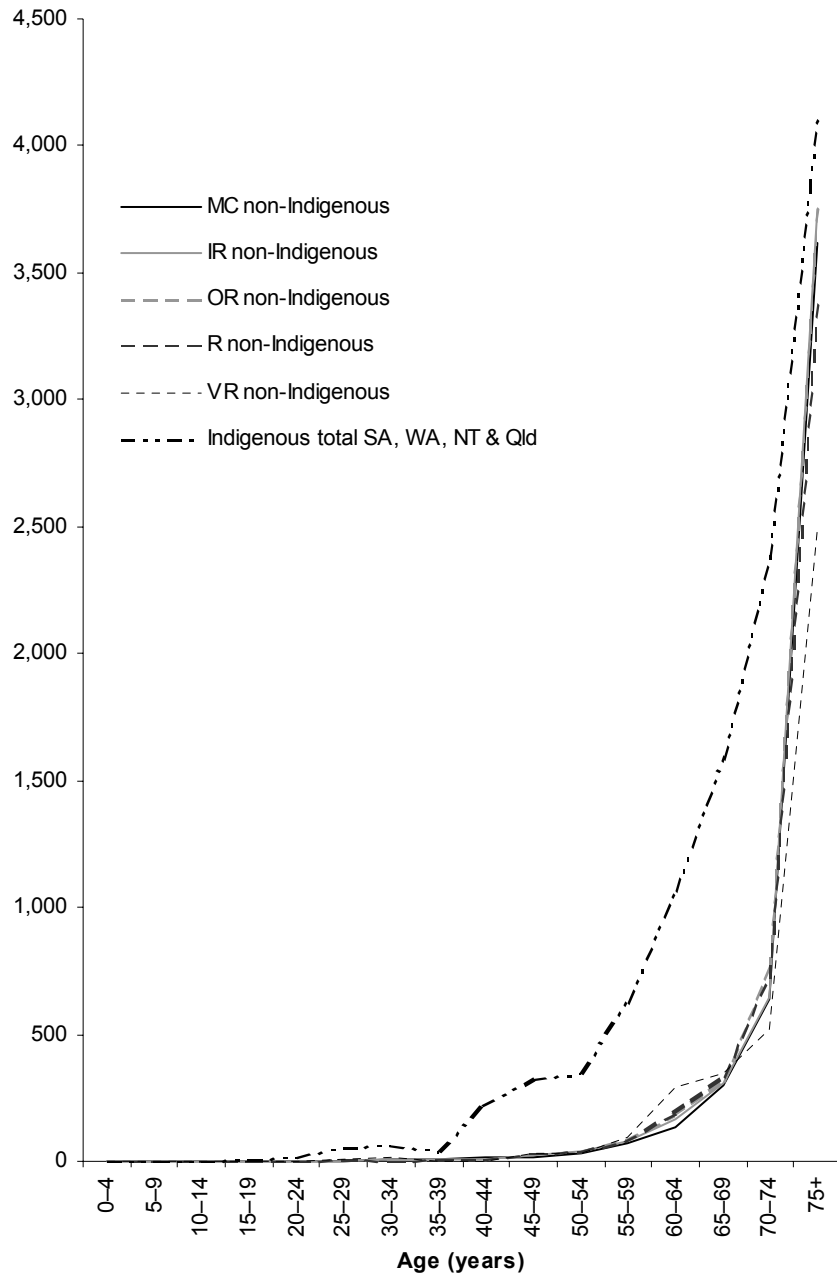
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 4.7: Age-specific death rates due to circulatory diseases, by ASGC Remoteness area, for non-Indigenous males and for SA, WA, NT and Qld Indigenous males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

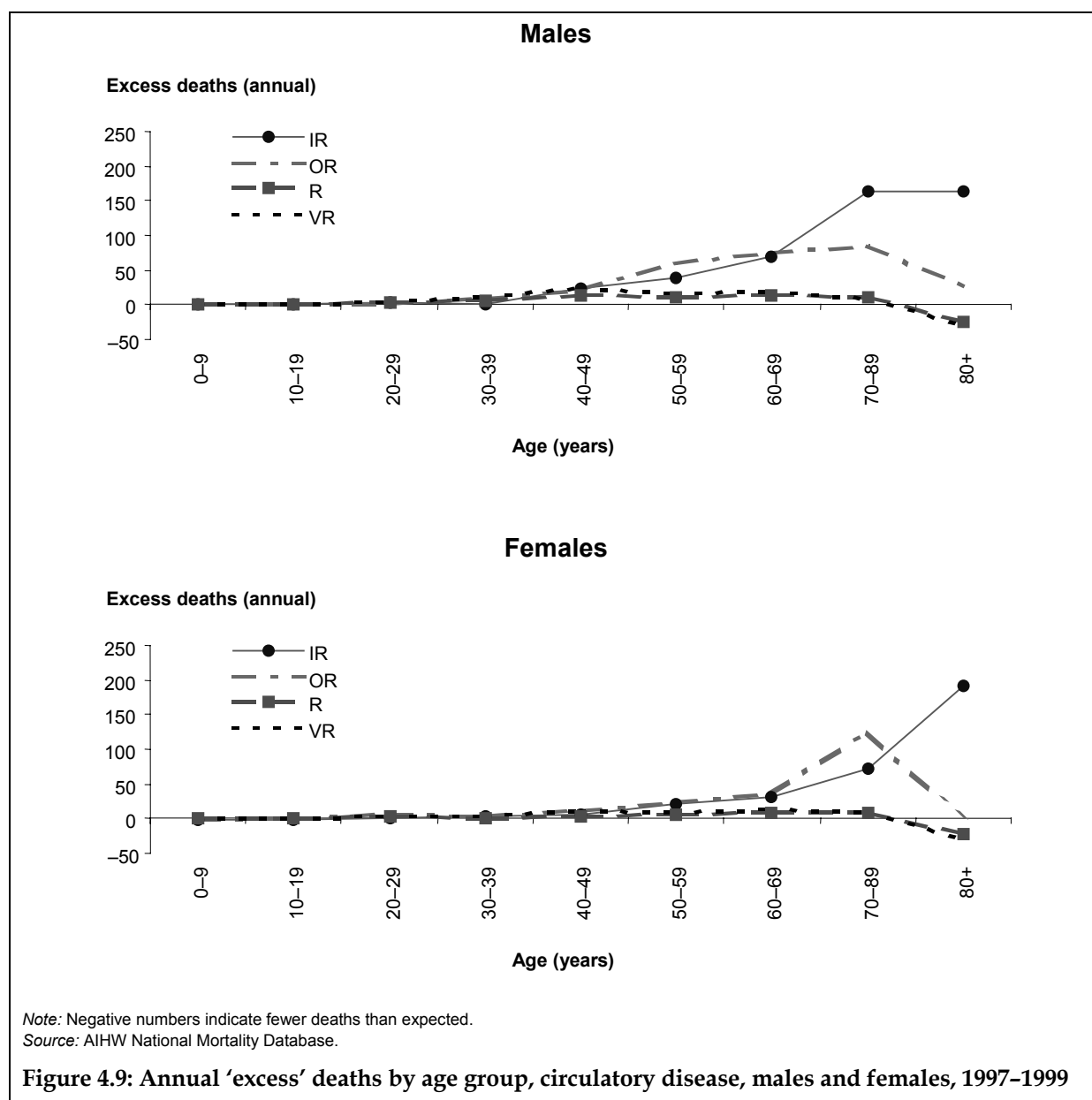
Figure 4.8: Age-specific death rates due to circulatory diseases, by ASGC Remoteness area, for non-Indigenous females and for SA, WA, NT and Qld Indigenous females, 1997-1999

'Excess' deaths due to circulatory disease

This measure is the difference between the number of observed deaths and the number expected. Whereas ratios provide a measure of inequity, a measure of the 'excess' provides a measure of the burden of the disease.

Annual 'excess' deaths

Annually between 1997 and 1999, there were 825 'excess' deaths of males and 552 'excess' deaths of females from circulatory disease across all areas outside Major Cities.



Deaths resulting from circulatory disease occur more frequently in older age groups, and it is only in the population older than 40 years that appreciable numbers of 'excess' deaths across areas outside Major Cities start to become apparent (Figure 4.9 and Appendix B).

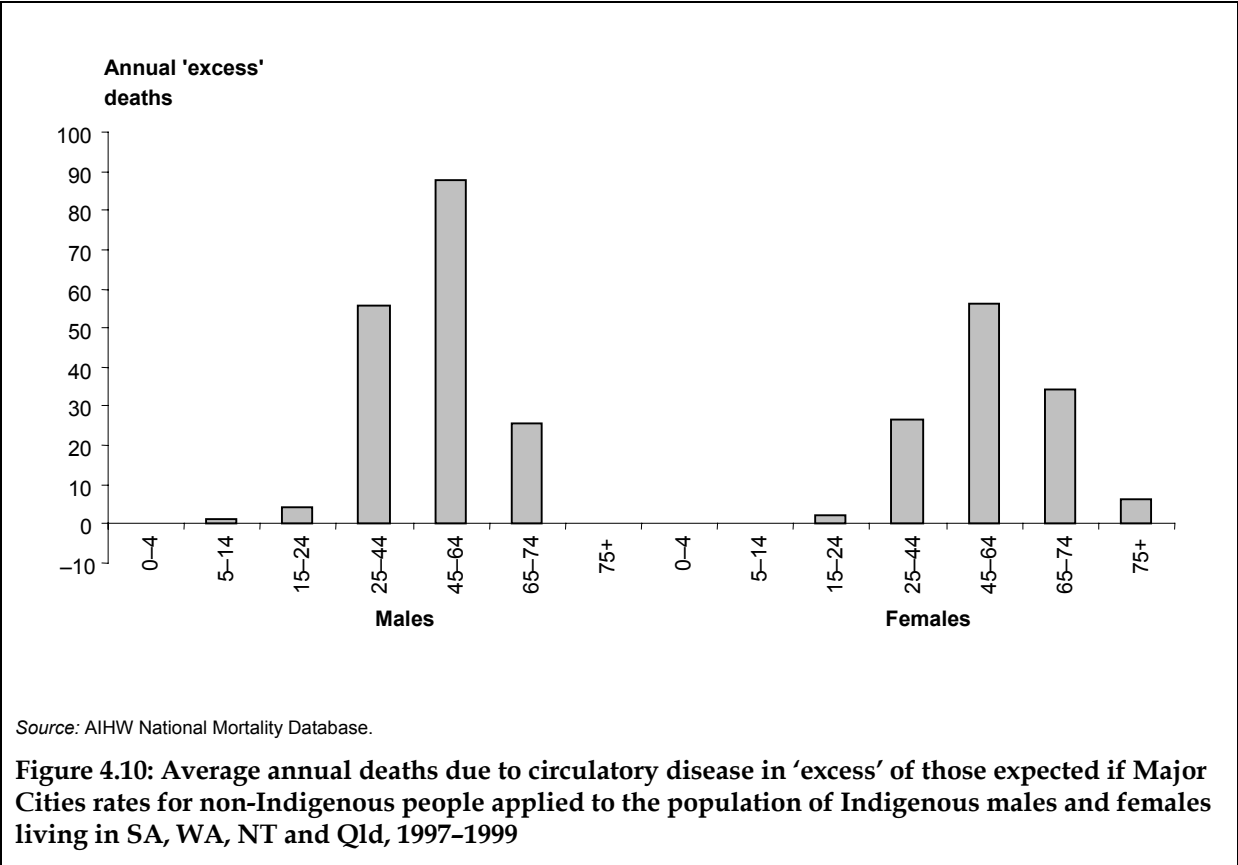
There were 294, 240, 50 and 67 'excess' deaths of males aged between 40 and 79 years in the four areas outside Major Cities and 129, 197, 29 and 41 'excess' deaths of similarly aged

females of that age group in those areas, respectively. For both males and females, the 70–79 year age group contributed the highest number of ‘excess’ deaths (163, 85, 12 and 10 for males, and 71, 125, 9 and 9 for females).

For those aged 80 years and over, however, the total numbers of ‘excess’ deaths (135 males and 138 females) were lower than for those aged 70–79 years. Most ‘excess’ deaths in this age group (164 males and 191 females) occurred in Inner Regional areas, however there were fewer deaths of females than expected in all other areas, and fewer deaths of males in Remote and Very Remote areas. As suggested previously, this may be a result of older people with known circulatory disease moving into more populated areas to receive treatment, and eventually dying there.

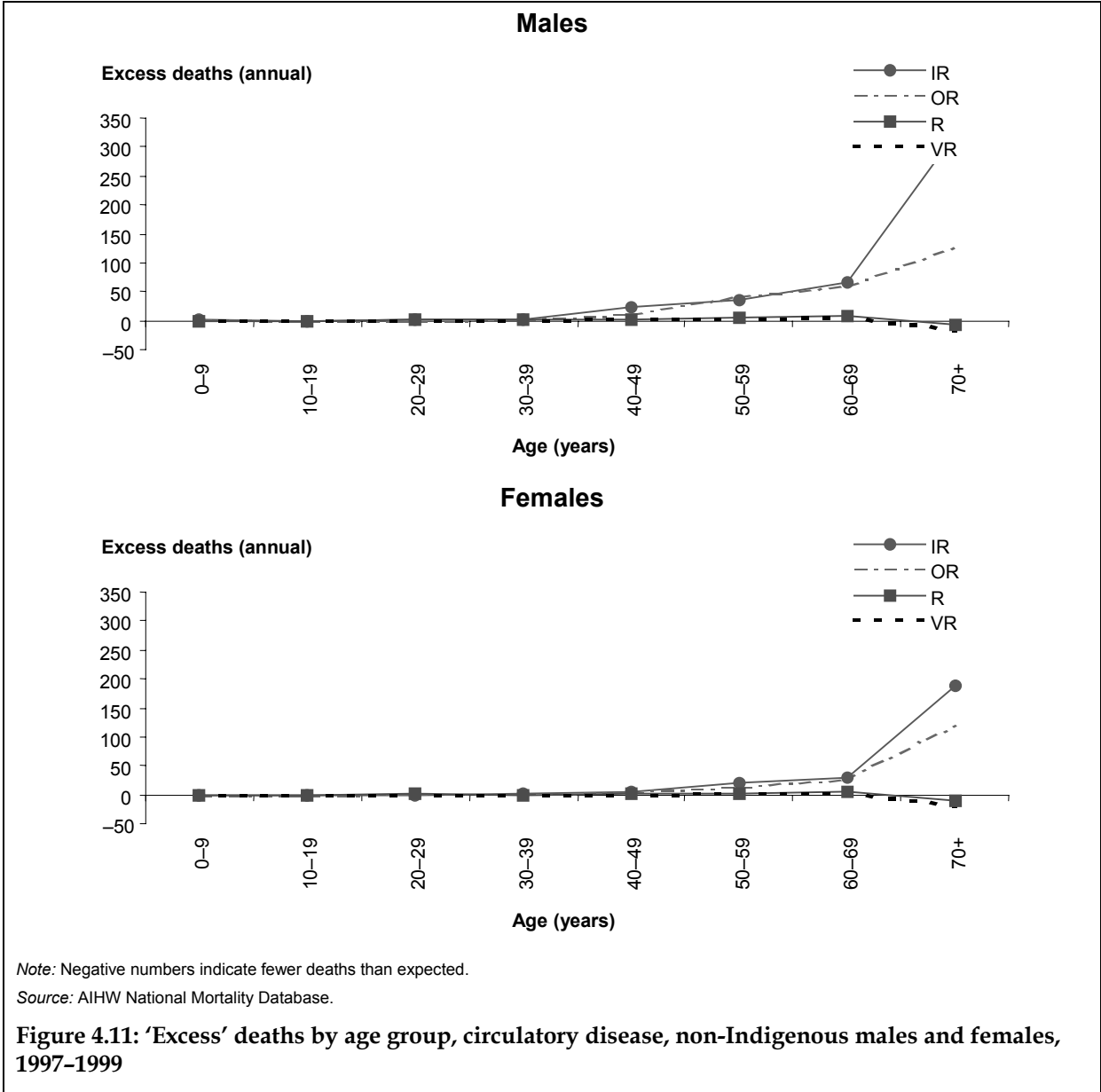
Annual ‘excess’ deaths of Indigenous people

In the Indigenous population there were 175 ‘excess’ deaths of males and 126 ‘excess’ deaths of females annually that resulted from circulatory diseases. These were calculated on the basis that Major Cities rates for non-Indigenous people had applied to the Indigenous population living in South Australia, Western Australia, the Northern Territory and Queensland. It is most likely that there were also ‘excess’ deaths of Indigenous people from these diseases in the other jurisdictions for which identification is considered less accurate (New South Wales, Victoria, Tasmania and the Australian Capital Territory).



The majority of these ‘excess’ deaths occurred in relatively young age groups (Figure 4.10 and Appendix B). For Indigenous males, 32%, 50% and 15% of the ‘excess’ deaths occurred in those who were aged 25–44, 45–64 and 65–74 years. For Indigenous females, the pattern was

similar with 21%, 44% and 28% of the 'excess' deaths occurring in those who were aged 25-44, 45-64 and 65-74 years.



Annual 'excess' deaths of non-Indigenous people

For the non-Indigenous population, there were 695 'excess' deaths of males and 391 'excess' deaths of females, annually, from circulatory diseases in the four areas outside Major Cities. The pattern of 'excess' deaths was different from the total population with most occurring in Inner and Outer Regional areas, demonstrating the effect of Indigenous mortality in remote areas (Figure 4.11 and Appendix B). Nearly all of the 'excess' deaths of non-Indigenous people were for those aged 70 years and over (323 and 127 male deaths in Inner and Outer Regional areas, respectively, and 189 and 120 female deaths in these areas). This is in marked contrast to the Indigenous population (in which most such deaths outside Major Cities occurred in those younger than 75 years).

4.2 Ischaemic heart disease

Ischaemic heart disease (coronary heart disease, ICD-10 codes I20–I25) is the single largest cause of premature death in Australia (AIHW 2002a). Risk factors include tobacco smoking, physical inactivity, alcohol misuse and poor nutrition. People with a family history of heart disease are often at greater risk, as are those with high blood pressure, high blood cholesterol and who have excess body weight.

Summary of findings

Annually, ischaemic heart disease was responsible for the deaths of 28,445 people (15,297 males and 13,148 females); 10,208 of these people came from areas outside Major Cities. Of these 28,445 deaths, 250 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

In regional areas, death rates for males and females were 1.1 and 1.05 times the Major Cities rate. In Remote and Very Remote areas, rates for males were 1.1 and 1.4 times the Major Cities rate respectively, while those for females in these areas were not significantly different to Major Cities rates.

There were over three times as many deaths of Indigenous people as expected from ischaemic heart disease.

For non-Indigenous males and females, there were 1.1 and 1.05 times as many deaths as expected in regional areas respectively, and about as many as expected in remote areas.

There were 0.6 and 0.7 times as many deaths of elderly (75 years and older) non-Indigenous males and females as expected in Very Remote areas.

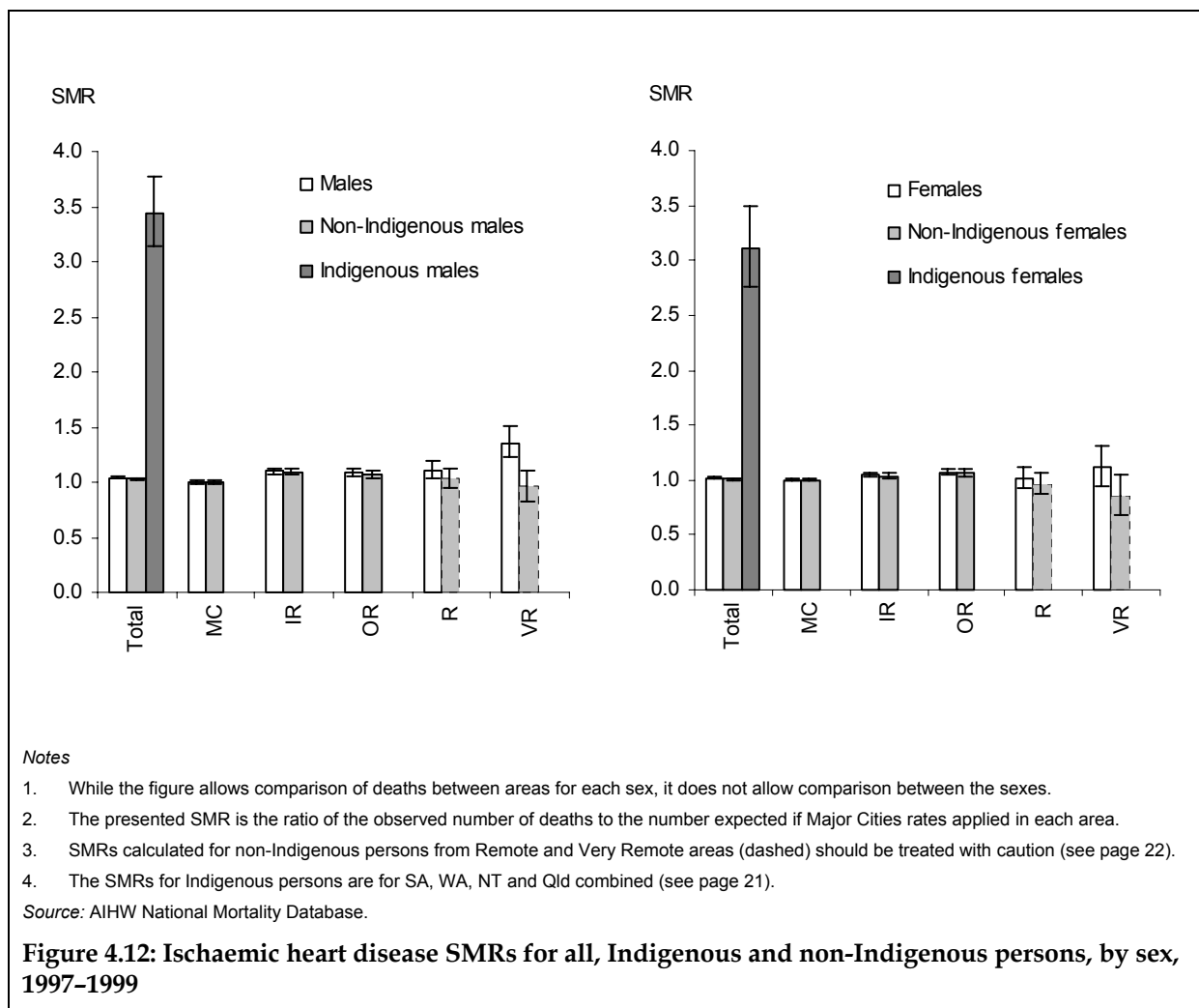
For the non-Indigenous population younger than 65 years, death rates increased with remoteness, in each of the four areas 1.1–1.2, 1.1–1.4, 1.2 and 1.9 times the rates for their counterparts in Major Cities.

Annually, there were 755 ‘excess’ deaths due to ischaemic heart disease outside Major Cities (465, 228, 25 and 37 in each of the four areas). Approximately 20% of these were ‘excess’ deaths of Indigenous people. While 80% of the ‘excess’ for the non-Indigenous population occurred in those who were 60 years and older, over 80% of the ‘excess’ for Indigenous people occurred in those who were 25–64 years old (that is, at a younger age).

There were 109 fewer deaths than expected of people who were 85 years and older in Outer Regional and remote areas.

Overall mortality due to ischaemic heart disease

Annually, there were 9,525, 3,670, 1,755, 229 and 118 deaths of males and 8,712, 2,903, 1,342, 138 and 53 deaths of females in Major Cities, Inner and Outer Regional, Remote and Very Remote areas as a result of ischaemic heart disease.



The death rate due to ischaemic heart disease tended to be higher outside Major Cities (Figure 4.12).

- There were 1.1 times as many deaths of males as expected in Inner and Outer Regional and Remote areas, and 1.4 times as many in Very Remote areas.
- There were 1.05 and 1.1 times as many deaths of females as expected in Inner and Outer Regional areas, while in remote areas, the number of observed deaths was not significantly different from the number expected.
- There were about 3 times as many deaths of Indigenous people due to ischaemic heart disease as expected.

In Major Cities, death rates due to ischaemic heart disease for males were close to 0 per 100,000 per year at age 20 years, rising gradually to 80 per 100,000 per year by age 50-54 years then more rapidly to 460 per 100,000 per year at age 65-69 years and 4,400 per 100,000 per year for those 85 years and older. The pattern was similar for females, with rates eventually to 3,800 per 100,000 per year for those who were 85 years and older.

Table 4.6: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, ischaemic heart disease, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	<1	0.00	0.00	0.10	0.00
5–14	0	..	..	..	..	<1	0.04	0.00	0.00	0.00
15–24	<1	2.11	0.41	6.19	9.30	<1	1.84	4.12	1.87	18.04
25–44	10	*1.22	*1.25	*2.21	*6.07	2	1.12	*1.90	2.39	*9.28
45–64	113	*1.11	*1.24	*1.45	*2.43	28	*1.26	*1.65	*1.88	*4.83
65–74	613	*1.11	*1.14	1.16	*1.48	260	1.02	*1.20	*1.35	1.29
75+	2,196	*1.08	1.01	*0.89	*0.54	1,746	*1.04	1.01	*0.88	*0.64
Total	..	*1.10	*1.08	*1.11	*1.36	..	*1.05	*1.07	1.01	1.12

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Age-specific death rates for males and females living outside Major Cities were higher than for their counterparts living inside Major Cities (Table 4.6).

For 25–74-year-old males there were 1.1–1.2, 1.15–1.25, 1.5–2.2 and 1.5–6 times as many deaths as expected due to this cause in the four areas outside Major Cities. The differences between Major Cities and regional/remote rates appear to be largest in the younger age groups.

The pattern was similar for females; that is, more deaths than expected in regional and remote areas (although fewer differences were statistically significant).

For males and females older than 75 years, there were 1.05–1.1 times as many deaths as expected due to this cause in Inner Regional areas, about as many as expected in Outer Regional areas, and 0.9 and 0.6 times as many as expected (that is, fewer) in Remote and Very Remote areas respectively.

As a result of ischaemic heart disease, there were 328, 137, 23 and 31 ‘excess’ deaths of males annually, and 137, 91, 2 and 6 ‘excess’ deaths of females annually in the four areas outside Major Cities. Almost all of the ‘excess’ deaths occurred among those older than 50 years. In Outer Regional, Remote and Very Remote areas, there were substantially fewer deaths than expected in those older than 80 years.

Indigenous population

Annually in the period 1997–1999, there were 250 deaths of Indigenous people (156 males and 95 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 250 deaths, there were 175 (110 males and 64 females) more than expected.

There were 3.4 and 3.1 times as many deaths of Indigenous males and females as expected (Table 4.7). For males, 90% of the 'excess' was in 25–64-year-olds, while for females, about 80% was amongst 45–74-year-olds, with a further 20% among 25–44-year-olds.

Non-Indigenous population

Annually, there were 9,481, 3,643, 1,699, 200 and 61 deaths of non-Indigenous males and 8,678, 2,885, 1,305, 123 and 29 deaths of non-Indigenous females in the five areas as a result of ischaemic heart disease.

Death rates due to ischaemic heart disease were higher in regional areas and not significantly different in remote areas, compared with Major Cities (Table 4.7).

- There were 1.1 times as many deaths of non-Indigenous males as expected in regional areas. There were about as many deaths of non-Indigenous males as expected in remote areas.
- There were 1.05 times as many deaths of non-Indigenous females as expected in regional areas. There were about as many deaths of non-Indigenous females as expected in remote areas.

Table 4.7: The ratio of observed deaths to those expected as a result of ischaemic heart disease if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	0	..	..	..	..	<1	0.00	0.00	0.00	0.00	23.9	
5–14	0	..	..	..	..	<1	0.04	0.00	0.00	0.00	0.0	
15–24	<1	1.67	0.49	8.16	0.00	*20.5	<1	1.87	2.50	0.31	0.00	*20.0
25–44	9	*1.20	0.96	1.21	1.37	*17.0	2	1.06	1.19	0.88	0.05	*23.6
45–64	112	*1.10	*1.16	*1.21	1.21	*6.3	27	*1.23	*1.45	1.36	*2.13	*11.3
65–74	612	*1.11	*1.13	1.11	*1.39	*2.3	258	1.02	*1.17	1.20	1.04	*4.0
75+	2,197	*1.08	1.02	0.92	*0.61	0.8	1,745	*1.03	1.01	0.90	*0.73	1.1
Total	..	*1.10	*1.07	1.04	0.96	*3.4	..	*1.04	*1.06	0.97	0.86	*3.1
0–64	..	*1.11	*1.14	*1.21	1.23	*8.2	..	*1.22	*1.42	1.30	*1.86	*13.2

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

There were 0.6–0.7 times as many (that is, fewer) deaths of non-Indigenous people aged 75 years and older from Very Remote areas.

As a result of ischaemic heart disease, there were 317, 112, 7 and –3 ‘excess’ deaths of non-Indigenous males annually, and 100, 72, –4 and –5 ‘excess’ deaths of non-Indigenous females annually in the four areas outside Major Cities. The bulk of the ‘excess’ deaths occurred in those older than 70 years, with those otherwise older than 50 years also contributing. There were fewer deaths than expected in Remote and Very Remote areas amongst those older than 70 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 165 (115 male, 50 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of ischaemic heart disease. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 165 deaths, there were 148 (101 males and 46 females) more than expected.

For Indigenous males and females who were younger than 65 years old, there were 8 and 13 times as many deaths as expected as a result of ischaemic heart disease (Table 4.7).

Non-Indigenous population

Annually, there were 1,678, 607, 333, 54 and 20 deaths of non-Indigenous males younger than 65 years and 401, 160, 92, 11 and 5 deaths of non-Indigenous females younger than 65 years in the five areas as a result of ischaemic heart disease.

Death rates due to ischaemic heart disease tended to be higher outside Major Cities (Table 4.7).

- There were 1.1, 1.1 and 1.2 times as many deaths of 0–64-year-old non-Indigenous males as expected in Inner Regional, Outer Regional and Remote areas. In Very Remote areas, although elevated, the numbers of deaths were not significantly greater than expected.
- There were 1.2, 1.4 and 1.9 times as many deaths of 0–64-year-old non-Indigenous females as expected in Inner Regional, Outer Regional and Very Remote areas. In Remote areas, although elevated, the numbers of deaths were not significantly greater than expected.

As a result of ischaemic heart disease, there were 61, 42, 10 and 4 ‘excess’ deaths of non-Indigenous males younger than 65 years annually, and 28, 27, 3 and 2 ‘excess’ deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. The bulk of the deaths were contributed by people older than 45 years, with older ages contributing more.

4.3 Stroke

Stroke (cerebrovascular disease, ICD-10 codes G45, G46 and I60–I69) ‘includes a group of diseases that affect the arteries supplying blood to the brain. Stroke is the second leading cause of death in Australia, a large contributor to disability, and places a heavy burden on family members and care providers’ (AIHW 2002a). Risk factors are similar to those for ischaemic heart disease, and people who have experienced atrial fibrillation or transient ischaemic attack are at greater risk. Risk of stroke can be reduced by actions such as reducing blood pressure through medication, smoking cessation, or reducing other risk factors.

Summary of findings

Annually, stroke was responsible for the deaths of 12,364 people (4,946 males and 7,418 females); 4,215 of these people came from areas outside Major Cities. Of these 12,364 deaths, 81 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

In almost all areas, death rates were not significantly different to those in Major Cities, however, in Very Remote areas there were 1.4 times as many deaths of males as expected due to this cause.

There were about 3 and 2 times as many deaths of Indigenous males and females as expected from stroke.

For non-Indigenous males and females, there were about as many deaths as expected in regional and remote areas, except in Very Remote areas where there were 0.6 times as many deaths of females as expected.

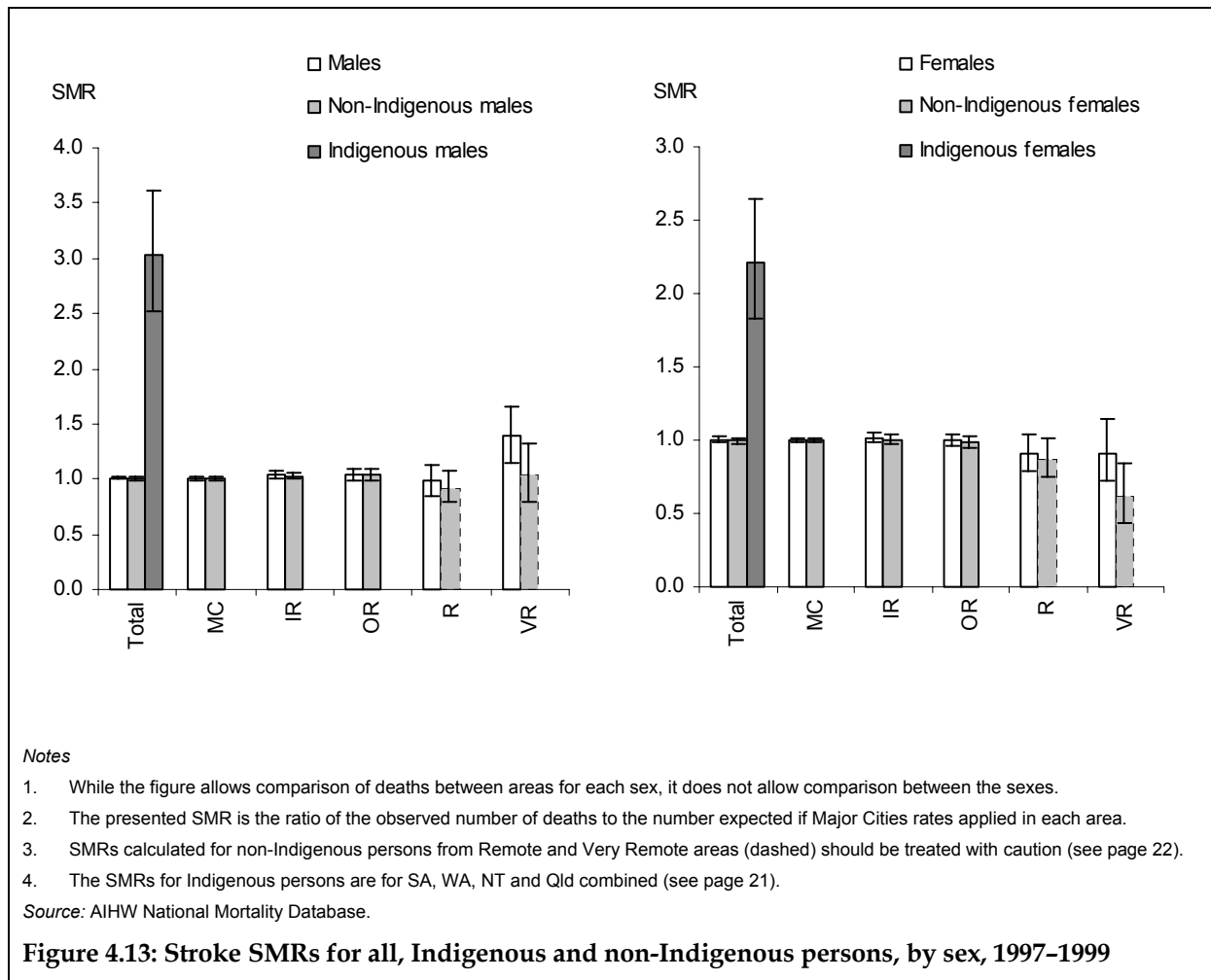
There were 0.8 and 0.5 times as many deaths of non-Indigenous females aged 75 years and older as expected in Remote and Very Remote areas which lowered the overall death rate for non-Indigenous females.

For the non-Indigenous population younger than 65 years, there were as many deaths of males as expected and more deaths of females than expected (1.2 times as many in regional areas, but the difference in remote areas was not significant).

Annually, there were 85 ‘excess’ deaths due to stroke outside Major Cities (65, 20, –8 and 8 in each of the four areas), however for those who were younger than 85 years, there were 124 ‘excess’ deaths (27, 69, 6 and 22 in each of the four areas).

Overall mortality due to stroke

Annually, there were 3,151, 1,141, 550, 65 and 39 deaths of males and 4,998, 1,609, 715, 71 and 25 deaths of females in the five areas as a result of stroke.



Death rates due to stroke were generally similar inside and outside Major Cities (Figure 4.13 and Table 4.8).

- Death rates for males in Inner and Outer Regional, as well as Remote areas were similar to rates in Major Cities. In Very Remote areas, there were 1.4 times as many deaths of males as expected.
- Death rates for females were not significantly different across the areas, although they tended to be lower in remote areas.
- There were about 2-3 times as many deaths of Indigenous people due to stroke as expected.

Table 4.8: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, stroke, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	<1	2.35	0.10	0.00	0.00	<1	0.00	5.59	0.00	0.00
5–14	<1	1.34	0.04	0.00	0.00	<1	0.20	1.06	0.00	0.00
15–24	<1	0.76	1.86	0.00	0.00	<1	0.86	1.54	0.95	0.78
25–44	3	*0.71	0.82	1.72	*3.79	2	1.09	*1.61	1.30	*4.43
45–64	21	1.03	1.16	1.20	*2.83	13	*1.16	*1.27	*2.04	*3.48
65–74	156	0.97	*1.17	0.85	*2.13	111	0.99	1.12	1.08	1.28
75+	893	*1.05	0.98	0.96	0.82	1,046	1.02	0.97	*0.81	*0.60
Total	..	1.03	1.04	0.98	*1.38	..	1.02	1.00	0.91	0.91

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates due to stroke for males were close to 0 per 100,000 per year at age 20 years, rising gradually at first, then more rapidly with age to about 2,100 per 100,000 per year for those 85 years and older. The pattern and rates were similar for females.

Age-specific death rates for people 25–74 years were frequently higher than for those in Major Cities (with the exception of rates for 25–44-year-old males from Inner Regional and Outer Regional areas). Where statistically significant, there were 1.2–1.6, 2 and 2.1–4.4 times as many deaths as expected in Outer Regional, Remote and Very Remote areas.

For males and females who were 75 years and older, there were slightly more deaths of males and about the same number of deaths of females as expected in Inner Regional areas, about as many as expected in Outer Regional areas and fewer deaths of females than expected (0.8 and 0.6 times as many as expected) in Remote and Very Remote areas. There were fewer deaths of males from remote areas than expected but not significantly fewer.

As a result of stroke, there were 34, 20, –1 and 11 ‘excess’ deaths of males annually, and 31, 0, –7 and –2 ‘excess’ deaths of females annually in the four areas outside Major Cities. Almost all of the ‘excess’ deaths occurred among those older than 60 years. In Outer Regional, Remote and Very Remote areas, there were substantially fewer deaths than expected in those older than 80 years.

Indigenous population

Annually in the period 1997–1999, there were 81 deaths of Indigenous people (43 males and 38 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 81 deaths, there were 50 (29 males and 21 females) more than expected.

There were 3.0 and 2.2 times as many deaths of Indigenous males and females as expected (Table 4.9).

- There were between 4 and 9 times as many deaths of 25–74-year-old Indigenous people as expected.
- For males, 65% of the ‘excess’ occurred in 45–74-year-olds, and for females, 65% of the ‘excess’ occurred in 25–64-year-olds (a further 30% occurring in females 65–74 years old).
- There were 1.5 times as many, or similar numbers of deaths as expected of Indigenous males and females 75 years and older.

Table 4.9: The ratio of observed deaths to those expected as a result of stroke if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR			IR	OR	R	VR	
0–4	<1	2.40	0.11	1.63	0.00	0.0	<1	0.00	6.01	0.00	0.00	0.0
5–14	<1	1.37	0.04	0.00	0.00	0.0	<1	0.21	1.13	0.00	0.00	0.0
15–24	<1	0.50	1.96	0.00	0.00	2.9	<1	0.87	1.01	1.14	1.86	3.0
25–44	3	*0.66	0.70	0.73	1.06	*8.5	2	1.13	1.40	1.20	2.73	*5.9
45–64	20	1.03	1.12	0.94	1.55	*5.7	13	*1.17	1.16	1.37	1.10	*7.8
65–74	155	0.97	*1.16	0.83	1.43	*4.2	111	0.99	1.07	1.00	0.70	*3.7
75+	893	*1.05	1.00	0.96	0.81	*1.5	1,046	1.00	0.97	*0.82	*0.53	1.1
Total	n.p.	1.03	1.04	0.92	1.03	*3.0	n.p.	1.00	0.99	0.87	*0.61	*2.2
0–64	n.p.	0.98	1.06	0.88	1.43	*6.2	n.p.	*1.15	*1.21	1.31	1.48	*6.9

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Non-Indigenous population

Annually, there were 3,140, 1,136, 539, 56 and 21 deaths of non-Indigenous males and 4,988, 1,603, 698, 64 and 12 deaths of non-Indigenous females in the five areas as a result of stroke.

There were generally as many deaths as expected outside Major Cities, except in Very Remote areas where there were 0.6 times as many deaths of females as expected (Table 4.9).

Age-specific death rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The pattern exhibited by age-specific death rates is similar for non-Indigenous people to that for the total population. However, rates for non-Indigenous people in Remote and Very Remote areas were lower than for the total population in these areas. Consequently, in Remote and Very Remote areas, although age-specific rates for people 25–64 years were elevated, they were less elevated than for the total population (and did not reach statistical significance). Rates for those older than 75 years follow the same pattern as for the total population.

As a result of stroke, there were 33, 20, -5 and 1 'excess' deaths of non-Indigenous males annually, and 8, -8, -9 and -8 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. Almost all of the 'excess' deaths occurred among those older than 70 years. In Outer Regional, Remote and Very Remote areas, there were substantially fewer deaths of females than expected in those older than 70 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 35 (19 male, 16 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of stroke. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 35 deaths, there were 30 (16 males and 14 females) more than expected.

For Indigenous males and females who were younger than 65 years old, there were 6 and 7 times as many deaths as expected as a result of stroke (Table 4.9).

Non-Indigenous population

Annually, there were 334, 106, 61, 8 and 5 deaths of non-Indigenous males younger than 65 years and 220, 81, 42, 6 and 2 deaths of non-Indigenous females younger than 65 years in the five areas as a result of stroke.

There were about as many deaths of 0–64-year-old non-Indigenous males as expected due to stroke in the areas outside Major Cities (Table 4.9). However, there were 1.2 times as many deaths of 0–64-year-old non-Indigenous females as expected due to stroke in Inner and Outer Regional areas. In remote areas, the numbers of deaths of females were greater (but not significantly greater) than expected.

As a result of stroke, there were -2, 4, -1 and 1 'excess' deaths of non-Indigenous males younger than 65 years annually, and 11, 7, 1 and 1 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities.

4.4 Rheumatic heart disease

Rheumatic heart disease (ICD-10 codes I00–I02 and I05–I09) results from recurrent bouts of rheumatic fever (which is caused by group A streptococcus bacteria associated with infections of the throat and skin). Rheumatic fever damages heart valves and muscles as well as the brain and joints. Rheumatic heart disease can be prevented by treatment of rheumatic fever with strict follow up and monthly injections of penicillin (AIHW 2002b).

Summary of findings

Annually, rheumatic heart disease was responsible for the deaths of 267 people (87 males and 180 females); 102 of these people came from areas outside Major Cities. Of these 267 deaths, 19 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Rheumatic heart disease death rates were similar in Inner Regional areas, 1.3–1.4, 2.6 and 6–8 times as high in Outer Regional, Remote and Very Remote areas.

There were about 30 and 20 times as many deaths of Indigenous males and females due to rheumatic heart disease as expected.

For non-Indigenous males and females, there were about as many deaths as expected in regional and remote areas. This pattern was also true for non-Indigenous people younger than 65 years.

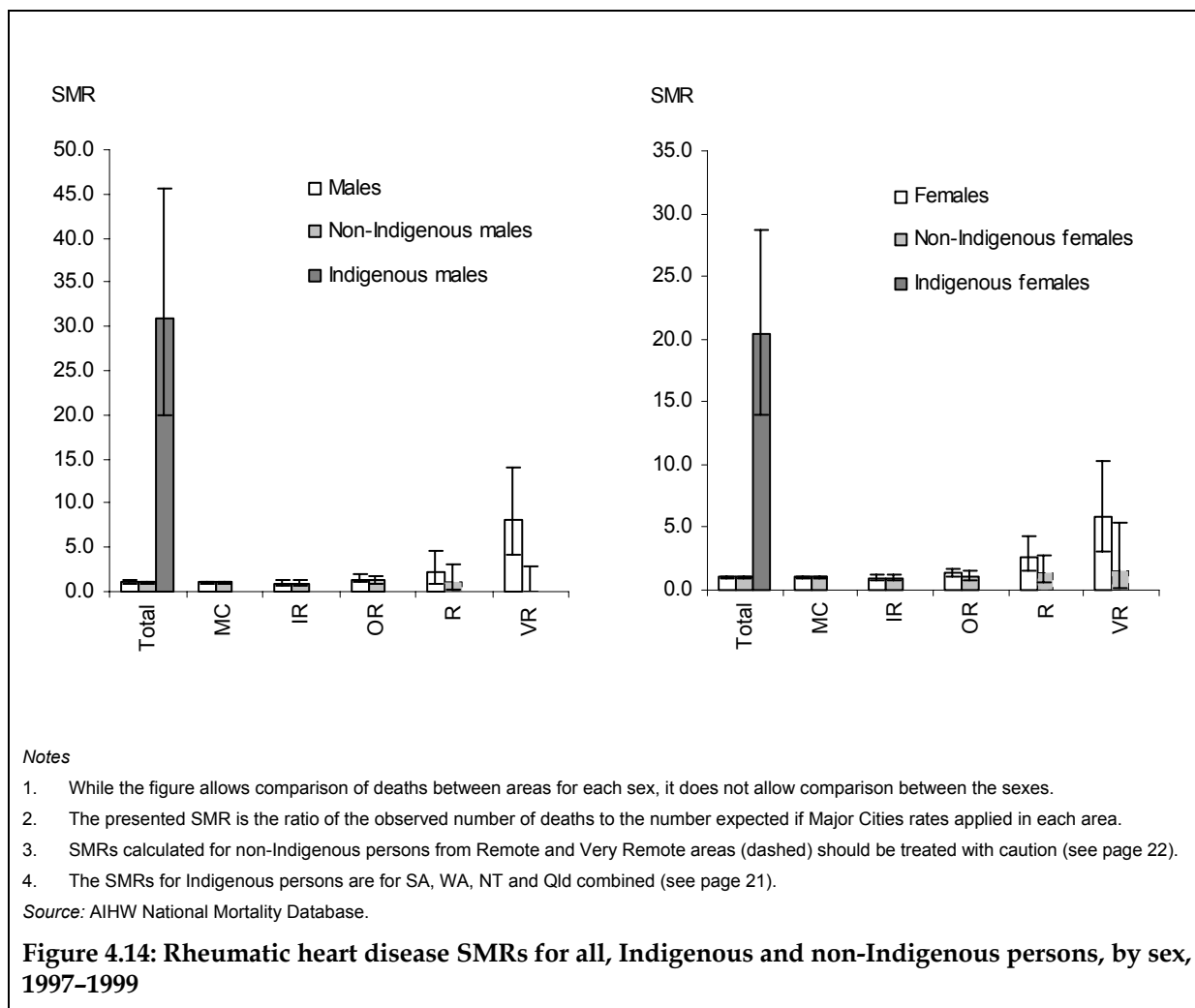
Annually, there were 18 ‘excess’ deaths due to rheumatic heart disease outside Major Cities (–3, 9, 5 and 7 in each of the four areas). A very large proportion of this ‘excess’ was of Indigenous people. Over 80% of the ‘excess’ for Indigenous people occurred in those who were 15–64 years old.

Overall mortality due to rheumatic heart disease

Annually, there were 51, 17, 12, 3 and 4 deaths of males and 114, 35, 22, 5 and 4 deaths of females in the five areas as a result of rheumatic heart disease.

Death rates due to rheumatic heart disease were higher in Remote and Very Remote areas (Figure 4.14 and Table 4.10).

- Death rates for males in Inner Regional areas were not significantly different from those in Major Cities, however, in Outer Regional and Very Remote areas, there were 1.4 and 8.1 times as many deaths of males as expected.
- As for males, death rates for females in Inner Regional areas were not significantly different from those in Major Cities. However, in Outer Regional, Remote and Very Remote areas there were 1.3, 2.6 and 5.9 times as many deaths of females as expected.
- There were about 20–30 times as many deaths of Indigenous people due to rheumatic heart disease than expected.



In Major Cities, death as a result of rheumatic heart disease is very rare, rising to about 20 per 100,000 per year in those 85 years and older.

There tend to be greater numbers of deaths than expected due to this cause outside Major Cities, particularly in remote areas. For example, there were 10 deaths of 25-44-year-olds in Very Remote areas (compared to less than one expected).

As a result of rheumatic heart disease, there were -1, 4, 1 and 4 'excess' deaths of males annually, and -2, 6, 3 and 3 'excess' deaths of females annually in the four areas outside Major Cities.

Indigenous population

Annually in the period 1997-1999, there were 19 deaths of Indigenous people (8 males and 11 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 19 deaths, there were 18 (8 males and 10 females) more than expected.

There were 31 and 20 times as many deaths of Indigenous males and females as expected (Table 4.11). Most of the deaths, and most of the 'excess' deaths occurred amongst those aged 15-64 years.

Table 4.10: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, rheumatic heart disease, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	0	..	..	..	..
5–14	0	..	..	..	..	0	..	..	..	..
15–24	<1	0.00	2.13	8.36	66.12	<1	0.00	0.00	0.00	159.92
25–44	<1	0.98	2.19	*14.16	*45.58	<1	0.30	2.90	*23.59	*31.54
45–64	1	0.79	1.13	2.78	2.65	1	1.03	*2.34	1.74	2.66
65–74	3	0.96	1.17	0.55	6.36	6	0.86	1.02	2.32	2.34
75+	9	1.03	1.66	0.59	0.00	16	1.02	1.12	1.09	2.44
Total	..	0.94	*1.42	2.28	*8.06	..	0.96	*1.34	*2.64	*5.85

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Non-Indigenous population

Annually, there were 49, 16, 10, 1 and 0 deaths of non-Indigenous males and 112, 35, 18, 2 and 1 deaths of non-Indigenous females in the five areas as a result of rheumatic heart disease.

There were about as many deaths of non-Indigenous people as expected due to this cause (Table 4.11).

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

Age-specific death rates for non-Indigenous people were substantially lower in Outer Regional, Remote and especially Very Remote areas than they were for the total population.

As a result of rheumatic heart disease, there were -1, 2, 0 and 0 'excess' deaths of non-Indigenous males annually, and -1, 2, 0 and 0 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 16 (7 male, 9 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of rheumatic heart disease. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 16 deaths, there were 15 (7 males and 8 females) more than expected.

For Indigenous males and females who were younger than 65 years old, there were 58 and 45 times as many deaths as expected (Table 4.11).

Table 4.11: The ratio of observed deaths to those expected as a result of rheumatic heart disease if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	0	..	..	..	..	0	..	..	..	..	..
5–14	0	..	..	..	..	0	..	..	..	..	..
15–24	0	..	..	..	**	<1	0.00	0.00	0.00	0.00	*72.0	
25–44	<1	1.11	1.00	0.00	0.00	*98.8	<1	0.33	0.01	4.05	0.50	*107.7
45–64	1	0.76	1.10	2.20	0.12	*18.6	1	1.08	1.80	1.75	0.51	*17.5
65–74	3	0.95	0.88	0.57	0.00	11.5	6	0.88	0.93	1.57	0.07	*9.7
75+	9	1.03	1.60	0.64	0.00	3.9	16	1.02	1.10	0.89	2.75	3.4
Total	..	0.95	1.26	1.05	0.04	*30.9	..	0.97	1.12	1.35	1.56	*20.4
0–64	..	0.81	1.08	1.83	0.10	*57.9	..	0.93	1.47	2.18	0.50	*45.1

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

** For 15–24 year old Indigenous males, the ratio is very high (there were 5 deaths in this period but none expected).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Non-Indigenous population

Annually, there were 14, 4, 3, 1 and 0 deaths of non-Indigenous males younger than 65 years and 19, 6, 4, 1 and 0 deaths of non-Indigenous females younger than 65 years in the five areas as a result of rheumatic heart disease.

There were about as many deaths of 0–64-year-old non-Indigenous people due to rheumatic heart disease as expected (Table 4.11).

As a result of rheumatic heart disease, there were –1, 0, 0 and 0 ‘excess’ deaths of non-Indigenous males younger than 65 years annually, and 0, 1, 0 and 0 ‘excess’ deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities.

4.5 'Other' diseases of the circulatory system

Other circulatory diseases (ICD-10 codes I00–I99, excluding the circulatory diseases described in this report) are included because as a group they are responsible for a large number of deaths. Differences in death rates across areas for this range of diseases may suggest further work to identify potential targets for intervention. Specific causes of death included in this diverse group includes hypertensive heart disease and hypertensive renal disease, pulmonary heart disease, pericarditis, valve disorders, endocarditis and myocarditis, cardiomyopathy, heart failure, atherosclerosis, aneurysms and other diseases of blood vessels.

Summary of findings

Annually, 'other' circulatory diseases were responsible for the deaths of 11,203 people (5,048 males and 6,155 females); 4,128 of these people came from areas outside Major Cities. Of these 11,203 deaths, 89 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates due to 'other' circulatory diseases rose steadily with remoteness; there were 1.1, 1.2, 1.2 and 1.2–1.5 times as many deaths of males and females as expected in the four areas outside Major Cities.

There were about three times as many deaths of Indigenous people as expected from 'other' circulatory diseases.

For non-Indigenous people, there were 1.1 and 1.2 times as many deaths as expected in Inner and Outer Regional areas, and about as many as expected in remote areas.

There were 0.75 times as many deaths of elderly (75 years and older) non-Indigenous people as expected in Very Remote areas due to 'other' circulatory diseases.

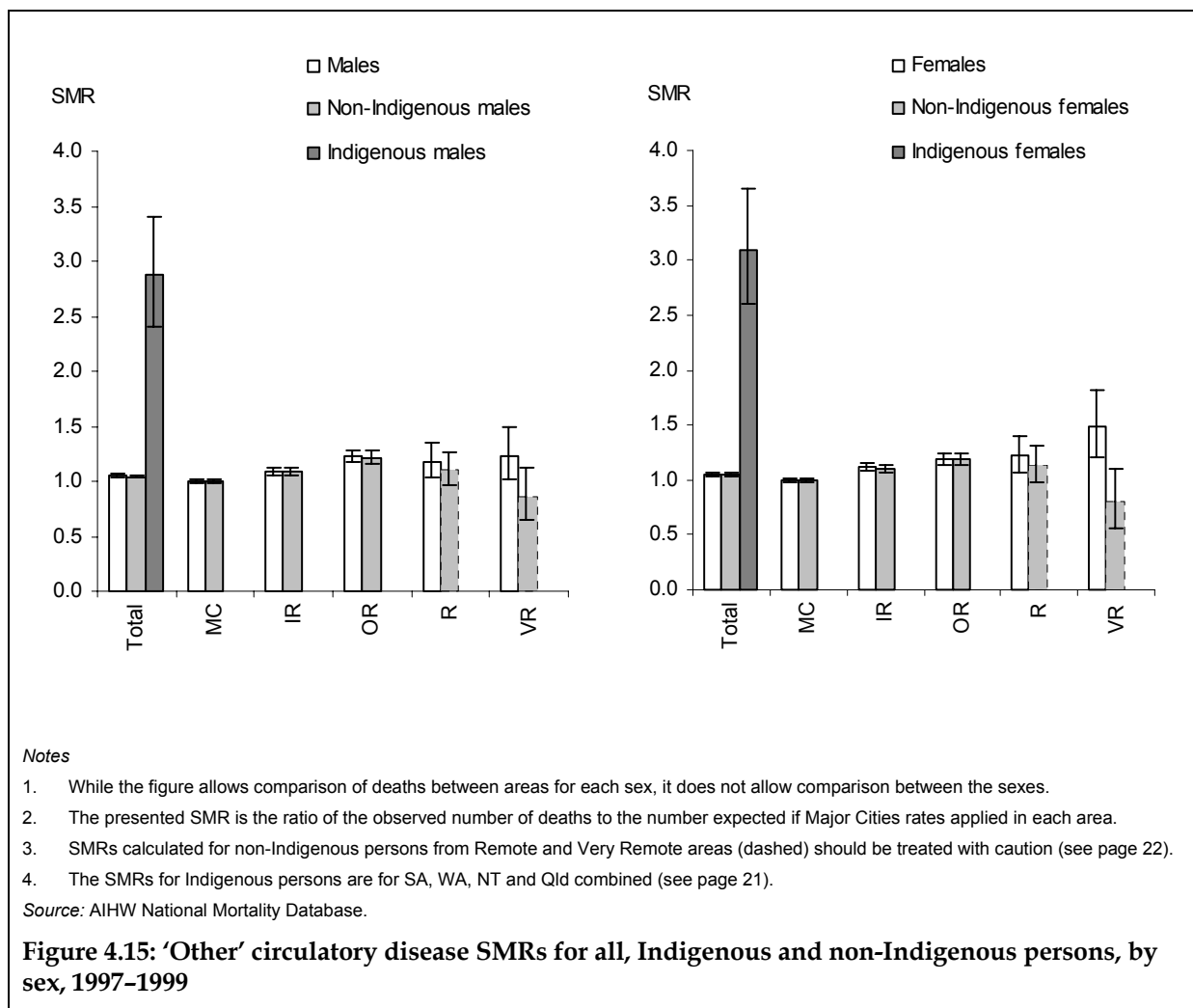
For the non-Indigenous population younger than 65 years, there were 1.2, 1.4 and 1.4 times as many deaths of males as expected in Inner and Outer Regional and Remote areas and about as many deaths of females as expected in the four areas outside Major Cities.

Annually, there were 518 'excess' deaths due to 'other' circulatory diseases outside Major Cities (254, 220, 26 and 18 in each of the four areas). About 70% of the 'excess' deaths occurred in those who were 75 years and older, although for Indigenous males and females almost all the 'excess' was in those younger than 65 and 75 years respectively.

Overall mortality due to 'other' circulatory diseases

'Other' circulatory diseases are those other specific circulatory diseases (for example, peripheral vascular disease and so on) that have not been described individually in previous sections.

Annually, there were 3,107, 1,189, 639, 78 and 35 deaths of males and 3,968, 1,403, 674, 77 and 33 deaths of females in the five areas as a result of 'other' circulatory diseases.



- For males from Inner Regional areas, there were 1.1 times as many deaths as expected, while for males from the other areas outside Major Cities, there were 1.2 times as many deaths as expected (Figure 4.15 and Table 4.12).
- For females, the differentials were similar, however, rates in Very Remote areas were even higher with 1.5 times as many deaths of females as expected.
- There were about 3 times as many deaths of Indigenous people due to 'other' circulatory disease as expected.

Table 4.12: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, 'other' circulatory disease, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	1	1.55	2.21	1.15	5.27	2	1.03	0.52	1.21	0.00
5–14	<1	0.35	0.48	0.00	13.81	<1	0.46	1.04	1.22	0.00
15–24	2	1.10	1.33	2.11	2.13	1	0.95	2.30	3.01	2.09
25–44	4	1.22	*1.36	*2.62	*3.45	3	1.04	0.73	2.16	*4.53
45–64	25	*1.17	*1.52	*1.81	*2.40	13	1.14	*1.29	1.63	*4.65
65–74	162	1.06	*1.18	*1.34	1.06	90	1.08	*1.18	1.47	*2.73
75+	823	*1.09	*1.17	0.89	0.75	812	*1.13	*1.19	1.13	0.92
Total	..	*1.09	*1.22	*1.18	*1.24	..	*1.12	*1.18	*1.22	*1.49

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

The pattern for age-specific death rates was similar to that for ischaemic heart disease, with rates to approximately 2,000 per 100,000 per year in both sexes for those 85 years and older. There were usually significantly more deaths than expected due to this cause in all age groups older than 24 years, for whom there were 1.1–1.2, 1.2–1.5, 1.3–2.6 and 2.4–4.7 times as many deaths as expected in the four areas outside Major Cities.

As a result of 'other' circulatory diseases, there were 102, 116, 12 and 7 'excess' deaths of males annually, and 151, 105, 14 and 11 'excess' deaths of females annually in the four areas outside Major Cities. The bulk of the 'excess' deaths occurred in those older than 40 years, with the greatest contribution from the older age groups.

Indigenous population

Annually in the period 1997–1999, there were 89 deaths of Indigenous people (43 males and 46 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 89 deaths, there were 59 (28 males and 31 females) more than expected.

There were 2.9 and 3.1 times as many deaths of Indigenous males and females as expected (Table 4.13). For males, 80% of the 'excess' occurred in 25–64-year-old males, and for females, 70% occurred among 45–74-year-olds.

Non-Indigenous population

Annually, there were 3,098, 1,184, 623, 68 and 17 deaths of non-Indigenous males and 3,957, 1,398, 662, 67 and 13 deaths of non-Indigenous females in the five areas as a result of 'other' circulatory diseases.

There were 1.1 and 1.2 times as many deaths of non-Indigenous males and females as expected in regional areas due to 'other' circulatory diseases. There were about as many deaths due to this cause as expected in remote areas (Table 4.13).

Table 4.13: The ratio of observed deaths to those expected as a result of 'other' circulatory disease if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area, and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
0–4	1	1.42	1.78	1.06	5.82	2.6	2	0.92	0.56	1.45	0.00	0.0
5–14	<1	0.36	0.51	0.00	0.00	*7.2	<1	0.47	0.44	1.44	0.00	0.0
15–24	2	1.08	1.14	1.34	2.72	*4.3	1	0.76	1.92	0.55	0.09	4.7
25–44	4	1.23	1.32	1.14	1.25	*7.2	3	1.04	0.69	0.73	0.16	*7.8
45–64	25	*1.17	*1.43	*1.51	0.95	*6.8	13	1.13	*1.23	1.08	1.34	*8.5
65–74	162	1.05	*1.17	1.27	0.93	*2.0	90	1.08	1.14	1.05	1.04	*6.1
75+	823	*1.09	*1.19	0.94	0.74	1.0	812	*1.11	*1.19	1.16	0.76	1.4
Total	..	*1.09	*1.22	1.10	0.86	*2.9	..	*1.10	*1.18	1.14	0.80	*3.1
0–64	..	*1.17	*1.40	*1.41	1.13	*6.4	..	1.09	1.11	1.00	0.89	*6.8

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The pattern exhibited by age-specific death rates in regional areas is similar for non-Indigenous people to that for the total population. However, in remote areas, age-specific death rates were lower and tended not to be significantly higher (as was the case in the total population).

As a result of 'other' circulatory diseases, there were 100, 111, 6 and –3 'excess' deaths of non-Indigenous males annually, and 133, 101, 8 and –3 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. The bulk (60–70%) of the 'excess' deaths

occurred in those older than 70 years, with younger age groups also making contributions, while for females, almost all of the 'excess' deaths were amongst those older than 70 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 50 (30 male, 20 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of 'other' circulatory diseases. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 50 deaths, there were 42 (25 males and 17 females) more than expected.

For Indigenous males and females who were younger than 65 years old, there were 6 and 7 times as many deaths as expected (Table 4.13).

Non-Indigenous population

Annually, there were 437, 163, 104, 16 and 5 deaths of non-Indigenous males younger than 65 years and 242, 84, 42, 5 and 1 deaths of non-Indigenous females younger than 65 years in the five areas as a result of 'other' circulatory diseases.

There were 1.2, 1.4 and 1.4 times as many deaths of 0–64-year-old non-Indigenous males as expected due to this cause in Inner Regional, Outer Regional and Remote areas. There were about as many deaths as expected in Very Remote areas (Table 4.13).

There were about as many deaths of 0–64-year-old non-Indigenous females in areas outside Major Cities as expected due to this cause.

As a result of 'other' circulatory diseases, there were 24, 30, 5 and 1 'excess' deaths of non-Indigenous males younger than 65 years annually, and 7, 4, 0 and 0 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. The bulk of the 'excess' deaths are contributed by those older than about 40 years.

5 Neoplasms

This chapter discusses mortality due to the broad category of neoplasms (including cancers and benign neoplasms, ICD-10, chapter 2, codes C00-D48). It then provides further analysis of specific diseases within this broad category. The specific neoplasms included are:

1. lung cancer;
2. colorectal cancer;
3. breast cancer;
4. cervical cancer;
5. prostate cancer;
6. melanoma; and
7. 'other' neoplasms.

These neoplasms were chosen because they tend to be the most frequently occurring causes of neoplasm deaths (except for melanoma, which is a frequently occurring cancer).

Summary of findings

The overall mortality of Australians due to neoplasms is higher for males from regional areas than males from Major Cities, but similar to those in Major Cities for males from remote areas, and for females from all areas (Table 5.2). Compared to those in Major Cities, death rates from neoplasms are:

- similar for females and 1.05 times as high for males in regional areas; and
- similar in remote areas for both sexes.

This broad observation does not take into account two factors previously stated on page 33, namely the likely effect on rates of high Indigenous mortality coupled with their greater representation outside Major Cities, and the possible effect of the migration of the frail aged. Indigenous mortality from neoplasms is 1.5 times as high as Major Cities non-Indigenous mortality, influencing rates for the total population in remote areas.

For non-Indigenous people:

- in regional areas, death rates were about 1.05 times as high for males and similar for females to those for their counterparts in Major Cities; and
- in remote areas, death rates for both sexes were not significantly different from those in Major Cities.

When analysis is restricted to non-Indigenous Australians under the age of 65, the same pattern remains, but with a greater differential for males (1.1 times as many deaths as expected in regional areas) and with rates for females remaining similar or becoming 1.04 times as high in Inner Regional areas.

Death rates for Indigenous people in this age group were 3 and 4 times as high as for their Major Cities non-Indigenous counterparts.

Death rates due to neoplasms in each area decreased by 1-2 % annually between 1992 and 1999, and, for females, at 6% per annum in Very Remote areas. Decreases tended to be lower in Inner Regional areas than in Major Cities.

Annually, there were 373 'excess' deaths due to neoplasms outside Major Cities (232, 133, 3 and 6 in each of the four areas). However, there were 47 fewer deaths than expected amongst those who were aged 75 years and older (that is, there were 420 'excess' deaths of those younger than 75 years). Of these people, 15% were younger than 50 years old, 59% were aged 50–64 years and 26% were 65–74 years. About 60% were male. For non-Indigenous people, the percentages were similar, while for Indigenous people, 23% were aged 25–44, 60% were aged 45–64 years and 15% were 65 years or older (Table 5.1).

Neoplasms account for 28% of all deaths (but only 11% of 'excess' deaths) and about 13% of Indigenous deaths (but 7% of the 'excess' Indigenous deaths).

Summary/discussion of individual causes of death reviewed in this chapter

There is a wide range of neoplasms that contribute to deaths that are due to the broad category of 'neoplasms'. A number of specific neoplasms have been described in this chapter, but 'other' neoplasms account for half of all neoplasm deaths.

Of the annual 12,549 deaths of people outside Major Cities due to neoplasms, 50% were due to 'other' neoplasms, but only 11% of the total 373 'excess' neoplasm deaths each year were due to this broad cause.

Of the other causes, lung and colorectal cancer were responsible for 19% and 13% of neoplasms deaths, but while lung cancer was responsible for 14% of the 'excess' neoplasm deaths, colorectal cancer accounted for 31% of the 'excess'.

Prostate cancer and melanoma were responsible for 8% and 3% of all neoplasm deaths, but were responsible for 35% and 10% of the 'excess' neoplasm deaths respectively. Finally, breast and cervical cancer, although responsible for 8% of all neoplasm deaths, were responsible for very few 'excess' deaths outside Major Cities.

Of those specific neoplasms examined, only for lung cancer and for 'other' neoplasms were there fewer deaths than expected amongst the elderly in the more remote areas. While there were only 52 'excess' deaths due to lung cancer overall, for those younger than 70 years, there were 112 'excess' deaths each year (that is, more), of whom the vast majority were male and 80% were from regional areas. Similarly, while there were 40 'excess' deaths each year due to 'other' neoplasms, there were 105 fewer deaths than expected for people 70 years and older, and 145 'excess' deaths of those younger than 70 years (over 80% were male).

All of the 'excess' deaths due to colorectal cancer occurred in regional areas (124 more than expected each year); there were fewer than expected deaths due to this cause in remote areas. Over 80% of the 'excess' deaths occurred in people who were 55–84 years, and more than half of these were female.

Table 5.1: Summary table of deaths due to neoplasms for all persons, 1997–1999

Cause	Annual deaths outside Major Cities			Annual 'excess' deaths outside Major Cities			Age groups in which the 'excess' occurs
	No.	%	% male	No.	%	% male ^(a)	
Lung cancer	2,386	19%	72%	52	14%	>100%	97%: 45–69 Many fewer than expected 70+
Colorectal cancer	1,675	13%	55%	117	31%	44%	19%: 40–54 66%: 55–74 18%: 75–84
Breast cancer	845	7%	0%	–11	–3%	0%	No clear pattern
Cervical cancer	92	<1%	0%	9	2%	0%	No strong pattern, tending to those 35 years and older
Prostate cancer	973	8%	100%	131	35%	100%	90%: 60–84
Melanoma	353	3%	68%	36	10%	96%	80%:45–70
Other neoplasms	6,218	50%	57%	40	11%	>100%	85% 50–70 Fewer than expected older than 70
Total neoplasms	12,549	100%	59%	373	100%	>100%	80%: 50–70 Fewer than expected older than 70

(a) In some cases there were fewer deaths of females than expected, with the result that there were more 'excess' deaths of males than for the total population.

Note: Descriptions of the age groups within which the 'excess' occurs apply only to the total population.

Source: AIHW National Mortality Database.

There were 5 and 6 fewer deaths of females than expected due to breast cancer in regional and remote areas respectively each year.

There were slightly fewer deaths than expected due to cervical cancer in Inner Regional areas, but 12 more than expected in Outer Regional and remote areas.

Although 74% of all deaths due to prostate cancer were of males aged 60–84 years, over 90% of the 'excess' deaths occurred in those who were aged 60–84 years. Almost all (95%) of the deaths and 'excess' deaths were from regional areas.

There were 36 'excess' deaths due to melanoma, all in regional areas. Essentially all of the 'excess' was contributed by males, and 90% occurred in those aged 45–69 years.

Table 5.2: The ratio of observed deaths from neoplasms to those expected if Major Cities^(a) rates applied in each ASGC Remoteness area, 1997–1999

Broad cause	Population	IR	OR	R ^(b)	VR ^(b)	National ^(c)
Lung cancer	All persons	1.0	1.0	*1.1	*1.3	n.p.
	Non-Indigenous	1.0	1.0	1.1	1.2	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.1	1.1	*1.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*2.1
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*3.2
Colorectal cancer	All persons	*1.1	*1.1	1.0	*0.7	n.p.
	Non-Indigenous	*1.1	*1.1	1.0	0.8	n.p.
	Non-Indigenous (aged 0–64 years)	*1.2	*1.2	1.0	0.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*0.6
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	0.7
Breast cancer ^(d)	All persons	1.0	1.0	0.9	0.8	n.p.
	Non-Indigenous	1.0	1.0	0.9	0.7	n.p.
	Non-Indigenous (aged 0–64 years)	1.0	1.0	0.8	0.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	1.1
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	1.2
Cervical cancer ^(d)	All persons	1.0	*1.3	1.5	*3.3	n.p.
	Non-Indigenous	0.9	1.2	1.1	1.1	n.p.
	Non-Indigenous (aged 0–64 years)	1.0	1.1	0.9	0.7	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*6.5
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*5.9
Prostate cancer ^(d)	All persons	*1.1	*1.2	1.2	1.0	n.p.
	Non-Indigenous	*1.1	*1.2	1.2	1.2	n.p.
	Non-Indigenous (aged 0–64 years)	*1.4	*1.4	1.6	1.2	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	0.8
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	1.3
Melanoma	All persons	*1.2	1.0	0.9	0.6	n.p.
	Non-Indigenous	*1.2	1.1	0.9	0.8	n.p.
	Non-Indigenous (aged 0–64 years)	*1.3	*1.2	1.0	0.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*0.1
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*0.1
Other neoplasms	All persons	1.0	1.0	1.0	1.0	n.p.
	Non-Indigenous	1.0	1.0	*0.9	*0.8	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	1.0	0.9	0.9	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*1.7
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*2.1

(continued)

Table 5.2 (continued): The ratio of observed deaths from neoplasms to those expected if Major Cities^(a) rates applied in each ASGC Remoteness area, 1997–1999

Broad cause	Population	IR	OR	R ^(b)	VR ^(b)	National ^(c)
Total neoplasms ^(d)	All persons	*1.0+	*1.0+	1.0	1.0	n.p.
	Non-Indigenous	*1.0+	*1.0+	1.0	*0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.1	1.0	1.0	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*1.5
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*1.9

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities). Caution should be used when making inferences about ratios that are not significantly different from 1.

- (a) While the number of expected deaths for the total population is based on the death rates of the total population from Major Cities, the expected number of deaths for the non-Indigenous population is based on the death rates of the non-Indigenous population from Major Cities. Because non-Indigenous people comprise the overwhelming majority (99%) of the population in Major Cities, these two standards are very similar, but not identical. This means that the ratios for the five population groups are not strictly comparable.
- (b) Ratios calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).
- (c) The ratios for Indigenous persons are for SA, WA, NT and Qld combined. Data for the total and non-Indigenous populations for this (SA, WA, NT and Qld) area adds little relevant information and has not been published (n.p.). Because of concerns about the quality of the data, ratios for Indigenous people have not been published (n.p.) for each area.
- (d) Ratios for breast, cervical and prostate cancer have been calculated for females and for males (as appropriate). Standard rates were those for females or males (as appropriate) from Major Cities.

Notes

- 1. 1.0+ indicates that there were slightly (but significantly) more deaths than expected (but less than 1.05 times more).
- 2. 1.0– indicates that there were slightly (but significantly) fewer deaths than expected (but more than 0.95 times as many).

Source: AIHW National Mortality Database.

The trends in the rate of death due to the range of neoplasms showed little consistency across the five areas.

Lung cancer death rates were elevated in remote areas primarily due to the influence of Indigenous mortality, for whom rates are about double the rate for their non-Indigenous counterparts from Major Cities. Lower death rates for the elderly reduced rates for non-Indigenous people so rates in all areas were not significantly different from those in Major Cities. Death rates for males younger than 65 years were about 1.1–1.3 times as high in regional areas and 1.9 times as high in Very Remote areas, with rates for similar aged females not significantly different from those for their counterparts from Major Cities.

Colorectal cancer death rates were 1.1 times in regional areas and 0.7 times (that is, lower) in Very Remote areas those for their counterparts from Major Cities. For non-Indigenous people younger than 65 years old, death rates in regional areas were 1.2 times those for similar people from Major Cities. Rates in remote areas were not significantly different to those in Major Cities. There were fewer deaths of Indigenous people due to this cause than expected.

Breast cancer death rates in regional and remote areas were not significantly different from those for females from Major Cities, and there were about as many deaths of Indigenous women due to this cause as expected.

Cervical cancer death rates were elevated in Outer Regional and Very Remote areas, possibly as a result of higher mortality amongst Indigenous women, for whom rates were 6.5 times those for non-Indigenous women from Major Cities. For non-Indigenous women, there was essentially no difference in mortality due to cervical cancer across the areas.

Prostate cancer death rates were 1.1 and 1.2 times as high in Inner and Outer Regional areas. For non-Indigenous males younger than 65 years, rates in these areas were 1.4 times those for their counterparts from Major Cities. Rates in remote areas were not significantly higher

than in Major Cities, and there were about as many deaths of Indigenous males due to this cause as expected.

Melanoma death rates were 1.3 times as high for males in Inner Regional areas, and not significantly different for males in the other areas, or for females in any area compared to those in Major Cities. This pattern also applies to non-Indigenous people. For non-Indigenous males younger than 65 years, rates in Inner and Outer Regional areas were 1.5 and 1.3 times those for their counterparts in Major Cities respectively; rates for similar aged females were not significantly different from those in Major Cities. The very low rates in Indigenous populations had a negligible effect in lowering overall melanoma death rates in remote areas.

Death rates due to 'other' neoplasms were similar in all areas. Rates for elderly non-Indigenous people in remote areas were lower than for their Major Cities counterparts; for non-Indigenous males younger than 65 years, rates were 1.1 times as high in Inner Regional areas. The death rate for Indigenous people due to 'other' neoplasms was about twice that for non-Indigenous people from Major Cities.

5.1 Overview—neoplasms

Between 1997 and 1999, an annual average of 35,604 Australians died as a result of neoplasms, comprising 20,102 males and 15,502 females (Table 5.3). Most of these deaths (23,055) occurred in Major Cities, with a further 11,884 in Inner and Outer Regional areas and the remaining 665 in Remote and Very Remote areas.

Neoplasms were responsible for 28% of all deaths nationally, and 11% of the 'excess' deaths in areas outside Major Cities.

Table 5.3: Average annual deaths due to neoplasms, 1997–1999

	MC	IR	OR	R	VR	Total
Males (no.)	12,697	4,675	2,313	297	120	20,102
Females (no.)	10,358	3,352	1,544	173	75	15,502
Persons (no.)	23,055	8,027	3,857	470	195	35,604
Non-Indigenous males ^(a) (per cent)	100	100	98	94	66	99
Non-Indigenous females ^(a) (per cent)	100	99	98	91	56	99
Non-Indigenous persons^(a) (per cent)	100	100	98	93	63	99
Non-Indigenous males (0–64 yrs) (no.)	3,335	1,227	648	90	34	5,334
Non-Indigenous females (0–64 yrs) (no.)	2,950	975	472	57	19	4,473
Non-Indigenous persons (0–64 yrs) (no.)	6,285	2,202	1,120	147	53	9,807
Indigenous persons^(b) (no.)	n.p.	n.p.	n.p.	n.p.	n.p.	196

(a) Percentages and counts are rounded to the nearest whole number.

(b) The number of Indigenous deaths is the average annual number registered in SA, WA, NT and Qld in the period 1997–1999. An average of a further 74 were registered annually in the other jurisdictions. Counts of deaths have not been reported for Indigenous people by area because of concerns about data accuracy.

Source: AIHW National Mortality Database.

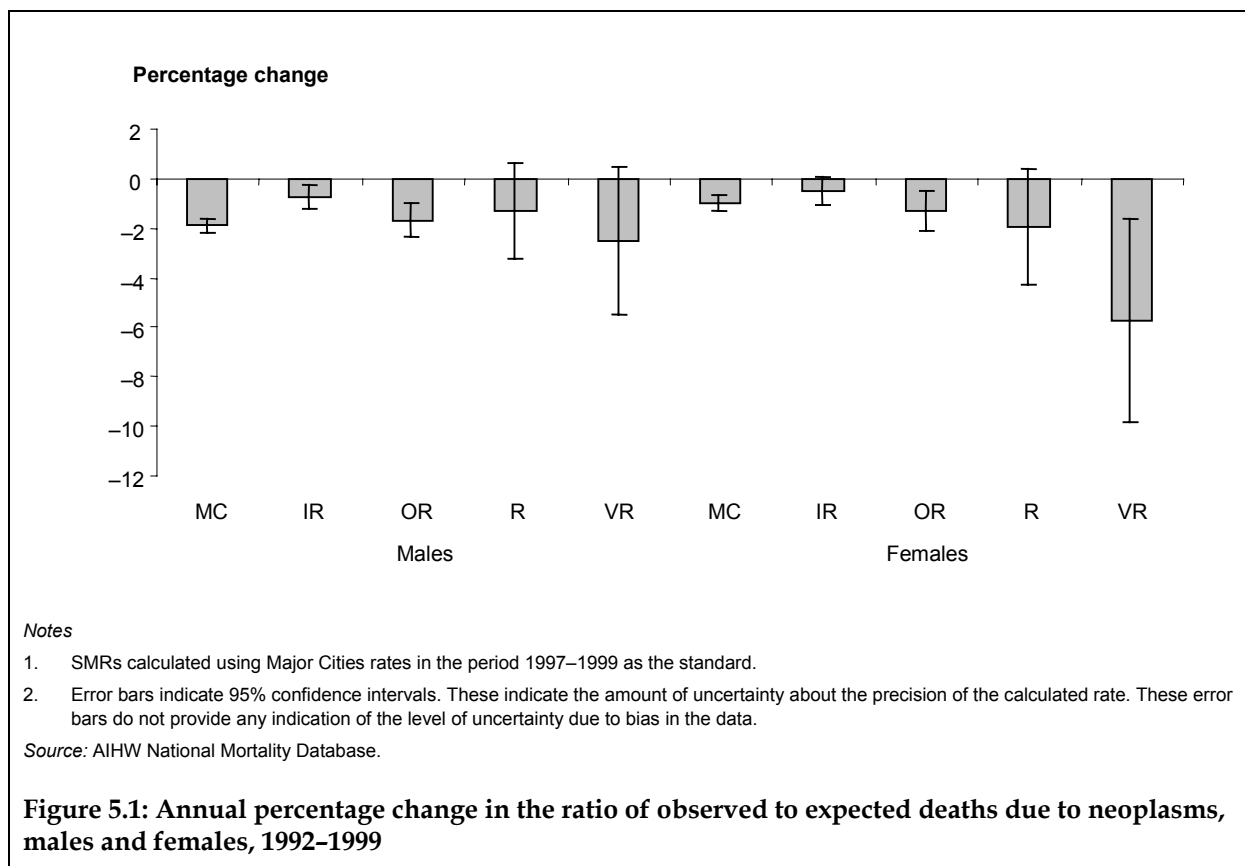
Trends in mortality due to neoplasms

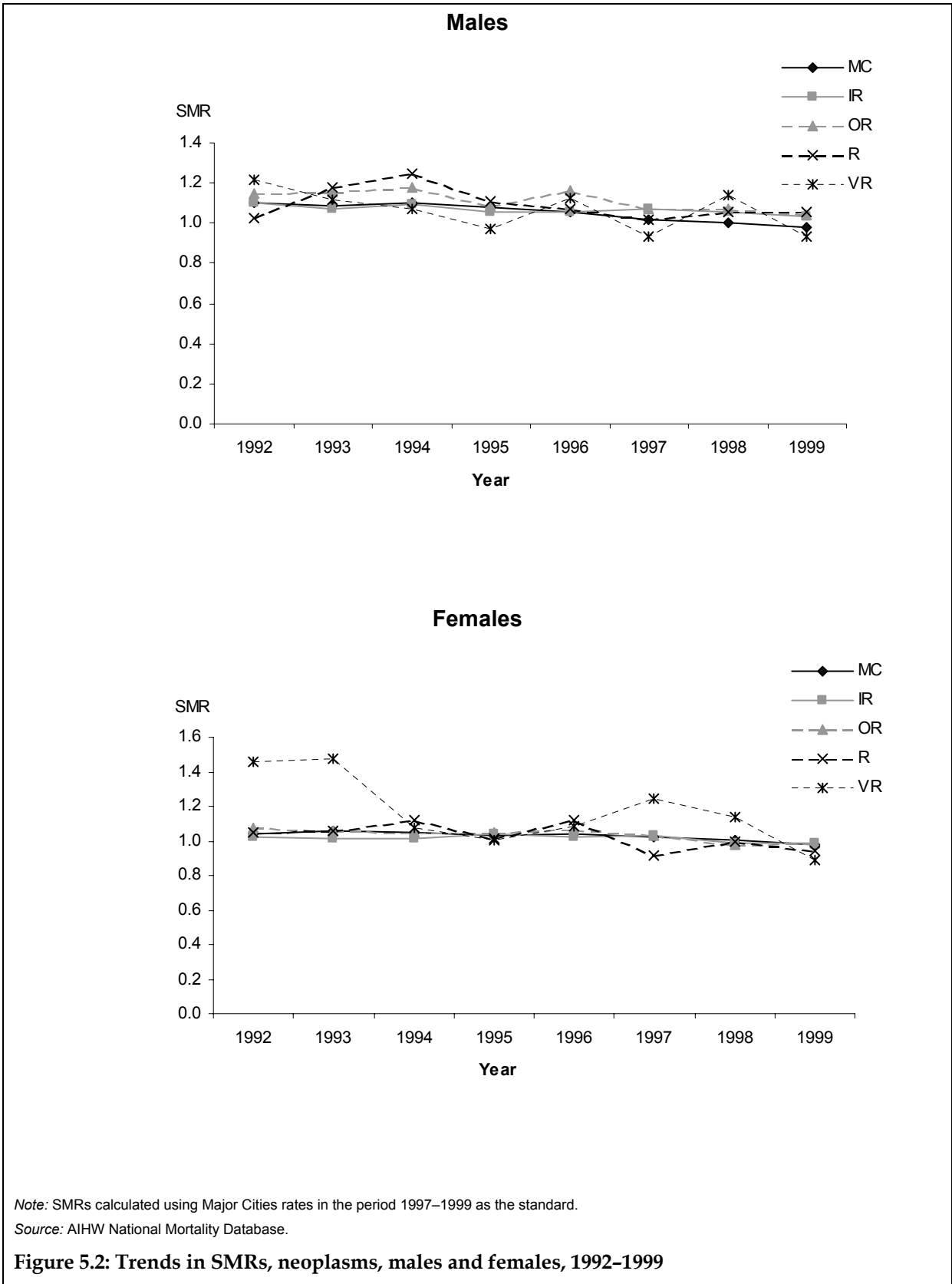
Death rates from this cause for both males and females decreased in all areas between 1992 and 1999, however, the decrease was statistically significant for males only in Major Cities, Inner Regional and Outer Regional areas; and for females only in Major Cities, Outer Regional and Very Remote areas (Figures 5.1 and 5.2).

For males, annual percentage decreases were generally of the order of 1–2% in each area; for females annual percentage decreases were of similar magnitude. In Very Remote areas, this annual decrease for females was larger at 6% (such that the ratio of observed to expected deaths decreased from approximately 1.5 to less than 1.0 over the period 1992–1999).

For both sexes, the rate of decrease in Inner Regional areas was less than in the other areas (significantly less for Inner Regional males than for Major Cities males).

About 15% of the reductions in the total number of ‘excess’ deaths were due to decreases in neoplasm death rates, except in Inner Regional areas where neoplasms contributed only 7% to the decrease in the overall ‘excess’.





Death rates due to neoplasms

Mortality due to neoplasms was higher for some groups living outside Major Cities, but for many groups death rates were not significantly different, or were lower.

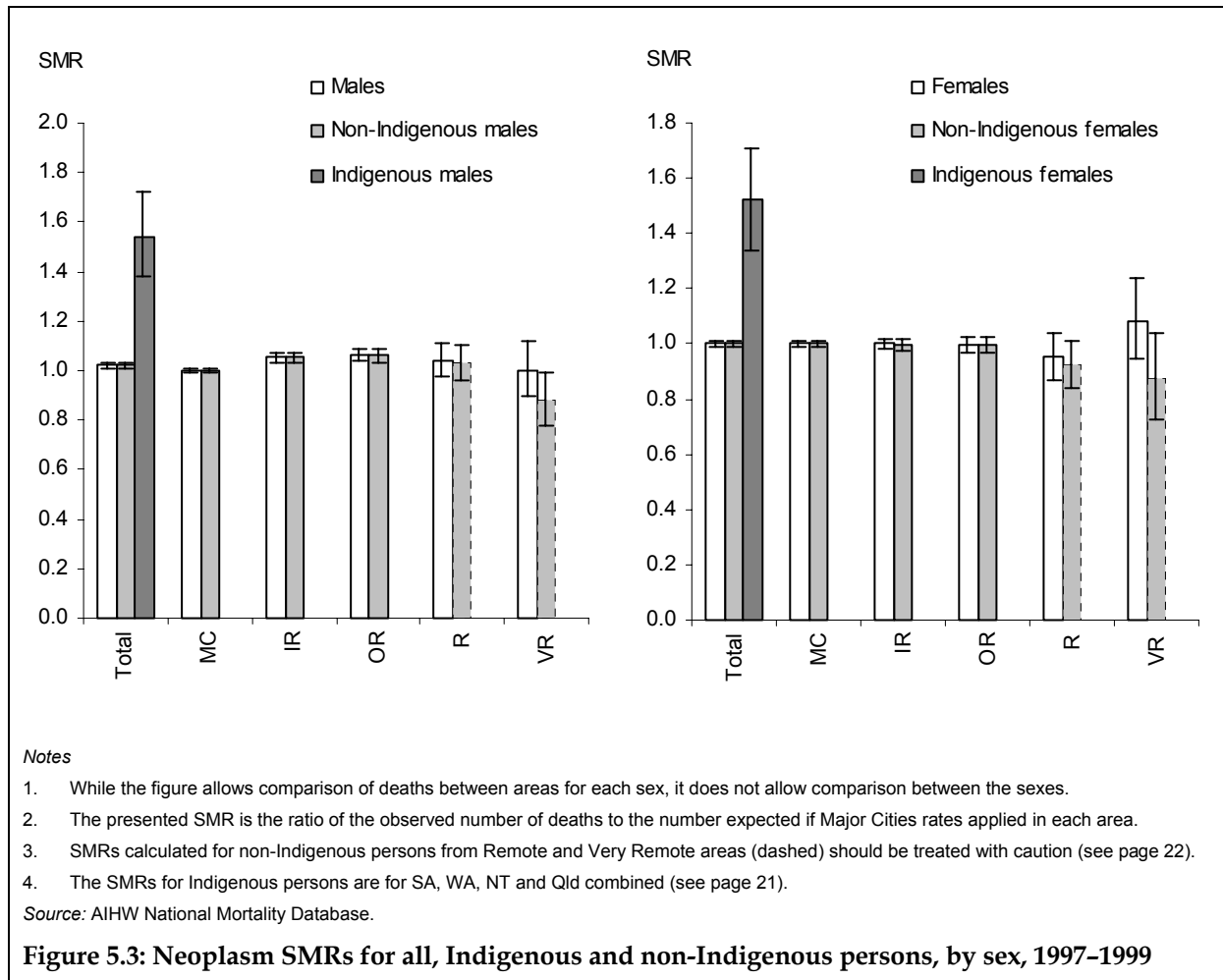


Figure 5.3 and Tables 5.4 and 5.5 show that:

- For males in Inner and Outer Regional areas, rates were 1.05 times those in Major Cities.
- For males in Remote and Very Remote areas, rates were not significantly different from those in Major Cities.
- For females, rates were not significantly different in any area from rates in Major Cities.
- Mortality for Indigenous males and females was 1.5 times as high as for their non-Indigenous counterparts who lived in Major Cities; this higher mortality slightly raises the average death rate due to neoplasms in the more remote areas.

These figures would appear, on the surface, to show that mortality as a result of neoplasms is slightly (5%) higher for males who live in regional areas than for those who live in Major Cities, but suggests little inter-regional difference for regional females or for people who live in remote areas.

The above rates are influenced, however, by the number of Indigenous people living outside Major Cities and the higher overall mortality of Indigenous people due to neoplasms. As in

the previous chapter pertaining to mortality as a result of circulatory disease, without examining the mortality of the Indigenous and non-Indigenous populations separately, it is premature to draw the conclusion that remoteness is a factor influencing cancer death rates.

Mortality of Indigenous people

Based on 1997–1999 death registrations, neoplasms accounted for 13% of deaths of Indigenous people living in Queensland, South Australia, Western Australia and the Northern Territory. Neoplasms accounted for 28% of all deaths among the Australian population as a whole, making neoplasms the second most common cause of death nationally. However, Indigenous males and females had higher death rates from this cause than the total population. While for several neoplasms (for example, lung, cervical and ‘other’ neoplasms), Indigenous people had higher death rates, there were some (colorectal, breast, prostate and melanoma) for which death rates were similar to or lower than those for non-Indigenous people from Major Cities.

In 1997–1999, there were approximately 1.5 times as many deaths of Indigenous people as expected (Table 5.5). Over half (57%) of these deaths were attributable to ‘other’ neoplasms (stomach, ovary, pancreas, etc.), a further 24% were due to lung cancer, while colorectal, breast, cervical and prostate cancer accounted for 5%, 7%, 4% and 3% respectively. A higher prevalence of cancer risk factors such as smoking and high-risk alcohol consumption, as well as the possibility that cancers may be detected at a later stage in Indigenous people (ABS 2002) would contribute to higher mortality as a result of cancer.

As discussed on page 21, uncertainty about the accuracy of identification of Indigenous deaths prevents reporting of Indigenous mortality in rural and remote areas.

Mortality of non-Indigenous people

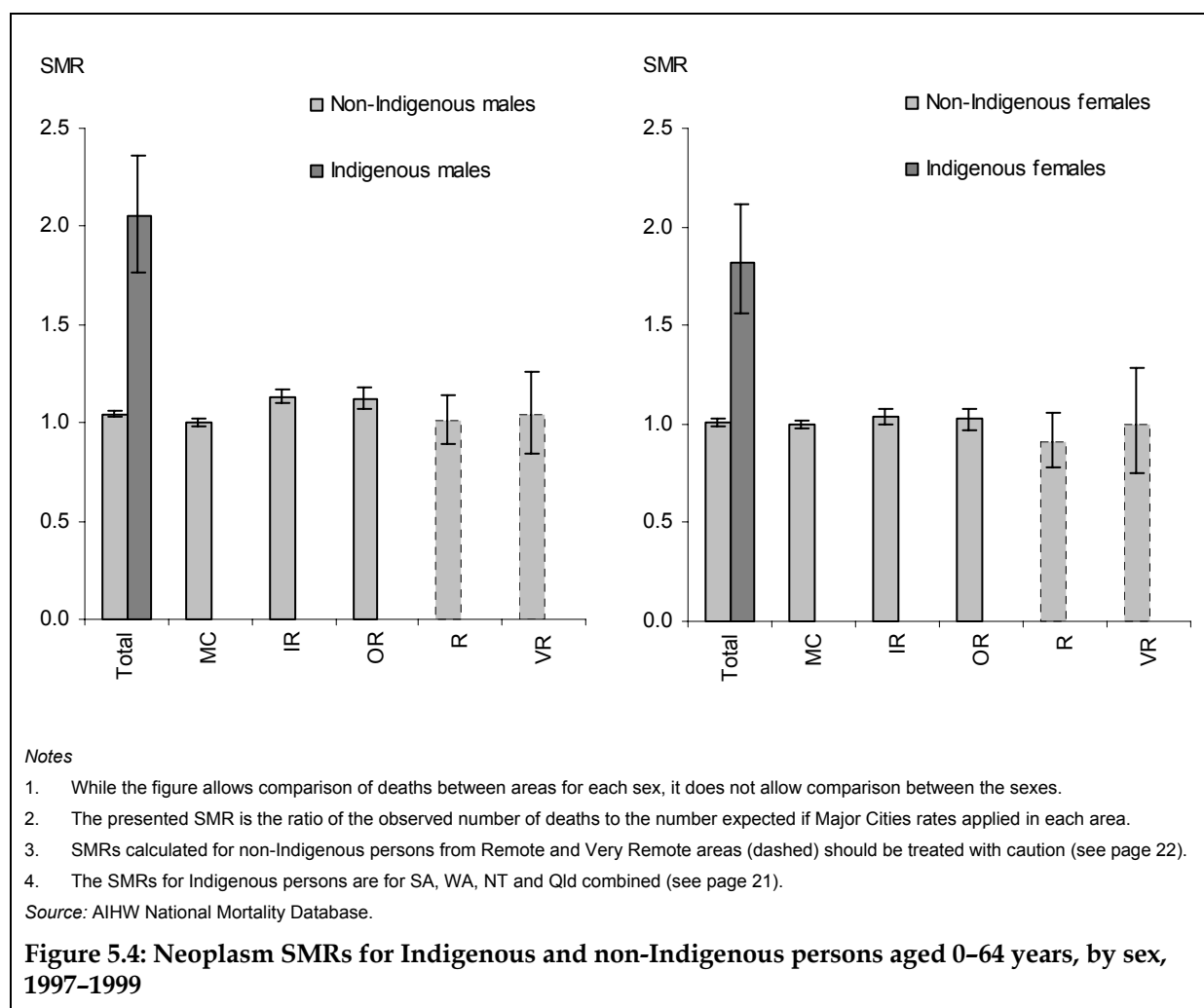
The inter-regional pattern for death rates due to neoplasms was similar for non-Indigenous people and the total population, except that in Remote and Very Remote areas, rates were more likely to be lower than in Major Cities, although they were still not significantly lower (Table 5.5).

Mortality of people aged 0–64 years

Frequently, and as stated elsewhere, death rates of elderly non-Indigenous people from remote and very remote areas are found to be substantially lower than those of similar aged people living in other areas, possibly reflecting a movement of older people with known health conditions into more populated areas to receive treatment, and eventually dying there. These lower rates can substantially affect the summary statistic described for non-Indigenous people above. For this reason, rates for 0–64-year-old non-Indigenous people are also presented here (Figure 5.4 and Table 5.5).

Death rates from neoplasms for Indigenous males and females who are younger than 65 years are approximately double the rates for non-Indigenous males and females of the same age from Major Cities.

Death rates due to neoplasms for non-Indigenous males younger than 65 years were 1.1 times as high in regional areas as for similar males in Major Cities, however, rates in remote areas were not significantly different from those in Major Cities. For non-Indigenous females in this age group, the rates were 1.05 times as high in Inner Regional areas, but not significantly different in the other areas from those in Major Cities.



Variation by age group: neoplasms

An analysis of age-specific death rates gives more detailed information about each age group to confirm and supplement findings resulting from the broad analysis above using standardised mortality ratios.

Age-specific rates

Compared to rates in Major Cities, death rates in 1997-1999 as a result of neoplasms tended to be slightly higher for most age groups (but not for those 75 years or older) in most regional and remote areas (Table 5.4 and Figures 5.5 and 5.6).

For both males and females, death rates were negligible until age 25 years. For males in Major Cities, the rates then rose to reach 210 deaths per 100,000 per year at age 45-64 years and 2,156 deaths per 100,000 per year for those 75 years and older. For females in Major Cities, the pattern was similar; with rates in the oldest age groups half that for their male counterparts.

Table 5.4: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, neoplasms, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	5	1.07	1.03	0.33	2.30	3	*1.73	1.10	0.77	1.39
5–14	4	0.96	0.72	0.93	0.62	4	*0.50	0.61	0.01	0.58
15–24	6	1.17	1.34	1.19	1.61	4	1.10	0.88	1.08	1.75
25–44	19	*1.12	1.09	0.87	1.28	24	*1.10	1.00	1.00	1.25
45–64	213	*1.14	*1.15	1.11	*1.31	179	1.03	1.05	1.00	*1.34
65–74	1,028	*1.04	*1.08	1.12	1.02	586	0.98	0.99	1.13	1.24
75+	2,156	1.02	1.00	0.94	*0.67	1,167	0.99	0.98	*0.81	*0.70
Total	..	1.05	1.06	1.04	1.00	..	1.00	1.00	0.95	1.08

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

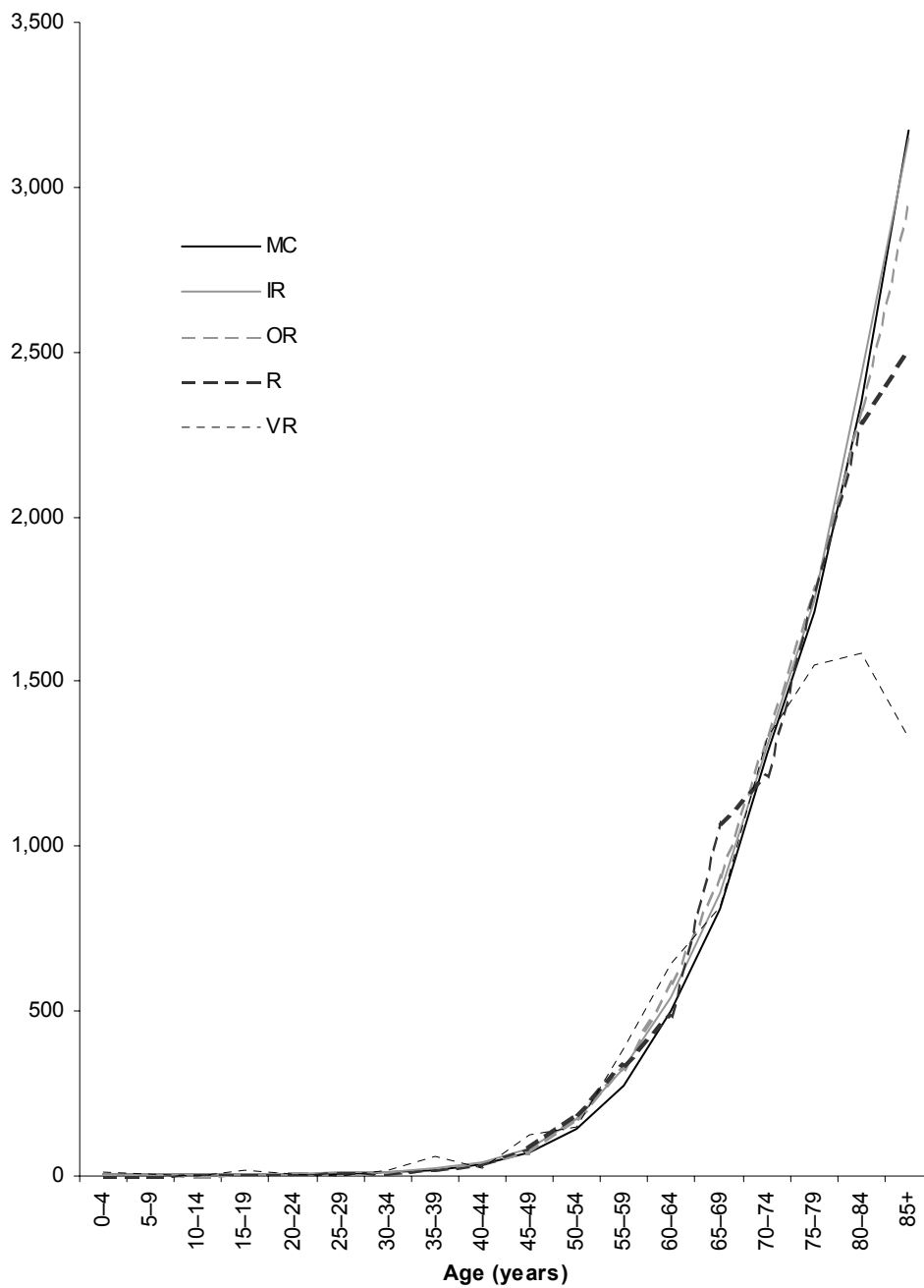
1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Age-specific death rates for males and females due to cancer and other neoplasms were frequently not significantly different for people living in regional and remote areas from those living in Major Cities. However, for most age groups (except 5–14-year-olds and those older than 75 years), rates tended to be higher outside Major Cities.

For males in Inner and Outer Regional areas, death rates were frequently 10% (or more) higher than in Major Cities. Females in regional areas had death rates that appeared to be similar to those in Major Cities or perhaps a little higher in young adulthood (to 44 years) and early childhood (0–4 years).

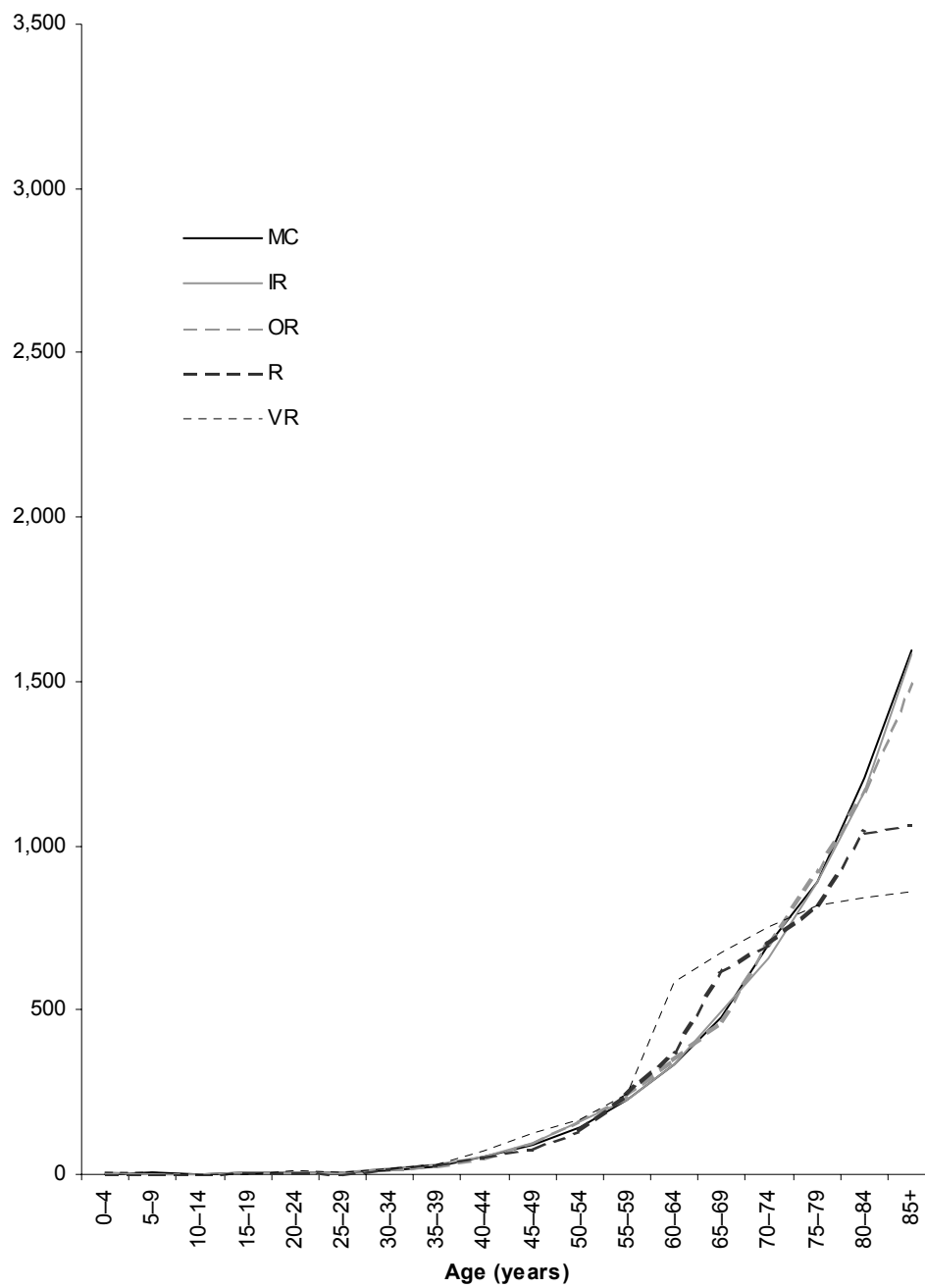
**Deaths per 100,000
population**



Source: AIHW National Mortality Database.

Figure 5.5: Age-specific death rates due to neoplasms, by ASGC Remoteness area for males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 5.6: Age-specific death rates due to neoplasms, by ASGC Remoteness area for females, 1997-1999

In Remote areas, age-specific rates for those younger than 75 years were not significantly different from rates in Major Cities. Death rates for females older than this were 0.8 times those in Major Cities.

In Very Remote areas, death rates for most age groups younger than 75 years were elevated (but were not significantly different to those in Major Cities). Death rates for 45–64-year-olds were more than 1.3 times as high as rates for similar people in Major Cities.

For those older than 75 years, death rates as a result of neoplasms in regional areas were either not significantly different or, in remote areas, were lower or significantly lower (to 0.7 times the Major Cities rates in Very Remote areas (0.8 times for females in Remote areas)).

Age-specific rates for Indigenous people

Death rates of Indigenous people are greater than for non-Indigenous people, irrespective of where the latter live (Table 5.5 and Figures 5.7 and 5.8).

Age-specific death rates tended to be higher for Indigenous males and females than for non-Indigenous people in any area, with the exception that rates for those aged 75 years and older were similar to rates for non-Indigenous people from Major Cities. For those who were aged 25–64 years, there were approximately two to three times as many deaths as expected if non-Indigenous Major Cities rates applied to the Indigenous population. For those aged 65–74 years, death rates were 1.3 to 1.4 times rates for non-Indigenous people from Major Cities.

Age-specific rates for non-Indigenous people

Death rates as a result of neoplasms for non-Indigenous males living in regional areas were higher (Table 5.5 and Figures 5.7 and 5.8), frequently by up to 15% (although rates for those older than 75 years were similar to rates for counterparts in Major Cities). Death rates for non-Indigenous males in remote areas were not significantly different from their counterparts from Major Cities, except for those who were 75 years and older from Very Remote areas (for whom rates were 0.6 times those in Major Cities (that is, lower)).

Table 5.5: The ratio of observed deaths to those expected as a result of neoplasms if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	5	1.13	1.05	0.38	1.75	1.2	3	*1.82	1.04	0.94	0.12	2.1
5–14	4	0.98	0.72	1.11	0.30	0.5	4	*0.52	0.67	0.01	0.00	0.9
15–24	6	1.13	1.35	0.69	0.98	2.1	4	1.13	0.87	0.57	1.68	1.4
25–44	19	*1.13	1.04	0.73	0.49	*2.7	24	*1.11	1.00	0.81	0.78	*1.9
45–64	214	*1.14	*1.14	1.06	1.13	*2.0	179	1.03	1.03	0.95	1.07	*1.9
65–74	1,028	*1.04	*1.07	1.11	0.99	*1.3	586	0.98	0.99	1.12	1.02	*1.4
75+	2,155	1.02	1.01	0.97	*0.62	1.0	1,168	0.98	0.97	*0.81	*0.66	1.0
Total	..	*1.05	*1.06	1.03	0.88	*1.5	..	1.00	0.99	0.92	0.87	*1.5
0–64	..	*1.13	*1.13	1.01	1.04	*2.1	..	*1.04	1.02	0.91	0.99	*1.8

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

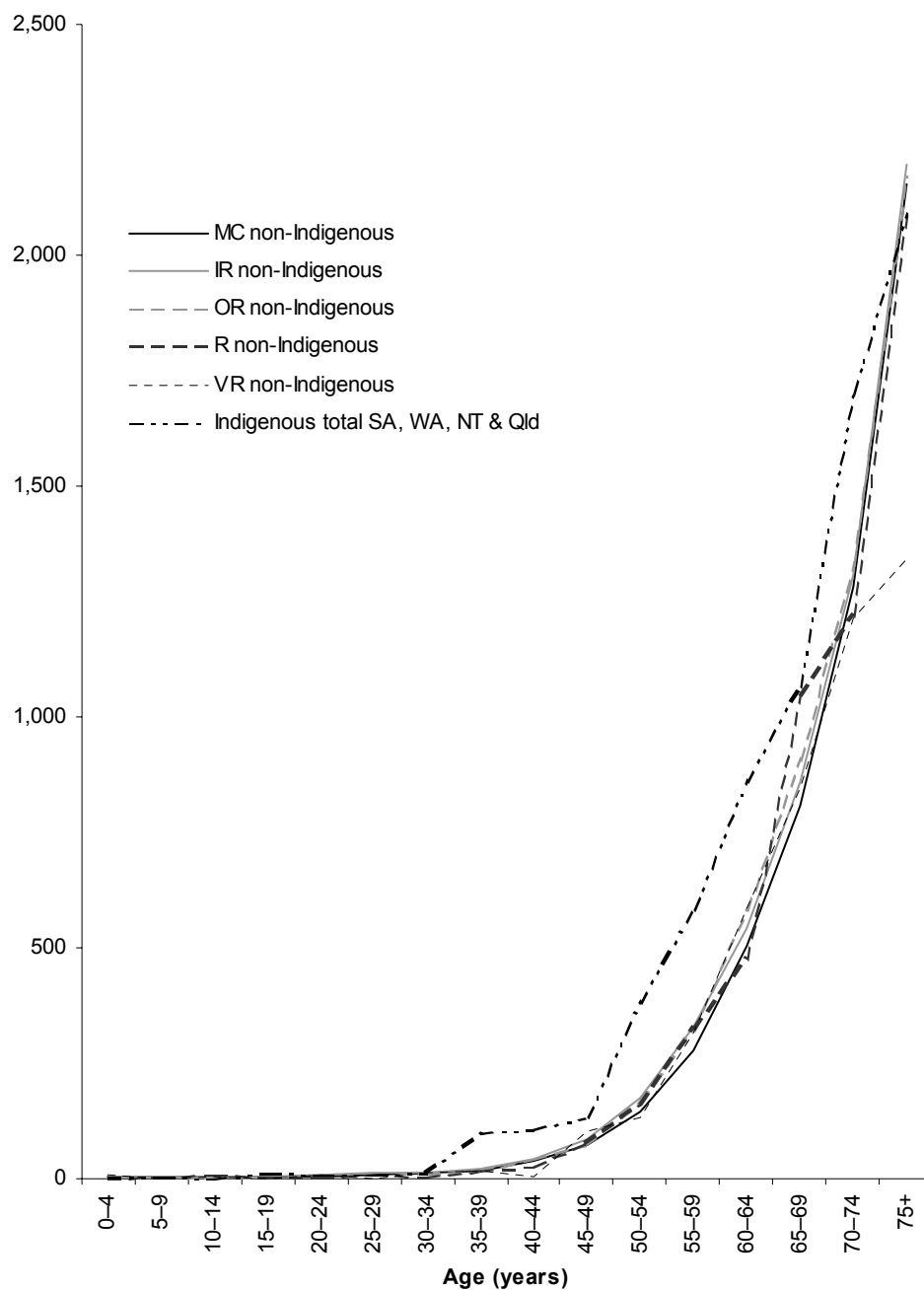
1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

For non-Indigenous females, death rates as a result of neoplasms were not clearly higher, except in a couple of groups. For females older than 75 years, rates were similar in regional areas and significantly lower in remote areas than for those from Major Cities. In Inner Regional areas, rates were either not significantly different, slightly (1.1 times) higher in 25–44-year-olds, significantly (1.8 times) higher in those younger than 5 years, or significantly (0.5 times) lower in those who were 5–14 years old.

Death rates for the oldest age group in Remote and Very Remote areas were significantly lower than for their counterparts in Major Cities (0.8 and 0.7 times respectively).

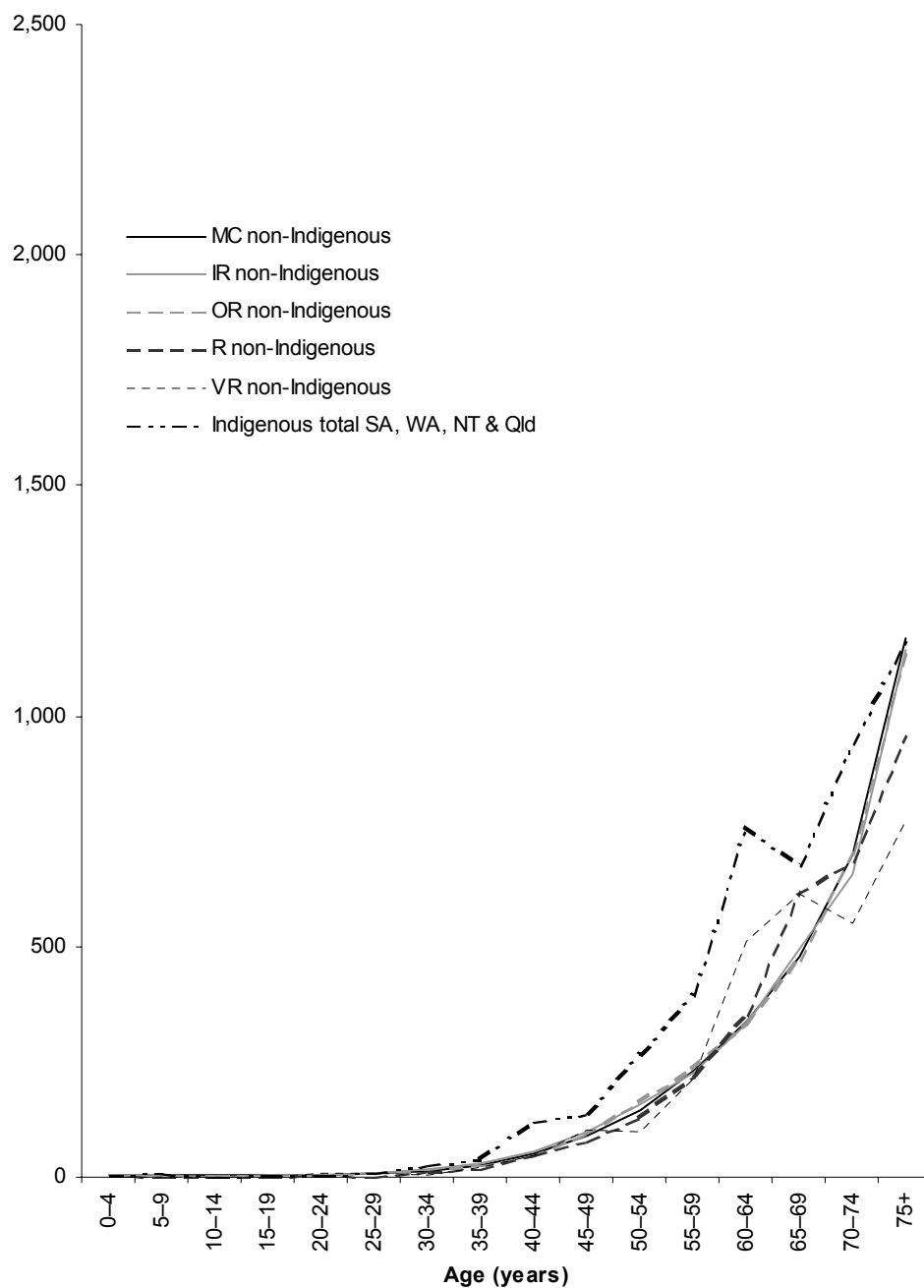
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 5.7: Age-specific death rates due to neoplasms, by ASGC Remoteness area for non-Indigenous males and for SA, WA, NT and Qld Indigenous males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 5.8: Age-specific death rates due to neoplasms, by ASGC Remoteness area for non-Indigenous females and for SA, WA, NT and Qld Indigenous females, 1997-1999

'Excess' deaths due to neoplasms

'Excess' deaths are defined as 'how many more observed deaths occurred than would be expected, if death rates in Major Cities were applied to the populations in each area outside Major Cities'.

'Excess' deaths gives a measure of the absolute number of 'extra' people who died outside Major Cities, and places these in perspective against the ratios shown in Tables 5.4 and 5.5. For example, although the ratio of observed deaths to those expected if Major Cities had applied may have been relatively high in a particular area, it may not have involved a large number of people. Conversely, a low rate ratio in another area may translate into a relatively large number of 'excess' deaths because of a larger base population.

Annual 'excess' deaths

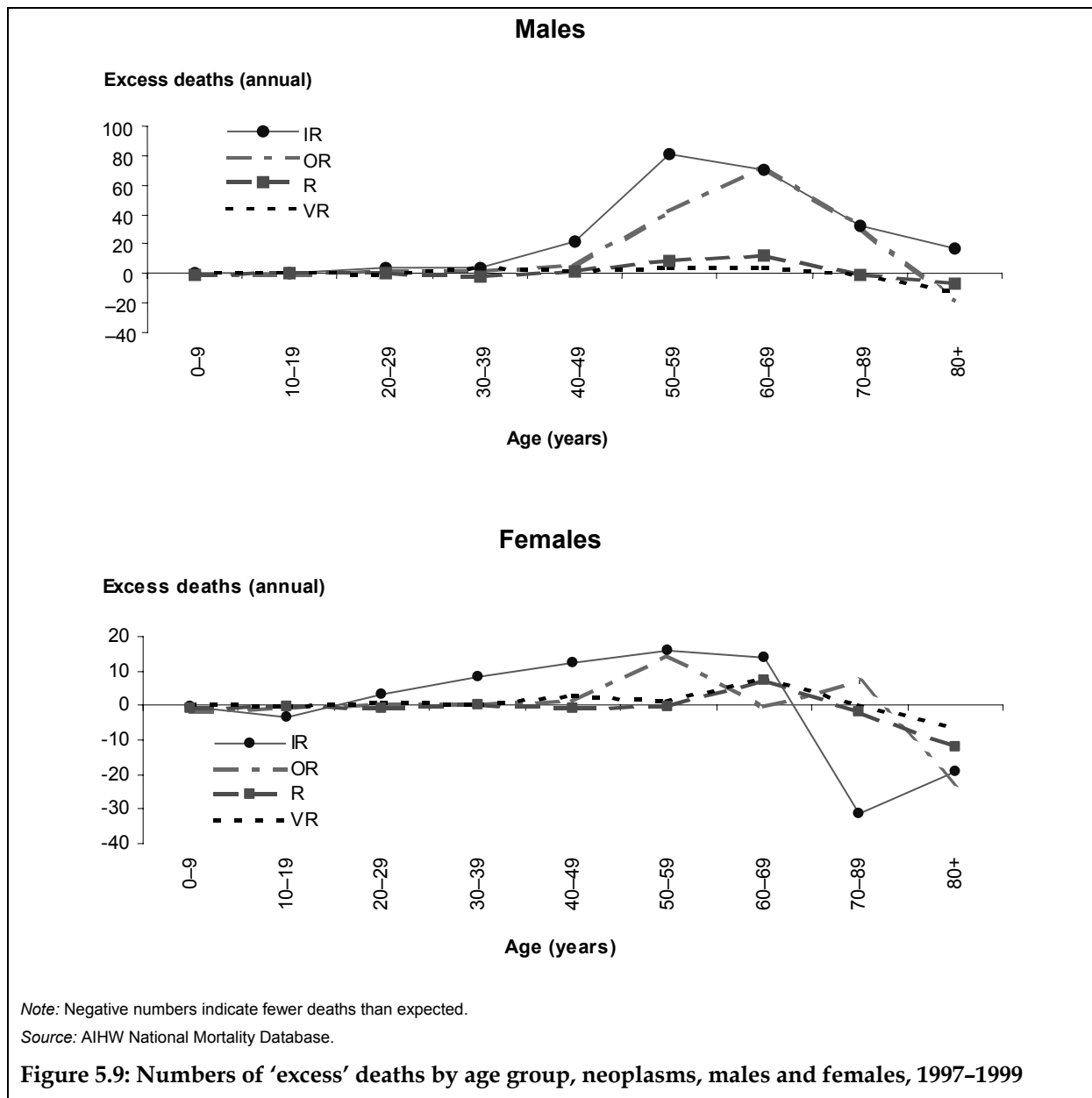
Outside Major Cities, there were 373 'excess' deaths annually as a result of neoplasms; 379 'excess' deaths of males and 6 fewer deaths of females than expected.

Annually, there were 232, 135, 12 and 0 'excess' deaths of males in the four areas outside Major Cities. The bulk (approximately 80%) of these 'excess' male deaths occurred in those aged 50–69 years (Figure 5.9 and Appendix B).

Even though there were fewer deaths than expected for females, there were 6 more deaths than expected in Very Remote areas annually (and 9 fewer than expected in Remote areas). The picture for females is complicated by the fact that there are substantially fewer deaths than expected for females aged 70 years and older. So, in fact, for females younger than 70 years who live outside Major Cities, there are about 80 more deaths than expected each year (slightly fewer than expected in those younger than 20 years, and about 90 more than expected for those aged 20–69 years, with the bulk of these occurring in women older than 50 years).

There were slightly fewer deaths than expected for males younger than 15 years, and 35 fewer deaths each year for those older than 84 years. This leaves an 'excess' of 416 deaths annually for males aged 15–84 years who live outside Major Cities, more than half of which were in the 50–69 year age group.

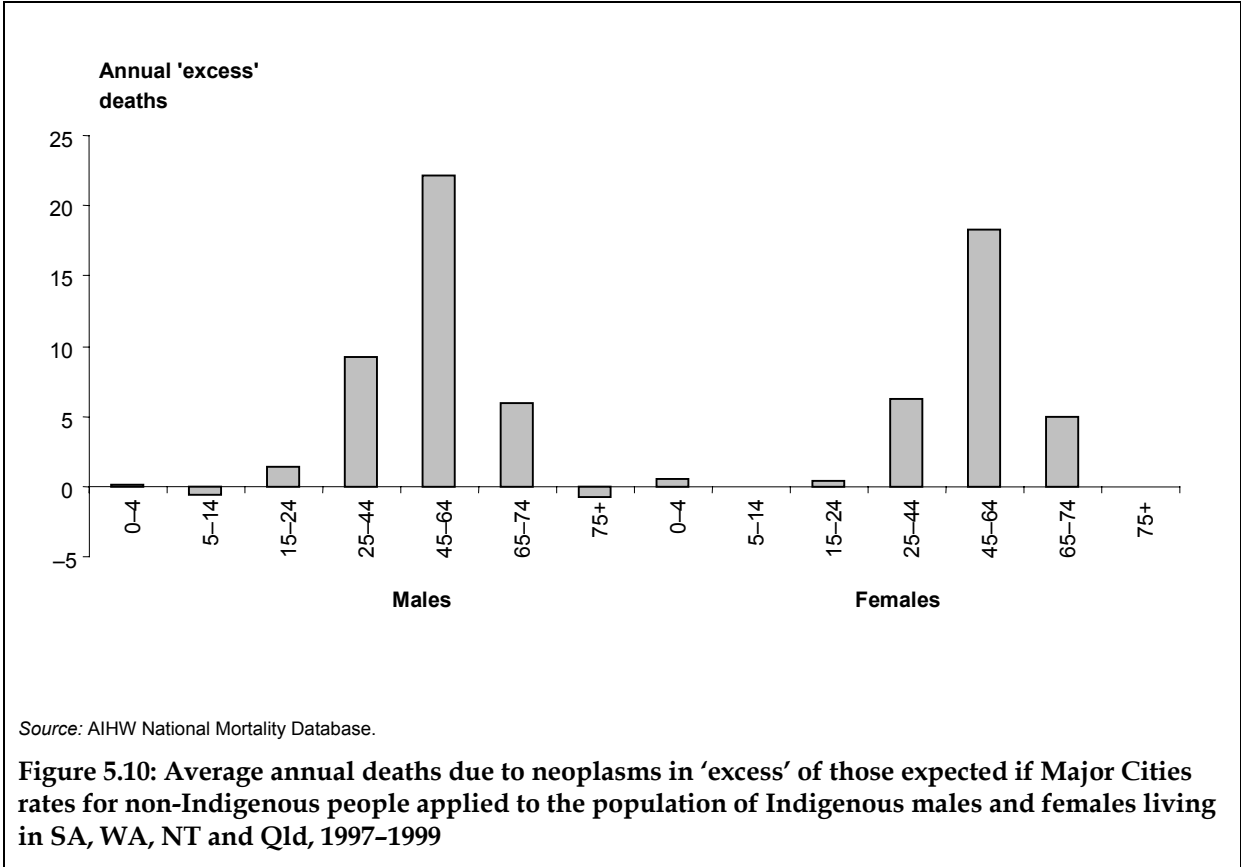
As noted previously, the fewer deaths than expected in the older age groups may be a consequence of older people with known poor health moving into more populated areas to receive treatment, and eventually dying there.



Annual 'excess' deaths of Indigenous people

In the Indigenous population there were 38 'excess' deaths of males and 30 'excess' deaths of females, resulting from neoplasms annually. These were calculated on the basis that Major Cities rates for non-Indigenous people had applied to the Indigenous population living in South Australia, Western Australia, the Northern Territory and Queensland. It is most likely that there were also 'excess' deaths of Indigenous people from these diseases in the other jurisdictions for which identification is considered less accurate (New South Wales, Victoria, Tasmania and the Australian Capital Territory).

The majority of these deaths occurred in relatively young age groups compared with the total population. For Indigenous males, 25% of the 'excess' was in those aged 25–44 years, 60% occurred in those aged 45–64 years; and 16% in those aged 65–74 years. For Indigenous females the numbers of excess deaths were lower, but the pattern similar; 21% were 25–44 years, 60% were in the 45–64 years age group, and 17% were aged 65–74 years (Figure 5.10 and Appendix B).

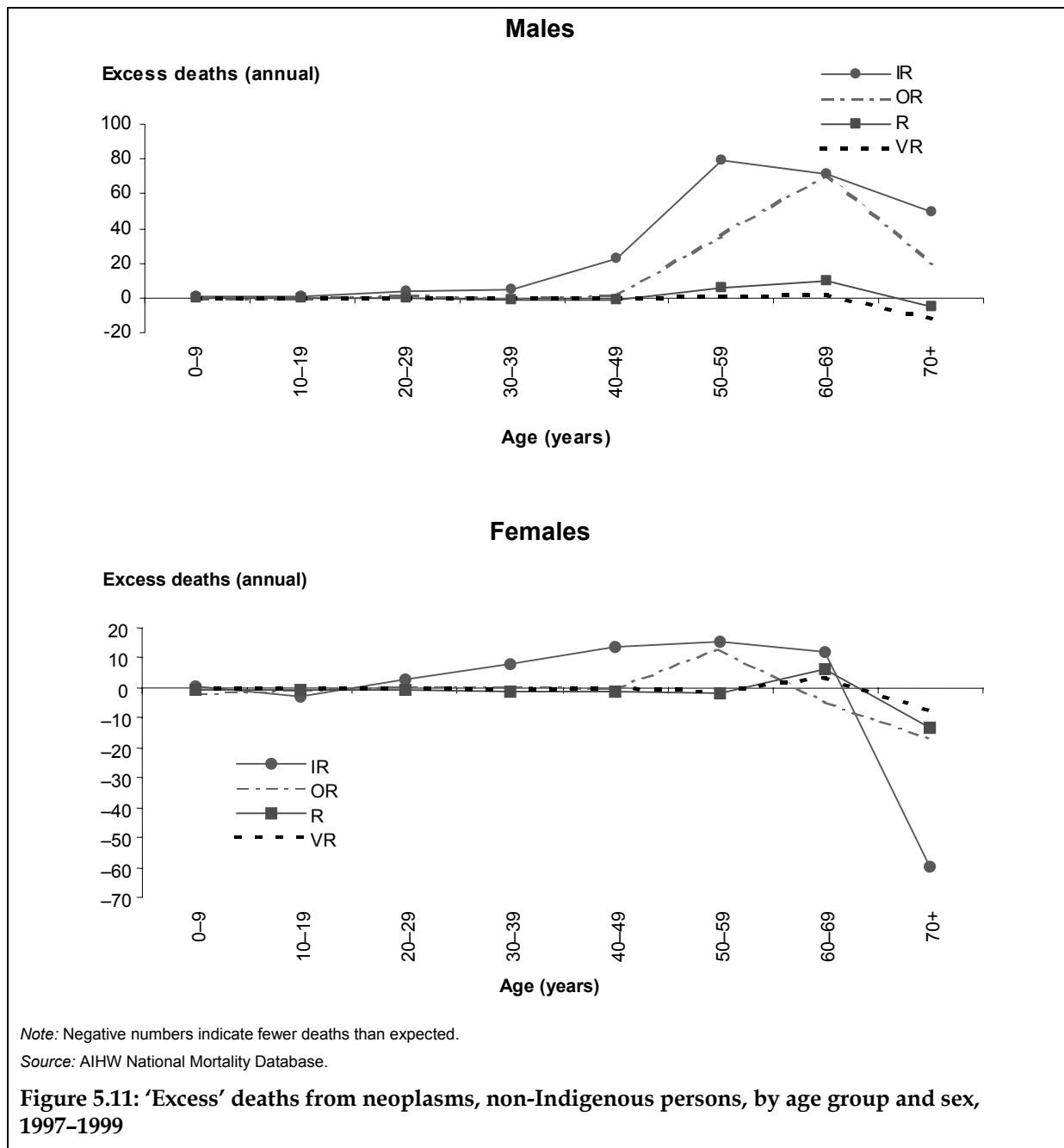


Annual 'excess' deaths of non-Indigenous people

Annually, there were 321 'excess' deaths of non-Indigenous people, compared with 379 'excess' deaths in the total population. Of these, there were 359 more deaths of non-Indigenous males and 38 fewer deaths of non-Indigenous females than expected; 233, 129, 8 and -11 'excess' deaths of males and 10, 9, 13 and 6 fewer deaths of females than expected in the four areas outside Major Cities.

For non-Indigenous males from regional areas, over 90% of the 'excess' occurred amongst those older than 45 years with roughly similar contribution from most age groups. In Remote and Very Remote areas respectively, there were 5 and 13 fewer deaths than expected of males 70 years or older, which substantially reduced the total number of 'excess' deaths in those areas (Figure 5.11 and Appendix B).

For non-Indigenous females 70 years and older, there were substantially fewer deaths than expected, while for those younger than 70 years, there were 50, 8, 0 and 1 more deaths than expected in the four areas outside Major Cities.



5.2 Lung cancer

Smoking is the main cause of lung cancer (ICD-10 codes C33, C34). People who live outside Major Cities are more likely to be smokers than those living in Major Cities (AIHW: Strong et al. 1998), and Indigenous people are twice as likely to smoke as the total population (ABS 2002).

Summary of findings

Lung cancer is the leading cause of cancer death in Australia.

Annually, lung cancer was responsible for the deaths of 6,658 people (4,634 males and 2,076 females), 2,334 of whom were living in areas outside Major Cities. Of these 6,658 deaths, 47 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Lung cancer death rates tended to be higher for males outside Major Cities. Rates were 1.1 and 1.3 times as high in Outer Regional and Very Remote areas respectively. Rates in Inner Regional and Remote areas were not significantly different to those in Major Cities. Rates for females were not significantly higher except in Very Remote areas where there were 1.4 times as many deaths as expected.

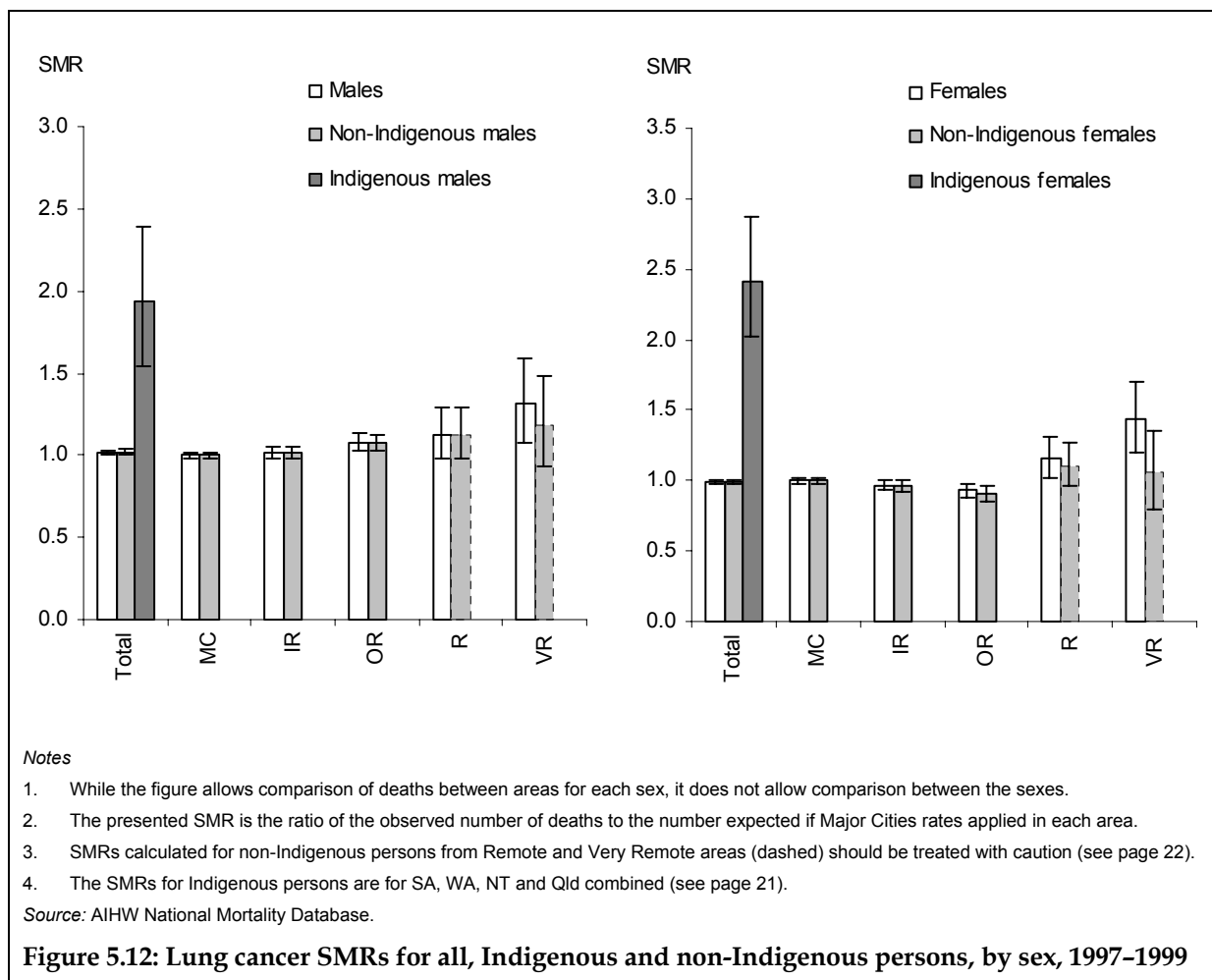
There were about twice as many deaths of Indigenous people as expected from lung cancer.

Death rates for non-Indigenous people who were 75 years or older were lower in remote areas, substantially lowering overall lung cancer death rates in those areas. For non-Indigenous males younger than 65 years, there were 1.1–1.3 and 1.9 times as many deaths as expected in regional and Very Remote areas, and although rates appeared to be elevated for females outside Major Cities, they were not significantly higher.

Annually as a result of lung cancer, there were 52 'excess' deaths (76 more males and 23 fewer females than expected). However, there were fewer deaths than expected due to this cause in those who were 70 years and older in all areas. For those who were younger than 70 years, there were 112 'excess' deaths, almost all of which occurred in those aged 45–69 years. Of these, 40, 45, 12 and 15 occurred in the four areas outside Major Cities.

Overall mortality due to lung cancer

Annually in the period 1997–1999, there were 2,927, 1,051, 547, 74 and 35 deaths of males and 1,397, 442, 195, 28 and 13 deaths of females, respectively, in the five areas as a result of lung cancer.



Death rates due to lung cancer tended to be either not significantly higher or tended to be higher outside Major Cities (Figure 5.12 and Table 5.6).

- Death rates for males tended to be higher outside Major Cities, although the difference did not reach statistical significance in Inner Regional and Remote areas. However, in Outer Regional and Very Remote areas, rates for males were 1.1 and 1.3 times as high as for males from Major Cities.
- Death rates for females tended to be slightly (and not significantly) lower in regional areas and higher in remote areas, with 1.4 times as many deaths as expected in Very Remote areas.
- There were about twice as many deaths of Indigenous people due to lung cancer as expected.

In Major Cities, death rates for males rose from about 0 per 100,000 per year at age 40 years, to about 400 per 100,000 per year at age 75 years. For females the pattern was similar but the rate at age 75 years was about 140 per 100,000 per year.

Death rates as a result of lung cancer were, for most age/sex groups, not significantly different from those in Major Cities. However, for males aged 45-64 years, rates in Inner Regional, Outer Regional and Very Remote areas were 1.1, 1.3 and 2.2 times as high respectively as for males from Major Cities. For females 25 years and older from regional areas, rates were not significantly different and generally lower (0.9 times the Major Cities

rate for 65–74-year-old females from Inner Regional areas) than rates for counterparts from Major Cities. Rates for females 25–74 years old in remote areas tended to be higher than in Major Cities (rates for 45–64-year-old females from Very Remote areas were 2.2 times as high as rates for females in that age group from Major Cities). Rates for people 75 years and older living outside Major Cities were similar to or lower than rates for people of that age living in Major Cities, but not significantly lower.

Table 5.6: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, lung cancer, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	0	..	..	..	..
5–14	0	..	..	..	..	<1	0.00	0.00	0.00	0.00
15–24	<1	0.00	2.85	4.07	0.00	<1	0.00	0.00	0.00	0.00
25–44	1	1.37	1.32	0.57	0.87	2	1.01	0.73	0.72	2.20
45–64	51	*1.11	*1.28	1.24	*2.15	26	1.09	0.97	1.35	*2.20
65–74	285	1.00	1.07	1.23	0.92	107	*0.89	0.96	1.17	1.24
75+	442	0.98	0.95	0.91	0.92	133	0.95	0.88	1.01	0.62
Total	..	1.02	*1.08	1.13	*1.31	..	0.96	0.93	1.16	*1.43

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

As a result of lung cancer, there were 18, 41, 8 and 8 ‘excess’ deaths of males annually in the four areas, 16 and 15 fewer deaths than expected for females in Inner and Outer Regional areas respectively, as well as 4 and 4 more deaths of females than expected in Remote and Very Remote areas. There were fewer deaths than expected in males older than 80 years and females older than 70 years. The bulk of the ‘excess’ deaths occurred among males who were 50–79 years old, with 91 more deaths than expected outside Major Cities annually. There were no clear ‘excess’ deaths of females at any stage of life.

Indigenous population

Annually in the period 1997–1999, there were 47 deaths of Indigenous people (29 males and 18 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 47 deaths, there were 25 (14 males and 11 females) more than expected.

There were 1.9 and 2.4 times as many deaths of Indigenous males and females as expected (Table 5.7). For those aged 25–64 years, there were 3–5 times as many deaths as expected, with most (70%) of the total ‘excess’ deaths occurring in those aged 45–64 years.

Non-Indigenous population

Annually, there were 2,918, 1,044, 537, 71 and 24 deaths of non-Indigenous males and 1,390, 438, 188, 25 and 7 deaths of non-Indigenous females in the five areas as a result of lung cancer.

- Death rates for males were higher in each area outside Major Cities, but not significantly higher (except for Outer Regional areas where rates were 1.1 times those in Major Cities).
- Death rates for females were 0.9 times Major Cities rates in Outer Regional areas but otherwise were not significantly different (Table 5.7).

Table 5.7: The ratio of observed deaths to those expected as a result of lung cancer if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997-1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
0-4	0	..	..	..	..	..	0	..	..	..	..	..
5-14	0	..	..	..	..	..	<1	0.00	0.00	0.00	0.00	0.0
15-24	<1	0.00	3.01	4.73	0.00	0.0	<1	0.00	0.00	0.00	0.00	0.0
25-44	1	1.39	1.27	0.24	1.19	*5.4	2	1.01	0.62	0.78	0.58	*3.9
45-64	51	*1.11	*1.26	1.17	*1.92	*2.7	26	1.09	0.92	1.19	1.57	*3.7
65-74	284	1.00	1.06	*1.27	0.88	1.2	107	*0.89	0.96	1.15	0.94	1.4
75+	442	0.97	0.96	0.94	0.76	1.5	133	0.95	*0.87	1.02	0.70	1.3
Total	..	1.02	*1.08	1.13	1.18	*1.9	..	0.96	*0.91	1.11	1.05	*2.4
0-64	..	*1.12	*1.27	1.14	*1.88	*2.9	..	1.08	0.90	1.15	1.47	*3.7

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Overall, for those living outside Major Cities, death rates due to lung cancer were 4% higher for non-Indigenous males, but were not significantly different for non-Indigenous females, compared with their counterparts inside Major Cities.

Age-specific death rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The pattern exhibited by age-specific death rates is similar for non-Indigenous people to that for the total population. However, death rates for 45-64-year-old non-Indigenous females were not significantly higher in Very Remote areas.

As a result of lung cancer, there were 16, 38, 8 and 4 'excess' deaths of non-Indigenous males annually in the four areas respectively, and -17, -19, 2 and 0 'excess' deaths of non-Indigenous females in these areas. There were (23) fewer deaths than expected in males older than 70 years, with most (83) of the total 'excess' deaths in males aged 50–69 years. There were substantially fewer (43 fewer) deaths than expected of females older than 60 years, but a small 'excess' (11) for those who were 40–59 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 29 (16 male, 13 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of lung cancer. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 29 deaths, there were 25 (14 males and 11 females) more than expected.

For Indigenous males and females who were younger than 65 years old, there were 2.9 and 3.7 times as many deaths as expected (Table 5.7).

Non-Indigenous population

Annually, there were 717, 264, 160, 22 and 13 deaths of non-Indigenous males younger than 65 years and 372, 130, 53, 9 and 3 deaths of non-Indigenous females younger than 65 years in the five areas, as a result of lung cancer.

Outside Major Cities, there were more deaths of non-Indigenous males than expected due to lung cancer, but for non-Indigenous females the number of deaths was not significantly more than expected (Table 5.7).

- Death rates for males were 1.1, 1.3 and 1.9 times as high in Inner Regional, Outer Regional and Very Remote areas as for males from Major Cities. Rates for males in Remote areas were not significantly different from rates for males from Major Cities.
- Death rates for females were not significantly different across remoteness categories.

Annually as a result of lung cancer, there were 27, 34, 3 and 6 'excess' deaths of non-Indigenous males and 10, -6, 1 and 1 'excess' deaths of non-Indigenous females who were younger than 65 years, in the four areas outside Major Cities. Most of the 'excess' deaths of males occurred in those 50–70 years old.

5.3 Colorectal cancer

Colorectal cancer (ICD-10 code C18–C21) is the most commonly diagnosed cancer in Australia (AIHW 2002a). 'A large proportion of colorectal cancer cases are preventable given its association with modifiable risk factors such as poor diet and physical inactivity. This proportion may be as high as 66–75%. Also if detected in its early stages, colorectal cancer is highly manageable and treatable' (AIHW 2002a). People who live outside Major Cities may have poorer access to healthy food, and people living in remote areas are more likely to be physically inactive (AIHW 2002b). Indigenous people are likely to have diets that are less healthy than those of non-Indigenous people for a range of reasons (ABS 2001c).

Summary of findings

Annually, colorectal cancer was responsible for the deaths of 4,630 people (2,501 males and 2,129 females); 1,675 of these people came from areas outside Major Cities. Of these 4,630 deaths, 10 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Colorectal cancer death rates tended to be 10% higher in regional areas, with rates similar or lower in remote areas.

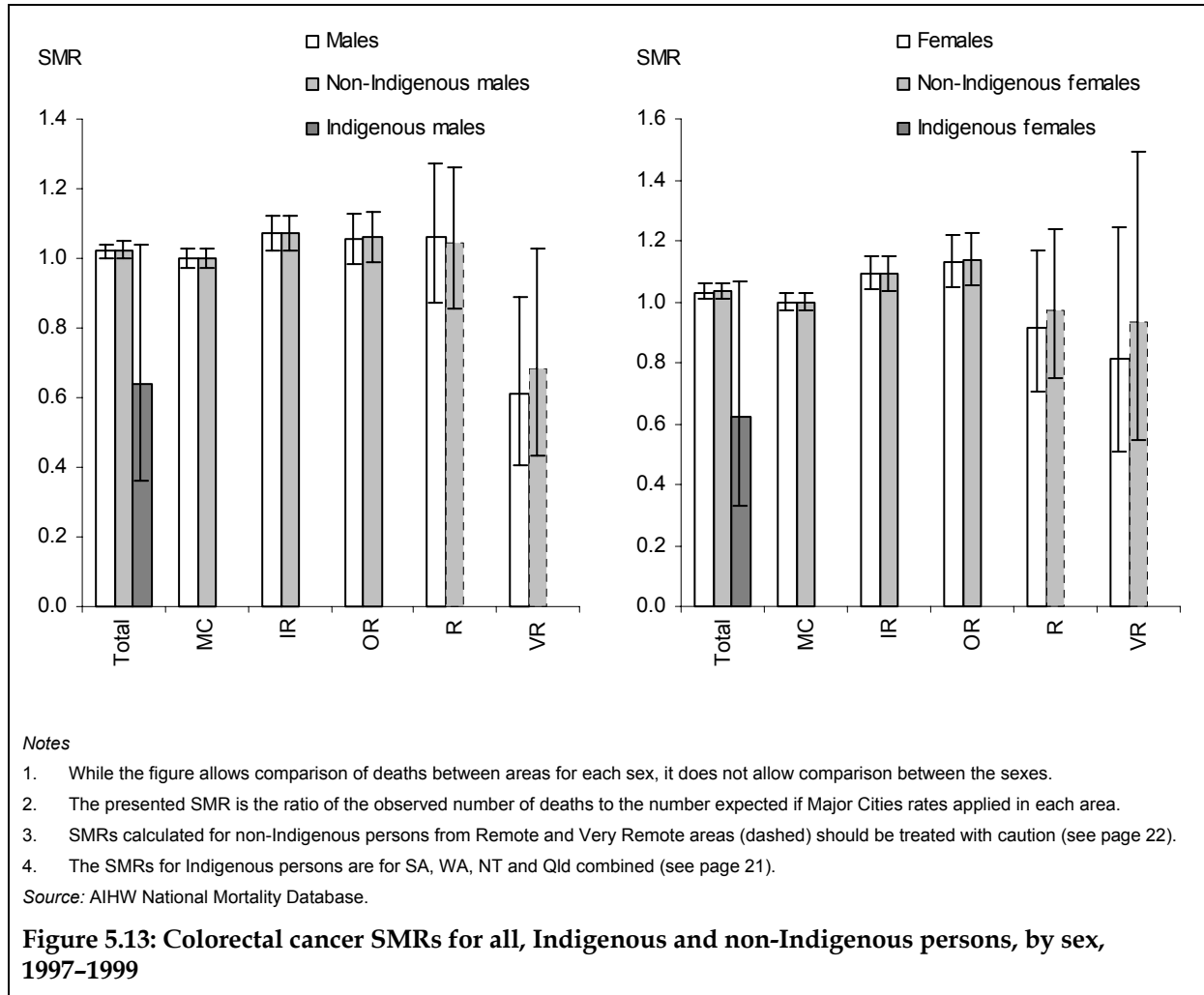
There were fewer (0.6 times as many) deaths of Indigenous people than expected due to colorectal cancer (although for males and females separately, rates were not significantly different to those for their non-Indigenous Major Cities counterparts).

As for the total population above, colorectal cancer death rates for non-Indigenous people tended to be 10% higher in regional areas, with about as many deaths as expected in remote areas.

Annually, there were 117 'excess' deaths due to colorectal cancer outside Major Cities (83, 41, 0 and -7 in each of the four areas). Almost all of these were non-Indigenous people. Over 80% of the 'excess' deaths occurred in those 55 years and older.

Overall mortality due to colorectal cancer

Annually, there were 1,575, 592, 286, 38 and 9 deaths of males and 1,380, 489, 232, 22 and 7 deaths of females in the five areas as a result of colorectal cancer.



Death rates due to colorectal cancer tended to be higher in regional areas and lower in remote areas than in Major Cities, although frequently the differences were not statistically significant (Figure 5.13 and Table 5.8).

- Death rates for males in Inner Regional areas were 1.1 times as high as in Major Cities, but were not significantly different in Outer Regional and Remote areas. In Very Remote areas rates were 0.6 times those in Major Cities (that is, lower).
- Death rates for females in Inner and Outer Regional areas were 1.1 times the Major Cities rate, with rates in Remote and Very Remote areas lower, but not significantly lower than in Major Cities.
- There were 0.6 times as many deaths of Indigenous people due to colorectal cancer as expected, however the number of observed deaths for each sex, although lower, was not significantly different from the number expected for each sex.

Table 5.8: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, colorectal cancer, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	0	..	..	..	..
5–14	<1	2.33	0.79	0.00	0.00	<1	0.01	0.00	0.00	0.00
15–24	<1	2.49	0.11	11.43	0.00	<1	3.62	3.90	0.00	0.00
25–44	2	1.14	1.29	0.67	0.02	2	1.00	0.87	0.57	1.20
45–64	31	*1.21	1.10	1.06	0.53	21	*1.20	*1.28	1.00	1.21
65–74	134	1.03	1.05	1.27	1.03	78	1.08	1.07	1.13	0.60
75+	243	1.02	1.01	0.85	*0.37	173	1.06	1.11	0.79	0.61
Total	..	*1.07	1.05	1.06	*0.61	..	*1.09	*1.13	0.92	0.82

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Note

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates due to colorectal cancer rose slowly with age at first, then more rapidly to 360 per 100,000 per year for males older than 85 years and 260 per 100,000 per year for similar aged females.

- There were up to 30% more deaths of 45–64-year-old males and females than expected in regional areas.
- Death rates for those who were 65–74 years old tended to be slightly (but not significantly) higher in each area than in Major Cities.
- For males and females who were 75 years and older, there were about the same number of deaths as expected, except in remote areas where there were fewer deaths than expected (0.4 times the number expected for males from Very Remote areas).

As a result of colorectal cancer, there were 40, 15, 2 and –6 ‘excess’ deaths of males annually, and 42, 27, –2 and –2 ‘excess’ deaths of females annually in the four areas. The bulk of the ‘excess’ occurred in those older than 60 years.

Indigenous population

Annually in the period 1997–1999, there were 9 deaths of Indigenous people (5 males and 4 females) in South Australia, Western Australia, the Northern Territory and Queensland as a result of colorectal cancer. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. These 9 deaths were 6 fewer than expected.

There were 0.6 times as many deaths of Indigenous males and females as expected (Table 5.9).

Non-Indigenous population

Annually, there were 1,573, 590, 284, 35 and 8 deaths of non-Indigenous males and 1,378, 487, 230, 22 and 6 deaths of non-Indigenous females in the five areas, as a result of colorectal cancer.

There were about 1.1 times as many deaths of non-Indigenous males and females as expected in regional areas due to colorectal cancer, but about as many deaths as expected in remote areas (Table 5.9).

Table 5.9: The ratio of observed deaths to those expected as a result of colorectal cancer if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female						
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous	
		IR	OR	R	VR			IR	OR	R	VR		
													(ratio)
0–4	0	..	..	..	..	..	0	..	..	..	..	..	..
5–14	<1	2.37	0.84	0.00	0.00	0.0	<1	0.01	0.00	0.00	0.00	0.00	0.0
15–24	<1	2.53	0.11	0.00	0.00	11.5	<1	3.67	4.15	0.00	0.00	0.00	0.0
25–44	2	1.15	1.33	0.72	0.03	0.0	2	1.02	0.91	0.63	1.84	0.0	0.0
45–64	31	*1.21	1.10	1.08	0.60	0.6	21	*1.20	*1.28	1.07	1.23	0.9	0.9
65–74	134	1.02	1.05	1.22	1.07	1.0	78	1.08	1.07	1.18	0.64	0.9	0.9
75+	243	1.02	1.03	0.85	0.47	0.3	173	1.05	1.11	0.83	0.80	0.2	0.2
Total	..	*1.07	1.06	1.04	0.68	0.6	..	*1.09	*1.14	0.97	0.94	0.6	0.6
0–64	..	*1.21	1.11	1.04	0.55	0.6	..	*1.19	*1.25	1.01	1.32	0.8	0.8

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The pattern exhibited by age-specific death rates is similar for non-Indigenous people to that for the total population, although death rates for males older than 75 years in Very Remote areas, though still low, were not significantly lower.

As a result of colorectal cancer, there were 40, 16, 1 and –4 ‘excess’ deaths of non-Indigenous males annually, and 40, 28, –1 and 0 ‘excess’ deaths of non-Indigenous females annually in the four areas outside Major Cities. The bulk (80–90%) of the ‘excess’ deaths occurred in those older than 50 or 60 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there was an average of 5 (2 male, 2 female²) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of colorectal cancer. There would also have been a number of deaths due to this cause in the other jurisdictions. These 5 deaths were 2 (1 male and 1 female) fewer than expected.

For Indigenous males and females who were younger than 65 years old, the number of observed deaths, although slightly lower, was not significantly different from the number expected (Table 5.9).

Non-Indigenous population

Annually, there were 450, 178, 87, 13 and 2 deaths of non-Indigenous males younger than 65 years and 322, 123, 63, 7 and 3 deaths of non-Indigenous females younger than 65 years in the five areas as a result of colorectal cancer.

In regional areas there were about 1.2 times as many deaths of 0–64-year-old non-Indigenous people as expected due to colorectal cancer. In remote areas, however, the difference between the observed and expected number of deaths was not significant (Table 5.9).

As a result of colorectal cancer, there were 31, 9, 1 and -2 'excess' deaths of non-Indigenous males younger than 65 years annually, and 20, 13, 0 and 1 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. The bulk of the 'excess' deaths occurred in males older than 55 years and females older than 45 years.

² Numbers for each sex do not add to the number for persons due to rounding.

5.4 Breast cancer

Breast cancer (ICD-10 code C50) is the most common cancer detected in women and one of the most common causes of death from cancer for women. Illness and death as a result of breast cancer can be reduced through population-based screening and effective follow-up treatment (AIHW 2002b).

Summary of findings

Annually, breast cancer was responsible for the deaths of 2,577 people (20 males and 2,557 females); 852 of these people came from areas outside Major Cities. Of these 2,577 deaths, 13 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Breast cancer death rates for females in each area were not significantly different from rates in Major Cities.

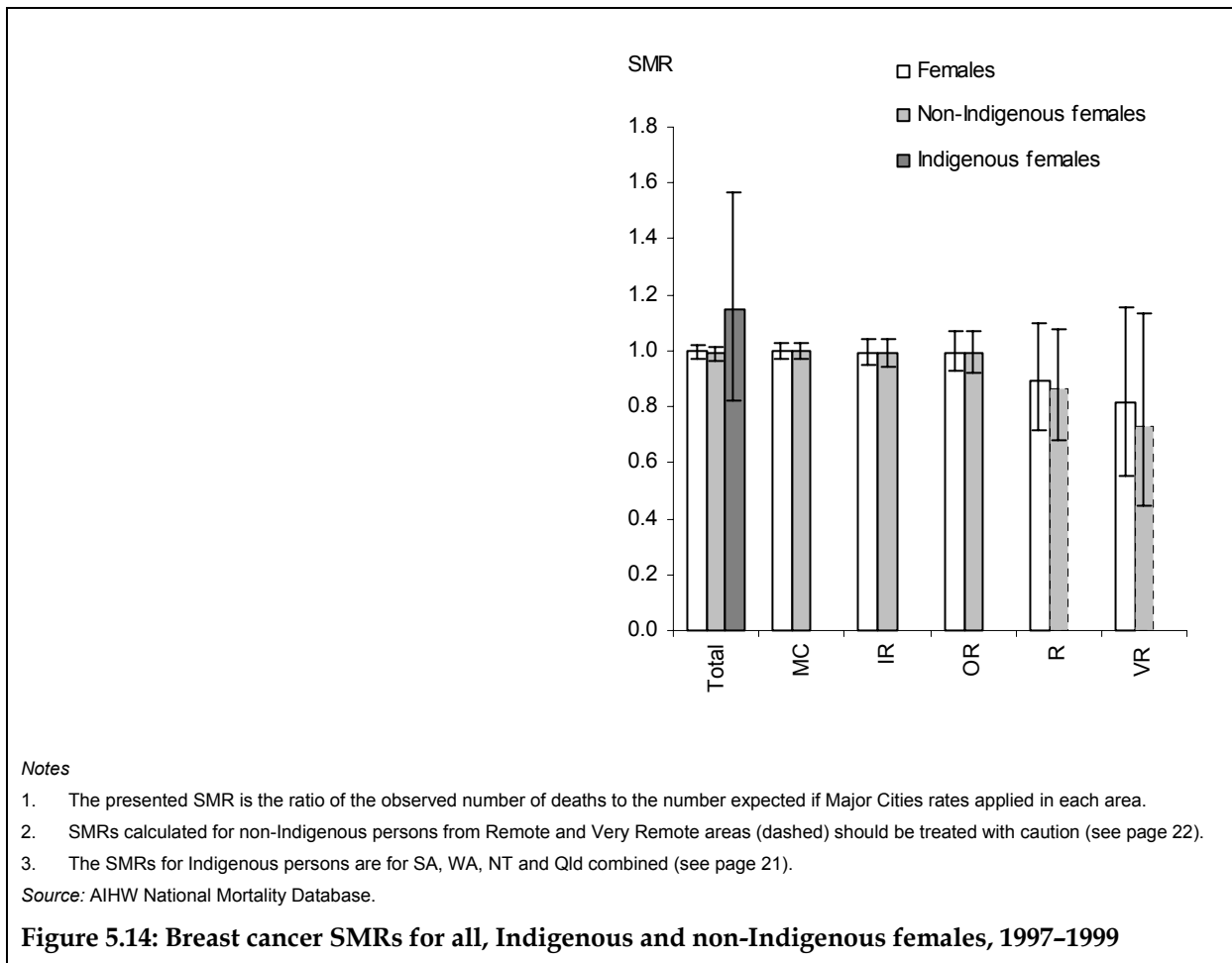
There were about as many deaths of Indigenous women as expected from breast cancer.

As for the total population of females, breast cancer death rates for non-Indigenous females in each area were not significantly different from rates in Major Cities.

Annually, there were 11 fewer deaths than expected due to breast cancer outside Major Cities.

Overall mortality due to breast cancer

Annually, there were very few deaths of males and 1,711, 548, 258, 29 and 10 deaths of females, respectively, in the five areas as a result of breast cancer.



Death rates for females were not significantly different across the areas (but did tend to be lower outside Major Cities). There were about as many observed deaths of Indigenous women due to breast cancer as expected (Figure 5.14 and Table 5.10).

In Major Cities, death rates as a result of breast cancer for females rose from close to 0 per 100,000 per year at age 35 years to 190 per 100,000 per year at age 85 years and older.

In no age group in any area was the number of observed deaths significantly different from the number expected due to this cause.

As a result of breast cancer, there were 3, 2, 4 and 2 fewer deaths of females than expected annually in the four areas.

Table 5.10: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, breast cancer, females, 1997–1999

Age group (years)	MC rate	(ratio)			
		IR	OR	R	VR
0–4	0	..	..	..	..
5–14	0	..	..	..	..
15–24	<1	4.29	1.94	0.00	0.00
25–44	8	1.09	1.06	1.23	1.31
45–64	48	0.99	0.96	0.80	0.70
65–74	80	0.95	1.02	0.90	1.08
75+	136	1.00	1.00	0.88	0.51
Total	..	0.99	0.99	0.89	0.81

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.

Source: AIHW National Mortality Database.

Indigenous population

Annually in the period 1997–1999, there were 13 deaths of Indigenous women in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. These 13 deaths were 2 more than expected; the difference between the number observed and expected was not significant (Table 5.11).

Non-Indigenous population

Annually, there were few deaths of non-Indigenous males and 1,707, 545, 253, 26 and 7 deaths of non-Indigenous females, respectively, in the five areas as a result of breast cancer.

There was no significant difference between the number of deaths observed and the number expected in any area, but there was a weak (non-significant) tendency for there to be slightly fewer deaths than expected in remote areas (Table 5.11).

Age-specific rates for non-Indigenous females living in Major Cities were similar to those for the total population living in Major Cities.

In no age group in any area was the number of observed deaths of non-Indigenous females significantly different from the number expected due to this cause.

There were 4, 2, 4 and 2 fewer deaths than expected of non-Indigenous females as a result of breast cancer annually in the four areas outside Major Cities.

Table 5.11: The ratio of observed deaths to those expected as a result of breast cancer if Major Cities non-Indigenous rates applied to the non-Indigenous female population in each ASGC Remoteness area and to the Indigenous female population in SA, WA, NT and Qld, 1997-1999

Age group (years)	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR	(ratio)
0-4	0	..	..	..	..	..
5-14	0	..	..	..	..	..
15-24	<1	4.37	2.07	0.00	0.00	0.0
25-44	8	1.09	1.06	0.99	1.00	*2.0
45-64	48	0.99	0.96	0.81	0.70	0.9
65-74	80	0.95	1.03	0.94	1.14	0.7
75+	136	1.00	0.99	0.84	0.34	1.4
Total	..	0.99	0.99	0.86	0.73	1.1
0-64	..	1.01	0.98	0.85	0.77	1.2

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld. While the table allows comparison of deaths between areas, it does not allow comparison between the age groups.
4. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Mortality for those aged 0-64 years

Indigenous population

Annually there were 10 deaths of Indigenous women younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of breast cancer. There would also have been a number of deaths due to this cause in the other jurisdictions. These 10 deaths were 2 more than expected but the difference was not significant (Table 5.11).

Non-Indigenous population

Annually, there were very few deaths of males and 796, 254, 121, 14 and 4 deaths of non-Indigenous females younger than 65 years in the five areas, respectively, as a result of breast cancer.

The death rate for 0-64-year-old non-Indigenous females in each of the areas was not significantly different from that in Major Cities (Table 5.11).

Annually, as a result of breast cancer, there were 2 more deaths, and 3, 3 and 1 fewer deaths of non-Indigenous females younger than 65 years than expected in the four areas outside Major Cities.

5.5 Cervical cancer

Cervical cancer (ICD-10 code C53) is responsible for a substantial number of cancer deaths among females. Cervical screening using Pap smear tests is an effective way to identify pre-cancerous abnormalities. The early stages of the disease are easy to treat, preventing the occurrence of cancer (AIHW: Strong et al. 1998).

Summary of findings

Annually, cervical cancer was responsible for the deaths of 260 women; 92 of these women came from areas outside Major Cities. Of these 260 deaths, 8 were of Indigenous women living in South Australia, Western Australia, the Northern Territory and Queensland.

There were about as many deaths of females due to this cause as expected in Inner Regional areas, 1.3 times as many as expected in Outer Regional areas, more (but not significantly more) than expected in Remote areas, and 3.3 times as many deaths as expected in Very Remote areas.

There were about seven times as many deaths of Indigenous women as expected from cervical cancer. These much higher rates were evident for all life stages from 25 years onwards.

In each of the areas outside Major Cities, there were about as many deaths of non-Indigenous females due to this cause as expected. The higher rates for the total population, particularly in the remote zone are largely due to the very high rates in the Indigenous population.

For the total population outside Major Cities, there were 9 'excess' deaths, all in Outer Regional and remote areas. A very small proportion of these were non-Indigenous women; the bulk were Indigenous women.

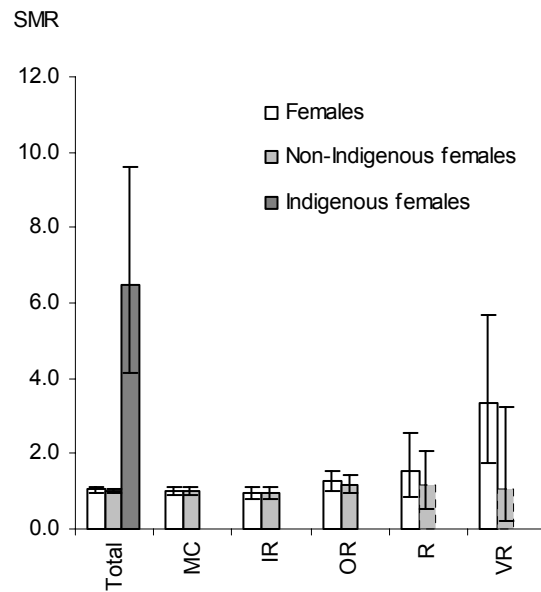
Overall mortality due to cervical cancer

Annually, there were 167, 51, 32, 5 and 4 deaths of females in the five areas respectively as a result of cervical cancer.

The death rate due to cervical cancer tended to be higher outside Major Cities (Figure 5.15 and Table 5.12).

Death rates for females in Inner Regional and Remote areas were not significantly different from rates for females from Major Cities (although rates in Remote areas were elevated). However, rates for females from Outer Regional and Very Remote areas were 1.3 and 3.3 times those for females from Major Cities, respectively.

There were about 7 times as many observed deaths of Indigenous women due to cervical cancer as expected.



Notes

1. The presented SMR is the ratio of the observed number of deaths to the number expected if Major Cities rates applied in each area.
2. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas (dashed) should be treated with caution (see page 22).
3. The SMRs for Indigenous persons are for SA, WA, NT and Qld combined (see page 21).

Source: AIHW National Mortality Database.

Figure 5.15: Cervical cancer SMRs for all, Indigenous and non-Indigenous females, 1997-1999

In Major Cities, death rates for females rose from almost 0 per 100,000 per year at age 30 years to 17 per 100,000 per year at age 85 years.

For most age groups in most areas, there tended to be more deaths than expected as a result of this cause, but for only two groups were these differences significantly different. For 45-64-year-old women from Very Remote areas and for women 75 years and older from Outer Regional areas, there were 4.0 and 1.5 times as many deaths as expected.

As a result of cervical cancer, there were -3, 7, 2 and 3 'excess' deaths of females annually in the four areas.

Table 5.12: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, cervical cancer, females, 1997–1999

Age group (years)	MC rate	IR	OR	R	VR
		(ratio)			
0–4	0	..	..	..	..
5–14	0	..	..	..	..
15–24	<1	1.31	3.85	0.00	0.00
25–44	1	1.17	1.44	2.43	1.37
45–64	4	0.99	1.03	0.96	*4.02
65–74	8	0.81	1.21	2.32	4.06
75+	13	0.91	*1.47	1.08	3.95
Total	..	0.95	*1.27	1.53	*3.32

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.

Source: AIHW National Mortality Database.

Indigenous population

Annually in the period 1997–1999, there were 8 deaths of Indigenous women in South Australia, Western Australia, the Northern Territory and Queensland as a result of cervical cancer. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 8 deaths, there were 7 more than expected (Table 5.13). This higher rate of death may indicate poorer access to screening or follow-up treatment.

Non-Indigenous population

Annually, there were 167, 50, 29, 3 and 1 deaths of non-Indigenous females in the five areas, respectively, as a result of cervical cancer.

There were about as many deaths of females due to this cause as expected in each area (Table 5.13).

Age-specific rates for non-Indigenous females living in Major Cities were similar to those for the total population living in Major Cities.

There were no significant differences between the numbers of observed and expected deaths for any age group due to this cause.

As a result of cervical cancer, there were -3, 4, 0 and 0 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities.

Table 5.13: The ratio of observed deaths to those expected as a result of cervical cancer if Major Cities non-Indigenous rates applied to the non-Indigenous female population in each ASGC Remoteness area and to the Indigenous female population in SA, WA, NT and Qld, 1997–1999

Age group (years)	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR	(ratio)
0–4	0	..	..	..	..	..
5–14	0	..	..	..	..	..
15–24	<1	1.33	4.10	0.00	0.00	0.0
25–44	1	1.18	1.20	0.78	0.28	*8.6
45–64	4	0.99	1.01	1.02	1.02	*4.1
65–74	8	0.81	1.04	1.86	1.41	*9.0
75+	13	0.89	1.43	1.11	1.78	*6.5
Total	..	0.94	1.18	1.15	1.07	*6.5
0–64	..	1.05	1.09	0.93	0.73	*5.9

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld. While the table allows comparison of deaths between areas, it does not allow comparison between the age groups.
4. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 5 deaths of Indigenous women younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of cervical cancer. There would also have been a number of deaths due to this cause in the other jurisdictions. These 5 deaths were about 4 more than expected (Table 5.13).

Non-Indigenous population

Annually, there were 79, 26, 13, 2 and 0 deaths of non-Indigenous females younger than 65 years in the five areas, respectively, as a result of cervical cancer.

The death rate for 0–64-year-old non-Indigenous females in each of the areas was not significantly different from that in Major Cities (Table 5.13).

As a result of cervical cancer, there were 1, 1, 0 and 0 ‘excess’ deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities.

5.6 Prostate cancer

Prostate cancer (ICD-10 code C61) is the most commonly diagnosed cancer in males after non-melanocytic skin cancer and, after lung cancer, it is the second most common cause of cancer death in males (AIHW 2002b).

Summary of findings

Annually, prostate cancer was responsible for the deaths of 2,500 males; 973 of these males came from areas outside Major Cities. Of these 2,500 deaths, 5 were of Indigenous males living in South Australia, Western Australia, the Northern Territory and Queensland.

There were 1.1–1.2 times as many deaths of males due to prostate cancer in regional areas, and about as many as expected in remote areas (with about 1.15 times as many deaths as expected overall due to this cause outside Major Cities).

There were about as many deaths of Indigenous men as expected due to prostate cancer.

As in the total population, there were 1.1–1.2 times as many deaths of non-Indigenous males due to prostate cancer in regional areas. In each of the remote areas, death rates were higher, but not significantly higher.

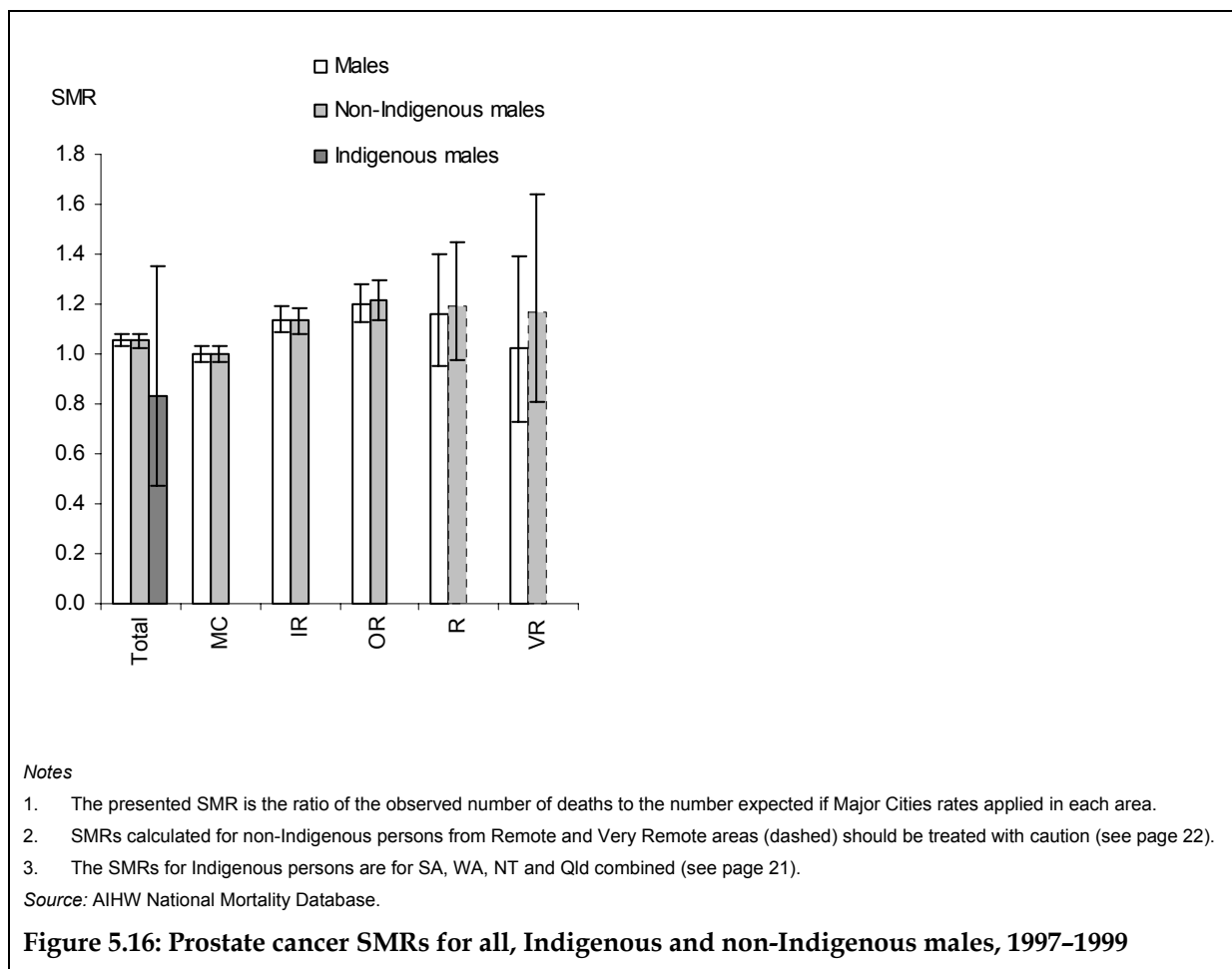
Annually, there were 131 'excess' deaths due to prostate cancer outside Major Cities (73, 52, 5 and 0 in each of the four areas). Almost all of these were non-Indigenous men. Most (95%) of the 'excess' deaths occurred in men who were 60 years and older.

Overall mortality prostate cancer

Annually, there were 1,527, 614, 309, 36 and 13 deaths of males in the five areas, as a result of prostate cancer.

The death rate due to prostate cancer tended to be higher outside Major Cities (Figure 5.16 and Table 5.14).

- Death rates for males in Inner Regional areas and Outer Regional areas were 1.1 and 1.2 times respectively those in Major Cities. Death rates in Remote and Very Remote areas, although slightly higher, were not significantly different from rates in Major Cities.
- There were about as many observed deaths of Indigenous men due to prostate cancer as expected.



In Major Cities, death rates for males rose from close to 0 per 100,000 per year at age 45 years to 790 per 100,000 per year at age 85 years and older.

Practically all deaths due to prostate cancer occurred in those 45 years and older. For males from regional areas, there were 1.4, 1.2-1.3, and 1.1-1.2 times as many deaths as expected of 45-64-year-old, 65-74-year-old and those 75 years and older respectively. In remote areas, there were about as many deaths as expected in each age group, except in Very Remote areas, where there were 1.9 times as many deaths of 65-74-year-old males as expected.

As a result of prostate cancer, there were 73, 52, 5 and 0 'excess' deaths of males annually in the four areas. The bulk of the 'excess' deaths occurred in those older than 60 years.

Table 5.14: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, prostate cancer, males, 1997–1999

Age group (years)	MC rate	IR	OR	R	VR
		(ratio)			
0–4	0	..	..	..	..
5–14	0	..	..	..	..
15–24	<1	0.00	0.00	0.00	0.00
25–44	<1	0.92	0.00	0.00	9.51
45–64	8	*1.42	*1.43	1.58	0.98
65–74	98	*1.22	*1.28	1.06	*1.88
75+	421	*1.08	*1.15	1.15	0.68
Total	..	*1.14	*1.20	1.16	1.02

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
 2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
- Source: AIHW National Mortality Database.

Indigenous population

Annually in the period 1997–1999, there were 5 deaths of Indigenous males due to prostate cancer in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. These 5 deaths were one fewer than expected annually (Table 5.15).

Non-Indigenous population

Annually, there were 1,525, 612, 308, 35 and 11 deaths of non-Indigenous males in the five areas respectively, as a result of prostate cancer.

There were 1.1 and 1.2 times as many deaths of non-Indigenous males than expected due to prostate cancer in Inner Regional and Outer Regional areas (Table 5.15). Although not significantly higher in either the Remote or Very Remote areas individually, there were 1.2 times as many deaths as expected in the total Remote/Very Remote area.

Age-specific rates for non-Indigenous males living in Major Cities were similar to those for the total population living in Major Cities (compare Tables 5.14 and 5.15).

The pattern of age-specific death rates for non-Indigenous males due to this cause is similar to that for the total population of males described earlier.

As a result of prostate cancer, there were 73, 54, 6 and 2 ‘excess’ deaths of non-Indigenous males annually, in the four areas outside Major Cities. The bulk of the ‘excess’ deaths occurred in those older than 60 years.

Table 5.15: The ratio of observed deaths to those expected as a result of prostate cancer if Major Cities non-Indigenous rates applied to the non-Indigenous male population in each ASGC Remoteness area and to the Indigenous male population in SA, WA, NT and Qld, 1997–1999

Age group (years)	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR	(ratio)
0–4	0	..	..	..	..	..
5–14	0	..	..	..	..	..
15–24	<1	0.0	0.0	0.0	0.0	0.0
25–44	<1	0.92	0.0	0.0	0.0	11.3
45–64	8	*1.42	*1.44	1.63	1.26	0.9
65–74	98	*1.22	*1.27	1.02	*2.05	1.4
75+	421	*1.08	*1.17	1.21	0.80	0.5
Total	..	*1.13	*1.21	1.20	1.17	0.8
0–64	..	*1.40	*1.41	1.59	1.23	1.3

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld. While the table allows comparison of deaths between areas, it does not allow comparison between the age groups.
4. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Mortality for those aged 0–64 years

Indigenous population

Annually there was about one death of an Indigenous man younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of prostate cancer. There would also have been a number of deaths due to this cause in the other jurisdictions. This one death was about the number expected (Table 5.15).

Non-Indigenous population

Annually, there were 105, 49, 26, 4 and 1 deaths of non-Indigenous males younger than 65 years in the five areas respectively, as a result of prostate cancer.

In regional areas, there were 1.4 times as many deaths of 0–64-year-old non-Indigenous males as expected (Table 5.15). In remote areas the numbers of observed and expected deaths were not significantly different to those in Major Cities.

As a result of prostate cancer, there were 14, 8, 2 and 0 ‘excess’ deaths of non-Indigenous males younger than 65 years annually in the four areas outside Major Cities. The bulk of the ‘excess’ deaths occurred in males older than 60 years.

5.7 Melanoma

Melanoma (ICD-10 code C43) is one of the most commonly diagnosed cancers, but can frequently be effectively treated, and consequently it is less important as a cause of death. Risk factors are fair skin, poor use of skin protection measures and sun exposure under the age of 10 years (AIHW: Strong et al. 1998).

Summary of findings

Annually, melanoma was responsible for the deaths of 954 people (611 males and 344 females); 353 of these people came from areas outside Major Cities. Of these 954 deaths, there was less than one death of an Indigenous person living in South Australia, Western Australia, the Northern Territory and Queensland.

There were 1.3 times as many deaths of males as expected due to melanoma in Inner Regional areas, and about as many deaths of males as expected in Outer Regional and remote areas.

There were about as many deaths of females due to this cause as expected in each of the areas outside Major Cities.

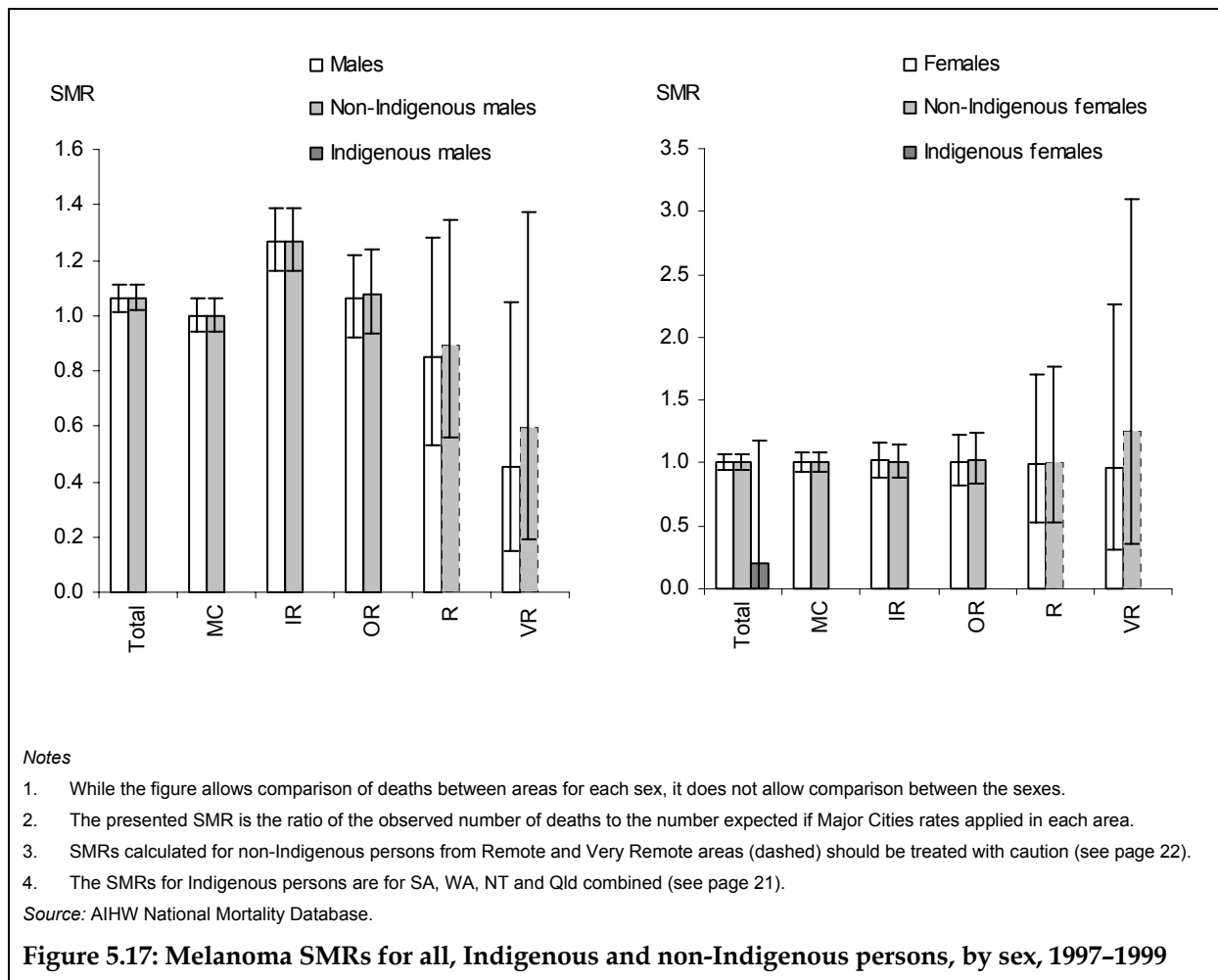
There were about one-tenth as many deaths of Indigenous people as expected from melanoma.

Similar to the situation for the total population, there were 1.3 times as many deaths of non-Indigenous males as expected due to melanoma in Inner Regional areas. In the other areas, the numbers of deaths of males were not significantly different from the number expected, and there were about as many deaths of non-Indigenous females as expected due to this cause in each of the areas outside Major Cities.

Annually, there were 36 'excess' deaths due to melanoma outside Major Cities (35, 4, -1 and -2 in each of the four areas). Essentially all of these were non-Indigenous males and, clearly, almost all occurred in Inner Regional areas. About 90% of the 'excess' occurred in those who were aged 45-74 years.

Overall mortality due to melanoma

Annually, there were 373, 162, 68, 7 and 2 deaths of males and 229, 74, 35, 4 and 2 deaths of females in the five areas respectively, as a result of melanoma.



- In Inner Regional areas, there were 1.3 times as many deaths of males as expected but for males in the other areas and for females generally, there were as many or fewer deaths than expected due to melanoma. There tended to be fewer deaths of males (though not significantly fewer) than expected as a result of melanoma in Remote and Very Remote areas (Figure 5.17 and Table 5.16).
- There were very few deaths of Indigenous people due to melanoma.

In Major Cities, death rates for males and females rose from close to 0 per 100,000 per year at age 20 and 30 years to 60 and 30 per 100,000 per year at age 85 years.

Age-specific death rates as a result of melanoma tend to be higher in regional areas than in Major Cities, however, the pattern is less clear in remote areas, where some age groups show substantially fewer deaths than expected.

Table 5.16: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, melanoma, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	0	..	..	..	..
5–14	0	..	..	..	..	0	..	..	..	..
15–24	<1	0.19	2.68	0.00	0.00	<1	1.20	2.86	0.00	0.00
25–44	2	*1.44	1.25	0.64	0.55	2	0.98	1.17	0.94	0.80
45–64	8	*1.47	1.22	1.03	0.47	4	1.01	1.13	1.27	1.05
65–74	26	*1.21	1.06	0.67	0.39	11	1.21	0.92	1.19	1.23
75+	48	1.11	0.83	0.90	0.42	21	0.91	0.87	0.63	0.89
Total	..	*1.27	1.06	0.85	0.45	..	1.02	1.01	0.99	0.96

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Inner Regional areas, there were 1.2–1.5 times as many deaths of 25–74-year-old males as expected. There were also more deaths than expected for males of this age in Outer Regional areas, however the difference for each age group was not significant. In each of the remote areas, rates in most age groups were lower (but not significantly lower).

For females, death rates in each age group and area were not significantly different to those in Major Cities.

Death rates for people 75 years and older in all areas outside Major Cities tended to be lower (but not significantly lower) than for their counterparts in Major Cities.

As a result of melanoma, there were 34, 4, -1 and -2 'excess' deaths of males annually, and 1, 0, 0 and 0 'excess' deaths of females annually in the four areas. The bulk of the 'excess' deaths occurred in those older than 50 years.

Indigenous population

Annually in the period 1997–1999, there were virtually no deaths of Indigenous people due to melanoma in South Australia, Western Australia, the Northern Territory and Queensland, probably due to the natural skin protection developed over a vast historical period of exposure to high levels of ultra-violet radiation (Table 5.17).

Non-Indigenous population

Annually, there were 372, 161, 68, 7 and 2 deaths of non-Indigenous males and 229, 74, 35, 4 and 1 deaths of non-Indigenous females in the five areas respectively as a result of melanoma.

There were 1.3 times as many deaths of non-Indigenous males as expected due to melanoma in Inner Regional areas (Table 5.17). In the other areas, the numbers of deaths were not significantly different from the number expected.

There were about as many deaths of non-Indigenous females as expected due to this cause in each of the areas outside Major Cities.

Table 5.17: The ratio of observed deaths to those expected as a result of melanoma if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997-1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0-4	0	..	..	..	..	0	..	..	..	..	..	..
5-14	0	..	..	..	..	0	..	..	..	..	..	..
15-24	<1	0.20	2.83	0.00	0.00	0.0	<1	1.22	3.04	0.00	0.00	0.0
25-44	2	*1.45	1.29	0.70	0.77	0.0	2	0.99	1.21	1.03	1.25	0.0
45-64	8	*1.47	1.24	1.08	0.61	0.0	4	1.00	1.15	1.23	1.07	0.6
65-74	26	*1.21	1.07	0.69	0.51	0.0	11	1.21	0.93	1.24	1.80	0.0
75+	48	1.11	0.83	0.95	0.55	0.0	21	0.89	0.87	0.66	1.18	0.0
Total	..	*1.27	1.08	0.89	0.59	0.0	..	1.01	1.02	1.01	1.26	0.2
0-64	..	*1.45	*1.27	0.97	0.65	0.0	..	1.00	1.20	1.14	1.12	0.3

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The pattern for age-specific death rates is similar to that for the total population, with the exception that rates in more remote areas were slightly higher than for the total population in the same area (reflecting lower rates of death for Indigenous people from this cause).

As a result of melanoma, there were 34, 5, -1 and -1 'excess' deaths of non-Indigenous males annually, and 1, 1, 0 and 0 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. The bulk of the 'excess' deaths occurred in those older than 50 years.

Mortality for those aged 0–64 years

Indigenous population

Annually in the period 1997–1999, there were virtually no deaths from melanoma of Indigenous people who were younger than 64 years in South Australia, Western Australia, the Northern Territory and Queensland (Table 5.17).

Non-Indigenous population

Annually, there were 152, 69, 32, 4 and 1 deaths of non-Indigenous males younger than 65 years and 94, 29, 17, 2 and 1 deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of melanoma.

In Inner and Outer Regional areas, there were 1.5 and 1.3 times as many deaths of 0–64-year-old non-Indigenous males as expected as a result of melanoma (Table 5.17). Otherwise (for remote area males and for females from all areas) the numbers of observed and expected deaths as a result of melanoma were not significantly different.

As a result of melanoma, there were 22, 7, 0 and –1 ‘excess’ deaths of non-Indigenous males younger than 65 years annually, and 0, 3, 0 and 0 ‘excess’ deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. For males, ‘excess’ deaths were largely from those older than 30 years, with the contribution increasing with age.

5.8 'Other' neoplasms

'Other' neoplasms (ICD-10 codes C00–D48, excluding the specific neoplasms described in this report) include all of those not otherwise included in this report including neoplasms such as cancer of the bladder, kidney and stomach, leukaemia, non-malignant neoplasms and many others. They constitute a relatively large proportion of cancers and any substantial inter-regional differences may suggest further work.

Summary of findings

Annually, 'other' neoplasms were responsible for the deaths of 17,973 people (9,837 males and 8,137 females); 6,218 of these people came from areas outside Major Cities. Of these 17,973 deaths, 112 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates for males and females due to 'other' neoplasms were not significantly higher than in Major Cities, except in Inner Regional areas, where there were 1.03 times as many deaths of males as expected (that is, rates were slightly higher).

There were almost twice (1.7 times) as many deaths of Indigenous people as expected from 'other' neoplasms.

While death rates for non-Indigenous people due to this cause were essentially the same as for the total population in regional areas (that is, as above), rates in remote areas are lower. In Remote and Very Remote areas there were about 0.9 and 0.8 times as many deaths of non-Indigenous people as expected.

Low rates in remote areas amongst those 75 years and older lowered overall rates for non-Indigenous people. For non-Indigenous people who were 0–64 years old, there were about as many deaths of regional females as expected and up to 1.1 times as many deaths of Inner Regional non-Indigenous males as expected due to this cause. In remote areas, although there were fewer deaths than expected, the difference between the number of observed and expected deaths was not significant.

Annually, there were 40 'excess' deaths due to 'other' neoplasms annually outside Major Cities (45, 4, -11 and 2 in each of the four areas). However, in all age groups 70 years and older, there were fewer deaths than expected. For those younger than 70 years there were 145 'excess' deaths due to this cause (76, 48, 8 and 14 in each of the four areas). Of these 145 'excess' deaths, 123 were deaths of males (66, 43, 7 and 7).

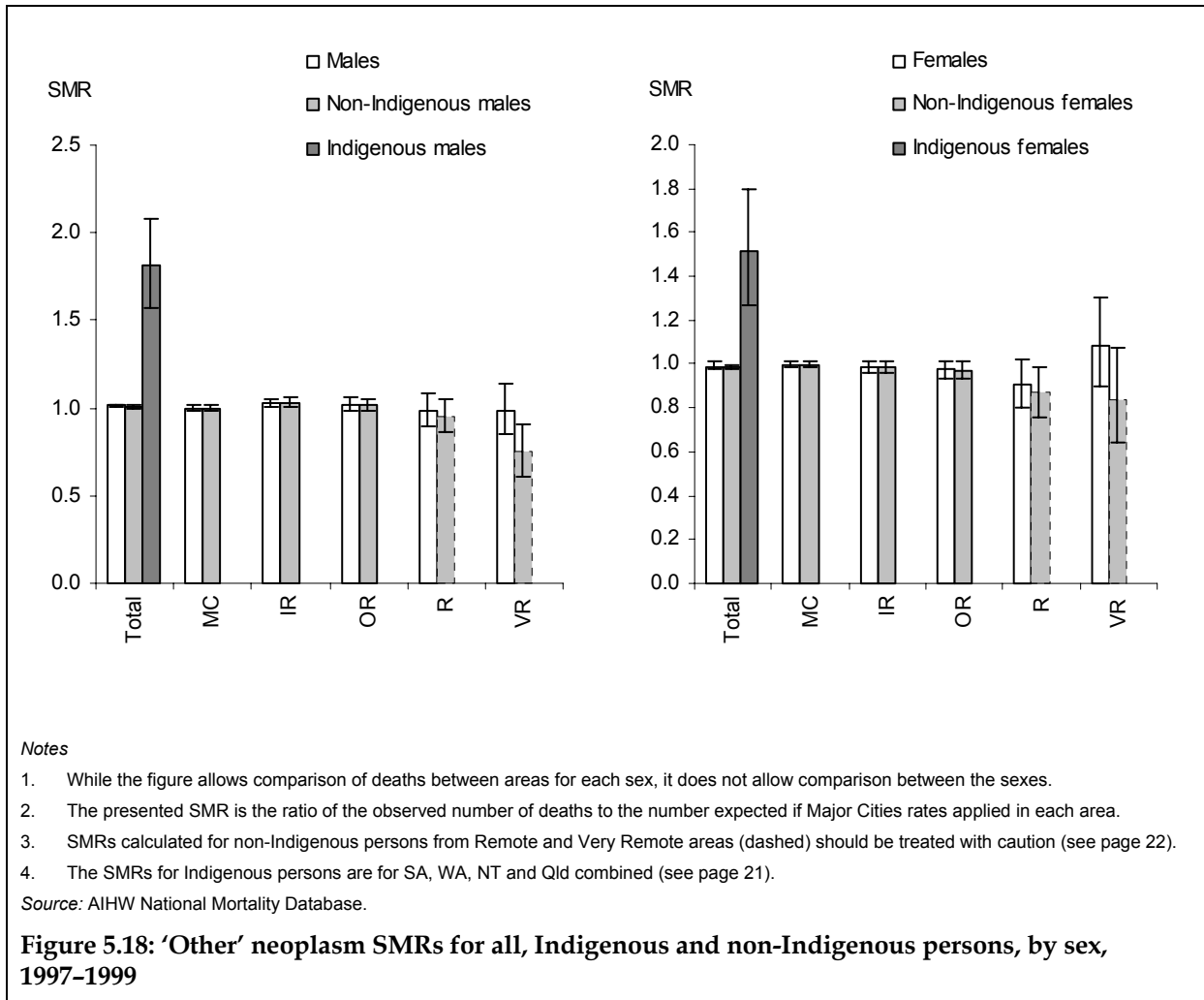
There were 'only' 6 'excess' deaths annually of non-Indigenous people due to this cause, however, similar to the situation for the total population, relatively low death rates amongst the elderly in remote areas reduced the overall 'excess'. For non-Indigenous people younger than 70 years, there were 113 'excess' deaths (81, 36, 1 and -3), and again most (100) were male (and 90% of this 'excess' occurred in those aged 50–69 years).

There were 45 'excess' deaths of Indigenous people in the four jurisdictions for which data is believed to be more reliable. The bulk of the 'excess' deaths for Indigenous people occurs at younger ages than for non-Indigenous people (25–64 years and 45–74 years for males and females respectively).

Overall mortality due to 'other' neoplasms

'Other' neoplasms are those other specific neoplasms (for example, leukaemia, stomach cancer and so on) which have not been described individually in previous sections.

Annually, there were 6,282, 2,252, 1,101, 141 and 60 deaths of males and 5,474, 1,747, 792, 85 and 38 deaths of females in the five areas respectively, as a result of 'other' neoplasms.



Death rates for males and females due to 'other' neoplasms (Figure 5.18 and Table 5.18) were not significantly different to those in Major Cities, except in Inner Regional areas where there were 1.03 times as many deaths of males as expected (that is, rates were slightly higher).

There were 1.5–1.8 times as many deaths of Indigenous people due to 'other' neoplasms as expected.

In Major Cities, death rates for males were approximately 5 per 100,000 per year until age 30 years, then rose to 1,500 per 100,000 per year for those 85 years and older; for females, death rates were less than 10 per 100,000 per year until age 35 years, then rose to 980 per 100,000 per year for those 85 years and older.

Table 5.18: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, 'other' neoplasms, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	5	1.07	1.03	0.33	2.30	3	*1.73	1.10	0.77	1.39
5–14	4	0.92	0.72	0.94	0.63	4	*0.52	0.63	0.01	0.59
15–24	5	1.20	1.32	0.94	1.74	4	0.99	0.63	1.23	2.00
25–44	14	1.05	1.01	0.97	1.52	10	*1.16	0.94	0.78	1.14
45–64	115	*1.08	*1.09	1.04	1.22	76	0.98	1.06	1.00	1.36
65–74	485	1.01	1.05	1.05	0.95	302	1.00	0.97	1.15	1.37
75+	999	1.01	0.96	0.90	*0.64	692	0.98	0.95	*0.76	0.71
Total	..	*1.03	1.02	0.99	0.99	..	0.99	0.98	0.91	1.08

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

There were few age groups for which rates were significantly different to those in Major Cities. For regional males who were 45–64 years old there were about 10% more deaths than expected. For people 75 years and older, there tended to be fewer deaths than expected, this difference becoming significant in remote areas (0.6 and 0.8 times as many deaths of Very Remote area males and Remote area females respectively).

As a result of 'other' neoplasms, there were 67, 24, -2 and -1 'excess' deaths of males annually, and -22, -20, -9 and 3 'excess' deaths of females annually in the four areas outside Major Cities. There were fewer deaths than expected amongst those older than 70 years. The bulk of the 'excess' deaths occurred for males aged 50–70 years, while for females there was very little 'excess', with fewer deaths than expected in almost all groups (but a small 'excess' in those aged 50–70 years).

Indigenous population

Annually in the period 1997–1999, there were 112 deaths of Indigenous people (67 males and 45 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 112 deaths, there were 45 (30 males and 15 females) more than expected.

There were 1.8 and 1.5 times as many deaths of Indigenous males and females as expected (Table 5.19). For males, 78% of the 'excess' occurred amongst 25–64-year-olds, with a further 15% occurring among 65–74-year-olds; for females, 88% of the 'excess' occurred among 45–74-year-olds.

Non-Indigenous population

Annually, there were 6,264, 2,247, 1,077, 129 and 34 deaths of non-Indigenous males and 5,460, 1,739, 778, 77 and 21 deaths of non-Indigenous females in the five areas as a result of 'other' neoplasms.

- There were 1.03 times as many deaths of non-Indigenous males as expected due to 'other' neoplasms in Inner Regional areas, about as many as expected in Outer Regional and Remote areas, and 0.8 times as many as (that is, fewer than) expected in Very Remote areas (Table 5.19).
- There were as many deaths of non-Indigenous females as expected in Inner and Outer Regional areas, 0.9 times as many deaths as expected in Remote areas and 0.9 times as many as (but not significantly fewer than) expected in Very Remote areas.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The pattern exhibited for non-Indigenous people by age-specific death rates is similar to that for the total population. In remote areas (particularly Very Remote areas), age-specific rates tended to be lower and closer to, or lower than rates in Major Cities than was the case for the total population.

As a result of 'other' neoplasms, there were 71, 17, -6 and -12 'excess' deaths of non-Indigenous males annually, and 27, 21, 12 and 4 fewer deaths of non-Indigenous females than expected annually in the four areas outside Major Cities. For those 70 years or older, there were fewer deaths of non-Indigenous males in Outer Regional, Remote and Very Remote areas and fewer deaths of non-Indigenous females than expected in all areas. The bulk of the 'excess' deaths occurred for non-Indigenous males aged 50-70 years, while for non-Indigenous females there were no 'excess' deaths, with fewer deaths than expected in almost all groups (but a small 'excess' in those aged 50-70 years).

Mortality for those aged 0-64 years

Indigenous population

Annually there were 70 (43 male, 26 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of 'other' neoplasms. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 70 deaths, there were 36 (24 males and 12 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 2.3 and 1.8 times as many deaths as expected (Table 5.19).

Table 5.19: The ratio of observed deaths to those expected as a result of 'other' neoplasms if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	5	1.13	1.05	0.38	1.75	1.2	3	*1.82	1.04	0.94	0.12	2.1
5–14	4	0.94	0.72	1.12	0.31	0.5	4	*0.54	0.69	0.01	—	1.0
15–24	5	1.16	1.32	0.68	1.06	2.0	4	1.02	0.60	0.65	1.95	1.6
25–44	14	1.07	0.94	0.79	0.45	*3.1	10	*1.17	0.96	0.68	0.44	1.3
45–64	115	*1.09	1.06	0.96	0.92	*2.3	76	0.99	1.04	0.90	1.09	*2.1
65–74	485	1.02	1.05	1.02	0.85	*1.5	302	1.00	0.98	1.12	1.06	*1.5
75+	999	1.01	0.96	0.92	*0.53	1.2	692	0.97	0.95	*0.77	*0.65	1.0
Total	..	*1.03	1.02	0.95	*0.75	*1.8	..	0.98	0.97	*0.87	0.84	*1.5
0–64	..	*1.08	1.05	0.93	0.85	*2.3	..	1.01	1.01	0.83	0.93	*1.8

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Non-Indigenous population

Annually, there were 1,907, 665, 341, 47 and 16 deaths of non-Indigenous males younger than 65 years and 1,287, 414, 204, 23 and 8 deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of 'other' neoplasms.

In regional areas, there were more deaths of males (about 1.1 times as many as expected in Inner Regional areas) and about as many deaths of females as expected. In each of the remote areas, there were fewer, but not significantly fewer, deaths of 0–64-year-old males and females than expected (Table 5.19).

As a result of 'other' neoplasms, there were 52, 15, –4 and –3 'excess' deaths of non-Indigenous males younger than 65 years, and 3, 3, –5 and –1 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. There was little 'excess', or fewer deaths of males than expected amongst those 60–64 years, with more than 70% of the 'excess' typically amongst 50–59-year-old males.

6 Respiratory disease

This chapter discusses mortality due to the broad category of respiratory disease (ICD-10 chapter 10, codes J00–J99). It then provides further analysis of specific diseases within this broad category. The specific respiratory diseases included are:

1. chronic obstructive pulmonary disease;
2. pneumonia;
3. asthma;
4. influenza; and
5. other respiratory diseases.

These diseases were chosen because they tend to be the most frequent specific causes of death within this category, are national health priorities (for example, asthma) or substantially affect Indigenous populations.

Summary of findings

The overall mortality of Australians due to respiratory diseases increases with increasing remoteness. Compared to those in Major Cities, death rates due to respiratory diseases were:

- 1.05–1.2 times as high in regional areas; and
- 1.25–1.9 times as high in remote areas.

This broad observation does not take into account two factors previously stated on page 33, namely the likely effect on rates of high Indigenous mortality coupled with their greater representation outside Major Cities, and the possible effect of the migration of the frail aged. Indigenous mortality is more than 4 times as high as for Major Cities non-Indigenous mortality (Table 6.2), apparently strongly raising rates for the total population in remote areas. In some age groups, Indigenous rates were 10, 15 or 30 times as high as for non-Indigenous people from Major Cities.

For non-Indigenous people:

- in regional areas, rates were 1.1–1.2 times as high for males, and similar for females compared to rates in Major Cities; and
- in remote areas, rates were not significantly different from those for counterparts in Major Cities.

When analysis was restricted to non-Indigenous Australians under the age of 65 years, the differential remains, but is a little greater than for the total non-Indigenous population. In regional areas there were 1.2–1.5 and 1.1–1.2 times as many deaths of males and females as expected, while in remote areas, rates were more likely to be significantly higher (twice the number of Very Remote area males and 1.8 times the number of Remote area females as expected).

For Indigenous males and females younger than 65 years, death rates due to respiratory diseases were more than 10 times greater than for their Major Cities non-Indigenous counterparts.

Between 1992 and 1999, death rates due to respiratory disease decreased at 5–6% per annum for males, 1–2% for females, but at 11% for males in Remote areas and at over 30% for both males and females from Very Remote areas.

Annually, there were 330 ‘excess’ deaths (Table 6.1) due to respiratory diseases outside Major Cities (102, 156, 32 and 40 in each of the four areas). However, there were 66 fewer deaths than expected amongst those older than 80 years (that is, there were 395 ‘excess’ deaths of those younger than 80 years). Of these people, 11% were younger than 50 years, 26% were aged 50–64 years, and 63% were aged 65–79 years. Between 70% and 80% were male. For non-Indigenous people there were only slightly fewer deaths than expected in those who were 75 years and older, but otherwise the percentages were similar. For Indigenous people, 23% were aged 25–44 years, 60% were aged 45–64 years and only 15% were 65 years or older.

Respiratory diseases account for about 8% of all deaths and 9–10% of ‘excess’ deaths, both for the total population and the Indigenous populations.

Summary/discussion of individual causes of death reviewed in this chapter

Chronic obstructive pulmonary disease (COPD) is the most common cause of death in this broad group, responsible for 60% of respiratory deaths. Other important causes were pneumonia (18%) and ‘other’ respiratory diseases (15%). Asthma (5%) and influenza (2%) were responsible for a small proportion of respiratory deaths. COPD was responsible for over 100% of the ‘excess’ deaths and asthma and influenza for 6% and 8% of the ‘excess’ deaths due to respiratory diseases. There were fewer deaths due to ‘other’ respiratory diseases and pneumonia.

Of all the causes of respiratory death, COPD appeared to have by far the largest impact on mortality. Rates were 1.2 and 1.3 times as high in Inner and Outer Regional and Remote areas and 1.9 times as high in Very Remote areas. A substantial proportion (over 80%) was due to higher death rates amongst males. In Very Remote areas particularly, higher rates were largely influenced by the high rate of death for Indigenous people (3.4 times as high) due to this cause. Rates for non-Indigenous people were between 20% and 40% higher for males and similar for females (or 10% higher for females in Outer Regional areas) in regional and remote areas. Rates for both non-Indigenous males and females younger than 65 years increased with remoteness from 1.3 to 2.8 times the rates for similar people from Major Cities.

There were 7 times as many deaths of Indigenous people as a result of pneumonia as expected, the higher rates for Indigenous people elevating overall death rates for the total populations in Remote and Very Remote areas. Pneumonia death rates for the total population ranged from 0.9 times (that is, lower) in Inner Regional areas to 2.3 times the Major Cities rate in Very Remote areas. However, for the non-Indigenous population younger than 65 years, there was no significant difference between rates in any of the areas and those in Major Cities.

Table 6.1: Summary table of deaths due to respiratory disease for all persons, 1997–1999

Cause	Annual deaths outside Major Cities			Annual 'excess' deaths outside Major Cities			Age groups in which the 'excess' occurs
	No.	%	% male	No.	%	% male	
COPD	2,173	61%	66%	374	113%	83%	20%: 55–65 years 75%: 65–80 years
Pneumonia	635	18%	42%	–14	–4%	—	85%: 30–65 years Fewer than expected 70+ years
Asthma	172	5%	42%	21	6%	57%	All life stages, mainly over 30 years
Influenza	63	2%	48%	27	8%	56%	20%: 70–80 years 70%: 80+ years
Other respiratory diseases	548	15%	56%	–78	–24%	51%	Less than 60 years Fewer than expected 70+ years
Total respiratory diseases	3,591	100%	59%	330	100	84%	15% 30–55 years 20%: 55–65 years 60%: 65–80 years

Notes: Descriptions of the age groups within which the 'excess' occurs apply only to the total population.

Source: AIHW National Mortality Database.

Asthma death rates were 1.2 and 1.5 times as high in Outer Regional and Remote areas. There were 3 times as many deaths of Indigenous people as expected. For non-Indigenous people and for those younger than 65 years, there were slightly, but not significantly, more deaths than expected (except in Outer Regional areas where there were 1.3 times as many asthma deaths as expected).

The numbers of Indigenous deaths due to influenza were not significantly different from the numbers expected. For the total population and for the non-Indigenous population, there were 1.6 and 1.9 times as many deaths as expected, and in Remote areas there were 3.2–3.4 times as many deaths as expected (the number in Very Remote areas was very small). There were few deaths of people younger than 65 years.

There were fewer deaths than expected due to 'other' respiratory diseases in regional areas, primarily because of the lower death rates of elderly people. For the total population in Very Remote areas there were 1.6 times as many deaths as expected from this cause, a consequence of higher death rates for Indigenous people (5 times those for non-Indigenous people from Major Cities). There were about as many deaths of non-Indigenous people in remote areas due to this cause as expected.

Table 6.2: The ratio of observed deaths from respiratory diseases to those expected if Major Cities^(a) rates applied in each ASGC Remoteness area, 1997–1999

Cause	Population	IR	OR	R ^(b)	VR ^(b)	National ^(c)
COPD	All persons	*1.2	*1.3	*1.3	*1.9	n.p.
	Non-Indigenous	*1.1	*1.3	*1.2	*1.3	n.p.
	Non-Indigenous (aged 0–64 years)	*1.3	*1.6	*1.8	*2.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.4
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*8.8
Pneumonia	All persons	*0.9	1.0	*1.3	*2.3	n.p.
	Non-Indigenous	*0.9	1.0	1.1	1.1	n.p.
	Non-Indigenous (aged 0–64 years)	1.2	1.2	0.8	1.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*7.2
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*23.7
Asthma	All persons	1.1	*1.2	*1.5	1.4	n.p.
	Non-Indigenous	1.1	1.2	1.5	0.8	n.p.
	Non-Indigenous (aged 0–64 years)	1.2	*1.3	1.8	0.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.0
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*3.8
Influenza	All persons	*1.6	*1.9	*3.2	2.1	n.p.
	Non-Indigenous	*1.6	*1.9	*3.4	1.2	n.p.
	Non-Indigenous (aged 0–64 years)	*2.3	1.1	3.9	5.7	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	3.0
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	5.9
Other respiratory diseases	All persons	*0.8	*0.9	1.0	*1.6	n.p.
	Non-Indigenous	*0.8	*0.9	0.8	0.6	n.p.
	Non-Indigenous (aged 0–64 years)	0.8	1.1	1.1	0.7	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*5.2
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*12.5
Total respiratory diseases	All persons	*1.0+	*1.2	*1.3	*1.9	n.p.
	Non-Indigenous	*1.0+	*1.1	*1.1	1.1	n.p.
	Non-Indigenous (aged 0–64 years)	*1.2	*1.4	*1.5	*1.9	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*4.4
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*10.7

(a) While the number of expected deaths for the total population is based on the death rates of the total population from Major Cities, the expected number of deaths for the non-Indigenous population is based on the death rates of the non-Indigenous population from Major Cities. Because non-Indigenous people comprise the overwhelming majority (99%) of the population in Major Cities, these two standards are very similar, but not identical. This means that the ratios for the five population groups are not strictly comparable.

(b) Ratios calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

(c) The ratios for Indigenous persons are for Queensland, SA, WA and NT combined. Data for the total and non-Indigenous populations for this (SA, WA, NT & Qld) area adds little relevant information and has not been published (n.p.). Because of concerns about the quality of the data, ratios for Indigenous people have not been published (n.p.) for each area.

Notes

1. Bold text and asterisk indicates that ratios are significantly different from 1 at the 95% level.
2. 1.0+ indicates that there were slightly (but significantly) more deaths than expected (but less than 1.05 times more).
3. 1.0– indicates that there were slightly (but significantly) fewer deaths than expected (but more than 0.95 times as many).

Source: AIHW National Mortality Database.

6.1 Overview—respiratory diseases

Between 1997 and 1999, an annual average of 9,856 Australians died as a result of respiratory diseases, comprising 5,419 males and 4,437 females (Table 6.3). Most of these (6,265) occurred in Major Cities, with a further 3,356 in Inner and Outer Regional areas, and the remaining 235 in Remote and Very Remote areas.

Respiratory diseases were responsible for 8% of all deaths nationally, and 10% of the ‘excess’ deaths in areas outside Major Cities.

Table 6.3: Average annual deaths due to respiratory diseases, 1997–1999

	MC	IR	OR	R	VR	Total
Males (no.)	3,314	1,273	690	87	55	5,419
Females (no.)	2,951	940	453	61	32	4,437
Persons (no.)	6,265	2,213	1,143	148	87	9,856
Non-Indigenous males ^(a) (per cent)	100	99	96	84	47	98
Non-Indigenous females ^(a) (per cent)	100	99	96	84	34	98
Non-Indigenous persons^(a) (per cent)	100	99	96	84	41	98
Non-Indigenous males (0–64 yrs) (no.)	330	130	85	12	6	563
Non-Indigenous females (0–64 yrs) (no.)	270	99	53	10	3	435
Non-Indigenous persons (0–64 yrs)	600	228	138	22	9	997
Indigenous persons^(b) (no.)	n.p.	n.p.	n.p.	n.p.	n.p.	122

(a) Percentages and counts are rounded to the nearest whole number.

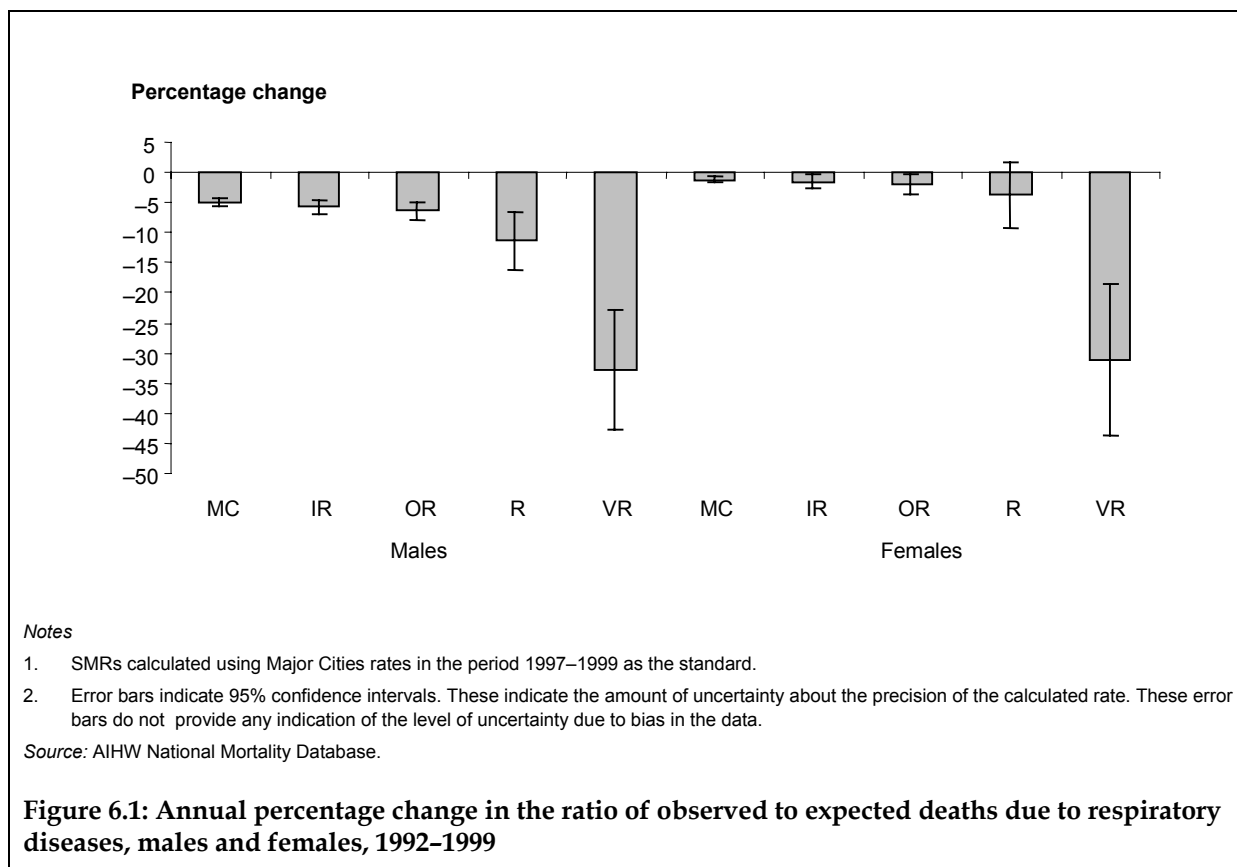
(b) The number of Indigenous deaths is the average annual number registered in SA, WA, NT and Qld in the period 1997–1999. An average of a further 37 were registered annually in the other jurisdictions. Counts of deaths have not been reported for Indigenous people by area because of concerns about data accuracy.

Source: AIHW National Mortality Database.

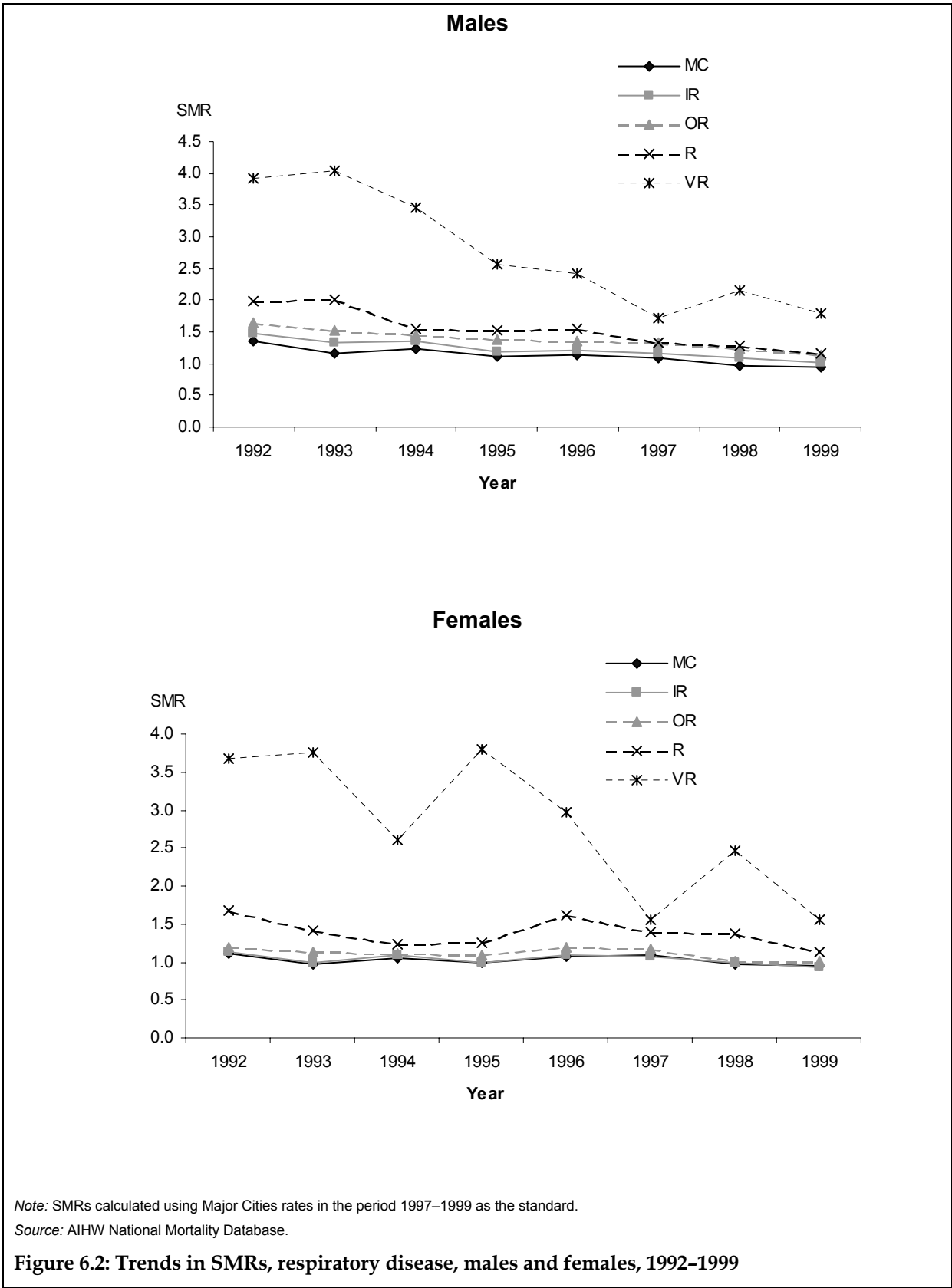
Trends in mortality due to diseases of the respiratory system

Death rates from this cause for both males and females decreased in all areas between 1992 and 1999 (although the decrease for females in Remote areas was not significant).

For males, annual percentage decreases were generally of the order of 5–6% in Major Cities and regional areas, but 11% and 30% in Remote and Very Remote areas (Figures 6.1 and 6.2). For females annual percentage decreases were smaller at 1–2% in Major Cities and regional areas, but reached 30% in Very Remote areas (such that the ratio of observed to expected deaths for males and females in Very Remote areas decreased from approximately 4 to less than 2 over the period 1992–1999).



The contribution of changes in respiratory disease death rates to the reduction in the overall number of ‘excess’ deaths was greater in more remote areas. Decreases in death rates due to respiratory diseases were responsible for 9%, 13%, 15%, 17% and 25% of the reduction in the overall number of ‘excess’ deaths in the five areas respectively.



Death rates due to respiratory diseases

Mortality due to respiratory diseases was higher for people living outside Major Cities (except for females in Inner Regional areas where rates were similar to those in Major Cities).

Figure 6.3 and Table 6.4 show that:

- For males from Inner and Outer Regional, Remote and Very Remote areas, death rates were respectively 1.1, 1.2, 1.3 and 1.9 times as high as for males living in Major Cities.
- For females in Inner Regional areas, rates were similar to those for females from Major Cities.
- For females from Outer Regional, Remote and Very Remote areas, death rates were respectively 1.05, 1.3 and 1.9 times as high as for females living in Major Cities.
- Death rates for Indigenous people were substantially higher (4–5 times as high) than for non-Indigenous people in any of the areas; this higher mortality substantially raises the average death rate, especially in the more remote areas (Table 6.5).

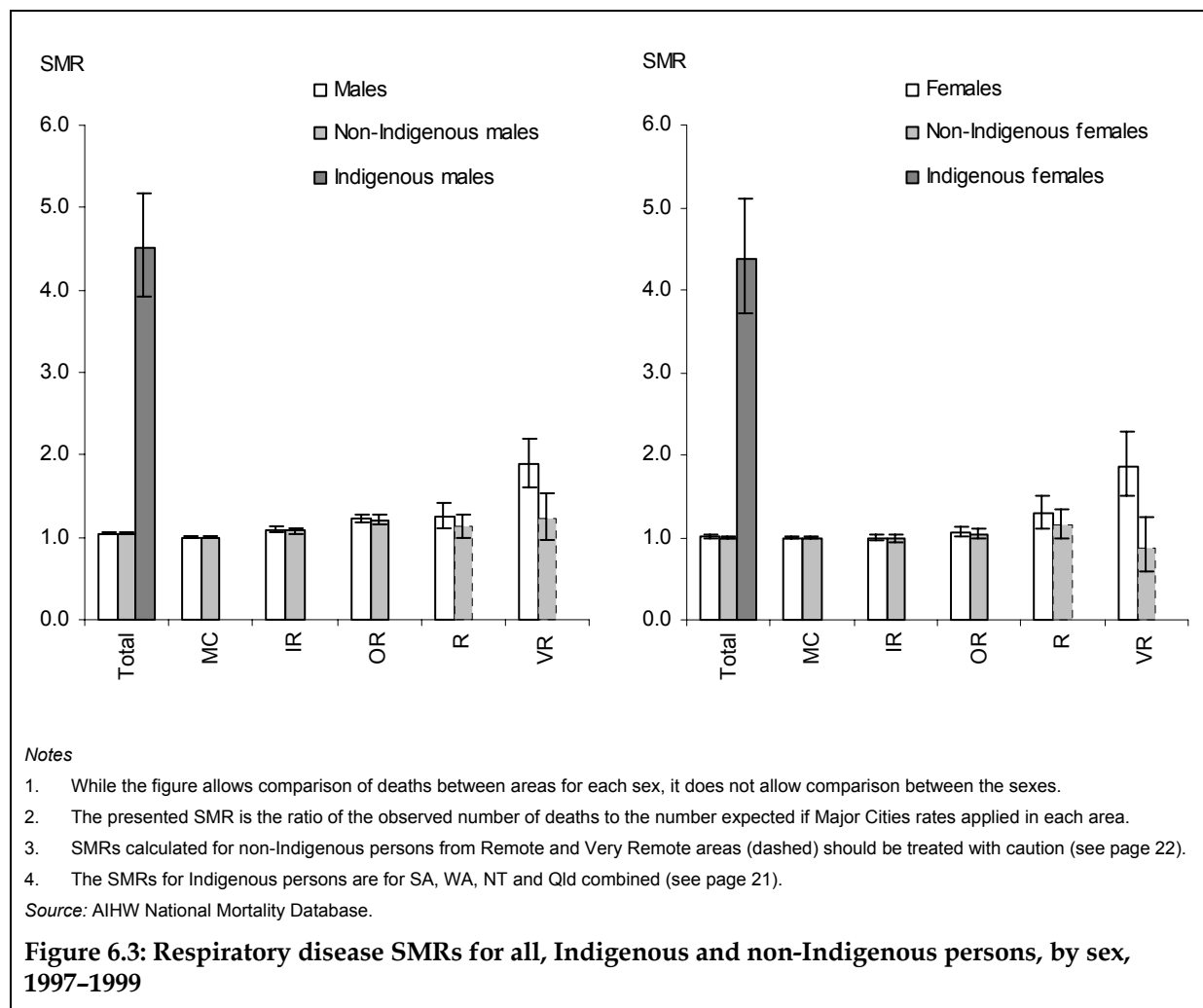
These figures would appear, on the surface, to show that mortality increases with increasing remoteness.

The above rates for the total population are influenced, however, by the number of Indigenous people living outside Major Cities and the high overall mortality of Indigenous people due to respiratory disease. Without examining the mortality of the Indigenous and non-Indigenous populations separately, therefore, it is premature to reach a definite conclusion that remoteness is a factor influencing the health of Australians.

Mortality of Indigenous people

Based on 1997–1999 death registrations, respiratory disease was a leading cause of death for Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland. These accounted for 8% of Indigenous deaths in these jurisdictions. Respiratory disease was one of the leading causes of death among the Australian population as a whole, accounting for 8% of all deaths. However, Indigenous males and females had higher death rates from this cause than the total population (Table 6.5).

In 1997–1999, there were approximately 4.5 times as many deaths of Indigenous males and females as expected if rates for people who lived in Major Cities had applied. Of these deaths 40% were attributable to chronic obstructive pulmonary disease (chronic bronchitis, emphysema, etc.), 30% were due to pneumonia, 24% due to 'other' respiratory diseases, 6% due to asthma and 1% due to influenza. Amongst other things, high rates of smoking amongst Indigenous people (Indigenous people are twice as likely as people in the total population to smoke) would contribute to higher rates of death for most, if not all, of these diseases (ABS 2002).



As discussed on page 21, uncertainty about the accuracy of identification of Indigenous deaths prevents reporting of Indigenous mortality in rural and remote areas.

Mortality of non-Indigenous people

In contrast to the total population, mortality from respiratory diseases did not rise consistently with increasing remoteness for the non-Indigenous population.

Death rates for non-Indigenous males from Inner and Outer Regional areas were 1.1 and 1.2 times those for males from Major Cities, while rates for males from remote areas, although slightly elevated, were not significantly higher (Table 6.5).

Death rates for non-Indigenous females from all areas were not significantly different from rates for females from Major Cities.

Mortality of people aged 0-64 years

Frequently, death rates of older non-Indigenous people from Remote and Very Remote areas are found to be substantially lower than those of similar aged people living in other areas, possibly reflecting a movement of older people with known health conditions into more populated areas to receive treatment, and eventually dying there. These lower rates can substantially affect the summary statistic described for non-Indigenous people above. For this reason, rates for 0-64-year-old non-Indigenous people are also presented here.

Death rates from respiratory disease for Indigenous males and females who are younger than 65 years were 12 and 10 times as high respectively as rates for non-Indigenous males and females of the same age from Major Cities (Figure 6.4 and Table 6.5).

Death rates from respiratory disease for non-Indigenous males younger than 65 years were 1.2, 1.5 and 2.0 times as high in Inner Regional, Outer Regional and Very Remote areas respectively, as for their counterparts from Major Cities. Rates in Remote areas, although elevated, were not significantly different from those for Major Cities.

Death rates from respiratory disease for non-Indigenous females younger than 65 years, were 1.1, 1.2 and 1.8 times as high in Inner Regional, Outer Regional and Remote areas respectively as for their counterparts from Major Cities. Rates in Very Remote areas, although elevated, were not significantly different from those for Major Cities.

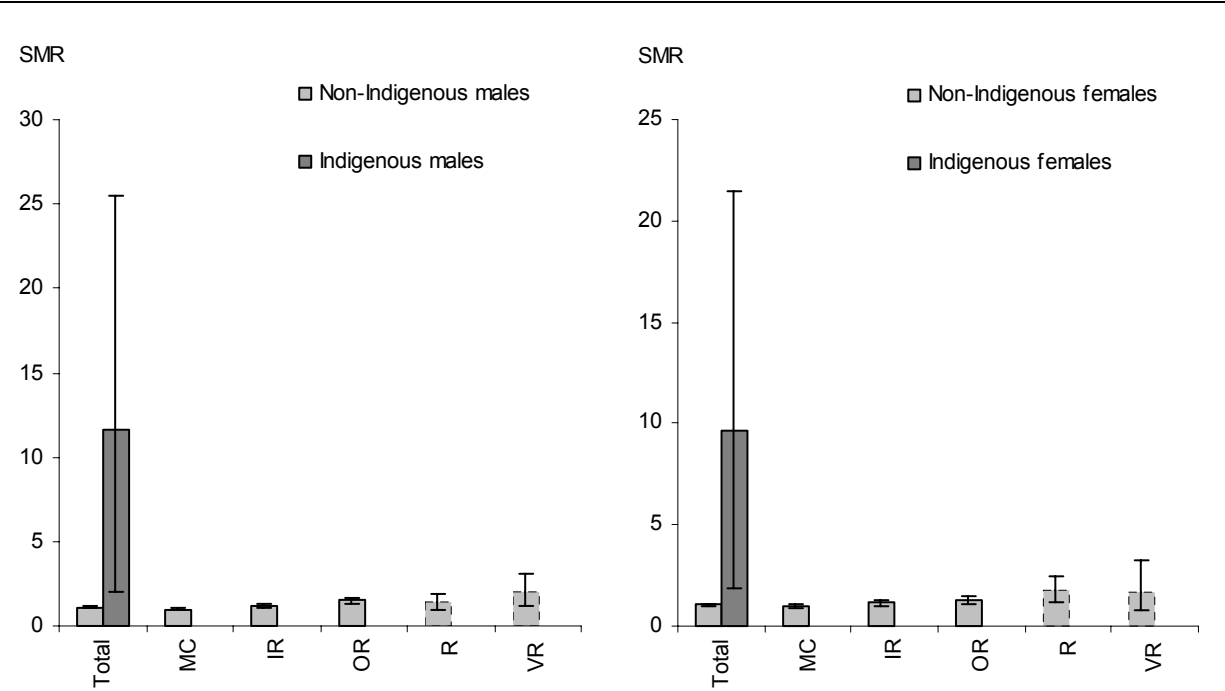
Variation by age group: respiratory diseases

An analysis of age-specific death rates gives more detailed information about each age group to confirm and supplement findings resulting from the broad analysis above using age-standardised rates.

Age-specific rates

Death rates as a result of respiratory disease tend to be higher, and in many cases substantially higher, outside Major Cities.

For both males and females, death rates were negligible until age 45 years. For males the rates then rose to reach 213 deaths per 100,000 per year at age 65–74 years and 870 deaths per 100,000 per year for those 75 years and older. For females the pattern was similar: rates rose to 531 deaths per 100,000 per year for those 75 years and older.



Notes

1. While the figure allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes.
2. The presented SMR is the ratio of the observed number of deaths to the number expected if Major Cities rates applied in each area.
3. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas (dashed) should be treated with caution (see page 22).
4. The SMRs for Indigenous persons are for SA, WA, NT and Qld combined (see page 21).

Source: AIHW National Mortality Database.

Figure 6.4: Respiratory disease SMRs for Indigenous and non-Indigenous persons aged 0–64 years, by sex, 1997–1999

Rates for males younger than 25 years tended to be higher (but frequently not significantly so) outside Major Cities, particularly in remote areas where rates could be up to 6 times as high (Table 6.4 and Figures 6.5 and 6.6). For young females, rates were generally not significantly different (but for girls less than 5 years old were 4–5 times as high in remote areas).

For males aged 25–74 years, rates were 1.2–1.5, 1.3–2.0, 1.5–4.8 and 2.0–9.6 times as high in the four areas outside Major Cities as for their counterparts in Major Cities. For females the pattern was similar, with rates 1.1–1.2, 1.2–1.4, 1.5–2.5 and 2.1–9.6 times as high in these areas.

Rates for males older than 75 years were either not significantly different or about 10% (1.1 times) higher in Outer Regional areas. For females, rates were either not significantly different or lower (0.95 times the Major Cities rate in Inner Regional areas).

Table 6.4: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, respiratory disease, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	3	0.69	1.02	2.14	*6.08	3	0.79	0.76	*3.70	*4.64
5–14	1	1.43	0.90	2.07	6.91	<1	1.52	0.07	0.04	0.00
15–24	1	1.10	*2.62	*5.74	2.75	1	1.06	1.21	1.64	0.16
25–44	2	*1.46	*2.02	*4.81	*9.64	2	1.18	1.45	*2.54	*9.60
45–64	21	*1.22	*1.70	*1.61	*4.88	16	*1.15	*1.44	*2.51	*4.67
65–74	213	*1.21	*1.31	*1.52	*2.00	113	*1.12	*1.22	*1.51	*2.13
75+	870	1.02	*1.12	0.95	0.95	531	*0.95	0.97	1.00	0.92
Total	..	*1.09	*1.23	*1.26	*1.88	..	1.00	*1.06	*1.29	*1.86

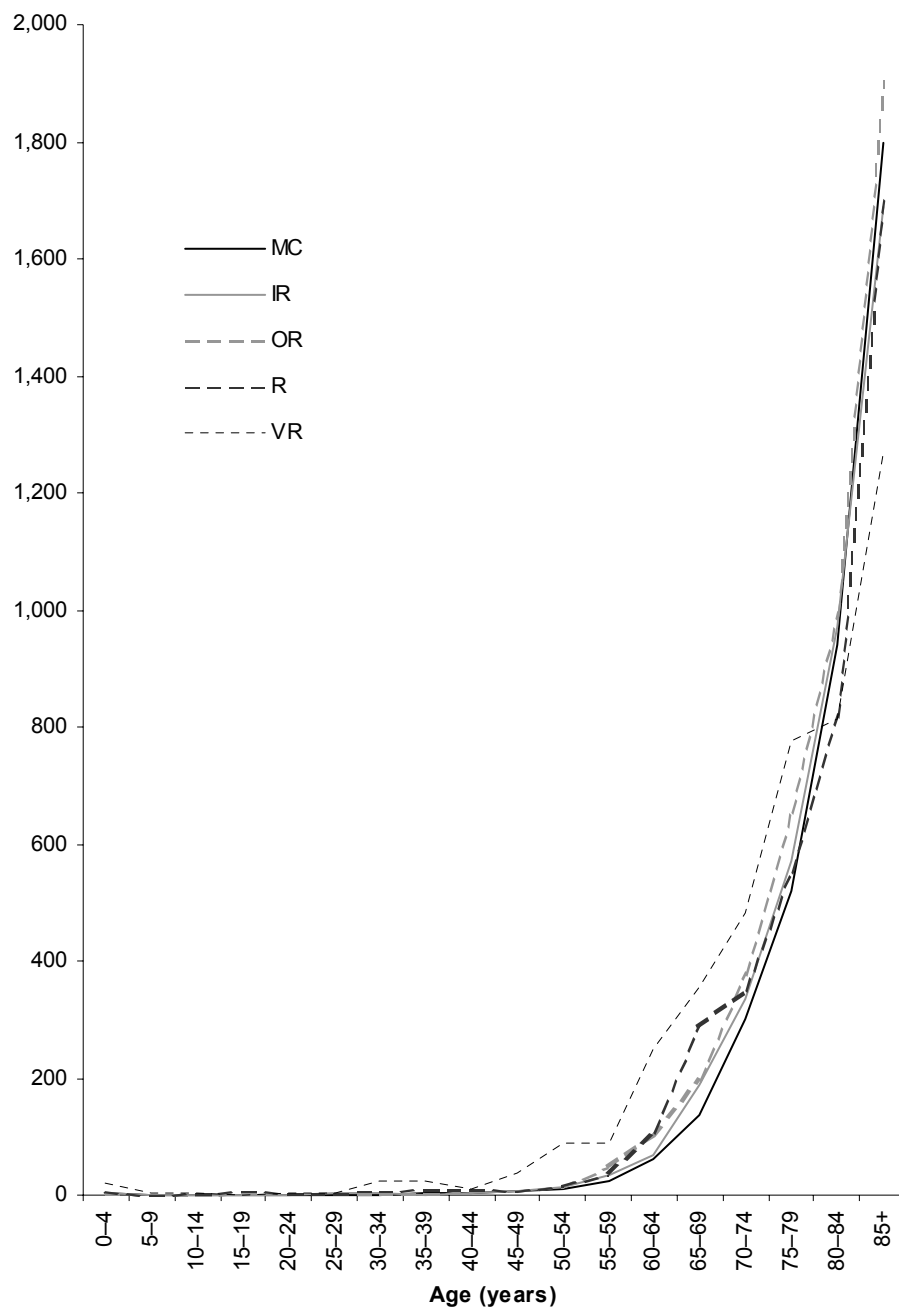
* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

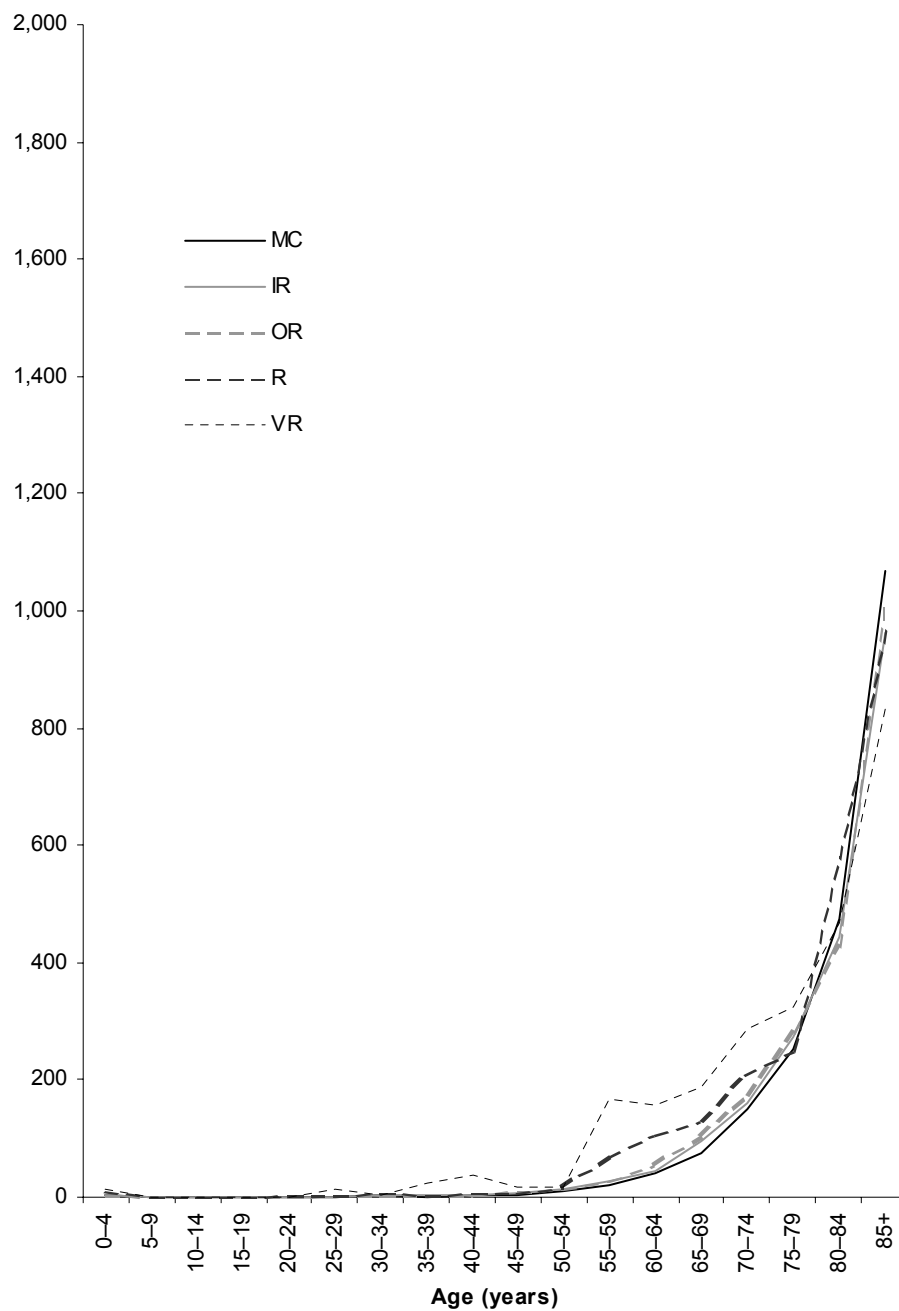
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 6.5: Age-specific death rates due to respiratory diseases, by ASGC Remoteness area for males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 6.6: Age-specific death rates due to respiratory diseases, by ASGC Remoteness area for females, 1997-1999

Age-specific rates for Indigenous people

Death rates of Indigenous people are much greater than for non-Indigenous people, irrespective of where the latter live (Table 6.5 and Figures 6.7 and 6.8).

Age-specific death rates were higher for Indigenous males and females than non-Indigenous males and females from Major Cities in practically every age group. The greatest relative differences occurred in the 25–44-year age group. In this age group, the death rates for Indigenous males and females were, respectively, 28 and 15 times the rate for non-Indigenous males and females living in Major Cities. In the 45–64 year age group, the mortality rate for Indigenous males and females was 10 times that for non-Indigenous males and females from Major Cities.

Age-specific rates for non-Indigenous people

For non-Indigenous people, death rates due to respiratory disease, although higher outside Major Cities (Table 6.5), were less different from Major Cities rates than is the case for the total population (Table 6.4).

This implies that the large differentials for the total population are influenced by the high death rates for Indigenous people, which were substantially and significantly higher in most age groups than those of non-Indigenous people in Major Cities (and indeed in other areas).

Death rates for non-Indigenous males and females younger than 45 years living outside Major Cities are not significantly different from those for similar people living in Major Cities, except for 15–24-year-old males from Outer Regional areas and 25–44-year-old males from Inner Regional areas for whom death rates are 2.4 and 1.5 times as high respectively as for their Major Cities counterparts.

Although there are several groups for which the difference did not reach significance, for non-Indigenous males and females aged 45–74 years, death rates were 1.1–1.2 times as high in Inner Regional areas and 1.2–1.5 times as high in Outer Regional areas. In Remote areas, death rates for people in this age group were 1.4–2.1 times and in Very Remote areas up to 2.2 times the rate for those living in Major Cities.

Death rates for non-Indigenous people older than 75 years did not tend to be significantly different, or were slightly lower than for their counterparts in Major Cities (for males in this age group from Outer Regional areas, death rates were 1.1 times as high as for their counterparts in Major Cities).

When the effects of the possible movement of the frail aged to more populated areas and the mortality of Indigenous people are taken into account, death rates due to respiratory disease clearly increased with remoteness.

Table 6.5: The ratio of observed deaths to those expected as a result of respiratory disease if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	3	0.66	0.45	1.07	2.78	*6.9	3	0.83	0.79	1.06	3.31	*6.7
5–14	1	1.45	0.60	2.44	0.00	3.6	<1	1.54	0.08	0.05	0.00	0.0
15–24	1	1.17	*2.41	4.30	0.51	*7.9	1	1.13	1.34	2.04	0.41	1.5
25–44	2	*1.53	1.50	2.27	0.89	*28.4	2	1.17	1.14	0.65	1.09	*15.2
45–64	20	*1.19	*1.53	1.23	*2.17	*10.2	16	1.14	*1.30	*2.06	1.78	*10.2
65–74	213	*1.21	*1.29	*1.38	1.39	*4.2	112	*1.12	*1.18	1.28	1.26	*4.3
75+	870	1.02	*1.13	0.95	0.96	*1.6	531	*0.94	0.97	1.01	0.62	*1.7
Total	..	*1.08	*1.21	1.13	1.22	*4.5	..	0.99	1.04	1.15	0.88	*4.4
0–64	..	*1.20	*1.49	1.40	*1.99	*11.6	..	*1.13	*1.24	*1.76	1.67	*9.6

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

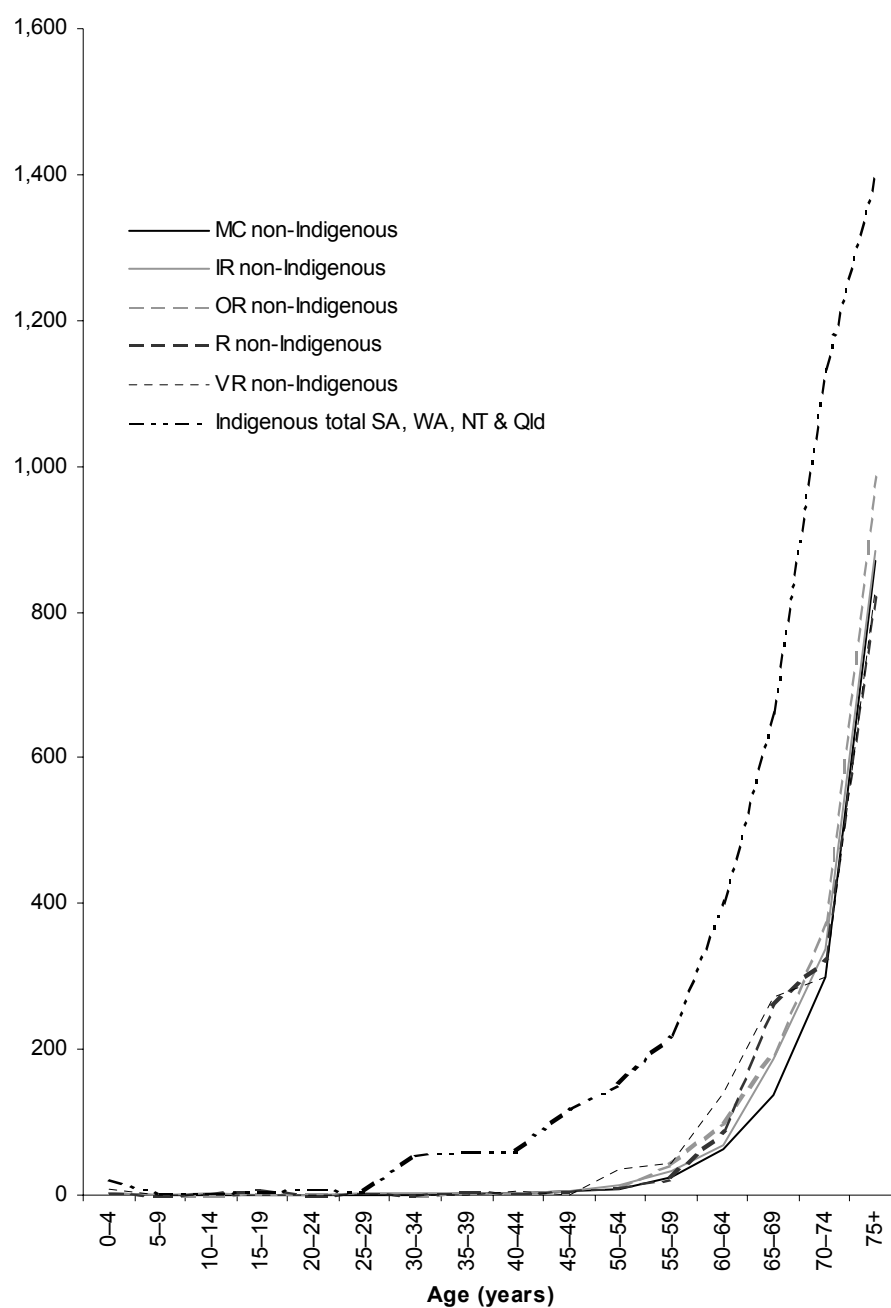
Source: AIHW National Mortality Database.

‘Excess’ deaths due to respiratory disease

‘Excess’ deaths are defined as ‘how many more observed deaths occurred than would be expected, if death rates in Major Cities are applied to the populations in each area outside Major Cities’.

‘Excess’ deaths give a measure of the absolute number of ‘extra’ people who died outside Major Cities, and places these in perspective against the ratios shown in Tables 6.4 and 6.5. For example, although the ratio of observed deaths to those expected if Major Cities had applied may have been relatively high in a particular area, it may not have involved a large number of people. Conversely, a low rate ratio in another area may translate into a relatively large number of ‘excess’ deaths because of a larger base population.

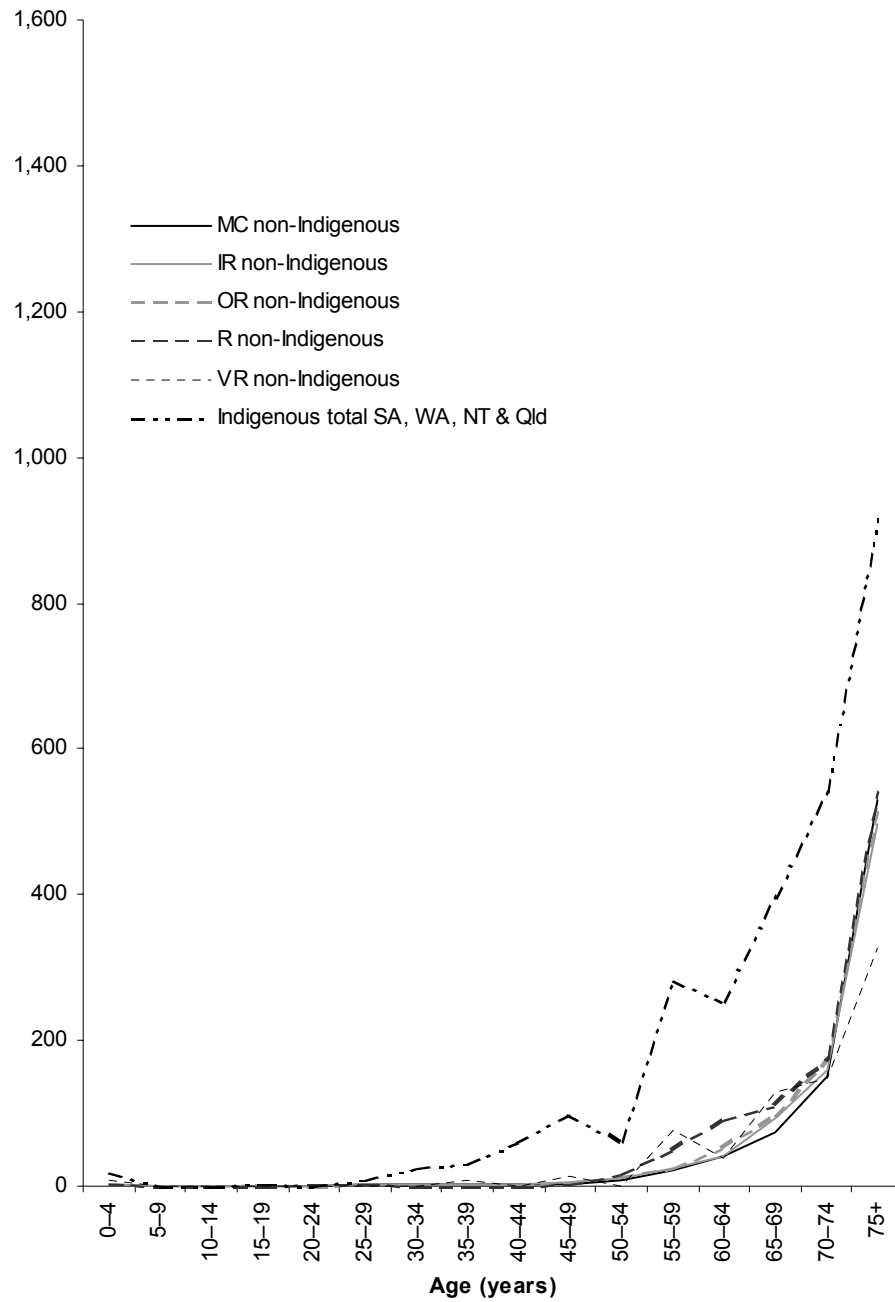
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 6.7: Age-specific death rates due to respiratory diseases, by ASGC Remoteness area for non-Indigenous males and for SA, WA, NT and Qld Indigenous males, 1997-1999

Deaths per 100,000 population



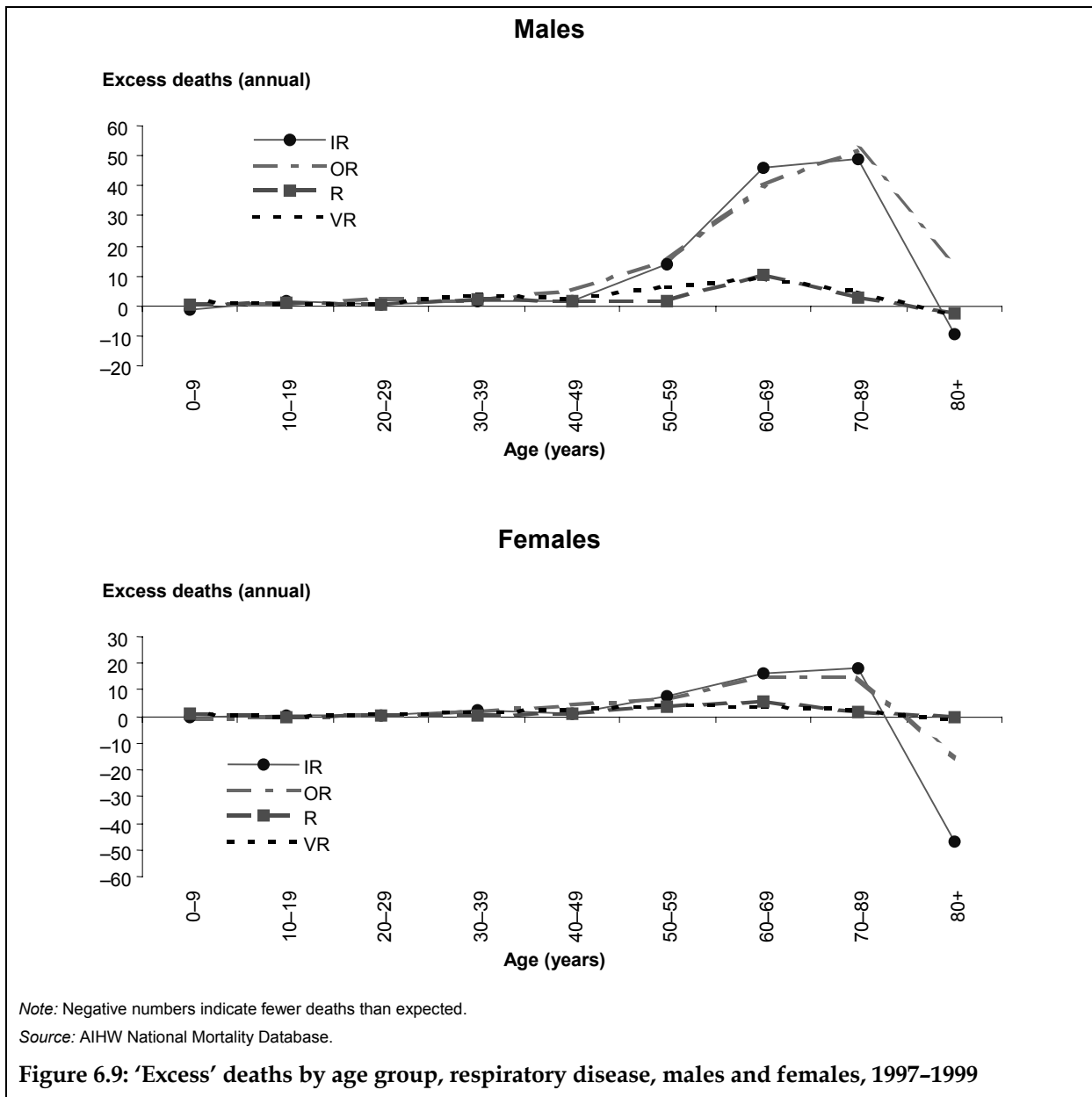
Source: AIHW National Mortality Database.

Figure 6.8: Age-specific death rates due to respiratory diseases, by ASGC Remoteness area for non-Indigenous females and for SA, WA, NT and Qld Indigenous females, 1997-1999

Annual 'excess' deaths

Annually between 1997 and 1999, there were 277 'excess' deaths of males and 53 'excess' deaths of females from respiratory disease across all areas outside Major Cities.

Deaths resulting from respiratory disease occur more frequently in older age groups, and it is only in the population older than 40 years that differences in 'excess' deaths across areas outside Major Cities start to become apparent. For those older than about 80 years, there were frequently fewer deaths than expected outside Major Cities (Figure 6.9 and Appendix B).

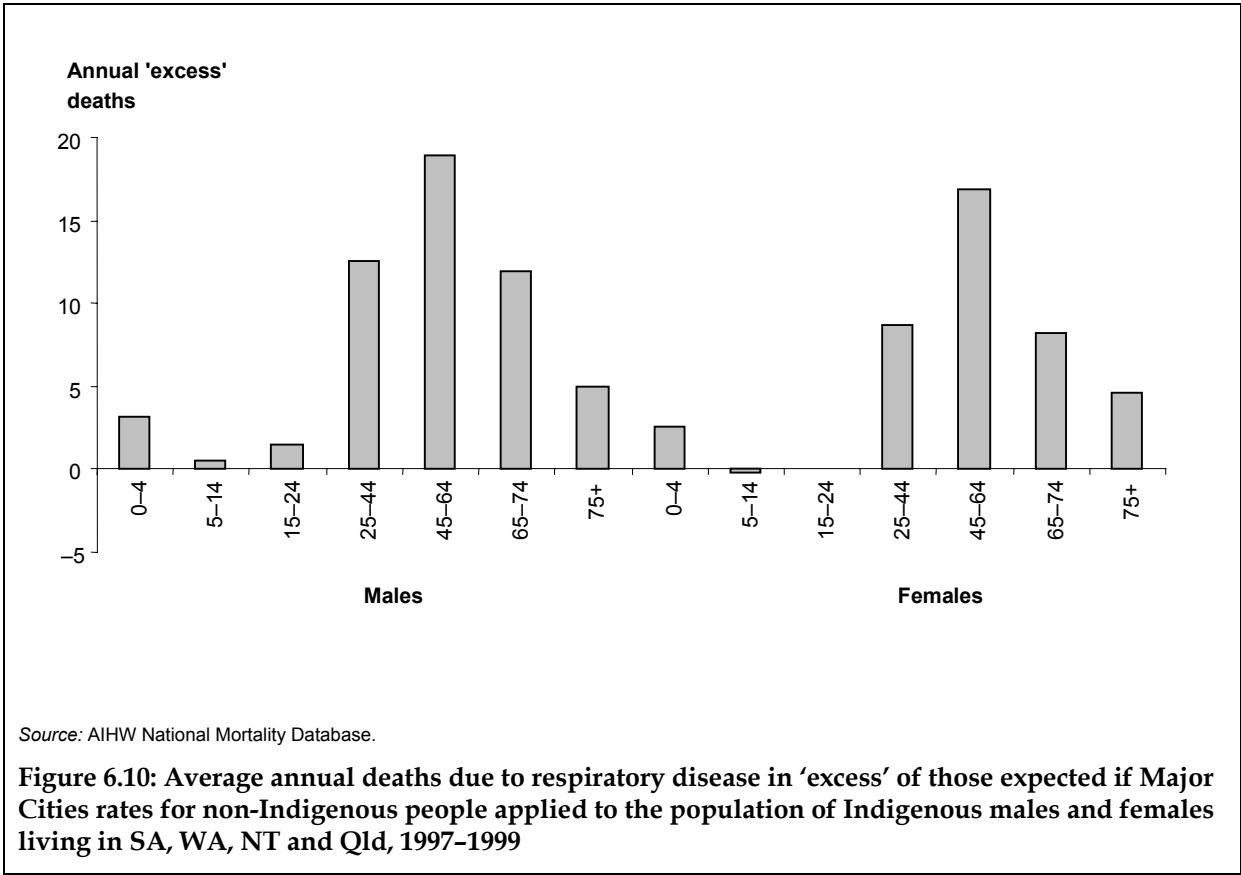


There were 111, 112, 16 and 23 'excess' deaths of males in the four areas outside Major Cities aged between 40 and 79 years and 43, 40, 14 and 13 'excess' female deaths of that age range in those areas. The bulk of these 'excess' deaths (183 male and 75 female deaths) occurred for those aged 65-79 years.

For those aged 80 years and over, however, there were fewer deaths than expected (2 fewer deaths of males and 64 fewer deaths of females) outside Major Cities. Indeed, for this age group in almost all areas (except for males from Outer Regional areas) there were fewer deaths than expected. As noted previously, this may be a result of older people with poor health moving into more populated areas to receive treatment, and eventually dying there.

Annual 'excess' deaths of Indigenous people

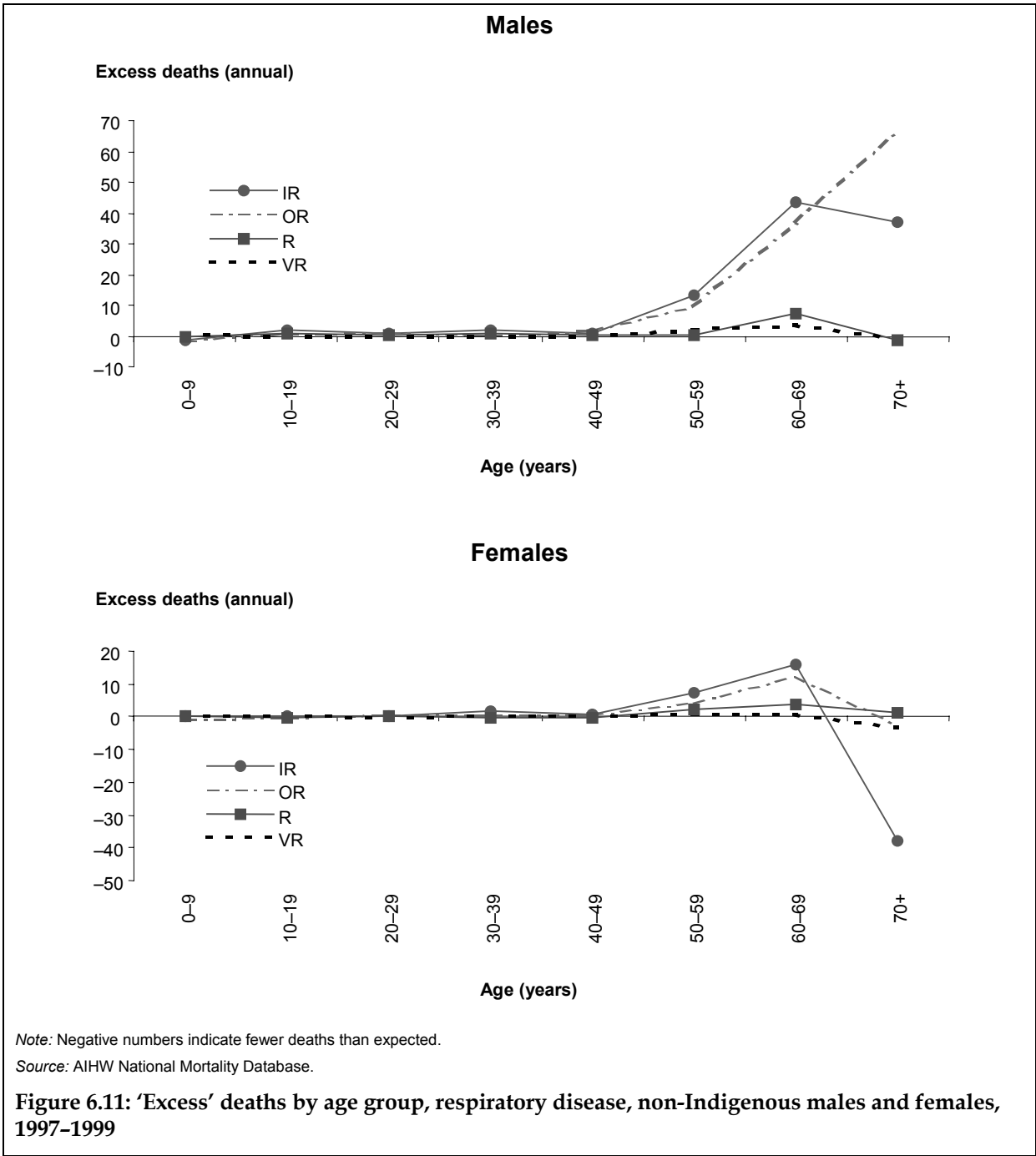
Annually in the Indigenous population there were 53 'excess' deaths of males and 41 'excess' deaths of females resulting from respiratory diseases. These were calculated on the basis that Major Cities rates for non-Indigenous people had applied to the Indigenous population living in South Australia, Western Australia, the Northern Territory and Queensland. It is most likely that there were also 'excess' deaths of Indigenous people from these diseases in the other jurisdictions for which identification is considered less accurate (New South Wales, Victoria, Tasmania, the Australian Capital Territory).



For Indigenous males, 25% of the 'excess' deaths were aged 25–44 years, 36% were aged 45–64 years, and 23% were aged 65–74 years. For Indigenous females the numbers of 'excess' deaths were lower, but the pattern similar: 22% were aged 25–44 years, 41% were in the 45–64 year age group, and 20% were aged 65–74 years (Figure 6.10 and Appendix B).

Annual 'excess' deaths of non-Indigenous people

There were 226 and 10 'excess' deaths respectively of non-Indigenous males and females annually outside Major Cities.



Annually for males, 98, 115, 8 and 5 'excess' deaths occurred in Inner and Outer Regional, Remote and Very Remote areas respectively, with 75% of the total 226 'excess' deaths occurring in those older than 65 years.

Annually for females there were -11, 15, 7 and -1 'excess' deaths in Inner and Outer Regional, Remote and Very Remote areas respectively (that is, 11 fewer than expected in Inner Regional areas); however, there were substantially fewer deaths than expected for those aged 75 years and older (44, 8, 0 and 3 fewer than expected in the four areas). Overall, for females aged 50-64 and 65-74 years who lived outside Major Cities, there were respectively 22 and 37 more deaths than expected annually (Figure 6.11 and Appendix B).

This is in marked contrast to the Indigenous population, in which most 'excess' deaths occurred in those younger than 65 years.

6.2 Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD, ICD-10 codes J41–J44) 'is a long-term disease that causes continual and increasing shortness of breath. The single most important cause of COPD is tobacco smoking' (AIHW 2002a).

Summary of findings

Annually, chronic obstructive pulmonary disease was responsible for the deaths of 5,581 people (3,453 males and 2,128 females); 2,173 of these people came from areas outside Major Cities. Of these 5,581 deaths, 48 deaths were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates due to COPD tended to be higher outside Major Cities. In the four areas outside Major Cities there were:

- 1.2, 1.4, 1.3 and 1.9 times as many deaths of males as expected; and
- 1.1, 1.1, 1.4 and 1.8 times as many deaths of females as expected.

There were 3–4 times as many deaths of Indigenous people as expected from COPD.

For non-Indigenous males, deaths rates in the four areas outside Major Cities were 1.2, 1.4, 1.2 and 1.4 times as high as in Major Cities, while for non-Indigenous females they were similar, except for Outer Regional areas where the rate was 1.1 times that for Major Cities counterparts.

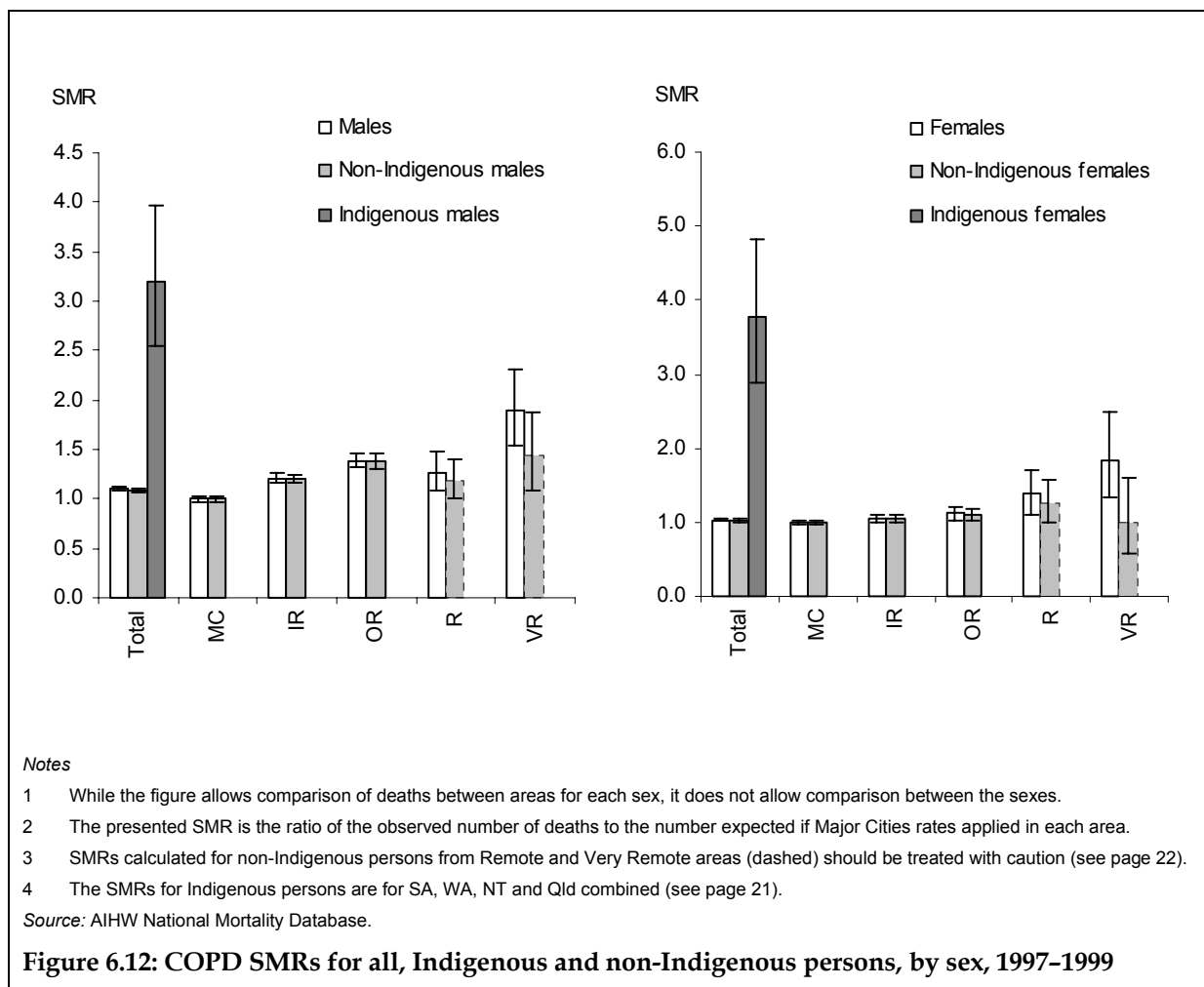
For non-Indigenous males there were 1.2, 1.4, 1.2 and 1.4 times as many deaths as expected in the four areas outside Major Cities due to COPD. For females, there were about as many deaths as expected, except in Outer Regional areas where there were 1.1 times as many deaths of females as expected.

For non-Indigenous people younger than 65 years, the ratio of observed to expected deaths in each area was higher than for the total non-Indigenous population (1.4 and 1.8 times as many deaths of males in Inner and Outer Regional areas, 1.3 and 2.5 times as many deaths of females from Outer Regional and Remote areas).

Annually, there were 374 'excess' deaths due to chronic obstructive pulmonary disease outside Major Cities (176, 156, 20 and 22 in each of the four areas). About 85% of the 'excess' occurred in those aged 60–79 years. There were fewer deaths than expected for those who were 85 years and older, but the effect on the overall 'excess' was small.

Overall mortality due to chronic obstructive pulmonary disease

Annually, there were 2,023, 869, 475, 53 and 33 deaths of males and 1,385, 473, 226, 30 and 14 deaths of females in the five areas respectively, as a result of COPD.



Death rates due to COPD tended to be higher outside Major Cities (Figure 6.12 and Table 6.6).

- In the four areas outside Major Cities, there were 1.2, 1.4, 1.3 and 1.9 times as many deaths of males as expected.
- For females, rates outside Major Cities were also higher with 1.05, 1.1, 1.4 and 1.8 times as many deaths of females as expected in the four areas.
- There were about 3-4 times as many deaths of Indigenous people due to COPD as expected.

In Major Cities, rates for males rose from 0 per 100,000 per year at about age 40 years to 100 per 100,000 per year at age 65-69 years, then to 900 per 100,000 per year for those 85 years and older. The pattern was similar for females but reached 320 per 100,000 per year in the oldest age group:

- There were 1.3-1.4, 1.5-1.9, 1.6-1.7 and 2.3-5.3 times as many deaths of 45-74-year-old males as expected in the four areas respectively. For females of the same age, the situation was similar with about 1.2, 1.3-1.4, 2.7 and 5.6 times as many deaths as expected in the four areas.
- There were 1.1 and 1.3 times as many deaths of males 75 years and older from Inner and Outer Regional areas as expected, and as many as expected in remote areas. There were about as many deaths of females of this age as expected in each of the four areas.

Table 6.6: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, COPD, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	0	..	..	..	..
5–14	0	..	..	..	..	0	..	..	..	..
15–24	0	..	..	..	..	<1	1.57	0.00	0.00	0.00
25–44	<1	2.35	0.18	0.00	8.47	<1	*2.96	1.07	4.90	10.30
45–64	12	*1.41	*1.91	*1.74	*5.26	9	1.16	*1.40	*2.67	*5.61
65–74	154	*1.32	*1.48	*1.62	*2.33	78	*1.24	*1.34	1.52	1.71
75+	509	*1.13	*1.27	0.98	1.02	223	0.96	0.98	1.03	0.95
Total	..	*1.21	*1.39	*1.27	*1.90	..	*1.06	*1.12	*1.38	*1.84

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

As a result of COPD, there were 151, 133, 11 and 15 ‘excess’ deaths of males annually, and 25, 24, 8 and 6 ‘excess’ deaths of females annually in the four areas outside Major Cities. Over 90% of ‘excess’ deaths of males occurred in those older than 60 years, although for those in Very Remote areas, the bulk of the contribution came from 50–80-year-olds. For females, there were fewer deaths than expected in all areas for those older than 80 years, with almost all of the ‘excess’ occurring in those aged 60–80 years.

Indigenous population

Annually in the period 1997–1999, there were 48 deaths of Indigenous people (28 males and 21³ females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 48 deaths, there were 34 (19 males and 15 females) more than expected.

There were 3 and 4 times as many deaths of Indigenous males and females as expected (Table 6.7). For males, 88% of the ‘excess’ occurred in those aged 45–74 years, while for females, 81% occurred amongst the same age group and a further 17% occurred among those 75 years and older.

Non-Indigenous population

Annually, there were 2,017, 863, 464, 47 and 18 deaths of non-Indigenous males and 1,379, 468, 219, 26 and 6 deaths of non-Indigenous females in the five areas respectively, as a result of COPD.

³ Figures for males and females do not add to the total for persons due to the rounding of fractions.

Table 6.7: The ratio of observed deaths to those expected as a result of COPD if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR			(ratio)	IR	OR	R		VR	(ratio)
0–4	<1	0.00	0.00	0.00	0.00	12.1	0	..	..	..	..	..
5–14	0	..	..	..	..	..	0	..	..	..	..	..
15–24	0	..	..	..	..	..	<1	1.59	0.00	0.00	0.00	0.0
25–44	<1	2.72	0.21	0.00	0.00	*21.7	<1	*2.99	0.24	0.17	0.00	8.0
45–64	12	*1.37	*1.79	1.37	*3.05	*8.5	9	1.13	*1.36	*2.41	2.48	*8.8
65–74	154	*1.32	*1.45	*1.50	*1.71	*4.0	78	*1.23	*1.29	1.31	1.07	*3.5
75+	509	*1.13	*1.28	0.97	0.98	1.3	222	0.95	0.98	0.99	0.67	*2.0
Total	..	*1.21	*1.38	*1.19	*1.44	*3.2	..	1.05	*1.10	1.25	0.99	*3.8
0–64	..	*1.38	*1.76	1.42	*3.00	*8.9	..	1.17	*1.33	*2.48	2.40	*8.7

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Death rates due to COPD were higher outside Major Cities (Table 6.7).

For non-Indigenous males there were 1.2, 1.4, 1.2 and 1.4 times as many deaths as expected in the four areas outside Major Cities.

For non-Indigenous females there were about as many deaths as expected in each of the areas, except Outer Regional areas where there were 1.1 times as many deaths as expected.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

Age-specific death rates for non-Indigenous people were similar to those for the total population except in Very Remote areas where rates were elevated, but not as much as for the total population (death rates in this area for 45–74-year-old males were 1.7–3.1 times the rates in Major Cities). For females in the same age group, rates were not significantly higher.

As a result of COPD, there were 147, 127, 8 and 6 ‘excess’ deaths of non-Indigenous males annually, and 21, 19, 5 and 0 ‘excess’ deaths of non-Indigenous females annually in the four areas outside Major Cities. The bulk of ‘excess’ deaths occurred in those older than 60 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 20 (11 male, 9 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of COPD. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 20 deaths, there were 18 (10 males and 8 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 9 times as many deaths as expected as a result of COPD (Table 6.7).

Non-Indigenous population

Annually, there were 163, 76, 51, 6 and 5 deaths of non-Indigenous males younger than 65 years and 122, 47, 26, 6 and 2 deaths of non-Indigenous females younger than 65 years in the five areas respectively, as a result of COPD.

Death rates for non-Indigenous 0–64-year-olds as a result of COPD tended to be higher outside Major Cities (Table 6.7).

- There were 1.4, 1.8 and 3.0 times as many deaths as expected of 0–64-year-old non-Indigenous males in Inner Regional, Outer Regional and Very Remote areas. In Remote areas, rates appeared elevated, but were not significantly higher than those in Major Cities.
- There were 1.3 and 2.5 times as many deaths as expected of 0–64-year-old non-Indigenous females in Outer Regional and Remote areas, with more than expected (but not significantly more) in Inner Regional and Very Remote areas.

As a result of COPD, there were 21, 22, 2 and 3 ‘excess’ deaths of non-Indigenous males younger than 65 years annually, and 7, 7, 4 and 1 ‘excess’ deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. The bulk of ‘excess’ deaths occurred in those older than 50 years.

6.3 Pneumonia

Pneumonia (ICD-10 codes J12–J18) is an inflammation or infection of the lungs, for example, caused by the bacteria *Streptococcus pneumoniae*. People at greatest risk are those whose immune systems are compromised, or who have chronic cardiovascular or pulmonary disease (for example, influenza), diabetes mellitus, alcohol-related problems, cirrhosis, cerebrospinal fluid leak after trauma or surgery, and those who smoke. Vaccination to protect against the disease is recommended for at-risk individuals (NHMRC 2000).

The exact cause of pneumonia is not always known or reported. Influenza virus infection can frequently be involved, and if this is known, influenza may be reported as the cause of death. However, influenza is often not specifically identified as the cause, so 'pneumonia' may be reported as the cause of death. Because of this, influenza and pneumonia are often considered together as causes of death, although they are reported separately here.

Summary of findings

Annually, pneumonia was responsible for the deaths of 1,921 people (786 males and 1,135 females); 636 of these people came from areas outside Major Cities. Of these 1,921 deaths, 36 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates due to pneumonia were 0.9 times Major Cities rates for males in Inner Regional areas (that is, lower) and 2.3 times as high for males and females in Very Remote areas, but elsewhere were not significantly different from rates in Major Cities.

There were about 9 and 6 times as many deaths of Indigenous males and females as expected from pneumonia.

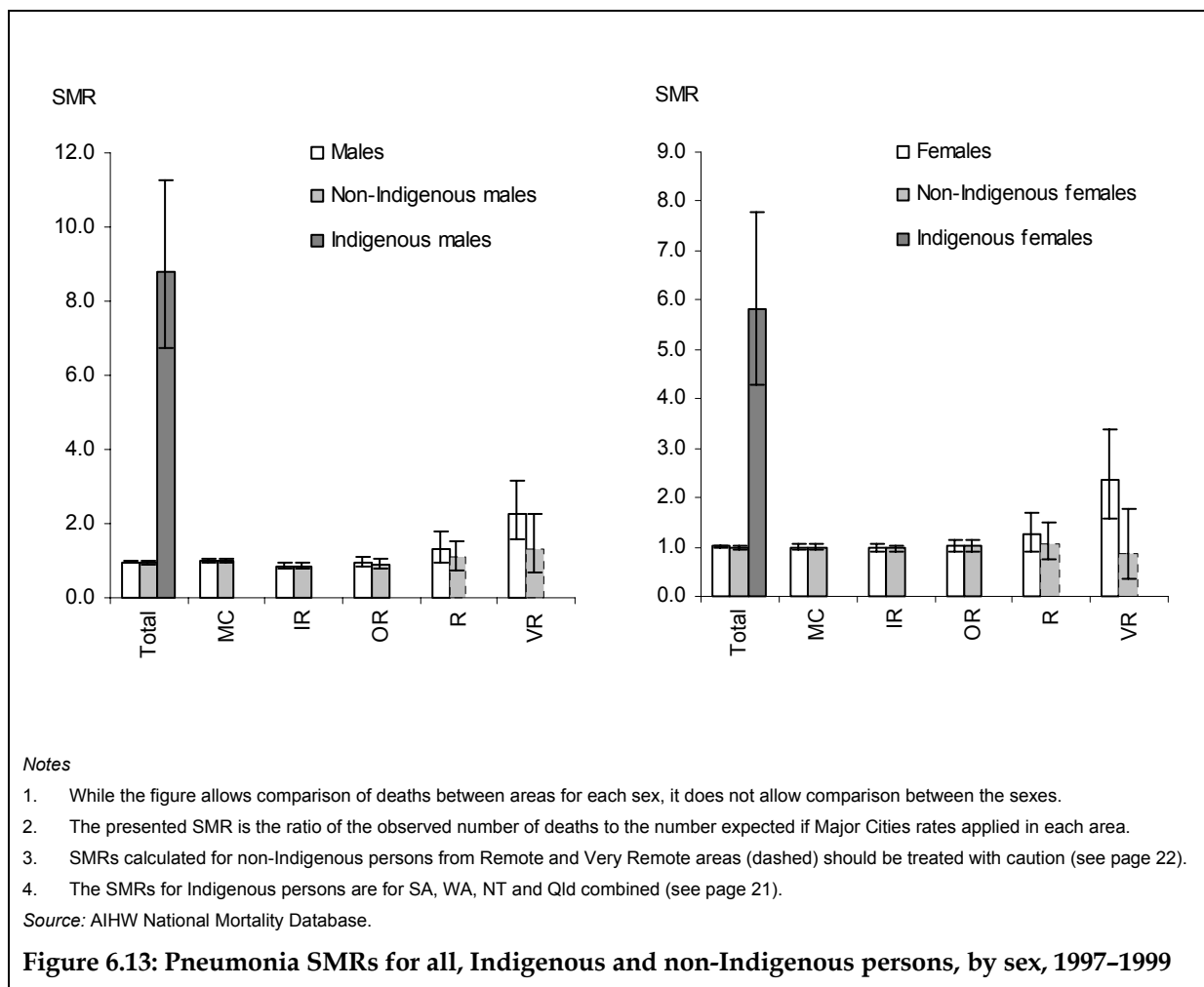
There were about as many deaths of non-Indigenous people as expected due to this cause, except in Inner Regional areas where there was 0.8 times as many deaths of males as expected.

For the non-Indigenous population younger than 65 years, there were about as many deaths of males as expected, and about as many deaths of females as expected in the other areas (with 1.5 times as many deaths of females as expected in Inner Regional areas).

Annually, there were 14 fewer deaths than expected due to pneumonia outside Major Cities (-32, -1, 7 and 12 'excess' deaths in each of the four areas). There were fewer deaths than expected in the older age groups. For those who were younger than 65 years, there were 25 'excess' deaths in the four areas, more than half of which occurred in remote areas. It appears likely that a substantial proportion of this 'excess' is a consequence of high rates for Indigenous people.

Overall mortality due to pneumonia

Annually, there were 521, 154, 85, 15 and 11 deaths of males and 764, 235, 111, 15 and 10 deaths of females in the five areas respectively, as a result of pneumonia.



- Death rates due to pneumonia were higher in Very Remote areas than in Major Cities (2.2 times as high for males and 2.4 times as high for females). Rates were not significantly different in the other areas, except for males in Inner Regional areas where rates were 0.9 times those in Major Cities (Figure 6.13 and Table 6.8).
- There were about 6–9 times as many deaths of Indigenous people due to pneumonia as expected.

In Major Cities, rates were negligible until age 50, rising to 160 per 100,000 per year for males and 110 per 100,000 per year for females at age 80–84 years, and about 500 per 100,000 per year for both sexes for those 85 years and older.

- For most age groups and areas outside Major Cities, there tended to be more deaths than expected, but in only a few were the differences significant.
- Within the 25–64-year-old age groups, there were several areas (particularly remote areas) where there were more deaths than expected. For example, there were 2.4, 4.8 and 13.4 times as many deaths of 25–44-year-old males as expected in Outer Regional, Remote and Very Remote areas. For females in this age group, there were 7.2 and 16.5 times more deaths than expected in Remote and Very Remote areas. However, the overall number of expected deaths in these age groups was relatively small.

- For males who were 75 years and older, there were either as many deaths as expected or, in Inner Regional areas, fewer deaths than expected. For females of this age, there were about as many deaths as expected in all areas.

Table 6.8: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, pneumonia, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	1	0.10	1.15	3.58	*17.45	1	0.89	1.01	4.63	*14.22
5–14	<1	0.81	0.01	0.00	23.90	<1	0.00	0.00	0.00	0.00
15–24	0	..	..	..	..	<1	0.36	0.00	0.00	0.00
25–44	<1	1.38	*2.38	*4.81	*13.44	<1	1.88	1.54	*7.21	*16.47
45–64	2	0.97	1.33	2.04	*5.05	1	*1.64	*2.11	3.29	*10.91
65–74	14	0.77	1.05	2.22	2.27	8	0.76	0.80	1.79	*5.91
75+	171	*0.85	0.89	0.97	1.07	172	0.97	1.00	1.03	1.28
Total	..	*0.85	0.97	1.33	*2.26	..	0.98	1.02	1.26	*2.35

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

As a result of pneumonia, there were –28, –3, 4 and 6 ‘excess’ deaths of males annually, and –4, 2, 3 and 6 ‘excess’ deaths of females annually in the four areas outside Major Cities. In regional areas, there were generally fewer deaths than expected amongst females older than 60 years and males older than 80 years.

Indigenous population

Annually in the period 1997–1999, there were 36 deaths of Indigenous people (21 males and 15 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 36 deaths, there were 31 (19 males and 13 females) more than expected.

There were 9 and 6 times as many deaths of Indigenous males and females as expected as a result of pneumonia (Table 6.9). For males and females, the pattern for ‘excess’ deaths was somewhat similar, with 15% amongst those younger than 5 years, just over 30% of the ‘excess’ amongst 25–44-year-olds and about 50% amongst those 45 years and older.

Non-Indigenous population

Annually, there were 517, 153, 77, 11 and 4 deaths of non-Indigenous males and 760, 234, 108, 12 and 3 deaths of non-Indigenous females in the five areas respectively as a result of pneumonia.

There were about as many deaths of non-Indigenous people as expected due to this cause, except in Inner Regional areas where there was 0.8 times as many deaths of males as expected (Table 6.9).

Table 6.9: The ratio of observed deaths to those expected as a result of pneumonia if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
0–4	1	0.11	0.01	0.00	7.92	*16.2	1	0.96	0.96	0.00	12.02	*16.2
5–14	<1	0.82	0.01	0.00	0.00	12.3	<1	0.00	0.00	0.00	0.00	0.0
15–24	0	..	..	..	..	..	<1	0.48	0.00	0.00	0.00	10.8
25–44	<1	1.50	1.79	0.37	0.00	*47.5	<1	*2.02	1.18	0.03	0.04	*40.3
45–64	2	0.97	1.06	1.33	1.26	*13.7	1	1.58	1.55	1.06	0.32	*23.9
65–74	14	0.77	0.94	1.66	1.03	*12.2	7	0.78	0.77	0.86	0.00	*14.8
75+	171	*0.84	0.90	1.02	1.29	*3.2	172	0.95	1.01	1.11	0.84	1.6
Total	n.p.	*0.84	0.92	1.09	1.30	*8.8	n.p.	0.96	1.01	1.07	0.88	*5.8
0–64	n.p.	0.96	1.10	0.95	1.63	*23.3	n.p.	*1.54	1.31	0.56	2.06	*24.2

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

Age-specific death rates were lower for non-Indigenous people than they were for the total population in Remote and particularly Very Remote areas, although rarely significantly different from those in Major Cities and tending to show no clear increase with remoteness. Rates for Inner Regional males older than 74 years were 0.8 times those for similar males from Major Cities, but were not significantly different in this age group in the more remote areas.

There were -28, -7, 1 and 1 'excess' deaths of non-Indigenous males annually from pneumonia, and -9, 1, 1 and 0 'excess' deaths of non-Indigenous females annually in the four

areas outside Major Cities. There were substantially fewer 'excess' deaths than expected amongst those older than 70 years and practically no 'excess' in younger age groups.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 23 (13 male, 10 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of pneumonia. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 23 deaths, there were 22 (12 males and 9 females) more than expected.

For Indigenous males and females who were younger than 65 years old, there were 23 and 24 times as many deaths as expected (Table 6.9).

Non-Indigenous population

Annually, there were 41, 13, 8, 1 and 1 deaths of non-Indigenous males younger than 65 years and 25, 12, 5, 0 and 0 deaths of non-Indigenous females younger than 65 years in the five areas respectively, as a result of pneumonia.

For females from Inner Regional areas, there were 1.5 times as many deaths as expected as a result of pneumonia; otherwise the numbers of deaths in each area were not significantly different from the numbers expected (Table 6.9).

As a result of pneumonia, there were 0, 1, 0 and 0 'excess' deaths of non-Indigenous males younger than 65 years annually, and 4, 1, 0 and 0 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities.

6.4 Asthma

Asthma (ICD-10 codes J45–J46) 'is a chronic inflammatory disorder of the lung's air passages that makes them narrow in response to various triggers, leading to episodes of shortness of breath and wheezing' (AIHW 2002a). Prevention involves drug therapy and avoiding triggers such as tobacco smoke, fine organic dusts such as flour, sawdust, grain dust, and chemicals used with the manufacture of plastics and resins (AIHW 2002a).

Summary of findings

Annually, asthma was responsible for the deaths of 467 people (184 males and 283 females); 171 of these people came from areas outside Major Cities. Of these 467 deaths, 7 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Overall there were about 10–20% (1.1–1.2 times) more deaths than expected in the areas outside Major Cities. While there were more deaths than expected in all areas, there were only significantly more in two areas – Outer Regional and Remote areas where rates were 1.3 and 2.2 times those in Major Cities.

There were about three times as many deaths of Indigenous people as expected from asthma. For non-Indigenous people, asthma death rates for both sexes in regional and remote areas were not significantly different from those in Major Cities (except for Remote areas where there were 2.2 times as many deaths of non-Indigenous males as expected).

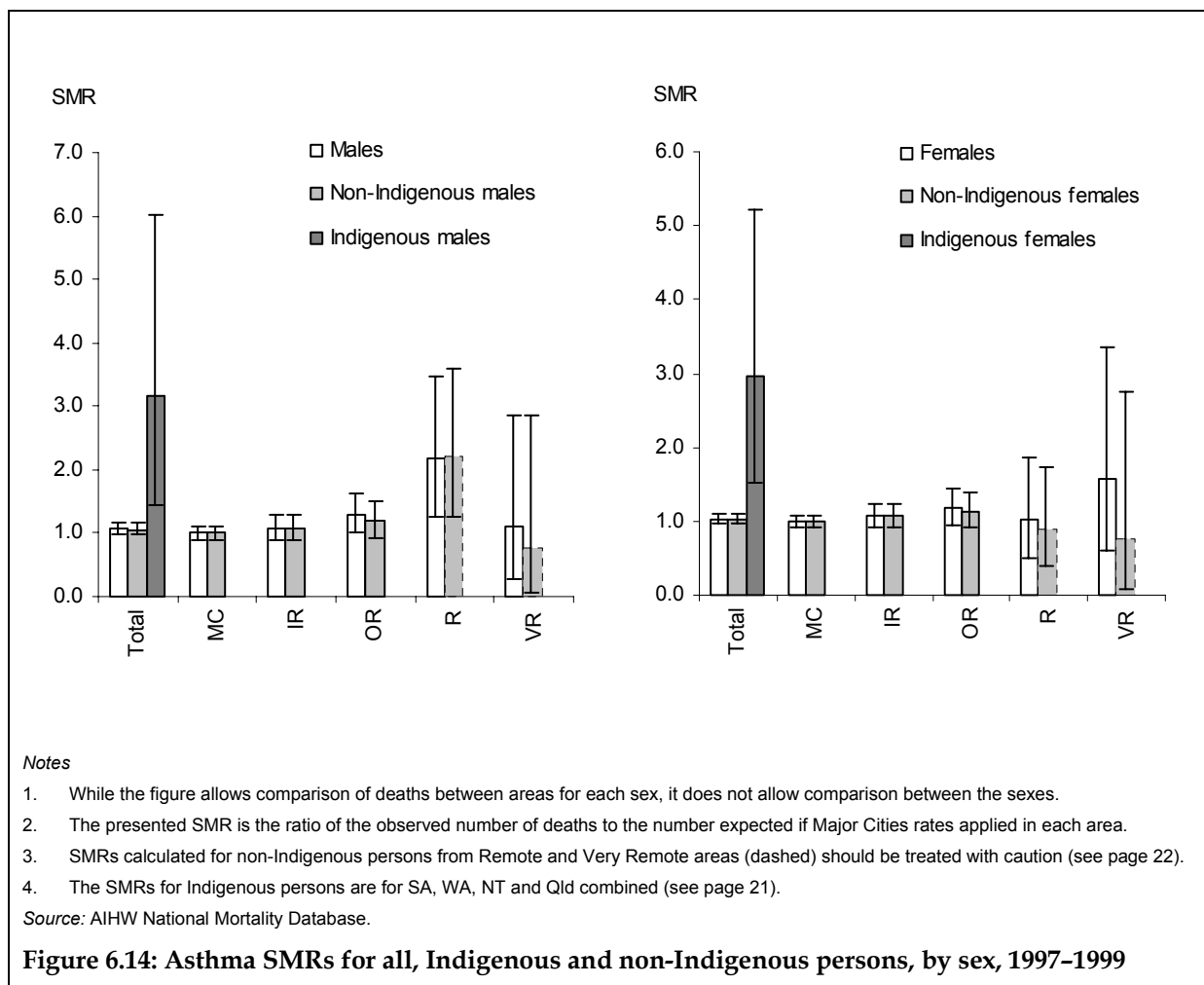
Annually, there were 21 'excess' deaths due to asthma outside Major Cities (7, 10, 3 and 1 in each of the four areas).

Overall mortality due to asthma

Annually, there were 112, 41, 24, 6 and 1 deaths of males and 184, 62, 32, 3 and 2 deaths of females in the five areas as a result of asthma.

Death rates due to asthma tended to be higher outside Major Cities (Figure 6.14 and Table 6.10).

- There were slightly more deaths of males and females than expected in Inner Regional areas, but the observed number for each sex was not significantly different from that expected for each sex.
- There were 1.3 and 2.2 times as many deaths of males as expected in Outer Regional and Remote areas. In Very Remote areas, death rates were not significantly different from the Major Cities rate.
- Although there tended to be more deaths of females than expected in Outer Regional and remote areas, the difference was not significant.
- There were about 3 times as many deaths of Indigenous people due to asthma as expected.



In Major Cities, death rates for both sexes due to asthma rose steadily to 11 per 100,000 per year at age 75-79 years, reaching 25 per 100,000 per year for males aged 85 years and older and 45 per 100,000 per year for females aged 85 years and older.

- For most age groups, there are more deaths than expected in most areas.
- For 25-44-year-old males and females (an age at which asthma death rates tend to be relatively low) there were 2.4 and 4.4 times as many deaths of males in Outer Regional and Remote areas, and 6.0 times as many deaths of females in Very Remote areas as expected.
- For people 65 years and older (the life stage at which most of the asthma deaths occur), it is difficult to identify a clear tendency, with observed numbers of deaths not significantly different from the number expected. However, there were 0.6 times as many deaths of 65-74-year-old males from Inner Regional areas as expected.

As a result of asthma, there were 3, 6, 3 and 0 'excess' deaths of males annually, and 4, 5, 0 and 1 'excess' deaths of females annually in the four areas outside Major Cities.

Table 6.10: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, asthma, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	<1	0.00	0.00	0.00	0.00	1	0.00	0.00	0.00	0.00
5–14	<1	1.72	1.38	3.23	0.00	<1	2.75	0.07	0.00	0.00
15–24	1	0.80	0.90	2.31	0.17	1	1.15	1.41	2.50	0.25
25–44	<1	1.64	*2.35	*4.42	1.83	1	1.08	1.42	0.64	*6.01
45–64	2	1.28	*1.98	1.46	2.43	3	1.11	1.42	1.92	1.21
65–74	7	*0.64	0.64	1.75	0.00	7	1.25	1.27	1.01	2.20
75+	16	1.22	1.25	2.13	1.05	22	0.97	1.05	0.59	0.00
Total	..	1.08	*1.29	*2.17	1.09	..	1.07	1.18	1.01	1.58

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Indigenous population

Annually in the period 1997–1999, there were 7 deaths of Indigenous people (3 males and 4 females) in South Australia, Western Australia, the Northern Territory and Queensland as a result of asthma. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 7 deaths, there were 5 (2 males and 3 females) more than expected (Table 6.11).

There were about three times as many deaths of Indigenous males and females as expected as a result of asthma. The numbers of deaths were very small; nearly all of the ‘excess’ deaths occurred in people aged 25–64 years.

Non-Indigenous population

Annually, there were 112, 41, 22, 5 and 1 deaths of non-Indigenous males and 184, 62, 30, 3 and 1 deaths of non-Indigenous females in the five areas as a result of asthma.

Asthma death rates for both sexes in regional and remote areas (Table 6.11) were not significantly different from those in Major Cities (except for Remote areas where there were 2.2 times as many deaths of non-Indigenous males as expected).

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

Annually, there were 3, 3, 3 and 0 ‘excess’ deaths of non-Indigenous males, and 4, 3, 0 and 0 ‘excess’ deaths of non-Indigenous females in the four areas outside Major Cities as a result of asthma.

Table 6.11: The ratio of observed deaths to those expected as a result of asthma if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR			IR	OR	R	VR	
0–4	<1	0.00	0.00	0.00	0.00	0.0	1	0.00	0.00	0.00	0.00	0.0
5–14	<1	1.75	0.91	3.80	0.00	0.0	<1	2.79	0.08	0.00	0.00	0.0
15–24	1	0.81	0.95	2.68	0.33	0.0	1	1.17	1.50	2.99	0.58	0.0
25–44	<1	1.71	1.93	4.16	2.71	*6.7	1	1.09	1.21	0.56	2.42	*5.9
45–64	2	1.24	*1.67	1.43	0.00	*11.6	3	1.11	1.33	1.61	0.00	*4.3
65–74	7	*0.64	0.64	1.81	0.00	0.0	7	1.25	1.22	0.57	2.54	4.1
75+	16	1.22	1.27	2.27	1.43	0.0	22	0.96	1.03	0.62	0.00	1.2
Total	..	1.08	1.19	*2.22	0.76	3.2	..	1.06	1.13	0.89	0.77	*3.0
0–64	..	1.29	*1.52	*2.41	0.75	4.5	..	1.11	1.21	1.27	0.84	*3.3

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 6 (3 male, 3 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of asthma. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 6 deaths, there were 4 (2 males and 2 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 5 and 3 times as many deaths as expected (Table 6.11).

Non-Indigenous population

Annually, there were 43, 17, 11, 3 and 0 deaths of non-Indigenous males younger than 65 years and 61, 21, 11, 2 and 0 deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of asthma.

There were 1.5 and 2.4 times as many deaths of 0–64-year-old non-Indigenous males as expected in Outer Regional and Remote areas (with rates in Inner Regional areas higher, but not significantly higher). Although there tended to be more deaths than expected for females

in three of the areas, the differences between the numbers observed and expected in each area were not statistically significant (Table 6.11).

Annually, there were 4, 4, 2 and 0 'excess' deaths of non-Indigenous males younger than 65 years, and 2, 2, 0 and 0 'excess' deaths of non-Indigenous females younger than 65 years in the four areas outside Major Cities as a result of asthma.

6.5 Influenza

Influenza (ICD-10 codes J10–J11) is a highly infectious disease caused by a virus transmitted in respiratory droplets produced during coughing or sneezing. Complications of influenza include acute bronchitis, croup, acute otitis media, pneumonia and cardiovascular complications. While influenza itself may not be recorded as the cause of death, its complications (for example, pneumonia) may lead to death and be recorded as the underlying cause of death. Individuals whose medical condition makes them vulnerable to disease may develop bacterial pneumonia, which may be fatal. Annual vaccination against influenza is recommended for individuals who are at increased risk of influenza-related complications (NHMRC 2000).

Because of the relationship between influenza and pneumonia, they are often reported together. In this report they have been reported separately, but should be considered jointly.

Summary of findings

Annually, influenza was responsible for the deaths of 134 people (58 males and 76 females); 63 of these people came from areas outside Major Cities. Of these 134 deaths, one was of an Indigenous person living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates due to influenza tended to be higher outside Major Cities, with 1.8 and 2.3 times as many deaths of males in Inner and Outer Regional areas, and 1.5 and 3.9 times as many deaths of females as expected in regional and Remote areas. Rates were higher in all the other areas than in Major Cities, but the difference did not reach statistical significance.

The number of deaths of Indigenous people was not significantly greater than expected.

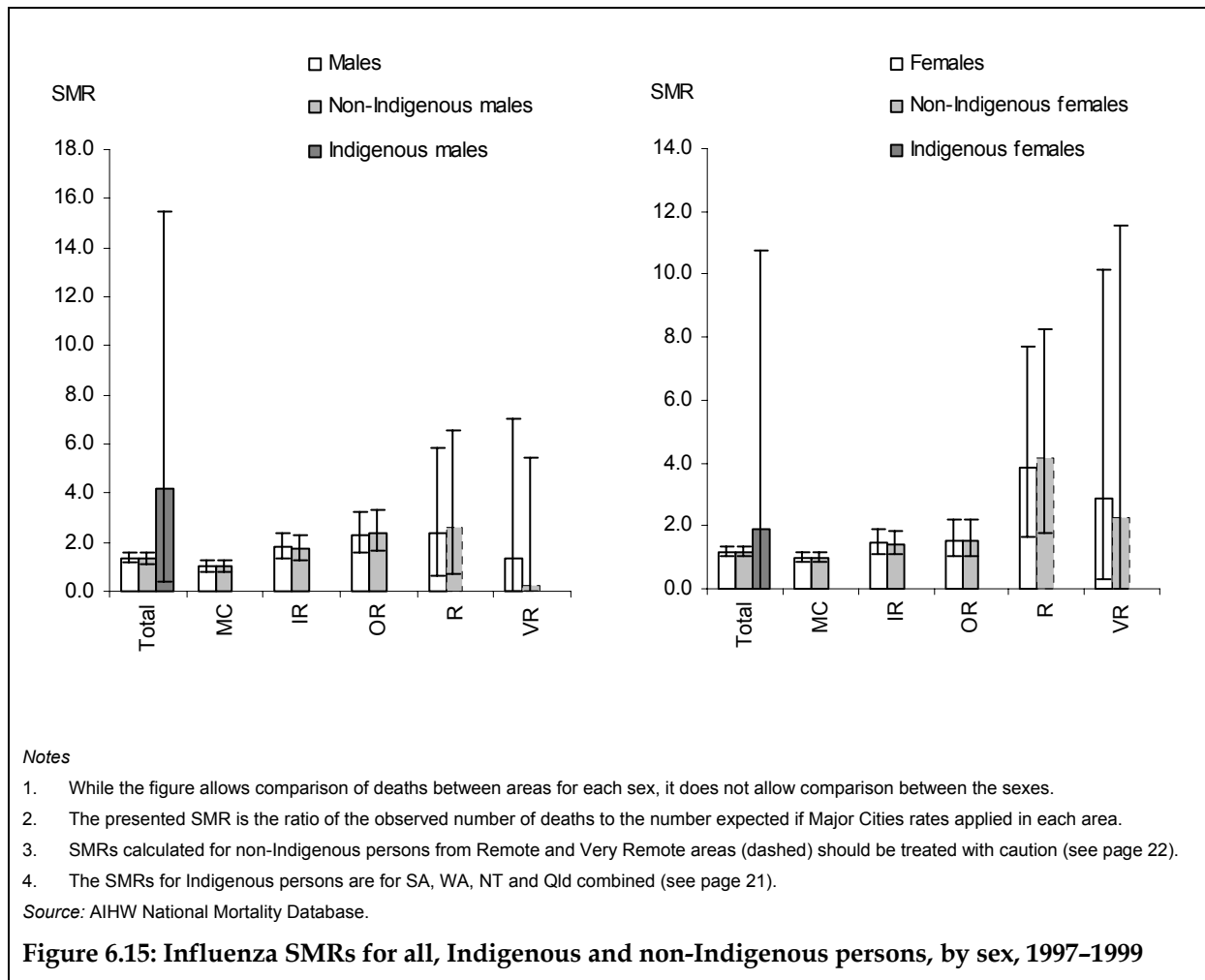
For non-Indigenous people, death rates due to influenza tended to be higher in Inner and Outer Regional areas. There were 1.7 and 2.4 times as many deaths of males in Inner and Outer Regional areas, and 1.4, 1.5 and 4.2 times as many deaths of females as expected in Inner and Outer Regional, and Remote areas.

There were very few deaths of people younger than 65 years of age due to influenza.

Annually, there were 27 'excess' deaths due to influenza outside Major Cities (14, 9, 3 and 1 in the four areas). About 80% of the 'excess' occurred in those aged 75 years and older.

Overall mortality due to influenza

Annually, there were 28, 18, 11, 1 and 0 deaths of males and 43, 20, 9, 3 and 1 deaths of females in the five areas respectively, as a result of influenza.



Death rates due to influenza tended to be higher outside Major Cities, however, the actual number of deaths were relatively small and differences did not often reach statistical significance (Figure 6.15 and Table 6.12).

- There were 1.8 and 2.3 times as many deaths of males as expected in Inner and Outer Regional areas, with more (but not significantly more) deaths than expected in remote areas.
- There were 1.5, 1.5 and 3.9 times as many deaths of females as expected in Inner and Outer Regional and Remote areas, with more (but not significantly more) deaths than expected in Very Remote areas.
- There were very few deaths of Indigenous people due to influenza.

Table 6.12: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, influenza, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	<1	2.30	1.95	0.00	0.00	<1	2.45	1.05	0.00	0.00
5–14	0	..	..	..	..	0	..	..	..	..
15–24	0	..	..	..	..	0	..	..	..	..
25–44	<1	0.00	0.00	0.00	0.00	<1	1.85	0.00	18.87	35.11
45–64	<1	1.76	0.59	3.83	8.70	<1	3.01	0.16	0.00	55.09
65–74	1	1.67	2.04	0.00	0.00	1	0.93	0.56	3.58	1.91
75+	8	*1.80	*2.60	2.83	0.27	9	*1.45	*1.71	*3.71	0.00
Total	..	*1.81	*2.30	2.36	1.36	..	*1.45	*1.52	*3.88	2.88

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates for males and females up to the age of 60 years were 0 per 100,000 population. Death rates reached 29 per 100,000 population per year for males aged 85 years and older and 21 per 100,000 population per year for females of the same age group.

- For those who were 75 years or older, there were 1.8 and 2.6 times as many deaths of males and 1.5 and 1.7 times as many deaths of females as expected in Inner and Outer Regional areas. In Remote areas there also appeared to be more deaths than expected (3.7 times as many deaths of females as expected).
- There were very few deaths amongst those younger than 75 years.

There were 8, 6, 1 and 0 ‘excess’ deaths from influenza of males annually, and 6, 3, 2 and 0 ‘excess’ deaths of females annually in the four areas outside Major Cities. The majority of ‘excess’ deaths for influenza occurred in persons aged 80 years and older.

Indigenous population

Annually in the period 1997–1999, there was about 1 death of an Indigenous person in South Australia, Western Australia, the Northern Territory and Queensland due to influenza. Based on Major Cities rates for non-Indigenous people, this is about as many deaths as expected (Table 6.13).

Non-Indigenous population

Annually, there were 28, 17, 11, 1 and 0 deaths of non-Indigenous males and 43, 20, 9, 3 and 0 deaths of non-Indigenous females in the five areas respectively, as a result of influenza.

Death rates due to influenza tended to be higher outside Major Cities (Table 6.13).

- There were 1.7 and 2.4 times as many deaths of non-Indigenous males as expected in Inner and Outer Regional areas due to this cause. In each of the remote areas the numbers of deaths were not significantly different to the number expected.
- There were 1.4, 1.5 and 4.2 times as many deaths of non-Indigenous females as expected in Inner and Outer Regional and remote areas due to this cause. The number of deaths of females in Very Remote areas was not significantly different to the number expected.

Table 6.13: The ratio of observed deaths to those expected as a result of influenza if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
0–4	<1	2.35	2.10	0.00	0.00	0.0	<1	2.51	1.13	0.00	0.00	0.0
5–14	0	..	..	..	..	..	0	..	..	..	..	..
15–24	0	..	..	..	..	..	0	..	..	..	..	..
25–44	<1	0.00	0.00	0.00	0.00	0.0	<1	1.87	0.00	20.91	0.00	27.1
45–64	<1	1.76	0.60	4.01	0.00	14.3	<1	3.02	0.16	0.00	83.92	0.0
65–74	1	1.45	2.05	0.00	0.00	18.3	1	0.93	0.57	3.74	2.80	0.0
75+	8	*1.75	*2.68	3.21	0.43	0.0	9	*1.42	*1.73	*3.99	0.00	0.0
Total	..	*1.74	*2.36	2.62	0.27	4.2	..	*1.43	*1.54	*4.17	2.24	1.9
0–64	..	1.99	1.30	2.78	0.00	5.0	..	2.96	0.64	6.77	20.69	7.2

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

Non-Indigenous age-specific death rate patterns are similar to those exhibited by the total population. Death rates for males aged 75 years and older in Inner and Outer Regional areas were 1.8 and 2.7 times those in Major Cities. Death rates for females aged 75 years and older in Inner and Outer Regional areas were 1.4 and 1.7 times those in Major Cities.

There were 7, 6, 1 and 0 'excess' deaths from influenza of non-Indigenous males annually, and 6, 3, 2 and 0 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. The majority of 'excess' deaths attributed to influenza occurred in non-Indigenous persons aged 70 years and older.

Mortality for those aged 0–64 years

Indigenous population

Annually there was 1 death of an Indigenous person younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of influenza. There may also have been other deaths due to this cause in the other jurisdictions.

This death was about as many as expected due to this cause (Table 6.13).

Non-Indigenous population

Annually, there were 4, 3, 1, 0 and 0 deaths of non-Indigenous males younger than 65 years and 2, 2, 0, 0 and 0 deaths of non-Indigenous females younger than 65 years in the five areas, respectively as a result of influenza.

In all areas and for both sexes of non-Indigenous people younger than 65 years, the small number of deaths due to influenza outside Major Cities was not significantly different from the number expected (Table 6.13).

As a result of influenza, there were 1, 0, 0 and 0 'excess' deaths of non-Indigenous males younger than 65 years annually, and 1, 0, 0 and 0 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities.

6.6 'Other' respiratory diseases

Other respiratory diseases (ICD-10 codes J00–J99, excluding the respiratory diseases described earlier in this report) are included because as a group they are responsible for a substantial number of deaths. Differences in death rates across areas for this range of diseases may suggest further work to identify potential targets for intervention. Specific causes of death included in this diverse group include acute upper respiratory infections (for example, acute tonsillitis), other acute lower respiratory infections (for example, acute bronchitis), lung diseases due to external agents (for example, pneumoconiosis) and others (for example, respiratory failure).

Summary of findings

Annually, 'other' respiratory diseases were responsible for the deaths of 1,753 people (937 males and 816 females); 548 of these people came from areas outside Major Cities. Of these 1,753 deaths, 29 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

In most areas, death rates due to 'other' respiratory diseases tended to be lower than or similar to those in Major Cities, although rates for males were significantly higher in Very Remote areas than in Major Cities. Typically there were 0.8–0.9 times as many deaths as expected in regional areas and about as many, or up to 1.7 times as many, as expected in remote areas.

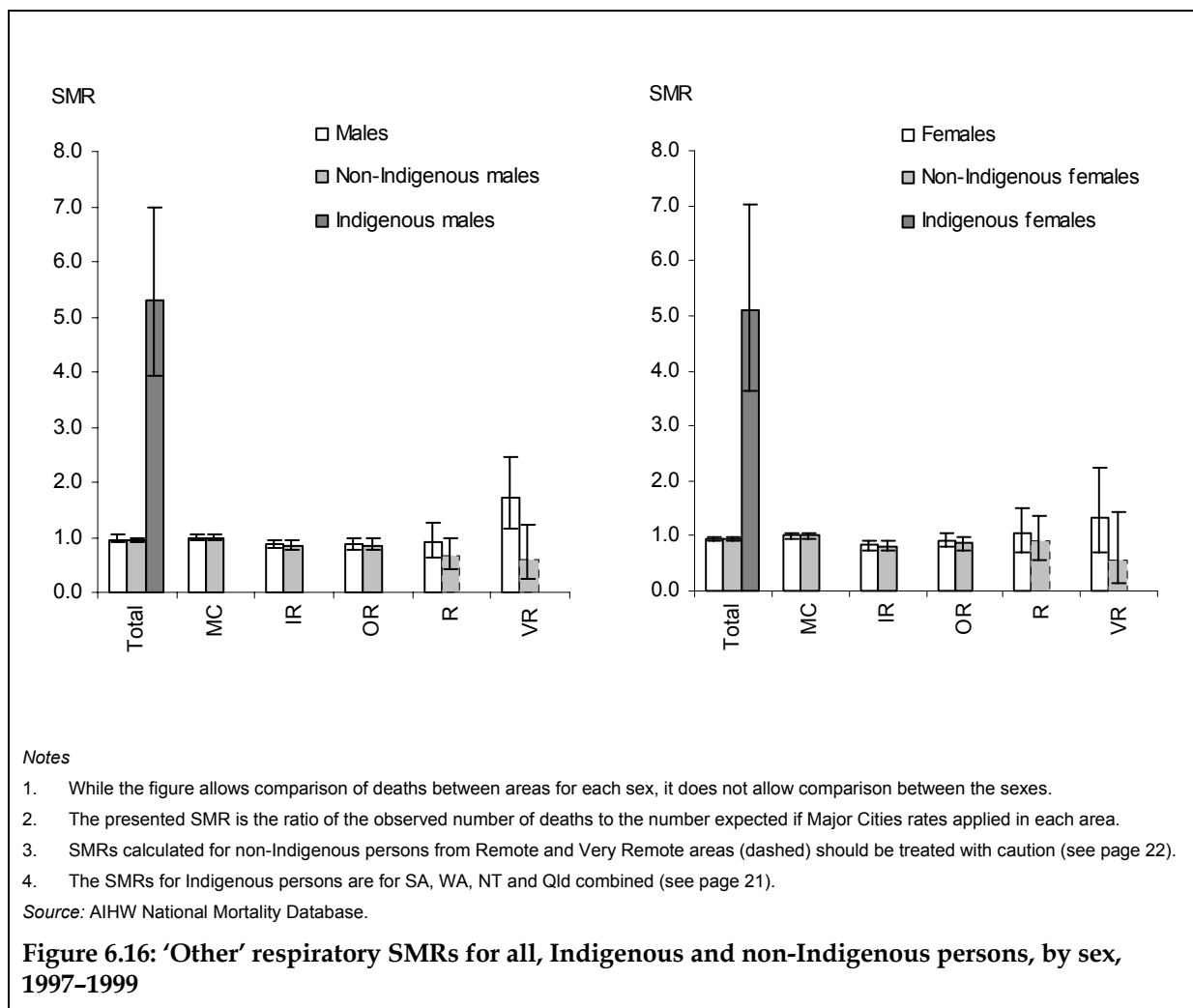
There were about five times as many deaths of Indigenous people as expected from 'other' respiratory diseases.

Death rates for non-Indigenous people due to 'other' respiratory diseases tended to be lower than or similar to those in Major Cities, with 0.8 or 0.9 times as many deaths as expected in regional areas. In remote areas there were 0.7 times as many (or lower but not significantly lower numbers of) deaths as expected. There were about as many deaths of non-Indigenous people younger than 65 years as expected.

Annually, there were 78 fewer deaths than expected due to 'other' respiratory diseases outside Major Cities (63, 20 and 1 fewer, and 5 'excess' in the four areas). In Inner Regional areas, practically all age groups exhibited fewer deaths than expected, however in Outer Regional and remote areas there was an 'excess' of 19 deaths among those younger than 65 years. It is likely that high Indigenous mortality due to this cause is largely responsible for this relatively small 'excess'.

Overall mortality due to 'other' respiratory diseases

Annually, there were 630, 191, 95, 12 and 10 deaths of males and 575, 151, 76, 10 and 4 deaths of females in the five areas as a result of 'other' respiratory diseases.



Death rates due to 'other' respiratory diseases tended to be similar to or lower than those in Major Cities, although rates for males were significantly higher in Very Remote areas than in Major Cities (Figure 6.16 and Table 6.14).

- There were 0.9 times as many deaths of males as expected in Inner and Outer Regional areas, but 1.7 times as many as expected in Very Remote areas. The difference between the observed and expected numbers of deaths in Remote areas was not significantly different.
- There were 0.8 times as many deaths of females as expected in Inner Regional areas. The difference between the observed and expected numbers of deaths in the other areas was not significantly different.
- There were about 5 times as many deaths of Indigenous people due to 'other' respiratory disease as expected.

Table 6.14: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, 'other' respiratory disease, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	2	1.08	1.04	1.93	0.02	1	0.91	0.95	3.61	0.62
5–14	<1	0.00	0.00	0.00	15.55	<1	0.58	0.08	0.08	0.00
15–24	<1	3.24	7.06	13.90	22.64	<1	0.24	2.39	0.00	0.00
25–44	1	1.21	1.91	*6.50	*14.09	1	0.36	1.60	0.55	*8.59
45–64	5	0.79	1.25	1.02	*4.52	3	0.96	1.39	2.34	2.12
65–74	36	1.00	0.86	0.81	0.98	19	*0.75	0.91	1.47	2.40
75+	166	*0.81	*0.80	0.64	0.63	105	*0.84	*0.83	0.73	0.53
Total	..	*0.86	*0.89	0.91	*1.71	..	*0.82	0.91	1.04	1.32

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates for males up to the age of 40 years were generally around zero with rates increasing to 100 per 100,000 per year at age 75–79, and further to 340 per 100,000 per year for those 85 years and older. Rates were similar for females, peaking at 210 per 100,000 per year in the oldest age group.

Death rates in regional and remote areas were generally not significantly different from those in Major Cities with the following exceptions:

- for those aged 25–64 years (life stages at which death due to this cause is reasonably rare), there were up to 4.5–14.1 times as many deaths as expected in remote areas; and
- for people 65 years and older, there were frequently fewer deaths than expected, with 0.8 times as many deaths as expected of regional males and females who were 75 years and older.

As a result of 'other' respiratory diseases, there were -31, -12, -1 and 4 'excess' deaths of males annually, and -32, -8, 0 and 1 'excess' deaths of females annually in the four areas outside Major Cities. While there were a small number of 'excess' deaths in persons younger than 60 years, for those older than 60 years there were substantially fewer deaths than expected outside Major Cities.

Indigenous population

Annually in the period 1997–1999, there were 29 deaths of Indigenous people (16 males and 13 females) in South Australia, Western Australia, the Northern Territory and Queensland as a result of 'other' respiratory diseases. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 29 deaths, there were 23 (13 males and 10 females) more than expected.

There were about 5 times as many deaths of Indigenous males and females as expected (Table 6.15). About 80% and 70% of the 'excess' deaths occurred amongst males and females aged 25–64 years.

Non-Indigenous population

Annually, there were 628, 189, 89, 8 and 2 deaths of non-Indigenous males and 571, 150, 71, 8 and 1 deaths of non-Indigenous females in the five areas respectively as a result of 'other' respiratory diseases.

Death rates due to 'other' respiratory diseases tended to be lower than or similar to those in Major Cities (Table 6.15).

For non-Indigenous males in regional and Remote areas, there were 0.9 and 0.7 times as many deaths as expected. The number of deaths in Very Remote areas was lower, but not significantly lower than expected.

For non-Indigenous females in Inner and Outer Regional areas, there were 0.8 and 0.9 times as many deaths as expected. The number of deaths in remote areas was lower, but not significantly lower than expected.

Table 6.15: The ratio of observed deaths to those expected as a result of 'other' respiratory disease if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		(ratio)						(ratio)				
		IR	OR	R	VR			IR	OR	R	VR	
0–4	1	0.95	0.62	2.26	0.04	1.3	1	1.00	1.10	0.00	0.00	5.4
5–14	<1	0.00	0.00	0.00	0.00	8.4	<1	0.59	0.09	0.10	0.00	0.0
15–24	<1	5.20	11.67	0.00	0.00	*59.9	<1	0.24	2.54	0.00	0.00	0.0
25–44	1	1.18	1.20	2.68	0.11	*36.4	1	0.27	1.31	0.00	0.00	*15.7
45–64	5	0.76	1.04	0.59	1.18	*12.3	3	0.99	1.02	1.84	0.57	*14.4
65–74	36	1.01	0.85	0.73	0.53	2.6	19	*0.76	0.88	1.43	1.97	*4.2
75+	166	*0.80	*0.81	*0.54	0.52	1.3	105	*0.83	*0.83	0.73	0.31	1.6
Total	..	*0.86	*0.86	*0.67	0.59	*5.3	..	*0.82	*0.86	0.90	0.55	*5.1
0–64	..	0.84	1.08	0.99	0.91	*13.8	..	0.86	1.06	1.22	0.36	*11.1

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific death rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

As a result of 'other' respiratory diseases, there were 31, 15, 4 and 2 fewer deaths of non-Indigenous males than expected annually, and 33, 11, 1 and 1 fewer deaths of non-Indigenous females than expected annually in the four areas outside Major Cities. While there were a small number of 'excess' deaths in those younger than 60 years, for those older than 70 years, there were substantially fewer deaths than expected outside Major Cities.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 22 (13 male, 9 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of 'other' respiratory disease. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 20 deaths, there were 20 (12 males and 8 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 14 and 11 times as many deaths as expected as a result of 'other' respiratory diseases (Table 6.15).

Non-Indigenous population

Annually, there were 78, 21, 15, 2 and 1 deaths of non-Indigenous males younger than 65 years and 60, 17, 10, 2 and 0 deaths of non-Indigenous females younger than 65 years in the five areas respectively, as a result of 'other' respiratory diseases.

The number of deaths of males and females observed in each area was not significantly different from the number expected (Table 6.15).

There were -4, 1, 0 and 0 more deaths from 'other' respiratory diseases of non-Indigenous males younger than 65 years than expected annually, and -3, 1, 0 and 0 more deaths of non-Indigenous females younger than 65 years than expected annually in the four areas outside Major Cities.

7 Injury

This chapter discusses mortality due to the broad category of injury and poisoning (ICD-10 chapter 20, codes V01–Y98). It then provides further analysis of types of injury within this broad category. The injuries included are:

1. motor vehicle accidents;
2. suicide;
3. interpersonal violence;
4. accidental shooting;
5. other injuries.

These were chosen either because they are frequent causes of death (as in the case of motor vehicle accidents and suicide) or because they exhibit substantial inter-regional variation (interpersonal violence and accidental shooting). Occupational injuries were not listed separately because they cannot be reliably identified using ICD-10 codes and because of the difficulty identifying the size of the population in each occupation. 'Other' injuries (which include a wide range of external causes including drowning, burns, falls and electrocution) sometimes account for a substantial proportion of 'excess' deaths, and deserve further investigation.

Summary of findings

The overall mortality of Australians due to injury and poisoning increased with increasing remoteness. Compared to those in Major Cities, death rates from injury and poisoning were:

- 1.2–1.4 times as high in regional areas; and
- 1.5–2.4 times as high in remote areas.

This broad observation does not take into account two factors previously stated on page 33, namely the likely effect on rates of high Indigenous mortality coupled with their greater representation outside Major Cities, and the possible effect of the migration of the frail aged.

Indigenous mortality from injury is almost 4 times as high as that for non-Indigenous people who live in Major Cities, strongly influencing rates for the total population in remote areas. In most age groups, rates were between 3 and 4 times the rates for similar aged non-Indigenous people from Major Cities.

For non-Indigenous males and females respectively, death rates in:

- regional areas were 1.3–1.4 and 1.2–1.3 times as high as in Major Cities;
- remote areas were 1.5–1.7 and 1.2 times as high as in Major Cities (although not significantly different for females from Very Remote areas).

When analysis is restricted to data on non-Indigenous Australians under the age of 65 years, the pattern remains similar. For Indigenous people of this age, the pattern is very similar to that for the total Indigenous population.

Death rates varied a little from year to year, but the trend between 1992 and 1999 was for rates of death to remain basically unchanged or to have risen slightly for most groups. There was a slight increase in the injury death rate for males in Major Cities (of less than 1% per annum) and for people from Inner Regional areas (of about 2% per annum).

Injury accounts for a relatively small proportion (about 6%) of all deaths, and about 16% of Indigenous deaths. However, injury accounts for a much larger proportion (24%) of all 'excess' deaths, the second largest proportion after circulatory disease (which accounts for 42% of 'excess' deaths). Of additional importance is the fact that people who die as a result of injury are considerably younger, on average, than those who die as a result of circulatory disease. Consequently, injury makes a substantial contribution to the total number of years of potential life lost outside Major Cities. Also, as mentioned above, death rates due to injury are steady or rising, whereas death rates due to circulatory disease are falling. This makes injury an important target for intervention.

Summary/discussion of individual causes of death reviewed in this chapter

Total population

Motor vehicle accidents, suicide and 'other' injuries were the most common causes of injury death outside Major Cities, responsible for 25%, 31% and 40% of all injury deaths respectively in these areas (Table 7.1). Interpersonal violence accounted for another 3% of injury deaths.

There were 1.7-3.6, 1.2-1.6 and 1.1-2.1 times as many deaths due to motor vehicle accidents, suicide and 'other' injuries as expected in the four areas outside Major Cities (death rates increased with remoteness). The patterns for interpersonal violence and accidental shooting were more extreme, with 0.8-5.4 and 3.7-15.5 times as many deaths in these areas as expected (Table 7.2).

Even though motor vehicle accidents were not responsible for the greatest number of deaths amongst these causes, they were responsible for the greatest number of 'excess' deaths (368 more deaths of people who lived outside Major Cities than expected each year, 47% of the total injury 'excess'). There were also substantially more deaths than expected annually due to 'other' injuries (214) and suicide (184).

Because of its relative importance as a cause of death, 'other' injuries (including occupational injury, drowning, falls and others) requires further investigation.

Table 7.1: Summary table of deaths due to injury and poisoning for all persons, 1997–1999

Cause	Annual deaths outside Major Cities			Annual 'excess' deaths outside Major Cities			Age groups in which the 'excess' occurs
	No.	%	% male	No.	%	% male	
Motor vehicle accidents	815	25%	70%	368	47%	71%	70%: 15–44
Suicide	984	31%	83%	184	23%	100%	95%: 15–64
Inter-personal violence	112	3%	64%	9	1%	10%	20–29, some older
Accidental shooting	16	<1%	88%	12	2%	100%	All age groups
'Other' injuries	1,287	40%	63%	214	27%	70%	Young children 15–49 males 85+ females
Total injury	3,213	100%	71%	788	100%	76%	70%: 15–49

Note: Descriptions of the age groups within which the 'excess' occurs apply only to the total population.

Source: AIHW National Mortality Database.

For most causes, there were more deaths of males than females; on average 71% of deaths and 76% of 'excess' deaths were of males.

Much, but not all, of the 'excess' death occurred amongst the young. For example, 70% of the 'excess' deaths due to motor vehicle accidents occurred amongst age groups between 15 and 44 years. However, the 'excess' death due to suicide (almost all of whom were male) was relatively evenly distributed amongst all age groups between 15 and 64 years (with slightly higher representation amongst younger people). 'Other' injuries include a wide range of specific causes, and consequently the 'excess' is broadly spread amongst all ages. However, a considerable percentage of the 'excess' does appear to be contributed by young children, working age males and elderly women.

Interpersonal violence appears to be more of a problem in remote areas, where there were 20 more deaths than expected, than in regional areas, where there were 12 fewer deaths than expected. For accidental shooting, the 'excess' is almost entirely in regional areas, and is entirely a non-Indigenous issue.

Indigenous population

Mortality of Indigenous people as a result of injury was 3.5 times as high as for non-Indigenous people from Major Cities. For the main causes of injury death, namely motor vehicle accidents, suicide and 'other' injuries, the rates for Indigenous people were respectively 4.1, 2.9 and 3.3 times those for non-Indigenous people who lived in Major Cities.

There were no reported Indigenous deaths due to accidental shooting during the study period. Death rates for Indigenous people due to interpersonal violence, on the other hand, were over 7 times as high as for their non-Indigenous counterparts from Major Cities.

Table 7.2: The ratio of observed deaths from injury and poisoning to those expected if Major Cities^(a) rates applied in each ASGC Remoteness area, 1997–1999

Cause	Population	IR	OR	R ^(b)	VR ^(b)	National ^(c)
Motor vehicle accidents	All persons	*1.7	*1.9	*2.4	*3.6	n.p.
	Non-Indigenous	*1.7	*1.9	*2.1	*2.2	n.p.
	Non-Indigenous (aged 0–64 years)	*1.8	*2.0	*2.1	*2.4	n.p.
	Indigenous	n.a.	n.a.	n.a.	n.a.	*4.1
	Indigenous (aged 0–64 years)	n.a.	n.a.	n.a.	n.a.	*4.2
Suicide	All persons	*1.2	*1.2	*1.4	*1.6	n.p.
	Non-Indigenous	*1.2	*1.2	*1.2	1.0	n.p.
	Non-Indigenous (aged 0–64 years)	*1.3	*1.2	1.2	1.0	n.p.
	Indigenous	n.a.	n.a.	n.a.	n.a.	*2.9
	Indigenous (aged 0–64 years)	n.a.	n.a.	n.a.	n.a.	*3.0
Inter-personal violence	All persons	*0.8	1.0	*2.0	*5.4	n.p.
	Non-Indigenous	*0.8	0.9	1.3	*2.2	n.p.
	Non-Indigenous (aged 0–64 years)	*0.8	0.8	1.2	*2.3	n.p.
	Indigenous	n.a.	n.a.	n.a.	n.a.	*7.4
	Indigenous (aged 0–64 years)	n.a.	n.a.	n.a.	n.a.	*7.6
Accidental shooting	All persons	*3.7	*4.6	*7.7	*15.5	n.p.
	Non-Indigenous	*3.7	*4.7	*8.3	*22.3	n.p.
	Non-Indigenous (aged 0–64 years)	*4.1	*4.3	*8.9	*19.0	n.p.
	Indigenous	n.a.	n.a.	n.a.	n.a.	*0.0
	Indigenous (aged 0–64 years)	n.a.	n.a.	n.a.	n.a.	*0.0
Other injuries	All persons	*1.1	*1.3	*1.6	*2.1	n.p.
	Non-Indigenous	*1.1	*1.2	*1.4	*1.6	n.p.
	Non-Indigenous (aged 0–64 years)	*1.1	*1.3	*1.5	*1.9	n.p.
	Indigenous	n.a.	n.a.	n.a.	n.a.	*3.3
	Indigenous (aged 0–64 years)	n.a.	n.a.	n.a.	n.a.	*3.6
Total injury	All persons	*1.2	*1.4	*1.7	*2.4	n.p.
	Non-Indigenous	*1.2	*1.3	*1.5	*1.5	n.p.
	Non-Indigenous (aged 0–64 years)	*1.3	*1.4	*1.5	*1.7	n.p.
	Indigenous	n.a.	n.a.	n.a.	n.a.	*3.5
	Indigenous (aged 0–64 years)	n.a.	n.a.	n.a.	n.a.	*3.7

(a) While the number of expected deaths for the total population is based on the death rates of the total population from Major Cities, the expected number of deaths for the non-Indigenous population is based on the death rates of the non-Indigenous population from Major Cities. Because non-Indigenous people comprise the overwhelming majority (99%) of the population in Major Cities, these two standards are very similar, but not identical. This means that the ratios for the five population groups are not strictly comparable.

(b) Ratios calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution.

(c) The ratios for Indigenous persons are for SA, WA, NT and Qld combined.

Note: Bold text and asterisk indicates that ratios are significantly different from 1 at the 95% level.

Source: AIHW National Mortality Database.

Annually there were 61, 68, 79 and 26 deaths of Indigenous people due to motor vehicle accidents, suicide, 'other' injuries and interpersonal violence. Of these, 46, 44, 55 and 23 respectively were in 'excess' of the number expected. These deaths were of Indigenous people from South Australia, Western Australia, the Northern Territory and Queensland only (where identification during this period was more reliable). The numbers for Australia would be greater.

Non-Indigenous population

The high mortality of Indigenous people is influential in elevating injury death rates in remote areas. However, for all causes investigated, rates for non-Indigenous people remained elevated outside Major Cities, and indeed tended to increase with increasing remoteness. It is possible that misidentification of Indigenous people as non-Indigenous in the database may artificially elevate some of the non-Indigenous rates in remote areas. The absolute size of this potential effect is unknown, but it appears unlikely to substantially alter the pattern described here.

Whereas overall death rates due to chronic diseases (such as ischaemic heart disease) can be greatly affected by relatively low death rates of the elderly in remote areas, this does not appear to be an issue for injury deaths. In other words, the ratio of observed to expected deaths is much the same for the total non-Indigenous population as it is for those non-Indigenous people younger than 65 years.

Death rates for non-Indigenous people due to:

- motor vehicle accidents were high throughout regional and remote areas, ranging from 1.7 to 2.2 times those in Major Cities;
- suicide were 20% (1.2 times) higher outside Major Cities;
- other injuries ranged from 1.1 to 1.6 times those in Major Cities.

For the two other causes of death responsible for relatively few deaths, rates for non-Indigenous people due to:

- interpersonal violence were lower (0.8 times) in regional areas but double in Very Remote areas;
- accidental shooting were 4 times as high in regional areas and over 20 times as high in Very Remote areas.

7.1 Overview—injury

Between 1997 and 1999, an annual average of 8,143 Australians died as a result of an injury or poisoning, comprising 5,678 males and 2,465 females (Table 7.3). Most of these (4,930) occurred in Major Cities, with a further 2,861 in Inner and Outer Regional areas, and the remaining 352 in Remote and Very Remote areas.

Injury and poisoning were responsible for 6% of all deaths nationally, and 24% of the ‘excess’ deaths in areas outside Major Cities.

Table 7.3: Average annual deaths due to injury and poisoning, 1997–1999

	MC	IR	OR	R	VR	Total
Males (no.)	3,390	1,270	750	155	113	5,678
Females (no.)	1,540	556	285	48	36	2,465
Persons (no.)	4,930	1,826	1,035	203	149	8,143
Non-Indigenous males ^(a) (per cent)	98	98	93	81	47	96
Non-Indigenous females ^(a) (per cent)	99	99	92	73	25	97
Non-Indigenous persons^(a) (per cent)	99	98	93	79	42	96
Non-Indigenous males (0–64 yrs) (no.)	3,335	1,227	648	90	34	5,334
Non-Indigenous females (0–64 yrs) (no.)	2,950	975	472	57	19	4,473
Non-Indigenous persons (0–64 yrs) (no.)	6,285	2,202	1,120	147	53	9,807
Indigenous persons^(b) (no.)	n.p.	n.p.	n.p.	n.p.	n.p.	234

(a) Percentages and counts are rounded to the nearest whole number.

(b) The number of Indigenous deaths is the average annual number registered in SA, WA, NT and Qld, 1997–1999. An average of a further 69 were registered annually in the other jurisdictions. Counts of deaths have not been reported for Indigenous people by area because of concerns about data accuracy.

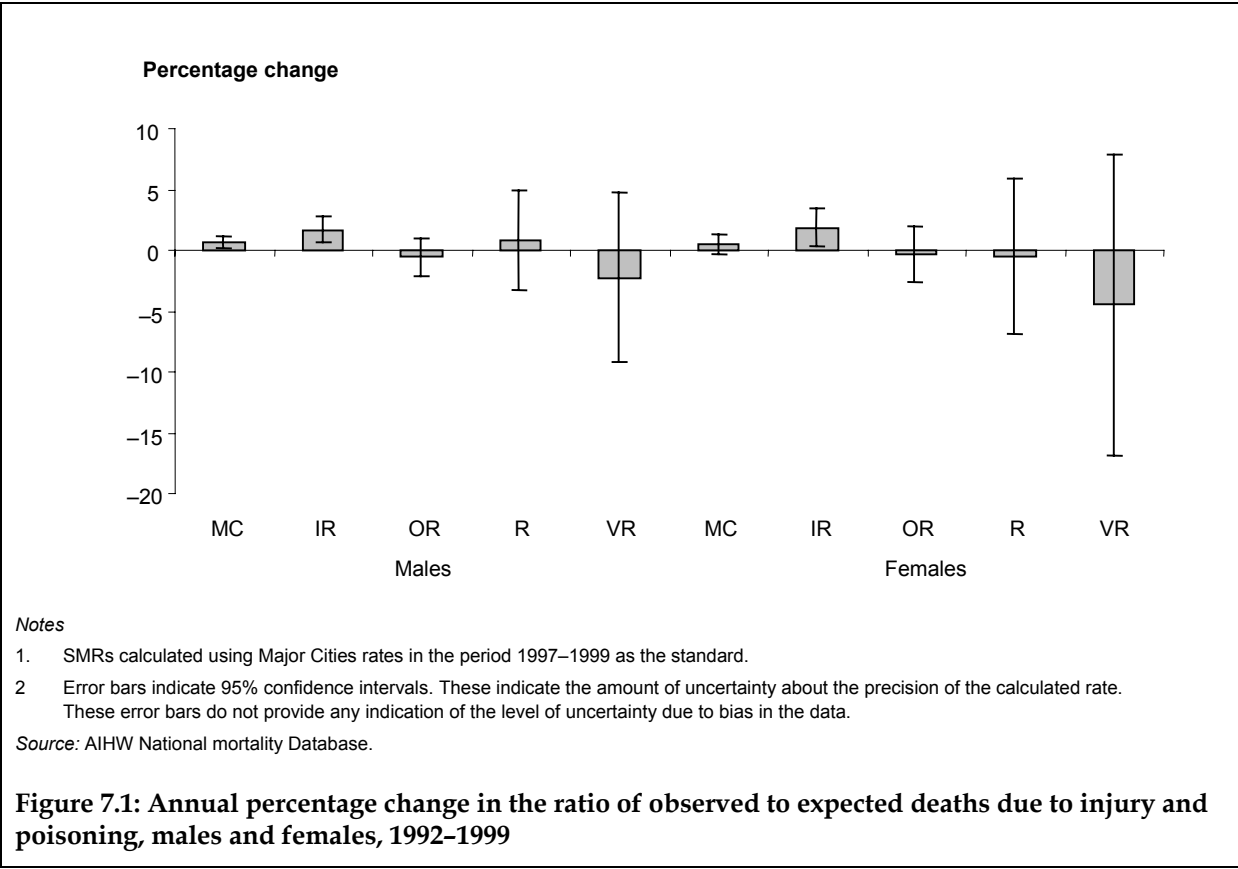
Source: AIHW National Mortality Database.

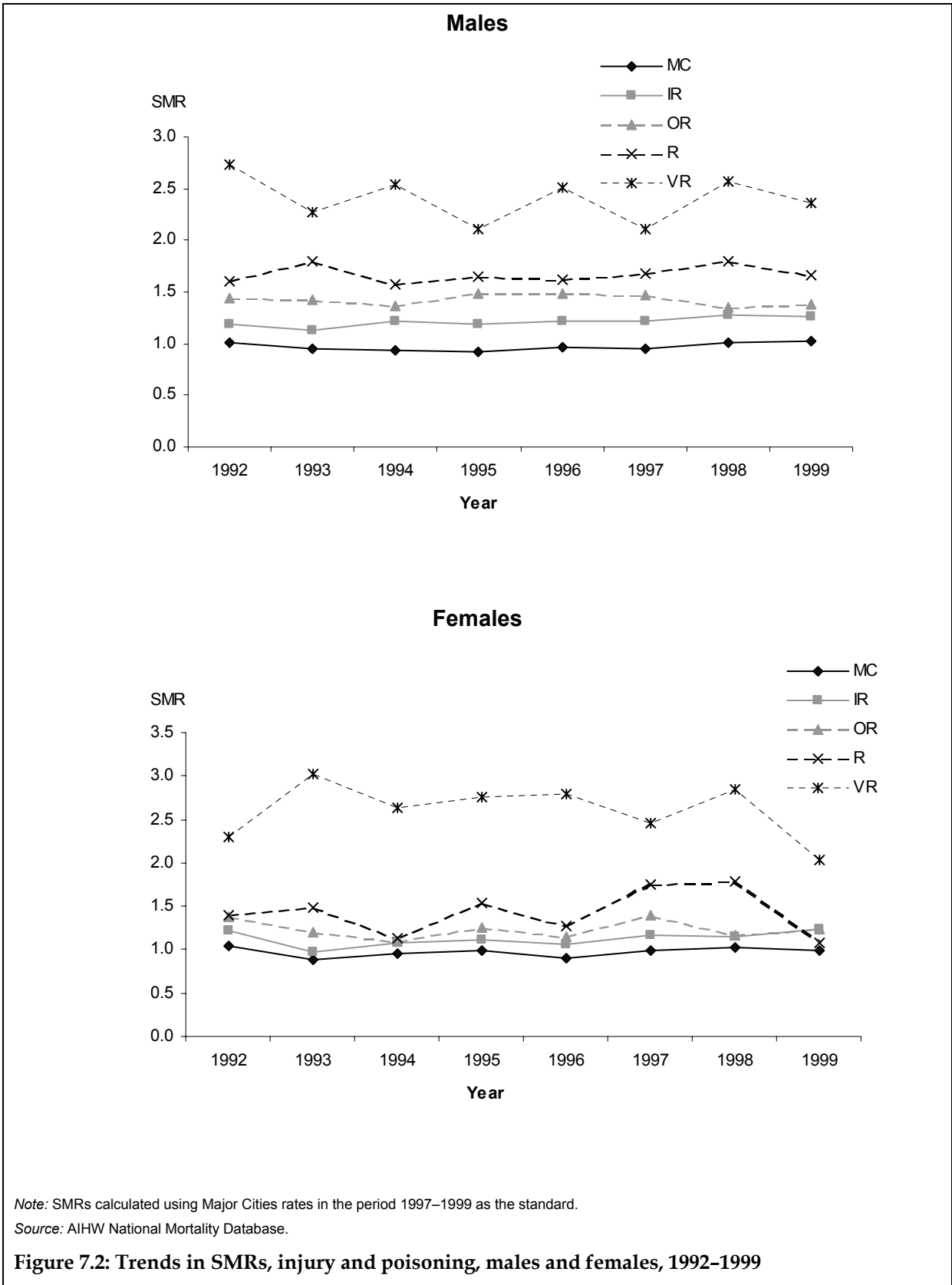
Trends in mortality due to injury and poisoning

Death rates due to injury and poisoning have fluctuated from year to year, but have either not changed significantly or have tended to increase very slightly between 1992 and 1999 (Figures 7.1 and 7.2).

Only for males and females living in Inner Regional areas, and males living in Major Cities, did rates of death due to injury clearly change, though not substantially (increasing by slightly less than 2% and less than 1% per annum respectively over the period 1992–1999).

Because of the small size of changes in mortality (and the small increase in Inner Regional areas), essentially none of the decrease in overall mortality has been due to changes in injury mortality; indeed these slight increases in the rate of injury mortality have slowed the overall rate of decrease in most of the areas.





Death rates due to injury and poisoning

Mortality due to injury and poisoning was higher for people living outside Major Cities, with death rates increasing with increasing remoteness.

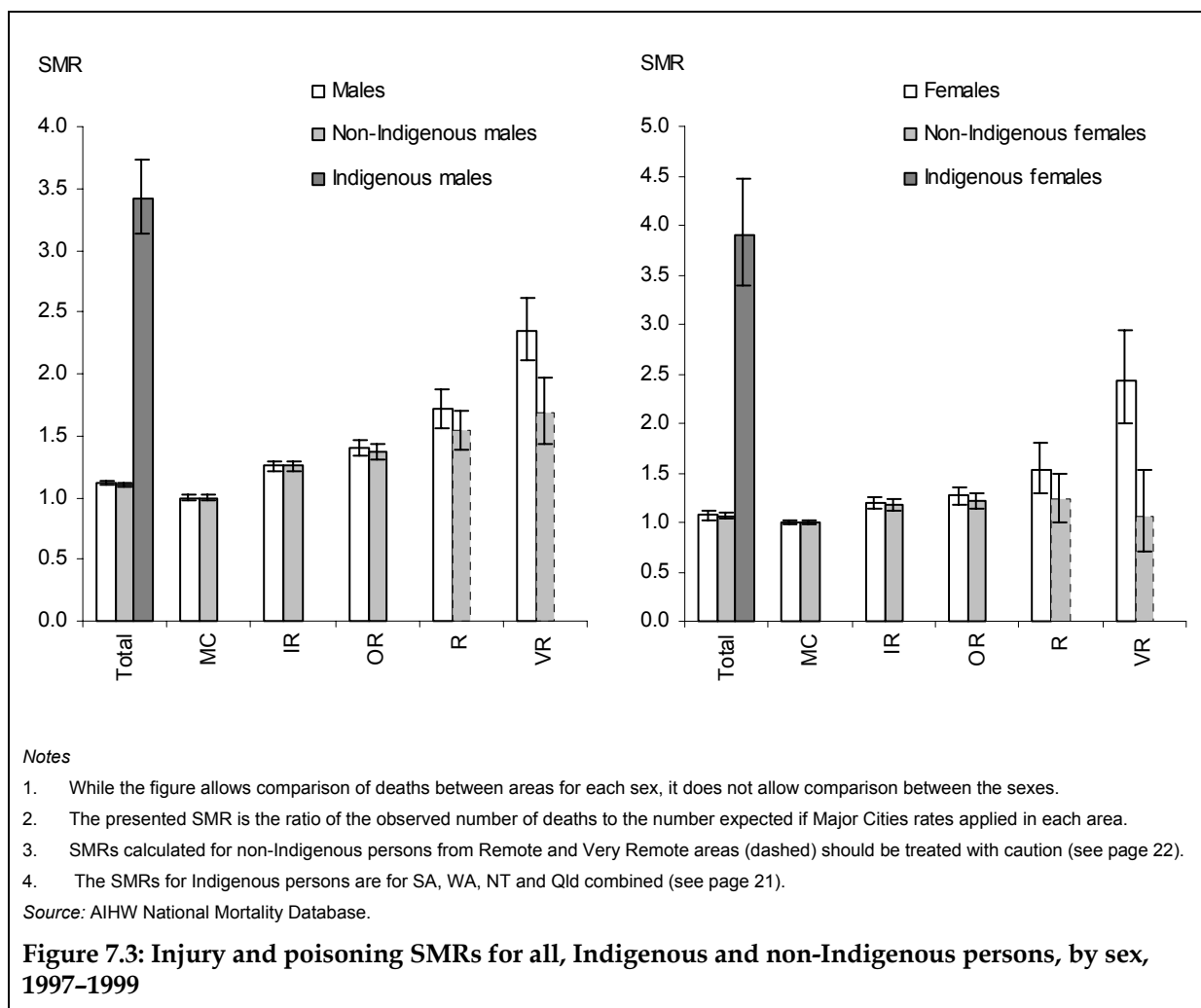


Figure 7.3, and Tables 7.4 and 7.5 show that:

- For males, death rates in Inner and Outer Regional, Remote and Very Remote areas were 1.3, 1.4, 1.7 and 2.4 times the rates for males who live in Major Cities.
- For females, death rates in Inner and Outer Regional, Remote and Very Remote areas were 1.2, 1.3, 1.5 and 2.4 times the rates for females who live in Major Cities.
- Mortality for Indigenous people is substantially higher (almost four times as high) than for non-Indigenous people from Major Cities and certainly higher than for non-Indigenous people from any of the areas. This higher mortality substantially raises the average death rate, especially in the more remote areas.

These figures would appear, on the surface, to show that mortality as a result of injury increases with increasing remoteness.

The above rates for the total population are influenced by the number of Indigenous people living outside Major Cities and the high overall mortality of Indigenous people. Without examining the mortality of the Indigenous and non-Indigenous populations separately, therefore, it is premature to draw the conclusion that remoteness is a factor influencing the mortality of Australians due to injury.

Mortality of Indigenous people

Based on 1997–1999 death registrations, injury and poisoning was the second most common cause of death for Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland. This accounted for 16% of Indigenous deaths in these jurisdictions. Injury and poisoning was one of the leading causes of death among the Australian population as a whole, accounting for 6% of all deaths. However, Indigenous males and females have higher death rates from this cause than the total population (Figure 7.3 and Table 7.5).

In 1997–1999, there were almost four times as many deaths in the Indigenous population than expected if rates for non-Indigenous people from Major Cities had applied (3.4 times more deaths for Indigenous males and 3.9 times more deaths for Indigenous females). Of all deaths of Indigenous people resulting from injury or poisoning, 29% were attributable to suicide, 26% to motor vehicle accidents, 11% to interpersonal violence and 34% to ‘other’ injuries. It is likely that, amongst other things, these rates are influenced by high alcohol consumption (Indigenous people are twice as likely as non-Indigenous people to consume alcohol in hazardous quantities (ABS 2002)). However, the whole range of disadvantages experienced by many Indigenous people (such as poverty, lack of control over one’s own life, reduced sense of hope, and so on (ABS 2001c)) would also contribute to these higher rates.

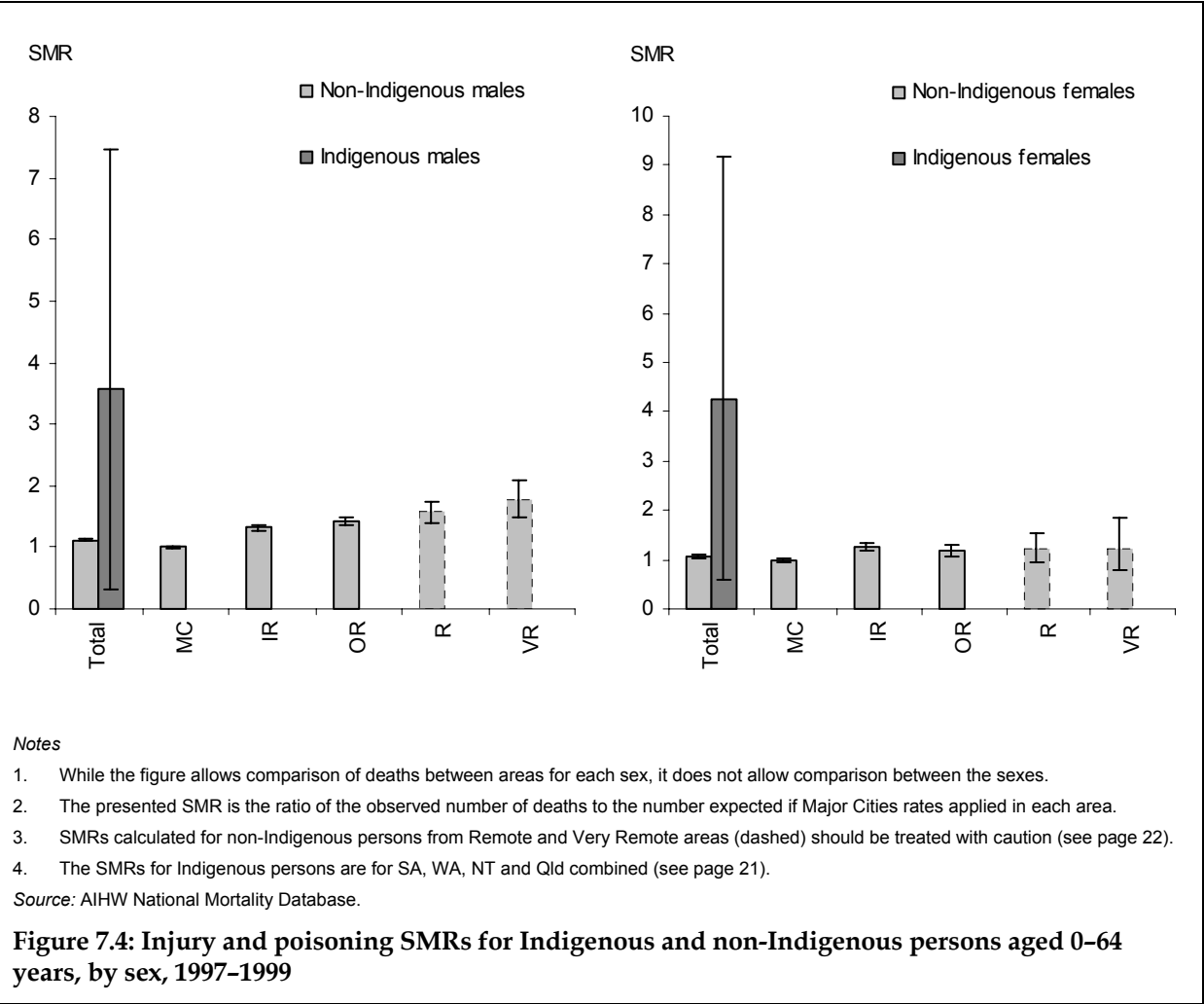
As discussed on page 21, uncertainty about the accuracy of identification of Indigenous deaths prevents reporting of Indigenous mortality in rural and remote areas.

Mortality of non-Indigenous people

As was the case for the total population, mortality of the non-Indigenous population as a result of injury and poisoning increased with increasing remoteness, although rates in the most remote areas were lower than for the total population (Figure 7.3 and Table 7.5).

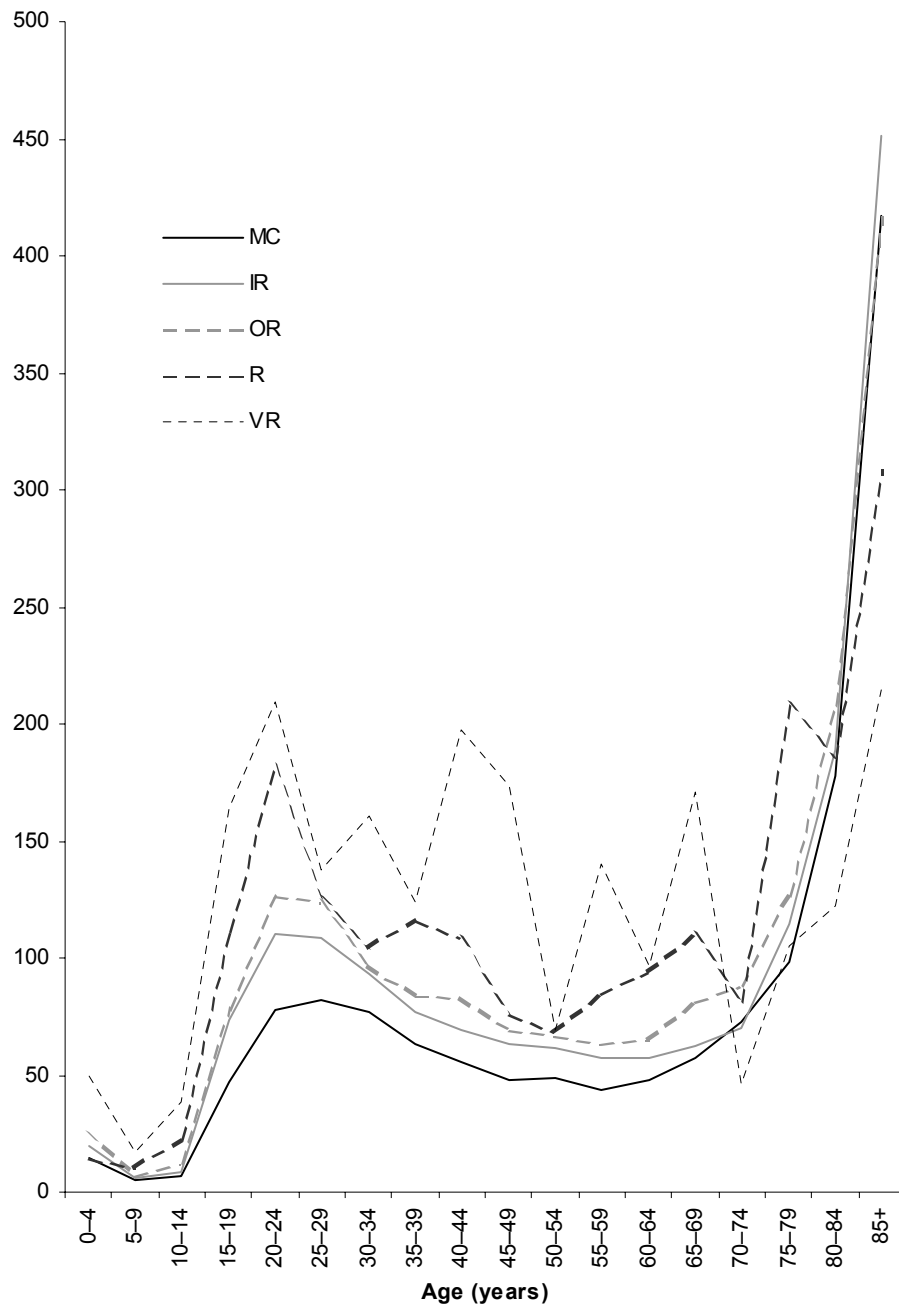
- For non-Indigenous males, death rates in Inner and Outer Regional, Remote and Very Remote areas were 1.3, 1.4, 1.5 and 1.7 times the rates for non-Indigenous males who live in Major Cities. Rates in regional areas were similar to rates for the total population, but were lower than for the total population in Remote and especially Very Remote areas.
- For non-Indigenous females, death rates in Inner and Outer Regional and Remote areas were 1.2 times the rates for non-Indigenous females who live in Major Cities. Rates for females in Very Remote areas were not significantly different from rates in Major Cities.

Mortality of people aged 0-64 years



For other causes, death rates of older non-Indigenous people from remote and very remote areas are frequently found to be substantially lower than those of similar aged people living in other areas, possibly reflecting a movement of older people with known health conditions moving into more populated areas to receive treatment, and eventually dying there. These lower rates can substantially affect the summary statistic described for non-Indigenous people above. However, this effect is much less likely to be an issue for injury.

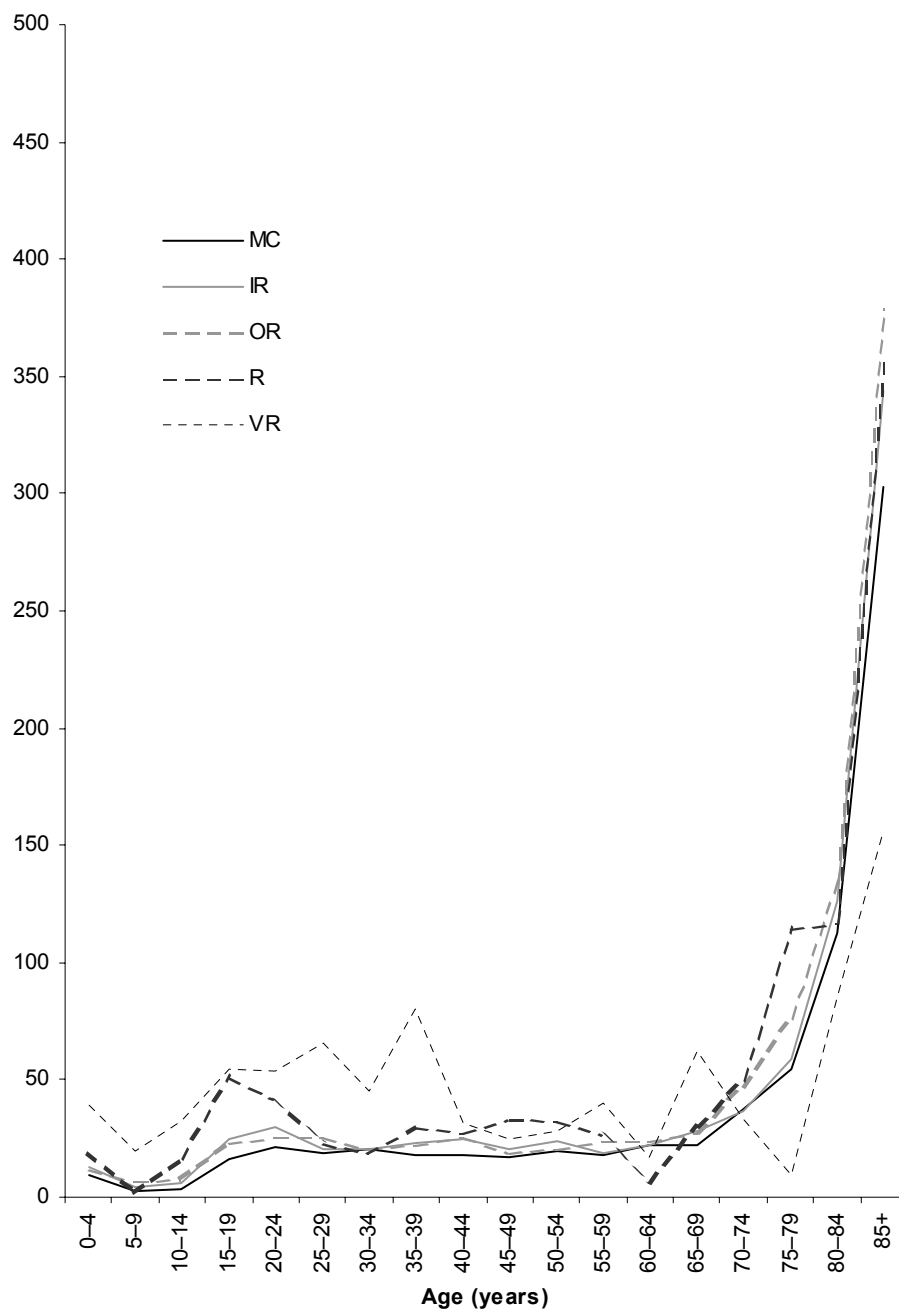
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 7.5: Age-specific death rates due to injury and poisoning, by ASGC Remoteness area for males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 7.6: Age-specific death rates due to injury and poisoning, by ASGC Remoteness area for females, 1997-1999

Death rates from injury and poisoning for Indigenous males and females who are younger than 65 years were approximately 4 times as high as rates for non-Indigenous males and females of the same age from Major Cities – similar to the differential for the total Indigenous population described earlier.

Death rates due to injury and poisoning for non-Indigenous males younger than 65 years were 1.3, 1.4, 1.6 and 1.8 times as high in the four areas outside Major Cities, than for similar males in Major Cities. For non-Indigenous females in this age group, the rates were 1.3 and 1.2 times as high in Inner and Outer Regional areas, but, although elevated, were not significantly higher in Remote and Very Remote areas than in Major Cities. This pattern is similar to that for the total non-Indigenous population described earlier.

Variation by age group: injury and poisoning

An analysis of age-specific death rates gives more detailed information about each age group to confirm and supplement findings resulting from the broad analysis above using age-standardised rates.

Age-specific rates

Death rates in 1997–1999 from injury were higher for both sexes for almost all age groups in most regional and remote areas than in Major Cities, and there is a clear trend for the size of the difference to increase with remoteness. Unlike many of the other causes of death, injury is a substantial cause of death for children younger than 5 years old and also from age 15, and then particularly for those who are 75 years and older.

In the various age groups for males younger than 65 years, there were respectively 1.3–1.5, 1.4–1.8, 1.6–2.8 and 2.2–4.8 times as many deaths as expected in Inner and Outer Regional, Remote and Very Remote areas. This includes death rates for 0–4-year-old boys that were 1.4–3.5 times those in Major Cities (Figures 7.5 and 7.6 and Table 7.5).

For males aged 65–74 years, there were 1.3–1.5 times as many deaths as expected in Outer Regional and Remote areas.

For males who were 75 years and older, there were 1.1 times as many deaths as expected in Inner Regional areas, and more (but not significantly more) deaths than expected in the other areas.

There were more deaths of females from areas outside Major Cities than expected, particularly in the younger age groups.

- There were 1.4 and 4.3 times as many deaths of young girls (0–4 years) as expected in Inner Regional and Very Remote areas.
- For 5–44-year-old females, rates were elevated and increased with remoteness, with 1.2–1.7, 1.3–2.6, 2.4–3.0 and 2.8–9.4 times as many deaths as expected in individual age groups in Inner and Outer Regional, Remote and Very Remote areas respectively.
- For females 45–74 years old, death rates were higher, but were only significantly higher for 45–64-year-old females from Inner Regional areas (1.15 times the Major Cities rate).
- There were 1.1 and 1.3 times as many deaths of females older than 75 years in Inner and Outer Regional areas, but numbers in Remote and Very Remote areas were not significantly different to those in Major Cities.

Table 7.4: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, injury and poisoning, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	14	*1.38	*1.77	0.99	*3.50	9	*1.44	1.31	2.07	*4.33
5–14	6	*1.31	*1.62	*2.82	*4.76	3	*1.74	*2.57	*2.98	*9.38
15–24	63	*1.48	*1.64	*2.35	*2.95	19	*1.46	*1.31	*2.44	*2.84
25–44	70	*1.25	*1.39	*1.64	*2.17	19	*1.20	*1.26	1.32	*3.04
45–64	47	*1.29	*1.41	*1.68	*2.63	19	*1.14	1.13	1.45	1.49
65–74	64	1.03	*1.31	*1.54	1.91	30	1.08	1.25	1.33	1.75
75+	178	*1.10	1.13	1.19	0.68	136	*1.12	*1.26	1.29	0.52
Total	..	*1.25	*1.40	*1.71	*2.35	..	*1.19	*1.27	*1.53	*2.44

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

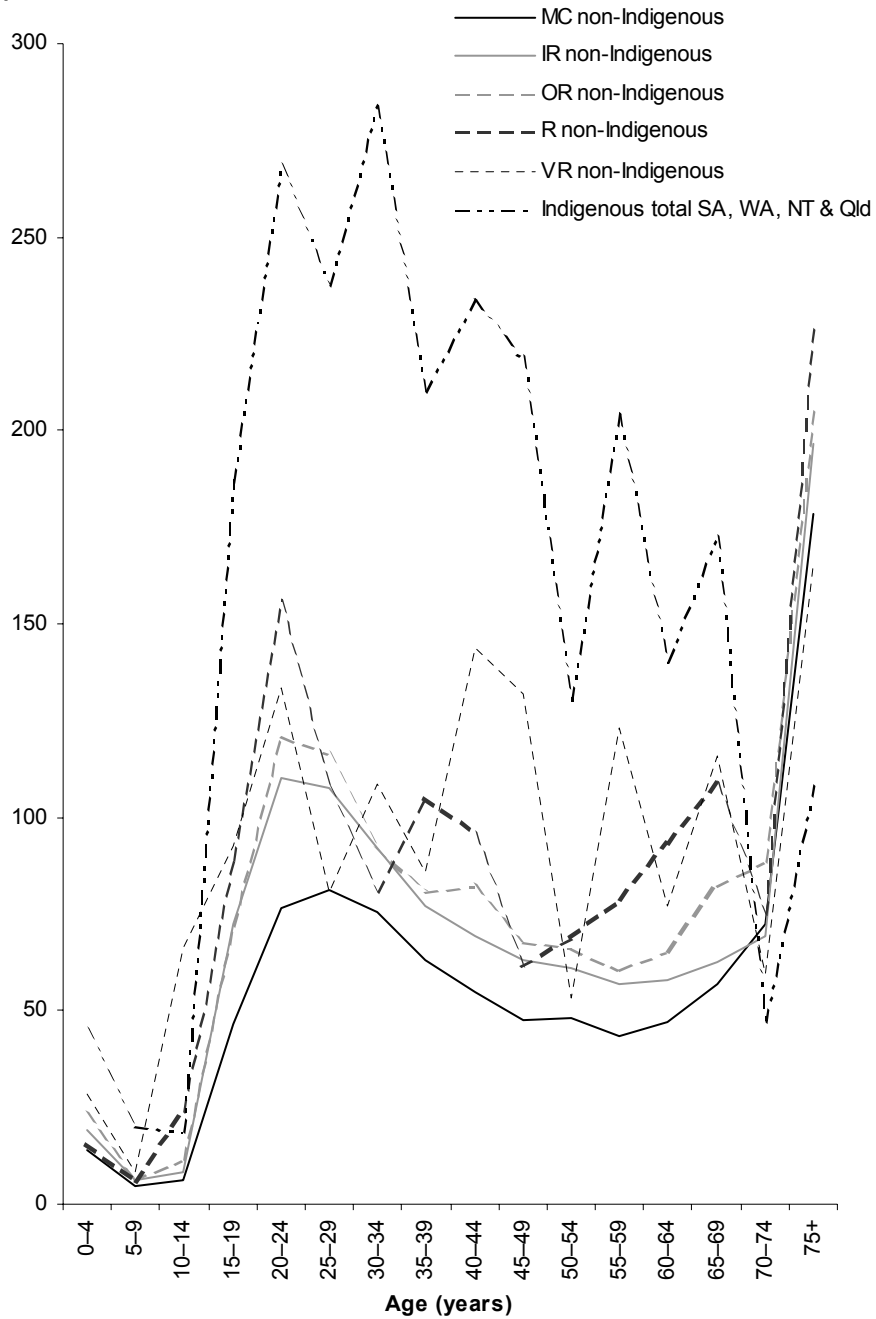
Source: AIHW National Mortality Database.

Age-specific rates for Indigenous people

Death rates of Indigenous people are much greater than for non-Indigenous people (Figures 7.7 and 7.8 and Table 7.5).

Age-specific death rates were higher for Indigenous males and females than for Major Cities non-Indigenous males and females in almost every age group, with rates for those 65 years and older not significantly different. Although there were some differences between the age groups, rates of death for Indigenous people were typically between three and four times the rates for non-Indigenous people from Major Cities, in all age groups 0–64 years (although for females, the ratios in some age groups were higher).

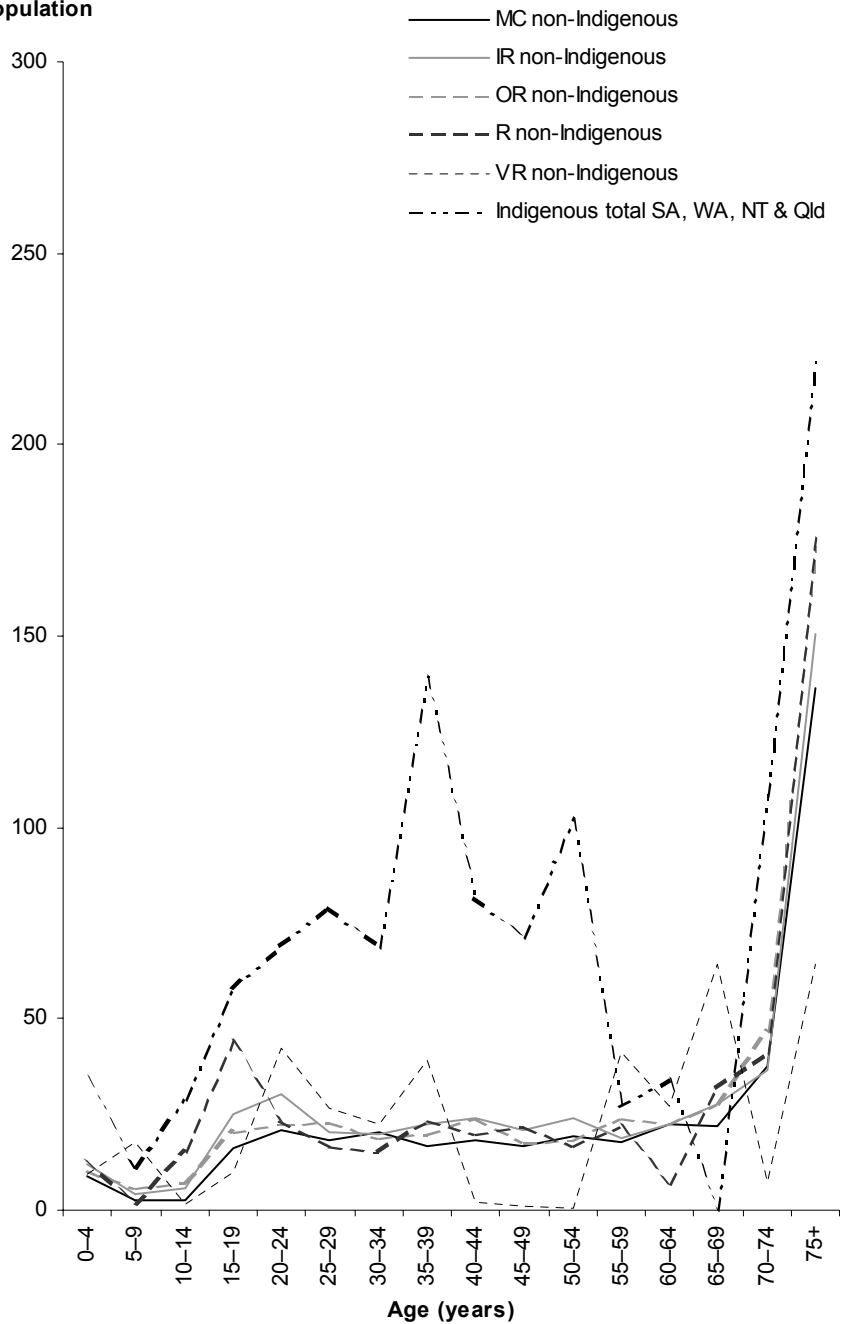
Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 7.7: Age-specific death rates due to injury and poisoning, by ASGC Remoteness area for non-Indigenous males and for SA, WA, NT and Qld Indigenous males, 1997-1999

Deaths per 100,000 population



Source: AIHW National Mortality Database.

Figure 7.8: Age-specific death rates due to injury and poisoning, by ASGC Remoteness area for non-Indigenous females and for SA, WA, NT and Qld Indigenous females, 1997-1999

Age-specific rates for non-Indigenous people

As for the total population, death rates due to injury for non-Indigenous males outside Major Cities are higher than those for similar people in Major Cities although the differences were smaller than for the total population (Figures 7.7 and 7.8 and Table 7.5).

Table 7.5: The ratio of observed deaths to those expected as a result of injury and poisoning if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			(ratio)	IR	OR	R		VR	(ratio)
0–4	14	*1.39	*1.69	1.11	2.05	*3.3	9	*1.35	1.15	1.44	1.05	*3.8
5–14	5	*1.32	*1.61	*2.63	*6.31	*3.6	3	*1.86	*2.46	2.95	4.09	*7.3
15–24	62	*1.49	*1.57	*1.99	*1.80	*3.7	19	*1.49	1.15	1.76	1.58	*3.4
25–44	69	*1.26	*1.35	*1.42	*1.50	*3.4	18	*1.19	*1.17	1.02	1.27	*4.9
45–64	47	*1.29	*1.39	*1.56	*2.10	*3.8	19	*1.15	1.07	0.96	0.69	*3.5
65–74	64	1.03	*1.33	1.48	1.47	2.0	30	1.08	1.24	1.23	1.34	1.5
75+	178	*1.10	*1.15	1.27	0.93	0.6	136	*1.10	*1.27	1.28	0.47	1.6
Total	..	*1.26	*1.37	*1.54	*1.68	*3.4	..	*1.18	*1.21	*1.23	1.06	*3.9
0–64	..	*1.32	*1.42	*1.57	*1.77	*3.6	..	*1.26	*1.17	1.21	1.24	*4.3

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

For non-Indigenous males 0–14 years, death rates in Inner and Outer Regional areas are 1.3–1.4 times and 1.6–1.7 times the rate for non-Indigenous males from Major Cities. Rates in remote areas were, or tended to be, higher still (to 6.3 times Major Cities rates).

For non-Indigenous males 15–64 years, death rates were 1.3–1.5, 1.3–1.6, 1.4–2 and 1.5–2.1 times as high in the four areas outside Major Cities as for similar aged non-Indigenous males from Major Cities.

Although statistical significance was frequently not reached, death rates for non-Indigenous females in almost all areas and for all age groups were higher than for similar aged non-Indigenous females in Major Cities. In Inner Regional areas, death rates were 40% (1.4 times) higher for 0–4-year-olds, 1.5–1.9 times for 5–24-year-olds, and 1.15–1.2 times as high for 25–64-year-olds. Death rates in Outer Regional areas were 2.5 times and 1.2 times as high respectively for 5–14 and 25–44-year-old non-Indigenous females than for their counterparts

from Major Cities. Rates for those in Remote and Very Remote areas tended to be higher than in Major Cities, but small numbers obscure the details.

For non-Indigenous males and females older than 65 years, the difference frequently failed to reach statistical significance, but where it did, rates were between 10% (1.1 times) and 30% (1.3 times) higher outside Major Cities than they were for similar non-Indigenous people who lived in Major Cities.

When the effects of the possible movement of the frail aged to more populated areas and the mortality of Indigenous people are taken into account, death rates due to injury and poisoning clearly increased with remoteness (or for females, were higher outside Major Cities).

'Excess' deaths due to injury and poisoning

'Excess' deaths are defined as 'how many more observed deaths occurred than would be expected, if death rates in Major Cities are applied to the populations in each area outside Major Cities'.

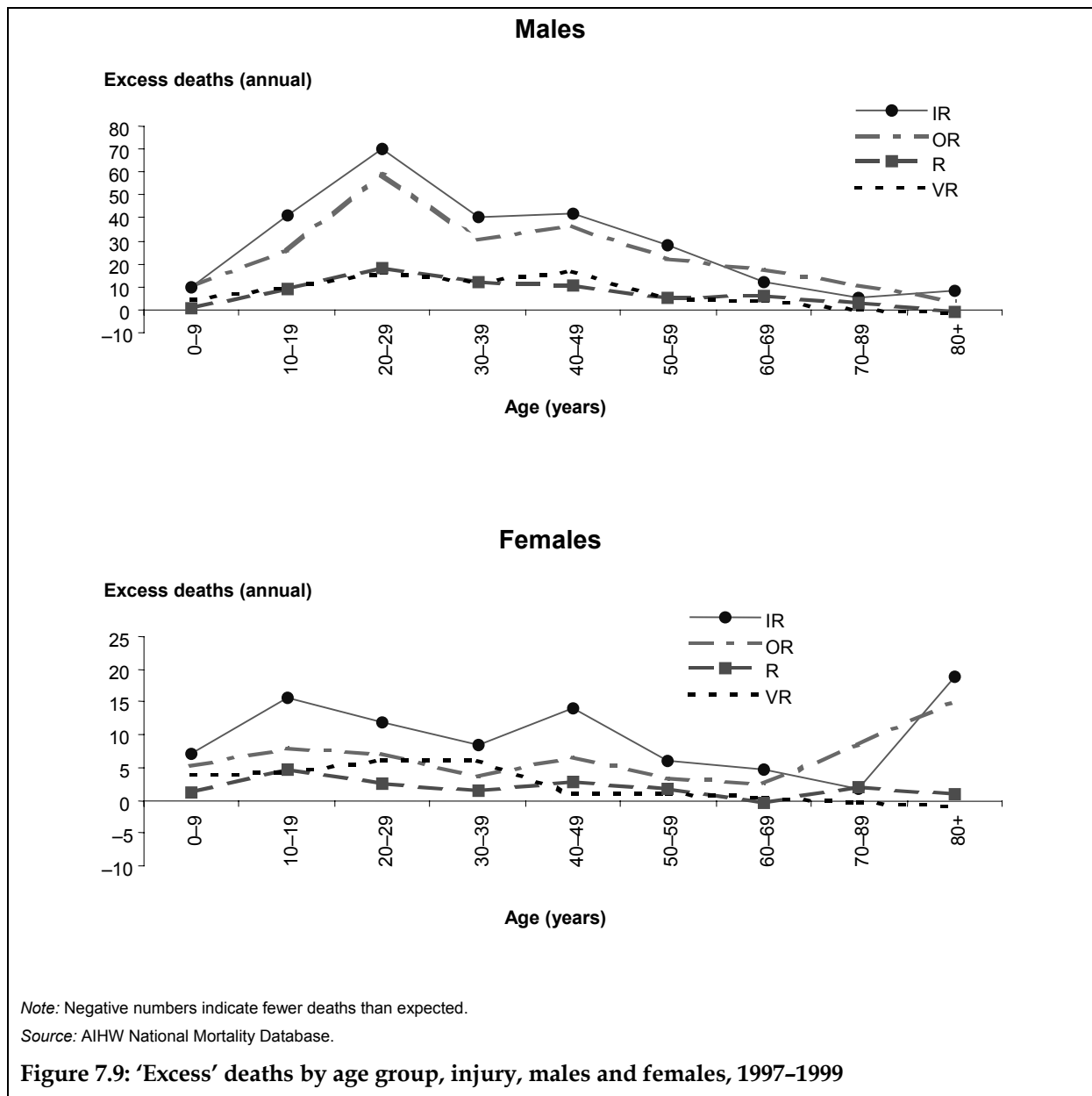
'Excess' deaths gives a measure of the absolute number of 'extra' people who died outside Major Cities, and places these in perspective against the ratios shown in Tables 7.4 and 7.5. For example, although the ratio of observed to expected deaths may have been relatively high in a particular area, it may not have involved a large number of people. Conversely, a low rate ratio in another area may translate into a relatively large number of 'excess' deaths because of a larger base population.

Annual 'excess' deaths

Annually between 1997 and 1999, there were 602 'excess' deaths of males and 186 'excess' deaths of females from injury and poisoning across all areas outside Major Cities.

Unlike other causes of death, injury has a proportionally greater effect on the younger rather than on the older age groups; certainly the younger age groups make a substantial contribution to the overall number of 'excess' deaths (Figure 7.9).

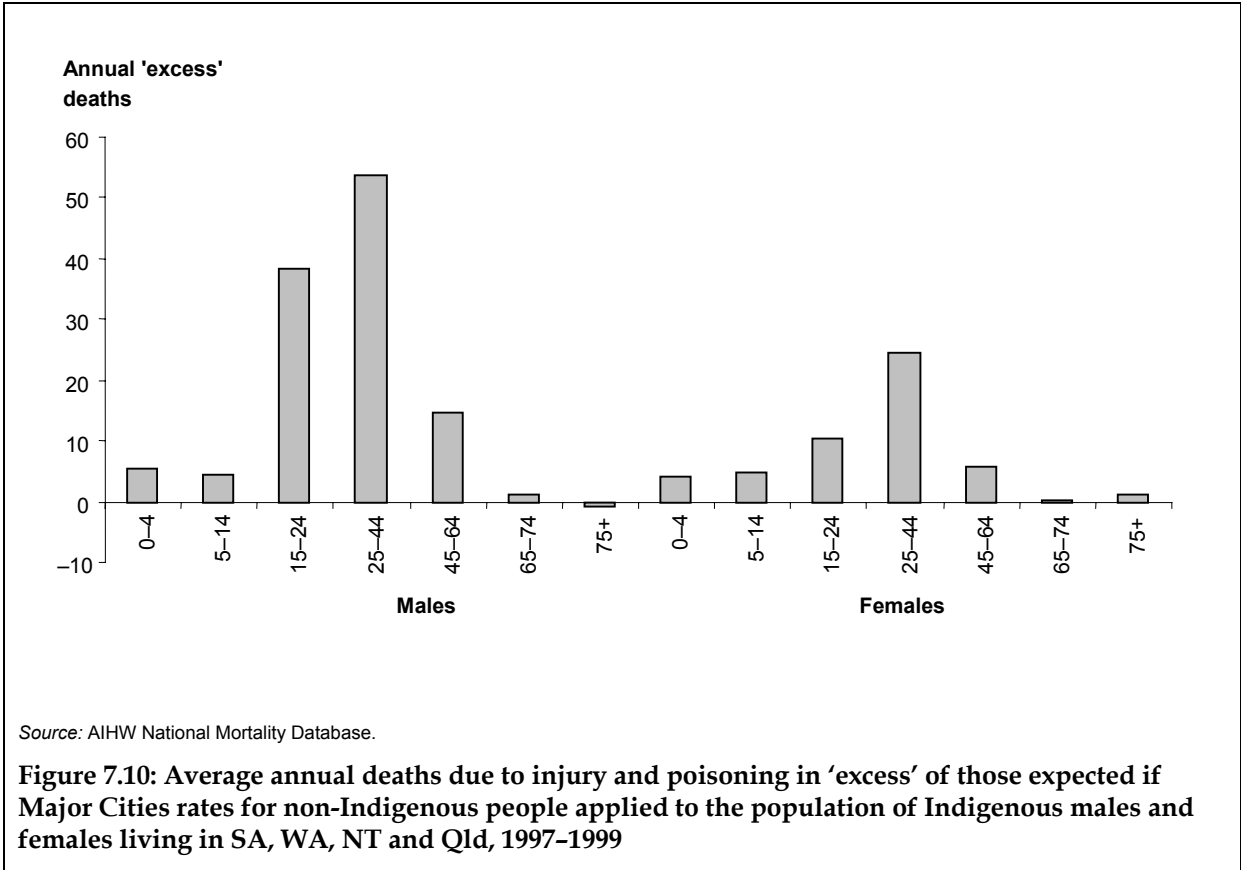
There were 257, 215, 64 and 65 'excess' deaths of males in the four areas outside Major Cities and 88, 60, 17 and 21 'excess' female deaths in those areas. For males, 6% of 'excess' deaths occurred in boys less than 15 years, 73% in males 15–49 years, and 17% in males 50–64 years. For females, 15% of 'excess' deaths occurred in girls younger than 15 years, 50% in females 15–49 years, 10% in females 50–69 years, and 25% in females 70 years or older. Overall, there were very few age groups and areas where there were fewer than expected deaths due to injury and poisoning.



Annual 'excess' deaths of Indigenous people

In the Indigenous population there were 117 'excess' deaths of males and 51 'excess' deaths of females in total, resulting from injury and poisoning annually. These were calculated on the basis that Major Cities rates for non-Indigenous people had applied to the Indigenous population living in South Australia, Western Australia, the Northern Territory and Queensland. It is most likely that there were also 'excess' deaths of Indigenous people resulting from injury in the other jurisdictions for which identification is considered less accurate (New South Wales, Victoria, Tasmania, the Australian Capital Territory).

These 'excess' deaths occurred mainly among young and very young people (Figure 7.10). For males, 9% were younger than 14 years, 79% were 15-44 years (33% were 15-24 years, 46% were 25-44 years), 13% were 45-64 years. For females, 18% were younger than 14 years, 68% were 15-44 years (20% were 15-24 years, 48% were 25-44 years), 11% were 45-64 years.

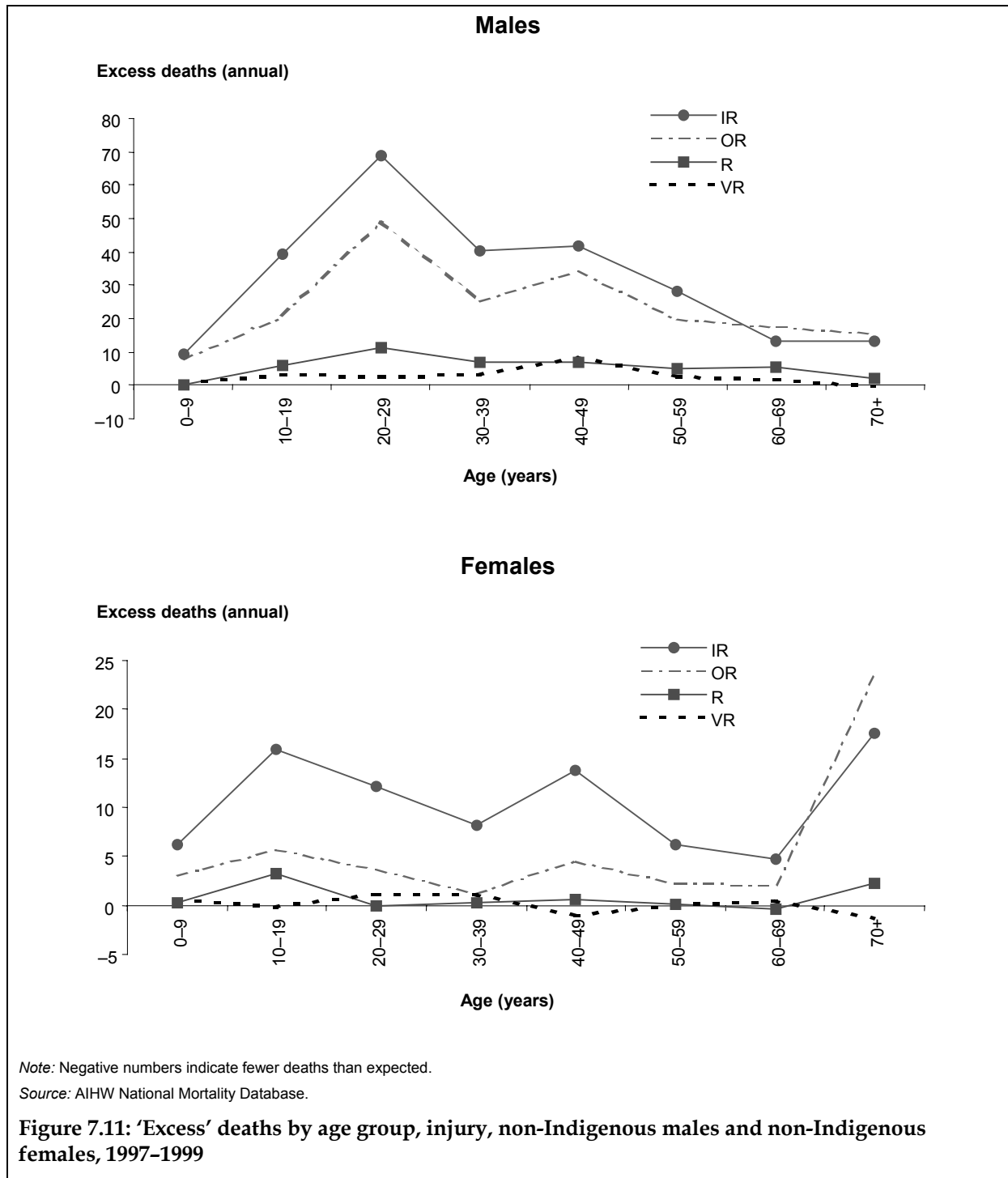


Annual 'excess' deaths of non-Indigenous people

Annually between 1997 and 1999, there were 510 'excess' deaths of non-Indigenous males and 138 'excess' deaths of non-Indigenous females from injury and poisoning across all areas outside Major Cities.

There were 254, 190, 44 and 21 'excess' deaths of males in the four areas outside Major Cities and 85, 46, 6 and 1 'excess' female deaths in those areas. For males, 70% of the 'excess' deaths occurred in those 15-49 years, and 15% in those 50-64 years (and just 5% were 75 years or older). For females, 7% of the 'excess' deaths were 0-9 years, 26% were 10-24 years, 18% were 35-44 years and 29% were aged 75 years or older (Figure 7.11).

Although it is not appropriate to subtract 'excess' deaths for non-Indigenous people from that for the total population, it is clear that a very large proportion of the 'excess' injury death in Remote and Very Remote areas involves the death of (mainly young) Indigenous people.



7.2 Motor vehicle accidents

Motor vehicle accidents (MVA) (ICD-10 codes are listed in Appendix D) in this report include accidents that occur on public roads and that involve a motor vehicle. For example, a car occupant, pedestrian or cyclist struck by a motor vehicle on a public road would be included, as would a car occupant killed on collision with a train. However, a car occupant killed in an off-road accident, or a cyclist killed after falling off a bicycle are not included. A motor vehicle can include motor bikes, cars, vans and utilities, trucks or buses.

The rate of death due to off-road accidents that may typically occur on farms has not been included under MVA, but has been included with 'other injuries' in a later section.

Summary of findings

Annually, motor vehicle accidents were responsible for the deaths of 1,729 people (1,205 males and 524 females); 815 of these people came from areas outside Major Cities. Of these 1,729 deaths, 61 deaths were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates due to motor vehicle accidents rose rapidly with remoteness. There were 1.7, 1.9, 2.3–2.4 and 3.1–3.8 times as many deaths of males and females as expected in the four areas outside Major Cities.

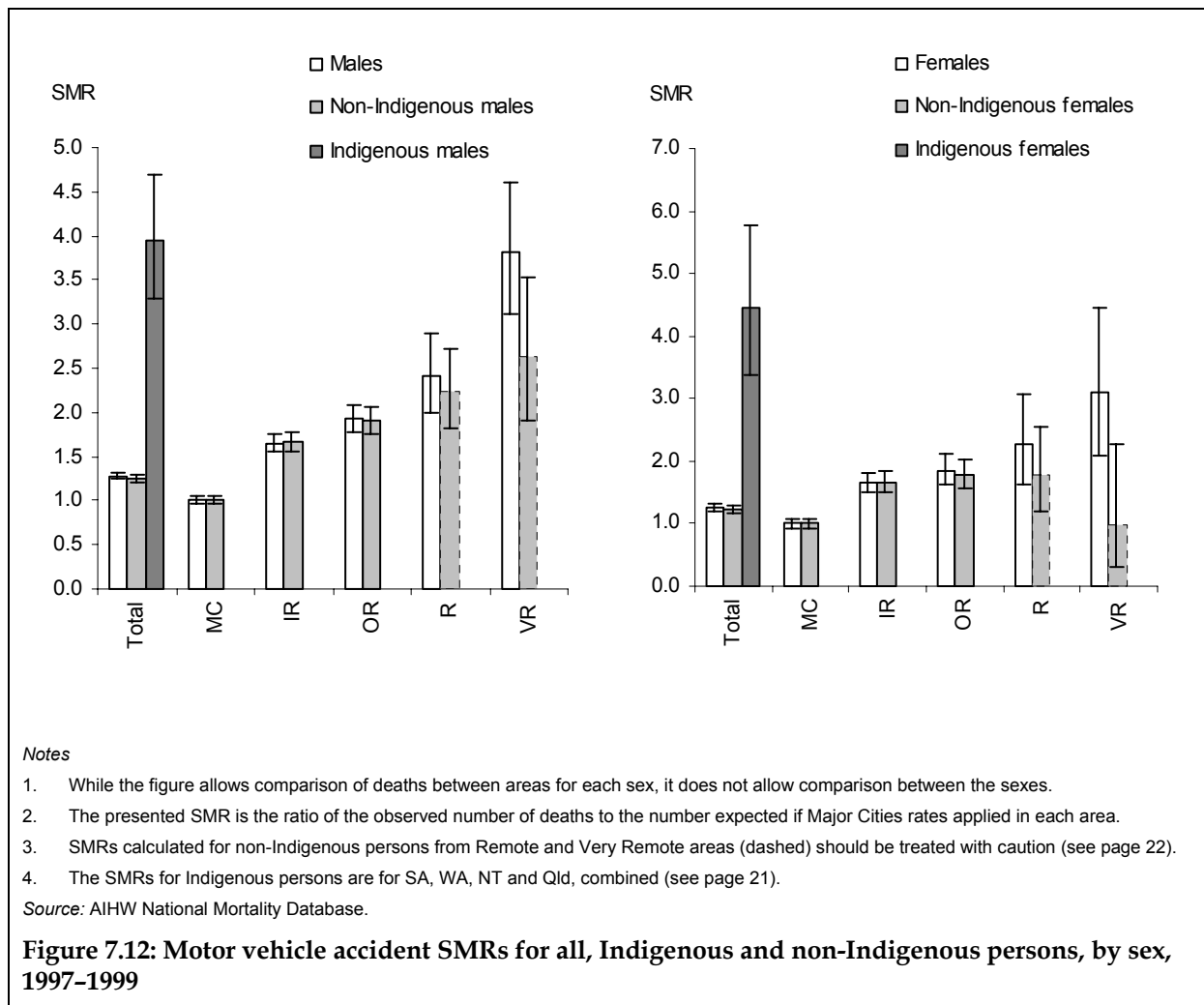
There were about 4 times as many deaths of Indigenous people as expected from motor vehicle accidents.

For non-Indigenous people, there were about twice as many deaths as expected in regional and Remote areas. In Very Remote areas there were 2.6 times as many deaths of non-Indigenous males, while the number of deaths of females in this area due to this cause was not significantly different to that expected. The pattern for those younger than 65 years old was similar.

Annually, there were 368 'excess' deaths due to motor vehicle accidents outside Major Cities (178, 127, 32 and 32 in each of the four areas; 263 were males, 106 were females). About 70% of this 'excess' occurred among 15–44-year-olds.

Overall mortality due to motor vehicle accidents

Annually, there were 632, 309, 189, 40 and 35 deaths of males and 282, 141, 77, 14 and 10 deaths of females in the five areas respectively as a result of MVA.



Death rates due to MVA rose rapidly with remoteness (Figure 7.12 and Table 7.6).

- There were 1.7, 1.9, 2.4 and 3.8 times as many deaths of males as expected in the four areas outside Major Cities.
- There were 1.7, 1.9, 2.3 and 3.1 times as many deaths of females as expected in the four areas outside Major Cities.
- There were about 4-5 times as many deaths of Indigenous people due to MVA as expected.

Table 7.6: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, motor vehicle accidents, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	3	1.34	1.72	0.00	2.80	2	*1.86	1.38	1.67	4.90
5–14	2	*1.50	*2.05	2.59	*4.06	1	1.61	*2.66	1.80	*9.60
15–24	20	*1.78	*2.17	*2.99	*2.98	7	*2.07	*2.04	*3.53	*2.96
25–44	11	*1.87	*2.06	*2.52	*4.48	3	*1.82	*2.26	*2.47	*3.30
45–64	7	*1.64	*1.89	*1.80	*5.19	4	*1.57	*1.68	1.67	1.83
65–74	12	1.23	1.30	*3.21	*3.78	7	1.27	*2.03	1.41	0.00
75+	21	1.18	1.36	0.89	0.03	10	1.30	0.87	1.70	0.00
Total	..	*1.65	*1.93	*2.42	*3.81	..	*1.65	*1.85	*2.27	*3.10

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Death rates for males are highest for those aged 15–29 years (about 20 per 100,000 per year) and again for those older than 75 years (20–30 per 100,000 per year). For females, rates were lower, but the pattern across age groups was similar to that for males.

Death rates in all age groups as a result of MVA were substantially higher for both males and females living outside Major Cities than for those living inside Major Cities (Table 7.5). Rates increased with remoteness. Within each area, the ratios of observed to expected deaths in each five-year age group between 5–74 years were similar. There were 1.5–1.9, 1.9–2.2, 1.8–3.2 and 3.0–5.2 times as many deaths of 15–64-year-old males as expected, and 1.6–2.1, 1.7–2.3, 2.5–3.5 and about 3.3 times as many deaths of 15–64-year-old females as expected in the four areas respectively.

There were 122, 91, 24 and 26 ‘excess’ deaths of males annually, and 56, 36, 8 and 7 ‘excess’ deaths of females annually in the four areas outside Major Cities. Eighty percent of the ‘excess’ for males occurs between the ages of 10 and 50 years; 80% of the ‘excess’ for females occurs between the ages of 10 and 60 years.

Indigenous population

Annually in the period 1997–1999, there were 61 deaths of Indigenous people (42 males and 19 females) in South Australia, Western Australia, the Northern Territory and Queensland as a result of MVA. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 61 deaths, there were 46 (31 males and 15 females) more than expected.

There were 3.9 and 4.5 times as many deaths of Indigenous males and females as expected (Table 7.7). For males, about 30% and 45% of the ‘excess’ deaths occurred amongst those who were aged 15–24 and 25–44 years, with another 20% amongst those aged 45–64 years. For

females, 25% of the 'excess' was in girls aged 0–14 years, about 25% in females aged 15–24 years, and about 40% was in those aged 25–44 years.

Non-Indigenous population

Annually, there were 623, 305, 178, 33 and 15 deaths of non-Indigenous males and 278, 139, 71, 10 and 2 deaths of non-Indigenous females in the five areas respectively as a result of MVA.

The death rate due to MVA rose rapidly with remoteness for males and was higher in regional areas for females (Table 7.7).

- There were 1.7, 1.9, 2.2 and 2.6 times as many deaths of non-Indigenous males in the four areas outside Major Cities.
- There were 1.7, 1.8 and 1.8 times as many deaths of non-Indigenous females as expected in Inner and Outer Regional and Remote areas. The number of deaths in Very Remote areas was not significantly different to the number expected.

Table 7.7: The ratio of observed deaths to those expected as a result of motor vehicle accidents if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
0–4	3	1.37	1.51	0.10	0.00	2.8	2	*1.86	1.30	1.66	0.00	3.8
5–14	2	*1.65	*2.13	3.30	7.65	2.2	1	*1.65	*2.74	1.87	0.02	*6.8
15–24	20	*1.77	*2.10	*2.69	*3.26	*2.9	7	*2.11	*2.00	*2.92	2.11	*3.2
25–44	11	*1.90	*2.05	*2.40	*2.53	*4.9	3	*1.83	*2.07	1.62	1.09	*6.1
45–64	7	*1.66	*1.86	1.35	2.31	*8.2	4	*1.60	*1.62	1.16	0.97	*4.6
65–74	11	1.25	1.33	*3.38	2.72	4.8	7	1.28	*2.05	1.47	0.02	0.0
75+	21	1.18	1.38	0.95	0.05	0.0	11	1.28	0.88	1.76	0.00	2.6
Total	..	*1.67	*1.90	*2.24	*2.63	*3.9	..	*1.66	*1.78	*1.79	0.98	*4.5
0–64	..	*1.78	*2.02	*2.25	*2.78	*4.0	..	*1.82	*1.93	*1.83	1.17	*4.7

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific death rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The pattern exhibited by age-specific death rates is similar for non-Indigenous people to that for the total population. The major differences are that death rates for 25–64-year-old males and females in Very Remote areas are lower than for the total population.

As a result of MVA, there were 123, 84, 18 and 9 'excess' deaths of non-Indigenous males annually, and 55, 31, 4 and 0 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. Sixty to seventy per cent of the 'excess' occurred between the ages of 10 and 40 years, with contribution declining with age thereafter.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 60 (41 male, 19 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of MVA. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 60 deaths, there were 45 (31 males and 15 females) more than expected.

For Indigenous males and females who were younger than 65 years old, there were 4 and 5 times as many deaths as expected as a result of MVA (Table 7.7).

Non-Indigenous population

Annually, there were 526, 262, 156, 29 and 14 deaths of non-Indigenous males younger than 65 years and 203, 107, 56, 8 and 2 deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of MVA.

There were substantially more deaths of 0–64-year-old males and females outside Major Cities than expected (Table 7.7).

As a result of MVA:

- there were respectively 1.8, 2.0, 2.2 and 2.8 times as many deaths of 0–64-year-old non-Indigenous males in the four areas as expected; and
- there were 1.8–1.9 times as many deaths of 0–64-year-old non-Indigenous females as expected in all but Very Remote areas (where there were about as many deaths as expected).

As a result of MVA, there were 115, 78, 16 and 9 'excess' deaths of non-Indigenous males younger than 65 years annually, and 49, 27, 4 and 0 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. Contribution is predominantly in young adulthood (that is, older than 15 years), but older age groups also make substantial contributions.

7.3 Suicide

Suicide is represented in this report by ICD-10 codes X60–X84 and Y87.0.

Summary of findings

Annually, suicide was responsible for the deaths of 2,631 people (2,099 males and 532 females); 984 of these people came from areas outside Major Cities. Of these 2,631 deaths, 68 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

There were 1.3, 1.3, 1.5 and 1.7 times as many deaths of males and about as many deaths of females as expected in the four areas outside Major Cities.

There were about 3 and 2 times as many deaths of Indigenous males and females as expected from suicide.

Compared to rates for their counterparts in Major Cities, death rates due to suicide for non-Indigenous males were 1.2 to 1.3 times as high outside Major Cities. For females in each of the areas, rates were similar to those in Major Cities.

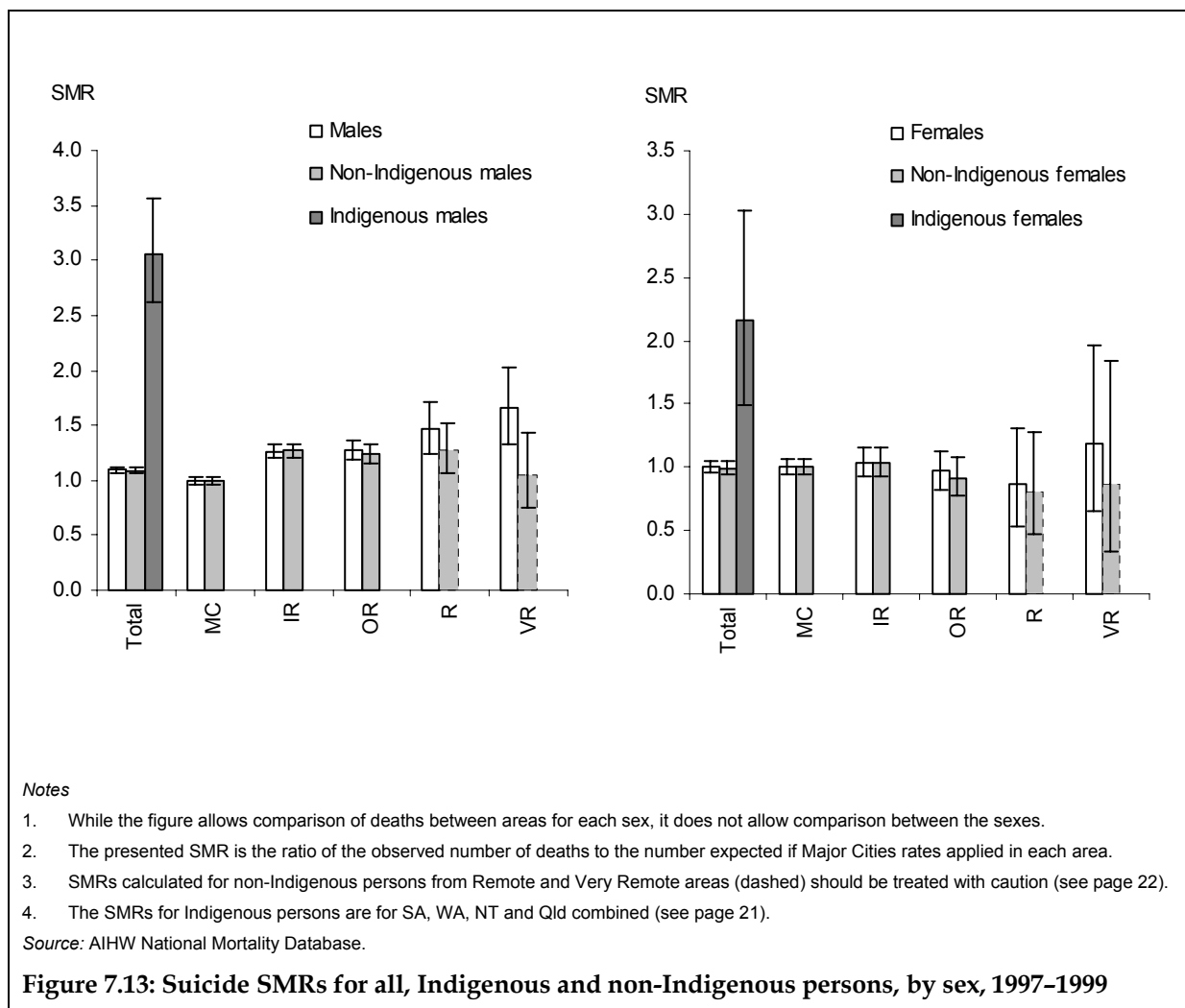
Annually, there were 184 'excess' deaths due to suicide outside Major Cities (103, 52, 15 and 13 in each of the four areas). Essentially all the 'excess' was of males, for whom 29% was amongst 15–24-year-olds, and 21%, 17%, 15% and 12% were among 25–34, 35–44, 45–54, 55–64-year-olds respectively. High rates of suicide mortality amongst Indigenous people are likely to have contributed significantly to the 'excess' in remote areas. For non-Indigenous males, the 'excess' was distributed throughout adult life; for Indigenous males the 'excess' was largely confined to those aged 15–44 years.

Overall mortality due to suicide

Annually, there were 1,287, 474, 255, 52 and 31 deaths of males and 360, 109, 51, 7 and 5 deaths of females in the five areas respectively, as a result of suicide.

The death rate due to suicide for males increased with remoteness (Figure 7.13 and Table 7.8).

- There were 1.3, 1.3, 1.5 and 1.7 times as many deaths of males as expected in the four areas as a result of suicide.
- There were about as many deaths of females as expected in areas outside Major Cities as a result of suicide.
- There were about 2–3 times as many deaths of Indigenous people due to suicide as expected.



In Major Cities, death rates of males due to suicide tend to be highest amongst 20–39-year-olds (30 per 100,000 per year or higher), with rates half to two thirds this value in older ages, rising again to the same levels in old age. For females, rates were largely similar throughout adulthood (about 5–9 per 100,000 per year).

Death rates for males as a result of suicide were higher outside Major Cities. Typically, for 15–64-year-old males, there were 1.2–1.5 times more deaths than expected in regional areas. There tended to be more deaths than expected in remote areas, and significantly more than expected in some age groups; 2.4 and 3.7 times as many as expected for 15–24-year-old males in Remote and Very Remote areas, and 1.5 times as many deaths of 45–64-year-olds living in Remote areas. For males 65 years and older, only those aged 65–74 years from Outer Regional areas had rates significantly higher than those in Major Cities.

Death rates for younger females tended to be higher outside Major Cities (but the difference did not reach statistical significance for individual age groups). While rates for older females tended to be lower, the difference failed to reach statistical significance for almost all groups (although there were 0.7 times as many deaths of 45–64-year-old females as expected from Outer Regional areas).

Table 7.8: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, suicide, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	0	..	..	..	..
5–14	<1	1.65	1.75	4.78	9.97	<1	2.14	2.14	1.31	19.75
15–24	23	*1.41	*1.45	*2.43	*3.66	6	1.14	1.17	1.09	1.64
25–44	32	*1.25	*1.22	1.19	1.16	8	1.02	1.12	0.84	1.20
45–64	21	*1.36	*1.26	*1.47	1.25	7	1.08	*0.68	0.84	0.00
65–74	22	0.90	*1.38	0.98	1.44	6	0.89	0.52	0.91	0.00
75+	29	1.14	1.15	2.07	0.54	6	0.78	1.23	0.32	3.30
Total	..	*1.27	*1.27	*1.47	*1.65	..	1.03	0.97	0.86	1.18

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Annually, as a result of suicide, there were 100, 54, 17 and 12 ‘excess’ deaths of males, and 3, -2, -1 and 1 ‘excess’ deaths of females in the four areas outside Major Cities. Eighty to ninety percent of the ‘excess’ for males in most areas outside Major Cities occurred between the ages of 20 and 70 years. In Very Remote areas however, 90% of the ‘excess’ occurred before age 30 years. Of the small ‘excess’ which exists for females, the bulk occurred before age 50 years; in those older than 50 years, there were generally fewer deaths than expected.

Indigenous population

Annually in the period 1997–1999, there were 68 deaths of Indigenous people by suicide (56 males and 11 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 68 deaths, there were 44 (38 males and 6 females) more than expected.

Overall, there were 3.1 and 2.2 times as many deaths of Indigenous males and females as expected (Table 7.9). About 100% and 90% of ‘excess’ suicide deaths of males and females occurred amongst 15–44-year-olds.

- Although the numbers of deaths were very small, there were about 8 and 30 times as many deaths of Indigenous boys and girls aged 5–14 years by suicide as expected.
- There were also 5 and 3 times as many deaths of 15–24-year-old males and females as expected, and about 3 and 2 times as many deaths of 25–44-year-old males and females as expected.
- For those older than 45 years, there were either negligible deaths or about as many deaths as expected.

Non-Indigenous population

Annually, there were 1,271, 466, 239, 41 and 13 deaths of non-Indigenous males and 357, 108, 47, 6 and 2 deaths of non-Indigenous females in the five areas respectively as a result of suicide.

Death rates due to suicide for males were higher outside Major Cities, but differences were not significant for females (Table 7.9).

- There were between 1.2 and 1.3 times as many deaths of non-Indigenous males as expected in regional and Remote areas due to suicide. In Very Remote areas, the number of observed deaths was not significantly different to that expected.
- There were about as many deaths of non-Indigenous females as expected in each of the areas outside Major Cities.

Table 7.9: The ratio of observed deaths to those expected as a result of suicide if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997-1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR			IR	OR	R	VR	
0-4	0	..	..	..	..	..	0	..	..	..	..	..
5-14	<1	1.42	1.33	2.72	20.95	*8.2	<1	3.25	3.44	2.35	0.00	*29.2
15-24	23	*1.42	*1.34	*1.84	1.09	*5.1	6	1.18	0.86	0.79	1.06	*3.1
25-44	32	*1.26	*1.18	1.04	0.77	*2.6	8	1.01	1.09	0.86	1.05	*2.0
45-64	21	*1.36	*1.27	1.44	1.41	1.3	7	1.08	*0.69	0.73	0.00	0.4
65-74	22	0.90	*1.39	0.84	1.85	0.0	6	0.89	0.53	0.95	0.00	0.0
75+	29	1.14	1.16	2.19	0.72	0.0	6	0.78	1.24	0.33	4.19	0.0
Total	..	*1.27	*1.24	*1.28	1.05	*3.1	..	1.04	0.92	0.80	0.87	*2.2
0-64	..	*1.32	*1.23	*1.27	1.02	*3.2	..	1.08	0.93	0.82	0.78	*2.3

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

The situation for non-Indigenous males is more or less similar to that for the total population, except that for those aged 15-24 years, the rates were lower in Outer Regional and remote areas than was the case for the total population (however, rates still tend to be higher than in Major Cities). In regional and remote areas, rates of death for non-Indigenous

males as a result of suicide are elevated, not only for 15–24-year-olds, but also for older males – to 64 years in most areas, and to 74 years in Outer Regional areas.

For non-Indigenous females from regional and remote areas, age-specific rates of death due to suicide were similar to those for the total population of females described previously.

As a result of suicide, there were 98, 46, 9 and 1 ‘excess’ deaths of non-Indigenous males annually, and 4, -4, -1 and 0 ‘excess’ deaths of non-Indigenous females annually in the four areas outside Major Cities. Sixty to seventy per cent of the ‘excess’ occurred in males aged 20–50 years, with most of the rest in adjoining age groups. There were very few ‘excess’ deaths of females. Almost all of the ‘excess’ deaths in Very Remote areas and a substantial proportion in Remote areas were as the result of suicide of Indigenous males.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 68 (56 male, 11 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of suicide (virtually all suicide deaths of Indigenous people occurred in those younger than 65 years). There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 68 deaths, there were 45 (39 males and 6 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 3.2 and 2.3 times as many deaths as expected as a result of suicide (Table 7.9).

Non-Indigenous population

Annually, there were 1,113, 408, 204, 37 and 12 deaths of males younger than 65 years and 305, 93, 40, 5 and 2 deaths of females younger than 65 years in the five areas respectively as a result of suicide.

There were 1.2–1.3 times as many deaths of 0–64-year-old non-Indigenous males in all areas (except Very Remote areas where there were about as many deaths as expected). There were about as many (or slightly fewer) deaths of 0–64-year-old non-Indigenous females as expected in all areas (Table 7.9).

As a result of suicide, there were 98, 38, 8 and 0 ‘excess’ deaths of non-Indigenous males younger than 65 years annually, and 7, -3, -1 and -1 ‘excess’ deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. The ‘excess’ deaths for males were distributed throughout adult life.

7.4 Interpersonal violence

Interpersonal violence (ICD-10 codes X85–Y09, Y87.1, Y35–Y36, Y89.0 and Y89.1) describes the killing of one person by another in an act of homicide (which includes both situations in which the intent may, and may not have been, to kill the person).

Summary of findings

Annually, interpersonal violence was responsible for the deaths of 319 people (214 males and 105 females); 112 of these people came from areas outside Major Cities. Of these 319 deaths, 26 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

There were fewer (0.8 times as many deaths of males in Inner Regional areas) or similar numbers of deaths than expected due to interpersonal violence in regional areas. However, there were substantially more than expected (2.9 and 4–9 times as many) in Remote and Very Remote areas, although the actual numbers of deaths were relatively small.

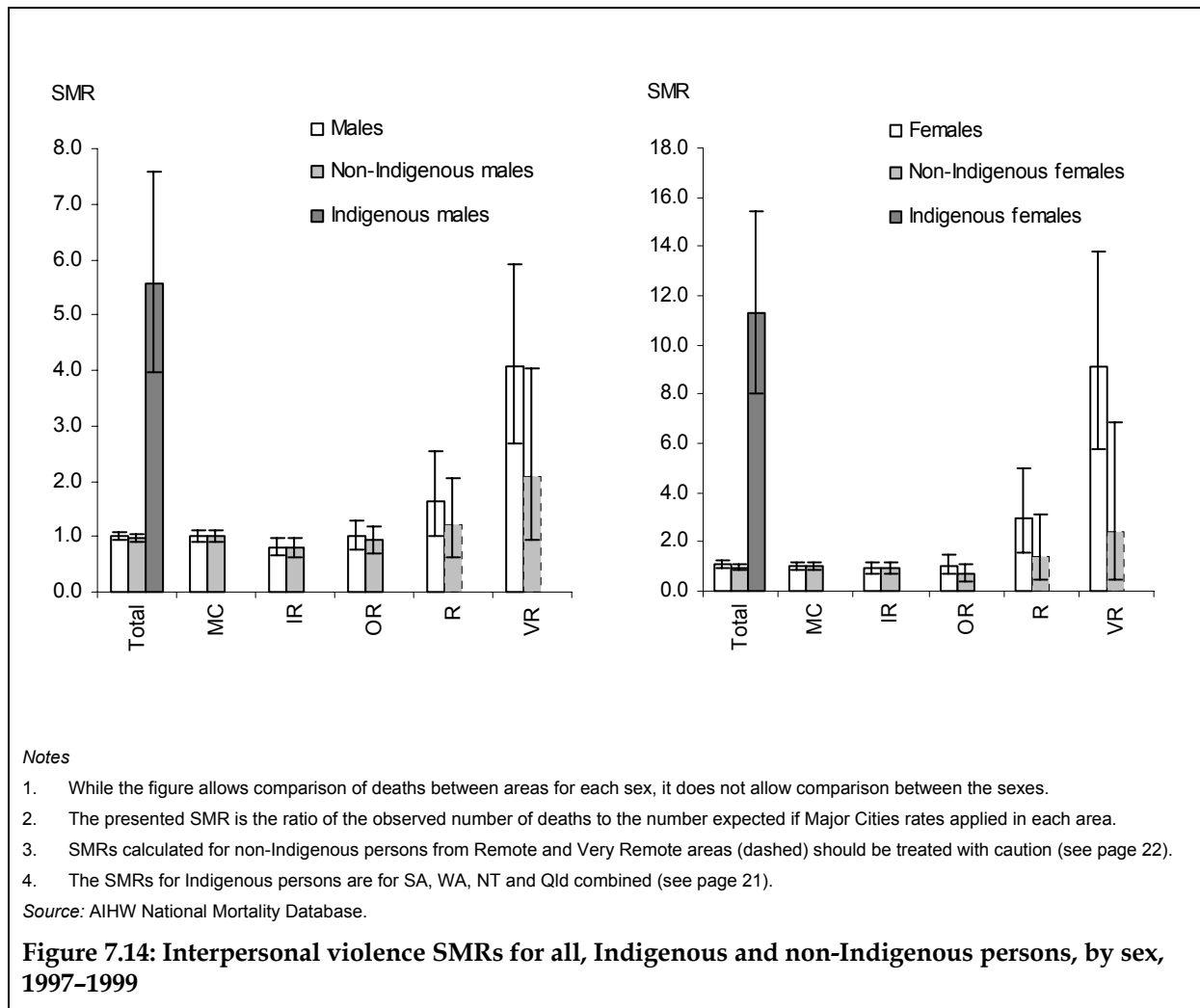
There were about 6 and 11 times as many deaths of Indigenous males and females as expected from interpersonal violence.

For non-Indigenous people in most of the areas, death rates due to interpersonal violence were similar to the Major Cities rate, but for males in Inner Regional areas the rate was 0.8 times the Major Cities rate (that is, lower).

Annually, there were 9 'excess' deaths due to interpersonal violence outside Major Cities (10 fewer and 0, 6 and 13 'excess' deaths in the four areas). A substantial proportion of the 'excess' deaths are Indigenous people.

Overall mortality due to interpersonal violence

Annually, there were 142, 33, 23, 7 and 9 deaths of males and 65, 18, 10, 5 and 7 deaths of females in the five areas respectively as a result of interpersonal violence.



There were fewer or similar numbers of deaths than expected due to interpersonal violence in regional areas, but substantially more than expected in Remote and Very Remote areas, although the actual numbers of deaths were relatively small (Figure 7.14 and Table 7.10).

- There were 0.8 times as many deaths of males due to interpersonal violence as expected in Inner Regional areas, and similar numbers to that expected in Outer Regional areas. The pattern was similar for females, with about as many deaths as expected in these regional areas.
- In remote areas, there were more deaths than expected, with 4.1 times as many deaths of males in Very Remote areas, and 2.9 and 9.1 times as many deaths of females as expected in Remote and Very Remote areas respectively.
- There were respectively about 6 and 11 times as many deaths of Indigenous males and females due to interpersonal violence as expected.

Table 7.10: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, interpersonal violence, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	2	0.81	0.35	0.30	2.24	1	0.49	2.06	3.17	5.42
5–14	1	0.33	0.29	0.00	2.63	<1	2.74	1.33	0.00	0.00
15–24	2	1.17	1.12	2.02	*6.05	2	0.81	0.64	3.18	4.31
25–44	4	*0.72	0.92	1.62	*3.42	1	1.01	1.03	*3.12	*15.07
45–64	2	0.77	1.21	2.56	*6.29	1	1.09	0.68	2.10	*8.11
65–74	1	1.09	1.88	0.62	0.00	1	0.32	0.84	6.66	0.00
75+	1	1.14	1.95	0.00	0.00	1	0.63	2.19	0.00	0.00
Total	..	*0.80	1.00	1.64	*4.06	..	0.91	1.02	*2.94	*9.13

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates for males and females tended to be relatively low, with rates highest for males between ages 25 and 40 years (3.5–4.5 per 100,000 per year). Rates were lower for females (maximum of 1.6 per 100,000 per year), the pattern roughly following that for males.

As a result of interpersonal violence, there were -8, 0, 3 and 7 ‘excess’ deaths of males annually, and -2, 0, 3 and 7 ‘excess’ deaths of females annually in the four areas outside Major Cities. Of the relatively small ‘excess’ that occurs in Remote and Very Remote areas, almost all occurs before age 50 years.

Indigenous population

Annually in the period 1997–1999, there were 26 deaths of Indigenous people (13 males and 13 females) in South Australia, Western Australia, the Northern Territory and Queensland as a result of interpersonal violence. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 26 deaths, there were 23 (11 males and 12 females) more than expected.

There were about 6 and 11 times as many deaths of Indigenous males and females as expected due to this cause (Table 7.11). For males, 55% of the ‘excess’ occurred amongst those aged 25–44-years, and about 20% each in those aged 15–24 and 45–64 years. For females, about 65% of the ‘excess’ was amongst those 25–44 years, about 20% amongst those aged 15–24 years and 10% amongst those aged 45–64 years. A little less than 10% of the ‘excess’ occurred in Indigenous children younger than 5 years. Overall, there were between 5 and 20 times as many deaths as expected of Indigenous males and females in individual age groups between 15 and 64 years.

Non-Indigenous population

Annually, there were 136, 31, 19, 4 and 3 deaths of non-Indigenous males and 64, 17, 6, 2 and 1 deaths of non-Indigenous females in the five areas respectively as a result of interpersonal violence.

Death rates due to interpersonal violence were similar across most of the areas, but for males in Inner Regional areas the rate was 0.8 times the Major Cities rate (Table 7.11).

- For males there were 0.8 times as many deaths of non-Indigenous males as expected in Inner Regional areas, and about as many as expected in the other areas due to this cause.
- There were about as many deaths of non-Indigenous females as expected in each of the areas due to this cause.

Table 7.11: The ratio of observed deaths to those expected as a result of interpersonal violence if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female							
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous		
		IR	OR	R	VR			(ratio)	IR	OR	R		VR	(ratio)
0–4	2	0.74	0.18	0.00	0.00	3.7	1	0.50	1.78	0.47	7.83	5.3		
5–14	1	0.38	0.35	0.00	6.48	1.5	<1	2.78	0.00	0.00	0.00	6.7		
15–24	2	1.25	1.02	2.13	2.68	*5.4	2	0.77	0.22	0.01	0.00	*6.6		
25–44	3	*0.68	0.79	0.68	1.94	*6.2	1	1.03	0.63	1.93	2.06	*20.0		
45–64	2	0.74	1.17	2.67	2.24	*9.6	1	1.10	0.52	1.02	3.94	*11.1		
65–74	1	1.10	1.90	0.64	0.00	0.0	1	0.32	0.85	6.95	0.00	0.0		
75+	1	1.14	1.96	0.00	0.00	0.0	1	0.64	2.21	0.00	0.00	0.0		
Total	..	*0.79	0.92	1.20	2.10	*5.6	..	0.91	0.71	1.39	2.40	*11.3		
0–64	..	*0.76	0.86	1.23	2.18	*5.7	..	0.99	0.61	1.10	2.59	*11.6		

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

As a result of interpersonal violence, there were -8, -2, 1 and 2 'excess' deaths of non-Indigenous males annually, and -2, -3, 1 and 1 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. There were fewer 'excess' deaths for most ages younger than 60 years in regional areas, with little or no 'excess' in the older age groups.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 26 (13 male, 13 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of interpersonal violence (virtually all deaths of Indigenous people as a result of interpersonal violence occurred in those younger than 65 years). There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 26 deaths, there were 23 (11 males and 12 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 6 and 12 times as many deaths as expected as a result of interpersonal violence (Table 7.11).

Non-Indigenous population

Annually, there were 129, 28, 17, 4 and 3 deaths of non-Indigenous males younger than 65 years and 56, 16, 5, 1 and 1 deaths of non-Indigenous females younger than 65 years in the five areas as a result of interpersonal violence.

The numbers of deaths of 0–64-year-old non-Indigenous males and females in the areas outside Major Cities were not significantly different from the numbers expected, except that there were fewer (0.8 times as many) deaths of males than expected in Inner Regional areas (Table 7.11).

As a result of interpersonal violence, there were -9, -3, 1 and 2 'excess' deaths of non-Indigenous males younger than 65 years annually, and 0, -3, 0 and 1 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities.

7.5 Accidental shooting

Accidental shooting (ICD-10 codes W32–W34) was included because of the possibility of higher rates in more remote areas as a result of a likely higher per capita availability of firearms.

Summary of findings

Annually, between 1997 and 1999, accidental shooting was responsible for the deaths of 23 people (21 males and 2 females); 16 of these people came from areas outside Major Cities. Of these 23 deaths, none were identified as Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

There were 3, 4, 7 and 16 times as many deaths of males as expected in the four areas outside Major Cities due to this cause (however, the number of deaths was relatively small). There were very few deaths of females due to accidental shooting.

For non-Indigenous males, death rates in the four areas outside Major Cities due to accidental shooting were 3, 4, 7 and 22 times as high as for their counterparts from Major Cities, however, the numbers of deaths (and especially of females) were relatively small.

Annually, there were 12 'excess' deaths due to accidental shooting outside Major Cities (6, 4, 1 and 1 in each of the four areas). The 'excess' deaths were distributed throughout all age groups.

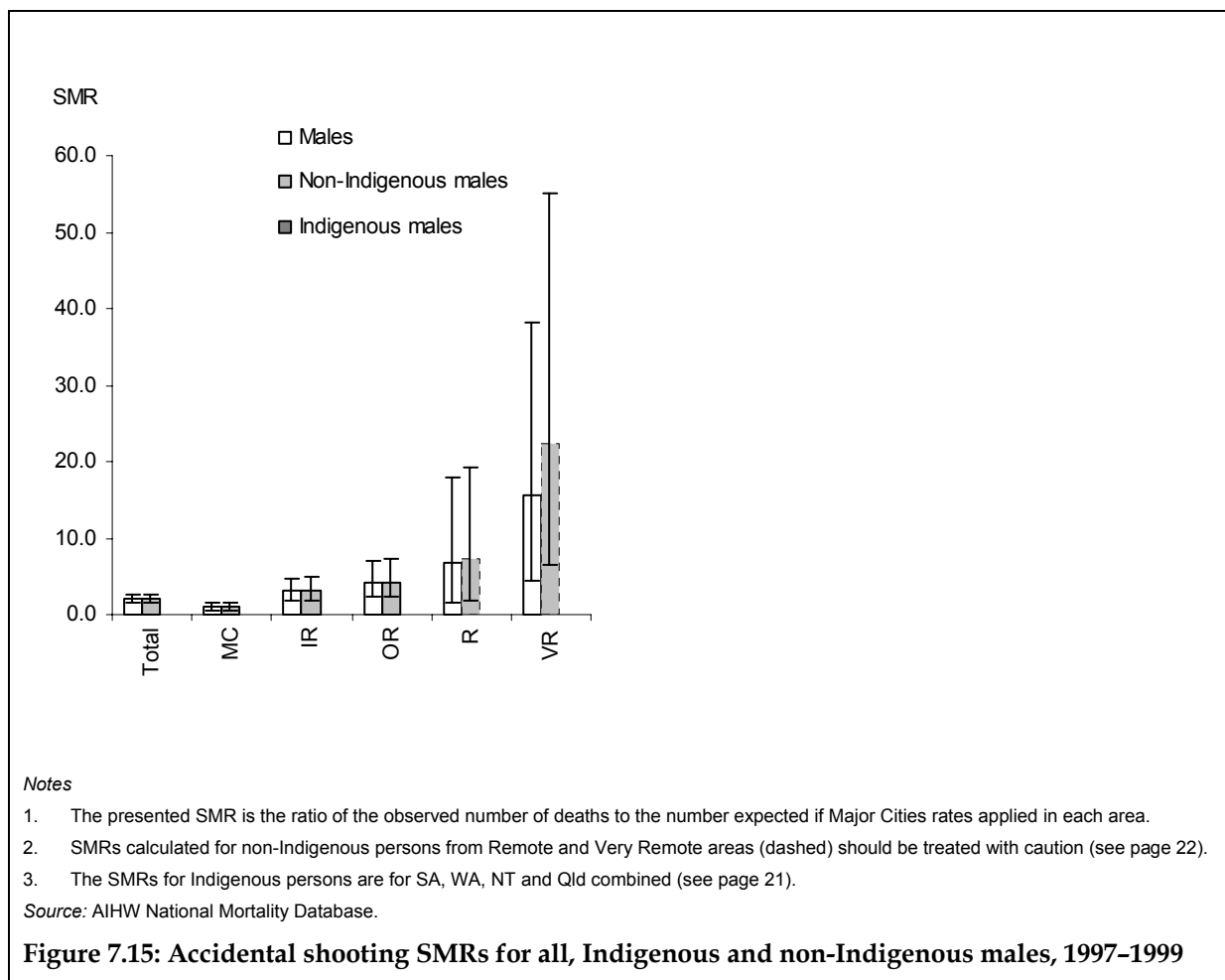
Overall mortality due to accidental shooting

Annually, there were 7, 7, 5, 1 and 1 deaths of males and 0, 1, 1, 0 and 0 deaths of females in the five areas respectively as a result of accidental shooting.

Death rates for males due to accidental shooting were substantially higher outside Major Cities (particularly in remote areas) however, the number of deaths was relatively small (Figure 7.15 and Table 7.12).

- There were 3.1, 4.2, 6.7 and 15.5 times as many deaths of males as expected in the four areas outside Major Cities.
- There were very few deaths of females due to accidental shooting.
- There were no deaths of Indigenous people due to accidental shooting registered in the period 1997–1999.

It is difficult to comment on age-specific death rates for accidental shooting because of the relatively small numbers of deaths for both sexes.



As a result of accidental shooting, there were 4, 4, 1 and 1 'excess' deaths of males annually, and 1, 1, 0 and 0 'excess' deaths of females annually in the four areas outside Major Cities.

Table 7.12: The ratio of observed deaths of males to those expected if Major Cities rates applied in each ASGC Remoteness area, accidental shooting^(a), 1997-1999

	IR	OR	R	VR
	(ratio)			
Total	*3.08	*4.17	*6.72	*15.50

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

(a) Small numbers of deaths make age-specific rates especially volatile and potentially misleading. Consequently the ratio of total observed to total expected deaths only are shown.

Note: Caution should be used when making inferences about ratios that are not significantly different from 1.

Source: AIHW National Mortality Database.

Indigenous population

Annually in the period 1997–1999, there were virtually no deaths of Indigenous people registered in South Australia, Western Australia, the Northern Territory and Queensland due to accidental shooting.

Non-Indigenous population

Annually, there were 7, 7, 5, 1 and 1 deaths of non-Indigenous males and 0, 1, 1, 0 and 0 deaths of non-Indigenous females in the five areas respectively as a result of accidental shooting.

Table 7.13: The ratio of observed deaths to those expected as a result of accidental shooting if Major Cities non-Indigenous rates applied to the non-Indigenous male population in each ASGC Remoteness area and to the Indigenous male population, 1997–1999

	Non-Indigenous				Indigenous
	IR	OR	R	VR	
	(ratio)				
Total	*3.10	*4.27	*7.24	*22.27	0.0
0–64 years	*3.34	*3.72	*7.72	*19.01	0.0

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. Ratios for Indigenous people are for SA, WA, NT and Qld.
3. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Death rates for males due to accidental shooting were substantially higher outside Major Cities, however, the numbers of deaths were relatively small (Table 7.13).

- There were 3.1, 4.3, 7.2 and 22.3 times as many deaths of non-Indigenous males as expected due to accidental shooting in the four areas outside Major Cities.
- There were very few deaths of non-Indigenous females due to this cause.

Practically all deaths due to accidental shooting were deaths of non-Indigenous people, and almost all of them were male and less than 65 years of age.

It is difficult to comment on age-specific death rates for accidental shooting because of the relatively small numbers of deaths for both sexes.

As a result of accidental shooting, there were 4, 4, 1 and 1 'excess' deaths of non-Indigenous males annually, and 1, 1, 0 and 0 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities.

Mortality for those aged 0–64 years

Indigenous population

Annually in the period 1997–1999, there were virtually no deaths of Indigenous people registered in South Australia, Western Australia, the Northern Territory and Queensland as a result of accidental shooting.

Non-Indigenous population

Annually, there were 6, 6, 3, 1 and 1 deaths of non-Indigenous males younger than 65 years and very few deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of accidental shooting.

There were significantly more deaths of 0–64-year-old non-Indigenous males than expected due to accidental shooting in all areas outside Major Cities. Death rates for males due to accidental shooting increased with remoteness (Table 7.13). There were very few deaths of females due to this cause.

In the four areas outside Major Cities, there were 3, 4, 8 and 19 times as many deaths of 0–64 year-old non-Indigenous males as expected due to accidental shooting.

As a result of accidental shooting, there were 4, 3, 1 and 1 ‘excess’ deaths of non-Indigenous males younger than 65 years annually, and 1, 1, 0 and 0 ‘excess’ deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities.

7.6 'Other' injury

Other injuries (ICD-10 codes V00–Y98, excluding the injuries already described in this report) are included because, as a group, they are responsible for a substantial proportion of injury deaths. Differences in death rates across areas for this range of causes may suggest further work to identify potential targets for intervention. Some of the specific causes of death included in this group are off-road driving accidents, drownings, falls, burns, electrocution, accidental poisonings and medical and surgical misadventure.

Summary of findings

Annually, 'other' injury was responsible for the deaths of 3,441 people (2,138 males and 1,303 females); 1,287 of these people came from areas outside Major Cities. Of these 3,441 deaths, 79 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rate due to 'other' injuries rose steadily with remoteness, such that there were 1.1, 1.2–1.3, 1.4–1.6 and 2.1 times as many deaths of males and females as expected in the four areas outside Major Cities due to this cause.

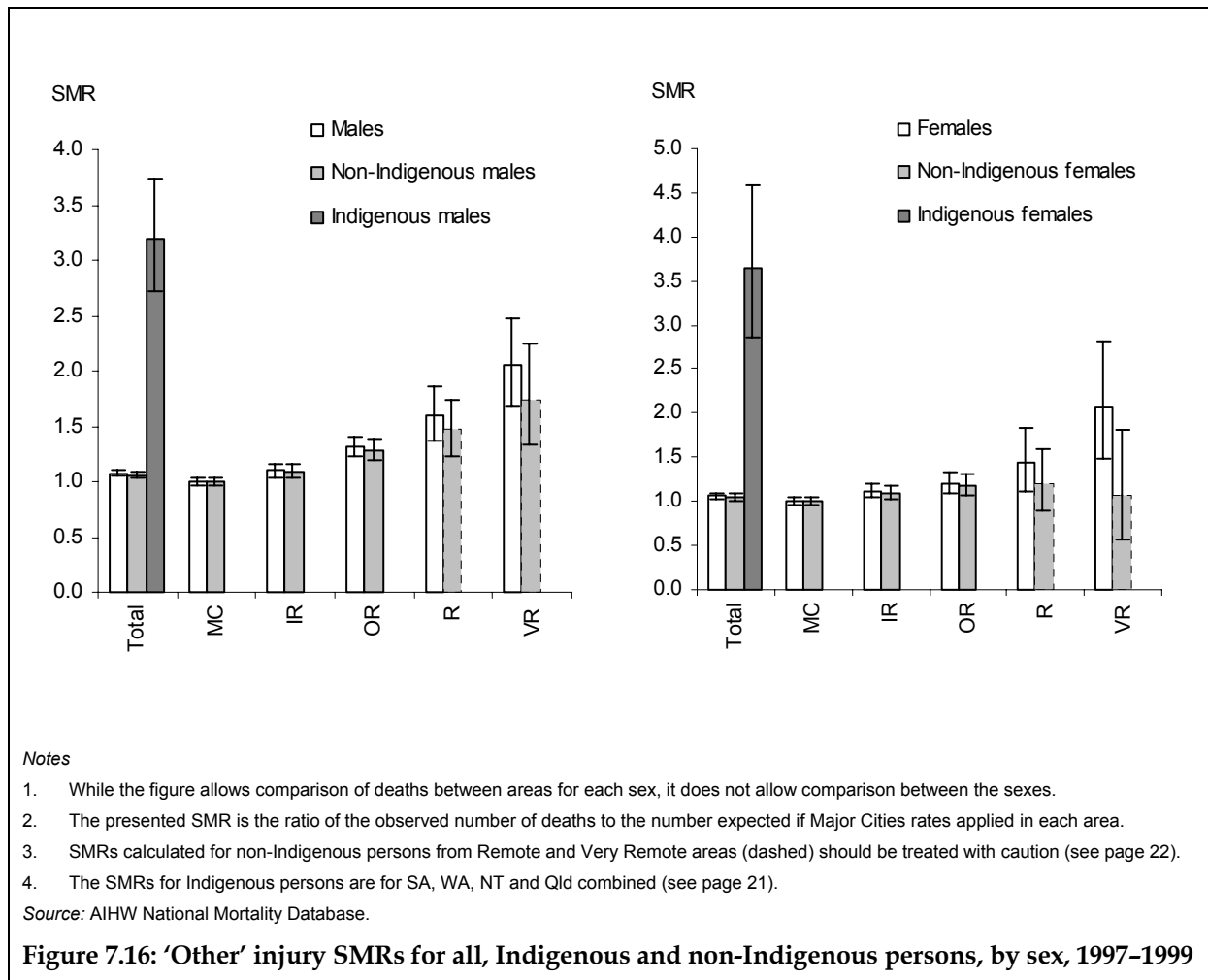
There were about 3 and 4 times as many deaths of Indigenous males and females as expected from 'other' injuries.

For non-Indigenous people, death rates due to 'other' injuries tended to increase with remoteness. Compared with rates for their counterparts in Major Cities, rates for non-Indigenous people were 1.1 and 1.2–1.3 times as high in Inner and Outer Regional areas respectively, and 1.5 and 1.7 times as high in Remote and Very Remote areas for males (but not significantly different in remote areas for non-Indigenous females). The higher rates for non-Indigenous females from Inner and Outer Regional areas were largely influenced by the higher rates among those aged 75 years and older in those areas, with rates for younger females frequently indistinguishable from those in Major Cities.

Annually, there were 214 'excess' deaths due to 'other' injury outside Major Cities (69, 92, 27 and 26 in each of the four areas). Over 70% of these are deaths of males. The 'excess' deaths are distributed throughout all ages.

Overall mortality due to 'other' injuries

Annually, there were 1,321, 448, 278, 55 and 36 deaths of males and 833, 287, 147, 22 and 14 deaths of females in the five areas as a result of 'other' injuries.



Death rate due to 'other' injuries rose steadily with remoteness (Figure 7.16 and Table 7.14).

- There were 1.1, 1.3, 1.6 and 2.1 times as many deaths of males as expected in the four areas outside Major Cities.
- There were 1.1, 1.2, 1.4 and 2.1 times as many deaths of females as expected in the four areas outside Major Cities.
- There were about 3-4 times as many deaths of Indigenous people due to 'other' injury as expected.

Table 7.14: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, 'other' injury, males and females, 1997-1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0-4	10	*1.49	*2.03	1.37	*3.92	6	*1.46	1.13	2.00	*3.89
5-14	2	1.28	1.62	*3.61	*4.38	1	1.65	*2.78	*6.16	*8.14
15-24	17	*1.24	1.25	1.53	1.57	5	1.14	0.62	2.38	*3.78
25-44	23	1.05	*1.39	*1.76	*2.16	6	1.09	0.91	0.85	*2.85
45-64	16	1.07	*1.42	*1.79	*2.80	7	0.92	1.30	1.87	1.86
65-74	29	1.02	1.24	1.34	1.27	15	1.12	1.20	1.09	3.49
75+	127	1.08	1.06	1.04	0.82	119	*1.13	*1.29	1.31	0.44
Total	..	*1.10	*1.31	*1.60	*2.05	..	*1.11	*1.21	*1.44	*2.08

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates for males due to 'other' injury were highest in those older than 74 years (60-380 per 100,000 per year), with rates for most age groups 20-50 per 100,000 per year. For females the pattern was similar, with rates lower (to 290 per 100,000 per year in the oldest age groups).

Age-specific death rates were higher in regional and remote areas in practically all age groups. Rates for 0-4-year-old males are 1.5, 2 and 3.9 times as high in Inner Regional, Outer Regional and Very Remote areas than in Major Cities, with a similar pattern for similar aged females. Although individual age-specific rates were frequently not significantly higher in older age groups, they increased with remoteness to between 2 and 3 times Major Cities rates in Very Remote areas, and higher to 8 times in one age group.

As a result of 'other' injuries, there were 40, 66, 21 and 19 'excess' deaths of males annually, and 30, 25, 7 and 7 'excess' deaths of females annually in the four areas outside Major Cities. The 'excess' for males in Inner Regional areas was largely in those younger than 30 years, while in the other areas contribution is from all age groups younger than 70 years. For females, a very large amount of the 'excess' occurs in those older than 70 years (although in Very Remote areas, the 'excess' is largely in those younger than 40 years).

Indigenous population

Annually in the period 1997-1999, there were 79 deaths of Indigenous people (54 males and 25 females) in South Australia, Western Australia, the Northern Territory and Queensland. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 79 deaths, there were 55 (37 males and 18 females) more than expected.

There were 3.2 and 3.7 times as many deaths of Indigenous males and females as expected (Table 7.15).

- About 10% of the 'excess' is among children younger than 5 years.
- About 80% of the 'excess' is among those aged 15–64 years (45–50% is in those aged 25–44 years).

Non-Indigenous population

Annually, there were 1,299, 437, 260, 45 and 20 deaths of non-Indigenous males and 826, 283, 139, 17 and 4 deaths of non-Indigenous females in the five areas respectively as a result of 'other' injuries.

Death rates due to 'other' injuries tended to increase with remoteness (Table 7.15).

- There were 1.1, 1.3, 1.5 and 1.7 times as many deaths of non-Indigenous males as expected in the four areas outside Major Cities due to this cause.
- There were 1.1 and 1.2 times as many deaths of non-Indigenous females as expected in Inner and Outer Regional areas due to this cause. There were about as many deaths of non-Indigenous females due to this cause as expected in remote areas.

Table 7.15: The ratio of observed deaths to those expected as a result of 'other' injury if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female							
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous		
		IR	OR	R				VR	IR	OR	R		VR	
				(ratio)							(ratio)			
0–4	9	*1.50	*1.99	1.60	3.00	*3.3	6	1.33	0.97	1.62	0.06	*3.6		
5–14	2	1.19	1.57	2.82	0.70	*4.7	1	1.76	2.25	5.70	13.33	4.2		
15–24	17	*1.24	1.23	1.36	1.04	*2.6	5	1.17	0.60	1.94	2.03	*2.8		
25–44	23	1.05	*1.33	*1.52	*1.80	*3.5	6	1.07	0.85	0.63	1.51	*5.1		
45–64	16	1.07	*1.37	*1.67	*2.91	*4.4	7	0.93	1.18	1.07	0.74	*5.0		
65–74	29	1.02	1.26	1.26	0.29	2.6	15	1.13	1.18	0.82	2.65	3.0		
75+	127	1.08	1.08	1.12	1.13	0.8	119	*1.11	*1.29	1.29	0.34	1.6		
Total	..	*1.09	*1.28	*1.47	*1.74	*3.2	..	*1.10	*1.18	1.21	1.07	*3.7		
0–64	..	*1.11	*1.37	*1.57	*1.99	*3.4	..	1.08	0.98	1.17	1.52	*4.3		

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

As a result of 'other' injuries, there were 37, 57, 14 and 9 'excess' deaths of non-Indigenous males annually, and 26, 21, 3 and 0 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. The 'excess' for males in Inner Regional areas is largely in those younger than 30 years, while in the other areas contribution is from all age groups. For females, a very large proportion of the 'excess' occurs in those older than 70 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 73 (52 male, 21 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of 'other' injury. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 73 deaths, there were 53 (36 males and 16 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 3.4 and 4.3 times as many deaths as expected as a result of 'other' injury and poisoning (Table 7.15).

Non-Indigenous population

Annually, there were 872, 276, 180, 36 and 18 deaths of non-Indigenous males younger than 65 years and 271, 86, 39, 7 and 3 deaths of non-Indigenous females younger than 65 years in the five areas, respectively, as a result of 'other' injuries.

Death rates for males due to 'other' injuries increased with remoteness. For females there were few differences across the areas (Table 7.15).

- There were 1.1, 1.4, 1.6 and 2.0 times as many deaths of 0–64-year-old non-Indigenous males as expected in each of the areas outside major Cities due to 'other' injuries.
- There were about as many deaths of 0–64-year-old non-Indigenous females as expected due to 'other' injuries in the areas outside Major Cities.

As a result of 'other' injuries, there were 28, 48, 13 and 9 'excess' deaths of non-Indigenous males younger than 65 years annually, and 7, -1, 1 and 1 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. For males, the contribution in Inner Regional areas was largely from 15–29 year-olds; in Outer Regional areas, from throughout life, but mainly in older age groups; in Remote and Very Remote areas, from throughout life, but perhaps with heavier contribution from 35–44 year-olds.

8 'Other' diseases

All those causes of death not described previously are included in this chapter (that is, all causes except circulatory and respiratory diseases, neoplasms and injuries).

There are many other causes of death, but, apart from diabetes, they tend to be less common than the causes already described.

The specific causes of death described in this chapter include:

1. diabetes;
2. renal disease; and
3. all other causes not elsewhere described (that is, the rest).

Diabetes and renal diseases were chosen because diabetes makes a large contribution to overall mortality and renal diseases is a substantial and growing cause of mortality for Australia's Aboriginal and Torres Strait Islander population.

'Other causes (not elsewhere described)' were included for the sake of completeness. The particular causes of death included in this group can be inferred from the text on page 71, but include a range of other causes such as infectious diseases, diseases of the digestive system and endocrine system, and conditions originating in the perinatal period.

Summary of findings

Annually, 'all other causes' were responsible for the deaths of 22,355 people (10,773 males and 11,582 females); 7,874 of these people came from areas outside Major Cities. Of these 22,355 deaths, 469 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

The overall mortality of Australians due to 'all other causes' increased with increasing remoteness. Compared to those in Major Cities, death rates from 'all other causes' were:

- 0.95–1.15 times as high in regional areas; and
- 1.2–2.3 times as high in remote areas.

This broad observation does not take into account two factors previously stated on page 33, namely the likely effect on rates of high Indigenous mortality coupled with their greater representation outside Major Cities, and the possible effect of the migration of the frail aged.

When these factors are taken into account by restricting analysis of mortality to non-Indigenous Australians under the age of 65 years, death rates in regional areas are found to be similar to those in Major Cities, while those in remote areas are found to be lower than rates in Major Cities.

There were about 4 and 5 times as many deaths of Indigenous males and females as expected from 'all other causes', strongly influencing rates for the total population in remote areas. Death rates were significantly higher for Indigenous people in all age groups, particularly for those in the 25–64 year age groups, where rates were 6–14 times as high.

Compared to death rates in Major Cities, death rates for non-Indigenous males and females due to 'all other causes' were:

- slightly lower or similar for males, or 5–10% (1.05–1.1 times) higher for females in regional areas; and

- similar in remote areas, or for males in Very Remote areas 0.8 times the Major Cities rate.

There was a tendency for death rates for both the total and non-Indigenous populations aged 75 years and older to be lower (towards 0.7 or 0.8 times the Major Cities rate) in Remote and Very Remote areas.

When analysis is restricted to those who are younger than 65 years of age, death rates for non-Indigenous people were:

- 0.9, 0.9 and 0.7 times (that is, lower) for males in Inner and Outer Regional and Very Remote areas; and
- not significantly different to those in Major Cities for females from any of the four areas outside Major Cities.

Indigenous males and females younger than 65 years of age had death rates that were 5 and 6 times as high as for their non-Indigenous counterparts from Major Cities.

Annually, there were 434 'excess' deaths due to all other causes outside Major Cities (61, 192, 51 and 130 in each of the four areas). A large proportion of these are likely to be a consequence of high Indigenous mortality due to these causes.

'All other causes' of death account for 17% of all deaths (and 13% of 'excess' deaths) and about 32% of deaths (and 36% of the 'excess' deaths) for the Indigenous population.

Summary/discussion of individual causes of death reviewed in this chapter

Diabetes and renal disease were each responsible for 14% and 8% of the 7,874 deaths outside Major Cities due to 'all other causes'. 'Other causes n.e.d.' was by far the most common of the causes of death (77%), however, while this cause was responsible for 48% of the 'excess' deaths, diabetes was responsible for 44%, and renal diseases for another 8% of 'excess' deaths due to 'all other causes' (Table 8.1).

There were 1.1–3.8, 1.0–2.6 and 1.0–1.7 times as many deaths due to diabetes, renal disease and 'other causes n.e.d.' as expected (Table 8.2) in the four areas outside Major Cities (death rates increased for all causes with remoteness).

Because of its relative importance as a cause of death, particularly for Indigenous people, 'other causes n.e.d.' requires further investigation.

While the number of deaths was fairly evenly split between males and females, the 'excess' deaths were predominantly female.

Substantial numbers of 'excess' deaths due to 'other causes n.e.d.' occurred among male children younger than 5 years (48 per year), and to a lesser extent female children of the same age (14 per year). However the bulk of the 'excess' for 'other causes n.e.d.' was amongst females roughly 45 years and older, with the 'excess' becoming greater with age (180 per year in total for women 45 years and older).

Of the 191 'excess' deaths due to diabetes annually, 80–90% were amongst those aged 55 years and older; the majority were females.

Of the 33 'excess' deaths due to renal disease annually, 40% were 40–60 years, and 90% were 60–80 years, with fewer deaths than expected in those aged 80 years and older. The majority of 'excess' deaths were female.

Table 8.1: Summary table of deaths due to all other causes for all persons, 1997–1999

Cause	Annual deaths outside Major Cities			Annual 'excess' deaths outside Major Cities			Age groups in which the 'excess' occurs
	No.	%	% male	No.	%	% male	
Diabetes	1,137	14%	50%	191	44%	35%	21%: 35–59 13%: 60–74 65%: 75+
Renal disease	653	8%	47%	33	8%	29%	30%: 40–59 66%: 65–79
'other causes n.e.d.'	6,084	77%	49%	210	48%	All female	30%: <5 the rest: 50+
Total 'other' causes of death	7,874	100%	49%	434	100%	17%	14%: <5 80%: 55+

Note: Descriptions of the age groups within which the 'excess' occurs apply only to the total population.

Source: AIHW National Mortality Database.

Indigenous population

There were 4.4 times as many deaths of Indigenous people due to 'all other causes' as expected. For the three causes – diabetes, renal disease and 'other causes n.e.d.' – there were 13, 7 and 3.5 times as many deaths as expected.

For Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland, annually there were 327 deaths due to 'other causes n.e.d.', 233 of these being in 'excess' of what would be expected if non-Indigenous Major Cities rates applied to the Indigenous population. There would have been more in the other jurisdictions where identification is less complete. More than half (57%) of these deaths and 'excess' deaths were male. For both sexes, 26% of the 'excess' were younger than 5 years, 30% were 25–44 years and 26% were 45–64 years.

There were also 109 deaths of Indigenous people with an underlying diagnosis of diabetes in these jurisdictions annually (there would have been many others where diabetes was an associated cause), and 32 due to renal disease; there were 101 and 28 more deaths than expected for each of these causes respectively. Of these 'excess' deaths, males were responsible for about half of the deaths due to diabetes and one-third of the deaths due to renal disease. About 50% of the 'excess' diabetes deaths were amongst those aged 45–64 years, with others younger and older; 50% of the 'excess' due to renal disease occurred in those younger than 65 years.

Table 8.2: The ratio of observed deaths from all other causes to those expected if Major Cities^(a) rates applied in each ASGC Remoteness area, 1997–1999

Cause	Population	IR	OR	R ^(b)	VR ^(b)	National ^(c)
Diabetes	All persons	*1.1	*1.3	*1.7	*3.8	n.p.
	Non-Indigenous	*1.0+	*1.2	*1.2	0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*0.9	1.2	1.4	1.5	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*13.3
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*28.2
Renal disease	All persons	1.0	1.1	1.2	*2.6	n.p.
	Non-Indigenous	1.0	1.0	1.0	1.2	n.p.
	Non-Indigenous (aged 0–64 years)	1.1	1.1	1.0	1.1	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*7.1
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*25.1
'other causes n.e.d.'	All persons	1.0	*1.0+	*1.1	*1.7	n.p.
	Non-Indigenous	1.0	1.0	*0.9	*0.8	n.p.
	Non-Indigenous (aged 0–64 years)	*1.0–	*1.0–	*0.9	*0.8	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*3.5
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*4.1
Total 'other' causes of death	All persons	1.0	*1.1	*1.2	*2.0	n.p.
	Non-Indigenous	1.0	*1.1	0.9	*0.9	n.p.
	Non-Indigenous (aged 0–64 years)	*1.0–	1.0	0.9	0.9	n.p.
	Indigenous	n.p.	n.p.	n.p.	n.p.	*4.4
	Indigenous (aged 0–64 years)	n.p.	n.p.	n.p.	n.p.	*5.2

(a) While the number of expected deaths for the total population is based on the death rates of the total population from Major Cities, the expected number of deaths for the non-Indigenous population is based on the death rates of the non-Indigenous population from Major Cities. Because non-Indigenous people comprise the overwhelming majority (99%) of the population in Major Cities, these two standards are very similar, but not identical. This means that the ratios for the five population groups are not strictly comparable.

(b) Ratios calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

(c) The ratios for Indigenous persons are for SA, WA, NT and Qld combined. Data for the total and non-Indigenous populations for this (SA, WA, NT & Qld) area adds little relevant information and has not been published (n.p.). Because of concerns about the quality of the data, ratios for Indigenous people have not been published (n.p.) for each area.

Notes

1. Bold text and asterisk indicates that ratios are significantly different from 1 at the 95% level.
2. 1.0+ indicates that there were slightly (but significantly) more deaths than expected (but less than 1.05 times more).
3. 1.0– indicates that there were slightly (but significantly) fewer deaths than expected (but more than 0.95 times as many).

Source: AIHW National Mortality Database.

Non-Indigenous population

The high mortality of Indigenous people has a strong influence in elevating death rates in remote areas because of the relatively large proportion of the population in those areas that are Indigenous. For renal disease and 'other causes n.e.d.', rates of death for non-Indigenous people were no longer higher in regional and remote areas.

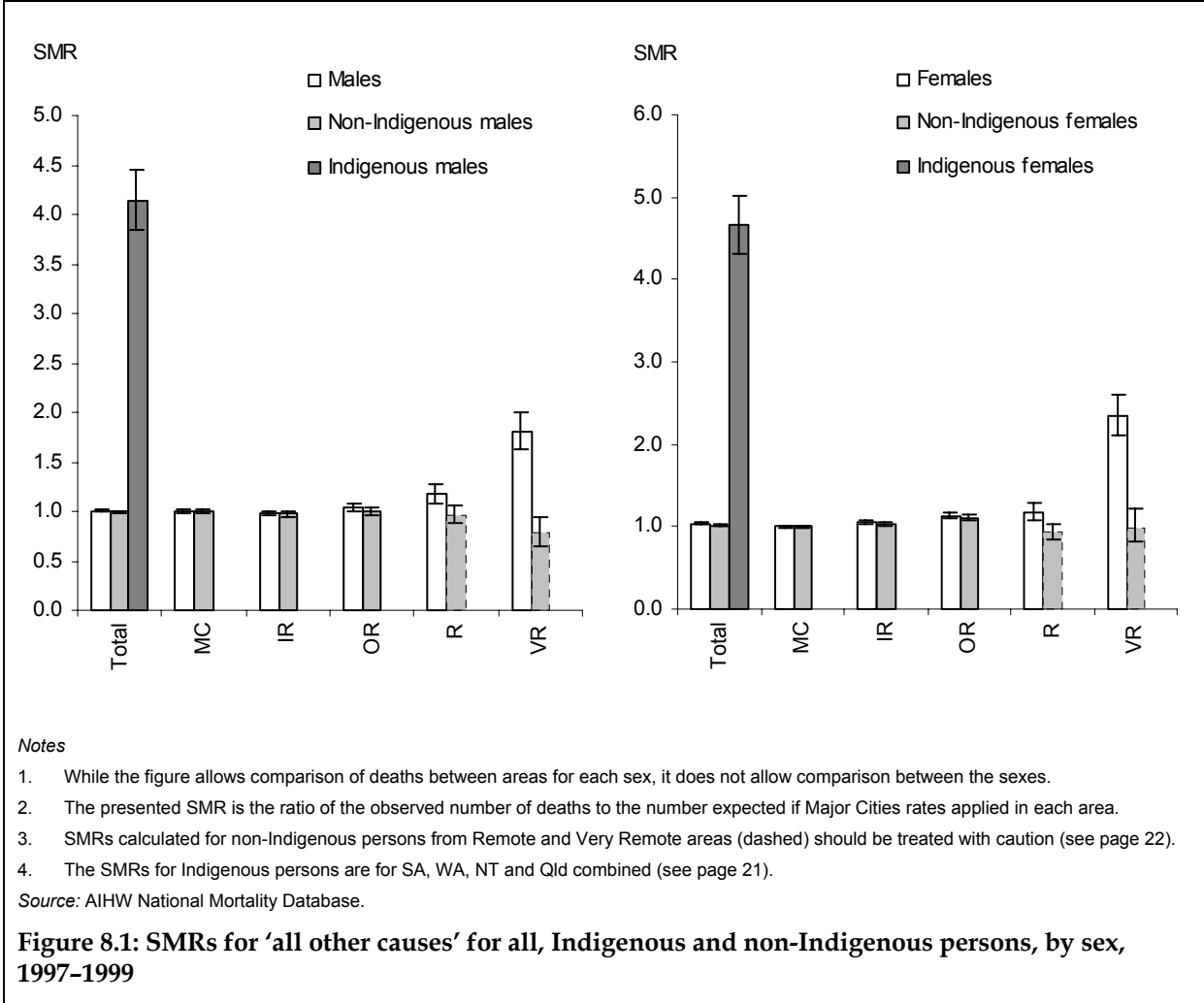
There were slightly more deaths of non-Indigenous people due to diabetes than expected in Inner Regional areas, and 1.2 times as many in Outer Regional and Remote areas. Rates for non-Indigenous people younger than 65 years old were lower in Inner Regional areas and not significantly different in the other areas to rates in Major Cities.

There were about as many deaths of non-Indigenous people as expected due to renal disease in each of the four areas outside Major Cities.

There were about as many deaths as expected due to 'other causes n.e.d.' in regional areas, and 0.8-0.9 times as many as expected in remote areas.

8.1 Overall mortality due to 'all other causes'

Annually, there were 6,937, 2,299, 1,210, 190 and 136 deaths of males and 7,544, 2,512, 1,252, 154 and 120 deaths of females in the five areas respectively as a result of these other causes.



There were more deaths than expected in all areas except for males in Inner Regional areas where there were slightly fewer deaths than expected (Figure 8.1 and Table 8.3).

- For males, death rates increased from 0.95, through 1.05 and 1.2 to reach 1.8 times the Major Cities rate in the four areas outside Major Cities.
- The differential was greater for females, with death rates increasing from 1.05 through 1.15 and 1.20 to reach 2.4 times the Major Cities rate in the four areas outside Major Cities.
- There were about 4-5 times as many deaths of Indigenous people due to these other causes as expected.

Table 8.3: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, all other causes (including diabetes and renal disease), males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	108	1.06	*1.24	*1.47	*2.35	92	0.95	1.05	1.23	*2.87
5–14	4	0.97	1.16	1.85	*3.37	4	1.19	1.26	2.36	*4.92
15–24	18	0.95	0.79	1.24	1.78	9	0.88	0.98	*2.10	2.31
25–44	35	*0.75	*0.85	1.22	*2.62	14	0.97	1.06	*2.18	*3.89
45–64	79	*0.93	1.08	*1.31	*2.76	43	*1.13	*1.34	*2.05	*5.76
65–74	313	1.01	1.06	*1.34	*1.93	217	1.04	*1.20	*1.34	*2.84
75+	1,347	1.00	1.03	0.93	*0.78	1,284	*1.06	*1.11	0.88	1.17
Total	..	*0.97	*1.04	*1.17	*1.81	..	*1.05	*1.14	*1.18	*2.34

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates for males and females due to these causes were about 100 per 100,000 per year for 0–4-year-olds, then rising from 4 per 100,000 per year, through 200–300 per 100,000 per year for 65–74-year-olds, to about 1,300 per 100,000 per year for those who are 75 years and older.

There tended to be slightly fewer deaths, or about as many deaths, of males as expected in Inner Regional areas and in the oldest age groups. However, for females and for males in other areas and age groups, the tendency was for rates to be higher. Rates for young children were elevated in Outer Regional areas (for males) and in remote areas generally.

As a result of ‘all other causes’, there were 59 fewer and 43, 28 and 61 more deaths of males than expected annually, and 120, 149, 23 and 69 ‘excess’ deaths of females annually in the four areas outside Major Cities. There were fewer deaths than expected in those older than 85 years in remote areas. About 15% of the ‘excess’ occurred in those younger than 5 years (particularly in Outer Regional and remote areas), and another 80% in those aged 55 years and older.

Indigenous population

Annually in the period 1997–1999, there were 469 deaths of Indigenous people (248 males and 221 females) in South Australia, Western Australia, the Northern Territory and Queensland due to these other causes. There would also have been a number of deaths due to these causes in the other jurisdictions where identification is less reliable. Of these 469 deaths, there were 362 (188 males and 174 females) more than expected.

There were 4 and 5 times as many deaths of Indigenous males and females as expected as a result of these other causes (Table 8.4). Of this ‘excess’, 15–20% occurred in children younger than 5 years old, 25% among 25–44-year-olds, 35% among 45–64-year-olds and 20% among those aged 65 years and older.

Non-Indigenous population

Annually, there were 6,868, 2,267, 1,134, 142 and 40 deaths of non-Indigenous males and 7,485, 2,489, 1,187, 112 and 33 deaths of non-Indigenous females in the five areas respectively, as a result of 'all other causes'.

There were fewer deaths of non-Indigenous males than expected in almost all areas outside Major Cities, and more deaths of non-Indigenous females from regional areas than expected due to this cause (Table 8.4).

Table 8.4: The ratio of observed deaths to those expected as a result of all other causes (including diabetes and renal disease), if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	107	1.05	1.09	1.18	0.92	*3.0	92	0.95	0.95	0.96	0.81	*2.6
5–14	4	1.00	1.10	0.40	0.83	*3.8	4	1.17	1.19	1.34	2.90	*4.3
15–24	18	0.95	0.76	1.06	0.39	*2.1	9	0.91	0.97	1.04	1.63	*3.6
25–44	34	*0.75	*0.73	*0.59	0.59	*6.3	13	0.96	0.91	0.80	0.52	*9.4
45–64	78	*0.92	1.01	0.94	0.83	*8.3	42	*1.13	*1.14	1.21	*1.76	*13.5
65–74	312	1.00	1.04	1.23	1.16	*4.3	216	1.03	*1.16	1.10	0.83	*6.2
75+	1,347	1.00	1.04	0.92	*0.69	*1.9	1,283	*1.04	*1.11	*0.86	0.94	*2.2
Total	..	*0.97	1.00	0.96	*0.79	*4.1	..	*1.04	*1.10	0.93	0.99	*4.7
0–64	..	*0.91	*0.94	0.88	*0.74	*4.8	..	1.04	1.03	1.04	1.17	*5.8

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

There were fewer deaths of non-Indigenous males aged 25–44 years than expected in practically all areas outside Major Cities, and fewer deaths than expected of 45–64-year-old males from Inner Regional areas.

There were more deaths of non-Indigenous females aged 45–64 years than expected in practically all areas outside Major Cities, and more deaths than expected amongst females who were older than this, at least in regional areas. There were fewer deaths of elderly non-Indigenous males and females in remote areas than expected. The substantially higher rates

that appear in remote areas for the total population do not appear to exist in the non-Indigenous population.

As a result of 'all other causes', there were 63 fewer, 5 more, and 6 and 11 fewer deaths of non-Indigenous males than expected annually, and 96 and 111 more, 8 fewer and the same number of deaths of non-Indigenous females as expected annually in the four areas outside Major Cities. There were slightly fewer deaths than expected in those older than 75 years, although these did not strongly affect the overall pattern.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 358 (200 male, 158 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of 'all other causes'. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 358 deaths, there were 289 (158 males and 131 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were about 5 times as many deaths as expected as a result of 'all other causes' (Table 8.4).

Non-Indigenous population

Annually, there were 2,331, 651, 356, 56 and 17 deaths of non-Indigenous males younger than 65 years and 1,282, 417, 207, 32 and 11 deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of 'all other causes'.

Death rates due to 'all other causes', for people living outside Major Cities, were not significantly different from those for people living in Major Cities (Table 8.4).

As a result of 'all other causes', there were 66, 23, 7 and 6 fewer deaths of non-Indigenous males younger than 65 years annually, and 16, 7, 1 and 2 more deaths of non-Indigenous females younger than 65 years than expected annually in the four areas outside Major Cities.

8.2 Diabetes

Diabetes mellitus (ICD-10 codes E10–E14) 'is a major cause of illness and disability in Australia. It is also a leading cause of blindness and lower limb amputations, and can lead to pregnancy-related complications for both the mother and foetus or newborn child. Diabetes is an important risk factor for several other chronic diseases including heart disease, stroke and renal disease' (AIHW 2002a). Risk factors include genetic factors and obesity, low birth weight, increasing age, physical inactivity and poor diet (AIHW 2002a).

Diabetes can be recorded on death records as the underlying cause of death or it may be recorded as an associated cause of death. Diabetes as the underlying cause of death is responsible for over 2% of deaths; diabetes as an associated cause is responsible for about 7.5% of all deaths.

Rates of diabetes death are usually reported for diabetes as an associated cause of death, because reporting underlying cause understates the impact of diabetes as a cause of death. However, this report describes the differences in diabetes mortality between areas based on diabetes as the underlying cause of death. This approach has been taken:

- to avoid double counting (as some deaths with diabetes as an associated cause may have been included in counts of deaths for circulatory disease, for example); and
- the inter-regional pattern as expressed by SMRs for each area are much the same using either method.

Numbers of deaths and 'excess' deaths attributed to, and SMRs calculated for, diabetes as the underlying cause of death are presented in Appendix A (page 301).

Average annual numbers of deaths and average annual numbers of 'excess' deaths due to diabetes defined as the underlying cause of death are underestimates of the burden of diabetes.

Summary of findings

Annually, diabetes as the underlying cause of death was responsible for the deaths of 2,951 people (1,493 males and 1,458 females); 1,137 of these people came from areas outside Major Cities. Of these 2,951 deaths, 109 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rate due to diabetes, similar or slightly higher in regional areas, rises rapidly in remote areas. There were 1.0–1.1, 1.3–1.4, 1.5–1.9 and 2.8–5.5 times as many deaths of males and females as expected in the four areas outside Major Cities.

There were about 11 and 16 times as many deaths of Indigenous males and females as expected from diabetes as the underlying cause of death.

For non-Indigenous people death rates due to diabetes tended to be higher outside Major Cities (about 5% higher for males and 20% higher for females). This tendency was much weaker than for the total population, particularly in remote areas, where, in one group (Very Remote area males), there were fewer (0.5 times as many) deaths than expected.

Annually, there were 191 'excess' deaths due to diabetes as the underlying cause of death outside Major Cities (33, 96, 24 and 39 in each of the four areas). For the total population, about 65% of the 'excess' occurred in those aged 75 years and older, but for the non-Indigenous population, almost all of the 'excess' occurs in this age group. For Indigenous

people, the great bulk of the 'excess' death occurs prior to reaching 75 years. A substantial proportion of the 'excess', particularly in remote areas, is likely to be a consequence of high rates in Indigenous populations.

For diabetes as an associated cause of death, the patterns were similar, although the numbers of deaths were higher. For example, there were 9,666 deaths with diabetes recorded as an associated cause of death, 3,645 of which were of people from areas outside Major Cities, and 251 of which were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland. Details are described in Appendix A (page 301).

About 30% of deaths where diabetes is mentioned on the death certificate had diabetes identified as the underlying cause of death. Of the rest, 14%, 42%, 4%, 1% and about 10% had neoplasms, diseases of the circulatory and respiratory systems, injury and other causes listed as the underlying diagnosis respectively.

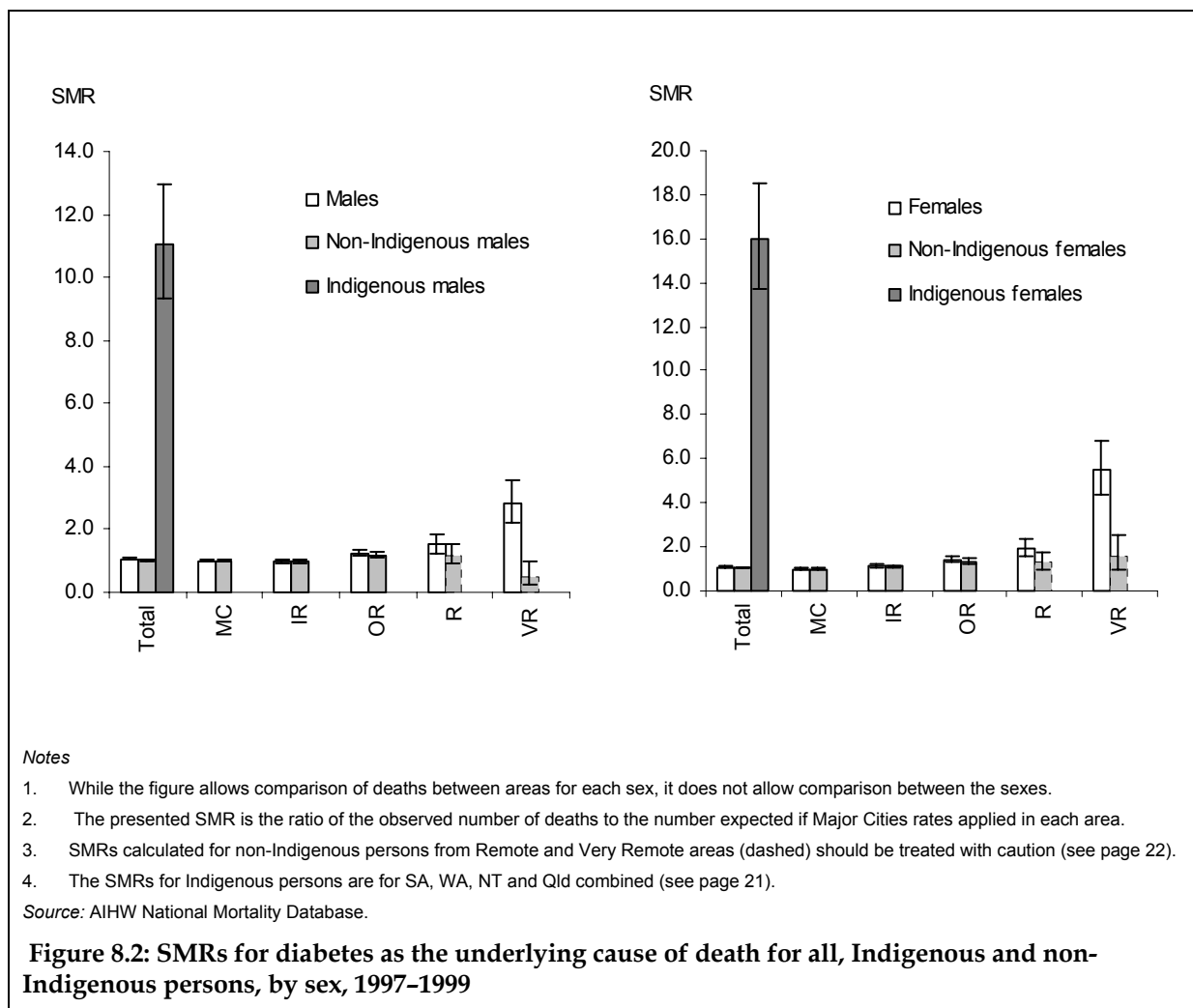
The ratios of observed to expected deaths for Indigenous people (7 and 12 for males and females) were lower than for diabetes as the underlying cause of death (11 and 16). This perhaps reflects the higher proportion of Indigenous deaths where diabetes is mentioned and where it is also stated as the underlying cause of death (43% of Indigenous deaths compared to 30% for the total population).

Overall mortality due to diabetes

Annually, there were 919, 324, 195, 31 and 24 deaths of males and 895, 319, 188, 28 and 28 deaths of females in the five areas respectively, as a result of diabetes as the underlying cause of death.

Death rates due to diabetes were similar or slightly higher in regional areas, then increased rapidly in remote areas (Figure 8.2 and Table 8.5).

- There were similar numbers of observed and expected deaths of males in Inner Regional areas, but 1.3, 1.5 and 2.8 times as many deaths as expected in Outer Regional, Remote and Very Remote areas.
- There were 1.1, 1.4, 1.9 and 5.5 times as many deaths of females as expected in the four areas outside Major Cities.
- There were respectively about 11 and 16 times as many deaths of Indigenous males and females as expected from diabetes.



Ratios of observed to expected deaths for diabetes as an associated cause of death are described in Appendix A (see page 301).

In Major Cities, death rates due to diabetes for males were close to 0 at age 40 years, rising gradually at first to 30 per 100,000 per year at age 60-64 years, then to 330 per 100,000 per year for those 85 years and older. The pattern was similar for females, but rates were lower to 250 per 100,000 per year for those 85 years and older.

Age-specific rates were substantially higher in some age groups. The difference appears to be most marked in 45-64-year-olds, where in Outer Regional, Remote and Very Remote areas, there were 1.3, 2.2 and 6.7 times as many deaths of males and 2.1, 3.6 and 17.0 times as many deaths of females as expected. A very large proportion of all the deaths due to diabetes in Very Remote areas were deaths of Indigenous people.

As a result of diabetes, there were 2, 38, 10 and 15 'excess' deaths of males annually, and 31, 57, 13 and 23 'excess' deaths of females annually in the four areas outside Major Cities. Most of the 'excess' deaths occurred in people older than 60 years, but in Remote and Very Remote areas there was substantial contribution also from those as young as 40 years.

Table 8.5: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, diabetes as the underlying cause of death, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	0	..	..	..	..	<1	0.00	0.00	0.00	0.00
5–14	0	..	..	..	..	<1	0.00	0.00	0.00	0.00
15–24	<1	0.61	4.51	1.24	11.03	<1	0.00	0.00	3.68	6.75
25–44	1	1.10	*1.71	2.75	*9.54	1	1.02	1.36	*5.27	*17.24
45–64	12	0.85	*1.25	*2.24	*6.70	7	0.93	*2.06	*3.58	*16.96
65–74	69	0.92	1.10	1.16	1.69	43	0.92	*1.29	1.49	*4.16
75+	188	*1.11	*1.30	1.29	0.72	146	*1.21	*1.39	*1.59	*2.31
Total	..	1.01	*1.25	*1.52	*2.82	..	*1.11	*1.44	*1.93	*5.48

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Indigenous population

Annually in the period 1997–1999, there were 109 deaths of Indigenous people (50 males and 59 females) in South Australia, Western Australia, the Northern Territory and Queensland with the underlying cause of death reported as diabetes. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 109 deaths, there were 101 (45 males and 56 females) more than expected. There were also an additional 142 deaths, and 124 ‘excess’ deaths of Indigenous people in these four jurisdictions due to diabetes as an associated cause of death (Appendix A).

There were 11 and 16 times as many deaths of Indigenous males and females due to diabetes as expected (Table 8.6).

- Almost all of the ‘excess’ deaths occurred amongst those who were 25 years and older.
- About 60–80% of the ‘excess’ deaths were amongst those who were 25–64 years.
- For females, about 20% of the ‘excess’ deaths occurred amongst 65–74-year-olds and a similar percentage among those 75 years and older.

Non-Indigenous population

Annually, there were 909, 320, 179, 22 and 3 deaths of non-Indigenous males and 883, 314, 169, 18 and 6 deaths of non-Indigenous females in the five areas respectively as a result of diabetes.

Death rates due to diabetes tended to be higher outside Major Cities, however, this tendency was much weaker than for the total population, particularly in remote areas; in fact there were half as many deaths of non-Indigenous males as expected in Very Remote areas (Table 8.6).

- There were as many deaths of non-Indigenous males as expected in Inner Regional and Remote areas, 1.2 times as many as expected in Outer Regional areas and 0.5 times (half) as many as expected in Very Remote areas.
- There were 1.1, 1.3 and 1.3 times as many deaths of non-Indigenous females due to diabetes as expected in Inner and Outer Regional and Remote areas. Although elevated, the number of observed deaths of non-Indigenous females in Very Remote areas was not significantly greater than expected.

Ratios of observed to expected deaths for diabetes as an associated cause of death are described in the Appendix (Table A.6).

Table 8.6: The ratio of observed deaths to those expected as a result of diabetes as the underlying cause of death if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			IR	OR	R	VR	
		(ratio)						(ratio)				
0–4	0	..	..	..	..	0	..	..	..	..	..	..
5–14	0	..	..	..	..	<1	0.06	0.00	0.00	0.00	0.00	0.0
15–24	<1	0.62	2.49	0.00	0.00	6.7	<1	0.01	0.00	0.00	0.00	6.4
25–44	1	1.02	1.09	0.84	0.23	*26.9	1	1.05	0.70	2.49	0.66	*37.1
45–64	12	*0.83	1.03	1.35	0.96	*23.1	6	0.91	*1.52	1.63	*4.32	*39.5
65–74	68	0.92	1.05	1.00	0.59	*6.8	43	0.91	1.16	0.75	1.37	*12.4
75+	188	*1.11	*1.30	1.27	0.26	*3.1	146	*1.20	*1.38	*1.45	1.14	*6.6
Total	..	1.00	*1.17	1.19	*0.52	*11.1	..	*1.10	*1.33	*1.34	1.59	*16.0
0–64	..	0.86	1.05	1.27	0.85	*23.3	..	0.90	*1.38	1.71	*3.52	*35.9

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific death rates for non-Indigenous people living in Major Cities were similar to those for the total population.

Age-specific death rates for non-Indigenous people as a result of diabetes were similar in Inner Regional areas to those for the total population. Rates were a little lower in Outer Regional areas than for the total population and were substantially lower in Remote and Very Remote areas, such that rates in those areas were no longer significantly different from those in Major Cities (except for 45–64-year-old women). Rates for people older than 74 years

were least affected and most similar to those for the total population (but even so, rates still tend to be lower in Remote and Very Remote areas than in the total population).

As a result of diabetes, there were 1, 26, 4 and -3 'excess' deaths of non-Indigenous males annually, and 29, 42, 5 and 2 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. Almost all of the 'excess' deaths occurred in people older than 70 years, frequently with fewer than expected in younger age groups.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 72 (36 male, 36 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland due to diabetes as the underlying cause. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 72 deaths, there were 70 (35 males and 35 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 23 and 36 times as many deaths as expected as a result of diabetes (Table 8.6).

Non-Indigenous population

Annually, there were 180, 50, 33, 6 and 2 deaths of non-Indigenous males younger than 65 years and 98, 28, 21, 4 and 2 deaths of non-Indigenous females younger than 65 years in the five areas as a result of diabetes as the underlying cause.

For 0–64-year-old non-Indigenous males, there were about as many deaths as expected due to diabetes in each area outside Major Cities (Table 8.6). However, rates tended to increase with remoteness for 0–64-year-old non-Indigenous females, with 1.4 and 3.5 times as many deaths as expected in Outer Regional and Very Remote areas respectively.

As a result of diabetes, there were -8, 2, 1 and 0 'excess' deaths of non-Indigenous males younger than 65 years annually, and -3, 6, 1 and 2 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. There was relatively little 'excess' death due to diabetes for this group.

8.3 Specified renal disease

The renal disease described in this report comprises renal tubulo-interstitial diseases (ICD-10 codes N10–N16) and renal failure (ICD-10 codes N17–N19) and has been included because of its importance as a cause of death for Indigenous persons. Renal disease can be a result of damage to kidneys caused by high blood pressure, diabetes, infections and long-term use of analgesics (AIHW 2002a).

Summary of findings

Annually, renal diseases were responsible for the deaths of 1,870 people (858 males and 1,012 females); 653 of these people came from areas outside Major Cities. Of these 1,870 deaths, 32 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates in most areas were similar to or slightly higher than in Major Cities. However, there were 2.0 and 3.4 times as many deaths of males and females due to this cause as expected in Very Remote areas.

There were about 5 and 9 times as many deaths of Indigenous males and females as expected from renal diseases.

For non-Indigenous people living outside Major Cities, there were about as many deaths due to renal disease as expected.

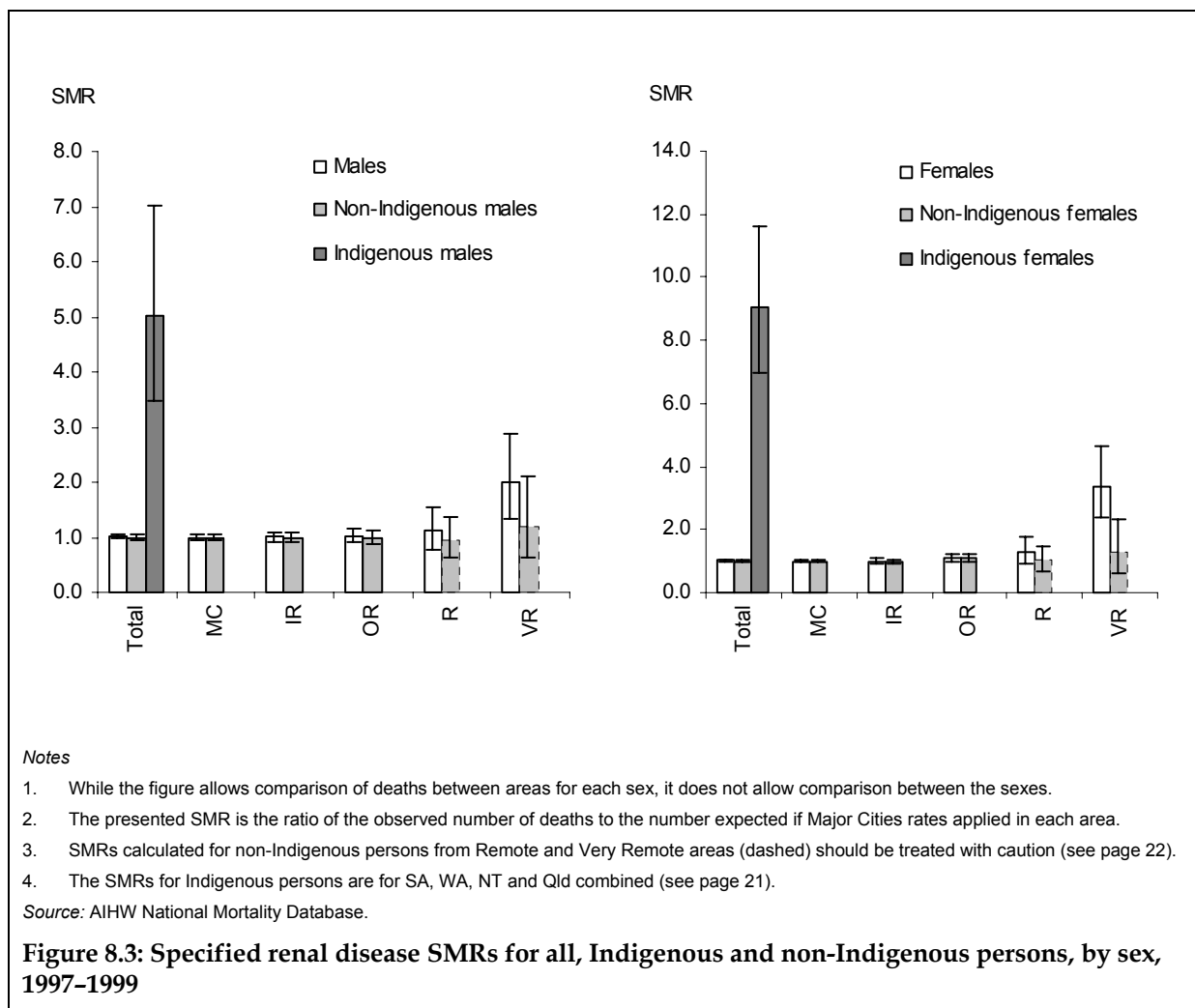
Annually, there were 33 'excess' deaths due to renal disease outside Major Cities (1, 14, 5 and 13 in each of the four areas). A large proportion of these is associated with high Indigenous mortality due to this cause.

Overall mortality due to renal diseases

Annually, there were 549, 194, 93, 12 and 10 deaths of males and 668, 211, 107, 14 and 12 deaths of females in the five areas respectively as a result of renal disease.

Although death rates are similar or slightly higher in areas outside Major Cities, rates in most areas (except Very Remote areas) are not significantly different from rates in Major Cities (Figure 8.3 and Table 8.7).

- There were about as many deaths of males as expected due to renal disease in Inner Regional, Outer Regional and Remote areas, however, there were 2.0 times as many as expected in Very Remote areas.
- There were as many deaths of females as expected due to renal disease in Inner Regional areas, but 1.1 and 3.4 times as many as expected in Outer Regional and Very Remote areas.
- There were about 2–3 times as many deaths of Indigenous people due to renal disease as expected.



In Major Cities, death rates for males due to renal disease were close to 0 per 100,000 per year until age 50 years, rising slowly at first, then faster to 97 per 100,000 per year for males and 58 per 100,000 per year for females at age 75-79 years, and 443 per 100,000 per year for males and 291 per 100,000 per year for females for those 85 years and older.

As a result of renal diseases, there were 1, 2, 1 and 5 'excess' deaths of males annually, and 0, 11, 3 and 9 'excess' deaths of females annually in the four areas outside Major Cities. There were fewer deaths than expected in those older than 80 years in all areas. The bulk of the 'excess' deaths occurred in people aged 60-80 years.

Table 8.7: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, specified renal disease, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	<1	0.97	0.25	0.00	0.00	0	..	..	..	..
5–14	0	..	..	..	..	0	..	..	..	..
15–24	<1	0.00	0.00	10.97	15.05	<1	0.96	0.25	0.00	0.00
25–44	<1	1.86	*6.82	7.06	0.00	<1	1.19	0.51	4.00	*29.79
45–64	2	0.99	1.03	2.17	*4.56	2	1.20	*1.76	2.61	*12.61
65–74	14	1.20	1.31	1.51	*6.25	16	1.17	1.20	*2.71	*6.75
75+	188	0.98	0.97	0.94	1.29	138	0.96	1.08	1.00	1.59
Total	..	1.01	1.02	1.11	*1.99	..	1.00	*1.12	1.31	*3.35

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Indigenous population

Annually in the period 1997–1999, there were 32 deaths of Indigenous people (11 males and 21 females) in South Australia, Western Australia, the Northern Territory and Queensland due to renal disease. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 32 deaths, there were 28 (9 males and 19 females) more than expected.

There were 5 and 9 times as many deaths of Indigenous males and females as expected as a result of renal disease (Table 8.8). This ‘excess’ was scattered more or less evenly amongst Indigenous males and females at all life stages older than 25 years.

Non-Indigenous population

Annually, there were 548, 194, 90, 10 and 4 deaths of non-Indigenous males and 664, 209, 102, 10 and 3 deaths of non-Indigenous females in the five areas respectively as a result of renal disease. More than two-thirds of deaths due to this cause in Very Remote areas were deaths of Indigenous people.

There were about as many deaths of non-Indigenous people as expected due to this cause in areas outside Major Cities.

Age-specific death rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

Table 8.8: The ratio of observed deaths to those expected as a result of specified renal disease if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indigenous	MC rate	Non-Indigenous				Indigenous
		IR	OR	R	VR			IR	OR	R	VR	
0–4	<1	0.99	0.27	0.78	0.00	0.0	0	..	..	..	..	..
5–14	0	..	..	..	..	..	0	..	..	..	..	..
15–24	<1	0.00	0.00	12.56	27.52	0.0	<1	1.26	0.34	0.00	0.00	13.4
25–44	<1	1.87	3.15	0.15	0.00	*50.8	<1	1.20	0.67	0.00	0.00	*54.5
45–64	2	1.02	1.00	1.39	0.00	*14.5	2	1.24	1.22	0.50	2.24	*30.3
65–74	14	1.08	1.10	0.94	*3.51	*8.3	16	1.14	1.06	2.06	0.63	*15.2
75+	188	0.98	0.97	0.91	0.87	*3.0	138	0.95	1.08	0.92	1.31	*3.2
Total	..	1.00	0.99	0.95	1.21	*5.0	..	0.98	1.08	1.02	1.27	*9.1
0–64	..	1.04	1.07	1.46	0.66	*15.1	..	1.23	1.14	0.42	1.79	*33.7

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

As a result of renal disease, there were -1, -1, 0 and 1 'excess' deaths of non-Indigenous males annually, and -4, 8, 0 and 1 'excess' deaths of non-Indigenous females annually in the four areas outside Major Cities. There were generally fewer deaths than expected in those older than 70 years and slightly more deaths than expected in those aged 60–69 years.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 14 (4 male, 10 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of renal disease. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 14 deaths, there were 14 (4 males and 10 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 15 and 34 times as many deaths as expected as a result of renal disease (Table 8.8).

Non-Indigenous population

Annually, there were 28, 9, 5, 1 and 0 deaths of non-Indigenous males younger than 65 years and 30, 12, 5, 0 and 0 deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of renal disease.

Death rates due to renal disease, for people living outside Major Cities, were not significantly different from those for people living in Major Cities (Table 8.8).

As a result of renal disease, there were no 'excess' deaths of non-Indigenous males younger than 65 years annually, and 2, 1, 0 and 0 'excess' deaths of non-Indigenous females younger than 65 years annually in the four areas outside Major Cities. There was little 'excess' death due to renal disease for non-Indigenous people younger than 65 years of age.

8.4 All other causes of death not elsewhere described

This section describes all the other causes of death not elsewhere included in this report (that is, excluding circulatory and respiratory diseases, neoplasms, injury, diabetes and renal diseases). Causes include infectious diseases, diseases of the digestive system and of the endocrine system (excluding diabetes), conditions originating in the perinatal period, and so on.

Although findings refer to a very broad range of conditions and may have limited application for advising policy, they are included for the sake of completeness, and may suggest further research.

Summary of findings

Annually, these 'other causes n.e.d.' were responsible for the deaths of 17,534 people (8,422 males and 9,112 females); 6,084 of these people came from areas outside Major Cities. Of these 17,534 deaths, 327 were of Indigenous people living in South Australia, Western Australia, the Northern Territory and Queensland.

Death rates were similar or up to 1.1 times as high in regional areas, and 1.1 to 1.9 times as high in remote areas.

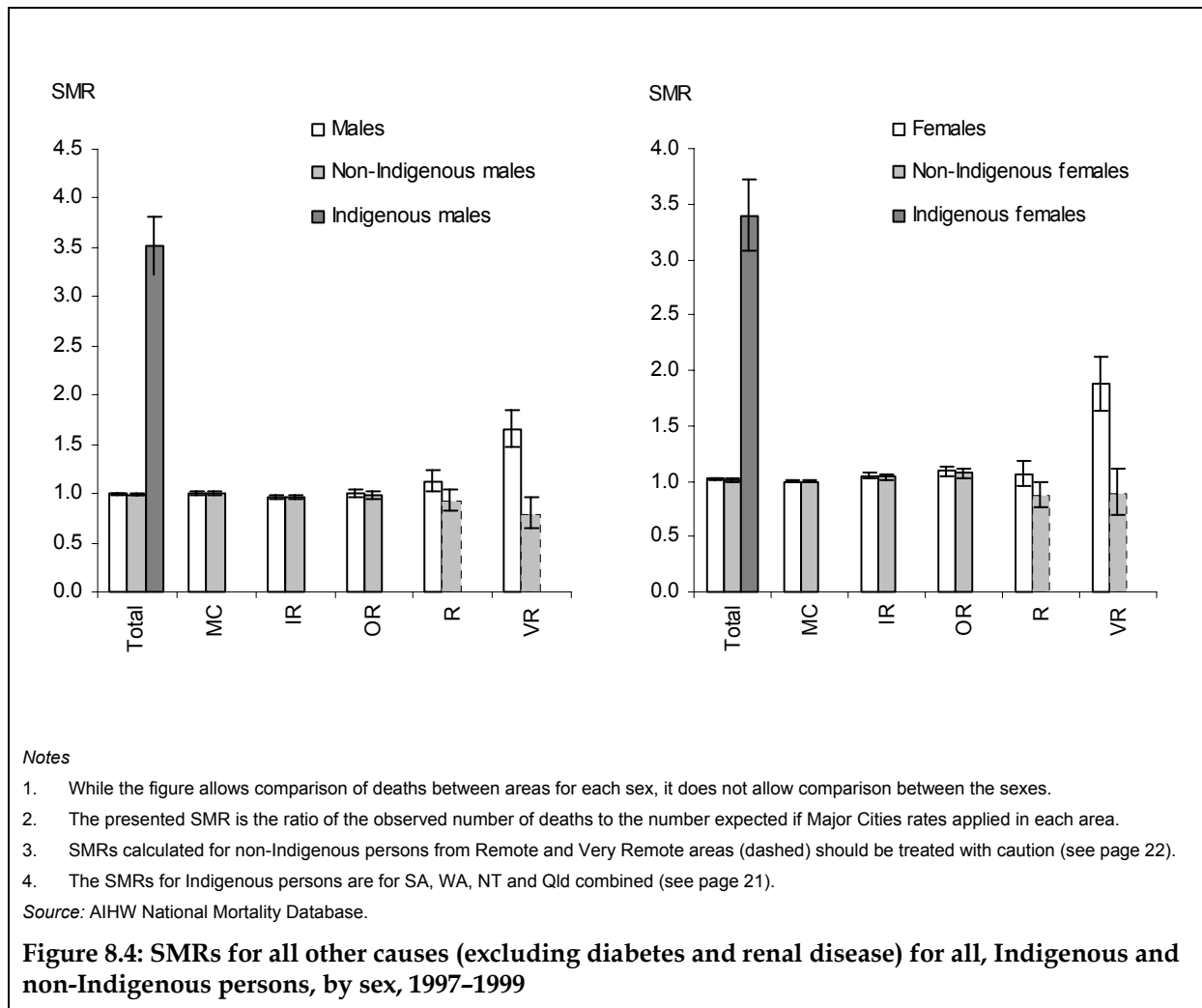
There were about 3.5 times as many deaths of Indigenous males and females as expected from these other causes.

For non-Indigenous people living outside Major Cities, there were about as many or fewer deaths due to these other causes as expected. For non-Indigenous females in regional areas, rates were about 5% (1.05 times) higher than for females in Major Cities.

Annually, there were 210 'excess' deaths due to these other causes outside Major Cities (27, 83, 23 and 78 in each of the four areas). Averaged across all areas, the 'excess' was all female, however, while there were more deaths of females in all areas than expected, there were fewer deaths of males in regional areas and substantially more than expected in remote areas. A large proportion of these 'excess' deaths, particularly in remote areas, appears likely to be a consequence of the large proportion of the population in these areas who are Indigenous, coupled with high death rates evident for Indigenous people in Australia due to these causes.

Overall mortality due to these other causes

Annually, there were 5,469, 1,780, 922, 147 and 103 deaths of males and 5,981, 1,982, 957, 112 and 79 deaths of females in the five areas respectively as a result of these 'other causes n.e.d.'.



Death rates were similar or slightly higher in regional areas, and substantially higher in remote areas (Figure 8.4 and Table 8.9).

- There were similar numbers of, or slightly fewer deaths of regional males than expected, but 5-10% more deaths of females than expected in regional areas.
- There were 1.1 times as many deaths as expected in Remote areas, and 1.7-1.9 times as many as expected in Very Remote areas.
- There were about 3.5 times as many deaths of Indigenous people due to these other causes as expected.

Table 8.9: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, other causes not elsewhere described (and excludes diabetes and renal disease), males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	108	1.06	*1.24	*1.47	*2.35	92	0.95	1.05	1.23	*2.87
5–14	4	0.94	1.16	1.85	*3.37	4	1.21	1.29	2.41	*5.02
15–24	18	0.95	*0.75	1.20	1.61	9	0.90	1.02	*2.10	2.24
25–44	33	*0.74	*0.80	1.15	*2.40	13	0.96	1.05	*1.97	*2.67
45–64	65	0.94	1.05	1.11	*1.99	34	*1.16	*1.18	*1.73	*3.31
65–74	230	1.02	1.03	*1.38	*1.75	158	1.06	*1.18	1.17	*2.09
75+	971	0.99	0.99	0.86	*0.70	1,000	*1.05	*1.07	*0.75	0.96
Total	..	*0.97	1.00	*1.12	*1.66	..	*1.05	*1.09	1.06	*1.87

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex and age group, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

In Major Cities, death rates for males and females due to these causes were about 100 per 100,000 per year for 0–4-year-olds, then rising from 4 per 100,000 per year, through 150–250 per 100,000 per year for 65–74-year-olds, to about 1000 per 100,000 per year for those who are 75 years and older.

Death rates were significantly higher for children younger than 5 years in Outer Regional and remote areas (clearly for boys, and clearly for girls in Very Remote areas).

As a result of these ‘other causes n.e.d.’, there were 63 fewer and 3, 16 and 41 more deaths of males than expected annually, and 89, 80, 7 and 37 more deaths of females than expected annually in the four areas outside Major Cities. There were slightly fewer deaths of elderly people in remote areas, but this had little effect on the overall pattern.

Indigenous population

Annually in the period 1997–1999, there were 327 deaths of Indigenous people (184 males and 141 females) in South Australia, Western Australia, the Northern Territory and Queensland due to these other causes. There would also have been a number of deaths due to this cause in the other jurisdictions where identification is less reliable. Of these 327 deaths, there were 233 (133 males and 99 females) more than expected.

There were 3.5 and 3.4 times as many deaths of Indigenous males and females as expected as a result of these other causes (Table 8.10). Of this ‘excess’ death, 26% were younger than 5 years, 30% were aged 25–44 years, and 26% were aged 45–64 years.

Non-Indigenous population

Annually, there were 5,412, 1,754, 865, 110 and 33 deaths of non-Indigenous males and 5,938, 1,966, 917, 84 and 24 deaths of non-Indigenous females in the five areas respectively as a result of these other causes.

There were fewer (0.95 times as many) deaths of non-Indigenous males and 1.05 times as many deaths of non-Indigenous females as expected in regional areas (Table 8.10). In remote areas there were 0.8 times as many deaths of non-Indigenous males and 0.9 times as many deaths of non-Indigenous females as expected.

Table 8.10: The ratio of observed deaths to those expected as a result of other causes not elsewhere described (and excludes diabetes and renal disease), if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR			(ratio)	IR	OR	R		VR	(ratio)
0–4	107	1.05	1.09	1.18	0.92	*3.0	92	0.95	0.95	0.81	0.81	*2.6
5–14	4	0.98	1.09	0.40	0.83	*3.8	4	1.20	1.22	1.37	2.96	*4.4
15–24	17	0.96	*0.74	1.03	0.27	*2.0	9	0.92	1.01	1.08	1.69	*3.4
25–44	32	*0.74	*0.71	*0.58	0.61	*5.5	12	0.96	0.92	0.72	0.52	*7.3
45–64	64	0.94	1.00	0.85	0.83	*5.6	34	*1.17	1.07	1.17	1.28	*8.0
65–74	230	1.02	1.03	*1.32	1.14	*3.4	158	1.06	*1.17	1.10	0.70	*3.6
75+	971	0.99	1.00	0.86	0.74	*1.4	1,000	1.03	*1.08	*0.77	0.86	*1.4
Total	..	*0.97	0.98	0.93	*0.80	*3.5	..	*1.04	*1.07	*0.87	0.89	*3.4
0–64	..	*0.91	*0.93	*0.84	*0.74	*4.0	..	*1.05	*1.00	*1.00	*0.99	*4.3

* Significantly different from 1 (that is, rates are significantly different from those for non-Indigenous people in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex and age group, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Age-specific rates for non-Indigenous people living in Major Cities were similar to those for the total population living in Major Cities.

While there were a small number of age groups for which there were slightly more deaths than expected, the great majority of age groups had about as many or fewer deaths than expected. The substantial differences that appear in the total population, particularly in Very Remote areas, do not appear to exist in the non-Indigenous population.

As a result of these other causes, there were 63, 21, 9 and 8 fewer deaths of non-Indigenous males than expected; and 71 and 61 more deaths, and 13 and 3 fewer deaths of non-Indigenous females than expected annually in the four areas outside Major Cities. There were slightly fewer deaths than expected in those older than 75 years, primarily in remote areas, but this had little effect on the overall pattern of 'excess' deaths.

Mortality for those aged 0–64 years

Indigenous population

Annually there were 271 (160 male, 112 female) deaths of Indigenous people younger than 65 years in South Australia, Western Australia, the Northern Territory and Queensland as a result of these 'other causes n.e.d.'. There would also have been a number of deaths due to this cause in the other jurisdictions. Of these 271 deaths, there were 205 (120 males and 86 females) more than expected.

For Indigenous males and females who were younger than 65 years, there were 4 times as many deaths as expected due to these 'other causes n.e.d.' (Table 8.10).

Non-Indigenous population

Annually, there were 2,123, 591, 318, 48 and 16 deaths of non-Indigenous males younger than 65 years and 1,154, 376, 180, 28 and 9 deaths of non-Indigenous females younger than 65 years in the five areas respectively as a result of these other causes.

There were fewer deaths of non-Indigenous males younger than 65 years in all areas (0.9 times as many as expected in regional areas, 0.8 times as many in remote areas) and 5% more deaths of non-Indigenous females younger than 65 years as expected in Inner Regional areas, and about as many deaths of these females as expected in Outer Regional and remote areas (Table 8.10).

As a result of these other causes, there were 58, 25, 9 and 6 fewer deaths of non-Indigenous males younger than 65 years than expected annually. There were 17, 0, 0 and 0 more deaths of non-Indigenous females younger than 65 years than expected annually in the four areas outside Major Cities.

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Appendices

Appendix A: Standardised mortality ratios

The ratio of the observed number of deaths to the expected number of deaths is presented with 95% confidence intervals.

Ratios are presented for a range of causes:

Table A1: Males and females from each area for the period 1997–1999.

Table A2: Non-Indigenous males and females from each area for the period 1997–1999.

Table A3: Indigenous males and females from South Australia, Western Australia, the Northern Territory and Queensland for the period 1997–1999.

The number of expected deaths for males and females was based respectively on the age-specific death rates for males and females from Major Cities as the standards. The number of expected Indigenous and non-Indigenous deaths was based on the age-specific death rates for non-Indigenous males and females from Major Cities as the standards.

Table A4: SMRs for ICD-10 chapters.

Table A5: Ratios are also presented for males and females from each area, in each year 1992–1999, for all causes of death and for the major causes of death. Percentage changes in the ratio of observed to expected deaths, in the period 1992–1999 are also presented as the slope.

SMRs for the period 1992–1999 were calculated using age-specific death rates for the period 1997–1999 as the standard. The SMR compares the number of deaths observed with the number that would be expected if age-specific death rates for the period 1997–1999 applied in each area in each year.

Table A6: Diabetes as an associated cause of death (including observed numbers and ‘excess’ numbers of deaths).

Table A1: Standardised mortality ratio by cause, in regional and remote areas, by sex 1997–1999

Cause		Male					Female				
		IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)
Standardised mortality ratio											
Chapter 2^(b)											
Lung cancer	SMR	1.02	1.08	1.13	1.31	1.02	0.96	0.93	1.16	1.43	0.99
	<i>L95%CI^(c)</i>	<i>0.98</i>	<i>1.03</i>	<i>0.98</i>	<i>1.06</i>	<i>1.00</i>	<i>0.91</i>	<i>0.86</i>	<i>0.92</i>	<i>1.02</i>	<i>0.96</i>
	<i>U95%CI^(d)</i>	<i>1.05</i>	<i>1.13</i>	<i>1.29</i>	<i>1.62</i>	<i>1.03</i>	<i>1.02</i>	<i>1.01</i>	<i>1.43</i>	<i>1.96</i>	<i>1.01</i>
Colorectal cancer	SMR	1.07	1.05	1.06	0.61	1.02	1.09	1.13	0.92	0.82	1.03
	<i>L95%CI^(c)</i>	<i>1.02</i>	<i>0.98</i>	<i>0.87</i>	<i>0.40</i>	<i>1.00</i>	<i>1.04</i>	<i>1.05</i>	<i>0.71</i>	<i>0.51</i>	<i>1.01</i>
	<i>U95%CI^(d)</i>	<i>1.12</i>	<i>1.13</i>	<i>1.27</i>	<i>0.89</i>	<i>1.04</i>	<i>1.15</i>	<i>1.22</i>	<i>1.17</i>	<i>1.24</i>	<i>1.06</i>
Breast cancer	SMR	—	—	—	—	—	0.99	0.99	0.89	0.81	1.00
	<i>L95%CI^(c)</i>	—	—	—	—	—	<i>0.95</i>	<i>0.93</i>	<i>0.71</i>	<i>0.55</i>	<i>0.97</i>
	<i>U95%CI^(d)</i>	—	—	—	—	—	<i>1.04</i>	<i>1.07</i>	<i>1.10</i>	<i>1.15</i>	<i>1.02</i>
Cervical cancer	SMR	..	..	..	..	..	0.95	1.27	1.53	3.32	1.04
	<i>L95%CI^(c)</i>	..	..	..	..	..	<i>0.81</i>	<i>1.03</i>	<i>0.85</i>	<i>1.77</i>	<i>0.96</i>
	<i>U95%CI^(d)</i>	..	..	..	..	..	<i>1.11</i>	<i>1.55</i>	<i>2.54</i>	<i>5.68</i>	<i>1.11</i>
Prostate cancer	SMR	1.14	1.20	1.16	1.02	1.06	..	..	..	..	..
	<i>L95%CI^(c)</i>	<i>1.08</i>	<i>1.13</i>	<i>0.95</i>	<i>0.73</i>	<i>1.03</i>	..	..	..	..	..
	<i>U95%CI^(d)</i>	<i>1.19</i>	<i>1.28</i>	<i>1.40</i>	<i>1.39</i>	<i>1.08</i>	..	..	..	..	..
Melanoma cancer	SMR	1.27	1.06	0.85	0.45	1.06	1.02	1.01	0.99	0.96	1.00
	<i>L95%CI^(c)</i>	<i>1.16</i>	<i>0.92</i>	<i>0.53</i>	<i>0.15</i>	<i>1.01</i>	<i>0.89</i>	<i>0.82</i>	<i>0.52</i>	<i>0.30</i>	<i>0.94</i>
	<i>U95%CI^(d)</i>	<i>1.39</i>	<i>1.22</i>	<i>1.28</i>	<i>1.05</i>	<i>1.11</i>	<i>1.16</i>	<i>1.22</i>	<i>1.70</i>	<i>2.27</i>	<i>1.07</i>
'Other' neoplasms	SMR	1.03	1.02	0.99	0.99	1.01	0.99	0.98	0.91	1.08	0.99
	<i>L95%CI^(c)</i>	<i>1.01</i>	<i>0.99</i>	<i>0.90</i>	<i>0.85</i>	<i>1.00</i>	<i>0.96</i>	<i>0.94</i>	<i>0.80</i>	<i>0.89</i>	<i>0.98</i>
	<i>U95%CI^(d)</i>	<i>1.06</i>	<i>1.06</i>	<i>1.09</i>	<i>1.14</i>	<i>1.02</i>	<i>1.01</i>	<i>1.02</i>	<i>1.02</i>	<i>1.30</i>	<i>1.01</i>

(continued)

Table A1 (continued): Standardised mortality ratio by cause, in regional and remote areas, by sex 1997–1999

Cause		Males					Females				
		IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)
Standardised mortality ratio											
Chapter 9											
Stroke	SMR	1.03	1.04	0.98	1.38	1.01	1.02	1.00	0.91	0.91	1.00
	<i>L95%CI^(c)</i>	<i>1.00</i>	<i>0.99</i>	<i>0.85</i>	<i>1.14</i>	<i>1.00</i>	<i>0.99</i>	<i>0.96</i>	<i>0.79</i>	<i>0.72</i>	<i>0.99</i>
	<i>U95%CI^(d)</i>	<i>1.07</i>	<i>1.09</i>	<i>1.13</i>	<i>1.66</i>	<i>1.03</i>	<i>1.05</i>	<i>1.04</i>	<i>1.04</i>	<i>1.14</i>	<i>1.02</i>
Rheumatic heart disease	SMR	0.94	1.42	2.28	8.06	1.10	0.96	1.34	2.64	5.85	1.06
	<i>L95%CI^(c)</i>	<i>0.70</i>	<i>1.00</i>	<i>0.98</i>	<i>4.18</i>	<i>0.97</i>	<i>0.78</i>	<i>1.03</i>	<i>1.47</i>	<i>3.02</i>	<i>0.97</i>
	<i>U95%CI^(d)</i>	<i>1.24</i>	<i>1.96</i>	<i>4.52</i>	<i>14.03</i>	<i>1.24</i>	<i>1.16</i>	<i>1.70</i>	<i>4.36</i>	<i>10.22</i>	<i>1.15</i>
Ischaemic heart disease	SMR	1.10	1.08	1.11	1.36	1.04	1.05	1.07	1.01	1.12	1.02
	<i>L95%CI^(c)</i>	<i>1.08</i>	<i>1.06</i>	<i>1.03</i>	<i>1.22</i>	<i>1.03</i>	<i>1.03</i>	<i>1.04</i>	<i>0.92</i>	<i>0.95</i>	<i>1.01</i>
	<i>U95%CI^(d)</i>	<i>1.12</i>	<i>1.11</i>	<i>1.20</i>	<i>1.51</i>	<i>1.04</i>	<i>1.07</i>	<i>1.11</i>	<i>1.12</i>	<i>1.30</i>	<i>1.03</i>
'Other' circulatory diseases	SMR	1.09	1.22	1.18	1.24	1.05	1.12	1.18	1.22	1.49	1.05
	<i>L95%CI^(c)</i>	<i>1.06</i>	<i>1.17</i>	<i>1.04</i>	<i>1.01</i>	<i>1.03</i>	<i>1.09</i>	<i>1.13</i>	<i>1.07</i>	<i>1.21</i>	<i>1.03</i>
	<i>U95%CI^(d)</i>	<i>1.13</i>	<i>1.28</i>	<i>1.34</i>	<i>1.49</i>	<i>1.07</i>	<i>1.16</i>	<i>1.24</i>	<i>1.39</i>	<i>1.81</i>	<i>1.06</i>
Chapter 10											
Influenza	SMR	1.81	2.30	2.36	1.36	1.35	1.45	1.52	3.88	2.88	1.18
	<i>L95%CI^(c)</i>	<i>1.36</i>	<i>1.58</i>	<i>0.67</i>	<i>0.01</i>	<i>1.15</i>	<i>1.10</i>	<i>1.01</i>	<i>1.65</i>	<i>0.32</i>	<i>1.04</i>
	<i>U95%CI^(d)</i>	<i>2.37</i>	<i>3.23</i>	<i>5.88</i>	<i>7.06</i>	<i>1.56</i>	<i>1.87</i>	<i>2.20</i>	<i>7.69</i>	<i>10.14</i>	<i>1.35</i>
Pneumonia	SMR	0.85	0.97	1.33	2.26	0.97	0.98	1.02	1.26	2.35	1.01
	<i>L95%CI^(c)</i>	<i>0.77</i>	<i>0.86</i>	<i>0.97</i>	<i>1.55</i>	<i>0.94</i>	<i>0.91</i>	<i>0.91</i>	<i>0.92</i>	<i>1.59</i>	<i>0.97</i>
	<i>U95%CI^(d)</i>	<i>0.93</i>	<i>1.10</i>	<i>1.80</i>	<i>3.17</i>	<i>1.01</i>	<i>1.06</i>	<i>1.13</i>	<i>1.69</i>	<i>3.36</i>	<i>1.04</i>
Asthma	SMR	1.08	1.29	2.17	1.09	1.07	1.07	1.18	1.01	1.58	1.03
	<i>L95%CI^(c)</i>	<i>0.90</i>	<i>1.01</i>	<i>1.26</i>	<i>0.28</i>	<i>0.98</i>	<i>0.92</i>	<i>0.95</i>	<i>0.49</i>	<i>0.60</i>	<i>0.97</i>
	<i>U95%CI^(d)</i>	<i>1.29</i>	<i>1.63</i>	<i>3.47</i>	<i>2.84</i>	<i>1.16</i>	<i>1.23</i>	<i>1.44</i>	<i>1.86</i>	<i>3.37</i>	<i>1.11</i>
COPD	SMR	1.21	1.39	1.27	1.90	1.10	1.06	1.12	1.38	1.84	1.03
	<i>L95%CI^(c)</i>	<i>1.16</i>	<i>1.32</i>	<i>1.08</i>	<i>1.54</i>	<i>1.08</i>	<i>1.00</i>	<i>1.03</i>	<i>1.11</i>	<i>1.33</i>	<i>1.01</i>
	<i>U95%CI^(d)</i>	<i>1.26</i>	<i>1.46</i>	<i>1.48</i>	<i>2.31</i>	<i>1.12</i>	<i>1.11</i>	<i>1.20</i>	<i>1.69</i>	<i>2.48</i>	<i>1.06</i>
'Other' respiratory diseases	SMR	0.86	0.89	0.91	1.71	0.96	0.82	0.91	1.04	1.32	0.96
	<i>L95%CI^(c)</i>	<i>0.79</i>	<i>0.79</i>	<i>0.64</i>	<i>1.15</i>	<i>0.92</i>	<i>0.75</i>	<i>0.79</i>	<i>0.70</i>	<i>0.71</i>	<i>0.92</i>
	<i>U95%CI^(d)</i>	<i>0.93</i>	<i>1.00</i>	<i>1.26</i>	<i>2.46</i>	<i>1.00</i>	<i>0.90</i>	<i>1.03</i>	<i>1.50</i>	<i>2.25</i>	<i>0.99</i>

(continued)

Table A1 (continued): Standardised mortality ratio by cause, in regional and remote areas, by sex 1997–1999

Cause		Males					Females				
		IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)
Standardised mortality ratio											
Chapter 20											
Suicide	SMR	1.27	1.27	1.47	1.65	1.10	1.03	0.97	0.86	1.18	1.00
	<i>L95%CI^(c)</i>	1.20	1.18	1.25	1.33	1.07	0.92	0.82	0.53	0.66	0.95
	<i>U95%CI^(d)</i>	1.33	1.36	1.72	2.02	1.12	1.15	1.13	1.31	1.97	1.05
Inter-personal violence	SMR	0.80	1.00	1.64	4.06	1.01	0.91	1.02	2.94	9.13	1.08
	<i>L95%CI^(c)</i>	0.65	0.78	1.00	2.67	0.93	0.68	0.69	1.59	5.74	0.97
	<i>U95%CI^(d)</i>	0.98	1.27	2.54	5.91	1.09	1.19	1.46	4.97	13.81	1.21
Accidental shooting	SMR	3.08	4.17	6.72	15.50	1.99	—	—	—	—	—
	<i>L95%CI^(c)</i>	1.87	2.27	1.65	4.45	1.53	—	—	—	—	—
	<i>U95%CI^(d)</i>	4.78	7.00	17.8	38.25	2.55	—	—	—	—	—
Motor vehicle accidents	SMR	1.65	1.93	2.42	3.81	1.28	1.65	1.85	2.27	3.10	1.25
	<i>L95%CI^(c)</i>	1.55	1.77	2.01	3.12	1.24	1.50	1.62	1.64	2.08	1.19
	<i>U95%CI^(d)</i>	1.76	2.09	2.89	4.61	1.32	1.82	2.11	3.07	4.46	1.32
'Other' injuries	SMR	1.10	1.31	1.60	2.05	1.07	1.11	1.21	1.44	2.08	1.06
	<i>L95%CI^(c)</i>	1.04	1.23	1.36	1.68	1.05	1.04	1.10	1.12	1.50	1.02
	<i>U95%CI^(d)</i>	1.16	1.41	1.86	2.47	1.10	1.19	1.33	1.83	2.83	1.09
Other Chapters											
Diabetes	SMR	1.01	1.25	1.52	2.82	1.05	1.11	1.44	1.93	5.48	1.09
	<i>L95%CI^(c)</i>	0.94	1.15	1.22	2.21	1.02	1.04	1.32	1.54	4.38	1.06
	<i>U95%CI^(d)</i>	1.07	1.35	1.86	3.56	1.08	1.18	1.56	2.39	6.77	1.13
Renal disease	SMR	1.01	1.02	1.11	1.99	1.01	1.00	1.12	1.31	3.35	1.02
	<i>L95%CI^(c)</i>	0.93	0.91	0.78	1.32	0.97	0.92	1.00	0.94	2.36	0.99
	<i>U95%CI^(d)</i>	1.09	1.15	1.54	2.86	1.05	1.08	1.25	1.78	4.63	1.06
'Other' causes n.e.d.	SMR	0.97	1.00	1.12	1.66	1.00	1.05	1.09	1.06	1.87	1.02
	<i>L95%CI^(c)</i>	0.94	0.97	1.02	1.48	0.99	1.02	1.05	0.95	1.64	1.01
	<i>U95%CI^(d)</i>	0.99	1.04	1.23	1.85	1.01	1.07	1.13	1.18	2.13	1.04

(a) The columns titled 'Total' refers to the SMRs for the total Australian population, of males and females.

(b) Chapters reported here are ICD-10 chapters.

(c) Lower 95% confidence interval.

(d) Upper 95% confidence interval.

Note: By definition, the SMR for Major Cities in all cases is equal to 1.00. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for males, those for females are based on MC rates for females).

Source: AIHW National Mortality Database.

Table A2: Standardised mortality ratio by cause, in regional and remote areas, non-Indigenous persons, by sex, 1997–1999

Cause ^(b)	Males						Females				
	IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)	
	Standardised mortality ratio										
Chapter 2											
Lung cancer	SMR	1.02	1.08	1.13	1.18	1.01	0.96	0.91	1.11	1.05	0.98
	<i>L95%CI^(c)</i>	<i>0.98</i>	<i>1.02</i>	<i>0.98</i>	<i>0.93</i>	<i>1.00</i>	<i>0.91</i>	<i>0.84</i>	<i>0.87</i>	<i>0.64</i>	<i>0.96</i>
	<i>U95%CI^(d)</i>	<i>1.05</i>	<i>1.13</i>	<i>1.29</i>	<i>1.49</i>	<i>1.03</i>	<i>1.02</i>	<i>0.99</i>	<i>1.39</i>	<i>1.63</i>	<i>1.01</i>
Colorectal cancer	SMR	1.07	1.06	1.04	0.68	1.02	1.09	1.14	0.97	0.94	1.03
	<i>L95%CI^(c)</i>	<i>1.02</i>	<i>0.99</i>	<i>0.85</i>	<i>0.43</i>	<i>1.00</i>	<i>1.03</i>	<i>1.05</i>	<i>0.75</i>	<i>0.55</i>	<i>1.01</i>
	<i>U95%CI^(d)</i>	<i>1.12</i>	<i>1.13</i>	<i>1.26</i>	<i>1.03</i>	<i>1.05</i>	<i>1.15</i>	<i>1.22</i>	<i>1.24</i>	<i>1.49</i>	<i>1.06</i>
Breast cancer	SMR	—	—	—	—	—	0.99	0.99	0.86	0.73	1.00
	<i>L95%CI^(c)</i>	—	—	—	—	—	<i>0.95</i>	<i>0.92</i>	<i>0.68</i>	<i>0.44</i>	<i>0.97</i>
	<i>U95%CI^(d)</i>	—	—	—	—	—	<i>1.04</i>	<i>1.07</i>	<i>1.08</i>	<i>1.14</i>	<i>1.02</i>
Cervical cancer	SMR	..	..	..	..	..	0.94	1.18	1.15	1.07	1.01
	<i>L95%CI^(c)</i>	..	..	..	..	..	<i>0.80</i>	<i>0.95</i>	<i>0.56</i>	<i>0.19</i>	<i>0.94</i>
	<i>U95%CI^(d)</i>	..	..	..	..	..	<i>1.11</i>	<i>1.45</i>	<i>2.09</i>	<i>3.24</i>	<i>1.08</i>
Prostate cancer	SMR	1.13	1.21	1.20	1.17	1.06	..	..	..	..	..
	<i>L95%CI^(c)</i>	<i>1.08</i>	<i>1.14</i>	<i>0.98</i>	<i>0.81</i>	<i>1.03</i>	..	..	..	..	..
	<i>U95%CI^(d)</i>	<i>1.19</i>	<i>1.30</i>	<i>1.45</i>	<i>1.64</i>	<i>1.08</i>	..	..	..	..	..
Melanoma cancer	SMR	1.27	1.08	0.89	0.59	1.06	1.01	1.02	1.01	1.26	1.01
	<i>L95%CI^(c)</i>	<i>1.16</i>	<i>0.93</i>	<i>0.56</i>	<i>0.19</i>	<i>1.02</i>	<i>0.88</i>	<i>0.84</i>	<i>0.53</i>	<i>0.36</i>	<i>0.94</i>
	<i>U95%CI^(d)</i>	<i>1.39</i>	<i>1.24</i>	<i>1.35</i>	<i>1.38</i>	<i>1.11</i>	<i>1.15</i>	<i>1.24</i>	<i>1.77</i>	<i>3.10</i>	<i>1.07</i>
'Other' neoplasms	SMR	1.03	1.02	0.95	0.75	1.01	0.98	0.97	0.87	0.84	0.99
	<i>L95%CI^(c)</i>	<i>1.01</i>	<i>0.98</i>	<i>0.86</i>	<i>0.61</i>	<i>1.00</i>	<i>0.96</i>	<i>0.93</i>	<i>0.76</i>	<i>0.64</i>	<i>0.98</i>
	<i>U95%CI^(d)</i>	<i>1.06</i>	<i>1.05</i>	<i>1.05</i>	<i>0.91</i>	<i>1.02</i>	<i>1.01</i>	<i>1.01</i>	<i>0.99</i>	<i>1.08</i>	<i>1.00</i>

(continued)

Table A2 (continued): Standardised mortality ratio by cause, in regional and remote areas, non-Indigenous persons, by sex, 1997–1999

Cause ^(b)		Males					Females				
		IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)
Standardised mortality ratio											
Chapter 9											
Stroke	SMR	1.03	1.04	0.92	1.03	1.01	1.00	0.99	0.87	0.61	1.00
	<i>L95%CI^(c)</i>	<i>1.00</i>	<i>0.99</i>	<i>0.79</i>	<i>0.79</i>	<i>0.99</i>	<i>0.98</i>	<i>0.95</i>	<i>0.75</i>	<i>0.43</i>	<i>0.98</i>
	<i>U95%CI^(d)</i>	<i>1.07</i>	<i>1.09</i>	<i>1.07</i>	<i>1.32</i>	<i>1.03</i>	<i>1.03</i>	<i>1.03</i>	<i>1.01</i>	<i>0.85</i>	<i>1.01</i>
Rheumatic heart disease	SMR	0.95	1.26	1.05	0.04	1.01	0.97	1.12	1.35	1.56	1.01
	<i>L95%CI^(c)</i>	<i>0.70</i>	<i>0.85</i>	<i>0.22</i>	<i>0.00</i>	<i>0.89</i>	<i>0.79</i>	<i>0.84</i>	<i>0.54</i>	<i>0.19</i>	<i>0.92</i>
	<i>U95%CI^(d)</i>	<i>1.26</i>	<i>1.78</i>	<i>2.97</i>	<i>2.81</i>	<i>1.15</i>	<i>1.17</i>	<i>1.46</i>	<i>2.78</i>	<i>5.33</i>	<i>1.10</i>
Ischaemic heart disease	SMR	1.10	1.07	1.04	0.96	1.03	1.04	1.06	0.97	0.86	1.01
	<i>L95%CI^(c)</i>	<i>1.07</i>	<i>1.04</i>	<i>0.95</i>	<i>0.83</i>	<i>1.02</i>	<i>1.01</i>	<i>1.03</i>	<i>0.87</i>	<i>0.69</i>	<i>1.00</i>
	<i>U95%CI^(d)</i>	<i>1.12</i>	<i>1.10</i>	<i>1.12</i>	<i>1.11</i>	<i>1.04</i>	<i>1.06</i>	<i>1.09</i>	<i>1.07</i>	<i>1.05</i>	<i>1.02</i>
'Other' circulatory diseases	SMR	1.09	1.22	1.10	0.86	1.04	1.10	1.18	1.14	0.80	1.04
	<i>L95%CI^(c)</i>	<i>1.06</i>	<i>1.16</i>	<i>0.96</i>	<i>0.64</i>	<i>1.03</i>	<i>1.07</i>	<i>1.13</i>	<i>0.99</i>	<i>0.57</i>	<i>1.03</i>
	<i>U95%CI^(d)</i>	<i>1.13</i>	<i>1.27</i>	<i>1.27</i>	<i>1.12</i>	<i>1.06</i>	<i>1.14</i>	<i>1.23</i>	<i>1.31</i>	<i>1.10</i>	<i>1.06</i>
Chapter 10											
Influenza	SMR	1.74	2.36	2.62	0.27	1.33	1.43	1.54	4.17	2.24	1.18
	<i>L95%CI^(c)</i>	<i>1.30</i>	<i>1.62</i>	<i>0.74</i>	<i>0.00</i>	<i>1.14</i>	<i>1.09</i>	<i>1.02</i>	<i>1.78</i>	<i>0.02</i>	<i>1.03</i>
	<i>U95%CI^(d)</i>	<i>2.29</i>	<i>3.32</i>	<i>6.51</i>	<i>5.43</i>	<i>1.54</i>	<i>1.85</i>	<i>2.23</i>	<i>8.27</i>	<i>11.57</i>	<i>1.34</i>
Pneumonia	SMR	0.84	0.92	1.09	1.30	0.96	0.96	1.01	1.07	0.88	0.99
	<i>L95%CI^(c)</i>	<i>0.77</i>	<i>0.80</i>	<i>0.74</i>	<i>0.68</i>	<i>0.92</i>	<i>0.89</i>	<i>0.90</i>	<i>0.75</i>	<i>0.37</i>	<i>0.96</i>
	<i>U95%CI^(d)</i>	<i>0.92</i>	<i>1.04</i>	<i>1.54</i>	<i>2.25</i>	<i>1.00</i>	<i>1.04</i>	<i>1.12</i>	<i>1.48</i>	<i>1.75</i>	<i>1.03</i>
Asthma	SMR	1.08	1.19	2.22	0.76	1.05	1.06	1.13	0.89	0.77	1.02
	<i>L95%CI^(c)</i>	<i>0.90</i>	<i>0.92</i>	<i>1.27</i>	<i>0.07</i>	<i>0.97</i>	<i>0.91</i>	<i>0.91</i>	<i>0.39</i>	<i>0.08</i>	<i>0.96</i>
	<i>U95%CI^(d)</i>	<i>1.29</i>	<i>1.51</i>	<i>3.59</i>	<i>2.86</i>	<i>1.15</i>	<i>1.23</i>	<i>1.39</i>	<i>1.74</i>	<i>2.75</i>	<i>1.10</i>
COPD	SMR	1.21	1.38	1.19	1.44	1.09	1.05	1.10	1.25	0.99	1.02
	<i>L95%CI^(c)</i>	<i>1.16</i>	<i>1.31</i>	<i>1.00</i>	<i>1.09</i>	<i>1.07</i>	<i>0.99</i>	<i>1.01</i>	<i>0.99</i>	<i>0.57</i>	<i>1.00</i>
	<i>U95%CI^(d)</i>	<i>1.25</i>	<i>1.45</i>	<i>1.41</i>	<i>1.88</i>	<i>1.11</i>	<i>1.10</i>	<i>1.18</i>	<i>1.56</i>	<i>1.60</i>	<i>1.05</i>
'Other' respiratory diseases	SMR	0.86	0.86	0.67	0.59	0.95	0.82	0.86	0.90	0.55	0.95
	<i>L95%CI^(c)</i>	<i>0.79</i>	<i>0.76</i>	<i>0.43</i>	<i>0.24</i>	<i>0.91</i>	<i>0.75</i>	<i>0.75</i>	<i>0.57</i>	<i>0.14</i>	<i>0.91</i>
	<i>U95%CI^(d)</i>	<i>0.93</i>	<i>0.97</i>	<i>0.99</i>	<i>1.22</i>	<i>0.98</i>	<i>0.90</i>	<i>0.99</i>	<i>1.35</i>	<i>1.44</i>	<i>0.98</i>

(continued)

Table A2 (continued): Standardised mortality ratio by cause, in regional and remote areas, non-Indigenous persons, by sex, 1997–1999

Cause ^(b)		Males					Females				
		IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)
Standardised mortality ratio											
Chapter 19											
Suicide	SMR	1.27	1.24	1.28	1.05	1.08	1.04	0.92	0.80	0.87	1.00
	<i>L95%CI</i> ^(c)	1.20	1.15	1.06	0.75	1.06	0.93	0.77	0.48	0.33	0.95
	<i>U95%CI</i> ^(d)	1.34	1.34	1.53	1.43	1.11	1.16	1.08	1.27	1.84	1.05
Inter-personal violence	SMR	0.79	0.92	1.20	2.10	0.96	0.91	0.71	1.39	2.40	0.97
	<i>L95%CI</i> ^(c)	0.64	0.70	0.63	0.94	0.89	0.68	0.43	0.48	0.50	0.85
	<i>U95%CI</i> ^(d)	0.97	1.20	2.07	4.04	1.04	1.20	1.10	3.12	6.85	1.09
Accidental shooting	SMR	3.10	4.27	7.24	22.27	2.01	—	—	—	—	—
	<i>L95%CI</i> ^(c)	1.88	2.33	1.78	6.39	1.54	—	—	—	—	—
	<i>U95%CI</i> ^(d)	4.81	7.18	19.2	54.95	2.57	—	—	—	—	—
Motor vehicle accidents	SMR	1.67	1.90	2.24	2.63	1.26	1.66	1.78	1.79	0.98	1.22
	<i>L95%CI</i> ^(c)	1.57	1.74	1.82	1.92	1.21	1.51	1.55	1.20	0.32	1.16
	<i>U95%CI</i> ^(d)	1.78	2.07	2.72	3.52	1.30	1.83	2.04	2.56	2.297	1.29
'Other' injuries	SMR	1.09	1.28	1.47	1.74	1.06	1.10	1.18	1.21	1.07	1.04
	<i>L95%CI</i> ^(c)	1.04	1.20	1.23	1.33	1.03	1.03	1.07	0.90	0.57	1.01
	<i>U95%CI</i> ^(d)	1.15	1.38	1.74	2.24	1.09	1.18	1.30	1.59	1.82	1.08
Other Chapters											
Diabetes	SMR	1.00	1.17	1.19	0.52	1.02	1.10	1.33	1.34	1.59	1.06
	<i>L95%CI</i> ^(c)	0.94	1.08	0.92	0.24	0.99	1.03	1.22	1.00	0.93	1.03
	<i>U95%CI</i> ^(d)	1.07	1.28	1.51	0.97	1.05	1.17	1.45	1.75	2.54	1.09
Renal disease	SMR	1.00	0.99	0.95	1.21	1.00	0.98	1.08	1.02	1.27	1.00
	<i>L95%CI</i> ^(c)	0.92	0.88	0.64	0.63	0.96	0.91	0.96	0.68	0.60	0.97
	<i>U95%CI</i> ^(d)	1.08	1.12	1.36	2.09	1.04	1.06	1.21	1.46	2.35	1.04
'Other' causes n.e.d.	SMR	0.97	0.98	0.93	0.80	0.99	1.04	1.07	0.87	0.89	1.01
	<i>L95%CI</i> ^(c)	0.94	0.94	0.83	0.65	0.98	1.01	1.03	0.77	0.70	1.00
	<i>U95%CI</i> ^(d)	0.99	1.01	1.03	0.97	1.00	1.06	1.11	0.98	1.12	1.03

(a) The columns titled 'Total' refer to the SMRs for the total Australian population, of males and females.

(b) Chapters reported here are ICD-10 chapters.

(c) Lower 95% confidence interval.

(d) Upper 95% confidence interval.

Source: AIHW National Mortality Database.

Table A3: SMR by cause for Indigenous people in SA, WA, NT and Qld, 1997–1999

Cause ^(c)	Male			Female		
	SMR	L95%CI ^(a)	U95%CI ^(b)	SMR	L95%CI ^(a)	U95%CI ^(b)
	Standardised mortality ratio					
Chapter 2						
Lung cancer	1.93	1.55	2.39	2.41	1.81	3.15
Colorectal cancer	0.64	0.36	1.04	0.62	0.33	1.07
Breast cancer	—	—	—	1.15	0.82	1.57
Cervical cancer	..	..	..	6.47	4.14	9.64
Prostate cancer	0.83	0.47	1.35	..	..	..
Melanoma cancer	—	—	—	0.21	0.00	1.18
'Other' neoplasms	1.82	1.57	2.08	1.51	1.27	1.79
Total neoplasms	1.54	1.38	1.72	1.52	1.34	1.71
Chapter 9						
Stroke	3.03	2.53	3.60	2.21	1.82	2.65
Rheumatic heart disease	30.86	19.95	45.61	20.36	13.92	28.77
Ischaemic heart disease	3.44	3.13	3.76	3.11	2.76	3.49
'Other' circulatory disease	2.87	2.40	3.41	3.09	2.60	3.66
Total circulatory diseases	3.35	3.11	3.60	3.00	2.76	3.26
Chapter 10						
Influenza	4.20	0.40	15.44	1.88	0.00	10.76
Pneumonia	8.79	6.75	11.25	5.83	4.27	7.78
Asthma	3.16	1.43	6.02	2.97	1.53	5.21
COPD	3.20	2.55	3.97	3.77	2.89	4.83
'Other' respiratory disease	5.29	3.91	7.00	5.11	3.62	7.02
Total respiratory diseases	4.51	3.92	5.17	4.37	3.72	5.11
Chapter 20						
Suicide	3.06	2.61	3.56	2.16	1.50	3.02
Inter-personal violence	5.57	3.98	7.60	11.30	8.03	15.46
Accidental shooting	—	—	—	—	—	—
Motor vehicle accidents	3.94	3.28	4.70	4.46	3.38	5.76
'Other' injuries	3.20	2.73	3.73	3.65	2.87	4.59
Total injury	3.42	3.13	3.73	3.91	3.39	4.48
Other chapters						
Diabetes	11.06	9.36	12.98	16.02	13.75	18.56
Renal disease	5.02	3.48	7.02	9.07	6.96	11.60
'Other' causes n.e.d.	3.51	3.22	3.81	3.39	3.08	3.73
Total 'other' causes	4.14	3.84	4.44	4.65	4.31	5.02

(a) Lower 95% confidence interval.

(b) **Upper 95% confidence interval.**

(c) Chapters reported here are ICD-10 chapters.

Source: AIHW National Mortality Database.

Table A4.1: Standardised mortality ratio by ICD-10 chapter, in regional and remote areas, by sex, 1997–1999

ICD-10 Chapter		Male					Female				
		IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)
		Standardised mortality ratio									
Circulatory diseases	SMR	1.08	1.10	1.10	1.36	1.03	1.06	1.08	1.04	1.18	1.02
	<i>L95%CI^(b)</i>	1.07	1.08	1.04	1.26	1.03	1.04	1.06	0.98	1.06	1.01
	<i>U95%CI^(c)</i>	1.10	1.13	1.17	1.48	1.04	1.07	1.10	1.12	1.31	1.03
Neoplasms	SMR	1.05	1.06	1.04	1.00	1.02	1.00	1.00	0.95	1.08	1.00
	<i>L95%CI^(b)</i>	1.03	1.04	0.97	0.90	1.01	0.98	0.97	0.87	0.95	0.99
	<i>U95%CI^(c)</i>	1.07	1.09	1.11	1.11	1.03	1.02	1.03	1.04	1.24	1.01
Respiratory diseases	SMR	1.09	1.23	1.26	1.88	1.05	1.00	1.06	1.29	1.86	1.01
	<i>L95%CI^(b)</i>	1.05	1.18	1.11	1.61	1.04	0.96	1.00	1.11	1.50	0.99
	<i>U95%CI^(c)</i>	1.12	1.29	1.42	2.19	1.07	1.04	1.12	1.49	2.27	1.03
Injury and poisoning	SMR	1.25	1.40	1.71	2.35	1.12	1.19	1.27	1.53	2.44	1.08
	<i>L95%CI^(b)</i>	1.21	1.35	1.56	2.11	1.10	1.13	1.18	1.29	2.00	1.06
	<i>U95%CI^(c)</i>	1.29	1.46	1.88	2.61	1.14	1.25	1.35	1.80	2.95	1.11
Other chapters	SMR	0.97	1.04	1.17	1.81	1.01	1.05	1.14	1.18	2.34	1.03
	<i>L95%CI^(b)</i>	0.95	1.00	1.08	1.64	1.00	1.03	1.10	1.07	2.11	1.02
	<i>U95%CI^(c)</i>	1.00	1.07	1.27	1.99	1.02	1.07	1.17	1.29	2.60	1.04
All causes	SMR	1.07	1.11	1.17	1.49	1.03	1.04	1.07	1.09	1.51	1.02
	<i>L95%CI^(b)</i>	1.06	1.10	1.13	1.42	1.03	1.03	1.06	1.04	1.42	1.01
	<i>U95%CI^(c)</i>	1.08	1.13	1.21	1.56	1.04	1.05	1.09	1.13	1.60	1.02

(a) The columns titled 'Total' refer to the SMRs for the total Australian population, of males and females.

(b) Lower 95% confidence interval.

(c) Upper 95% confidence interval.

Note: By definition, the SMR for Major Cities in all cases is equal to 1.00. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for males; those for females are based on MC rates for females).

Source: AIHW National Mortality Database.

Table A4.2: Standardised mortality ratio by ICD-10 chapter, in regional and remote areas, non-Indigenous persons, by sex, 1997–1999

ICD-10 Chapter		Male					Female				
		IR	OR	R	VR	Total ^(a)	IR	OR	R	VR	Total ^(a)
		Standardised mortality ratio									
Circulatory diseases	SMR	1.08	1.09	1.02	0.95	1.03	1.04	1.07	0.98	0.78	1.01
	<i>L95%CI^(b)</i>	1.07	1.07	0.96	0.85	1.02	1.03	1.04	0.92	0.67	1.01
	<i>U95%CI^(c)</i>	1.10	1.12	1.09	1.07	1.04	1.06	1.09	1.06	0.91	1.02
Neoplasms	SMR	1.05	1.06	1.03	0.88	1.02	1.00	0.99	0.92	0.87	1.00
	<i>L95%CI^(b)</i>	1.04	1.04	0.96	0.77	1.01	0.98	0.97	0.84	0.73	0.99
	<i>U95%CI^(c)</i>	1.07	1.09	1.10	1.00	1.03	1.02	1.02	1.01	1.04	1.01
Respiratory diseases	SMR	1.08	1.21	1.13	1.22	1.04	0.99	1.04	1.15	0.88	1.00
	<i>L95%CI^(b)</i>	1.05	1.16	0.98	0.96	1.03	0.95	0.98	0.98	0.60	0.99
	<i>U95%CI^(c)</i>	1.12	1.26	1.29	1.53	1.06	1.03	1.09	1.35	1.24	1.02
Injury and poisoning	SMR	1.26	1.37	1.54	1.68	1.10	1.18	1.21	1.23	1.06	1.06
	<i>L95%CI^(b)</i>	1.22	1.31	1.38	1.43	1.09	1.13	1.13	1.00	0.71	1.04
	<i>U95%CI^(c)</i>	1.30	1.43	1.70	1.97	1.12	1.24	1.30	1.49	1.53	1.09
Other chapters	SMR	0.97	1.00	0.96	0.79	0.99	1.04	1.10	0.93	0.99	1.07
	<i>L95%CI^(b)</i>	0.95	0.97	0.87	0.65	0.98	1.02	1.07	0.84	0.81	1.01
	<i>U95%CI^(c)</i>	1.00	1.04	1.06	0.94	1.00	1.06	1.14	1.04	1.21	1.03
All causes	SMR	1.07	1.10	1.07	1.00	1.03	1.03	1.06	0.98	0.87	1.01
	<i>L95%CI^(b)</i>	1.06	1.08	1.03	0.93	1.02	1.02	1.04	0.94	0.79	1.01
	<i>U95%CI^(c)</i>	1.08	1.11	1.11	1.07	1.03	1.04	1.07	1.03	0.95	1.02

(a) The columns titled 'Total' refer to the SMRs for the total Australian population, of males and females.

(b) Lower 95% confidence interval.

(c) Upper 95% confidence interval.

Note: By definition, the SMR for Major Cities in all cases is equal to 1.00. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for males; those for females are based on MC rates for females).

Source: AIHW National Mortality Database.

Table A5.1: Trends in all-cause mortality, 1992–1999

	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	Male					Female				
1992	1.19	1.22	1.30	1.33	2.12	1.14	1.18	1.24	1.30	2.14
1993	1.13	1.16	1.27	1.40	1.93	1.08	1.11	1.17	1.23	2.11
1994	1.14	1.19	1.27	1.34	1.75	1.10	1.13	1.17	1.19	1.81
1995	1.09	1.11	1.21	1.25	1.70	1.06	1.09	1.13	1.17	1.80
1996	1.08	1.12	1.22	1.22	1.61	1.06	1.08	1.12	1.14	1.62
1997	1.04	1.11	1.16	1.18	1.48	1.04	1.08	1.11	1.12	1.62
1998	1.00	1.06	1.11	1.18	1.60	0.99	1.02	1.05	1.10	1.52
1999	0.97	1.04	1.07	1.13	1.40	0.97	1.03	1.06	1.05	1.41
Slope	-3.0	-2.3	-3.3	-3.5	-8.7	-2.2	-2.0	-2.4	-3.2	-10.2
L95%CI ^(a)	-3.2	-2.6	-3.7	-4.7	-10.7	-2.4	-2.3	-2.8	-4.5	-12.9
U95%CI ^(b)	-2.9	-2.1	-2.9	-2.4	-6.6	-2.0	-1.7	-1.9	-1.8	-7.6

(a) Lower 95% confidence interval.

(b) Upper 95% confidence interval.

Notes

1. Reported statistics are ratios of observed to expected deaths. Expected deaths were based on age-specific death rates in Major Cities in the period 1997–1999 and the estimated population in each area in each year.
2. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for non-Indigenous males; those for females are based on MC rates for non-Indigenous females).

Source: AIHW National Mortality Database.

Table A5.2: Trends in mortality due to diseases of the circulatory system, 1992–1999

	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	Male					Female				
1992	1.33	1.39	1.44	1.47	2.15	1.29	1.33	1.39	1.42	1.81
1993	1.24	1.32	1.36	1.43	1.88	1.19	1.26	1.29	1.29	1.79
1994	1.23	1.30	1.37	1.38	1.76	1.20	1.25	1.27	1.27	1.82
1995	1.17	1.19	1.28	1.25	1.75	1.13	1.16	1.20	1.17	1.50
1996	1.12	1.20	1.25	1.22	1.52	1.10	1.14	1.13	1.04	1.32
1997	1.06	1.17	1.18	1.15	1.39	1.06	1.12	1.13	1.12	1.21
1998	1.00	1.05	1.11	1.08	1.50	1.00	1.03	1.06	1.01	1.20
1999	0.94	1.04	1.02	1.08	1.21	0.95	1.02	1.05	1.00	1.14
Slope	-5.3	-5.0	-5.8	-6.1	-11.5	-4.5	-4.4	-4.6	-5.6	-11.2
L95%CI ^(a)	-5.6	-5.4	-6.4	-8.1	-14.9	-4.8	-4.8	-5.3	-7.7	-15.2
U95%CI ^(b)	-5.1	-4.5	-5.1	-4.2	-8.0	-4.3	-3.9	-3.9	-3.5	-7.2

(a) Lower 95% confidence interval.

(b) Upper 95% confidence interval.

Notes

1. Reported statistics are ratios of observed to expected deaths. Expected deaths were based on age-specific death rates in Major Cities in the period 1997–1999 and the estimated population in each area in each year.
2. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for non-Indigenous males; those for females are based on MC rates for non-Indigenous females).

Source: AIHW National Mortality Database.

Table A5.3: Trends in mortality due to neoplasms, 1992–1999

	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	Male					Female				
1992	1.10	1.10	1.15	1.03	1.21	1.04	1.02	1.08	1.05	1.46
1993	1.09	1.07	1.15	1.18	1.11	1.06	1.01	1.06	1.06	1.47
1994	1.10	1.10	1.18	1.25	1.07	1.05	1.01	1.05	1.12	1.08
1995	1.08	1.06	1.09	1.11	0.97	1.03	1.04	1.05	1.01	1.01
1996	1.05	1.05	1.17	1.07	1.12	1.04	1.02	1.07	1.12	1.09
1997	1.02	1.07	1.07	1.02	0.94	1.02	1.03	1.03	0.92	1.24
1998	1.00	1.06	1.07	1.05	1.14	1.00	0.99	0.98	0.99	1.14
1999	0.98	1.03	1.04	1.05	0.93	0.98	0.98	0.98	0.94	0.89
Slope	-1.9	-0.8	-1.7	-1.3	-2.5	-1.0	-0.5	-1.3	-1.9	-5.7
L95%CI ^(a)	-2.2	-1.2	-2.4	-3.2	-5.5	-1.3	-1.0	-2.1	-4.3	-9.8
U95%CI ^(b)	-1.6	-0.3	-1.0	0.6	0.5	-0.6	0.1	-0.5	0.4	-1.6

(a) Lower 95% confidence interval.

(b) Upper 95% confidence interval.

Notes

1. Reported statistics are ratios of observed to expected deaths. Expected deaths were based on age-specific death rates in Major Cities in the period 1997–1999 and the estimated population in each area in each year.
2. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for non-Indigenous males; those for females are based on MC rates for non-Indigenous females).

Source: AIHW National Mortality Database.

Table A5.4: Trends in mortality due to diseases of the respiratory system, 1992–1999

	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	Male					Female				
1992	1.35	1.47	1.64	1.99	3.92	1.10	1.13	1.19	1.68	3.67
1993	1.16	1.32	1.53	2.00	4.04	0.98	0.98	1.13	1.42	3.75
1994	1.23	1.36	1.46	1.54	3.46	1.06	1.10	1.11	1.23	2.60
1995	1.11	1.18	1.37	1.52	2.58	0.99	0.98	1.08	1.25	3.79
1996	1.15	1.20	1.36	1.56	2.41	1.08	1.10	1.18	1.61	2.96
1997	1.09	1.16	1.32	1.32	1.72	1.09	1.07	1.17	1.39	1.55
1998	0.96	1.09	1.24	1.29	2.15	0.96	0.99	1.00	1.37	2.47
1999	0.95	1.02	1.14	1.17	1.78	0.95	0.94	1.01	1.13	1.56
Slope	-5.0	-5.7	-6.4	-11.3	-32.7	-1.2	-1.5	-2.0	-3.8	-31.1
L95%CI ^(a)	-5.5	-6.8	-8.0	-16.1	-42.7	-1.7	-2.5	-3.6	-9.2	-43.6
U95%CI ^(b)	-4.4	-4.7	-4.8	-6.6	-22.7	-0.6	-0.5	-0.4	1.6	-18.5

(a) Lower 95% confidence interval.

(b) Upper 95% confidence interval.

Notes

1. Reported statistics are ratios of observed to expected deaths. Expected deaths were based on age-specific death rates in Major Cities in the period 1997–1999 and the estimated population in each area in each year.
2. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for non-Indigenous males; those for females are based on MC rates for non-Indigenous females).

Source: AIHW National Mortality Database.

Table A5.5: Trends in mortality due to injury, 1992–1999

	Male					Female				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
1992	1.01	1.18	1.44	1.60	2.74	1.04	1.22	1.39	1.41	2.30
1993	0.96	1.12	1.43	1.80	2.28	0.89	0.97	1.20	1.49	3.02
1994	0.93	1.22	1.37	1.57	2.55	0.95	1.07	1.09	1.13	2.63
1995	0.92	1.19	1.49	1.65	2.11	0.99	1.11	1.25	1.55	2.75
1996	0.97	1.22	1.49	1.62	2.51	0.89	1.06	1.15	1.27	2.79
1997	0.95	1.22	1.48	1.68	2.11	1.00	1.17	1.39	1.75	2.45
1998	1.02	1.28	1.35	1.80	2.57	1.02	1.15	1.17	1.78	2.84
1999	1.03	1.27	1.39	1.66	2.37	0.99	1.24	1.24	1.07	2.03
Slope	0.7	1.7	-0.6	0.9	-2.2	0.5	1.8	-0.3	-0.5	-4.5
L95%CI ^(a)	0.1	0.6	-2.1	-3.3	-9.1	-0.3	0.3	-2.6	-6.8	-16.9
U95%CI ^(b)	1.2	2.7	1.0	5.0	4.7	1.3	3.4	2.0	5.8	7.9

(a) Lower 95% confidence interval.

(b) Upper 95% confidence interval.

Notes

1. Reported statistics are ratios of observed to expected deaths. Expected deaths were based on age-specific death rates in Major Cities in the period 1997–1999 and the estimated population in each area in each year.
2. SMRs for males and females cannot be compared (SMRs for males are calculated using Major Cities (MC) rates for non-Indigenous males; those for females are based on MC rates for non-Indigenous females).

Source: AIHW National Mortality Database.

Diabetes as an associated cause of death

In the body of this report, diabetes-related deaths have been defined as those deaths where diabetes has been identified as the underlying cause of death. However, such a definition understates the burden of diabetes.

An alternative definition counts any death where diabetes is stated to be a contributing cause (but not necessarily the underlying cause). This definition provides a more complete enumeration of deaths to which diabetes has contributed, but its use in this report would involve double counting of those deaths where the underlying cause was stated to be, for example, circulatory disease (with diabetes mentioned as an associated cause). This approach could also have been taken with other causes of death besides diabetes (for example, chronic obstructive pulmonary disease, ischaemic heart disease). However, diabetes is a relatively commonly reported associated cause of death, so is included here as such.

Regional differentials using both definitions are similar (slightly smaller for diabetes as an associated cause of death), but the total number of deaths attributed to diabetes using the second definition (diabetes as an associated cause of death) is considerably larger.

Details in this Appendix (Tables A6.1–A6.6) describe standardised mortality ratios, numbers of deaths and ‘excess’ deaths where diabetes is an associated (and not necessarily the underlying) cause of death.

Ratio of observed to expected deaths

Table A6.1: The ratio of observed deaths to those expected if Major Cities rates applied in each ASGC Remoteness area, diabetes as an associated cause of death, males and females, 1997–1999

Age group (years)	Male					Female				
	MC rate	IR	OR	R	VR	MC rate	IR	OR	R	VR
		(ratio)					(ratio)			
0–4	<1	1.56	0.32	0.00	0.00	<1	0.89	0.00	0.00	0.00
5–14	0	..	..	..	..	<1	0.05	1.79	5.51	0.00
15–24	1	1.12	1.78	0.47	3.96	<1	0.99	1.37	2.45	8.94
25–44	3	0.99	*1.71	*2.88	*13.70	2	1.10	1.57	*3.65	*15.42
45–64	38	0.96	*1.23	*1.66	*4.21	19	1.05	*1.91	*2.81	*12.05
65–74	248	0.94	*1.09	1.08	*1.65	135	0.98	*1.27	*1.75	*3.40
75+	663	1.03	*1.11	1.05	*0.58	477	*1.08	*1.23	1.16	*1.70
Total	..	0.99	*1.14	*1.23	*2.05	..	*1.05	*1.31	*1.54	*3.89

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.

Source: AIHW National Mortality Database.

Table A6.2: The ratio of observed deaths to those expected as a result of diabetes as an associated cause of death if Major Cities non-Indigenous rates applied to the non-Indigenous population in each ASGC Remoteness area and to the Indigenous population, 1997–1999

Age group (years)	Male						Female					
	MC rate	Non-Indigenous				Indig-enous	MC rate	Non-Indigenous				Indig-enous
		IR	OR	R	VR	IR		OR	R	VR		
		(ratio)						(ratio)				
0–4	<1	1.59	0.34	0.00	0.00	0.0	<1	0.91	0.00	0.00	0.00	0.0
5–14	0	..	..	..	..	..	<1	0.06	1.92	6.53	0.00	0.0
15–24	1	1.13	0.99	0.00	0.00	2.5	<1	1.01	0.97	0.00	0.00	8.9
25–44	2	0.94	1.05	0.83	0.67	*32.4	1	1.07	0.94	1.23	1.78	*31.3
45–64	38	0.95	1.06	1.09	0.87	*14.7	18	1.00	*1.39	1.12	*3.34	*30.3
65–74	247	*0.94	1.06	0.98	0.71	*5.2	133	0.98	*1.16	1.21	1.11	*11.6
75+	663	1.03	*1.12	1.00	*0.40	*1.9	476	*1.07	*1.22	1.10	1.04	*4.6
Total	..	0.99	*1.08	1.01	*0.60	*7.4	..	*1.04	*1.22	1.13	1.36	*12.2
0–64	..	0.96	1.05	1.06	0.84	*16.7	..	1.00	*1.34	1.13	*3.06	*28.9

* Significantly different from 1 (that is, rates are significantly different from those in Major Cities).

Notes

1. Caution should be used when making inferences about ratios that are not significantly different from 1.
2. MC rates for non-Indigenous persons are expressed as deaths per 100,000 population per year. Total (crude) MC rate is largely meaningless and is not included.
3. Ratios for Indigenous people are for SA, WA, NT and Qld.
4. While the table allows comparison of deaths between areas for each sex, it does not allow comparison between the sexes or age groups.
5. SMRs calculated for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Number of observed deaths

Table A6.3: The average annual number of observed deaths where diabetes is mentioned on the death certificate as an associated cause of death, in each ASGC Remoteness area, 1997-1999

Age group (years)	Male					Female				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	(number)					(number)				
0-4	1	—	—	—	—	1	—	—	—	—
5-14	—	—	—	—	—	1	—	—	—	—
15-24	5	2	1	—	—	4	1	1	—	1
25-44	49	14	14	4	11	30	10	7	3	6
45-64	515	164	113	24	27	257	89	80	16	28
65-74	971	338	190	23	13	601	200	116	17	12
75+	1,635	591	297	33	8	1,951	664	339	34	17
Total	3,175	1,110	615	84	59	2,845	964	544	70	63

Source: AIHW National Mortality Database.

Table A6.4: The average annual number of observed deaths where diabetes is mentioned on the death certificate as an associated cause of death, in the non-Indigenous population in each ASGC Remoteness area and in the Indigenous population in SA, WA, NT and Qld, 1997-1999

Age group (years)	Male						Female					
	Non-Indigenous					Indig- enous	Non-Indigenous					Indig- enous
	MC	IR	OR	R	VR		MC	IR	OR	R	VR	
(number)						(number)						
0-4	1	—	—	—	—	—	1	—	—	—	—	—
5-14	—	—	—	—	—	—	1	—	—	—	—	—
15-24	5	2	1	—	—	—	4	1	1	—	—	1
25-44	46	13	8	1	—	21	27	8	4	1	—	13
45-64	503	159	94	15	4	56	246	81	55	6	5	64
65-74	966	335	182	20	4	23	594	197	104	11	3	34
75+	1,633	589	293	29	4	12	1,943	660	330	30	8	26
Total	3,154	1,097	576	65	13	112	2,815	948	494	48	16	139

Notes

1. Numbers for Indigenous people are for SA, WA, NT and Qld. There were an additional 53 deaths annually of Indigenous people in the other jurisdictions where identification is considered to be less accurate.
2. Numbers of deaths for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Number of deaths in 'excess' of those expected

Table A6.5: The average annual number of deaths in 'excess' of those expected where diabetes is mentioned on the death certificate as an associated cause of death in each ASGC Remoteness area (that is, in the total population), 1997-1999

Age group (years)	Male				Female			
	IR	OR	R	VR	IR	OR	R	VR
	(number)				(number)			
0-4	—	—	—	—	—	—	—	—
5-14	—	—	—	—	—	—	—	—
15-24	—	1	—	—	—	—	—	—
25-44	—	6	3	10	1	3	2	6
45-64	-7	21	9	20	4	38	10	25
65-74	-20	16	2	5	-4	25	7	9
75+	18	30	2	-5	48	64	5	7
Total	-9	74	15	30	49	130	24	47

Note: The number of expected deaths is based on the number of people in the local population and on death rates for people who live in Major Cities.

Source: AIHW National Mortality Database.

Table A6.6: The average annual number of deaths in 'excess' of those expected, where diabetes is mentioned on the death certificate as an associated cause of death in the non-Indigenous population in each ASGC Remoteness area and in the Indigenous population in SA, WA, NT and Qld, 1997-1999

Age group (years)	Male					Female				
	Non-Indigenous				Indig- enous	Non-Indigenous				Indig- enous
	IR	OR	R	VR		IR	OR	R	VR	
(number)					(number)					
0-4	—	—	—	—	—	—	—	—	—	—
5-14	—	—	—	—	—	—	—	—	—	—
15-24	—	—	—	—	—	—	—	—	—	1
25-44	-1	—	—	—	20	1	—	—	—	13
45-64	-8	5	1	-1	52	—	15	1	3	62
65-74	-22	10	—	-2	19	-5	14	2	—	31
75+	17	30	—	-6	6	43	59	3	—	21
Total	-13	45	—	-8	97	38	89	5	4	128

Notes:

1. The number of expected deaths is based on the number of people in the local population and on death rates for non-Indigenous people who live in Major Cities.
2. Numbers for Indigenous people are for SA, WA, NT and Qld. There were also additional 'excess' deaths of Indigenous people in the other jurisdictions where identification is considered to be less accurate.
3. Numbers of deaths for non-Indigenous persons from Remote and Very Remote areas should be treated with caution (see page 22).

Source: AIHW National Mortality Database.

Appendix B: 'Excess' deaths

Table B1: The average number of 'excess' deaths that occur in each area, each year, due to a range of causes. 'Excess' deaths are calculated by subtracting the total number of deaths expected from the total number of deaths observed. The number of expected deaths is calculated by applying the death rates for males and females from Major Cities to the population in each area.

Table B2: The average number of deaths of non-Indigenous people that occur each year, in 'excess' of what would be expected if Major Cities rates for non-Indigenous people were experienced in each area.

Table B3: The average number of deaths of Indigenous people that occur each year, in 'excess' of what would be expected if Major Cities rates for non-Indigenous people were experienced by those Indigenous people.

In Tables B2 and B3, the number of expected deaths is calculated by applying the death rates for non-Indigenous males and females from Major Cities to the population in each area.

If the value in a cell for an area is zero, then death rates in that area can be regarded as the same as those in Major Cities.

Where a positive value is indicated, there were more deaths than expected.

Where a negative value is indicated, there were fewer deaths than expected.

It is not possible to subtract numbers in Table B2 from those in Table B1 so as to derive the number of Indigenous deaths in 'excess' in each area. This is because the 'excess' in each of the two tables has been calculated using two different (but similar) standards and are not strictly comparable. The 'excess' in Table B1 has been calculated using death rates for people who live in Major Cities as the standard, whereas the 'excess' in Table B2 has been calculated using death rates for non-Indigenous people who live in Major Cities. In addition, such numbers (derived by subtracting figures in Table B2 from Table B1) may be misleading because of the overall inaccuracies in the identification of Indigenous deaths, and also because of the likely difference in the quality of identification in each of the areas.

Table B1: Annual number of 'excess' deaths

Males, Inner Regional areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	—	4	11	14	7	-18	18
Colorectal	—	—	—	-1	7	16	11	2	6	40
Breast	—	—	—	—	—	—	1	-1	—	-1
Cervical	..	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	4	23	23	23	73
Melanoma	—	—	—	3	4	11	8	6	2	34
'Other'	—	1	4	1	7	38	14	-4	4	67
All cancers	1	1	4	4	22	80	71	32	17	232
Diseases of the circulatory system										
Stroke	—	—	—	-2	1	-2	-1	11	27	34
Ischaemic heart disease	—	—	3	6	13	31	60	133	82	328
Rheumatic heart disease	—	—	—	—	1	-1	-2	3	-1	-1
'Other'	1	—	—	-1	8	11	12	17	56	102
All circulatory	1	—	3	2	24	38	69	163	164	463
Diseases of the respiratory system										
COPD	—	—	—	—	1	10	55	61	25	151
Pneumonia	-1	—	—	—	—	—	-3	-7	-18	-28
Asthma	—	1	-1	1	1	1	-2	—	2	3
Influenza	1	—	—	—	—	1	1	2	4	8
'Other'	—	—	1	—	—	1	-5	-6	-22	-31
All respiratory	-1	1	1	2	2	14	46	49	-9	103
Injury										
Motor vehicle accidents	4	24	31	24	18	11	7	3	1	122
Suicide	—	10	26	22	22	16	2	-1	2	100
Interpersonal violence	-2	—	1	-4	-2	-1	—	—	—	-8
Accidental shooting	—	1	—	—	—	1	1	—	—	4
'Other'	8	6	12	-2	4	1	1	2	6	40
All injury	10	41	70	40	42	28	12	6	8	257
All other causes										
Diabetes	—	—	1	—	—	-6	-3	-2	13	2
Renal disease	—	—	—	—	—	1	2	1	-3	1
'Other' causes <i>n.e.d.</i>	9	-4	-6	-27	-21	-7	-4	6	-9	-63
All other causes	9	-4	-5	-28	-21	-13	-5	5	3	-59
Total	19	39	73	20	68	148	193	254	182	997

(continued)

Table B1 (continued): Annual number of 'excess' deaths

Males, Outer Regional areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	2	-1	16	34	6	-16	41
Colorectal	—	—	—	1	1	1	5	7	—	15
Breast	—	—	—	—	1	—	-1	—	—	—
Cervical	..	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	2	12	31	7	52
Melanoma	—	—	—	1	1	3	2	—	-2	4
'Other'	-1	-1	2	-2	3	20	20	-11	-8	24
All cancers	-1	-1	2	1	5	42	73	32	-19	135
Diseases of the circulatory system										
Stroke	—	—	—	—	2	—	9	20	-11	20
Ischaemic heart disease	—	—	—	8	12	42	40	40	-5	137
Rheumatic heart disease	—	—	—	—	—	—	—	2	1	4
'Other'	1	—	—	—	8	17	25	23	42	116
All circulatory	1	—	—	8	21	59	75	85	27	276
Diseases of the respiratory system										
COPD	—	—	—	—	—	10	39	55	28	133
Pneumonia	—	—	1	—	1	1	3	-3	-6	-3
Asthma	—	—	—	—	3	1	-1	1	1	6
Influenza	—	—	—	—	—	—	—	1	5	6
'Other'	—	1	1	1	1	2	-1	-3	-13	-12
All respiratory	—	1	2	2	5	15	40	52	13	130
Injury										
Motor vehicle accidents	3	16	28	17	13	7	5	1	2	91
Suicide	—	5	17	5	10	7	4	6	—	54
Interpersonal violence	-1	-1	2	-2	—	1	—	—	1	—
Accidental shooting	—	1	1	—	—	—	—	—	1	4
'Other'	8	5	11	10	13	7	8	4	—	66
All injury	10	26	60	31	37	22	17	11	3	215
All other causes										
Diabetes	—	1	1	2	—	5	5	14	11	38
Renal disease	—	—	—	—	1	—	6	3	-5	6
'Other' causes n.e.d.	21	-1	-5	-18	-8	16	1	1	-3	3
All other causes	21	—	-5	-16	-7	21	9	18	3	43
Total	31	25	59	26	60	159	213	198	26	798

(continued)

Table B1 (continued): Annual number of 'excess' deaths

Males, Remote areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	—	—	4	4	3	-3	8
Colorectal	—	—	—	—	—	2	1	1	-1	2
Breast	—	—	—	—	—	—	—	—	—	—
Cervical	..	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	—	3	2	—	5
Melanoma	—	—	—	—	—	—	—	—	-1	-1
'Other'	-1	—	—	-1	2	2	4	-6	-2	-2
All cancers	-1	—	1	-2	1	9	12	-1	-7	12
Diseases of the circulatory system										
Stroke	—	—	—	—	1	—	1	2	-5	-1
Ischaemic heart disease	—	—	1	4	8	7	10	8	-15	23
Rheumatic heart disease	—	—	—	—	1	—	—	—	—	1
'Other'	—	—	1	2	4	4	3	2	-4	12
All circulatory	—	—	2	7	13	11	14	12	-24	35
Diseases of the respiratory system										
COPD	—	—	—	—	—	1	10	3	-2	11
Pneumonia	—	—	—	1	1	—	1	—	—	4
Asthma	—	—	—	1	—	—	—	1	1	3
Influenza	—	—	—	—	—	—	—	—	1	1
'Other'	—	—	1	1	—	1	—	-1	-3	-1
All respiratory	—	1	1	2	1	2	10	3	-3	18
Injury										
Motor vehicle accidents	—	6	7	5	2	2	2	1	—	24
Suicide	—	2	7	1	2	2	1	1	—	17
Interpersonal violence	—	—	1	—	1	1	—	—	—	3
Accidental shooting	—	—	—	1	—	—	—	—	—	1
'Other'	1	2	3	6	5	1	3	—	-1	21
All injury	1	9	18	12	11	6	6	3	-1	64
All other causes										
Diabetes	—	—	—	1	2	3	2	2	1	10
Renal disease	—	—	—	—	—	1	1	1	-2	2
'Other' causes n.e.d.	8	—	2	—	—	3	4	4	-7	16
All other causes	8	1	2	1	2	7	6	8	-7	28
Total	9	11	24	21	28	34	49	24	-43	156

(continued)

Table B1 (continued): Annual number of 'excess' deaths

Males, Very Remote areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	—	2	5	2	1	-2	8
Colorectal	—	—	—	—	—	-1	-1	—	-2	-6
Breast	—	—	—	—	—	—	—	—	—	—
Cervical	..	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	—	1	1	-2	—
Melanoma	—	—	—	—	—	-1	—	-1	—	-2
'Other'	1	—	-1	3	1	1	2	-2	-6	-1
All cancers	1	—	-1	3	2	4	4	-1	-13	—
Diseases of the circulatory system										
Stroke	—	—	—	2	2	2	4	5	-5	11
Ischaemic heart disease	—	—	—	7	17	11	11	3	-19	31
Rheumatic heart disease	—	1	1	1	—	—	—	—	—	4
'Other'	1	1	1	1	3	2	2	2	-6	7
All circulatory	1	1	2	11	23	16	18	10	-30	52
Diseases of the respiratory system										
COPD	—	—	—	—	1	3	9	5	-2	15
Pneumonia	2	—	—	1	1	1	—	1	—	6
Asthma	—	—	—	—	—	1	—	—	—	—
Influenza	—	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	2	1	2	1	—	-2	4
All respiratory	2	—	—	4	2	6	9	5	-3	26
Injury										
Motor vehicle accidents	1	3	6	6	6	2	1	—	—	26
Suicide	—	3	8	—	1	—	—	—	—	12
Interpersonal violence	—	1	2	1	2	1	—	—	—	7
Accidental shooting	—	—	—	—	—	—	—	—	—	1
'Other'	3	2	—	4	7	2	2	—	-1	19
All injury	4	9	16	12	17	5	4	—	-1	65
All other causes										
Diabetes	—	—	—	2	5	4	4	1	-1	15
Renal disease	—	—	—	1	—	1	1	3	-1	7
'Other' causes n.e.d.	14	1	4	7	8	6	4	3	-7	41
All other causes	13	1	5	8	14	11	9	8	-9	61
Total	21	12	22	39	59	42	44	21	-55	205

(continued)

Table B1 (continued): Annual number of 'excess' deaths

Females, Inner Regional areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	—	7	4	—	-24	-3	-16
Colorectal	—	—	—	-1	5	7	16	6	10	42
Breast	—	—	1	2	-4	9	-7	—	-4	-3
Cervical	—	—	—	2	-1	—	-2	1	-3	-3
Prostate	..	..	..	..	..	..	..	..	..	..
Melanoma	—	—	—	1	1	-1	2	-1	-2	1
'Other'	—	-3	3	4	4	-3	5	-14	-18	-22
All cancers	—	-3	3	8	13	16	14	-31	-19	—
Diseases of the circulatory system										
Stroke	—	-1	—	1	2	4	2	-7	29	31
Ischaemic heart disease	—	—	—	—	2	11	27	49	48	137
Rheumatic heart disease	—	—	—	—	-1	—	—	1	-1	-2
'Other'	—	-1	—	2	1	7	2	27	112	151
All circulatory	-1	-2	—	3	5	22	31	70	189	317
Diseases of the respiratory system										
COPD	—	—	—	1	1	4	15	27	-24	25
Pneumonia	—	—	—	2	—	2	—	1	-9	-4
Asthma	—	1	—	1	—	—	3	4	-5	4
Influenza	—	—	—	—	—	1	-1	2	4	6
'Other'	—	—	—	-1	-1	1	-2	-16	-13	-32
All respiratory	—	—	—	2	1	8	16	18	-47	-2
Injury										
Motor vehicle accidents	3	12	12	8	6	7	3	3	2	56
Suicide	—	1	—	-2	5	1	—	-1	—	3
Interpersonal violence	—	—	—	—	-1	1	—	-1	—	-2
Accidental shooting	—	—	1	—	—	—	—	—	—	1
'Other'	4	3	-1	2	4	-3	2	2	17	30
All injury	7	16	12	8	14	6	5	2	19	88
All other causes										
Diabetes	—	-1	—	—	2	-1	-3	7	28	31
Renal disease	—	1	—	1	—	1	4	—	-5	1
'Other' causes <i>n.e.d.</i>	-4	-2	-1	5	-5	13	13	16	54	89
All other causes	-4	-2	-1	5	-3	12	14	21	77	120
Total	1	9	14	26	29	64	80	81	221	526

(continued)

Table B1 (continued): Annual number of 'excess' deaths

Females, Outer Regional areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	—	1	1	-6	-2	-8	-15
Colorectal	—	—	—	-1	4	1	10	6	7	27
Breast	—	—	—	1	-1	2	-8	5	-1	-2
Cervical	—	—	1	—	—	1	1	2	3	7
Prostate	..	..	..	..	..	..	..	..	..	..
Melanoma	—	1	—	1	-1	2	-1	-1	-1	—
'Other'	-2	-2	—	—	-2	7	4	-3	-22	-20
All cancers	-2	-1	—	—	1	14	-1	7	-23	-2
Diseases of the circulatory system										
Stroke	—	—	2	3	3	1	7	22	-37	—
Ischaemic heart disease	—	—	1	2	7	15	24	72	-31	91
Rheumatic heart disease	—	—	—	—	1	1	2	1	—	6
'Other'	-1	1	1	-2	—	6	5	29	65	105
All circulatory	-1	—	5	4	11	24	37	124	-3	202
Diseases of the respiratory system										
COPD	—	—	—	—	—	3	12	18	-10	24
Pneumonia	—	—	—	—	1	1	—	2	-2	2
Asthma	-1	—	—	—	3	—	2	-1	1	5
Influenza	—	—	—	—	—	—	—	—	4	3
'Other'	—	—	1	1	1	2	1	-4	-8	-8
All respiratory	-1	—	1	1	5	6	15	15	-16	26
Injury										
Motor vehicle accidents	2	6	9	6	4	3	5	1	—	36
Suicide	—	1	1	1	—	-2	-3	—	—	-2
Interpersonal violence	1	—	—	—	—	—	—	—	—	—
Accidental shooting	—	—	—	—	—	—	—	—	—	1
'Other'	2	1	-2	-3	3	2	—	7	15	25
All injury	5	8	7	4	7	3	3	8	15	60
All other causes										
Diabetes	—	—	—	—	1	6	14	14	23	57
Renal disease	—	—	—	—	1	1	2	2	4	11
'Other' causes n.e.d.	3	1	—	-1	7	11	6	22	31	80
All other causes	3	1	—	—	9	19	22	38	58	149
Total	5	8	13	9	33	66	76	193	32	435

(continued)

Table B1 (continued): Annual number of 'excess' deaths

Females, Remote areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	—	1	—	3	—	—	4
Colorectal	—	—	—	—	—	-1	1	2	-4	-2
Breast	—	—	—	—	—	-1	-2	—	-1	-4
Cervical	—	—	—	—	—	—	1	—	—	2
Prostate	..	..	..	..	..	..	..	..	..	..
Melanoma	—	—	—	—	—	—	—	—	—	—
'Other'	-1	—	—	—	-2	1	4	-3	-7	-9
All cancers	-1	—	-1	—	-1	—	7	-2	-12	-9
Diseases of the circulatory system										
Stroke	—	—	—	1	2	—	1	—	-11	-7
Ischaemic heart disease	—	—	—	—	1	4	6	4	-13	2
Rheumatic heart disease	—	—	1	1	—	—	—	—	—	3
'Other'	—	—	1	—	1	1	2	5	3	14
All circulatory	—	—	3	2	4	6	10	9	-21	12
Diseases of the respiratory system										
COPD	—	—	—	—	—	2	5	2	-1	8
Pneumonia	—	—	—	1	1	—	1	—	1	3
Asthma	—	—	—	—	—	—	—	—	—	—
Influenza	—	—	—	—	—	—	—	—	2	2
'Other'	—	—	—	—	—	1	—	—	-1	—
All respiratory	1	—	—	1	1	4	6	2	—	14
Injury										
Motor vehicle accidents	—	2	2	1	2	—	—	—	1	8
Suicide	—	—	-1	—	—	—	-1	—	—	-1
Interpersonal violence	—	—	1	—	1	—	—	—	—	3
Accidental shooting	—	—	—	—	—	—	—	—	—	—
'Other'	1	2	—	—	1	1	—	2	1	7
All injury	1	5	3	1	3	2	—	2	1	17
All other causes										
Diabetes	—	—	—	1	2	2	3	6	—	13
Renal disease	—	—	—	1	—	1	—	4	-2	4
'Other' causes n.e.d.	4	1	2	5	3	4	2	—	-14	7
All other causes	4	1	2	7	4	7	5	8	-15	23
Total	5	5	8	11	12	18	27	19	-47	57

(continued)

Table B1 (continued): Annual number of 'excess' deaths

Females, Very Remote areas

Disease	Age group (years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
	(number)									
Cancers										
Lung	—	—	—	—	2	—	3	-1	-1	4
Colorectal	—	—	—	—	1	—	-1	—	-1	-2
Breast	—	—	—	—	-1	-1	1	-1	-1	-2
Cervical	—	—	—	—	1	—	—	1	—	3
Prostate	..	..	..	..	..	..	..	..	..	..
Melanoma	—	—	—	—	—	—	—	—	—	—
'Other'	—	—	1	—	—	1	5	1	-4	3
All cancers	—	—	1	—	3	1	8	—	-7	6
Diseases of the circulatory system										
Stroke	—	—	—	1	2	2	1	1	-9	-2
Ischaemic heart disease	—	—	—	1	7	5	5	4	-17	6
Rheumatic heart disease	—	—	1	1	1	—	1	—	—	3
'Other'	—	—	1	—	2	2	6	4	-4	11
All circulatory	—	—	3	3	11	9	12	9	-30	17
Diseases of the respiratory system										
COPD	—	—	—	—	1	3	3	1	-1	6
Pneumonia	1	—	—	1	1	1	1	1	1	6
Asthma	—	—	1	1	—	—	—	—	—	1
Influenza	—	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	—	1	1	—	—	-1	1
All respiratory	1	—	1	2	2	4	4	2	-1	15
Injury										
Motor vehicle accidents	1	2	3	1	—	—	—	—	—	7
Suicide	—	1	—	—	—	—	—	—	—	1
Interpersonal violence	—	—	2	3	1	—	—	—	—	7
Accidental shooting	—	—	—	—	—	—	—	—	—	—
'Other'	2	1	2	2	—	1	1	—	-1	7
All injury	4	4	6	6	1	1	1	—	-1	21
All other causes										
Diabetes	—	—	—	1	4	6	7	5	—	23
Renal disease	—	—	1	1	2	3	2	3	1	11
'Other' causes <i>n.e.d.</i>	16	2	2	4	3	3	7	5	-4	37
All other causes	16	2	2	5	9	11	14	13	-3	69
Total	20	6	12	16	26	26	39	24	-41	128

Note: Expected and 'excess' deaths are rarely whole numbers. Rounding may result in individual cells not adding exactly to totals.

Source: AIHW National Mortality Database.

Table B2: Annual number of 'excess' deaths of non-Indigenous people

Non-Indigenous Males, Inner Regional areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	—	4	11	13	-12	16
Colorectal	—	—	—	-1	7	15	11	8	40
Breast	—	—	—	—	—	—	1	-1	-1
Cervical	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	4	23	46	73
Melanoma	—	—	—	3	4	11	8	8	34
'Other'	1	1	4	2	7	38	16	1	71
All cancers	1	1	4	5	22	79	71	50	233
Diseases of the circulatory system									
Stroke	—	—	—	-2	1	-2	-1	38	33
Ischaemic heart disease	—	—	2	5	11	28	59	212	317
Rheumatic heart disease	—	—	—	—	1	-1	-2	2	-1
'Other'	—	—	—	-2	9	10	11	71	100
All circulatory	1	—	2	1	22	35	67	322	449
Diseases of the respiratory system									
COPD	—	—	—	—	—	10	53	84	147
Pneumonia	-1	—	—	—	1	1	-3	-26	-28
Asthma	—	1	—	1	1	1	-2	1	3
Influenza	1	—	—	—	—	1	—	6	7
'Other'	—	1	1	1	-1	1	-5	-28	-31
All respiratory	-1	2	1	2	1	13	44	37	98
Injury									
Motor vehicle accidents	4	23	30	25	19	11	7	4	123
Suicide	—	10	26	22	21	16	3	1	98
Interpersonal violence	-2	—	—	-4	-2	-1	—	—	-8
Accidental shooting	—	1	—	—	—	1	1	—	4
'Other'	7	5	13	-3	4	2	2	8	37
All injury	9	39	69	41	42	28	13	13	254
All other causes									
Diabetes	—	—	2	—	-2	-6	-3	10	1
Renal disease	—	—	—	—	—	1	2	-5	-1
'Other' causes <i>n.e.d.</i>	7	-4	-6	-26	-21	-8	-4	-2	-63
All other causes	7	-4	-4	-26	-22	-14	-5	5	-63

(continued)

Table B2 (continued): Annual number of 'excess' deaths

Non-Indigenous Males, Outer Regional areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	1	-1	14	34	-10	38
Colorectal	—	—	—	1	1	2	4	8	16
Breast	—	—	—	—	1	—	-1	—	—
Cervical	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	2	12	41	54
Melanoma	—	—	—	1	2	3	2	-2	5
'Other'	-1	-1	2	-3	—	15	20	-16	17
All cancers	-1	-1	2	—	2	36	71	20	129
Diseases of the circulatory system									
Stroke	—	—	—	—	—	—	7	14	20
Ischaemic heart disease	—	—	-1	3	4	29	33	44	112
Rheumatic heart disease	—	—	—	—	—	—	—	2	2
'Other'	1	—	-1	1	6	14	22	68	111
All circulatory	1	—	-2	3	10	43	61	129	246
Diseases of the respiratory system									
COPD	—	—	—	—	—	7	37	83	127
Pneumonia	-1	—	—	—	1	—	1	-8	-7
Asthma	—	—	—	—	2	1	-1	1	3
Influenza	—	—	—	—	—	—	—	6	6
'Other'	-1	1	1	—	—	1	-1	-16	-15
All respiratory	-1	1	1	—	2	9	36	67	115
Injury									
Motor vehicle accidents	2	14	26	16	11	7	5	3	84
Suicide	—	3	13	4	10	7	4	6	46
Interpersonal violence	-1	-1	1	-2	—	1	—	1	-2
Accidental shooting	—	1	1	—	—	—	—	1	4
'Other'	7	5	8	7	13	6	8	5	57
All injury	8	21	49	25	34	20	18	15	190
All other causes									
Diabetes	—	1	—	1	-2	1	2	23	26
Renal disease	—	—	—	1	—	-1	5	-3	2
'Other' causes <i>n.e.d.</i>	8	-2	-7	-20	-14	12	-2	3	-21
All other causes	7	-1	-7	-19	-15	13	3	23	5
Total	14	20	44	10	34	121	189	252	683

(continued)

Table B2 (continued): Annual number of 'excess' deaths

Non-Indigenous Males, Remote areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	—	—	3	4	1	8
Colorectal	—	—	—	—	—	2	—	-1	1
Breast	—	—	—	—	—	—	—	—	—
Cervical	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	—	3	3	6
Melanoma	—	—	—	—	—	—	—	-1	-1
'Other'	-1	—	—	-1	—	—	3	-7	-6
All cancers	-1	—	—	-1	-1	6	10	-5	8
Diseases of the circulatory system									
Stroke	—	—	—	—	—	-1	—	-3	-5
Ischaemic heart disease	—	—	—	1	1	3	6	-4	7
Rheumatic heart disease	—	—	—	—	—	1	—	—	—
'Other'	—	—	—	—	2	2	2	—	6
All circulatory	—	—	1	1	3	4	8	-7	8
Diseases of the respiratory system									
COPD	—	—	—	—	—	—	8	—	8
Pneumonia	—	—	—	—	—	—	—	1	1
Asthma	—	1	—	1	—	—	—	2	3
Influenza	—	—	—	—	—	—	—	1	1
'Other'	—	—	—	—	—	—	-1	-4	-4
All respiratory	—	1	—	1	—	—	7	-1	8
Injury									
Motor vehicle accidents	—	4	6	4	1	1	2	1	18
Suicide	—	1	3	-1	2	2	1	1	9
Interpersonal violence	—	—	1	-1	1	1	—	—	1
Accidental shooting	—	—	—	1	—	—	—	—	1
'Other'	1	1	1	5	3	1	3	—	14
All injury	—	6	11	7	7	5	5	2	44
All other causes									
Diabetes	—	—	—	—	—	1	—	3	4
Renal disease	—	—	—	—	—	—	—	-2	-1
'Other' causes n.e.d.	2	—	-1	-5	-4	—	2	-3	-9
All other causes	2	1	-1	-5	-4	1	2	-1	-6
Total	2	7	11	2	5	16	33	-14	61

(continued)

Table B2 (continued): Annual number of 'excess' deaths

Non-Indigenous Males, Very Remote areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	—	1	4	1	-2	4
Colorectal	—	—	—	—	—	-1	-1	-1	-4
Breast	—	—	—	—	—	—	—	—	—
Cervical	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	—	2	—	2
Melanoma	—	—	—	—	—	—	—	-1	-1
'Other'	—	—	—	—	-1	-1	-1	-8	-12
All cancers	—	—	—	—	—	1	2	-13	-11
Diseases of the circulatory system									
Stroke	—	—	—	—	1	—	1	-1	1
Ischaemic heart disease	—	—	—	—	2	1	4	-10	-3
Rheumatic heart disease	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	—	1	—	—	-4	-3
All circulatory	—	—	—	—	3	1	5	-15	-5
Diseases of the respiratory system									
COPD	—	—	—	—	—	1	4	—	6
Pneumonia	—	—	—	—	—	—	—	1	1
Asthma	—	—	—	—	—	—	—	—	—
Influenza	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	—	—	—	-1	-1	-2
All respiratory	—	—	—	—	—	2	4	-1	5
Injury									
Motor vehicle accidents	—	2	3	2	2	1	—	—	9
Suicide	—	—	—	-1	—	1	1	—	1
Interpersonal violence	—	—	—	—	1	—	—	—	2
Accidental shooting	—	—	—	—	—	—	—	—	1
'Other'	1	—	—	2	5	1	1	—	9
All injury	1	3	2	3	8	3	2	—	21
All other causes									
Diabetes	—	—	—	—	—	-1	—	-2	-3
Renal disease	—	—	—	—	—	—	—	1	—
'Other' causes n.e.d.	—	—	-2	-1	-2	-1	1	-4	-8
All other causes	—	—	-2	-1	-2	-1	1	-5	-11
Total	1	3	—	2	9	5	14	-34	—

(continued)

Table B2 (continued): Annual number of 'excess' deaths

Non-Indigenous Females, Inner Regional areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	—	8	3	-1	-26	-17
Colorectal	—	—	—	-1	5	7	16	13	40
Breast	—	—	—	2	-3	9	-8	-4	-4
Cervical	—	—	—	2	-1	—	-2	-2	-3
Prostate	..	..	..	..	..	..	..	..	..
Melanoma	—	—	—	1	1	-1	2	-3	1
'Other'	—	-3	3	4	5	-2	5	-38	-27
All cancers	—	-3	3	8	14	16	12	-60	-10
Diseases of the circulatory system									
Stroke	—	-1	—	1	2	4	1	—	8
Ischaemic heart disease	—	—	—	—	1	9	26	64	100
Rheumatic heart disease	—	—	—	—	-1	—	—	—	-1
'Other'	-1	-1	—	2	1	7	2	122	133
All circulatory	-1	-2	—	3	4	20	29	186	239
Diseases of the respiratory system									
COPD	—	—	—	1	1	3	14	1	21
Pneumonia	—	—	—	1	—	2	—	-12	-9
Asthma	—	1	—	1	—	—	3	-1	4
Influenza	—	—	—	—	—	1	-1	5	6
'Other'	—	—	—	-1	-1	2	-1	-31	-33
All respiratory	—	—	—	2	1	7	16	-38	-11
Injury									
Motor vehicle accidents	3	12	11	8	6	7	3	5	55
Suicide	—	2	1	-2	5	1	—	-2	4
Interpersonal violence	—	—	—	1	-1	1	—	-1	-2
Accidental shooting	—	—	1	—	—	—	—	—	1
'Other'	3	3	-1	1	4	-3	2	16	26
All injury	6	16	12	8	14	6	5	18	85
All other causes									
Diabetes	—	-1	—	1	1	-1	-5	33	29
Renal disease	—	1	—	—	—	1	4	-8	-2
'Other' causes <i>n.e.d.</i>	-4	-1	—	4	-4	12	14	51	71
All other causes	-4	-1	-1	5	-3	12	13	76	96
Total	1	10	15	26	30	61	74	184	402

(continued)

Table B2 (continued): Annual number of 'excess' deaths

Non-Indigenous Females, Outer Regional areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	-1	—	-1	-7	-11	-19
Colorectal	—	—	—	-1	4	1	10	13	28
Breast	—	—	—	1	-1	3	-9	4	-2
Cervical	—	—	1	—	-1	1	—	3	4
Prostate	..	..	..	..	..	..	..	..	..
Melanoma	—	1	—	1	—	3	-1	-2	1
'Other'	-2	-2	—	—	-2	6	2	-24	-21
All cancers	-2	-1	—	1	—	13	-4	-16	-9
Diseases of the circulatory system									
Stroke	—	—	1	2	2	—	3	-16	-8
Ischaemic heart disease	—	—	—	1	2	10	17	42	72
Rheumatic heart disease	—	—	—	—	—	1	2	—	2
'Other'	-1	—	1	-2	—	5	4	94	101
All circulatory	—	—	2	1	5	15	25	119	167
Diseases of the respiratory system									
COPD	—	—	—	—	—	3	10	7	19
Pneumonia	—	—	—	—	—	1	—	—	1
Asthma	-1	—	—	—	2	—	2	—	3
Influenza	—	—	—	—	—	—	—	4	3
'Other'	—	—	1	—	-1	1	1	-13	-11
All respiratory	-1	—	1	—	1	4	12	-2	15
Injury									
Motor vehicle accidents	2	6	7	5	3	2	5	1	31
Suicide	—	—	—	—	—	-2	-2	—	-4
Interpersonal violence	—	-1	-1	-1	—	—	—	—	-3
Accidental shooting	—	—	—	—	—	—	—	—	1
'Other'	1	—	-2	-2	1	2	—	22	21
All injury	3	6	4	1	5	2	2	24	46
All other causes									
Diabetes	—	—	—	—	-1	3	8	33	42
Renal disease	—	—	—	—	—	—	1	6	7
'Other' causes <i>n.e.d.</i>	-3	1	—	-3	3	5	4	54	61
All other causes	-3	1	—	-3	3	8	13	92	111
Total	-3	5	7	1	12	43	49	217	331

(continued)

Table B2 (continued): Annual number of 'excess' deaths

Non-Indigenous Females, Remote areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	—	1	—	2	—	2
Colorectal	—	—	—	—	—	-1	2	-1	-1
Breast	—	—	—	—	—	-1	-1	-1	-4
Cervical	—	—	—	—	—	—	1	—	—
Prostate	..	..	..	..	..	..	..	..	..
Melanoma	—	—	—	—	—	—	—	-1	—
'Other'	-1	-1	—	—	-2	-1	3	-10	-12
All cancers	-1	-1	-1	-1	-1	-2	6	-13	-13
Diseases of the circulatory system									
Stroke	—	—	—	—	—	—	—	-10	-9
Ischaemic heart disease	—	—	—	—	—	1	3	-8	-4
Rheumatic heart disease	—	—	—	—	—	—	—	—	1
'Other'	—	—	—	—	—	—	—	8	8
All circulatory	—	—	—	—	1	1	4	-10	-5
Diseases of the respiratory system									
COPD	—	—	—	—	—	1	4	—	5
Pneumonia	—	—	—	—	—	—	—	1	1
Asthma	—	—	—	—	—	—	—	-1	—
Influenza	—	—	—	—	—	—	—	2	2
'Other'	—	—	—	—	—	1	—	-1	-1
All respiratory	—	—	—	—	—	2	4	1	7
Injury									
Motor vehicle accidents	—	2	1	—	1	—	—	—	4
Suicide	—	—	-1	—	—	—	—	—	-1
Interpersonal violence	—	—	—	—	—	—	—	—	1
Accidental shooting	—	—	—	—	—	—	—	—	—
'Other'	—	2	—	—	—	—	—	2	3
All injury	—	3	—	—	1	—	—	2	6
All other causes									
Diabetes	—	—	—	—	—	1	-1	4	5
Renal disease	—	—	—	—	—	—	—	—	—
'Other' causes n.e.d.	—	—	—	-1	—	—	1	-13	-13
All other causes	—	—	—	-1	—	1	—	-9	-8
Total	—	3	—	-2	—	3	13	-28	-12

(continued)

Table B2 (continued): Annual number of 'excess' deaths

Non-Indigenous Females, Very Remote areas

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	—	1	—	1	-1	—
Colorectal	—	—	—	—	1	—	—	-1	—
Breast	—	—	—	—	-1	-1	1	-2	-2
Cervical	—	—	—	—	—	—	—	—	—
Prostate	..	..	..	..	..	..	..	..	..
Melanoma	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	—	-1	—	2	-4	-4
All cancers	—	—	—	-1	—	-1	4	-7	-6
Diseases of the circulatory system									
Stroke	—	—	—	—	—	—	—	-8	-8
Ischaemic heart disease	—	—	—	—	—	1	1	-7	-5
Rheumatic heart disease	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	—	—	—	1	-3	-3
All circulatory	—	—	—	—	—	1	2	-19	-15
Diseases of the respiratory system									
COPD	—	—	—	—	—	1	1	-2	—
Pneumonia	—	—	—	—	—	—	—	-1	—
Asthma	—	—	—	—	—	—	—	—	—
Influenza	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	—	—	—	—	-1	-1
All respiratory	—	—	—	—	—	1	1	-3	-1
Injury									
Motor vehicle accidents	—	—	1	—	—	—	—	—	—
Suicide	—	—	—	—	—	—	—	—	—
Interpersonal violence	—	—	—	—	—	—	—	—	1
Accidental shooting	—	—	—	—	—	—	—	—	—
'Other'	—	—	—	1	—	—	—	-1	—
All injury	1	—	1	1	-1	—	—	-1	1
All other causes									
Diabetes	—	—	—	—	—	1	1	—	2
Renal disease	—	—	—	—	—	1	—	1	1
'Other' causes <i>n.e.d.</i>	—	—	—	-1	—	—	1	-3	-3
All other causes	—	—	—	-1	-1	1	2	-2	—
Total	—	—	2	—	-1	1	9	-32	-22

Note: Expected and 'excess' deaths are rarely whole numbers. Rounding may result in individual cells not adding exactly to totals.

Source: AIHW National Mortality Database.

Table B3: Annual number of 'excess' deaths of Indigenous persons in SA, WA, NT and Qld

Males

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	1	2	6	2	3	14
Colorectal	—	—	—	—	-1	—	-1	-1	-3
Breast	—	—	—	—	—	—	—	—	—
Cervical	..	..	..	..	..	..	..	..	..
Prostate	—	—	—	—	—	—	1	-2	-1
Melanoma	—	—	—	—	—	—	—	—	-2
'Other'	—	—	—	5	5	8	8	3	30
All cancers	—	—	—	6	6	14	9	2	38
Diseases of the circulatory system									
Stroke	—	—	—	3	5	4	8	8	29
Ischaemic heart disease	—	—	2	19	37	32	22	-1	110
Rheumatic heart disease	—	1	2	2	1	—	1	1	8
'Other'	1	1	3	3	7	6	5	2	28
All circulatory	1	2	8	27	51	42	36	9	175
Diseases of the respiratory system									
COPD	—	—	—	1	1	3	7	6	19
Pneumonia	3	1	1	4	3	1	2	4	19
Asthma	—	—	—	—	1	1	—	—	2
Influenza	—	—	—	—	—	—	1	—	1
'Other'	—	—	1	4	3	3	2	1	13
All respiratory	3	1	1	9	8	9	12	11	53
Injury									
Motor vehicle accidents	2	4	7	8	6	3	1	—	31
Suicide	—	9	20	7	3	—	-1	—	38
Interpersonal violence	1	2	3	2	2	1	—	—	11
Accidental shooting	—	—	—	—	—	—	—	—	—
'Other'	6	4	7	10	6	2	2	—	37
All injury	8	18	37	28	17	6	3	-1	117
All other causes									
Diabetes	—	—	1	4	10	14	8	8	45
Renal disease	—	—	—	—	1	2	2	4	9
'Other' causes <i>n.e.d.</i>	38	2	12	20	24	18	10	9	133
All other causes	38	2	13	24	35	34	20	21	188
Total	50	24	60	94	117	103	80	42	571

(continued)

Table B3 (continued): Annual number of 'excess' deaths of Indigenous persons in SA, WA, NT and Qld

Females

Disease	Age group (years)								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
	(number)								
Cancers									
Lung	—	—	—	—	3	4	3	1	11
Colorectal	—	—	—	—	—	—	—	-2	-3
Breast	—	—	—	1	1	—	—	—	2
Cervical	—	—	—	1	2	—	1	2	7
Prostate	..	..	..	..	..	..	..	..	..
Melanoma	—	—	—	—	—	—	—	—	-1
'Other'	1	—	—	—	2	4	7	2	15
All cancers	1	—	—	2	6	8	11	2	30
Diseases of the circulatory system									
Stroke	—	—	1	1	5	3	6	6	21
Ischaemic heart disease	—	—	2	4	16	14	21	6	64
Rheumatic heart disease	—	—	2	3	2	1	1	1	10
'Other'	—	—	4	1	5	5	8	9	31
All circulatory	—	1	8	8	27	24	37	22	126
Diseases of the respiratory system									
COPD	—	—	—	—	1	4	6	4	15
Pneumonia	2	—	—	2	3	1	2	2	13
Asthma	—	—	—	1	1	—	—	—	3
Influenza	—	—	—	—	—	—	—	—	—
'Other'	1	—	—	2	3	3	1	1	10
All respiratory	2	—	1	4	8	8	9	8	41
Injury									
Motor vehicle accidents	2	2	5	4	1	1	—	—	15
Suicide	—	3	2	2	—	—	—	—	6
Interpersonal violence	1	1	3	5	2	—	—	—	12
Accidental shooting	—	—	—	—	—	—	—	—	—
'Other'	3	1	2	4	4	1	—	2	18
All injury	5	8	12	14	6	3	—	2	51
All other causes									
Diabetes	—	—	—	4	8	13	18	14	56
Renal disease	—	—	1	1	4	5	2	6	19
'Other' causes <i>n.e.d.</i>	25	5	6	15	16	14	9	10	99
All other causes	25	5	6	20	27	31	29	30	174
Total	34	14	27	48	75	74	85	64	422

Note: Expected and 'excess' deaths are rarely whole numbers. Rounding may result in individual cells not adding exactly to totals.

Source: AIHW National Mortality Database.

Appendix C: Age-specific death rates

Table C1: Age-specific death rates for males and females.

Table C2: Age-specific death rates for Indigenous and non-Indigenous males and females. Rates for Indigenous people are for SA, WA, NT and Qld; rates for non-Indigenous people are for the five Remoteness areas.

These tables should be interpreted with caution:

- Calculated age-specific death rates can fluctuate appreciably from one age group to the next where populations are small and where the cause of death is not common (for example, calculated age-specific injury death rates for Indigenous people, and for non-Indigenous people from Very Remote areas).
- Age-specific death rates for non-Indigenous people in remote areas should be used with caution (see page 22).
- Age-specific death rates for Indigenous people from South Australia, Western Australia, the Northern Territory and Queensland are likely to be underestimates (see page 21).

Table C1.1: Age-specific death rates for males and females, all causes, 1997–1999

Age group	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	(rate per 100,000 population per year)									
0–4	132	144	171	183	343	110	110	115	148	322
5–9	13	15	16	23	41	11	11	12	9	43
10–14	17	18	19	34	71	12	13	17	27	54
15–19	69	95	102	146	205	32	38	38	70	87
20–24	110	144	157	227	276	37	47	45	79	97
25–29	123	150	165	193	219	40	42	52	66	141
30–34	135	141	153	190	310	54	59	60	84	157
35–39	138	147	156	220	442	69	81	74	119	198
40–44	174	191	215	280	553	104	109	118	140	339
45–49	236	269	275	346	812	155	171	189	230	457
50–54	380	426	484	492	808	239	277	303	325	537
55–59	632	732	814	897	1,188	387	407	448	546	958
60–64	1,129	1,209	1,330	1,384	2,053	626	664	727	856	1,830
65–69	1,908	2,072	2,226	2,548	2,835	1,024	1,085	1,118	1,390	1,974
70–74	3,298	3,452	3,627	3,571	4,519	1,815	1,797	2,030	2,163	2,691
75–79	5,261	5,590	5,708	5,842	5,763	3,051	3,211	3,543	3,343	4,826
80–84	9,142	9,630	9,295	8,567	7,027	5,982	6,171	6,296	5,773	5,082
85+	16,906	17,294	17,019	13,209	7,630	13,849	14,300	13,703	11,262	7,780

Source: AIHW National Mortality Database.

Table C1.2: Age-specific death rates for males and females, circulatory diseases, 1997–1999

Age group	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	(rate per 100,000 population per year)									
0–4	2	3	3	2	8	2	2	1	2	—
5–9	—	—	—	—	4	—	—	—	—	—
10–14	1	1	—	—	14	1	—	1	1	5
15–19	2	3	4	3	5	2	1	2	2	4
20–24	3	3	4	9	16	2	2	5	5	15
25–29	6	8	5	15	20	3	2	7	22	25
30–34	10	10	15	31	49	5	6	9	16	43
35–39	18	19	24	42	120	8	10	9	11	12
40–44	35	40	39	70	179	12	13	15	22	107
45–49	60	71	84	127	297	20	23	34	52	149
50–54	111	123	157	139	328	31	43	49	63	116
55–59	201	226	260	297	328	70	80	99	117	278
60–64	370	399	432	522	748	139	166	202	234	562
65–69	676	735	797	770	1,051	298	308	330	414	554
70–74	1,233	1,325	1,398	1,391	1,868	642	650	778	824	901
75–79	2,192	2,411	2,348	2,439	2,306	1,324	1,436	1,646	1,431	2,136
80–84	4,282	4,576	4,401	4,060	3,303	3,102	3,277	3,374	2,964	2,177
85+	8,452	9,039	8,606	6,163	3,346	8,090	8,466	7,763	6,972	4,076

Source: AIHW National Mortality Database.

Table C1.3: Age-specific death rates for males and females, neoplasms, 1997–1999

Age group	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	(rate per 100,000 population per year)									
0–4	5	5	5	2	12	3	5	3	2	4
5–9	4	4	3	2	4	4	2	2	—	4
10–14	4	4	3	6	1	3	1	3	—	—
15–19	5	6	6	5	15	5	4	3	4	—
20–24	6	7	9	8	4	3	5	4	5	12
25–29	9	11	8	11	—	8	9	8	2	8
30–34	13	14	13	5	16	15	17	18	17	15
35–39	19	21	21	16	58	27	30	24	27	29
40–44	38	43	43	38	24	51	55	50	55	74
45–49	73	85	74	84	125	91	96	94	79	124
50–54	146	174	174	182	150	144	159	162	134	165
55–59	277	327	325	336	387	229	228	238	239	243
60–64	504	544	583	483	645	337	336	344	368	586
65–69	809	857	905	1,068	816	478	496	468	613	673
70–74	1,283	1,305	1,337	1,212	1,330	699	659	699	698	753
75–79	1,709	1,748	1,782	1,776	1,550	891	888	919	821	820
80–84	2,348	2,430	2,325	2,281	1,586	1,204	1,166	1,167	1,042	844
85+	3,173	3,150	2,951	2,500	1,330	1,595	1,581	1,488	1,062	862

Source: AIHW National Mortality Database.

Table C1.4: Age-specific death rates for males and females, respiratory diseases, 1997-1999

Age group	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	(rate per 100,000 population per year)									
0-4	3	2	3	7	20	3	2	2	11	14
5-9	—	—	1	—	4	—	1	—	—	—
10-14	1	1	—	3	5	—	—	—	—	—
15-19	1	1	2	7	1	1	1	1	—	—
20-24	1	1	3	4	4	1	1	1	3	—
25-29	1	2	2	3	4	1	2	2	3	13
30-34	2	3	2	8	24	2	2	2	5	5
35-39	2	2	3	11	24	2	3	4	4	24
40-44	2	4	6	10	12	3	2	4	8	37
45-49	5	5	8	7	36	4	5	10	7	17
50-54	10	13	15	16	87	9	12	15	16	19
55-59	24	35	47	35	87	21	26	27	68	167
60-64	62	70	102	106	249	42	43	55	107	156
65-69	138	189	196	288	354	76	94	101	130	189
70-74	299	337	376	348	484	151	159	176	210	285
75-79	519	570	652	550	778	252	273	280	249	323
80-84	940	969	990	816	814	476	444	428	576	469
85+	1,800	1,690	1,902	1,697	1,268	1,067	962	1,019	963	833

Source: AIHW National Mortality Database.

Table C1.5: Age-specific death rates for males and females, injury and poisoning, 1997-1999

Age group	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
	(rate per 100,000 population per year)									
0-4	14	20	25	14	50	9	13	12	19	39
5-9	5	6	7	10	17	2	4	7	1	20
10-14	7	9	12	22	38	3	6	7	16	33
15-19	47	74	78	111	164	16	25	23	51	54
20-24	78	110	126	182	210	21	30	25	41	54
25-29	82	108	124	126	138	18	21	26	23	65
30-34	77	94	97	104	161	20	21	20	19	45
35-39	63	77	84	116	124	18	23	22	30	80
40-44	55	69	83	108	198	18	24	26	27	31
45-49	48	63	69	76	173	17	21	19	33	25
50-54	48	62	67	69	69	19	24	20	33	28
55-59	44	57	63	85	140	18	19	24	27	40
60-64	47	58	65	94	96	22	22	24	6	17
65-69	57	63	81	111	171	22	28	27	30	62
70-74	73	70	88	81	46	38	36	47	49	33
75-79	99	114	126	209	105	55	59	76	114	9
80-84	178	189	207	185	122	112	126	135	117	85
85+	417	451	416	308	215	303	344	378	355	156

Source: AIHW National Mortality Database.

Table C2.1: Age-specific death rates for Indigenous and non-Indigenous males and females, all causes, 1997–1999

Age group	Non-Indigenous					Indig- enous	Non-Indigenous					Indig- enous
	MC	IR	OR	R	VR		MC	IR	OR	R	VR	
	(rate per 100,000 population per year)											
0–4	130	141	149	148	153	394	109	109	104	110	93	300
5–9	13	15	14	10	15	47	11	11	11	5	32	28
10–14	17	18	19	35	69	40	11	13	17	22	6	53
15–19	68	93	95	124	102	246	32	38	35	51	28	106
20–24	108	144	151	184	157	363	37	48	41	45	68	121
25–29	121	148	150	148	89	428	39	41	46	34	51	201
30–34	132	139	140	114	143	638	53	58	52	39	46	278
35–39	135	145	141	163	159	849	67	80	69	62	73	421
40–44	171	188	195	187	236	1,257	103	107	104	96	58	697
45–49	234	264	257	258	369	1,565	152	170	170	161	157	981
50–54	378	421	450	417	396	2,281	237	275	281	243	165	1,383
55–59	630	728	780	782	757	2,745	384	403	424	427	535	1,861
60–64	1,125	1,205	1,298	1,247	1,392	3,784	623	657	681	725	1,103	2,969
65–69	1,905	2,065	2,199	2,418	2,448	4,996	1,021	1,079	1,092	1,228	1,329	3,719
70–74	3,296	3,451	3,601	3,464	3,565	7,177	1,813	1,797	1,991	1,970	1,400	5,514
75+	8,468	8,844	8,863	8,018	5,932	10,057	6,732	6,883	7,013	6,158	4,862	9,212

Note: Age-specific death rates for Indigenous people are for SA, WA, NT and Qld combined.

Source: AIHW National Mortality Database.

Table C2.2: Age-specific death rates for Indigenous and non-Indigenous males and females, circulatory diseases, 1997–1999

Age group	Non-Indigenous					Indig- enous	Non-Indigenous					Indig- enous
	MC	IR	OR	R	VR		MC	IR	OR	R	VR	
	(rate per 100,000 population per year)											
0–4	2	3	3	2	9	4	2	2	2	3	—	2
5–9	—	—	—	—	—	2	1	—	—	—	—	—
10–14	1	1	—	—	—	7	1	—	—	1	—	2
15–19	2	2	4	—	—	14	2	1	2	1	—	6
20–24	3	3	3	8	9	29	2	2	4	1	1	17
25–29	5	7	3	6	—	53	2	2	4	7	9	58
30–34	10	9	12	12	16	134	5	6	6	3	12	65
35–39	17	18	19	21	16	247	8	10	9	7	1	39
40–44	33	39	32	33	53	467	12	12	9	11	—	223
45–49	59	69	75	83	109	681	19	22	29	28	29	320
50–54	110	121	141	109	144	956	31	41	42	43	35	346
55–59	200	224	247	255	193	941	70	78	89	76	98	620
60–64	369	396	414	460	415	1,542	138	163	182	188	290	1,063
65–69	673	731	780	716	948	2,125	296	305	317	330	351	1,581
70–74	1,232	1,324	1,389	1,352	1,522	2,502	641	649	754	728	518	2,378
75+	3,918	4,220	4,115	3,629	2,662	3,915	3,614	3,755	3,761	3,392	2,489	4,122

Note: Age-specific death rates for Indigenous people are for SA, WA, NT and Qld combined.

Source: AIHW National Mortality Database.

Table C2.3: Age-specific death rates for Indigenous and non-Indigenous males and females, neoplasms, 1997–1999

Age group	Non-Indigenous					Indig- enous	Non-Indigenous					Indig- enous
	MC	IR	OR	R	VR		MC	IR	OR	R	VR	
	(rate per 100,000 population per year)											
0–4	5	6	5	2	9	6	3	5	3	3	—	6
5–9	4	5	3	3	—	4	4	2	2	—	—	6
10–14	4	4	3	7	2	—	3	1	3	—	—	—
15–19	5	6	6	5	2	14	5	4	4	—	—	6
20–24	6	6	9	3	8	9	3	6	4	4	10	6
25–29	9	11	8	9	—	7	8	9	8	1	7	9
30–34	13	14	13	5	12	12	15	17	18	15	4	25
35–39	19	21	19	16	19	98	27	30	25	18	23	39
40–44	38	43	42	27	6	108	51	55	49	49	45	120
45–49	73	85	72	78	100	133	91	97	93	79	101	135
50–54	146	174	169	164	133	380	144	159	161	127	99	264
55–59	277	327	320	325	315	580	228	228	236	218	212	391
60–64	503	544	582	474	583	861	337	334	334	349	511	759
65–69	808	857	904	1,048	846	1,062	478	495	469	615	615	674
70–74	1,283	1,307	1,331	1,219	1,213	1,700	699	659	701	685	548	937
75+	2,155	2,195	2,167	2,096	1,342	2,083	1,168	1,144	1,138	951	774	1,162

Note: Age-specific death rates for Indigenous people are for SA, WA, NT and Qld combined.

Source: AIHW National Mortality Database.

Table C2.4: Age-specific death rates for Indigenous and non-Indigenous males and females, respiratory diseases, 1997–1999

Age group	Non-Indigenous					Indig- enous	Non-Indigenous					Indig- enous
	MC	IR	OR	R	VR		MC	IR	OR	R	VR	
	(rate per 100,000 population per year)											
0–4	3	2	1	3	9	22	3	2	2	3	9	18
5–9	—	—	—	—	—	2	—	1	—	—	—	—
10–14	1	1	—	3	—	2	—	—	—	—	—	—
15–19	1	1	2	7	1	6	1	1	1	—	—	3
20–24	1	1	2	1	—	9	1	1	1	4	1	—
25–29	1	2	2	3	—	7	1	2	2	3	—	9
30–34	1	3	1	1	—	55	2	2	1	—	—	25
35–39	2	1	2	7	—	61	2	3	3	—	8	30
40–44	2	3	4	3	6	60	3	2	2	1	—	60
45–49	5	5	6	5	—	117	4	5	6	4	13	99
50–54	10	13	11	11	37	152	9	12	14	17	1	61
55–59	24	34	40	23	44	220	21	25	25	50	76	283
60–64	62	68	98	88	140	400	42	42	53	89	37	253
65–69	138	188	192	258	272	660	75	94	96	110	128	395
70–74	299	336	370	323	298	1,133	151	159	169	175	148	541
75+	870	883	981	822	831	1,401	531	497	516	537	326	913

Note: Age-specific death rates for Indigenous people are for SA, WA, NT and Qld combined.

Source: AIHW National Mortality Database.

Table C2.5: Age-specific death rates for Indigenous and non-Indigenous males and females, injury and poisoning, 1997-1999

Age group	Non-Indigenous					Indig- enous	Non-Indigenous					Indig- enous
	MC	IR	OR	R	VR		MC	IR	OR	R	VR	
	(rate per 100,000 population per year)											
0-4	14	19	23	15	28	45	9	12	10	13	9	35
5-9	5	6	6	6	9	20	2	4	5	1	18	11
10-14	6	8	12	24	66	19	3	6	7	15	2	29
15-19	46	72	72	89	92	187	16	25	20	44	10	57
20-24	77	110	121	156	133	268	21	30	22	23	42	69
25-29	81	107	116	108	81	237	18	20	23	16	27	79
30-34	75	92	92	81	109	284	20	20	19	15	22	69
35-39	63	77	81	105	86	210	17	23	20	23	39	139
40-44	55	69	82	96	144	233	18	24	24	20	2	82
45-49	48	63	68	62	132	219	17	21	18	22	1	71
50-54	48	61	66	69	53	130	19	24	18	17	1	102
55-59	44	57	61	79	123	204	18	19	24	22	41	27
60-64	47	58	65	93	77	140	22	22	22	7	27	34
65-69	57	63	82	109	116	172	22	28	28	32	64	—
70-74	73	69	88	75	59	47	38	36	46	41	7	108
75+	178	196	205	227	166	108	136	151	173	175	64	221

Notes: Age-specific death rates for Indigenous people are for SA, WA, NT and Qld combined.

Source: AIHW National Mortality Database.

Appendix D: ICD-9 and ICD-10 codes

Cause of death data have been reported using the International Statistical Classification of Diseases and related health problems, 10th revision (ICD-10). Data for time series analysis have been adjusted to account for changes in coding practices and the introduction of ICD-10 via the use of conversion factors.

Table D1: ICD-9 and ICD-10 chapter and cause codes for mortality data

Chapter and cause	ICD-9	ICD-10
Neoplasms	140–239	C00–D48
Lung cancer	162	C33, C34
Colorectal cancer	153, 154	C18–C21
Breast cancer	174, 175	C50
Cervical cancer	180	C53
Prostate cancer	185	C61
Melanoma	172	C43
‘Other’ neoplasms	140–239 (excluding above)	C00–D48 (excluding above)
Circulatory disease	390–459	I00–I99
Ischaemic heart disease	410–414	I20–I25
Stroke	430–438	G45, G46, I60–I69
Rheumatic fever and rheumatic heart disease	390–398	I00–I02, I05–I09
‘Other’ circulatory disease	390–459 (excluding above)	I00–I99 (excluding above)
Respiratory disease	460–519	J00–J99
Pneumonia	480–486	J12–J18
Influenza	487	J10–J11
Asthma	493	J45–J46
Chronic obstructive pulmonary disease	491, 492, 496	J41, J42, J43, J44
‘Other’ respiratory disease	460–519 (excluding above)	J00–J99 (excluding above)
External causes	E800–E999	V01–Y98
Motor vehicle accidents	E810–E819	V09.2, V02–V04 (.1–.9), V12–V14 (.3–.9) V19 (.4–.6), V20–V28 (.3–.9), V29 (.4–.9) V30–V39 (.4–.9), V40–V49 (.4–.9), V50– V59 (.4–.9), V60–V69 (.4–.9) V70–V79 (.4–.9), V80(.3–.5), V81.1–V82.1, V83–V86 (.0–.3), V87 (.0–.8), V89.2
Suicide	E950–E959	X60–X84, Y87.0
Accidental shooting	E922	W32–W34
Interpersonal violence	E960–E978, E990–E999	X85–Y09, Y87.1, Y35–Y36, Y89.0, Y89.1
‘Other’ injury/poisoning	E800–E999 (excluding above)	V00–Y98 (excluding above)
OTHER		
Diabetes	250	E10–E14
Renal disease	403, 580–586	N10–N19

Appendix E: Population tables

Table E1: Population distribution in each ASGC Remoteness area, persons, 2001

	MC	IR	OR	R	VR	Total
	(number)					
Males	6,343,536	1,995,269	1,024,813	171,544	95,491	9,630,652
Females	6,527,307	2,030,421	989,024	152,785	83,052	9,782,588
Persons	12,870,843	4,025,689	2,013,837	324,329	178,542	19,413,240

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

Table E2: Percentage of the population in each ASGC Remoteness area who are Indigenous, by state, 2001

	MC	IR	OR	R	VR	Total
	(per cent Indigenous)					
NSW	1	3	5	16	29	2
Vic	—	1	2	1	..	1
Qld	2	2	6	12	36	3
WA	2	2	5	12	39	3
SA	1	1	3	3	30	2
Tas	..	3	5	5	8	4
ACT	1	1	..	..	..	1
NT	..	..	10	24	74	29
Australia	1	2	5	12	45	2

Note: In those jurisdictions where the Remoteness area was not represented .. indicates not applicable.

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

Table E3: Distribution of non-Indigenous and Indigenous populations by state and ASGC Remoteness area, 2001

	MC	IR	OR	R	VR	Total
	(number)					
NSW						
Non-Indigenous	4,639,628	1,304,926	456,994	33,102	5,679	6,440,329
Indigenous	56,773	43,697	25,922	6,178	2,318	134,888
Persons	4,696,401	1,348,623	482,916	39,280	7,997	6,575,217
Vic						
Non-Indigenous	3,514,464	1,008,206	248,311	5,899	..	4,776,880
Indigenous	13,655	9,711	4,410	70	..	27,846
Persons	3,528,119	1,017,917	252,721	5,969	..	4,804,726
Qld						
Non-Indigenous	1,868,541	915,532	604,177	80,941	33,845	3,503,036
Indigenous	31,208	22,995	41,318	11,513	18,876	125,910
Persons	1,899,749	938,527	645,495	92,454	52,721	3,628,946
WA						
Non-Indigenous	1,321,485	226,930	176,452	80,068	30,294	1,835,228
Indigenous	21,168	5,295	9,717	10,670	19,081	65,931
Persons	1,342,653	232,225	186,169	90,738	49,375	1,901,159
SA						
Non-Indigenous	1,073,473	185,007	172,966	44,388	10,350	1,486,184
Indigenous	11,789	2,197	5,910	1,220	4,428	25,544
Persons	1,085,262	187,204	178,876	45,608	14,778	1,511,728
Tas						
Non-Indigenous	..	291,125	152,907	7,970	2,409	454,411
Indigenous	..	8,869	7,911	402	202	17,384
Persons	..	299,994	160,818	8,372	2,611	471,795
ACT						
Non-Indigenous	314,759	649	..	..	..	315,408
Indigenous	3,901	8	..	..	..	3,909
Persons	318,660	657	..	..	..	319,317
NT						
Non-Indigenous	..	..	96,155	31,800	12,938	140,893
Indigenous	..	..	10,687	10,108	36,080	56,875
Persons	..	..	106,842	41,908	49,018	197,768
Total						
Non-Indigenous	12,732,349	3,932,917	1,907,962	284,168	97,557	18,954,953
Indigenous	138,494	92,772	105,875	40,161	80,985	458,287
Persons	12,870,843	4,025,689	2,013,837	324,329	178,542	19,413,240

Note: In those jurisdictions where the Remoteness area was not represented . . . indicates not applicable.

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