

# **Non-melanoma skin cancer**

**General practice consultations, hospitalisation  
and mortality**

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# **Non-melanoma skin cancer**

## **General practice consultations, hospitalisation and mortality**

**Australian Institute of Health and Welfare  
and  
Cancer Australia**

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# Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographical Classification
ASR (A)	age-standardised rate (Australia)
ASR (W)	age-standardised rate (World)
BCC	basal cell carcinoma(s)
BEACH	Bettering the Evaluation and Care of Health
CI	confidence interval
DALY	disability adjusted life years
GP	general practitioner
IRSD	Index of Relative Socioeconomic Disadvantage
NMSC	non-melanoma skin cancer(s)
SACC	Standard Australian Classification of Countries
SCC	squamous cell carcinoma(s)
SEIFA	Socio-Economic Indexes for Areas

# Symbols

.. not applicable

# Summary

Non-melanoma skin cancer (NMSC) is by far the most common cancer diagnosed in Australia but, unlike other invasive cancers, is not reportable by law to cancer registries. As a result, incidence and prevalence statistics are not routinely available.

This report by the Australian Institute of Health and Welfare (AIHW) and Cancer Australia is intended to fill some of the gaps in data availability for NMSC by analysing the impact of these cancers on general practitioner (GP) workload, hospital inpatient admissions and mortality.

GP-patient encounters are tabulated by age and sex, and over time. Hospital inpatient admissions and mortality are examined by sex, age, country of birth, remoteness of residential area and socioeconomic status.

## Key findings

- It is projected that in 2008 around 434,000 persons (253,000 males, 180,000 females) will be diagnosed with one or more NMSC in Australia.
- In 2006, 410 persons (276 males, 134 females) died from NMSC in Australia (ABS, 2008).

## GP-patient encounters

- GP encounters for NMSC increased by 14% from an estimated 836,500 per year between April 1998 and March 2000 to an estimated 950,000 per year between April 2005 and March 2007.
- The proportion of GP encounters for males between April 2002 and March 2007 relating to NMSC was almost twice that of females. This was consistent for the two most common NMSC types – basal cell carcinomas (0.7% of all GP encounters for males, 0.4% for females) and squamous cell carcinomas (0.4% of all GP encounters for males, 0.2% for females).

## Hospital inpatient admissions

- Inpatient separations where the principal diagnosis was NMSC more than doubled between 1993–94 and 2006–07, from 35,833 to 79,792. This represents a 60% increase in separations from 224 to 359 per 100,000. The increase for females (68%) was much greater than the increase for males (53%).
- In 2006–07 males accounted for 47,247 separations (471 per 100,000) compared with 32,545 (272 per 100,000) for females.
- Hospitalisation was significantly higher for Australian-born patients than for overseas-born patients, for people living in Inner Regional areas than for those in other areas, and for people living in high socioeconomic status areas than for those living in low socioeconomic areas.

## Mortality

- Mortality from NMSC was fairly stable from 1998 to 2005 with an average of 382 deaths per year (approximately 3 per 100,000 for males and 1 per 100,000 for females).
- During 2002–2005, 83% of NMSC deaths were Australian-born people, and 9% were people born in the United Kingdom and Ireland.
- NMSC mortality rates were significantly higher in Outer Regional areas and significantly lower in the most socioeconomically advantaged areas.



# 1 Introduction

The three main types of skin cancer occurring in Australia are basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and melanoma (Staples et al. 2006; FitzGerald et al. 2006). Other rare types of cancer occasionally affecting the skin include Merkel cell lesions, Kaposi sarcoma and cutaneous lymphoma.

Data are provided in this report on non-melanoma skin cancer (NMSC). Melanoma is not covered because data on this cancer are widely available through annual reporting of the Australian Institute of Health and Welfare (AIHW) and the Australasian Association of Cancer Registries.

Although NMSC accounts for just over 1% only of cancer deaths in Australia (AIHW 2007), it is a major public health problem because of the burden its high incidence imposes on the population and health system. Approximately two-thirds of Australians will experience at least one NMSC during their lifetime before the age of 70 years (NCCI 2003; Staples et al. 2006). Approximately five NMSC are diagnosed annually for every one invasive cancer of any other type.

Population surveys between 1985 and 2002 indicated an increase in NMSC incidence of over 50%, largely because of increases among people over 60 years of age (Staples et al. 2006; Staples et al. 1998; Marks et al. 1993; Giles et al. 1988). Larger percentage increases applied for the more serious SCC than BCC types. Incidence increases recorded since 1985 are likely to be augmented by increased NMSC detection following an increase in numbers of general-practice skin clinics (Askew et al. 2007).

Although most NMSC is treated in medical practices without hospitalisation, these cancers still account for more hospital admissions than any other cancer type, including breast, large bowel and prostate cancer (AIHW 2007). It is clear from hospital data, and the extent of treatment in community settings, that the impact of NMSC on health-service resource use is large. These cancers can also cause cosmetic ill-effects, including facial disfigurement, which can negatively affect quality of life.

BCC accounts for at least two-thirds of NMSC in Australia, with most other NMSC comprising SCC (Staples et al. 2006). BCC rarely metastasises to other organs, but it can be highly invasive and cause significant destruction of local tissue. SCC is also invasive and has a greater potential than BCC to metastasise to other parts of the body. Most SCC are thought to follow solar keratoses resulting from excess sun exposure (Marks et al. 1988).

The strongest NMSC risk factor is exposure to ultraviolet radiation, particularly during childhood and adolescence (Elwood 2004). Most NMSC is attributed to excess sun exposure, such that lesions often occur on sun-exposed areas of the face, ears, neck, scalp, shoulders, back and hands (Staples et al. 2006). Other risk factors include a personal or family history of NMSC or melanoma, the presence of a large numbers of freckles or moles, or having a fair complexion (Elwood 2004; Armstrong & Krickler 2001). Skin types that are prone to burn rather than tan when exposed to the sun are more susceptible. In addition, people immunosuppressed because of organ transplant or from other causes are at increased risk.

NMSC is by far the most common type of cancer in Australia, but it is generally not recorded by cancer registries. Although Tasmania is an exception in registering NMSC (FitzGerald et al. 2006), it is thought to have a comparatively low incidence by Australian standards and has not been used to indicate the national experience (Staples et al. 2006). Instead, national

incidence rates have been estimated from medically verified self-reporting in population surveys. The last survey for this purpose was conducted in 2002 (Staples et al. 2006).

This report by the AIHW and Cancer Australia provides estimates of current NMSC incidence, based on results of the 2002 survey and subsequent population change. It also provides information on the contribution of NMSC to general practitioner (GP) visits, hospital inpatient admissions and mortality. To the extent possible, results have been presented by sociodemographic characteristics of affected people, although the detail provided has depended on the detail available in the source data. Although incidence and GP data were available for SCC and BCC separately, it was not possible to obtain corresponding population-based data for these cancer types from the hospital admission and mortality data sets.

It is recognised that sociodemographic patterns of health-service use and death from NMSC are affected by many factors apart from incidence. These patterns are provided to show which sectors of the population contribute most to the impact of NMSC on the health system and death rates, rather than to infer underlying incidence patterns, which should be the subject of further investigation.

## **Overview of the burden of NMSC**

- Over 370,000 Australians are estimated to have been diagnosed and treated for NMSC in 2002 (Table 1.2). This is a vastly higher number than for other common cancers in the same year (12,114 for prostate cases, 12,059 for female breast cancer cases, 9,791 for cutaneous melanoma cases, and 12,483 for colorectal cancer cases).
- It is estimated from age-specific NMSC incidence rates in 2002, and subsequent population change, that over 430,000 Australians will be diagnosed and treated for NMSC in 2008 (tables 1.1 and 1.3). The estimates may be conservative, given the increase in the number of GP skin clinics (Askew et al. 2007).
- In 2002, 415 persons (278 males, 137 females) died from NMSC. In 2006, there were 410 deaths (276 males, 134 females) (ABS 2008). Males had much higher death rates from NMSC than females.
- The age-standardised incidence for all NMSC was estimated to be 53% higher in males than females in 2002. This difference was more pronounced for SCC with incidence being 75% higher in males than females compared with 44% higher for BCC (Table 1.1).
- NMSC incidence increased sharply with age in 2002, such that the incidence rate in people aged 70 years and over was estimated to be 193 times higher than for 20–24 year olds. This difference was more pronounced for SCC than BCC (Table 1.1).
- NMSC age-standardised incidence also was higher in people born in Australia than those born overseas and in the more northern residential latitudes (Staples et al. 2006).
- Because of its high incidence, NMSC imposed the highest health-system expenditure of any cancer in Australia during 2000–01 at an estimated \$264 million. The second leading cancer in expenditure terms was breast cancer at \$241 million. The high expenditure for NMSC reflected its high incidence, not the cost per affected person, with NMSC imposing the lowest cost per capita of any cancer type (approximately \$700/case) (AIHW 2005).
- Cancer imposed the highest DALY burden of any disease category in 2003 (DALY refers to disability-adjusted life years, calculated from estimating the number of years of healthy life lost through premature death or lived with a disability due to illness or

injury). The estimated NMSC DALY burden of 4,734 life years in 2003 was similar to DALY estimates for liver, cervical and uterine cancers (Begg et al. 2007).

**Table 1.1: Estimated age-specific incidence rates of basal and squamous cell carcinomas of the skin: Australia, 2002**

Age (years)	Basal cell carcinoma			Squamous cell carcinoma			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
0–19	0	0	0	0	0	0	0	0	0
20–24	89	0	43	0	0	0	89	0	43
25–29	83	141	114	0	0	0	83	141	114
30–34	150	231	195	0	0	0	150	231	195
35–39	491	742	629	0	57	31	491	800	661
40–44	688	1,058	893	482	223	339	1,170	1,281	1,231
45–49	1,493	1,602	1,553	597	431	506	2,090	2,033	2,059
50–54	1,987	2,113	2,055	1,104	808	943	3,090	2,921	2,999
55–59	3,293	2,014	2,602	1,857	647	1,204	5,150	2,661	3,806
60–64	5,496	2,224	3,780	1,963	979	1,447	7,458	3,203	5,226
65–69	4,165	2,849	3,486	2,251	1,900	2,070	6,416	4,749	5,556
70+	7,051	3,880	5,308	3,979	2,146	2,972	11,030	6,027	8,280
<b>ASR (A)</b>	<b>1,538</b>	<b>1,068</b>	<b>1,286</b>	<b>771</b>	<b>441</b>	<b>592</b>	<b>2,309</b>	<b>1,510</b>	<b>1,878</b>
<b>ASR (W)</b>	<b>1,151</b>	<b>825</b>	<b>977</b>	<b>561</b>	<b>323</b>	<b>432</b>	<b>1,712</b>	<b>1,148</b>	<b>1,409</b>

*Notes*

1. ASR (A) refers to age-standardised rate standardised to the 2001 Australian Standard Population.
2. ASR (W) refers to age-standardised rate standardised to the 2000 WHO World Population.
3. Rates are expressed per 100,000 population.
4. Estimates are based on the 2002 survey.

Source: NCCI 2003.

**Table 1.2: Estimated number of new cases of basal and squamous cell carcinomas of the skin: Australia, 2002**

Age (years)	Basal cell carcinoma			Squamous cell carcinoma			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
0–19	0	0	0	0	0	0	0	0	0
20–24	601	0	601	0	0	0	601	0	601
25–29	571	974	1,545	0	0	0	571	974	1,545
30–34	1,115	1,748	2,862	0	0	0	1,115	1,748	2,862
35–39	3,602	5,519	9,121	0	425	425	3,602	5,944	9,546
40–44	5,169	8,053	13,222	3,618	1,695	5,314	8,788	9,749	18,536
45–49	10,250	11,129	21,379	4,100	2,996	7,096	14,350	14,125	28,475
50–54	12,911	13,705	26,616	7,173	5,240	12,413	20,083	18,945	39,028
55–59	18,113	10,792	28,905	10,218	3,469	13,687	28,331	14,261	42,592
60–64	23,419	9,323	32,743	8,364	4,102	12,466	31,783	13,426	45,209
65–69	14,326	10,104	24,430	7,744	6,736	14,480	22,070	16,840	38,910
70+	53,472	39,818	93,290	30,174	22,027	52,201	83,646	61,845	145,491
<b>Total</b>	<b>143,550</b>	<b>111,166</b>	<b>254,715</b>	<b>71,390</b>	<b>46,691</b>	<b>118,081</b>	<b>214,940</b>	<b>157,856</b>	<b>372,796</b>

Note: Estimates are based on the 2002 survey. Minor differences in totals and subtotals are due to rounding.

Source: NCCI 2003.

**Table 1.3: Estimated number of new cases of basal and squamous cell carcinomas of the skin: Australia, 2008**

Age (years)	Basal cell carcinoma			Squamous cell carcinoma			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
0–19	0	0	0	0	0	0	0	0	0
20–24	649	0	649	0	0	0	649	0	649
25–29	608	1,032	1,640	0	0	0	608	1,032	1,640
30–34	1,079	1,679	2,758	0	0	0	1,079	1,679	2,758
35–39	3,857	5,944	9,801	0	457	457	3,857	6,401	10,258
40–44	5,164	7,999	13,163	3,615	1,684	5,299	8,778	9,683	18,461
45–49	11,507	12,464	23,971	4,603	3,356	7,958	16,110	15,819	31,929
50–54	13,811	14,965	28,776	7,673	5,722	13,395	21,483	20,688	42,171
55–59	21,331	13,235	34,566	12,033	4,254	16,287	33,363	17,489	50,852
60–64	31,430	12,626	44,056	11,225	5,555	16,780	42,655	18,181	60,837
65–69	17,545	12,054	29,598	9,484	8,036	17,519	27,029	20,089	47,118
70+	62,502	44,532	107,034	35,269	24,635	59,904	97,771	69,167	166,938
<b>Total</b>	<b>169,483</b>	<b>126,530</b>	<b>296,013</b>	<b>83,901</b>	<b>53,699</b>	<b>137,600</b>	<b>253,384</b>	<b>180,229</b>	<b>433,613</b>

Note: Estimates are calculated using the age-specific rates obtained from the 2002 survey and the estimated resident population for 2008. Minor differences in totals and subtotals are due to rounding.

Source: NCCI 2003.

## 2 General practice patient encounters

### Introduction

NMSC is largely treated in community settings where national data are not routinely collected. Clinical treatment occurs both in GP and specialist surgical practices. It is possible with the data available from the continuous national study of general practice in Australia known as the BEACH program (Bettering the Evaluation and Care of Health) to estimate the scale of this treatment in the GP sector.

The BEACH program has been running since April 1998. It collects data on the characteristics of patients attending general practices, the health problems managed in these settings, and the management practices used. Data are not available by socioeconomic status or geographic region, but numbers of encounters can be analysed by NMSC type, age and sex of patient, and period of attendance.

About 1,000 randomly selected GPs provide details of approximately 100,000 GP-patient encounters annually as part of the BEACH program. The program is administered by the General Practice Statistic and Classification Unit (an AIHW collaborating unit within the Family Medicine Research Centre, University of Sydney).

In this chapter, national age and sex distributions of patients attending GPs with NMSC between April 2002 and March 2007 are estimated from the BEACH data and Medicare Claims information (see Appendix: Methodology).

Problems managed through GP encounters have been classified using the *International classification of primary care – version 2* (ICPC-2), a product of the World Organization of Family Doctors. The ICPC-2 code for NMSC is shown in the Appendix, Table A.1.

### Trends

- The estimated annual number of general practice encounters for NMSC increased by 14% from 836,500 during the period from April 1998 to March 2000 to 950,000 encounters during April 2005 to March 2007 (Table 2.1).
- The annual rate of GP encounters for NMSC also increased over this period, from an estimated 0.8 per 100 GP encounters during the period from April 1998 to March 2000 to 1.0 per 100 GP encounters from April 2005 to March 2007.
- BCC accounted for 60% of GP encounters for NMSC compared with 30% for SCC. Other or unspecified NMSC type accounted for the remaining 10% of NMSC-related GP encounters.

### Age group and sex

- BCC accounted for approximately 0.6% of all GP-patient encounters, with a higher proportion applying to males (0.7%) than females (0.4%) (Table 2.2).
- In comparison, SCC accounted for about 0.3% of all GP-patient encounters, with a higher proportion applying to males (0.4%) than females (0.2%) (Table 2.2).
- BCC and SCC encounter rates increased with age, for both males and females, with the highest rates experienced by those aged 80 years and over (Table 2.2). This was more pronounced for SCC than BCC, as seen in the incidence data (Table 1.1).

**Table 2.1: Estimated number of NMSC-related GP encounters per year: Australia, April 1998–March 2007**

Type of cancer	April 1998–March 2000		April 2000–March 2002		April 2002–March 2004		April 2005–March 2007	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Basal cell carcinoma	511,800	0.5	511,800	0.5	578,300	0.6	570,000	0.6
Squamous cell carcinoma	262,100	0.4	262,200	0.3	312,200	0.3	285,000	0.3
Other skin cancer	62,600	0.1	55,300	0.1	67,500	0.1	95,000	0.1
<b>Total</b>	<b>836,500</b>	<b>0.8</b>	<b>829,300</b>	<b>0.8</b>	<b>958,000</b>	<b>1.0</b>	<b>950,000</b>	<b>1.0</b>

Note: Rates are the estimated number of GP–patient encounters where the problem managed was NMSC per 100 encounters.

Sources: BEACH database; Medicare claims benefits.

**Table 2.2: NMSC-related GP encounters by age, sex and NMSC type: Australia, April 2002–March 2007**

Age (years)	Basal cell carcinoma			Squamous cell carcinoma		
	Males	Females	Persons	Males	Females	Persons
< 34	0.1	0.0	0.1	0.0	0.0	0.0
35–39	0.3	0.2	0.2	0.1	0.1	0.1
40–44	0.5	0.4	0.5	0.2	0.0	0.1
45–49	0.7	0.5	0.6	0.2	0.1	0.2
50–54	1.1	0.5	0.7	0.5	0.2	0.3
55–59	1.2	0.7	0.9	0.4	0.2	0.3
60–64	1.1	0.7	0.9	0.4	0.4	0.4
65–69	1.1	0.7	0.8	0.7	0.4	0.5
70–74	1.4	0.7	1.0	0.9	0.5	0.7
75–79	1.5	0.8	1.1	0.9	0.7	0.8
80–84	1.7	1.0	1.3	1.2	0.7	0.9
85+	1.8	1.0	1.3	1.1	0.7	0.9
<b>Total</b>	<b>0.7</b>	<b>0.4</b>	<b>0.6</b>	<b>0.4</b>	<b>0.2</b>	<b>0.3</b>

Note: Rates are the number of GP–patient encounters where the problem managed was NMSC per 100 encounters overall.

Source: BEACH database.

# 3 Hospital inpatient admissions

## Introduction

Hospital separations comprise discharges and transfers from hospital, plus deaths in hospital and changes in hospital care type. This chapter shows trends in hospital separations of admitted patients with a principal diagnosis of NMSC from 1993–94 to 2006–07 financial years. In addition, differences in NMSC separations by age, sex, country of birth, remoteness of residence and socioeconomic status are shown for 2006–07.

Hospital separation rates were calculated using the average of 30 June 2006 and 30 June 2007 population estimates for remoteness areas and quintiles of socioeconomic disadvantage, age-standardised to the Australian 2001 population. Rates were also calculated by country of birth using population estimates for 30 June 2004, age-standardised to the Australian 2001 population.

Results show the contribution made by NMSC to hospital separations both in absolute terms and as a proportion of all separations. They also show differences in separation rates for sociodemographic subgroups, after adjusting for age, indicating those sections of the population most at risk of hospital admission because of this cancer.

## Trends

- The number of separations where the principal diagnosis was NMSC more than doubled from 35,833 in 1993–94 to 79,792 in 2006–07. The crude separation rate for NMSC increased steadily from 7.8 per 1,000 separations in 1993–94 to 10.1 in 2006–07 (Table 3.1, Figure 3.1).
- Age-standardised separation rates increased significantly for both males and females from 224 per 100,000 in 1993–94 to 320 in 1999–2000 and 359 in 2006–07 (Table 3.2).
- The increase for females (68%) from 1993–94 to 2006–07 (161 to 272 per 100,000) was much greater than the increase for males (53%) in the same period (from 309 to 471 per 100,000) (Table 3.2, Figure 3.2).

## Age group and sex

- Males accounted for 47,247 NMSC separations (a crude rate of 13 per 1,000 separations) in 2006–07 compared with 32,545 (a crude rate of 8 per 1,000 separations) for females (Table 3.3).
- Separations with a principal diagnosis of NMSC increased with age for both males and females (Table 3.3).
- In 2006–07, 89% of NMSC separations occurred in people aged 50 and over, with the median age of 71 years for both males and females. Separations before the age of 30 were uncommon (Table 3.3).
- Age-specific separation rates for males increased from 48 per 100,000 for the 30–34 year age group to over 5,000 for those aged 85 and over. For females, there was an increase

from 55 per 100,000 for the 30–34 year age group to 2,200 for those aged 85 and over (Table 3.4, Figure 3.3).

- Separation rates for NMSC were 1.7 times higher for males than females. The age-standardised separation rate was 471 separations per 100,000 for males and 272 per 100,000 for females. The overall separation rate for NMSC was 359 per 100,000 (Table 3.4).

## Country of birth

The country of birth classification used in this analysis was the Australian Bureau of Statistics (ABS) Standard Australian Classification of Countries (SACC). Countries were grouped into geographic regions as per the classification in Table A.3 of the Appendix.

Tables 3.5 and 3.6 present the number of separations, the separation rate, the age-standardised separation rate (ASR) and the 95% confidence interval for the ASR for each country group. In 2006–2007:

- Australian-born patients accounted for 85% of all separations for NMSC, although people born in Australia represented only 76% of the population in 2004. A further 6% of separations were for people born in the United Kingdom and Ireland (Table 3.5). This is consistent with incidence data which also have shown higher rates in the Australian-born population (Staples et al. 2006).
- The age-standardised separation rate for NMSC for Australian-born patients (482 per 100,000 people) was significantly higher than for other countries of birth. Relatively high separation rates applied for patients born in New Zealand (318 per 100,000), United States (277), Canada (268), Sub-Saharan Africa (219) and the United Kingdom and Ireland (217) (Table 3.6).
- The lowest age-standardised separation rates per 100,000 persons were for people born in North-East Asia (20 per 100,000), South-East Asia (25) and the Middle East (34) (Table 3.6).

## Remoteness area

The geographical classification used in this analysis was the 2006 Australian Standard Geographical Classification (ASGC). Details of remoteness classifications are outlined in Table A.4 of the Appendix.

Tables 3.7 to 3.12 present the number of separations, the separation rate and the age-standardised separation rate (ASR) with 95% confidence intervals for each remoteness area for 2006–07. As confidence intervals are wide for Remote and Very Remote locations, these figures must be interpreted with caution.

In 2006–07:

- Age-standardised separation rates were significantly lower for Remote (269 per 100,000) and Very Remote (258 per 100,000) areas (Table 3.12, Figure 3.4).
- For males, the age-standardised separation rates were: Major Cities (481 per 100,000 population), Inner Regional (488), Outer Regional (456), Remote (343) and Very Remote (335) (Table 3.8).



- For females, the age-standardised separation rates were: Major Cities (271 per 100,000 population), Inner Regional (285), Outer Regional (283), Remote (202) and Very Remote (170) (Table 3.10).

## **Socioeconomic disadvantage**

Socioeconomic status was classified in this analysis by population quintile using the ABS Index of Relative Socioeconomic Disadvantage (IRSD) from the Socio-Economic Indexes for Areas (SEIFA) 2006. Details of this index are available in the Appendix.

Tables 3.13–3.18 present for each quintile for 2006–07 the number of separations, the separation rate and the age-standardised separation rate (ASR) with 95% confidence interval.

In 2006–07:

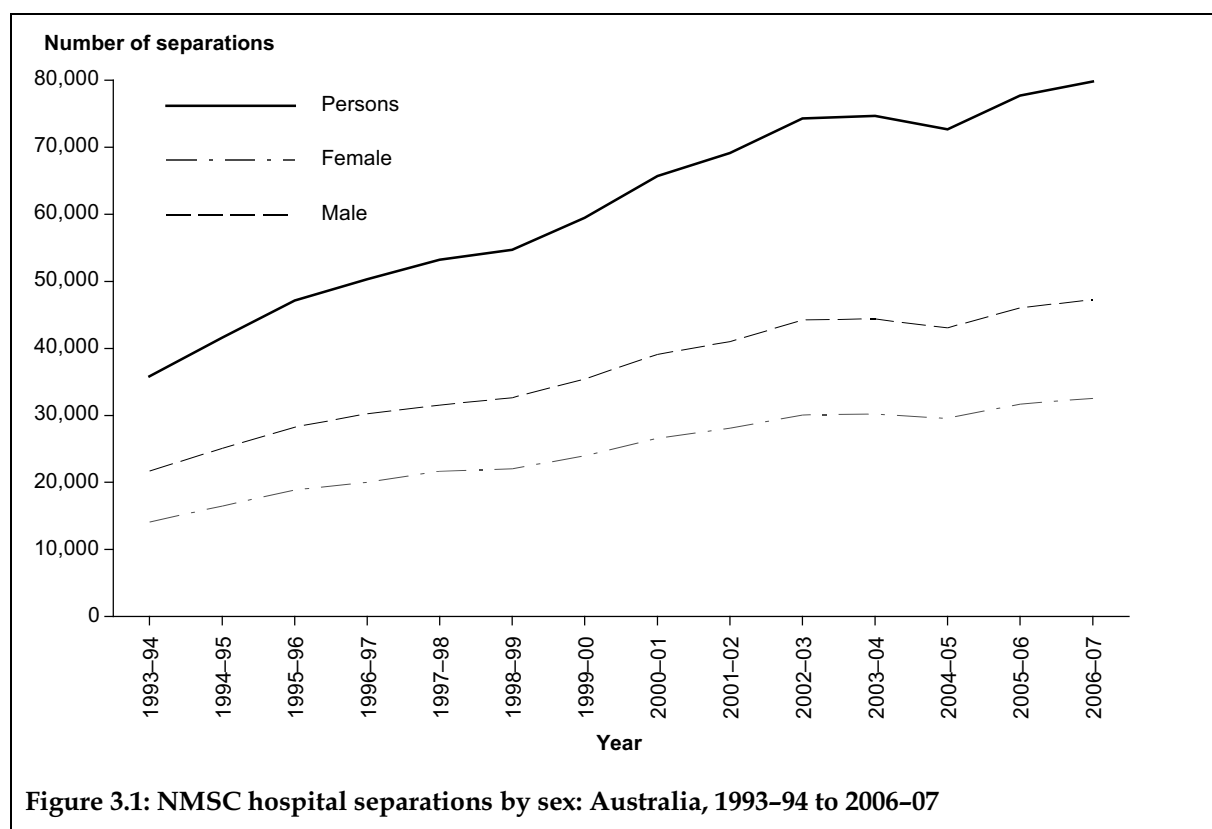
- Age-standardised separation rates increased with decreasing socioeconomic disadvantage from 311 per 100,000 for persons usually resident in the 1st quintile (the most disadvantaged quintile) to 417 for persons in the 5th quintile (the least disadvantaged quintile) (Table 3.18, Figure 3.5).
- For males the age-standardised separation rates were 404 per 100,000 for the 1st quintile (most disadvantaged), 448 for the 2nd quintile, 460 for the 3rd quintile, 498 for the 4th quintile and 557 for the 5th quintile (least disadvantaged) (Table 3.14).
- For females the age-standardised separation rates were 236 per 100,000 for the 1st quintile (most disadvantaged), 256 for the 2nd quintile, 266 for the 3rd quintile, 282 for the 4th quintile and 314 for the 5th quintile (least disadvantaged) (Table 3.16).

**Table 3.1: NMSC hospital separations by sex: Australia, 1993-94 to 2006-07**

Year	Male		Female		Persons	
	Number	Rate	Number	Rate	Number	Rate
1993-94	21,712	10.4	14,121	5.6	35,833	7.8
1994-95	25,122	11.4	16,493	6.2	41,615	8.5
1995-96	28,272	12.0	18,868	6.7	47,140	9.1
1996-97	30,265	12.4	20,040	6.9	50,321	9.4
1997-98	31,549	12.3	21,675	7.2	53,225	9.6
1998-99	32,620	12.4	22,059	7.1	54,679	9.5
1999-00	35,471	13.0	23,971	7.6	59,443	10.1
2000-01	39,105	13.7	26,587	8.1	65,693	10.7
2001-02	41,026	13.8	28,108	8.2	69,135	10.8
2002-03	44,199	14.3	30,083	8.5	74,282	11.2
2003-04	44,430	13.9	30,229	8.3	74,660	10.9
2004-05	43,061	13.1	29,573	7.9	72,634	10.3
2005-06	46,049	13.0	31,672	7.9	77,721	10.3
2006-07	47,247	12.8	32,545	7.8	79,792	10.1

*Notes*

1. Person numbers include separations where sex not stated.
2. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 1,000 hospital separations.

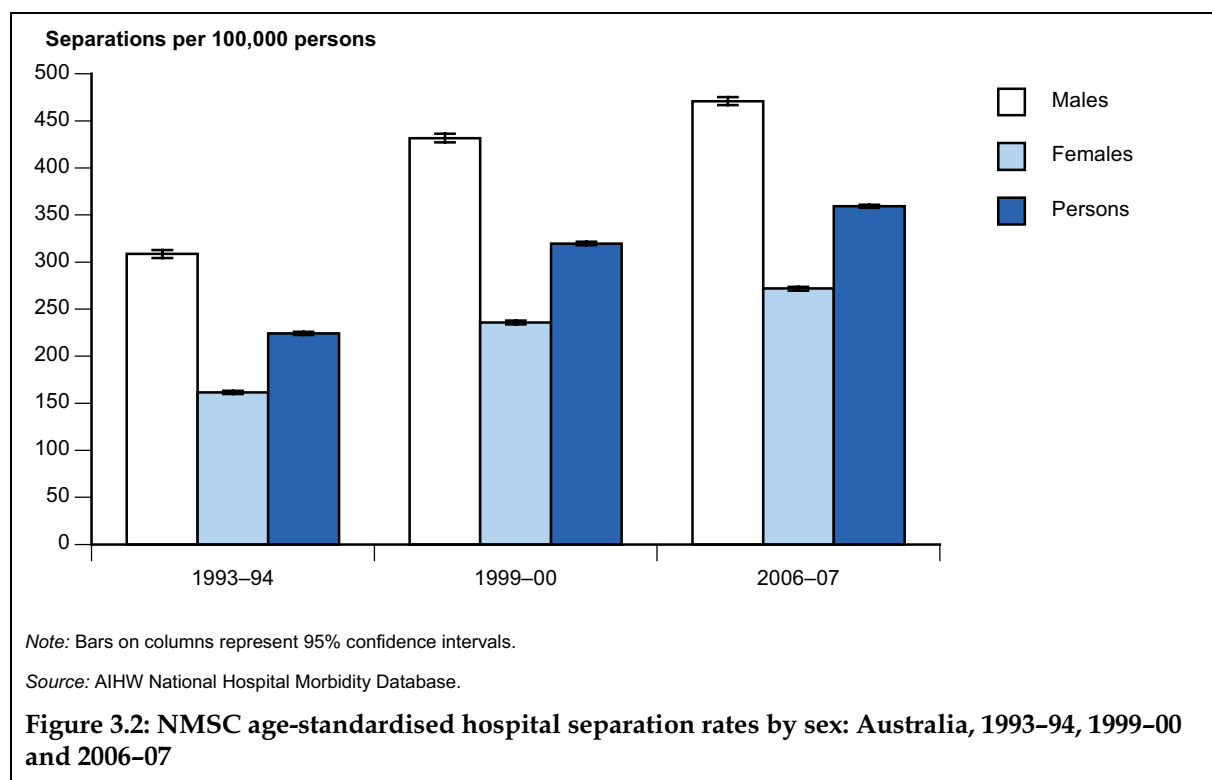


**Table 3.2: NMSC age-standardised hospital separation rates by sex: Australia, 1993-94, 1999-00 and 2006-07**

Year	Males		Females		Persons	
	ASR	95% CI	ASR	95% CI	ASR	95% CI
1993-94	308.7	304.5-313.0	161.4	159.6-163.2	224.1	222.4-225.8
1999-00	431.7	427.1-436.3	235.7	233.7-237.8	319.6	317.7-321.5
2006-07	471.0	466.8-475.3	271.9	269.9-274.0	359.2	357.3-361.0

*Note:* Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population, age-standardised to the Australian population at 30 June 2001.

*Source:* AIHW National Hospital Morbidity Database.



**Table 3.3: NMSC hospital separations by age and sex: Australia, 2006–07**

Age (years)	Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate
0–4	5	0.0	4	0.0	9	0.0
5–9	7	0.1	5	0.1	12	0.1
10–14	8	0.1	6	0.1	14	0.1
15–19	14	0.1	25	0.2	39	0.2
20–24	54	0.5	46	0.2	100	0.3
25–29	107	1.0	123	0.5	230	0.6
30–34	354	2.8	410	1.3	764	1.7
35–39	657	4.1	714	2.5	1,371	3.1
40–44	1,143	6.4	1,178	5.0	2,321	5.6
45–49	1,912	9.0	1,865	7.7	3,777	8.3
50–54	2,916	11.8	2,383	9.1	5,299	10.4
55–59	4,235	13.7	2,754	9.6	6,989	11.7
60–64	5,072	15.4	2,879	10.3	7,951	13.0
65–69	5,330	16.3	2,983	11.0	8,313	13.9
70–74	5,829	18.1	3,349	12.1	9,178	15.3
75–79	6,815	20.5	4,196	14.2	11,011	17.5
80–84	7,247	28.0	4,642	18.3	11,889	23.2
85+	5,542	33.8	4,983	21.9	10,525	26.9
<b>Total</b>	<b>47,247</b>	<b>12.8</b>	<b>32,545</b>	<b>7.8</b>	<b>79,792</b>	<b>10.1</b>

*Note:* Rates are the numbers of hospital separations with principal diagnosis of NMSC per 1,000 hospital separations.

*Source:* AIHW National Hospital Morbidity Database.

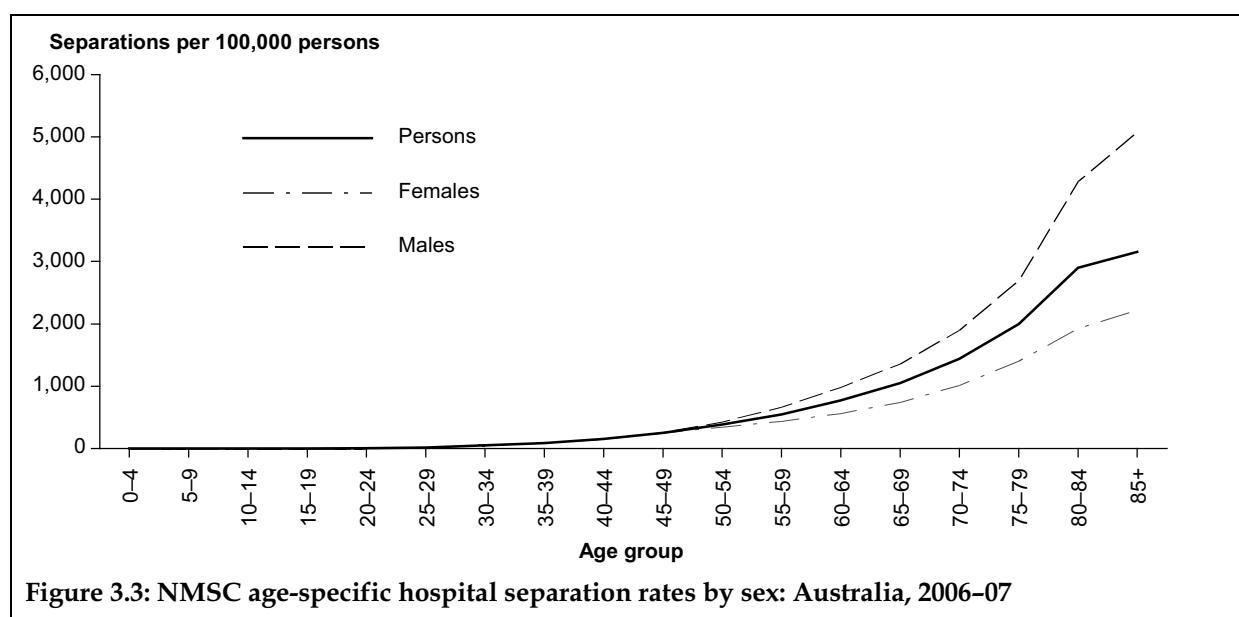
**Table 3.4: NMSC age-specific and age-standardised hospital separation rates by age and sex: Australia, 2006–07**

Age (years)	Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate
0–4	5	0.7	4	0.6	9	0.7
5–9	7	1.0	5	0.8	12	0.9
10–14	8	1.1	6	0.9	14	1.0
15–19	14	1.9	25	3.6	39	2.7
20–24	54	7.2	46	6.3	100	6.8
25–29	107	14.9	123	17.4	230	16.1
30–34	354	47.9	410	55.1	764	51.5
35–39	657	85.4	714	91.8	1,371	88.6
40–44	1,143	150.4	1,178	153.3	2,321	151.9
45–49	1,912	255.5	1,865	244.9	3,777	250.2
50–54	2,916	425.8	2,383	344.7	5,299	385.1
55–59	4,235	666.5	2,754	433.6	6,989	550.0
60–64	5,072	985.4	2,879	563.6	7,951	775.3
65–69	5,330	1,359.3	2,983	745.5	8,313	1,049.3
70–74	5,829	1,902.6	3,349	1,014.6	9,178	1,442.0
75–79	6,815	2,698.1	4,196	1,405.9	11,011	1,998.2
80–84	7,247	4,285.8	4,642	1,927.5	11,889	2,900.3
85+	5,542	5,074.7	4,983	2,222.3	10,525	3,156.5
<b>All ages</b>	<b>47,247</b>	<b>455.6</b>	<b>32,545</b>	<b>310.3</b>	<b>79,792</b>	<b>382.5</b>
<b>ASR (A)</b>	..	<b>471.0</b>	..	<b>271.9</b>	..	<b>359.2</b>
<b>95% CI</b>	..	<b>466.8–475.3</b>	..	<b>269.9–274.0</b>	..	<b>357.3–361.0</b>

*Notes*

1. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population.
2. All-age totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.



**Figure 3.3: NMSC age-specific hospital separation rates by sex: Australia, 2006–07**

**Table 3.5: NMSC hospital separations by country of birth: Australia, 2006–07**

Country of birth group	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
Australia	39,861	84.4	27,898	85.7	67,759	84.9
UK/Ireland	3,182	6.7	1,861	5.7	5,043	6.3
New Zealand	634	1.3	419	1.3	1,053	1.3
Pacific Island countries	55	0.1	45	0.1	100	0.1
United States	84	0.2	60	0.2	144	0.2
Canada	43	0.1	33	0.1	76	0.1
Western Europe	627	1.3	370	1.1	997	1.2
Northern Europe	60	0.1	22	0.1	82	0.1
Southern Europe	528	1.1	263	0.8	791	1.0
Central and Eastern Europe	652	1.4	437	1.3	1,089	1.4
North Africa	28	0.1	19	0.1	47	0.1
Middle East	34	0.1	31	0.1	65	0.1
South-East Asia	58	0.1	45	0.1	103	0.1
North-East Asia	27	0.1	34	0.1	61	0.1
Southern and Central Asia	53	0.1	34	0.1	87	0.1
South America	20	0.0	11	0.0	31	0.0
Central America	6	0.0	4	0.0	10	0.0
Caribbean	8	0.0	3	0.0	11	0.0
Sub-Saharan Africa	210	0.4	145	0.4	355	0.4
Missing/Inadequately described	1,070	2.3	809	2.5	1,879	2.4
Not classified	7	0.0	2	0.0	9	0.0
<b>Total</b>	<b>47,247</b>	<b>100.0</b>	<b>32,545</b>	<b>100.0</b>	<b>79,792</b>	<b>100.0</b>

*Notes*

1. Proportions are the number of hospital separations with principal diagnosis of NMSC in each country group.
2. Country of birth is classified according to the Standard Australian Classification of Countries, ABS cat. no. 1269.0.

Source: AIHW National Hospital Morbidity Database.

**Table 3.6: NMSC age-standardised hospital separation rates by country of birth: Australia, 2006-2007**

Country of birth grouping	Males			Females			Persons		
	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI
Australia	522.9	652.0	645.6-658.5	360.6	358.1	353.9-362.4	441.1	481.5	477.8-485.1
UK/Ireland	525.4	293.8	283.5-304.4	318.0	156.2	148.9-163.8	423.5	217.2	211.1-223.4
New Zealand	277.6	415.6	379.8-453.5	196.0	238.4	214.7-264.0	238.1	318.2	297.7-339.7
Pacific Island countries	96.8	152.7	110.0-204.8	72.1	97.3	68.2-133.8	83.9	121.8	96.5-151.2
United States	259.0	303.1	237.8-380.0	199.2	243.1	179.5-320.1	230.2	277.0	230.1-330.1
Canada	273.9	323.1	228.5-441.8	200.4	214.3	143.3-306.5	236.3	267.9	208.0-338.9
Western Europe	470.0	224.8	205.9-244.8	284.1	123.5	110.1-137.9	378.2	165.9	155.1-177.3
Northern Europe	373.4	266.4	200.4-346.3	138.9	97.0	60.4-147.3	257.0	179.7	142.1-224.1
Southern Europe	326.0	120.4	109.5-132.0	177.7	61.7	54.1-70.0	255.2	89.7	83.2-96.5
Central and Eastern Europe	245.5	112.9	104.1-122.3	163.5	73.7	66.6-81.3	204.4	92.3	86.7-98.1
North Africa	88.0	62.1	41.0-90.1	68.5	46.2	27.3-72.9	78.9	54.9	40.1-73.4
Middle East	30.1	36.4	23.4-53.2	31.1	33.1	21.9-47.6	30.5	34.2	25.7-44.5
South-East Asia	21.7	32.8	23.9-43.8	13.5	18.9	13.4-25.9	17.2	24.9	19.8-30.8
North-East Asia	15.8	20.1	13.0-29.5	17.5	19.5	13.4-27.4	16.7	20.4	15.5-26.3
Southern and Central Asia	40.5	60.4	44.9-79.4	29.7	30.1	20.8-42.1	35.5	42.7	34.1-52.8
South America	58.4	74.1	38.8-123.5	29.2	24.5	11.7-44.6	43.1	42.4	27.2-62.3
Central America	89.0	236.5	76.6-533.7	56.2	67.4	12.3-185.6	72.2	126.1	53.8-242.6
Caribbean	371.9	216.6	89.1-434.2	144.6	106.4	21.7-311.5	260.4	168.3	81.1-305.7
Sub-Saharan Africa	213.5	292.2	250.7-338.2	153.1	162.1	135.8-192.0	183.9	218.5	195.0-243.8

**Notes**

1. Crude rates are the numbers of hospital separations with principal diagnosis of non-melanoma cancer per 100,000 as at 30 June 2004.

2. Country of birth is classified according to the Standard Australian Classification of Countries, ABS cat. no. 1269.0.

Source: AIHW National Hospital Morbidity Database.

**Table 3.7: NMSC hospital separations by region: males, Australia, 2006–07**

Age (years)	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
0–4	2	0	3	0	0	5
5–9	6	1	0	0	0	7
10–14	6	0	2	0	0	8
15–19	7	1	6	0	0	14
20–24	38	10	5	0	1	54
25–29	66	22	17	2	0	107
30–34	237	70	38	5	3	354
35–39	437	130	66	16	4	657
40–44	735	244	133	17	8	1,143
45–49	1,265	371	219	31	15	1,912
50–54	1,820	691	330	44	21	2,916
55–59	2,687	923	533	48	32	4,235
60–64	3,171	1,211	567	78	27	5,072
65–69	3,297	1,309	624	52	29	5,330
70–74	3,693	1,453	605	48	18	5,829
75–79	4,423	1,607	691	49	30	6,815
80–84	5,026	1,616	552	36	3	7,247
85+	4,059	1,090	341	39	7	5,542
<b>All ages</b>	<b>30,975</b>	<b>10,749</b>	<b>4,732</b>	<b>465</b>	<b>198</b>	<b>47,247</b>

*Notes*

1. Regions are defined according to the ASGC.
2. 128 separations were undefined for remoteness. Hence the sum of remoteness areas may be less than the national total.

*Source:* AIHW National Hospital Morbidity Database.



**Table 3.8: NMSC age-specific and age-standardised hospital separation rates by region: males, Australia, 2006–07**

Age (years)	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
0–4	0.4	0.0	4.6	0.0	0.0	0.7
5–9	1.3	0.7	0.0	0.0	0.0	1.0
10–14	1.3	0.0	2.6	0.0	0.0	1.1
15–19	1.4	0.7	8.8	0.0	0.0	1.9
20–24	6.9	8.3	8.7	0.0	14.4	7.2
25–29	12.5	20.8	30.3	17.8	0.0	15.1
30–34	43.8	58.3	60.3	40.5	41.2	47.6
35–39	81.6	96.7	95.5	122.4	55.1	86.5
40–44	140.5	167.6	179.5	128.4	121.7	149.9
45–49	255.2	246.7	288.4	241.7	240.9	258.0
50–54	406.1	486.1	462.6	380.2	370.4	429.5
55–59	645.5	676.4	777.6	451.7	682.3	665.2
60–64	995.2	1,085.2	1,038.6	998.8	796.7	1,022.6
65–69	1,357.3	1,446.3	1,425.3	909.0	1,276.5	1,383.8
70–74	1,914.6	2,033.0	1,827.9	1,218.3	1,319.2	1,925.3
75–79	2,701.4	2,746.6	2,670.3	1,628.8	2,915.9	2,702.7
80–84	4,519.3	4,347.0	3,541.3	2,344.2	614.0	4,365.7
85+	5,733.7	4,799.4	3,571.8	4,084.9	2,154.4	5,312.0
<b>All ages</b>						
Crude rate	442.4	529.6	473.2	277.7	220.0	459.2
ASR (A)	480.8	488.4	455.7	343.0	334.6	479.3
95% CI	475.5–486.3	479.1–497.8	442.6–469.1	310.5–377.8	285.0–389.7	475.0–483.7

*Notes*

1. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population at 30 June 2006.
2. Regions are defined according to the ASGC.
3. All-age totals are age-standardised to the Australian population at 30 June 2001.

*Source:* AIHW National Hospital Morbidity Database.

**Table 3.9: NMSC hospital separations by region: females, Australia, 2006–07**

Age (years)	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
0–4	4	0	0	0	0	4
5–9	5	0	0	0	0	5
10–14	4	1	1	0	0	6
15–19	13	9	3	0	0	25
20–24	34	3	8	0	0	46
25–29	92	21	9	0	0	123
30–34	297	78	29	3	1	410
35–39	487	124	87	10	3	714
40–44	784	245	120	13	12	1,178
45–49	1,267	376	177	24	11	1,865
50–54	1,563	521	247	24	13	2,383
55–59	1,812	591	294	32	14	2,754
60–64	1,854	682	282	34	11	2,879
65–69	1,844	764	326	29	7	2,983
70–74	2,170	816	324	22	10	3,349
75–79	2,724	1,006	422	30	4	4,196
80–84	3,234	981	391	19	1	4,642
85+	3,581	976	381	30	6	4,983
<b>All ages</b>	<b>21,769</b>	<b>7,194</b>	<b>3,101</b>	<b>270</b>	<b>93</b>	<b>32,545</b>

*Notes*

1. Regions are defined according to the ASGC.
2. 118 separations were undefined for remoteness. Hence the sum of remoteness areas may be less than the national total.

*Source:* AIHW National Hospital Morbidity Database.

**Table 3.10: NMSC age-specific and age-standardised hospital separation rates by region: females, Australia, 2006–07**

Age (years)	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
0–4	0.9	0.0	0.0	0.0	0.0	0.6
5–9	1.2	0.0	0.0	0.0	0.0	0.8
10–14	0.9	0.7	1.4	0.0	0.0	0.9
15–19	2.8	6.4	4.9	0.0	0.0	3.6
20–24	6.3	2.7	15.4	0.0	0.0	6.4
25–29	17.7	20.1	16.3	0.0	0.0	17.6
30–34	54.5	63.1	46.3	25.7	14.8	54.7
35–39	89.9	88.8	127.6	83.9	48.1	93.0
40–44	147.5	161.8	166.6	112.1	212.8	152.6
45–49	247.5	245.2	244.7	213.8	208.9	247.3
50–54	337.3	370.0	374.2	243.0	290.1	348.1
55–59	425.6	439.0	471.1	380.9	389.0	433.8
60–64	575.7	616.4	563.0	533.6	428.3	585.5
65–69	717.6	845.3	810.0	628.4	411.6	757.3
70–74	1,004.5	1,099.3	1,029.7	635.5	851.3	1,026.2
75–79	1,347.7	1,520.9	1,540.9	1,093.3	432.1	1,401.8
80–84	1,960.1	1,909.4	1,907.0	983.2	193.0	1,939.6
85+	2,383.8	2,097.2	2,042.7	1,658.6	1,397.9	2,289.4
<b>All ages</b>						
Crude rate	303.8	350.8	322.4	178.5	115.7	312.6
ASR (A)	271.0	284.6	283.1	202.2	169.8	275.1
95% CI	267.4–274.7	278.0–291.3	273.1–293.3	178.5–228.2	135.1–210.4	272.1–278.2

*Notes*

1. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population at 30 June 2006.
2. Regions are defined according to the ASGC.
3. All-age totals are age-standardised to the Australian population at 30 June 2001.

*Source:* AIHW National Hospital Morbidity Database.

**Table 3.11: NMSC hospital separations by region: persons, Australia, 2006–07**

Age (years)	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
0–4	6	0	3	0	0	9
5–9	11	1	0	0	0	12
10–14	10	1	3	0	0	14
15–19	20	10	9	0	0	39
20–24	72	13	13	0	1	100
25–29	158	43	26	2	0	230
30–34	534	148	67	8	4	764
35–39	924	254	153	26	7	1,371
40–44	1,519	489	253	30	20	2,321
45–49	2,532	747	396	55	26	3,777
50–54	3,383	1,212	577	68	34	5,299
55–59	4,499	1,514	827	80	46	6,989
60–64	5,025	1,893	849	112	38	7,951
65–69	5,141	2,073	950	81	36	8,313
70–74	5,863	2,269	929	70	28	9,178
75–79	7,147	2,613	1,113	79	34	11,011
80–84	8,260	2,597	943	55	4	11,889
85+	7,640	2,066	722	69	13	10,525
<b>All ages</b>	<b>52,744</b>	<b>17,943</b>	<b>7,833</b>	<b>735</b>	<b>291</b>	<b>79,792</b>

*Notes*

1. Regions are defined according to the ASGC.
2. 246 separations were undefined for remoteness. Hence the sum of remoteness areas may be less than the national total.

*Source:* AIHW National Hospital Morbidity Database.

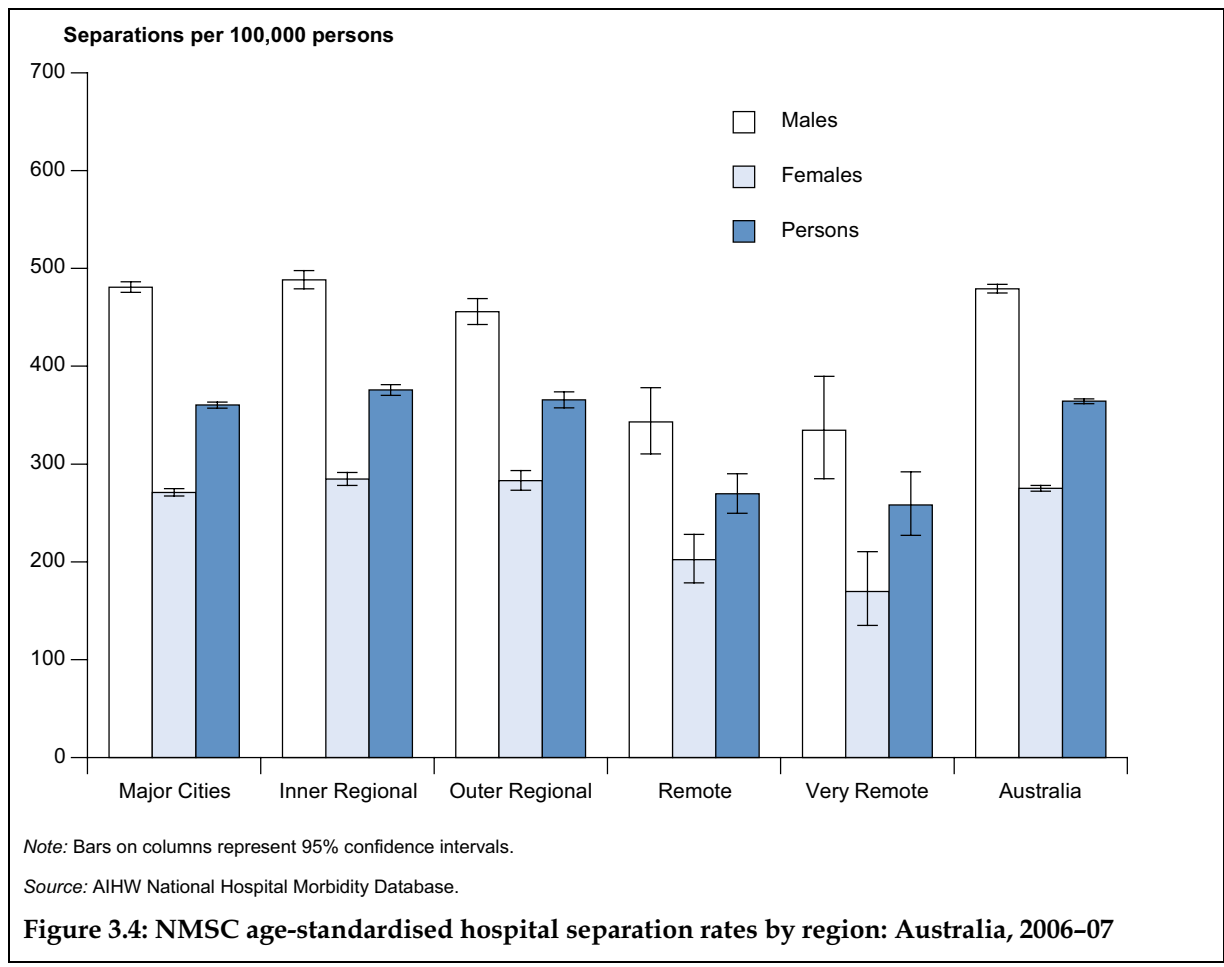
**Table 3.12: NMSC age-specific and age-standardised hospital separation rates by region: persons, Australia, 2006–07**

Age (years)	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Total
0–4	0.7	0.0	2.3	0.0	0.0	0.7
5–9	1.3	0.4	0.0	0.0	0.0	0.9
10–14	1.1	0.3	2.0	0.0	0.0	1.0
15–19	2.1	3.4	7.0	0.0	0.0	2.8
20–24	6.6	5.6	11.9	0.0	7.3	6.8
25–29	15.1	20.5	23.4	9.1	0.0	16.4
30–34	49.2	60.7	53.4	33.4	28.5	51.2
35–39	85.8	92.7	111.4	104.0	51.9	89.8
40–44	144.1	164.7	173.2	120.8	163.8	151.3
45–49	251.3	246.0	267.1	228.7	226.2	252.6
50–54	371.1	428.3	420.1	317.0	334.9	388.6
55–59	534.3	558.5	631.5	420.5	555.0	549.7
60–64	784.3	851.8	811.0	789.8	637.9	805.0
65–69	1,028.4	1,146.0	1,130.6	783.7	906.2	1,067.0
70–74	1,433.8	1,557.3	1,438.9	945.7	1,102.7	1,458.9
75–79	1,953.5	2,096.2	2,089.6	1,373.3	1,739.6	1,996.6
80–84	2,990.5	2,932.7	2,612.9	1,585.8	397.3	2,933.2
85+	3,456.8	2,983.4	2,560.4	2,496.8	1,723.8	3,268.8
<b>All ages</b>						
Crude rate	372.3	439.8	399.3	230.6	170.8	385.5
ASR (A)	360.2	375.6	365.4	269.4	258.2	364.1
95% CI	357.2–363.3	370.1–381.2	357.3–373.7	249.8–290.1	227.1–292.1	361.6–366.6

*Notes*

1. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population at 30 June 2006.
2. Regions are defined according to the ASGC.
3. All-age totals are age-standardised to the Australian population at 30 June 2001.

*Source:* AIHW National Hospital Morbidity Database.



**Table 3.13: NMSC hospital separations by socioeconomic status: males, Australia, 2006–07**

Age (years)	1st quintile (most disadvantaged)	2nd quintile	3rd quintile	4th quintile	5th quintile (least disadvantaged)	Total
0–4	3	1	0	1	0	5
5–9	0	5	0	1	1	7
10–14	1	1	2	1	3	8
15–19	6	4	0	2	2	14
20–24	0	8	19	15	12	54
25–29	12	28	21	18	28	107
30–34	37	60	73	108	75	353
35–39	72	132	121	167	161	653
40–44	132	212	240	250	303	1,137
45–49	213	374	392	409	512	1,900
50–54	320	601	602	666	715	2,904
55–59	474	899	836	934	1,078	4,221
60–64	599	1,150	958	1,050	1,289	5,046
65–69	601	1,265	1,061	1,142	1,235	5,304
70–74	678	1,404	1,147	1,214	1,363	5,806
75–79	812	1,664	1,333	1,485	1,493	6,787
80–84	771	1,674	1,480	1,625	1,670	7,220
85+	515	1,160	1,110	1,281	1,461	5,527
<b>All ages</b>	<b>5,246</b>	<b>10,642</b>	<b>9,395</b>	<b>10,369</b>	<b>11,401</b>	<b>47,053</b>

*Notes*

1. Quintiles were defined using the 2006 Index of Relative Socioeconomic Disadvantage.
2. As some separations were undefined for socioeconomic status, the sum of quintiles may be less than the national total. There were 194 separations not classifiable.

*Source:* AIHW National Hospital Morbidity Database.

**Table 3.14: NMSC age-specific and age-standardised hospital separation rates by socioeconomic status: males, Australia, 2006–07**

Age (years)	1st quintile (most disadvantaged)	2nd quintile	3rd quintile	4th quintile	5th quintile (least disadvantaged)	Total
0–4	3.0	0.7	0.0	0.6	0.0	0.7
5–9	0.0	3.3	0.0	0.6	0.7	1.0
10–14	1.0	0.6	1.3	0.6	2.1	1.1
15–19	6.2	2.6	0.0	1.2	1.3	1.9
20–24	0.0	5.3	12.5	8.3	7.1	7.2
25–29	13.1	19.8	14.5	10.4	17.7	15.1
30–34	39.6	40.3	48.1	59.3	44.8	47.5
35–39	74.9	86.2	77.5	91.2	94.3	86.0
40–44	135.4	133.7	151.8	139.7	179.1	149.2
45–49	224.0	237.0	255.4	239.7	312.3	256.4
50–54	365.3	407.7	430.9	433.4	475.2	427.8
55–59	572.8	641.2	645.5	656.4	760.2	663.1
60–64	891.3	1,008.2	949.6	981.1	1,206.8	1,017.4
65–69	1,118.3	1,330.9	1,327.3	1,431.0	1,611.4	1,377.1
70–74	1,593.3	1,810.6	1,801.4	1,960.6	2,388.7	1,917.8
75–79	2,405.1	2,563.6	2,498.9	2,891.7	3,060.7	2,691.7
80–84	3,704.6	3,993.6	4,226.6	4,734.4	4,922.8	4,349.6
85+	4,115.4	4,592.1	5,228.2	5,861.6	6,227.4	5,298.1
<b>All ages</b>						
Crude rate	383.4	477.3	444.0	439.9	514.8	457.4
ASR(A)	403.6	447.6	459.7	497.9	556.5	477.4
95% CI	392.6–414.9	439.1–456.3	450.4–469.2	488.2–507.7	546.2–566.9	473.1–481.8

*Notes*

1. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population at 30 June 2006.
2. Quintiles were defined using the 2006 Index of Relative Socioeconomic Disadvantage.
3. All-age totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.



**Table 3.15: NMSC hospital separations by socioeconomic status: females, Australia, 2006–07**

Age (years)	1st quintile (most disadvantaged)	2nd quintile	3rd quintile	4th quintile	5th quintile (least disadvantaged)	Total
0–4	0	0	0	1	3	4
5–9	2	0	0	2	1	5
10–14	0	3	0	1	2	6
15–19	2	8	2	6	7	25
20–24	6	5	8	11	15	45
25–29	11	24	25	29	33	122
30–34	29	73	82	90	133	407
35–39	68	113	150	184	196	711
40–44	111	213	228	290	329	1,171
45–49	192	382	371	385	524	1,854
50–54	245	468	495	532	626	2,366
55–59	311	558	542	579	748	2,738
60–64	299	589	560	650	759	2,857
65–69	326	739	587	631	683	2,966
70–74	406	865	626	724	718	3,339
75–79	508	958	865	926	923	4,180
80–84	521	1,100	888	1,034	1,077	4,620
85+	521	1,080	954	1,132	1,280	4,967
<b>All ages</b>	<b>3,558</b>	<b>7,178</b>	<b>6,383</b>	<b>7,207</b>	<b>8,057</b>	<b>32,383</b>

*Notes*

1. Quintiles were defined using the 2006 Index of Relative Socioeconomic Disadvantage.
2. As some separations were undefined for socioeconomic status, the sum of quintiles may be less than the national total. There were 162 separations not classifiable.

*Source:* AIHW National Hospital Morbidity Database.

**Table 3.16: NMSC age-specific and age-standardised hospital separation rates by socioeconomic status: females, Australia, 2006–07**

Age (years)	1st quintile (most disadvantaged)	2nd quintile	3rd quintile	4th quintile	5th quintile (least disadvantaged)	Total
0–4	0.0	0.0	0.0	0.7	2.3	0.6
5–9	2.1	0.0	0.0	1.4	0.8	0.8
10–14	0.0	2.0	0.0	0.7	1.4	0.9
15–19	2.2	5.4	1.4	3.8	4.6	3.6
20–24	6.4	3.5	5.5	6.3	9.2	6.2
25–29	12.1	17.1	17.8	17.1	21.1	17.5
30–34	31.0	48.8	53.8	49.3	77.6	54.3
35–39	71.9	72.8	96.5	99.1	110.8	92.6
40–44	116.9	132.6	144.6	159.1	186.5	151.7
45–49	205.7	238.3	242.6	220.9	302.6	245.9
50–54	283.6	317.1	359.7	342.7	397.1	345.7
55–59	383.0	397.8	429.4	407.1	516.6	431.4
60–64	464.3	511.7	563.7	611.6	712.1	581.0
65–69	608.3	754.4	723.8	767.0	864.9	753.0
70–74	910.3	1,031.4	923.7	1,082.0	1,136.4	1,023.2
75–79	1,287.9	1,255.2	1,403.8	1,494.6	1,538.9	1,396.5
80–84	1,748.5	1,862.1	1,829.4	2,070.7	2,072.4	1,930.5
85+	2,099.5	2,103.7	2,197.5	2,461.2	2,457.3	2,282.1
<b>All ages</b>						
Crude rate	261.5	317.2	302.0	302.2	352.5	311.2
ASR(A)	235.5	256.1	266.0	282.4	313.9	273.7
95% CI	227.8–243.5	250.1–262.1	259.5–272.7	275.9–289.1	306.9–320.9	270.7–276.8

*Notes*

1. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population at 30 June 2006.
2. Quintiles were defined using the 2006 Index of Relative Socioeconomic Disadvantage.
3. All-age totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.

**Table 3.17: NMSC hospital separations by socioeconomic status: persons, Australia, 2006–07**

Age (years)	1st quintile (most disadvantaged)	2nd quintile	3rd quintile	4th quintile	5th quintile (least disadvantaged)	Total
0–4	3	1	0	2	3	9
5–9	2	5	0	3	2	12
10–14	1	4	2	2	5	14
15–19	8	12	2	8	9	39
20–24	6	13	27	26	27	99
25–29	23	52	46	47	61	229
30–34	66	133	155	198	208	760
35–39	140	245	271	351	357	1,364
40–44	243	425	468	540	632	2,308
45–49	405	756	763	794	1,036	3,754
50–54	565	1,069	1,097	1,198	1,341	5,270
55–59	785	1,457	1,378	1,513	1,826	6,959
60–64	898	1,739	1,518	1,700	2,048	7,903
65–69	927	2,004	1,648	1,773	1,918	8,270
70–74	1,084	2,269	1,773	1,938	2,081	9,145
75–79	1,320	2,622	2,198	2,411	2,416	10,967
80–84	1,292	2,774	2,368	2,659	2,747	11,840
85+	1,036	2,240	2,064	2,413	2,741	10,494
<b>All ages</b>	<b>8,804</b>	<b>17,820</b>	<b>15,778</b>	<b>17,576</b>	<b>19,458</b>	<b>79,436</b>

*Notes*

1. Quintiles were defined using the 2006 Index of Relative Socioeconomic Disadvantage.
2. As some separations were undefined for socioeconomic status, the sum of quintiles may be less than the national total. There were 356 separations not classifiable.

*Source:* AIHW National Hospital Morbidity Database.

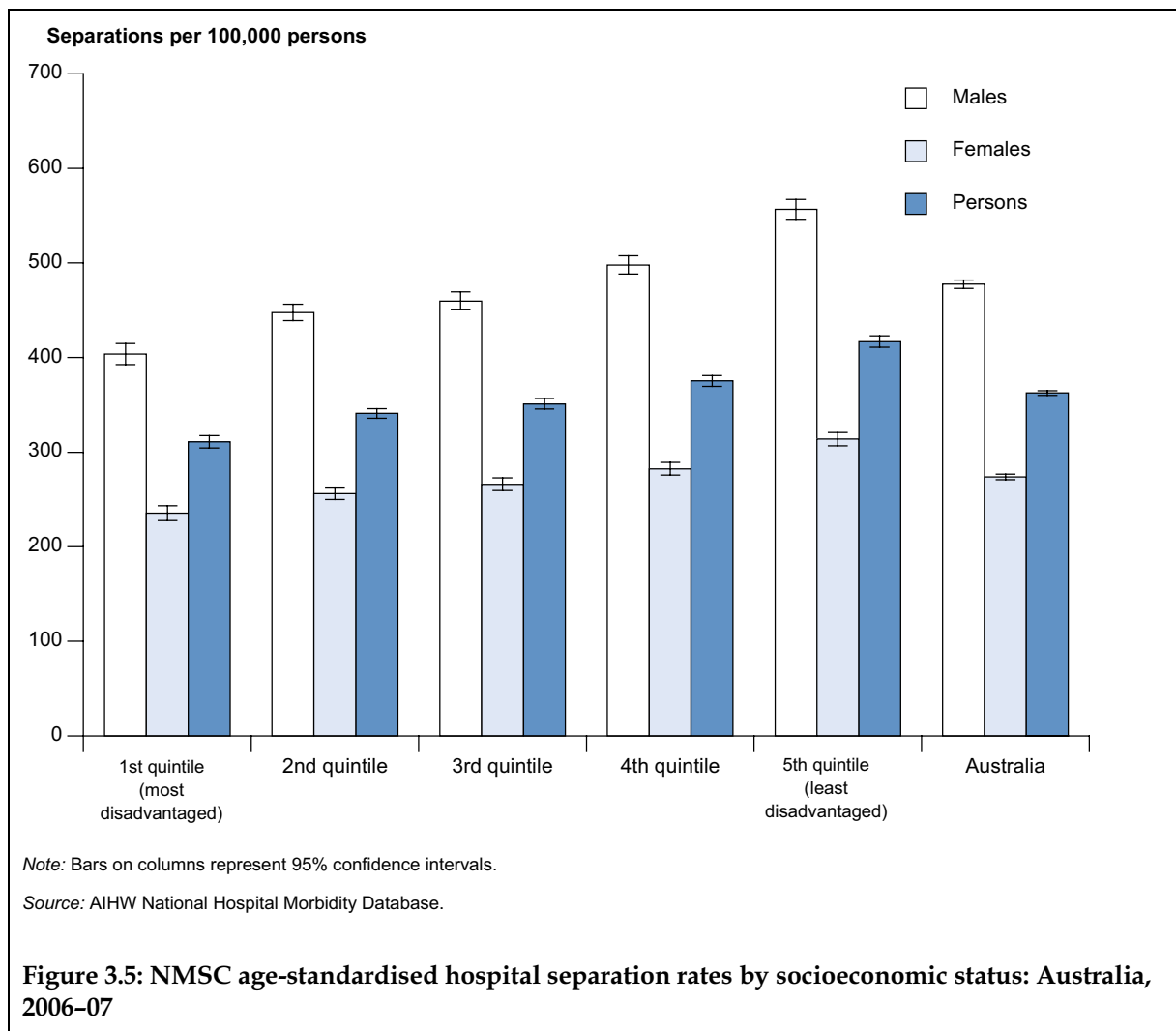
**Table 3.18: NMSC age-specific and age-standardised hospital separation rates by socioeconomic status: persons, Australia, 2006–07**

Age (years)	1st quintile (most disadvantaged)	2nd quintile	3rd quintile	4th quintile	5th quintile (least disadvantaged)	Total
0–4	1.6	0.4	0.0	0.7	1.1	0.7
5–9	1.0	1.7	0.0	1.0	0.7	0.9
10–14	0.5	1.3	0.7	0.6	1.8	1.0
15–19	4.3	3.9	0.7	2.5	2.9	2.8
20–24	3.2	4.4	9.1	7.3	8.1	6.7
25–29	12.6	18.5	16.1	13.7	19.4	16.3
30–34	35.3	44.6	51.0	54.3	61.4	50.9
35–39	73.4	79.5	87.0	95.2	102.7	89.3
40–44	126.3	133.2	148.2	149.5	182.9	150.4
45–49	214.9	237.7	249.0	230.2	307.3	251.1
50–54	324.7	362.4	395.6	387.8	435.2	386.6
55–59	478.8	519.5	538.8	531.8	637.1	547.4
60–64	682.4	758.8	758.1	797.0	959.7	800.1
65–69	863.7	1,038.3	1,023.3	1,093.9	1,232.6	1,061.5
70–74	1,243.8	1,405.7	1,348.9	1,504.3	1,730.6	1,453.7
75–79	1,803.1	1,856.5	1,912.0	2,127.8	2,221.4	1,988.7
80–84	2,552.9	2,746.8	2,834.0	3,155.8	3,198.2	2,921.2
85+	2,775.2	2,924.3	3,192.9	3,556.5	3,628.1	3,259.3
<b>All ages</b>						
Crude rate	322.6	396.7	373.0	370.6	432.3	383.9
ASR (A)	311.0	340.9	351.0	375.2	416.9	362.5
95% CI	304.5–317.5	335.8–345.9	345.6–356.6	369.6–380.8	411.0–422.9	360.0–365.0

*Notes*

1. Rates are the numbers of hospital separations with principal diagnosis of NMSC per 100,000 population at 30 June 2006.
2. Quintiles were defined using the 2006 Index of Relative Socioeconomic Disadvantage.
3. All-age totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Hospital Morbidity Database.



# 4 Mortality

## Introduction

This chapter presents a sociodemographic profile of people who died between 1998 and 2005 with NMSC recorded as the underlying cause of death. The data are provided by age, sex, country of birth, remoteness of residence and socioeconomic status.

Age-standardised rates were derived using population estimates for remoteness areas for 1998–2005 and 2001 quintiles of socioeconomic disadvantage, age-standardised to the Australian 2001 population. Country of birth was analysed using population estimates for 30 June 2004 as a substitute for 2005 population estimates, age-standardised to the Australian 2001 population.

## Overview

- In 2006, 410 persons (276 males, 134 females) died from NMSC in Australia (ABS 2008).
- In 2005, the mean age at death from NMSC for all persons was 78 years – 76 years for males and 80 years for females (AIHW 2008). The risk of dying of NMSC by age 75 years was estimated to be 1 in 848 for males and 1 in 2955 for females.
- In 2005, NMSC deaths represented 1.0% of all cancer deaths and 0.3% of deaths from all causes. For males, the corresponding figures were 1.3% and 0.4%. For females, the figures were 0.8% and 0.2% (AIHW 2008).

## Trends

- There was an average of 382 deaths per year from NMSC between 1998 and 2005, with the annual number ranging from 358 deaths in 1998 to 415 deaths in 2002 (Table 4.5). Males accounted for 2,080 deaths from 1998 to 2005, compared with 977 deaths for females (tables 4.1 and 4.3).
- The age-standardised mortality rate (ASR) of around 3 per 100,000 for males and 1 per 100,000 for females showed little variation between 1998 and 2005 (tables 4.2, 4.4 and 4.6).
- Between 1968 and 2005, however, there was a slight decline in mortality rates. The average annual decline overall was 0.2% – 0.1% for males and 0.2% for females (AIHW 2008).

## Age group and sex

- Numbers of deaths from NMSC increased steeply with age for both males and females. In the period 1998–2005, 65% of deaths (59% for males, 78% for females) occurred in people aged 75 and over (tables 4.1, 4.3 and 4.5).
- Deaths before the age of 40 were rare. The highest death rates applied to the age range of 85 and over, where the rate for both sexes combined was approximately double the rate for people aged 80–84 years (Table 4.6).

- Males were more than 3 times as likely as females to die from NMSC. The age-standardised mortality rate for 1998–2005 was 3.2 per 100,000 for males and 1.0 per 100,000 for females (tables 4.2 and 4.4).

## Country of birth

Countries were classified using the ABS Standard Australian Classification of Countries (SACC). They were grouped into geographic regions according to the classification shown in the Appendix, Table A.3.

Tables 4.7 to 4.10 present the number of deaths, the mortality rate, and the age-standardised mortality rate (ASR) with 95% confidence intervals for each country group.

The data indicate:

- People born in Australia accounted for 85% of all deaths from NMSC in 1998–2001 and 83% of all deaths in 2002–2005. A further 10% of deaths in 1998–2001 and 9% of deaths in 2002–2005 were people born in the United Kingdom and Ireland (tables 4.7 and 4.8).
- The NMSC age-standardised mortality rate for people born in Pacific Island countries (11 per 100,000 for 1998–2001; 4 per 100,000 for 2002–2005) was higher than for the overall age-standardised mortality rate (2 per 100,000 for 1998–2001 and 2002–2005). This rate is heavily influenced by the age-standardised mortality rate for NMSC for males born in Pacific Island countries (22 per 100,000 for 1998–2001; 8 per 100,000 for 2002–2005); however, because of the small number of deaths, the 95% confidence intervals are wide, and these rates should be interpreted with caution (tables 4.9 and 4.10).
- The age-standardised mortality rate for NMSC for people born in Australia (over 2 per 100,000 for 1998–2001 and 2002–2005) significantly exceeds the overall age-standardised mortality rate (tables 4.9 and 4.10). This is a similar finding to the excess number of NMSC hospital inpatient separations observed in the Australian-born sector compared with the overseas-born sector of the population (Table 3.6).

## Remoteness area

The geographic classification used for remoteness of residential area was the Australian Standard Geographical Classification (ASGC). Tables 4.11 to 4.14 present the number of deaths, the mortality rate and the age-standardised mortality rate (ASR) with 95% confidence intervals for each remoteness area.

Generally, age-standardised mortality rates were relatively low for Major Cities and higher for Very Remote areas, although confidence intervals were wide for Very Remote areas because of small numbers, and these differences were not statistically significant. In addition, it is possible that residents of Very Remote areas may move residence to increase access to services when they have major health problems, which could affect these trends.

More specific results were:

- In 2002–2005 the age-standardised mortality rate for persons resident in Outer Regional (2.7 per 100,000 persons) and Inner Regional (2.3) areas were significantly higher than the overall age-standardised mortality rates (1.9). The Outer Regional areas also had a high rate in 1998–2001 (2.9) compared with the overall rate (2.0) (tables 4.12 and 4.14).
- The age-standardised mortality rates for 2002–2005 by region were: Major Cities 1.6, Inner Regional 2.3, Outer Regional 2.7, Remote 1.4 and Very Remote 2.7 (Table 4.14). This

is contrary to the trend for lower hospital inpatient separation rates for NMSC in the more remote areas (Table 3.12).

- For males in 2002–2005, the age-standardised mortality rates were: Major Cities 2.5, Inner Regional 3.8, Outer Regional 4.6, Remote 1.7 and Very Remote 3.1 (Table 4.14).
- For females in 2002–2005, the age-standardised mortality rates were: Major Cities 0.9, Inner Regional 1.2, Outer Regional 1.2, Remote 1.0 and Very Remote 2.1 (Table 4.14).

## **Socioeconomic disadvantage**

Socioeconomic status was classified by population quintile using the Index of Relative Socioeconomic Disadvantage (ISRD) from the Socio-Economic Indexes for Areas (SEIFA) 2001. Tables 4.15 to 4.18 present for each quintile the number of deaths, the mortality rate and the age-standardised mortality rate (ASR) with 95% confidence intervals. Quintiles are ranked from the most disadvantaged to the least disadvantaged populations.

The data indicate:

- Age-standardised mortality rates decreased progressively with decreasing disadvantage in both the 1998–2001 and 2002–2005 periods (tables 4.16 and 4.18).
- For all persons, age-standardised mortality rates decreased from 2.3 per 100,000 population for both 1998–2001 and 2002–2005 in the 1st quintile (most disadvantaged) to 1.5 for 1998–2001 and 1.3 for 2002–2005 in the 5th quintile (least disadvantaged) (tables 4.16 and 4.18).
- For males, age-standardised mortality rates decreased from 3.4 per 100,000 population for both 1998–2001 and 2002–2005 in the 1st quintile to 2.7 for 1998–2001 and 2.1 for 2002–2005 in the 5th quintile (tables 4.16 and 4.18).
- For females, age-standardised mortality rates decreased from 1.5 per 100,000 population for 1998–2001 and 1.4 for 2002–2005 in the 1st quintile to 0.8 for 1998–2001 and 0.7 for 2002–2005 in the 5th quintile (tables 4.16 and 4.18).



**Table 4.1: NMSC deaths: males, Australia, 1998–2005**

Age (years)	1998	1999	2000	2001	2002	2003	2004	2005	Total
< 30	0	1	0	0	1	1	0	0	3
30–34	0	0	0	0	0	0	0	0	0
35–39	0	1	1	1	0	2	0	2	7
40–44	2	2	2	1	3	3	0	3	16
45–49	3	4	3	6	4	5	1	7	33
50–54	7	12	8	5	6	7	6	9	60
55–59	13	14	12	10	26	16	14	15	120
60–64	24	12	14	19	23	9	12	8	121
65–69	27	30	25	29	17	35	20	24	207
70–74	37	38	37	39	38	35	36	31	291
75–79	46	56	50	56	55	38	46	48	395
80–84	29	53	46	39	46	47	53	48	361
85+	54	47	43	59	59	60	63	81	466
<b>All ages</b>	<b>242</b>	<b>270</b>	<b>241</b>	<b>264</b>	<b>278</b>	<b>258</b>	<b>251</b>	<b>276</b>	<b>2,080</b>

Source: AIHW National Mortality Database.

**Table 4.2: NMSC age-specific and age-standardised mortality rates: males, Australia, 1998–2005**

Age (years)	1998	1999	2000	2001	2002	2003	2004	2005	1998–2005
< 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30–34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35–39	0.0	0.1	0.1	0.1	0.0	0.3	0.0	0.3	0.1
40–44	0.3	0.3	0.3	0.1	0.4	0.4	0.0	0.4	0.3
45–49	0.5	0.6	0.4	0.9	0.6	0.7	0.1	1.0	0.6
50–54	1.2	2.0	1.3	0.8	0.9	1.1	0.9	1.3	1.2
55–59	2.9	3.0	2.4	1.9	4.7	2.7	2.3	2.4	2.8
60–64	6.5	3.1	3.5	4.6	5.4	2.1	2.6	1.7	3.6
65–69	8.0	9.0	7.5	8.6	4.9	9.9	5.5	6.4	7.5
70–74	12.8	12.9	12.4	12.8	12.5	11.6	12.0	10.3	12.2
75–79	22.9	26.4	22.8	24.6	23.6	15.9	18.8	19.2	21.6
80–84	26.2	47.1	38.7	30.4	33.7	32.5	34.7	30.2	33.9
85+	79.2	64.6	55.5	72.0	69.3	68.5	69.9	83.9	70.6
<b>All ages</b>									
Crude rate	2.6	2.9	2.5	2.7	2.8	2.6	2.5	2.7	2.7
ASR (A)	3.4	3.6	3.1	3.3	3.4	3.1	2.9	3.1	3.2
95% CI	3.0–3.9	3.2–4.1	2.7–3.5	2.9–3.7	3.0–3.8	2.7–3.5	2.6–3.3	2.8–3.5	3.1–3.4

Note: Rates are the numbers of deaths from NMSC per 100,000 males. All-age totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Mortality Database.

**Table 4.3: NMSC deaths: females, Australia, 1998–2005**

Age (years)	1998	1999	2000	2001	2002	2003	2004	2005	Total
< 30	0	0	0	1	0	0	0	0	1
30–34	1	0	0	0	0	1	0	0	2
35–39	0	1	0	1	0	0	0	0	2
40–44	1	0	3	0	1	0	0	1	6
45–49	1	2	2	1	2	1	1	1	11
50–54	4	3	1	2	2	2	1	1	16
55–59	1	2	4	1	7	3	2	4	24
60–64	0	3	4	4	1	2	2	6	22
65–69	3	8	6	14	8	3	7	3	52
70–74	16	5	8	11	14	8	9	12	83
75–79	10	14	21	18	22	24	9	17	135
80–84	34	21	22	23	28	21	25	24	198
85+	45	54	47	47	52	67	53	60	425
<b>All ages</b>	<b>116</b>	<b>113</b>	<b>118</b>	<b>123</b>	<b>137</b>	<b>132</b>	<b>109</b>	<b>129</b>	<b>977</b>

Source: AIHW National Mortality Database.

**Table 4.4: NMSC age-specific and age-standardised mortality rates: females, Australia, 1998–2005**

Age (years)	1998	1999	2000	2001	2002	2003	2004	2005	1998–2005
< 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30–34	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
35–39	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
40–44	0.1	0.0	0.4	0.0	0.1	0.0	0.0	0.1	0.1
45–49	0.2	0.3	0.3	0.1	0.3	0.1	0.1	0.1	0.2
50–54	0.7	0.5	0.2	0.3	0.3	0.3	0.2	0.1	0.3
55–59	0.2	0.4	0.8	0.2	1.3	0.5	0.3	0.6	0.6
60–64	0.0	0.8	1.0	1.0	0.2	0.5	0.4	1.3	0.7
65–69	0.9	2.3	1.7	4.0	2.3	0.8	1.9	0.8	1.8
70–74	4.8	1.5	2.4	3.3	4.2	2.4	2.8	3.7	3.1
75–79	3.7	5.0	7.3	6.2	7.5	8.1	3.0	5.7	5.8
80–84	18.7	11.5	11.6	11.4	13.3	9.5	10.9	10.2	12.0
85+	28.7	32.5	26.8	25.6	27.5	34.7	26.9	29.1	29.0
<b>All ages</b>									
Crude rate	1.2	1.2	1.2	1.3	1.4	1.3	1.1	1.3	1.2
ASR (A)	1.1	1.0	1.0	1.1	1.1	1.0	0.8	1.0	1.0
95% CI	0.9–1.3	0.8–1.2	0.9–1.3	0.9–1.3	1.0–1.4	0.9–1.2	0.7–1.0	0.8–1.2	1.0–1.1

Note: Rates are the numbers of deaths from NMSC per 100,000 females. All-age totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Mortality Database.

**Table 4.5: NMSC deaths: persons, Australia, 1998–2005**

Age (years)	1998	1999	2000	2001	2002	2003	2004	2005	Total
< 30	0	1	0	1	1	1	0	0	4
30–34	1	0	0	0	0	1	0	0	2
35–39	0	2	1	2	0	2	0	2	9
40–44	3	2	5	1	4	3	0	4	22
45–49	4	6	5	7	6	6	2	8	44
50–54	11	15	9	7	8	9	7	10	76
55–59	14	16	16	11	33	19	16	19	144
60–64	24	15	18	23	24	11	14	14	143
65–69	30	38	31	43	25	38	27	27	259
70–74	53	43	45	50	52	43	45	43	374
75–79	56	70	71	74	77	62	55	65	530
80–84	63	74	68	62	74	68	78	72	559
85+	99	101	90	106	111	127	116	141	891
<b>All ages</b>	<b>358</b>	<b>383</b>	<b>359</b>	<b>387</b>	<b>415</b>	<b>390</b>	<b>360</b>	<b>405</b>	<b>3,057</b>

Source: AIHW National Mortality Database.

**Table 4.6: NMSC age-specific and age-standardised mortality rates: persons, Australia, 1998–2005**

Age (years)	1998	1999	2000	2001	2002	2003	2004	2005	1998–2005
< 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30–34	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
35–39	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1
40–44	0.2	0.1	0.3	0.1	0.3	0.2	0.0	0.3	0.2
45–49	0.3	0.5	0.4	0.5	0.4	0.4	0.1	0.5	0.4
50–54	0.9	1.2	0.7	0.5	0.6	0.7	0.5	0.7	0.7
55–59	1.6	1.7	1.7	1.1	3.0	1.6	1.3	1.5	1.7
60–64	3.2	2.0	2.3	2.8	2.8	1.3	1.6	1.5	2.1
65–69	4.4	5.6	4.6	6.3	3.6	5.3	3.7	3.5	4.6
70–74	8.6	6.8	7.1	7.8	8.2	6.8	7.2	6.9	7.4
75–79	11.9	14.2	14.0	14.2	14.6	11.6	10.1	11.8	12.8
80–84	21.5	25.0	22.0	18.8	21.3	18.6	20.4	18.3	20.6
85+	44.0	42.3	35.6	40.0	40.5	45.2	40.4	46.6	41.9
<b>All ages</b>									
Crude rate	1.9	2.0	1.9	2.0	2.1	2.0	1.8	2.0	2.0
ASR (A)	2.0	2.1	1.9	2.0	2.1	1.9	1.7	1.9	2.0
95% CI	1.8–2.3	1.9–2.3	1.7–2.1	1.8–2.2	1.9–2.3	1.7–2.1	1.5–1.9	1.7–2.1	1.9–2.0

Note: Rates are the numbers of deaths from NMSC per 100,000 population. All-age totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Mortality Database.

**Table 4.7: NMSC deaths by country of birth: Australia, 1998–2001**

Country of birth group	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
Australia	857	84.3	403	85.7	1,260	84.7
UK/Ireland	101	9.9	46	9.8	147	9.9
New Zealand	0	0.0	0	0.0	0	0.0
Pacific Island countries	14	1.4	5	1.1	19	1.3
United States	0	0.0	0	0.0	0	0.0
Canada	0	0.0	0	0.0	0	0.0
Western Europe	4	0.4	4	0.9	8	0.5
Northern Europe	2	0.2	0	0.0	2	0.1
Southern Europe	1	0.1	0	0.0	1	0.1
Central and Eastern Europe	2	0.2	0	0.0	2	0.1
North Africa	3	0.3	1	0.2	4	0.3
Middle East	0	0.0	0	0.0	0	0.0
South-East Asia	1	0.1	0	0.0	1	0.1
North-East Asia	2	0.2	3	0.6	5	0.3
Southern and Central Asia	3	0.3	1	0.2	4	0.3
South America	0	0.0	0	0.0	0	0.0
Central America	0	0.0	1	0.2	1	0.1
Caribbean	0	0.0	0	0.0	0	0.0
Sub-Saharan Africa	3	0.3	0	0.0	3	0.2
Missing/Inadequately described	9	0.9	2	0.4	11	0.7
Not classified	15	1.5	4	0.9	19	1.3
<b>Total</b>	<b>1,017</b>	<b>100.0</b>	<b>470</b>	<b>100.0</b>	<b>1,487</b>	<b>100.0</b>

*Notes*

1. Percentages are the deaths from NMSC as a proportion all deaths.
2. Country of birth is classified according to the Standard Australian Classification of Countries, ABS cat. no. 1269.0.

*Source:* AIHW National Mortality Database.

**Table 4.8: NMSC deaths by country of birth: Australia, 2002–2005**

Country of birth group	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
Australia	886	83.3	424	83.6	1,310	83.4
UK/Ireland	101	9.5	44	8.7	145	9.2
New Zealand	6	0.6	2	0.4	8	0.5
Pacific Island countries	7	0.7	2	0.4	9	0.6
United States	3	0.3	0	0.0	3	0.2
Canada	0	0.0	0	0.0	0	0.0
Western Europe	10	0.9	6	1.2	16	1.0
Northern Europe	1	0.1	0	0.0	1	0.1
Southern Europe	15	1.4	5	1.0	20	1.3
Central and Eastern Europe	11	1.0	14	2.8	25	1.6
North Africa	1	0.1	0	0.0	1	0.1
Middle East	2	0.2	0	0.0	2	0.1
South-East Asia	5	0.5	1	0.2	6	0.4
North-East Asia	0	0.0	2	0.4	2	0.1
Southern and Central Asia	1	0.1	1	0.2	2	0.1
South America	1	0.1	1	0.2	2	0.1
Central America	0	0.0	0	0.0	0	0.0
Caribbean	0	0.0	0	0.0	0	0.0
Sub-Saharan Africa	3	0.3	1	0.2	4	0.3
Missing/Inadequately described	7	0.7	3	0.6	10	0.6
Not classified	3	0.3	1	0.2	4	0.3
<b>Total</b>	<b>1,063</b>	<b>100.0</b>	<b>507</b>	<b>100.0</b>	<b>1,570</b>	<b>100.0</b>

*Notes*

1. Percentages are the deaths from NMSC as a proportion all deaths.
2. Country of birth is classified according to the Standard Australian Classification of Countries, ABS cat. no. 1269.0.

Source: AIHW National Mortality Database.

**Table 4.9: NMSC crude and age-standardised mortality rates by country of birth: Australia, 1998–2001**

Country of birth grouping	Males			Females			Persons		
	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI
Australia	3.0	4.3	4.0–4.6	1.4	1.3	1.1–1.4	2.1	2.5	2.3–2.6
UK/Ireland	4.2	2.7	2.2–3.3	1.9	0.9	0.6–1.2	3.1	1.7	1.4–1.9
New Zealand	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Pacific Island countries	7.1	21.5	10.7–37.8	2.3	4.9	1.3–11.8	4.6	11.4	6.5–18.4
United States	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Canada	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Western Europe	0.7	0.6	0.1–1.5	0.8	0.4	0.1–1.0	0.7	0.4	0.2–0.9
Northern Europe	3.2	2.2	0.2–8.3	0.0	0.0	..	1.6	1.2	0.1–4.4
Southern Europe	0.1	0.0	0.0–0.3	0.0	0.0	..	0.1	0.0	0.0–0.1
Central and Eastern Europe	0.2	0.1	0.0–0.4	0.0	0.0	..	0.1	0.1	0.0–0.2
North Africa	3.1	1.8	0.4–5.2	1.1	0.7	0.0–4.0	2.2	1.3	0.3–3.3
Middle East	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
South-East Asia	0.1	0.3	0.0–1.6	0.0	0.0	..	0.0	0.1	0.0–0.6
North-East Asia	0.3	0.8	0.1–2.9	0.5	0.6	0.1–1.7	0.4	0.6	0.2–1.3
Southern and Central Asia	0.8	0.7	0.1–2.2	0.3	0.3	0.0–1.7	0.5	0.6	0.1–1.5
South America	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Central America	0.0	0.0	..	3.5	7.0	0.2–38.8	1.8	4.4	0.1–24.5
Caribbean	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Sub-Saharan Africa	1.1	2.3	0.4–6.7	0.0	0.0	..	0.5	0.9	0.2–2.6
<b>Total</b>	<b>2.7</b>	<b>3.4</b>	<b>3.2–3.6</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0–1.2</b>	<b>2.0</b>	<b>2.0</b>	<b>1.9–2.1</b>

*Notes*

1. Crude rates are the number of deaths from NMSC per 100,000.
2. Age-standardised rates are standardised to the Australian population at 30 June 2001.
3. Country of birth is classified according to the Standard Australian Classification of Countries, ABS cat. no. 1269.0.

Source: AIHW National Mortality Database.

**Table 4.10: NMSC crude and age-standardised mortality rates by country of birth: Australia, 2002-2005**

Country of birth grouping	Males			Females			Persons		
	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI
Australia	2.9	3.9	3.7-4.2	1.4	1.2	1.1-1.3	2.1	2.3	2.2-2.4
UK/Ireland	4.2	2.4	1.9-2.9	1.9	0.8	0.6-1.0	3.1	1.5	1.3-1.8
New Zealand	0.7	1.6	0.5-3.6	0.2	0.4	0.0-1.3	0.5	0.8	0.3-1.7
Pacific Island countries	3.1	8.0	2.8-17.3	0.8	1.7	0.2-6.1	1.9	4.2	1.8-8.2
United States	2.3	3.4	0.7-10.1	0.0	0.0	..	1.2	1.9	0.4-5.6
Canada	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Western Europe	1.9	0.9	0.4-1.8	1.1	0.5	0.2-1.2	1.5	0.7	0.4-1.2
Northern Europe	1.6	1.7	0.0-9.4	0.0	0.0	..	0.8	0.7	0.0-4.2
Southern Europe	2.3	1.1	0.5-1.9	0.8	0.3	0.1-0.7	1.6	0.7	0.4-1.1
Central and Eastern Europe	1.0	0.6	0.3-1.0	1.3	0.6	0.3-0.9	1.2	0.5	0.3-0.8
North Africa	0.9	0.5	0.0-2.9	0.0	0.0	..	0.5	0.3	0.0-1.5
Middle East	0.5	1.1	0.1-4.1	0.0	0.0	..	0.2	0.5	0.1-1.8
South-East Asia	0.5	1.0	0.3-2.3	0.1	0.2	0.0-0.9	0.3	0.5	0.2-1.1
North-East Asia	0.0	0.0	..	0.3	0.3	0.0-1.0	0.1	0.1	0.0-0.5
Southern and Central Asia	0.2	0.3	0.0-1.7	0.2	0.3	0.0-1.4	0.2	0.3	0.0-1.0
South America	0.7	1.2	0.0-6.7	0.7	0.9	0.0-4.8	0.7	1.1	0.1-4.1
Central America	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Caribbean	0.0	0.0	..	0.0	0.0	..	0.0	0.0	..
Sub-Saharan Africa	0.8	1.6	0.3-4.7	0.3	0.4	0.0-2.3	0.5	0.9	0.3-2.4
<b>Total</b>	<b>2.7</b>	<b>3.1</b>	<b>2.9-3.3</b>	<b>1.3</b>	<b>1.0</b>	<b>0.9-1.1</b>	<b>2.0</b>	<b>1.9</b>	<b>1.8-2.0</b>

**Notes**

1. Crude rates are the numbers of deaths from NMSC per 100,000 population.
  2. Age-standardised rates are standardised to the Australian population at 30 June 2001.
  3. Country of birth is classified according to the Standard Australian Classification of Countries, ABS cat. no. 1269.0.
- Source: AIHW National Mortality Database.

**Table 4.11: NMSC deaths by region: Australia, 1998–2001**

Region	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
Major Cities	592	58.2	278	59.2	870	58.5
Inner Regional	250	24.6	119	25.3	369	24.8
Outer Regional	150	14.7	64	13.7	214	14.4
Remote	15	1.5	7	1.6	23	1.5
Very Remote	10	1.0	1	0.2	11	0.7
<b>Total</b>	<b>1,017</b>	<b>100.0</b>	<b>470</b>	<b>100.0</b>	<b>1,487</b>	<b>100.0</b>

*Notes*

1. Regions are defined according to the ASGC.
2. Because some deaths were undefined for remoteness area, the sum of regions may be less than the national total.
3. Totals may not sum because of rounding caused by restructuring of ASGC boundaries.

Source: AIHW National Mortality Database.

**Table 4.12: NMSC crude and age-standardised mortality rates by region: Australia, 1998–2001**

Region	Males			Females			Persons		
	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI
Major Cities	2.4	3.1	2.8–3.3	1.1	0.9	0.8–1.1	1.7	1.8	1.7–1.9
Inner Regional	3.2	3.6	3.1–4.1	1.5	1.2	1.0–1.4	2.3	2.2	2.0–2.5
Outer Regional	3.7	4.5	3.8–5.3	1.6	1.5	1.1–1.9	2.7	2.9	2.5–3.3
Remote	2.3	3.7	1.9–6.1	1.2	1.6	0.6–3.2	1.8	2.6	1.6–3.8
Very Remote	2.6	5.1	2.2–9.6	0.3	0.7	0.0–3.9	1.6	3.0	1.4–5.4
<b>Total</b>	<b>2.7</b>	<b>3.4</b>	<b>3.2–3.6</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0–1.2</b>	<b>2.0</b>	<b>2.0</b>	<b>1.9–2.1</b>

*Notes*

1. Regions are defined according to the ASGC.
2. Crude rates are the number of deaths from NMSC per 100,000 population.
3. Totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Mortality Database.



**Table 4.13: NMSC deaths by region: Australia, 2002–2005**

Region	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
Major Cities	558	52.8	300	59.4	858	54.9
Inner Regional	312	29.5	135	26.7	447	28.6
Outer Regional	173	16.4	62	12.3	235	15.1
Remote	9	0.8	5	0.9	13	0.9
Very Remote	6	0.5	3	0.7	9	0.6
<b>Total</b>	<b>1,057</b>	<b>100.0</b>	<b>505</b>	<b>100.0</b>	<b>1,562</b>	<b>100.0</b>

*Notes*

1. Regions are defined according to the ASGC.
2. Because some deaths were undefined for remoteness area, the sum of regions may be less than the national total.
3. Totals may not sum because of rounding caused by restructuring of ASGC boundaries.

Source: AIHW National Mortality Database.

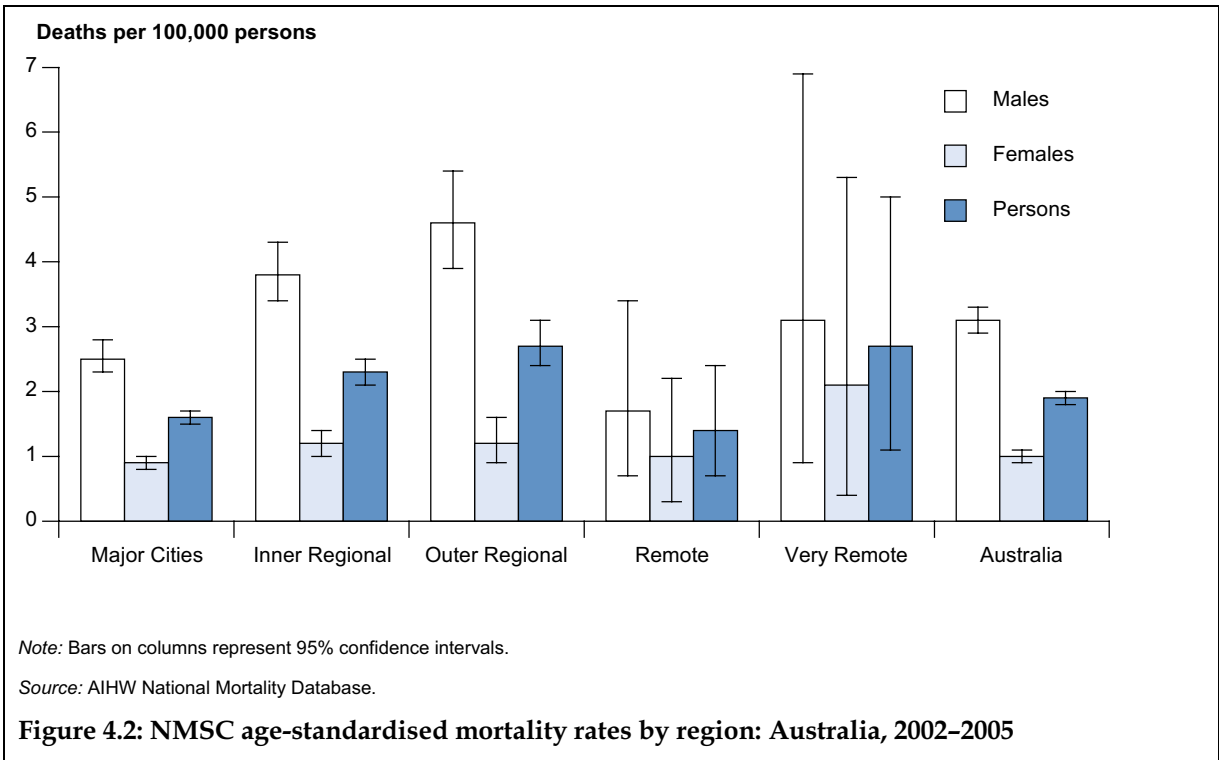
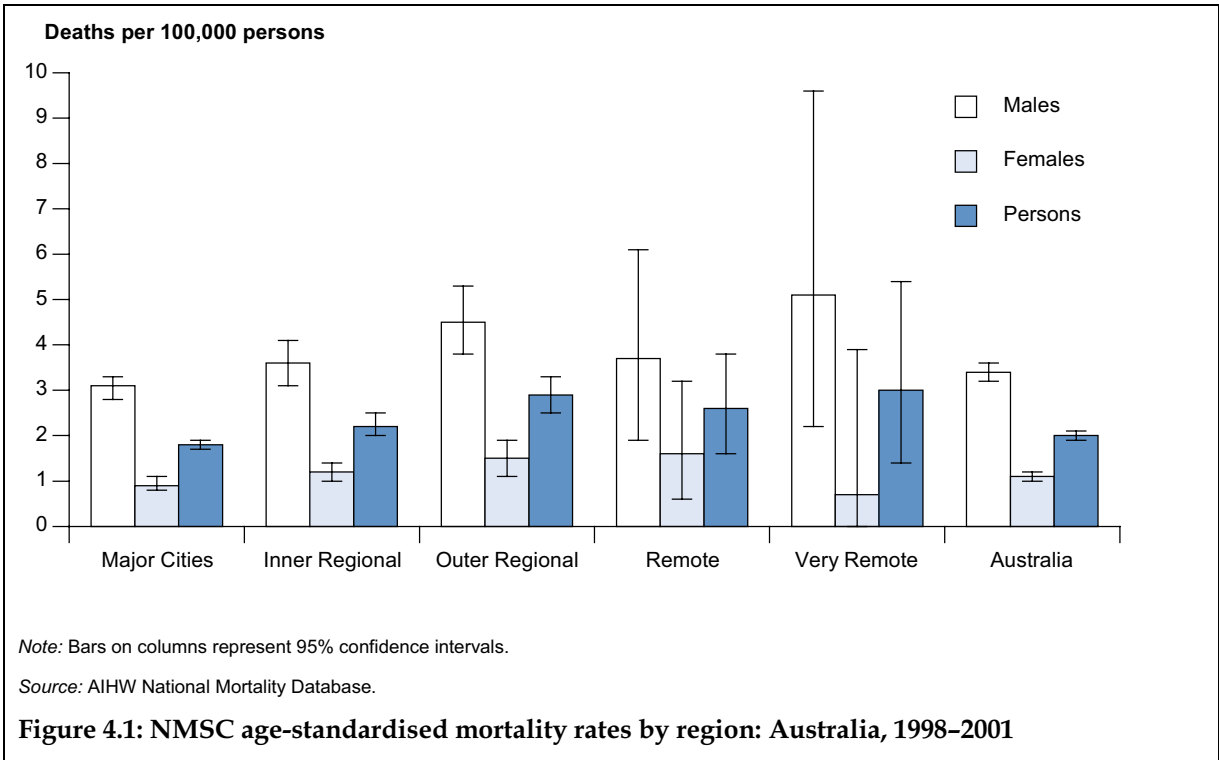
**Table 4.14: NMSC crude and age-standardised mortality rates by region: Australia, 2002–2005**

Region	Males			Females			Persons		
	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI
Major Cities	2.1	2.5	2.3–2.8	1.1	0.9	0.8–1.0	1.6	1.6	1.5–1.7
Inner Regional	3.7	3.8	3.4–4.3	1.6	1.2	1.0–1.4	2.7	2.3	2.1–2.5
Outer Regional	4.2	4.6	3.9–5.4	1.5	1.2	0.9–1.6	2.9	2.7	2.4–3.1
Remote	1.3	1.7	0.7–3.4	0.8	1.0	0.3–2.2	1.0	1.4	0.7–2.4
Very Remote	1.5	3.1	0.9–6.9	1.0	2.1	0.4–5.3	1.3	2.7	1.1–5.0
<b>Total</b>	<b>2.7</b>	<b>3.1</b>	<b>2.9–3.3</b>	<b>1.3</b>	<b>1.0</b>	<b>0.9–1.1</b>	<b>2.0</b>	<b>1.9</b>	<b>1.8–2.0</b>

*Notes*

1. Rates are the numbers of deaths from NMSC per 100,000 population.
2. Regions are defined according to the ASGC.
3. Totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Mortality Database.



**Table 4.15: NMSC deaths by socioeconomic status: Australia, 1998–2001**

Socioeconomic status	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
1st quintile (most disadvantaged)	200	19.7	122	26.0	322	21.7
2nd quintile	255	25.1	100	21.2	354	23.8
3rd quintile	214	21.1	90	19.2	304	20.5
4th quintile	183	18.0	84	17.8	266	17.9
5th quintile (least disadvantaged)	165	16.3	74	15.7	239	16.1
<b>Total</b>	<b>1,016</b>	<b>100.0</b>	<b>470</b>	<b>100.0</b>	<b>1,486</b>	<b>100.0</b>

*Notes*

1. Quintiles were defined using the 2001 IRSD.
2. As some deaths were undefined for socioeconomic status, the sum of quintiles may be less than the national total.
3. Totals may not sum because of rounding caused by restructuring of ASGC boundaries.

Source: AIHW National Mortality Database.

**Table 4.16: NMSC crude and age-standardised mortality rates by socioeconomic status: Australia, 1998–2001**

Socioeconomic status	Males			Females			Persons		
	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI
1st quintile (most disadvantaged)	2.6	3.4	3.0–4.0	1.6	1.5	1.2–1.8	2.1	2.3	2.1–2.6
2nd quintile	3.4	4.1	3.6–4.6	1.3	1.2	0.9–1.4	2.4	2.4	2.2–2.7
3rd quintile	2.8	3.4	2.9–3.9	1.2	1.0	0.8–1.2	2.0	2.0	1.8–2.2
4th quintile	2.4	3.2	2.7–3.7	1.1	1.0	0.8–1.2	1.8	1.9	1.7–2.1
5th quintile (least disadvantaged)	2.2	2.7	2.3–3.1	0.9	0.8	0.6–0.9	1.6	1.5	1.3–1.7
<b>Total</b>	<b>2.7</b>	<b>3.4</b>	<b>3.1–3.6</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0–1.2</b>	<b>2.0</b>	<b>2.0</b>	<b>1.9–2.1</b>

*Notes*

1. Quintiles were defined using the 2001 IRSD.
2. Crude rates are the numbers of deaths from NMSC per 100,000 population.
3. Totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Mortality Database.

**Table 4.17: NMSC deaths by socioeconomic status: Australia, 2002–2005**

Socioeconomic status	Males		Females		Persons	
	Number	Per cent	Number	Per cent	Number	Per cent
1st quintile (most disadvantaged)	228	21.5	128	25.2	356	22.7
2nd quintile	267	25.2	106	20.9	373	23.8
3rd quintile	243	22.9	105	20.8	348	22.2
4th quintile	180	17.0	88	17.5	269	17.1
5th quintile (least disadvantaged)	142	13.4	79	15.6	221	14.1
<b>Total</b>	<b>1,060</b>	<b>100.0</b>	<b>506</b>	<b>100.0</b>	<b>1,566</b>	<b>100.0</b>

*Notes*

1. Quintiles were defined using the 2001 IRSD.
2. As some deaths were undefined for socioeconomic status, the sum of quintiles may be less than the national total.
3. Totals may not sum because of rounding caused by restructuring of ASGC boundaries.

Source: AIHW National Mortality Database.

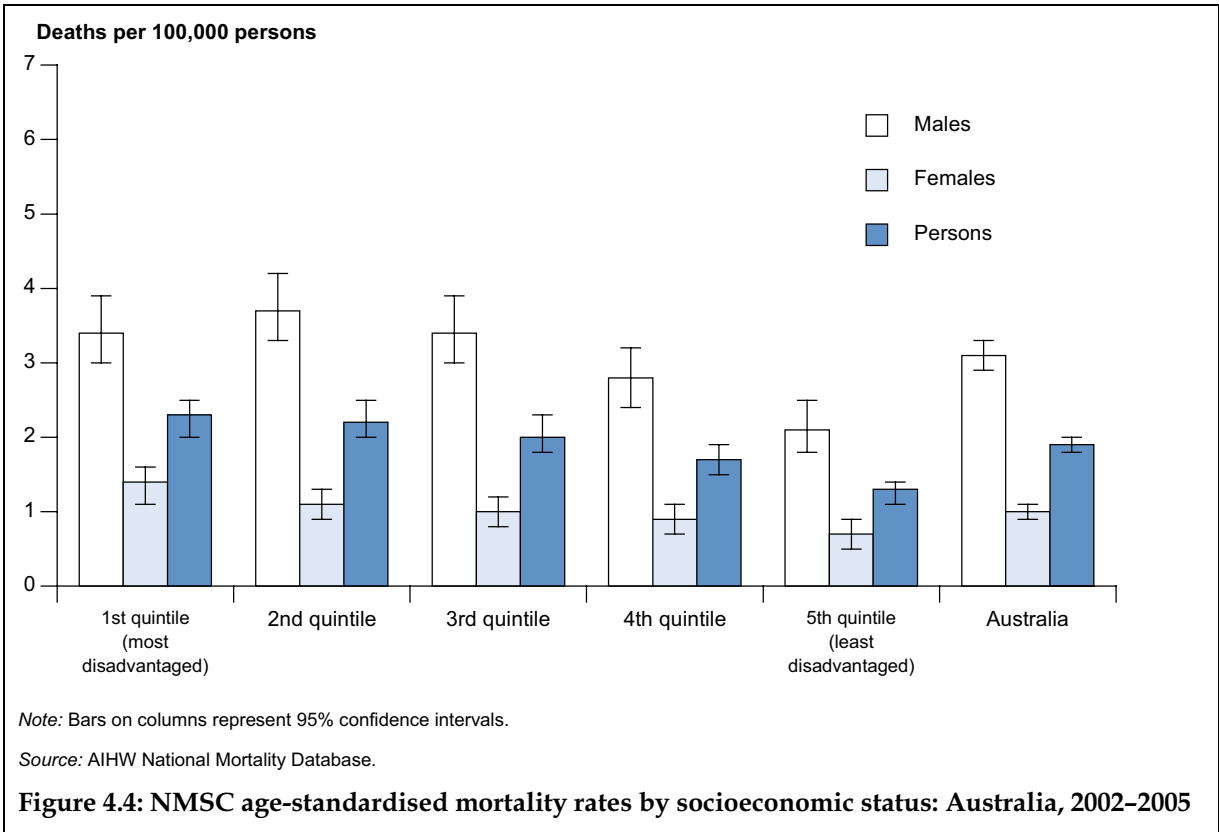
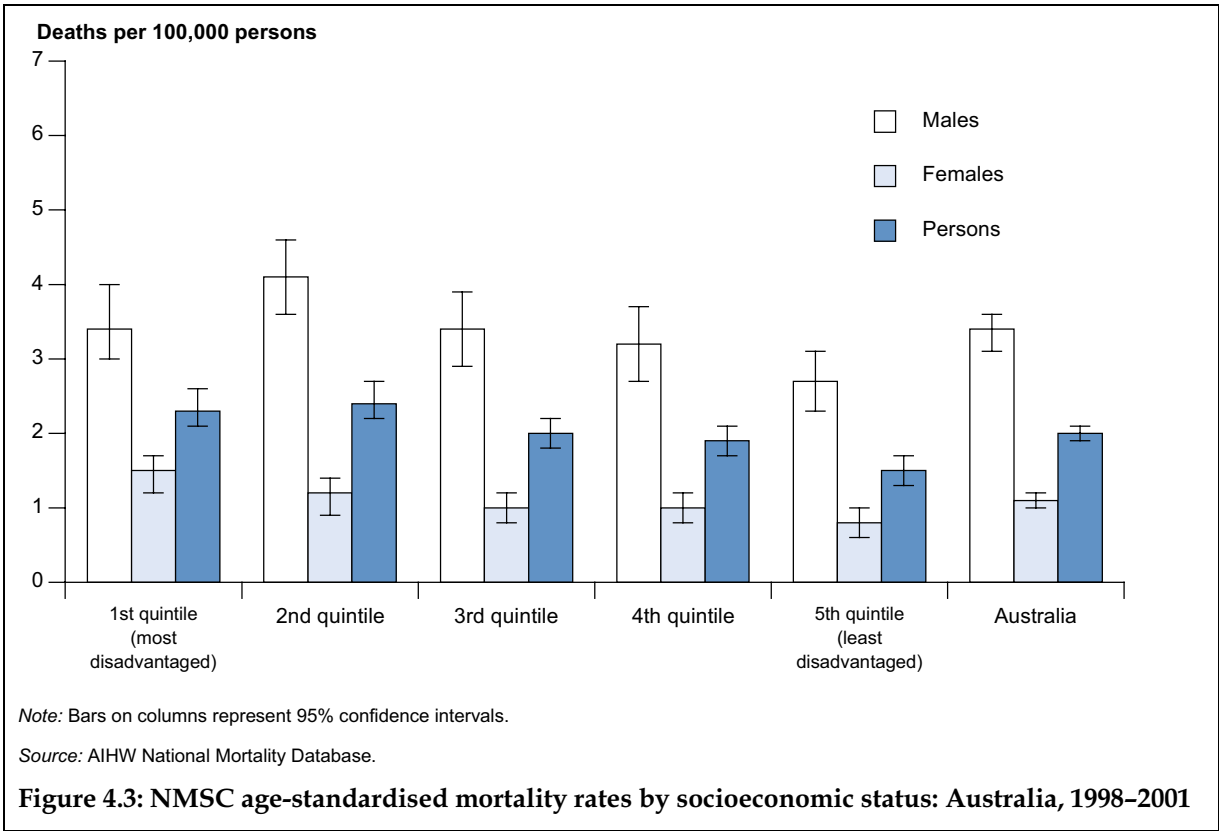
**Table 4.18: NMSC crude and age-standardised mortality rates by socioeconomic status: Australia, 2002–2005**

Socioeconomic status	Males			Females			Persons		
	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI	Crude	ASR (A)	95% CI
1st quintile (most disadvantaged)	2.8	3.4	3.0–3.9	1.6	1.4	1.1–1.6	2.2	2.3	2.0–2.5
2nd quintile	3.4	3.7	3.3–4.2	1.3	1.1	0.9–1.3	2.4	2.2	2.0–2.5
3rd quintile	3.0	3.4	3.0–3.9	1.3	1.0	0.8–1.2	2.2	2.0	1.8–2.3
4th quintile	2.2	2.8	2.4–3.2	1.1	0.9	0.7–1.1	1.6	1.7	1.5–1.9
5th quintile (least disadvantaged)	1.8	2.1	1.8–2.5	1.0	0.7	0.5–0.9	1.4	1.3	1.1–1.4
<b>Total</b>	<b>2.7</b>	<b>3.1</b>	<b>2.9–3.3</b>	<b>1.3</b>	<b>1.0</b>	<b>0.9–1.1</b>	<b>2.0</b>	<b>1.9</b>	<b>1.8–2.0</b>

*Notes*

1. Quintiles were defined using the 2001 IRSD.
2. Rates are the number of deaths from NMSC per 100,000 population.
3. Totals are age-standardised to the Australian population at 30 June 2001.

Source: AIHW National Mortality Database.



# 5 Conclusions

This chapter presents comparisons of sociodemographic profiles as indicated by incidence, general practice patient encounters, hospital inpatient separations and mortality.

## Trends

Increases over time in age-standardised NMSC rates were evident from the incidence, general practitioner, and hospital inpatient data, but corresponding upward trends in mortality rates were not observed.

## Age

NMSC rates were observed to increase steeply with age in all the data sources (that is, incidence, general practice encounters, hospital separations and mortality). Incidence and general practitioner data indicated that a steeper age gradient applied to SCC than BCC.

## Male to female ratio

The male to female ratio of age-standardised rates exceeded 1.0, with the lowest ratio of 1.5:1.0 applying for incidence data and the highest of 3.2:1.0 for mortality data. Incidence and general practitioner data pointed to a higher male to female ratio for SCC than BCC.

## Basal cell to squamous cell ratio

The ratio of BCC to SCC age-standardised rates was 2.2:1.0 for incidence and 2.0:1.0 for general practice encounters. In other words, around two-thirds of NMSC rates applied to BCC.

## Remoteness area

Remote and Very Remote regions presented comparatively low age-standardised NMSC rates for hospital inpatient separations, irrespective of sex, yet populations of these regions did not have a lower risk of mortality from NMSC than other regions.

## Socioeconomic disadvantage

The more disadvantaged sectors of the population had lower age-standardised NMSC rates for hospital inpatient separations, irrespective of sex, although their NMSC mortality rates were elevated. The reasons for these contrary trends require further investigation. Unfortunately, incidence data were not available by socioeconomic status.

## Country of birth

Both hospital inpatient data and mortality data showed markedly higher age-standardised NMSC rates for those born in Australia than for those born in other countries. This is consistent with trends observed in incidence data.

# Appendix: Methodology

## Data sources

### General practice patient encounters

Data for general practice patient encounters was obtained from the BEACH (Bettering the Evaluation and Care of Health) database, a continuous cross-sectional national study of general practice activity in Australia which began in April 1998. It is the only continuous randomised study of GP activity in the world, and the only national program directly linking management actions to the problem under management.

A GP is defined by the Royal Australian College of General Practitioners as a medical practitioner who provides primary comprehensive and continuing care to patients and their families within the community.

Problems managed in GP encounters are classified according to the *International classification of primary care – version 2* (ICPC-2), a product of the World Organization of Family Doctors. The ICPC-2 code for types of NMSC are detailed in Table A.1.

**Table A.1: ICPC-2 codes for NMSC**

Non-melanoma skin cancer	ICP code
Basal cell carcinoma	S77008
Squamous cell carcinoma	S77006
Non-basal, non-squamous cancer or non-melanoma skin cancer	S77001, S77004, S77005, S77007, S77010, S77011
All non-melanoma skin cancer	S77006, S77008, S77001, S77004, S77005, S77007, S77010, S77011

National estimates were calculated by multiplying the encounter rate for each year in the given time period by the estimated total number of general practice services claimed through Medicare for that year to give the estimated annual number of events.

## Hospital inpatient admissions

Data for hospital inpatient admissions were sourced from the AIHW National Hospital Morbidity Database (NHMD) for data collected in the 2006–07 financial year.

The NHMD is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals. The database contains data relating to admitted patients in almost all hospitals, including public acute hospitals, public psychiatric hospitals, private acute hospitals, private psychiatric hospitals and private free-standing day hospital facilities.

All public hospitals were included for 2006–07, with minor exceptions. The great majority of private hospitals were also included, although a few (mainly private free-standing day facilities) were not included. Counts of separations presented in this report are therefore likely to be slight underestimates of the actual counts.

Records for 2006–07 are for hospital separations (discharges, transfers, deaths or changes in care type) in the period 1 July 2006 to 30 June 2007. A record is included for each separation, not for each patient, so patients who separated more than once in the year have more than one record in the database. Counts exclude separations for which the care type was reported as *newborn*, *hospital boarder* or *posthumous organ procurement*.

### Principal diagnosis

Principal diagnosis was classified using the fifth edition of the *International statistical classification of diseases and related health problems, 10th revision, Australian modification* (ICD-10-AM). Separations where the principal diagnosis was non-melanoma skin cancer were selected using ICD-10-AM code C44 'Other malignant neoplasms of the skin' (Table A.2). This code is based on the cancer site, not by cancer morphology. Morphology codes are optionally reported to the NHMD, but are not supported by all states and territories, and hence are unreliable at a national level.

**Table A.2: ICD-10-AM codes for NMSC**

<b>C44 Non-melanoma skin cancer</b>	<b>Description</b>
C44.0	Malignant neoplasm of skin of lip
C44.1	Malignant neoplasm of skin of eyelid, including canthus
C44.2	Malignant neoplasm of skin of ear and external auricular canal
C44.3	Malignant neoplasm of skin of other and unspecified parts of face
C44.4	Malignant neoplasm of skin of scalp and neck
C44.5	Malignant neoplasm of skin of trunk
C44.6	Malignant neoplasm of skin of upper limb, including shoulder
C44.7	Malignant neoplasm of skin of lower limb, including hip
C44.8	Overlapping malignant lesion of skin
C44.9	Malignant neoplasm of skin, unspecified



## **Mortality**

Data for mortality statistics were sourced from the AIHW National Mortality Database (NMD) for deaths occurring between 1998 and 2005. Mortality statistics are derived from death registration data documents, including the medical certificate of cause of death. Registration of death is a legal requirement in Australia, and compliance is virtually complete. The registration of death is the responsibility of those registering deaths in their respective state or territory, and the collation and coding of death data are undertaken by the Australian Bureau of Statistics.

An additional source of data is the AIHW GRIM (General Record of Incidence of Mortality) Book for NMSC. The National GRIM Books are a collection of dynamic and interactive workbooks comprising cause-specific Australian mortality information for the most recent years (currently to 2005) and historically, for many causes, to 1907. For NMSC, GRIM Book data are available from 1968 to 2005, but are updated annually with the latest mortality data from the Australian Bureau of Statistics. Data are based on year of registration of death as opposed to year of death.

Although year of death and its registration mostly coincide, deaths at the end of each calendar year may not be registered until the following year, as will deaths whose causes require further examination by a coroner. In recent years, less than 5% of deaths were held over from one year to the next for processing. Subsequently, the number of registrations in 2005 is used as a measure of the number of deaths occurring in 2005.

### **Underlying cause of death**

Underlying cause of death is coded using the *International statistical classification of diseases and related health problems, 10th revision, Australian modification* (ICD-10-AM). Deaths with NMSC as the underlying cause were selected using ICD-10-AM code C44 'Other malignant neoplasms of the skin'. Morphology is not recorded in the National Mortality Database.

## Population subgroups

### Country of birth

Country of birth details were coded to the ABS Standard Australian Classification of Countries (SACC) at time of collection for both hospital separations and mortality. Countries were grouped into geographic regions as detailed in Table A.3.

As 2006 populations by country of birth were unavailable at the time of the analysis, age-standardised hospital separation rates by country of birth were calculated using the estimated resident population as at 30 June 2004 and standardised to the Australian 2001 population.

As 2005 populations by country of birth were unavailable at the time of the analysis, age-standardised mortality rates by country of birth for 2005 were calculated using the estimated resident populations as at 30 June 2004 and standardised to the Australian 2001 population.

**Table A.3: SACC geographic grouping**

<b>Geographic grouping</b>	<b>SACC codes</b>
Australia	900–909, 1000–1199
UK/Ireland	2100–2299
New Zealand	1200–1299
Pacific Island countries	1300–1599
United States	8104
Canada	8102
Western Europe	2300–2399
Northern Europe	2400–2499
Southern Europe	3100–3199
Central and Eastern Europe	912–914, 3200–3399
North Africa	4100–4199,
Middle East	4200–4299
South-East Asia	5000–5299
North-East Asia	6000–6299
Southern and Central Asia	7000–7299
South America	8200–8299
Central America	8300–8399
Caribbean	8400–8499
Sub-Saharan Africa	9000–9299

## Remoteness areas

Geographic location was classified according to the ABS Australian Standard Geographical Classification (ASGC) which groups geographical areas into five classes. These classes are based on Census Collection Districts (CDs) and are defined using the Accessibility/Remoteness Index for Australia (ARIA). ARIA is a measure of the remoteness of a location from the services provided by large towns or cities. Accessibility is judged purely on distance to one of the metropolitan centres. A higher ARIA score denotes a more remote location. The five classes of the ASGC, along with a sixth 'Migratory' class, are listed in Table A.4.

The usual residence of a person is provided as the state or territory and statistical local area (SLA). Usual residence SLAs are mapped to CDs and then classified to five categories ranging from Major Cities to Very Remote areas.

**Table A.4: Remoteness areas for the ASGC**

Region	Collection districts within region
Major Cities of Australia	CDs with an average ARIA index value of 0 to 0.2
Inner Regional Australia	CDs with an average ARIA index value greater than 0.2 and less than or equal to 2.4
Outer Regional Australia	CDs with an average ARIA index value greater than 2.4 and less than or equal to 5.92
Remote Australia	CDs with an average ARIA index value greater than 5.92 and less than or equal to 10.53
Very Remote Australia	CDs with an average ARIA index value greater than 10.53
Migratory	Areas composed of off-shore, shipping and migratory CDs

## Socioeconomic disadvantage

Socioeconomic classifications are based on the ABS Index of Relative Socioeconomic Disadvantage (IRSD). Geographical areas are assigned a score based on attributes such as low income, low educational attainment, high unemployment, and jobs in relatively unskilled occupations. It does not refer to the socioeconomic situation of a particular individual but instead refers to the area in which a person lives. A low score means an area has many low-income families, people with little training and high unemployment, and may be considered disadvantaged relative to other areas. Areas with high index scores may be considered less disadvantaged relative to other areas. Geographic areas may be excluded where no score is determined because of low populations or high levels of non-response in the underlying census.

For hospital admissions data, a patient's socioeconomic status was classified using the patient's usual residence SLA according to the ABS IRSD for 2006. Quintiles based on the level of the index are used for analysis where the 1st quintile represents the most disadvantaged 20% of the population and the 5th quintile represents the least disadvantaged 20%.

For mortality data, usual residence SLAs were mapped to the 2001 ASGC and assigned to categories of the IRSD, from SEIFA 2001. Quintiles based on the level of the index are used for analysis where the 1st quintile represents the most disadvantaged 20% of the population and the 5th quintile represents the least disadvantaged 20%.

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