4 All causes

Age–sex distribution

There were 127,194 deaths (67,066 males and 60,128 females) in 1998. In the 12-year period 1987–1998 the mortality rate fell by 24.4% for males (from 10,054 to 7,603 deaths per million population), and by 19.4% for females (from 5,837 to 4,705 deaths per million population in 1987) (Figure 4.1; Table 4.1).

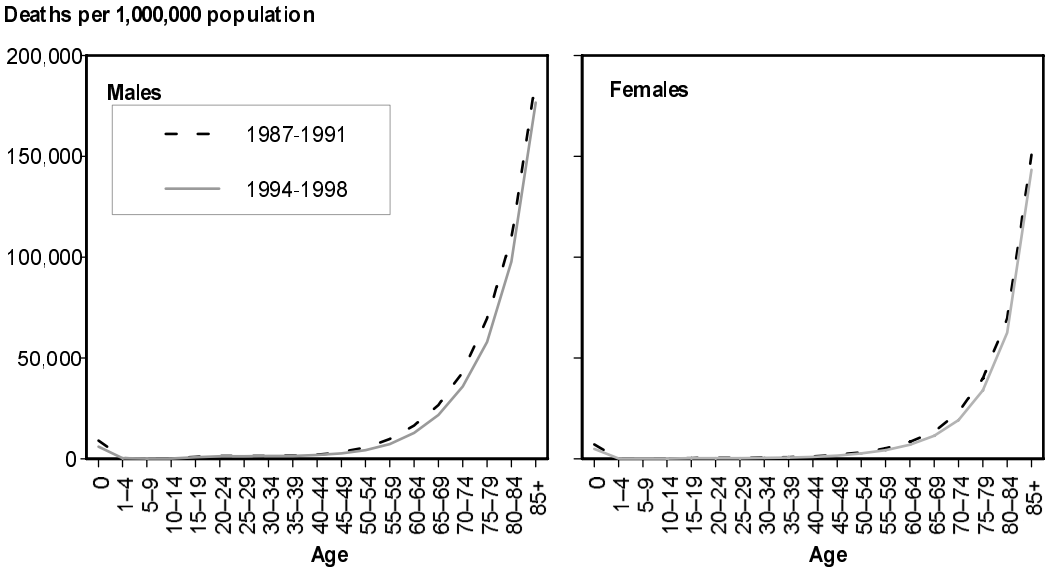


Figure 4.1: Age-specific mortality rates for all deaths, by sex, Australia, for the 5-year periods 1987–1991 and 1994–1998

While the risk of death increases with age, the relationship is not linear. In the first year of life, risk of death is about 15 times as high as for children aged 1–4. Between the ages of 15–35, male deaths outnumber female deaths three to one, largely because of the high numbers of males who die due to accidents and injuries. Mortality rates increase at an exponential rate from the age of 45. As females live longer than males, the ratio of female to male deaths is about two to one from age 85 (see Chapter 3).

Twelve-year trends 1987–1998

Over the 1987–1998 period there were significant decreases in age-specific mortality rates in most age groups, with overall mortality rates decreasing significantly by 2.3% per year for males and by 1.9% per year for females. There were significant decreases in infant mortality for both sexes. There were also significant decreases for most other age groups. The exceptions occurred for males and females aged 30–39 years, where the age-specific mortality rates here increased in the mid-1990s, and for males and females aged 10–19 years (Figure 4.2; Table 4.1).

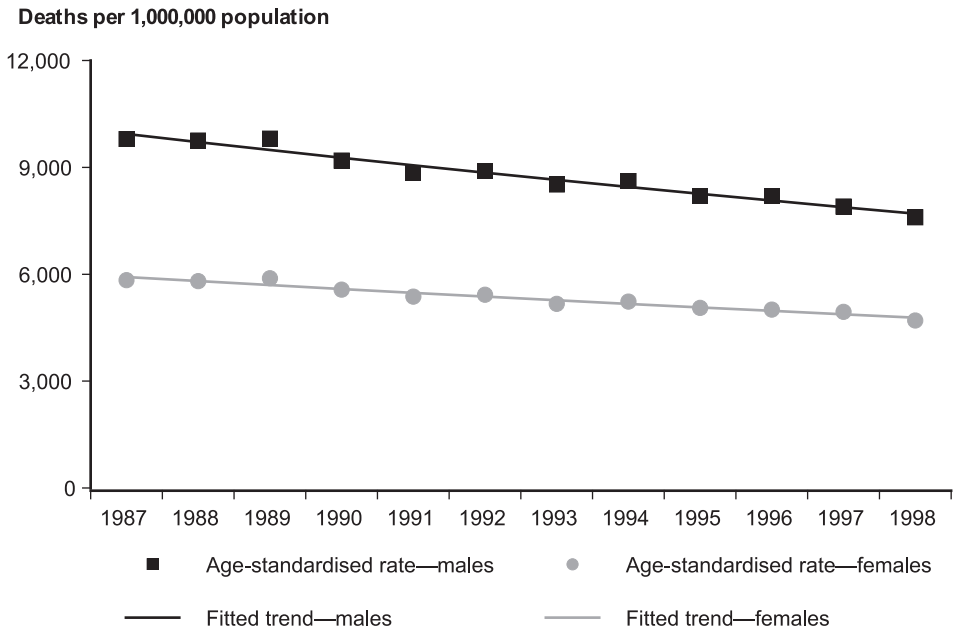


Figure 4.2: Age-standardised mortality rates and fitted trends for all deaths, Australia, 1987–1998

Geographic differences in mortality

Geographic analysis of age-standardised and age-specific mortality is affected by a number of overlapping factors including:

- socioeconomic status of the population (AIHW 2000a);
- migration of older persons from the southern States to Queensland, Western Australia and the Northern Territory (AIHW 2000a).
- exposure to occupational and environmental risk (AIHW 2000a);
- proportion of the population who are recent migrants—this population has lower rates of mortality and morbidity which tend to become closer to the Australian rates as their period of residence in Australia increases (AIHW 2000a);
- proportion of the population who are Aboriginal and Torres Strait Islanders—this population has higher rates of mortality (ABS & AIHW 1999); and
- proportion of the population living in rural and remote areas (AIHW 1998a).

The overlap of factors influences mortality rates for the State and Territories and geographic categories, both overall and for each disease group. Areas with a higher proportion of Aboriginal and Torres Strait Islander people will have higher mortality rates because of the higher mortality rates experienced by the Aboriginal and Torres Strait Islander population.

State and Territory comparison

The mortality rates decreased across the two periods 1987–1991 and 1994–1998 for males and females in all States and Territories (Table 4.2). During the 1987–1991 period, compared with the national mortality rate:

- Mortality rates for males in New South Wales, Victoria, South Australia, Tasmania and the Northern Territory were significantly higher.
- Mortality rates for males in Western Australia and the Australian Capital Territory were significantly lower.
- Mortality rates for females in New South Wales, Victoria, South Australia, Tasmania and the Northern Territory were significantly higher.
- Mortality rates for females in Queensland, Western Australia and the Australian Capital Territory were significantly lower.

During the 1994–1998 period:

- Mortality rates for males in New South Wales, Victoria, South Australia, Tasmania and the Northern Territory were significantly higher.
- Mortality rates for males in Western Australia and the Australian Capital Territory were significantly lower.
- Mortality rates for females in Victoria, South Australia, Tasmania and the Northern Territory were significantly higher.
- The mortality rate for females in Western Australia was significantly lower.

Geographic category (by metropolitan, rural and remote area)

To compare rates by metropolitan, rural and remote area, it was necessary to aggregate to a 3-year period (1995–1997) because the small numbers of deaths led to instability of the rates. There were significant differences in mortality rates by area for the period 1995–1997, with rates significantly higher in remote areas.

- For males, the mortality rate in remote areas (9,248 deaths per million population) was 17% higher than in metropolitan areas (7,905) and 10% higher than in rural areas (8,418).
- For females, the mortality rate in remote areas (6,033 deaths per million population) was 23% higher than in metropolitan areas (4,924) and 18% higher than in rural areas (5,109) (Table 4.3).

In considering these figures it is important to note that Aboriginal and Torres Strait Islander people have substantially worse levels of health than other Australians, and form a greater proportion of the population living in remote areas (ABS & AIHW 1999). Consequently the higher mortality rates found in Aboriginal and Torres Strait Islander populations across all areas has the greatest effect on remote mortality rates (AIHW 1998a).

Aboriginal and Torres Strait Islander people

While 2% of the Australian population counted at the 1996 population census identified themselves as Aboriginal and Torres Straight Islanders, they did not represent 2% of the population in each State and Territory. The proportion was much greater in the Northern Territory (28.5% of the population) than in all other jurisdictions. Consequently, higher mortality rates for the Aboriginal and Torres Strait Islander population influence the mortality rates in State and Territories where the Aboriginal and Torres Strait Islander population as a proportion is relatively larger, particularly the Northern Territory. Mortality rates in remote and rural regions are more affected by the higher mortality rates for the Aboriginal and Torres Strait Islander population as:

- 20.7% of Australians living in remote regions are of Aboriginal or Torres Strait Islander origin;

- 2.8% of Australians living in rural regions are of Aboriginal of Torres Strait Islander origin; and
- 1.1% of Australians living in metropolitan regions are of Aboriginal or Torres Strait Islander origin (AIHW population data, based on ABS population estimates).

While greater numbers of Aboriginal and Torres Strait Islander people reside in Queensland and New South Wales, Aboriginal and Torres Strait Islander mortality data are only included in this report for the Northern Territory, Western Australia and South Australia. This is due to the poor rate of Aboriginal and Torres Strait Islander identification in the collection of data in the other States and Territories for the analysis period of this report (1995–1997).

When comparing mortality between the Aboriginal and Torres Strait Islander and the Australian populations, the different age structures of each population need to be taken into account. The two most common methods are direct age-standardisation (used throughout this report) and indirect age-standardisation. Indirect age-standardisation is used when the numbers of deaths are small, resulting in unstable values with the direct method, as is the case when analysing Aboriginal and Torres Strait Islander mortality patterns.

Indirect age-standardisation gives a ratio of the number of deaths observed in the population (in this case the Aboriginal and Torres Strait Islander population) to the number of deaths expected if the age-specific mortality rates in the Australian population are applied to the Aboriginal and Torres Strait Islander population. Both of these methods create an index that enables comparison between populations.

Direct age-standardised rates and indirect standardised mortality ratios (SMR) were calculated for the Aboriginal and Torres Strait Islander population for each of the disease profiles featured in this report. These are presented in Table 4.0 for comparison between the two methods.

Results

For the period 1995–1997, there were 2,652 deaths in Aboriginal and Torres Strait Islander peoples for the Northern Territory, Western Australia and South Australia (Table 4.0). The SMR for all-cause mortality for the Aboriginal and Torres Strait Islander population was 3.1 for males and 3.0 for females, i.e. Aboriginal and Torres Strait Islander mortality is three times higher than for the Australian population as a whole (1.0). Mortality rates were higher for Aboriginal and Torres Strait Islander males than females for all-cause mortality and some specific causes.

As is the case for the rest of the Australian population, risk of death increases with age for the Aboriginal and Torres Strait Islander population. However, for the Aboriginal and Torres Strait Islander population, risk of death increases at a much faster rate from an earlier age, particularly for males, peaking for age group 45–64 years for males and age 65 years and over for females. For the rest of the Australian population, risk of death peaks for age 65 years and over (AIHW & ABS 2002).

For many of the disease profiles, the SMR was higher for the Aboriginal and Torres Strait Islander population. The highest SMRs for Aboriginal and Torres Strait Islander males were for diabetes (9.3), homicide (8.2), motor vehicle traffic accidents (4.1), mental disorders (4.1) and cerebrovascular disease (3.2). The highest SMRs for Aboriginal and Torres Strait Islander females were for diabetes (15.1), homicide (6.2), asthma (4.6), chronic obstructive pulmonary disease (4.4) and mental disorders (3.5) (Table 4.0).

The higher SMR for Aboriginal and Torres Strait Islander peoples is reflected in shorter life expectancy at birth, about 20 years less than for the total Australian male and female

populations. For the period 1990–1996, life expectancy from birth was 56.9 years for Aboriginal and Torres Strait Islander males and 61.7 years for females (ABS & AIHW 1999) compared with 75.7 for the total Australian male population and 81.4 for the total Australian female population (see Life expectancy in Chapter 2).

Table 4.0: Age-standardised mortality rates (direct method) and standardised mortality ratios (indirect method) for the Aboriginal and Torres Strait Islander population and the Australian population: selected causes, 1995–1997

	Aboriginal and Torres Strait Islander		Aboriginal and Torres Strait Islander age-standardised rates (direct method)		Australian age-standardised rates (direct method)		Standardised mortality ratio (indirect method)	
	Number of deaths		per 1,000,000 population		per 1,000,000 population			
	Male	Female	Male	Female	Male	Female	Male	Female
All causes	1,546	1,106	18,403	12,657	7,991	5,284	3.1	3.0
Ischaemic heart disease	237	114	3,192	1,636	1,911	1,136	2.6	1.9
Cerebrovascular disease	88	70	1,659	1,040	630	629	3.2	2.1
Lung cancer	42	33	656	415	546	192	1.5	2.5
Prostate cancer	6	—	146	—	314	—	0.5	—
Breast cancer	—	14	—	199	—	253	—	0.7
Colorectal cancer	12	13	151	144	305	205	0.8	1.0
Chronic obstructive pulmonary disease	55	46	1,099	715	446	189	3.0	4.4
Asthma	6	13	79	165	34	39	2.4	4.6
Suicide	56	12	296	59	220	55	1.7	1.4
Motor vehicle traffic accidents	111	45	692	253	153	62	4.1	4.2
Homicide	34	15	195	77	24	13	8.2	6.2
Diabetes	79	112	1,107	1,440	173	127	9.3	15.1
Mental disorders	64	35	799	422	186	161	4.1	3.5
Dementia and related disorders	9	12	217	242	148	190	1.5	1.4

(a) Includes only Northern Territory, Western Australia and South Australia.

Country of birth

Migrants bring to Australia their own health characteristics. Because of the stringent health requirements for immigration, migrants generally enjoy better health than does the Australian-born population. However, their illness and disability levels generally increase with length of residency in Australia. Some migrant groups also have greater tendencies towards specific conditions (AIHW 2000a).

Mortality rates by country of birth for migrants were analysed for 1992–1994, as it was the most recent period comparable with international mortality rates. To allow the mortality rates to be directly compared to rates for the country where the migrants were born, the

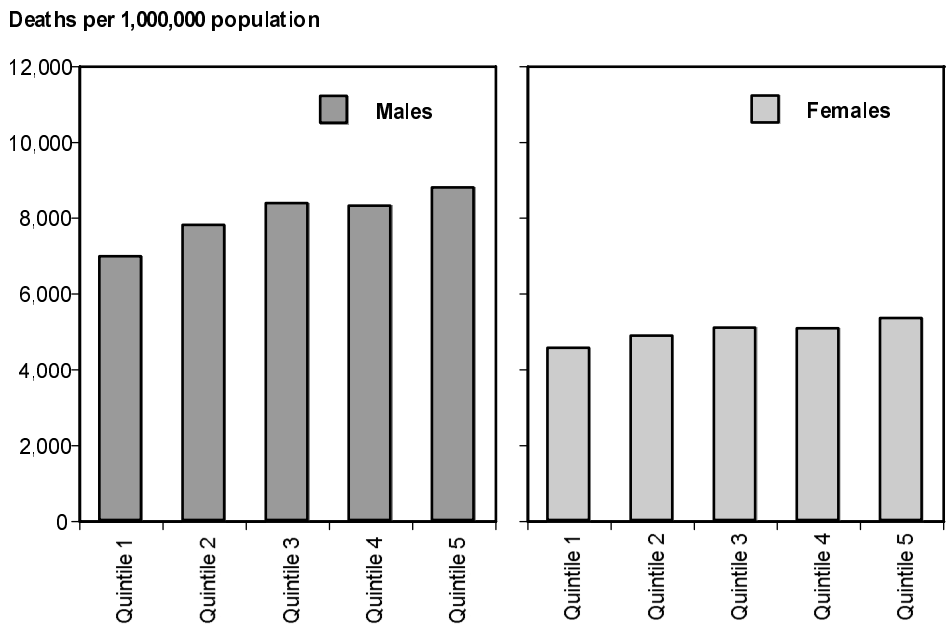
Australian rates by country of birth were age-standardised to the World Standard Population.

For the period 1992–1994, the world-standardised mortality rate for Australian males and females born in Australia was 5,922 deaths per million population for males and 3,499 deaths per million population for females (Table 4.6).

- Differences in mortality rates between countries of birth analysed for Australian males and females are only discussed where the difference is statistically significant.
- Of the 25 countries of birth analysed for Australian males, none had significantly higher mortality rates than Australian males born in Australia.
- For females, only Australian females born in Israel had significantly higher mortality rates than Australian females born in Australia.

Socioeconomic status

Mortality rates by socioeconomic status were analysed for the 3-year period 1995–1997. (See Appendix D for methodology used to determine socioeconomic status.) Socioeconomic status (SES) is an important factor in risk of death (AIHW 2000a), as there is a general inverse relationship between mortality rates and socioeconomic status. The mortality rate for males increased significantly as socioeconomic status decreased, using the SEIFA index of Relative Socioeconomic Disadvantage, with a difference of 26% between the highest and lowest groups. For females, the mortality rate increased by 17% as socioeconomic status decreased between the highest and lowest SEIFA groups (Figure 4.3, Table 4.4).



Note: The population has been divided into five segments: Quintile 1 represents the highest socioeconomic status, and Quintile 5 the lowest.

Figure 4.3: Age-standardised mortality rates by socioeconomic status and sex, Australia, 1995-1997

Table 4.1: Age-specific and age-standardised mortality rates for all causes of death per million population, Australia, 1987–1998

	Age																				ASMR
Year	0	1–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Crude rate	Aust 1991
Males																					
1987	9,890	458	231	297	1,147	1,579	1,509	1,438	1,508	2,387	3,495	6,107	9,917	17,521	28,508	44,894	75,252	116,276	197,440	7,833	10,054
1988	9,761	455	227	302	1,130	1,582	1,482	1,406	1,495	2,251	3,386	5,964	10,051	17,243	27,202	44,943	72,357	110,888	188,940	7,888	9,754
1989	8,886	444	217	270	1,027	1,407	1,459	1,403	1,672	1,938	3,268	5,747	9,920	16,643	27,254	45,151	72,618	114,006	199,950	7,979	9,808
1990	9,290	499	232	213	942	1,380	1,394	1,396	1,472	2,119	3,128	5,361	9,547	16,038	26,186	41,195	67,485	104,833	183,852	7,596	9,191
1991	7,890	375	198	216	883	1,283	1,268	1,327	1,606	1,975	3,126	5,173	8,854	15,429	24,892	39,270	65,468	105,481	175,712	7,436	8,851
1992	8,109	418	195	198	807	1,194	1,282	1,352	1,465	2,005	2,978	5,084	8,649	15,194	25,042	39,748	66,517	104,479	182,275	7,585	8,893
1993	6,927	458	179	209	786	1,167	1,233	1,365	1,538	1,890	2,850	4,843	8,377	14,211	23,746	37,976	62,626	100,688	178,693	7,398	8,523
1994	6,553	377	171	219	814	1,153	1,217	1,317	1,576	1,964	2,849	4,638	8,000	13,956	23,797	38,251	64,411	101,764	186,840	7,590	8,618
1995	6,092	386	169	196	756	1,263	1,228	1,432	1,628	1,896	2,736	4,457	7,580	13,329	22,468	36,855	58,694	98,123	176,593	7,366	8,203
1996	6,438	383	172	219	826	1,222	1,233	1,414	1,548	1,958	2,686	4,408	7,267	13,102	21,778	36,171	58,321	100,742	181,291	7,487	8,203
1997	5,737	386	147	198	862	1,229	1,289	1,337	1,462	1,919	2,645	4,334	7,033	12,712	21,032	34,928	55,741	96,557	173,986	7,352	7,905
1998	5,542	375	150	188	750	1,258	1,346	1,517	1,525	1,878	2,486	3,982	6,846	11,793	19,974	33,529	53,630	92,851	167,228	7,196	7,603
Females																					
1987	7,471	327	175	144	429	483	488	546	801	1,254	2,091	3,518	5,479	8,577	13,893	23,948	40,956	72,208	152,170	6,593	5,837
1988	7,554	414	179	151	413	538	475	592	818	1,240	2,137	3,352	5,524	8,696	13,871	23,497	41,052	71,650	149,510	6,614	5,808
1989	7,132	394	171	151	379	475	452	574	756	1,265	2,062	3,292	5,297	8,694	13,754	24,171	40,818	72,925	159,929	6,800	5,889
1990	7,380	344	143	157	387	445	460	540	760	1,139	1,864	3,268	4,987	8,142	13,401	22,809	39,195	67,188	149,580	6,477	5,567
1991	6,239	300	144	149	368	448	535	542	766	1,106	1,870	3,074	4,840	7,968	13,048	21,866	37,969	64,870	143,510	6,354	5,373
1992	6,133	356	156	133	335	428	426	560	732	1,130	1,820	3,112	4,932	7,775	12,667	21,716	38,022	67,325	149,617	6,555	5,426
1993	5,349	320	138	159	343	402	367	539	815	1,080	1,730	2,774	4,692	7,628	12,191	20,795	36,434	64,051	141,334	6,372	5,171
1994	5,157	316	134	167	301	359	406	479	765	1,126	1,772	2,808	4,590	7,346	12,382	20,422	36,690	65,335	149,154	6,605	5,236
1995	5,117	298	148	179	346	416	420	566	693	1,092	1,671	2,803	4,369	7,119	11,934	19,683	35,193	63,011	142,594	6,486	5,057
1996	4,962	288	115	166	295	331	418	503	762	1,050	1,655	2,774	4,473	7,060	11,344	19,268	34,783	62,360	145,687	6,575	5,011
1997	4,860	239	134	127	351	421	441	603	746	1,078	1,675	2,717	4,319	6,846	11,344	19,171	32,472	62,436	144,630	6,616	4,948
1998	4,517	294	95	136	371	388	420	529	766	1,082	1,630	2,643	3,977	6,538	10,418	18,169	31,453	59,917	136,117	6,389	4,705

Note: ASMR = age-standardised mortality rate.

Table 4.2: Number of deaths and age-standardised mortality rates for all causes of death per million population, States and Territories, 1987–1991 and 1994–1998

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males									
				Deaths					
1987–1991	116,801	83,031	53,797	26,066	29,398	9,860	2,836	2,506	324,295
1994–1998	118,308	84,253	59,308	28,716	30,304	9,994	3,244	2,559	336,707
				Deaths per million population					
1987–1991	9,708	9,608	9,371	8,237	10,102	10,158	8,326	13,371	9,466
1994–1998	8,181	8,175	8,056	7,679	8,402	8,870	7,115	11,030	8,088
				Confidence intervals (95%)					
1987–1991	9,651– 9,765	9,541– 9,675	9,290– 9,452	8,135– 8,339	9,984– 10,220	9,953– 10,363	7,975– 8,677	12,641– 14,101	9,432– 9,499
1994–1998	8,134– 8,228	8,119– 8,230	7,991– 8,122	7,590– 7,769	8,306– 8,497	8,695– 9,045	6,853– 7,377	10,478– 11,581	8,060– 8,115
Females									
				Deaths					
1987–1991	101,374	73,806	42,807	20,819	25,285	8,413	2,356	1,410	276,270
1994–1998	106,719	78,509	49,555	24,436	27,600	8,956	2,998	1,550	300,339
				Deaths per million population					
1987–1991	5,838	5,790	5,562	4,592	6,330	6,255	5,346	8,676	5,687
1994–1998	5,019	5,072	4,948	4,428	5,351	5,490	4,801	7,956	4,983
				Confidence intervals (95%)					
1987–1991	5,802– 5,874	5,748– 5,832	5,509– 5,615	4,528– 4,655	6,251– 6,408	6,120– 6,389	5,126– 5,567	8,118– 9,233	5,666– 5,709
1994–1998	4,988– 5,050	5,035– 5,108	4,903– 4,992	4,370– 4,486	5,287– 5,416	5,374– 5,607	4,627– 4,975	7,496– 8,416	4,964– 5,001

Table 4.3: Age-standardised mortality rates for all causes of death per million population, by geographic area, 1995–1997

Geographic area	Males		Females	
	ASMR	95% confidence interval	ASMR	95% confidence interval
Metropolitan	7,905	7,863–7,948	4,924	4,896–4,951
Rural	8,418	8,351–8,486	5,109	5,063–5,155
Remote	9,248	8,987–9,509	6,033	5,824–6,242

Note: ASMR = age-standardised mortality rate.
Source: AIHW Mortality Database, based on *Statistical Local Area* resident population estimates compiled by the ABS.

Table 4.4: Age-standardised mortality rates (ASMR) for all causes of death per million population, by socioeconomic status, 1995–1997

SEIFA quintile	Males		Females	
	ASMR	95% confidence interval	ASMR	95% confidence interval
1 High SES	6,967	6,893–7,041	4,550	4,502–4,598
2	7,790	7,709–7,870	4,869	4,816–4,923
3	8,367	8,286–8,448	5,076	5,023–5,130
4	8,301	8,221–8,382	5,066	5,012–5,120
5 Low SES	8,779	8,699–8,859	5,332	5,277–5,386

Notes
1. ASMR = age-standardised mortality rate; SES = socioeconomic status.
2. A description of the SEIFA Index of Relative Socioeconomic Disadvantage may be found in Appendix D.

Source: AIHW Mortality Database, based on *Statistical Local Area* resident population estimates compiled by the ABS.

Table 4.5: Age-standardised mortality rates per million population for all causes of death, Australians by birthplace, 1992–1994

Males			Females		
Country of birth	ASMR (world)	95% CI	Country of birth	ASMR (world)	95% CI
Hungary	7,455	3,801–11,108	Israel	5,568	4,351–6,785
Israel	7,193	5,428–8,959	Poland	3,526	3,303–3,749
Finland	6,778	5,621–7,934	**Australia**	**3,499**	**3,478–3,521**
Poland	5,990	5,622–6,358	Hungary	3,471	3,059–3,883
Australia	**5,922**	**5,890–5,954**	New Zealand	3,230	3,033–3,427
USA	5,711	5,147–6,276	Germany	3,230	3,033–3,426
France	5,471	4,162–6,781	Switzerland	3,172	2,385–3,960
New Zealand	5,465	5,217–5,712	United Kingdom and Ireland	3,151	3,089–3,212
Germany	5,410	5,114–5,707	Finland	3,134	2,408–3,860
Austria	5,378	4,742–6,013	USA	3,071	2,649–3,493
Malta	5,309	4,881–5,736	Malta	3,029	2,723–3,336
United Kingdom and Ireland	5,210	5,116–5,304	Netherlands	2,916	2,684–3,147
Canada	5,102	4,397–5,807	France	2,832	2,308–3,355
Netherlands	4,847	4,579–5,116	Canada	2,695	2,200–3,190
Switzerland	4,782	3,851–5,712	Austria	2,570	2,183–2,957
Portugal	4,626	3,569–5,683	Italy	2,355	2,268–2,442
Italy	4,271	4,090–4,452	China	2,327	2,142–2,513
Mauritius	4,076	3,351–4,801	Japan	2,311	1,662–2,960
Greece	3,870	3,643–4,097	Mauritius	2,299	1,821–2,777
Singapore	3,855	2,951–4,760	Singapore	2,243	1,696–2,791
China	3,815	3,467–4,163	Portugal	2,222	1,610–2,834
Japan	3,344	2,322–4,367	Greece	2,207	2,064–2,351
Hong Kong and Macau	3,135	2,554–3,717	Korea	2,073	1,464–2,683
Chile	3,068	1,978–4,158	Chile	1,929	995–2,863
Korea	2,310	1,594–3,025	Hong Kong and Macau	1,609	1,252–1,965

Notes

1. ASMR = age-standardised mortality rate; CI = confidence interval.
2. Age-standardised mortality rates have been standardised to the World Standard Population.