

**National and International Comparisons  
of Selected Health Measures for  
Western Australians**

August 2004

## **Citation**

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## Executive summary

This report draws together and updates information analysed by the Department of Health, Western Australia, and sourced from the Australian Bureau of Statistics, the Australian Institute of Health & Welfare, the World Health Organisation and various other international publications. This allows comparisons of the health status of Western Australians against national and international populations. Results show that overall, the health status of the Western Australian population compares favourably with that of the Australian population, as measured by a number of important health indicators. Similarly, the health of Australians is among the best in the world.

The indicators used in this report were drawn from measures of demographics, health determinants, burden of disease, perinatal and infant health, cancer incidence and mortality, with a focus on conditions defined under the Australian National Health Priority Areas. While the report provides international comparisons, it should be remembered that these indicators represent only a small set of measures, which can be used to define a population's health status.

The major causes of death in Western Australia during 2002 were cardiovascular conditions (diseases of the heart and blood vessels) and cancer. The age-standardised mortality rate for cardiovascular conditions has decreased since 1989 from 383 per 100,000 persons to 211 per 100,000 persons in 2002. Ischaemic heart disease and stroke accounted for the majority of deaths attributable to cardiovascular conditions in 2002. The leading cause of cancer deaths during 2002 was lung cancer. Breast cancer was the most common cause of cancer deaths and lung cancer was the second most common cause of cancer deaths among Western Australian females. Cancer of the colon, rectum and anus (colorectal cancer) was the second most common cause of cancer deaths amongst Western Australian males. Although malignant melanoma accounted for only three per cent of all cancer deaths among Western Australians, in 2002, the incidence rate was amongst the highest in the world.

### ***Indicators of good health outcomes for Western Australians***

- **Life expectancy:** Since 1984 Western Australian life expectancy has increased in males from 73.2 years to 77.3 years in 2001 and from 79.6 years to 82.8 years in females and both were slightly higher than the National figure. International comparison shows that Australian males enjoy a life expectancy of around 3.2 years longer than Irish males, but 0.9 years less than Japanese males. Japanese females live on average 2.3 years longer than Australian females.
- **All-cause and infant mortality:** Western Australia has achieved a reduction in all-cause and infant mortality, generally performing better against these indicators than Australia as a whole. Australia compares favourably to the United States, the UK, Canada, New Zealand and Ireland for all of these indicators.
- **Lung cancer and smoking:** Since 1982, WA male lung cancer incidence has decreased significantly in keeping with national trends. In contrast, female lung cancer incidence rates have increased slightly despite being lower than the male rate. The Australian female incidence ranked higher than the Australian male incidence

when compared to the other countries. However, Australian male smoking prevalence was higher than the male prevalence of countries such as the UK, the United States and Canada and ranked more highly than Australian female prevalence amongst similar countries. While smoking is a major risk factor for lung cancer, its prevalence is declining.

- **Breast cancer:** Breast cancer incidence has been increasing since 1982 in Western Australian females and was similar to the Australian figure over this time. The increase in incidence reflects greater screening and early detection of breast cancers. Although the Australian breast cancer incidence was the highest in relation to other comparable countries in 2000, the death rate in both WA and Australia has steadily decreased from 1982 to 2001.
- **Heart disease and stroke:** Death rates for coronary heart disease and stroke among the Western Australian population were usually lower than among the Australian population and decreasing annually. The Australian death rate for coronary heart disease ranked fairly low amongst comparable countries, as did the death rate due to stroke. The death rates for both these conditions were lower than in the United States and the UK.
- **AIDS:** Among Western Australian males, the decline in the notification rate for AIDS began in 1993, whereas it began in 1994 among Australian males. The notification rate among Western Australian males has remained below that among national males. By 2001 the Western Australian male rate had decreased to 4.1 per million from a high of 48 per million in 1992. In 2001, the cumulative prevalence of AIDS in Australia was lower than that in the United States and Canada, but higher than in the UK, Germany and New Zealand.
- **Asthma:** Asthma death rates have decreased in Western Australia and Australia, despite an increase in prevalence, due mainly to treatment and management practices implemented in Australia in the 1990s. However, the death rate for asthma in Australia ranks highly internationally.

### ***Conditions and diseases with less favourable comparisons***

- **Injury and poisoning:** The death rate due to injury and poisoning was higher amongst Western Australian and Australian males than females. Although the death rate due to injury and poisoning has declined among both Western Australian and Australian males, the national rate declined more rapidly. Since 1996, the injury and poisoning rate among Western Australian females has exceeded the Australian female rate. Internationally, the injury and poisoning death rate among Australian males and females ranks above that for the UK and the United States, but below that for New Zealand and Canada.
- **Suicide:** Suicide rates provide an indicator of mental health, which allows for international comparison. Rates were similar for each sex between Western Australia and Australia and higher among males than females. The Australian male suicide rate ranked highly amongst comparable countries, with a higher male rate than the United States and the UK, but lower than males from New Zealand.



- **Diabetes:** From 1983 to 2002 the diabetes death rate, although underestimating the extent of the problem, shows an increase among Western Australian males. In addition, the rate among Western Australian females remained unchanged while the rate among Australian females declined. These trends resulted in a higher rate among both males and females in WA when compared to Australia in 2002. For both sexes, the Australian death rate ranks lower than the United States, Canada and New Zealand, but above Ireland and the UK.
- **Melanoma:** Incidence of melanoma increased from 1983 to 2001 and was higher among Western Australians than among Australians. Australian males had the highest incidence of any comparable country in 2000, with Australian females being second after New Zealand females. While increasing incidence may be related to screening and early detection, the effect of early treatment is yet to show in female death rates that continue to increase. Death rates amongst both sexes in the Australian population rank highly internationally, second only to New Zealand in 2001 for males, and third behind New Zealand and Norway for females.
- **Colorectal Cancer:** The incidence of this cancer is increasing and is high when compared to other countries. However, increased detection rates and early intervention has contributed to a decrease in the death rate.



## Introduction

Recently, summary gap measures such as Disability Adjusted Life Years, from burden of disease analyses, have been used to describe the health status of populations across Australia. Whilst these studies quantify the areas in which the largest health gains can be made, complementary data describing the trends in health outcomes is needed.

There have been enormous gains in the health status of the population achieved in the past century. While most of this improvement is due to improved living conditions and nutrition, further improvements are becoming increasingly dependent upon the ability of health services to prevent and treat the effects of disease and injury.

Through scientific and medical research our knowledge of the causes of disease continues to produce new and innovative interventions designed to extend the quality and duration of our lives. But this progress comes at a cost. With an ever-increasing population size and proportion of elderly, the health services will come under even greater pressure.

As part of the strategic planning process in determining health priorities, the monitoring of health outcomes over time is an important component. The monitoring of health outcomes is substantially improved by comparing the health indicators of Australians as a whole and of people from other countries, which provides benchmarks upon which to assess the Western Australian population, thereby substantially improving the monitoring process. This brief report attempts to provide this level of comparative information. The trends and comparisons depicted in this report update and extend the range of indicators measured previously (Sommerford P et al, 2000).

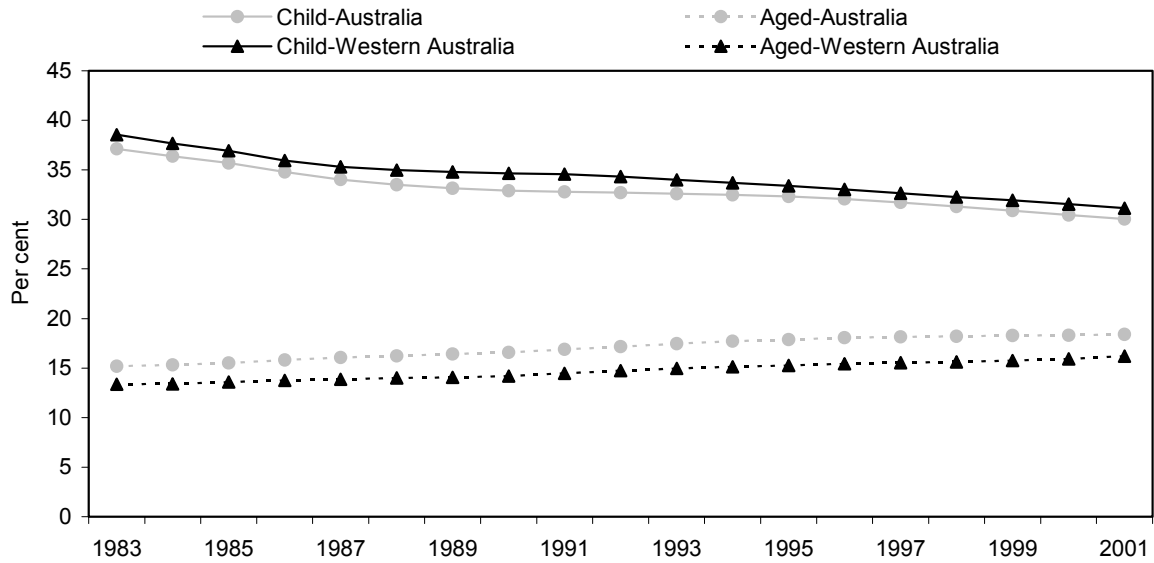
Ideally comparative data on the 'wellness' of populations would provide the best representation of the health of Western Australians. Unfortunately data on the 'wellness' of international populations are difficult to obtain as most countries lack the infrastructure to conduct surveys to obtain such information. Consequently many countries only capture statistics of ill health in death and hospital admission registries. However, hospitalisation data are not ideal for comparing populations as variations in hospital admission practices, accessibility and multiple admissions of the same individual are likely to exist from one population to another. Therefore, mortality and incidence data provide the basis for many of the statistics presented in this report.

Two main sources provided the information presented in this report. Data comparing indicators from the Western Australian and Australian populations were mainly obtained from the Department of Health, Western Australia Cancer Registry and Mortality Database. The majority of the international comparisons of health indicators with the Australian population were obtained from the World Health Organisation.

**It should be noted that the age-standardised rates for comparing Western Australia and Australia were standardised to the Australian population for 2001, with the international comparisons using the World standard population for 2001. Therefore, the rates from the two sources are not comparable.**

- The dependency ratio indicates the proportion of people of non-working age in the community who are dependent on the number of people of working age (15–64 years). The ratio is broken down into two components of dependence. The child dependency ratio is a ratio of children younger than 15 years dependent on the population of working age. The aged dependency ratio is the ratio of people older than 65 years dependent on the population of working age.
- Declining fertility rates have led to a marked decrease in the child dependency ratios for both Western Australia and Australia from 1983 to 2001 (Figure 1). The higher child dependency ratio for the Western Australian population, compared with the Australian population, reflects the relative younger age distribution of the Western Australian population.
- The ageing of both the Western Australian and Australian populations was indicated by the increasing aged dependency ratio from 1983 to 2001 (Figure 1). As a consequence the prevalence of diseases of ageing and chronic degenerative conditions resulting in handicap and disability will continue to increase, and generally more rapidly in the future.
- Internationally, Australia's dependency ratio overall ranked fairly low when compared to other countries. Israel had the highest dependency ratio of 61 and Singapore had the lowest at 41. Australia was lower than New Zealand, the UK and the United States (Figure 2).

Figure 1: Child and aged dependency ratio, Australia and WA, 1983 to 2001



Note: Child dependency ratio age range is 0–14 years, aged dependency ratio age range is 65 years and older.  
 Source: Health and Wellbeing Surveillance System (2001). Department of Health, WA.

Figure 2: Aged dependency ratio, 2001



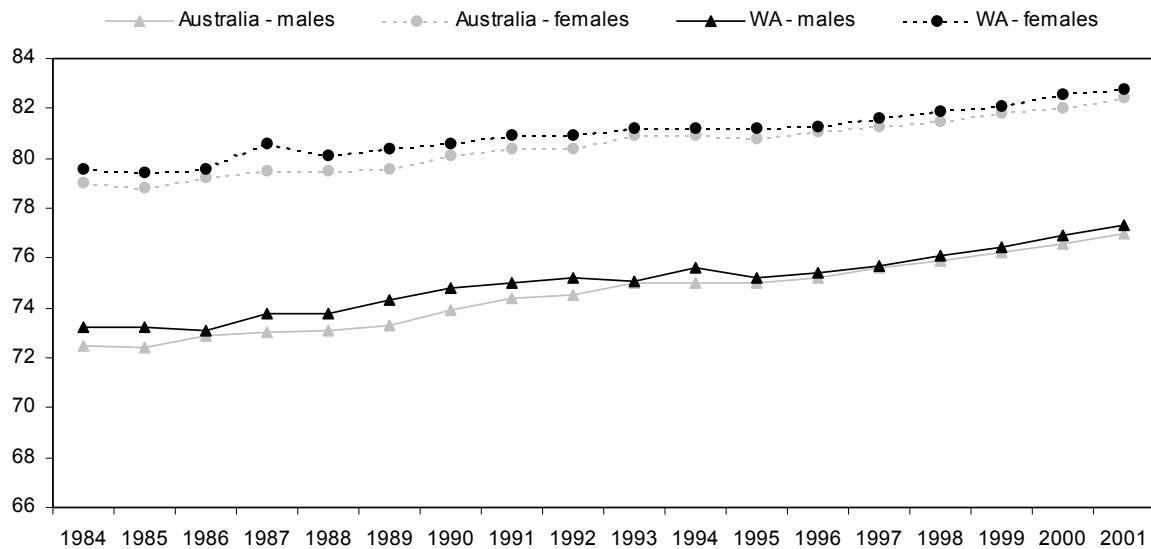
Source: Reducing Risks, Promoting Healthy Life (2002). World Health Organisation, Geneva.

## Population

## Life expectancy

- Life expectancy is the average number of years of life a person can be expected to live, if current age-specific mortality rates do not change throughout the person's lifetime.
- However, as mortality rates change, so does life expectancy. Although life expectancy does not provide an indication of disease severity or quality of life, it does provide an insight into the effect that changes in social, economic, environmental circumstances and health care provision have had over time.
- In 2001, the Western Australian life expectancy at birth, of 77.3 years for males and 82.8 years for females, was similar to the equivalent Australian life expectancy at birth for the same year (males: 77.0; females: 82.4). The male and female differentials have decreased over the period 1984 to 2001 (Figure 3). This data is taken from the Australian Bureau of Statistics death data for 2001 and is based on three year rolling averages.
- From 1984 to 2001, the Western Australian life expectancy at birth has generally been higher than that for equivalent Australians. Male and female life expectancy at birth increased from 1984 to 2001 for both Western Australia and Australia.
- Internationally, Australian males and females rank highly against comparable developed countries. The Japanese have the highest male (77.9) and female (84.7) life expectancy and the Irish have the lowest (males 73.8; females 79.2) (Figures 4 and 5). This data is taken from the World Health Organisation mortality database and is therefore slightly different from the ABS death data for Australia due to calculation differences.

Figure 3: Life expectancy at birth by gender, Australia and WA, 1984 to 2001

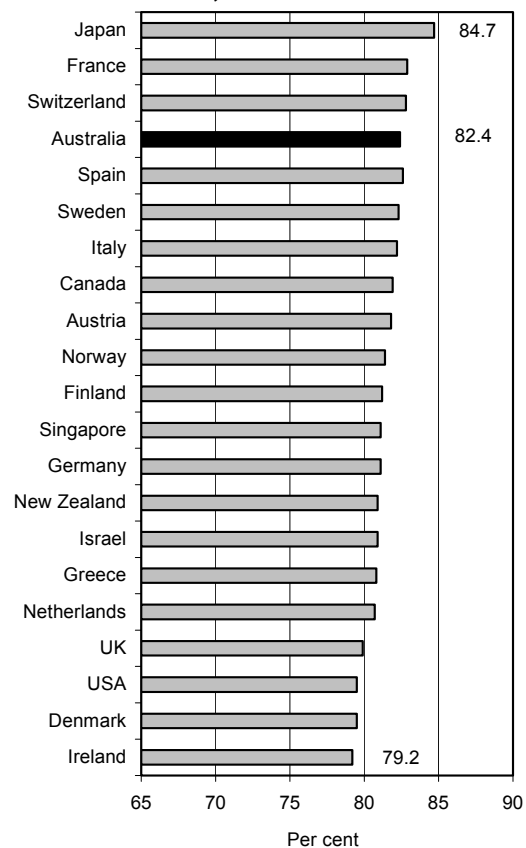


Source: 1984-91: National and International Comparisons of Selected Health Measures for Western Australia (2000). Department of Health, WA.  
1992-01: Deaths Australia 1992-2001. ABS cat no. 3302.0. ABS, Canberra.

Figure 4: Male life expectancy at birth, 2001



Figure 5: Female life expectancy at birth, 2001

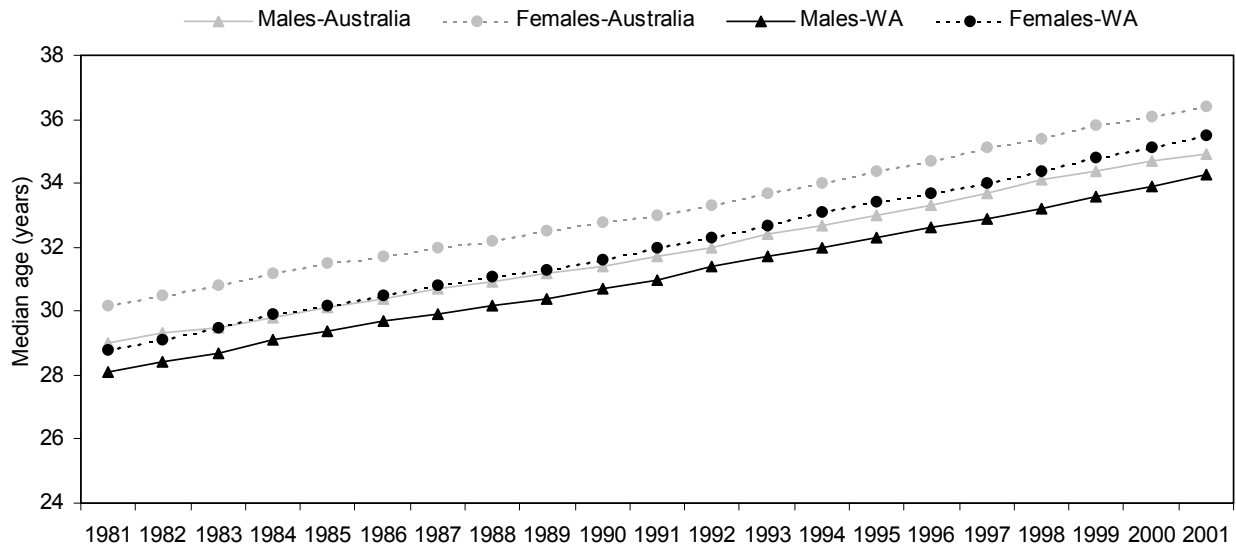


Source: World Health Organisation Mortality Database.

- The median age is the age at which half of the population is younger and half is older. For both Western Australia and Australia, the median age of females has been higher than that of males over time, reflecting the increased life expectancy of females, while the median age for Western Australian males and females has been slightly younger than that of the entire nation over time.
- In 2001, the median age of females in Western Australia was 35.5 years, slightly younger than that of Australian females, 36.4 years. The median age of Western Australian males in 2001 was 34.3, while the median age for males across the country was 34.9 (Figure 6).
- However, the rate of increase in median age for Western Australian males and females is greater than that of the nation as a whole. Between 1981 and 2001, Western Australian females' median age increased by 6.7 years, from 28.8 to 35.5 years, while the median age of Western Australian males increased by 6.2 years, from 28.1 to 34.3 years. During the same period, the median age of Australian females increased by 6.4 years, from 30.2 to 36.4 years, while the median age of Australian males increased by 5.9 years, from 29.0 to 34.9 years (Figure 6).
- The median age of the Australian population was young in relation to comparable developed countries. Japan has the oldest median age at 41.3 years, while at 27.9 years Israel has the youngest median age (Figure 7).

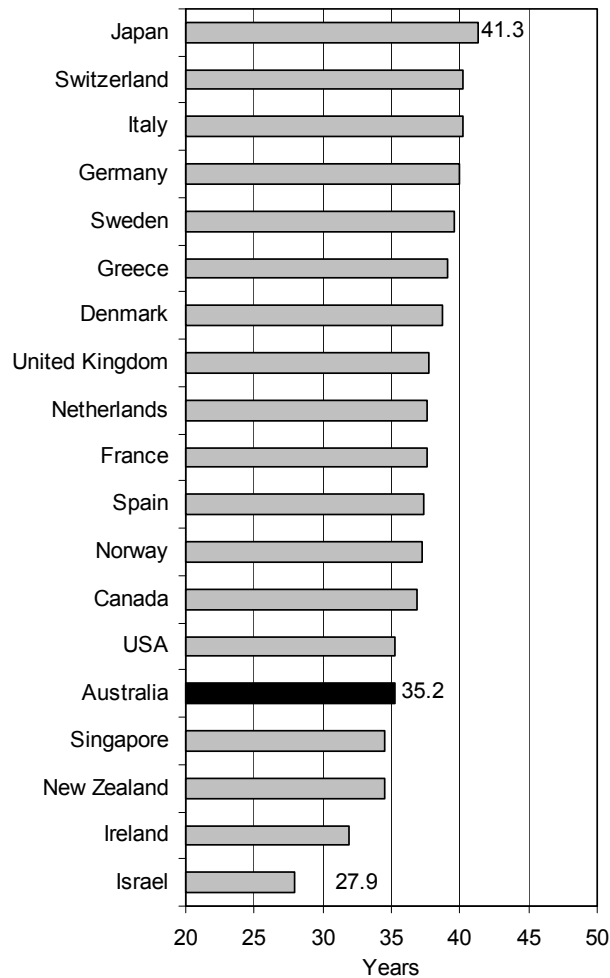


Figure 6: Median age by gender, Australia and WA, 1981 to 2001



Source: ABS Population by Age and Sex: Australian States and Territories (annual). ABS cat no. 3201.0. ABS, WA.

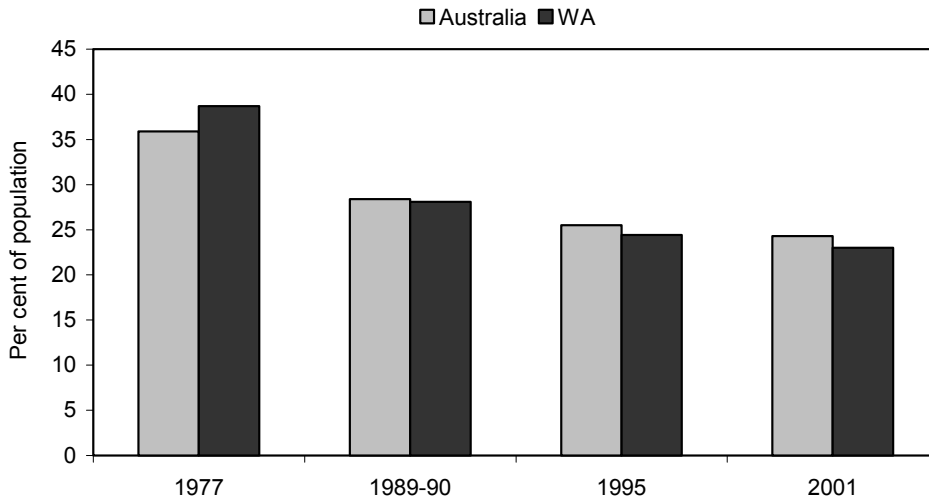
Figure 7: Median age, 2000



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2003). World Population Prospects: The 2002 Revision. United Nations, New York.

- Smoking is the largest avoidable cause of disease (cardiovascular disease, chronic respiratory disease and lung cancer) and is the leading cause of death and disability in Australia and other developed countries.
- In 2001, the prevalence of smokers among those aged 18 years and older (23.0%) was less than, but similar to, the national prevalence (24.3%). While questions and definitions may have varied across surveys, there has been a significant decrease in the prevalence of smokers in Western Australia since 1977 (Figure 8).
- In 2001, Australian females reported lower proportions of current smokers compared to many other developed countries, while Australian males ranked more highly (Figures 9 and 10).

Figure 8: Proportion of those 18 years or older who smoke, Australia and WA, 1977 to 2001

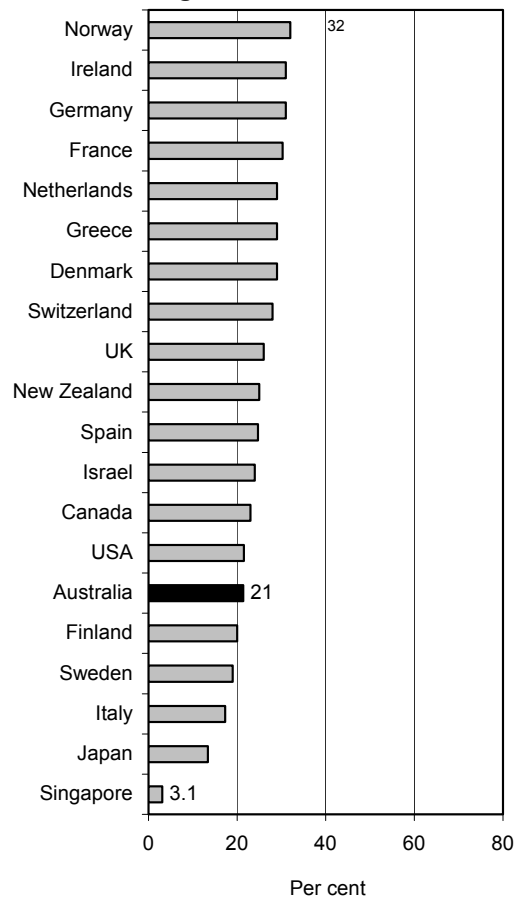


Source: Health and Wellbeing Surveillance System (2001). Department of Health, WA.  
 ABS National Health Survey (2001). ABS cat no. 4364.0. ABS, WA.  
 National and International Comparisons of Selected Health Measures for Western Australians (2000). Department of Health, WA.

Figure 9: Percentage of males who are regular smokers, 2001



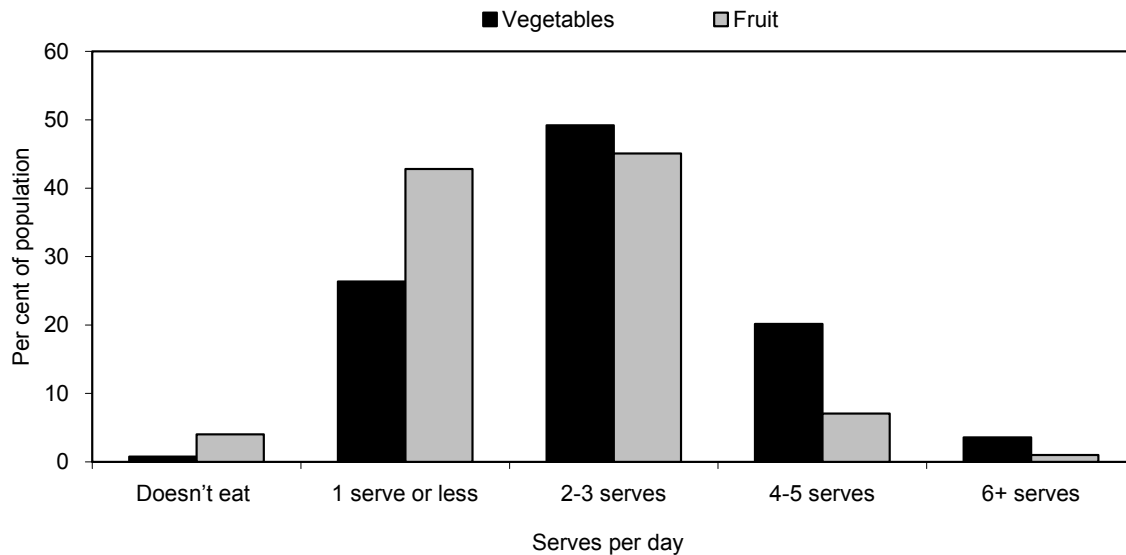
Figure 10: Percentage of females who are regular smokers, 2001



Source: OECD Health Data, 4<sup>th</sup> ed, 2002.  
 World Health Organisation Tobacco Statistics.

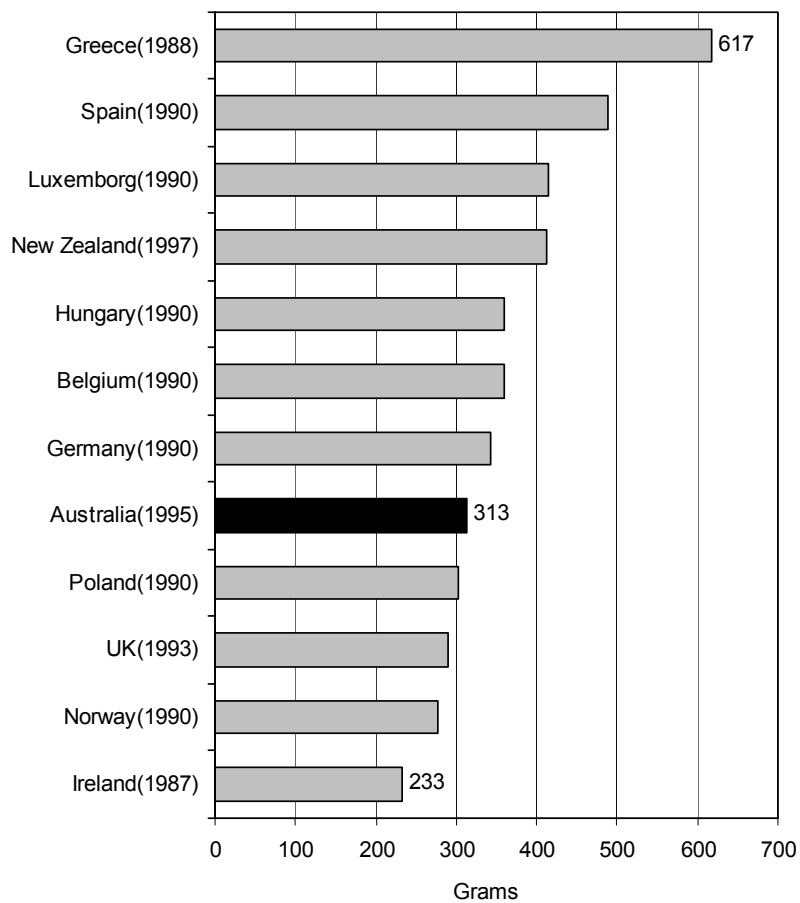
- Usual daily intake of vegetables is an indicator of food diversity. The Australian Guide to Healthy Eating (Smith et al. 1998) recommends that adolescents aged 12 to 18 years consume at least 4 serves (300 grams) and adults 5 serves (375 grams) of vegetables and legumes each day. Results from the 2001 National Health Survey suggest that approximately 11% of Australians reported a higher usual daily intake of vegetables compared to that in 1995.
- In Western Australia in 2001 between 45% and 49% of people ate two to three serves of fruit and two to three servers of vegetables daily. Fewer than 5% of people did not eat either fruit or vegetables (Figure 11).
- International comparisons of fruit and vegetable intakes are difficult due to differences in the definition of what constitutes fruit and vegetables and measurement of fruit and vegetable intakes between countries. In New Zealand, for example, the mean intake of fruit and vegetables was 412 g/day in 1997. In Australia, mean fruit and vegetable intake (excluding potatoes, mature legumes and juice) was 313 g/day in 1995 (McLennan and Podger, 1999). However, the Australian value does not include juice, which contributed almost 50 g/day to the mean vegetable and fruit intake in New Zealand in 1997 (Figure 12).

Figure 11: Proportion of persons by serves of fruit and vegetables consumed in WA, 2001



Source: Health and Wellbeing Surveillance System (2001). Department of Health, WA.

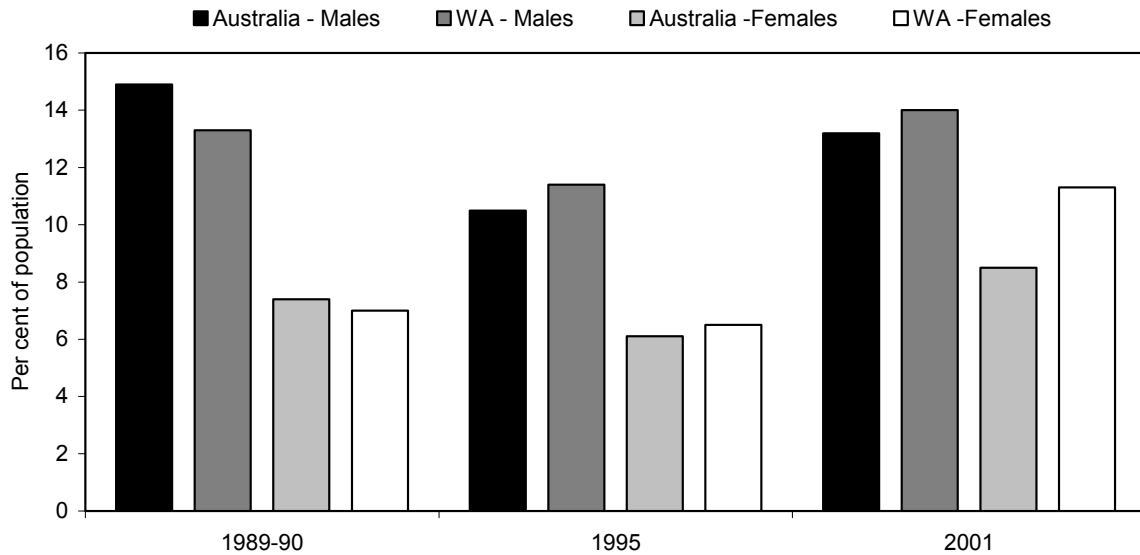
Figure 12: Grams of fruit and vegetables consumed per day per person, 1988 to 1999



Source: McLennan W, Podger A, 1999. National Nutrition Survey: Foods eaten, Australia, 1995. Ministry of Health and the University of Auckland. 2003. Nutrition and the Burden of Disease: New Zealand 1997-2011. Wellington: Ministry of Health.

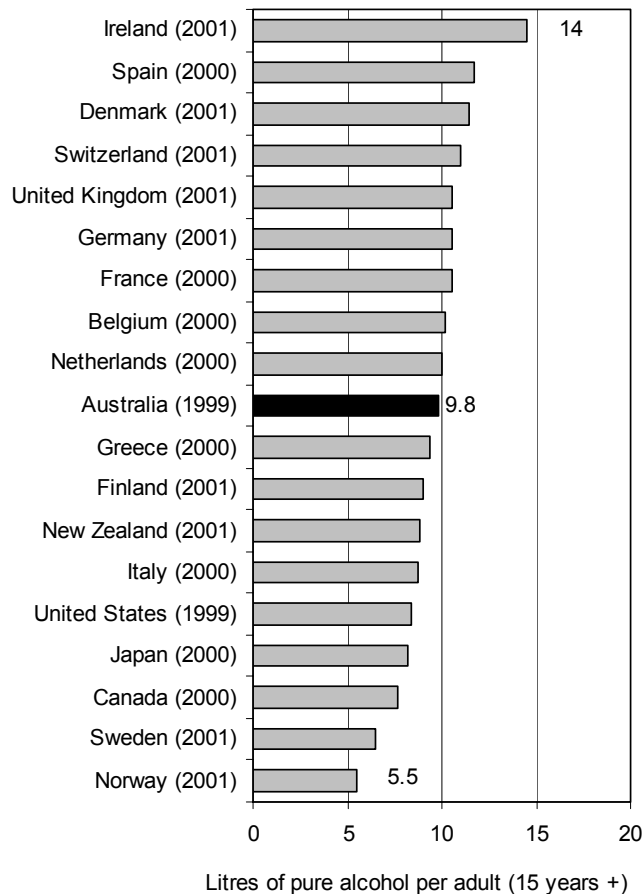
- Harmful and hazardous levels of alcohol consumption are a major cause of ill health. Several studies have associated prolonged excessive alcohol consumption with cardiovascular disease, liver disease, brain damage and some cancers. It is also responsible for acute harm such as assaults, road and other injuries, some of which result in death.
- Harmful drinking levels in Western Australian males and females were similar to that for Australian males and females in 1989/90 and 1995. However, there appears to be an upward trend in harmful drinking in both WA and Australia, with WA levels higher than the national levels in 2001 (Figure 13).
- In 2001 the National Drug Strategy Household Survey found that 25.9% of the population drank at risky or high-risk levels for short-term harm (AIHW 2001).
- Approximately 39.3% of men and 29.6% of women who are current drinkers usually consume alcohol in a hazardous or harmful manner (more than four standard drinks for men and more than two for women on average daily), that put them at short-term alcohol related harm (AIHW, 2001).
- Two thirds of women aged less than 25 years who drink alcohol reported usually consuming alcohol in a harmful way. Eighty-two per cent of men who usually consume alcohol at harmful levels do so at least weekly. Of these, 42% of men and 21% of women reported usually consuming 13 or more standard drinks when they drank alcohol (AIHW 2001).
- The per capita alcohol consumption of the Australian population was in the middle of the range for comparable countries (Figure 14).

Figure 13: Proportion of those aged over 18 years who drink alcohol in unsafe quantities, Australia and WA, 1989 to 2001



Source: ABS National Health Survey 2001. Health and Wellbeing Surveillance System (2001). Department of Health, WA.

Figure 14: Adult per capita alcohol consumption, 1999 to 2001

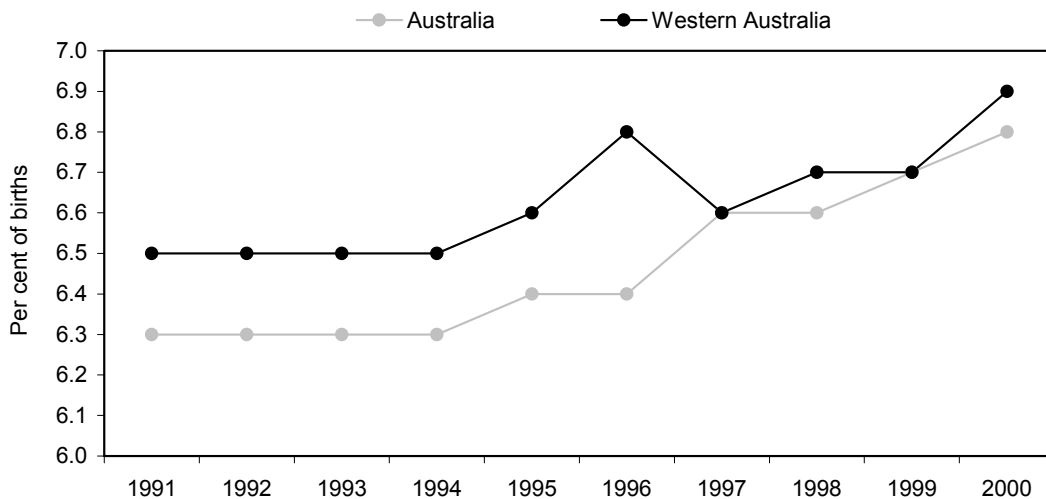


Source: OECD Health Data, 2003.

- Low birth weight is a major indicator of both the antenatal development and future disability and mortality of the birth cohort.
- The risk of a pregnancy outcome of low birth weight is increased by several factors; Pre-term babies are more likely to be underweight and pre-term delivery is increased due to: young maternal age, older maternal age, primigravida, low socio-economic status, multiple births and assisted conception. Low birth weight can also be attributed to cigarette smoking, consumption of alcohol during pregnancy and the nutritional status of the mother. In Australia, Aboriginal and Torres Strait Islanders have a higher proportion of low birth weight babies than the general population.
- From 1991 to 1994, the proportion of low birth weight babies (less than 2500 g) remained steady at 6.5% for Western Australia and 6.3% for Australia and increased to 6.9% in 2000 for Western Australia and 6.8% for Australia (Figure 15).
- Among developed countries for which birth weight data were available, between 1998 and 2001 Australia ranked equal with Germany and France, for the proportion of newborns weighing less than 2,500 g at 7%. Sweden had the lowest proportion of low birth weight babies at 4% and United Kingdom was one of the highest at 8% (Figure 16).



Figure 15: Proportion of babies weighing less than 2,500 g at birth, Australia and WA, 1991 to 2000

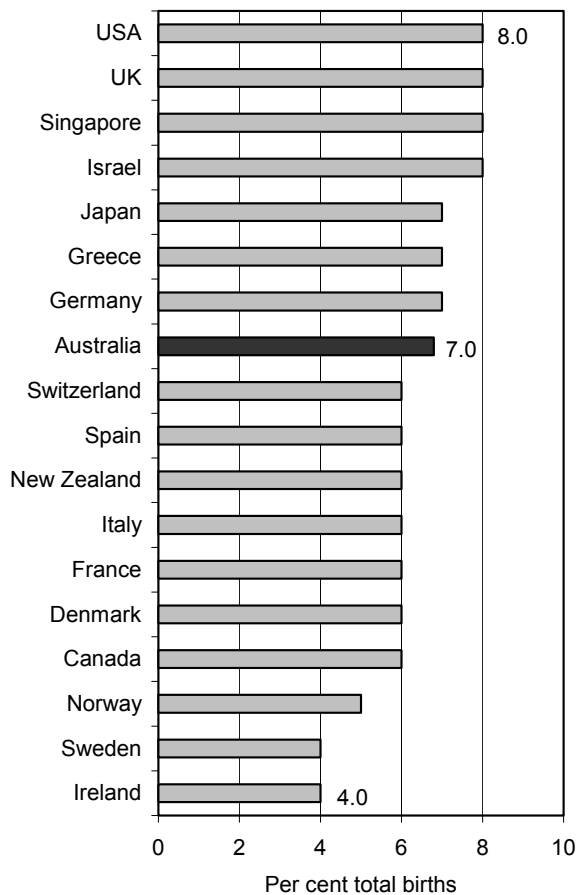


Note: Stillbirths are included in this data.

Source: WA Midwives' Notification System, Department of Health, WA.

Australian Institute of Health and Welfare 2002. Australia's health 2002. Canberra: AIHW.

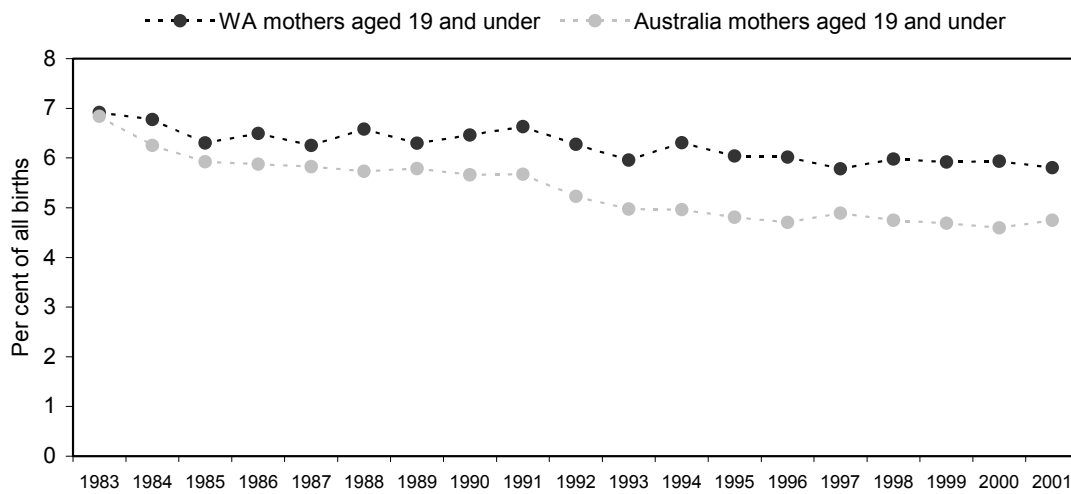
Figure 16: Proportion of low birth weight babies 1998 to 2000



Source: The United Nations Children's Fund (UNICEF), 2002. The state of the world's children 2004.

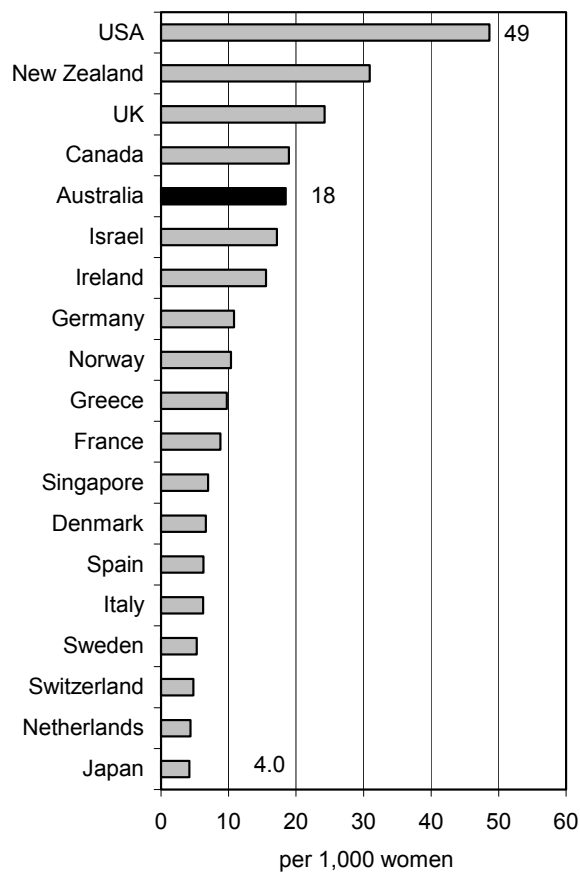
- Teenage mothers are at risk of a number of adverse social and psychological outcomes, which include; leaving school early, having no or low qualifications, being unemployed or low paid, living in poor housing, suffering from depression, experiencing social isolation, and being dependent on government income assistance (UNICEF 2001; Healy 2001).
- A child of a teenage mother is also at risk of poor psychosocial outcomes, including living in poverty, growing up without a father, becoming a victim of neglect or abuse, achieving poorly at school, becoming involved in crime, abusing drugs and alcohol, and becoming a teenage parent themselves (UNICEF 2001).
- From 1983 to 2001, the proportion of births to WA teenage mothers was higher than for Australia as a whole. Almost six percent, or 1,412 Western Australian babies were born to teenage mothers in 2001. A lower percentage (4.8) of babies (11,704) across the nation were born to teenage mothers (Figure 17).
- The rate decreased from 7% to 5.8% in WA and to 4.8% in Australia from 1983 to 2001. The rate of decrease has been slower for WA.
- Some groups of young women are more likely to have babies at a younger age than others. For example, in 2000, more than 1 in 5 (23%) Aboriginal and Torres Strait Islander mothers were teenagers. The age at first birth for Indigenous mothers was 24.7 years compared with 29.0 for all mothers (AIHW NPSU 2003). Teenage confinements are more common among Australian-born women than those born overseas (apart from women born in New Zealand) (AIHW NPSU 2003).
- The adolescent fertility rate, or, the annual number of live births per 1,000 girls aged 15-19, is estimated at 50 per 1,000 worldwide for the period 2000-2005 (UN Population Division 2000). Australia ranked fairly high for births to teenage mothers internationally, with the USA having the highest rate at 49 per 1,000 and Japan the lowest at 4 per 1,000 (Figure 18).

Figure 17: Percentage of births to teenage mothers, Australia and WA, 1983 to 2001



Source: WA birth data: Midwives' Notification System. Department of Health, WA.  
 Australian Institute of Health & Welfare, NPSU, 2003.  
 Australian Bureau of Statistics Births cat no. 3301.0, various.

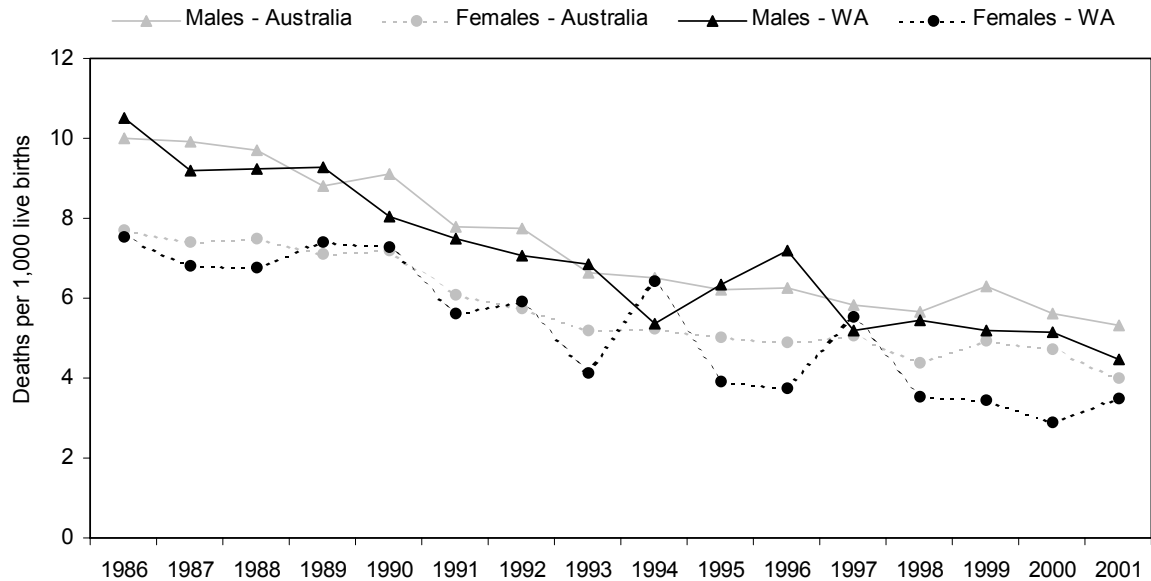
Figure 18: Estimated births to teenage mothers aged 15 to 19 years, 2000 to 2005



Source: UNICEF. Monitoring the situation of children and women

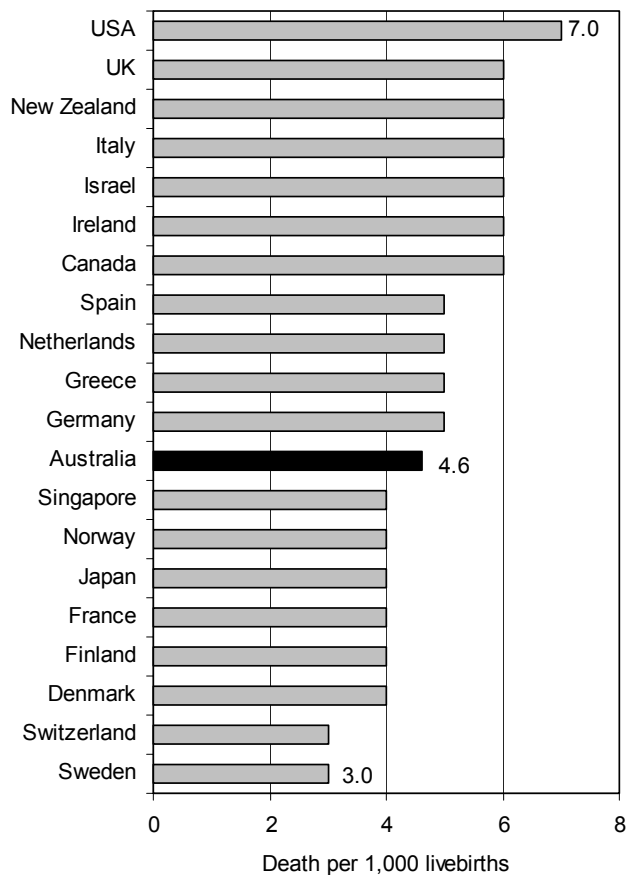
- Infant mortality rates measure deaths in children under one year old, and are used internationally as an indicator of the health and hygiene conditions prevailing in a community.
- Western Australian infant mortality rates in 2001 were lower for both males (4.5 deaths per 1,000 live births) and females (3.5 deaths per 1,000 live births) compared to Australia as a whole (5.3 and 4.0 deaths per 1,000 live births respectively). The infant mortality rates among males were generally higher than among females for the fifteen-year period of 1986 to 2001 (Figure 19).
- From 1986 to 2001, the infant mortality rate for males decreased from 10.5 per 1,000 live births to 4.5 in Western Australia and from 10 per 1,000 live births to 5.3 in Australia. Similar declines in female infant mortality rates were experienced in Western Australia (7.5 per 1,000 live births to 3.5) and Australia (7.7 per 1,000 live births to 4.0) over the same period (Figure 19).
- In 2001, Australia's infant mortality rate was slightly lower than the average of comparable developed countries. The USA had the highest rate of around seven deaths per 1,000 live births while Sweden and Switzerland had the lowest infant mortality rates of around three deaths per 1,000 live births (Figure 20).

Figure 19: Infant mortality rate per 1,000 live births, Australia and WA, 1986 to 2001



Source: Health Measures for the Population of Western Australia: Trends and comparisons (1999). HDWA, Perth. WA Midwives' Notification System, Health Information Centre, Department of Health, WA. WA Mortality Database, Epidemiology Branch, Department of Health, WA. Australian Bureau of Statistics Births cat no. 3301.0, Canberra: ABS.

Figure 20: Infant mortality per 1,000 live births, 2000



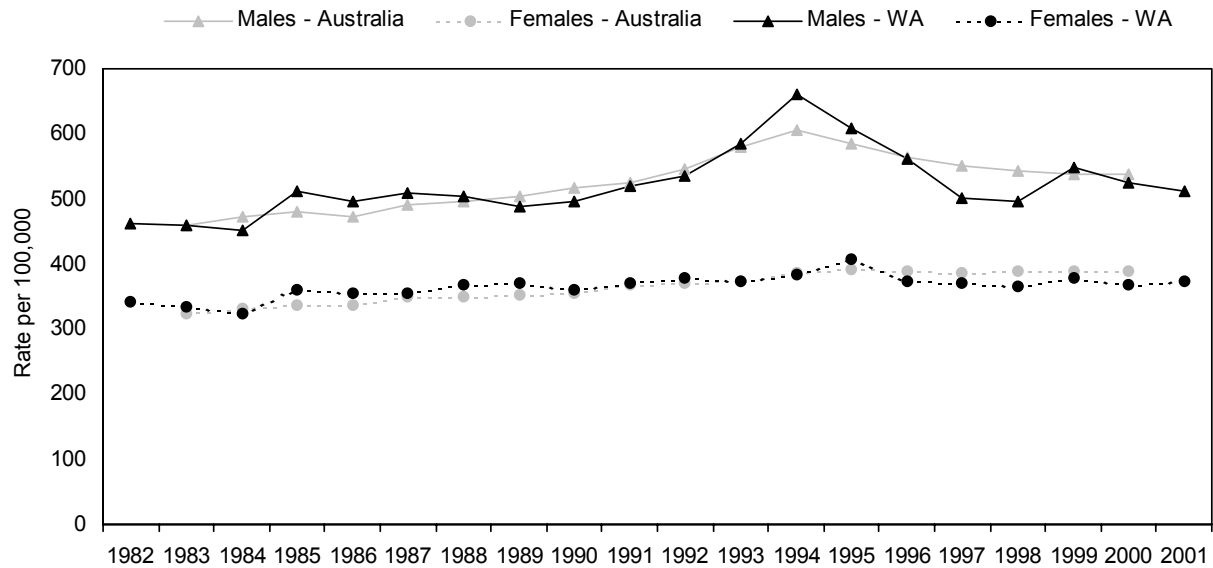
Source: Millennium Indicator: Infant mortality rate (0-1 year) per 1,000 live births (UNICEF estimates).

- There were 4,122 new cancers in males and 3,517 new cancers in females in WA in 2001.
- In males, the most common cancers after prostate cancer (of which 929 cases were diagnosed in WA in 2001) are colorectal cancer (597), malignant melanoma (485) and lung cancer (473). These four cancers accounted for 60.3% of all new male cancer cases.
- In females, breast cancer (1,081) is the most common cancer, followed by colorectal cancer, malignant melanoma, and lung cancer. Together these cancers comprised 62.6% of all new cancers in females in 2001.
- The 2000 WA age-standardised incidence for all cancers of 525 per 100,000 males and 370 per 100,000 females were lower than those of their national counterparts (males 538; females 390) (Figure 21).
- Cancer incidence increased among both males and females in the Western Australian and Australian populations. Increased screening for some cancer types and improved techniques for detection of cancers has increased the number of cancers reported.
- The Australian male age-standardised incidence rate for 2000 ranked the highest when compared to males of equivalent developed countries. Males from Greece ranked the lowest, with 225 new cases per 100,000. Australian females were second to those from New Zealand, with 303 new cases per 100,000. Females from Greece also had the lowest incidence rate of 158 new cases per 100,000 females (Figures 22 and 23).

# Cancer incidence

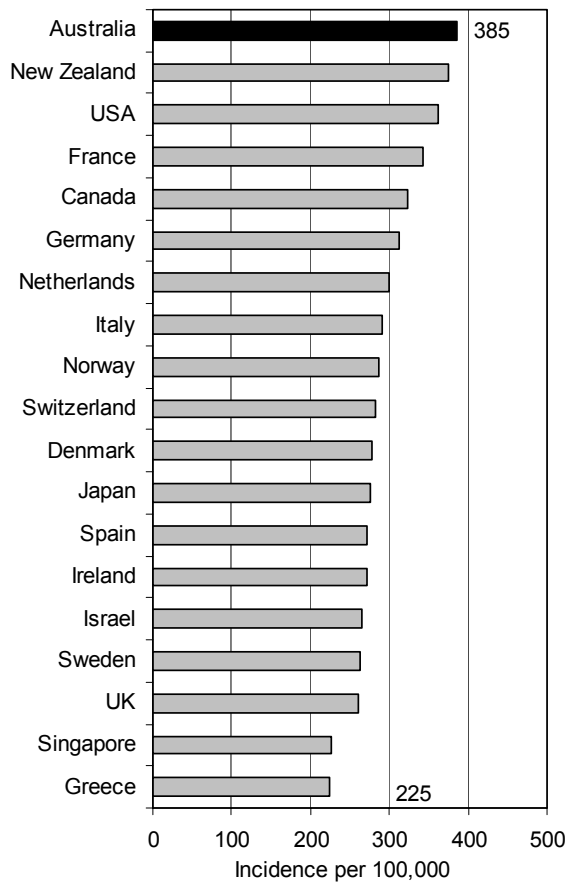
# All cancers

**Figure 21: All cancers incidence by gender, Australia and WA, 1983 to 2001**

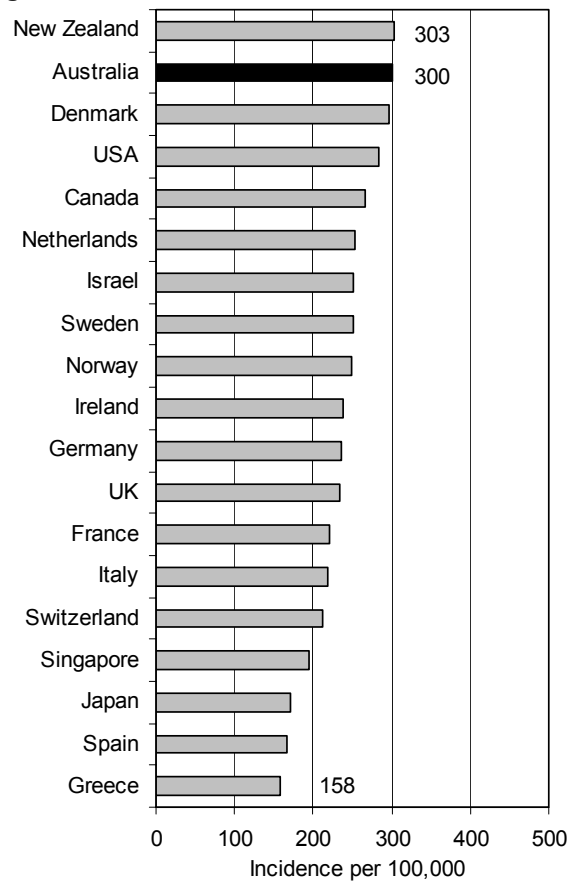


Source: WA Cancer Registry. Department of Health, WA. National Cancer Statistics Clearing House.

**Figure 22: Male cancer incidence, 2000**



**Figure 23: Female cancer incidence, 2000**



Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

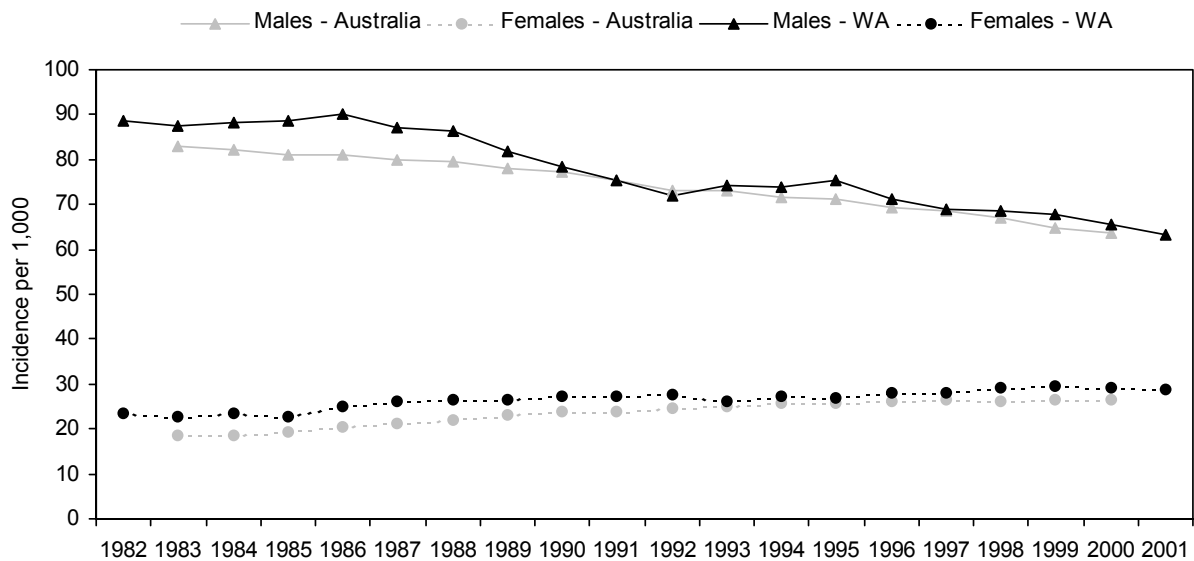
- In 2001, lung cancer was the fourth most common cancer in Western Australia after colorectal, breast and prostate cancers, comprising 11% of all new cancers in Western Australia.
- Cigarette smoking is the single most important cause of lung cancer, and is responsible for approximately 90% of new lung cancer in males and 65% in females (AIHW: Ridolfo & Stevenson, 2001). In 2001, one in 35 males and one in 69 females were affected by lung cancer before the age of 75.
- In WA in 2001 there were 473 male and 253 female new cases of lung cancer, amounting to the age-standardised rates of 63 per 100,000 males and 24 per 100,000 females. These rates are similar to the 2000 male and female national rates of 64 and 27 new cases per 100,000 respectively (Figure 24).
- The male incidence rate has decreased since 1983 from 89 per 100,000 to 66 in 2000 in WA and from 83 to 64 in Australia. However, while the male rates have decreased, the female rates have increased. In 1983 the female rate in WA was 23 per 100,000 and has increased to 29 in 2000. In Australia the female rate increased from 18 to 27 (Figure 24).
- In Australia in 2000, males ranked moderately low at 43 per 100,000 males compared to males in the Netherlands who ranked highest at 62 per 100,000 males. Male rates were lowest in Sweden at 21. Females ranked fairly high at 20 per 100,000 females and the USA ranked highest at almost 34 per 100,000. Females in Spain ranked lowest (Figure 25 and 26).



# Cancer incidence

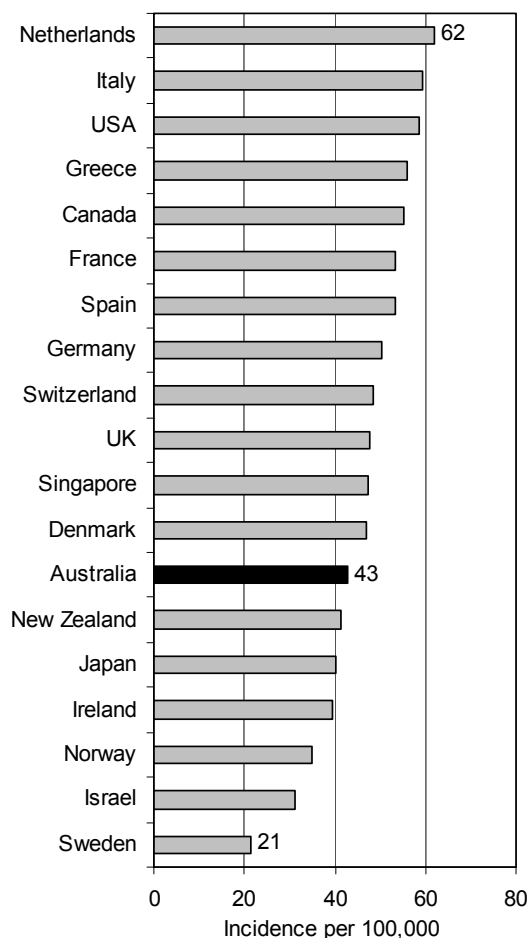
# Lung cancer

**Figure 24: Lung cancer incidence by gender, Australia and WA, 1982 to 2001**



Source: WA Cancer Registry, Department of Health, WA. National Cancer Statistics Clearing House.

**Figure 25: Male lung cancer incidence, 2000**



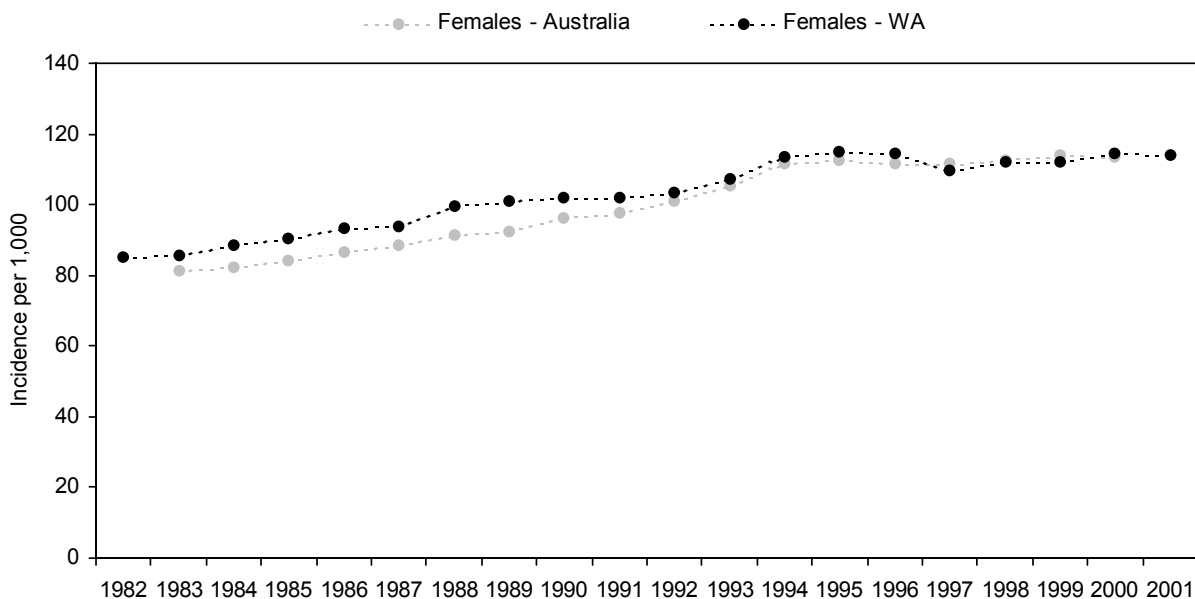
**Figure 26: Female lung cancer incidence, 2000**



Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

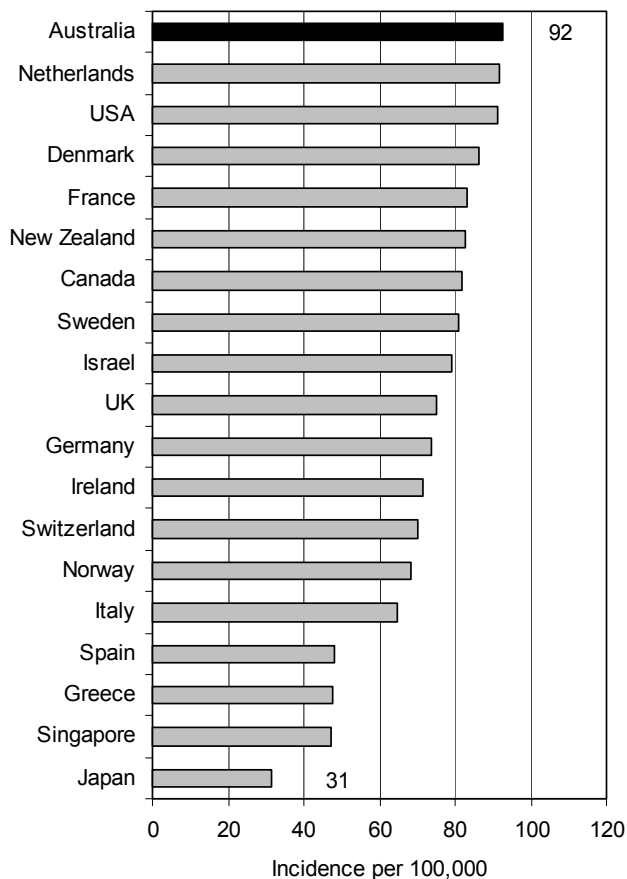
- With 1,081 new cases in WA in 2001, breast cancer was the most common cancer occurring in females that year. At current rates, one in 11 Western Australian women will be affected by breast cancer before the age of 75. Yet there is still no evident cause for breast cancer and no known means of preventing the disease. Therefore the most significant impact on morbidity and mortality may be achieved through mammography screening, as treatment is known to be most effective in early stage disease.
- The Western Australian age-standardised incidence for 2001 was 114 new cases per 100,000 females, which was similar to the Australian age-standardised incidence of 113 new cases per 100,000 females in 2000 (Figure 29).
- The rises in WA and Australian incidence rates over time are statistically significant (Figure 27), but do not necessarily reflect increased occurrence of the disease alone. Increased screening participation rates and a change in the definition of small invasive cancers (from less than or equal to 10mm in diameter to less than or equal to 15mm in diameter) are other contributing factors.
- Australian females ranked highest (92 per 100,000 females) compared to equivalent developed countries. Females from Japan ranked the lowest, with 31 new cases per 100,000 females (Figure 28).

Figure 27: Female breast cancer incidence, Australia and WA, 1983 to 2001



Source: WA Cancer Registry, Department of Health, WA. National Cancer Statistics Clearing House.

Figure 28: Female breast cancer incidence, 2000



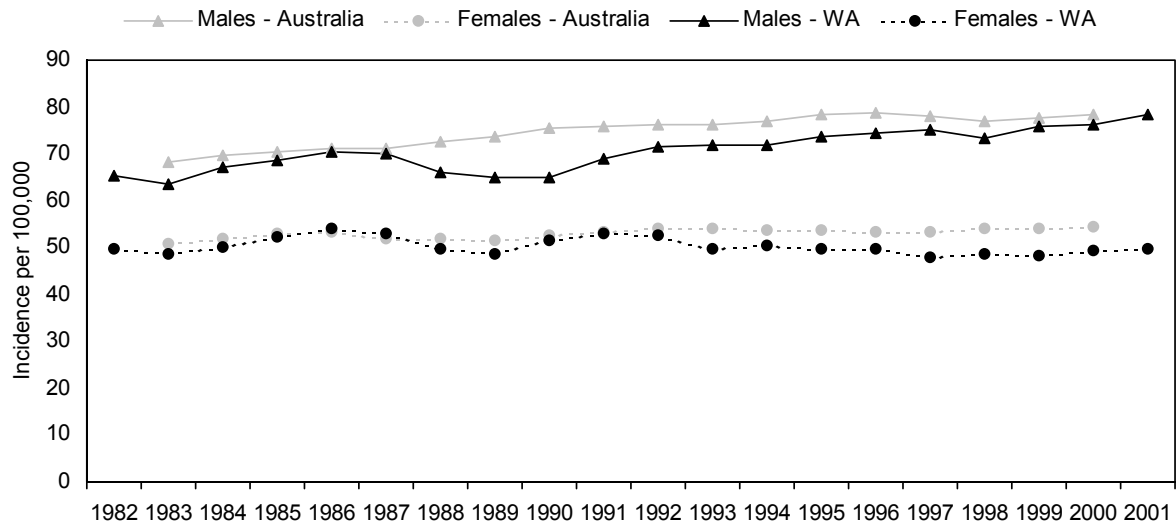
Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

- Colorectal cancer is a major health problem in Western Australia. In 2001, one in 17 males and one in 25 females in WA were affected by colorectal cancer before the age of 75. Yet it is a potentially preventable cancer: an adequate vegetable intake has a protective effect on colorectal cancer while high intakes of red and processed meat increase the risk of the disease (Marks, et al 2001).
- In 2001, there were 597 new male and 482 new female cases of colorectal cancer, affecting 78 per 100,000 males and 50 per 100,000 females in the state. The incidence among WA males and females was lower than those of their national counterparts in 2000.
- The increases in age-standardised incidence for both WA and Australian males and Australian females were statistically significant. The incidence for WA males and females have in the main remained below those of the nation (Figure 29).
- Against comparable developed countries, Australian males ranked the highest, while Australian females ranked the second highest next to New Zealand (43 new cases per 100,000). The country with the lowest incidence was Greece (17 new male cases and 13 new female cases per 100,000) (Figures 30 and 31).

# Cancer incidence

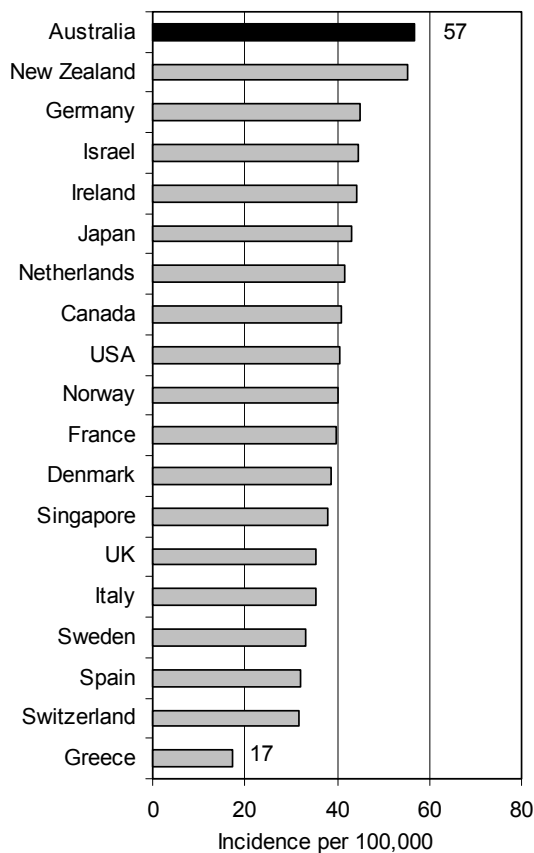
# Colorectal cancer

**Figure 29: Colorectal cancer incidence, Australia and WA, 1983 to 2001**

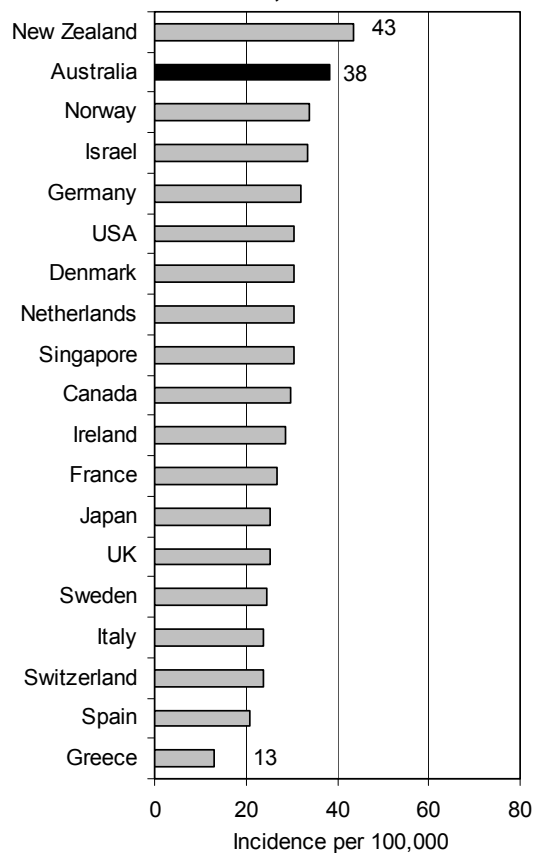


Source: WA Cancer Registry, Department of Health, WA. National Cancer Statistics Clearing House.

**Figure 30: Male colorectal cancer incidence, 2000**



**Figure 31: Female colorectal cancer incidence, 2000**



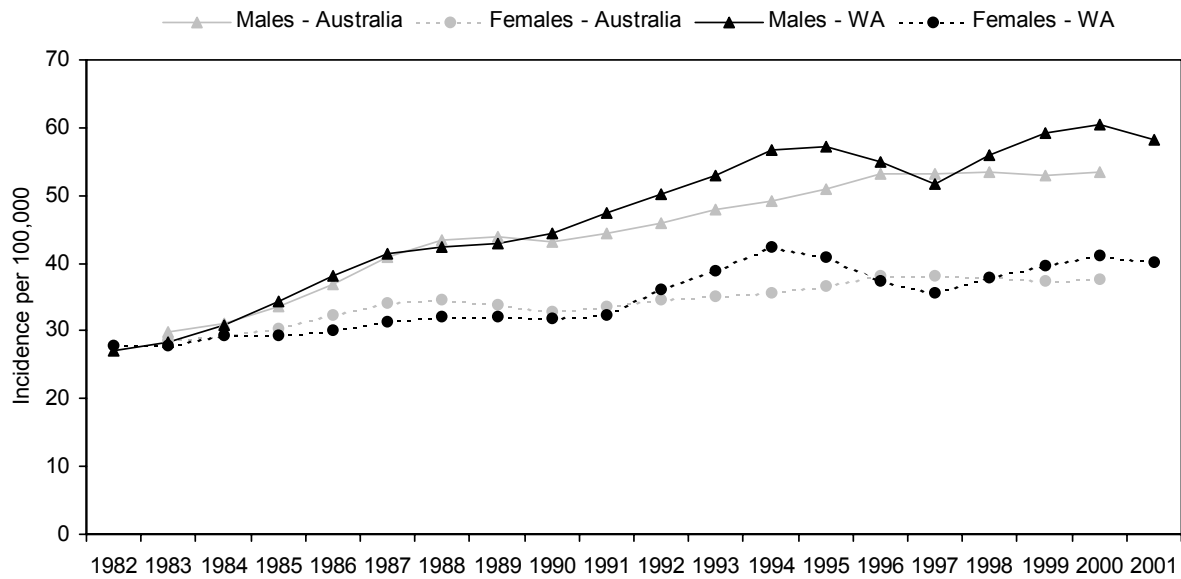
Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

- Malignant melanoma is the fifth most commonly occurring cancer in Western Australia. The main risk factor for malignant melanoma is sun exposure, and the disease occurs more commonly in people with many atypical moles or dysplastic naevi, fair hair, skin and freckles, and a family history of melanoma.
- In 2001 in WA, one in 31 males and one in 40 females were affected by malignant melanoma before the age of 75. In 2001, malignant melanoma was responsible for 869 or over 11% of all new cancer cases; of these, 485 were male and 384 were female. Standardising for age, malignant melanoma affected 58 males and 40 females per 100,000. The incidence among WA males and females was higher than the national rates in 2000 (Figure 32).
- Male incidence has been higher than female incidence in both WA and Australia, and throughout the time period shown, the incidence for both WA and Australian males and females has increased significantly (Figure 32).
- Australian incidence of malignant melanoma was among the highest in the world. Compared to equivalent developed countries, Australian males ranked the highest, with females the second highest next to New Zealand (35 females per 100,000). Japan had the lowest incidence rates of 0.4 males and 0.2 females per 100,000 (Figures 33 and 34).

# Cancer incidence

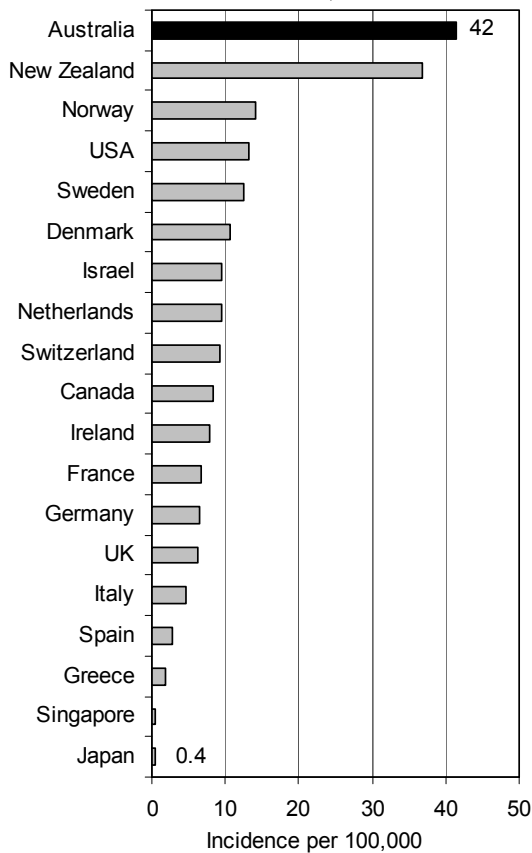
# Malignant melanoma

**Figure 32: Malignant melanoma incidence, Australia and WA, 1983 to 2001**

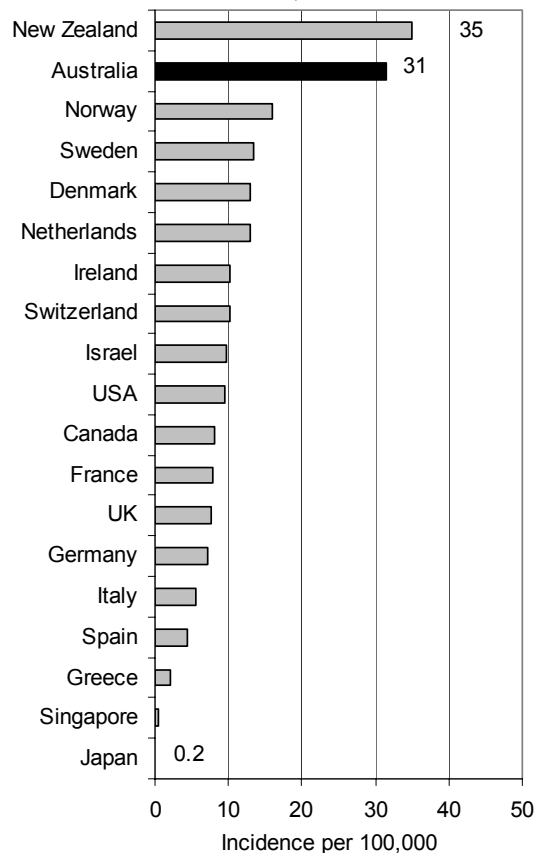


Source: WA Cancer Registry, Department of Health, WA. National Cancer Statistics Clearing House.

**Figure 33: Male malignant melanoma incidence, 2000**



**Figure 34: Female malignant melanoma incidence, 2000**



Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

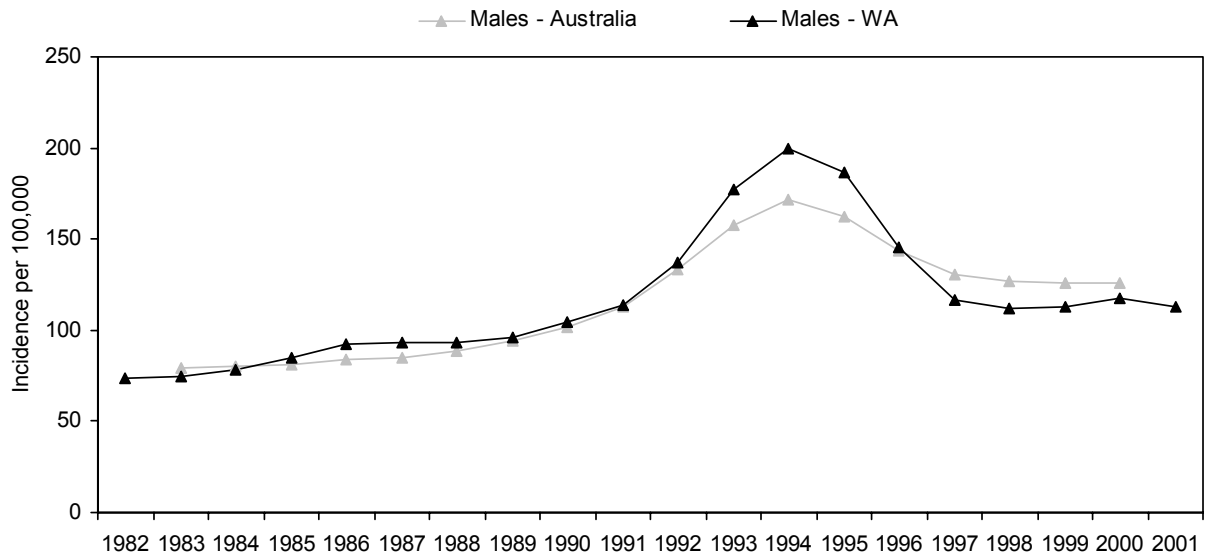
## Cancer incidence

## Prostate cancer

- Prostate cancer was the most common cancer in Western Australian males in 2001. There were 929 cases diagnosed in the state, and 10,512 new cases in Australia during 2001.
- Prostate cancer incidence increases exponentially with age (Ellison, 1998), in 2001, almost 80% of prostate cancer cases occurred in males aged 60 years or more. Other risk factors include a diet high in saturated fat, physical inactivity, a family history of prostate cancer and smoking.
- In 2001, one in 11 Western Australian males was directly affected by the disease before the age of 75. The WA age-standardised incidence of 117 males per 100,000 was lower than the national rate of 125 males per 100,000 in 2000.
- The age-standardised incidence for both WA and Australia peaked in 1994 due mainly to increased investigation using prostate-specific antigen testing in the early 1990s (AIHW, 2002). In the early 1990s the age-adjusted incidence for Western Australia was higher than the equivalent national rate, but from 1997 to 2000 it was lower (Figure 35).
- Australian males ranked third highest when compared to their international counterparts (Figure 36). Males from the United States had the highest age adjusted incidence of 104 new cases per 100,000 while those from Japan had the lowest (11 new cases per 100,000).

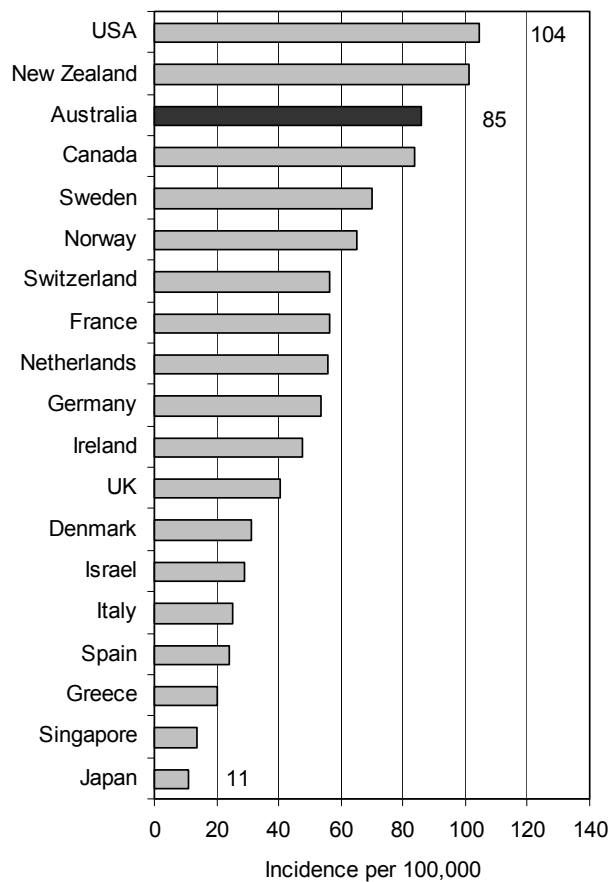


Figure 35: Prostate cancer incidence, Australia and WA, 1983 to 2001



Source: WA Cancer Registry, Department of Health, WA. National Cancer Statistics Clearing House.

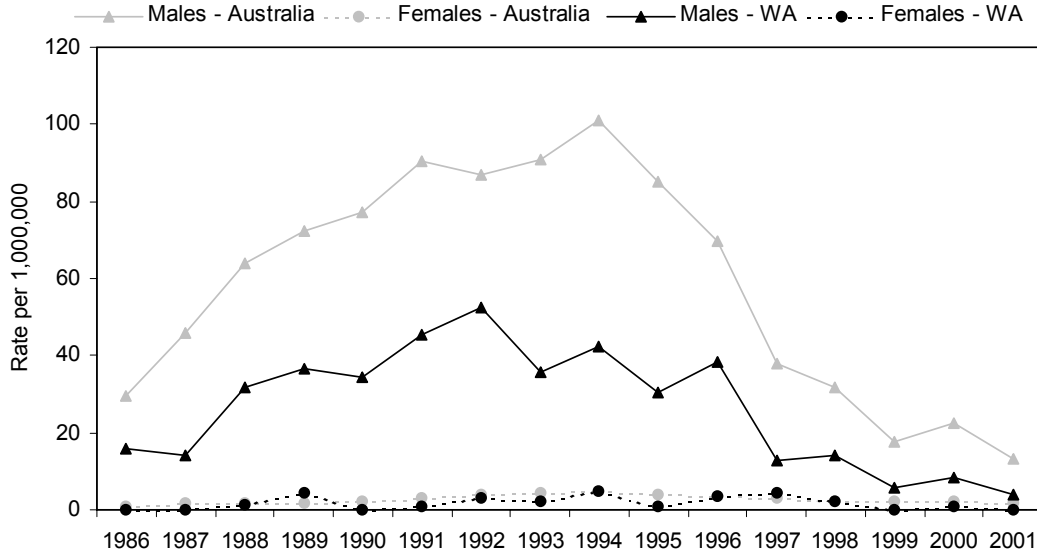
Figure 36: Prostate cancer incidence, 2000



Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

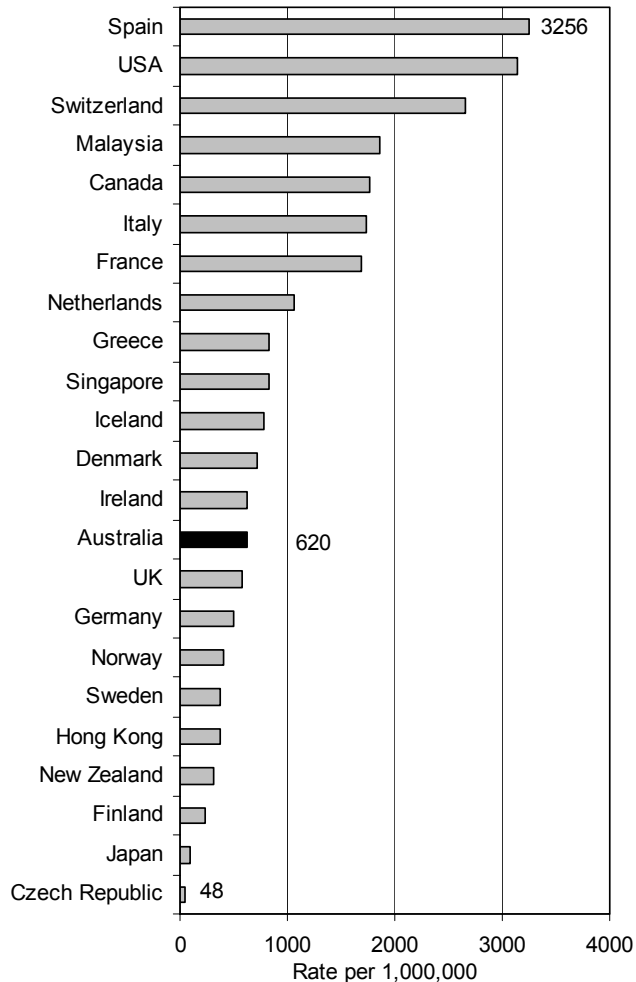
- The Human Immunodeficiency Virus (HIV) is the virus that can lead to Acquired Immune Deficiency Syndrome (AIDS). Over time HIV can damage the immune system to a point where the sufferer gets easily infected by disease or cancers. At this stage of HIV infection, a person is said to have AIDS.
- Transmission of the HIV virus in Australia continues primarily through sexual contact between men. Needle sharing for injection of illegal drugs is another, but less common means of spreading the virus.
- The annual number of AIDS diagnosis in Australia, after adjustment for reporting delay, peaked in Western Australia in 1992 with 46 AIDS diagnoses and in Australia in 1994 with 950. Since the mid-1990s, however, the number of diagnoses across the State and nation has declined rapidly. The decrease in the number of AIDS diagnoses is largely due to the use of effective combination antiretroviral therapy, including protease inhibitors, for the treatment of HIV infection.
- In Western Australia in 2001, there were no notifications among females. The age-standardised rate for AIDS notifications was 4.1 per 1,000,000 for males. The Australian rates were 13.2 and 1.7 per 1,000,000 for males and females respectively (Figure 37).
- Cumulative AIDS prevalence is the total number of AIDS cases reported to date divided by the current estimate of the mid-year population. The cumulative prevalence of AIDS in Australia to 2001 was 620 cases per million in comparison to 3256 cases per million in Spain and 48 per million in the Czech Republic. Australia was ranked near the middle of comparable developed countries for cumulative AIDS prevalence to 2001 (Figure 38).

**Figure 37: Crude notification rates of AIDS (per million) by gender, Australia and WA, 1990 to 2001**



Source: National Centre in HIV Epidemiology and Clinical Research. Annual Surveillance Report, 2003.

**Figure 38: Cumulative HIV/AIDS prevalence rate per million, 2001**



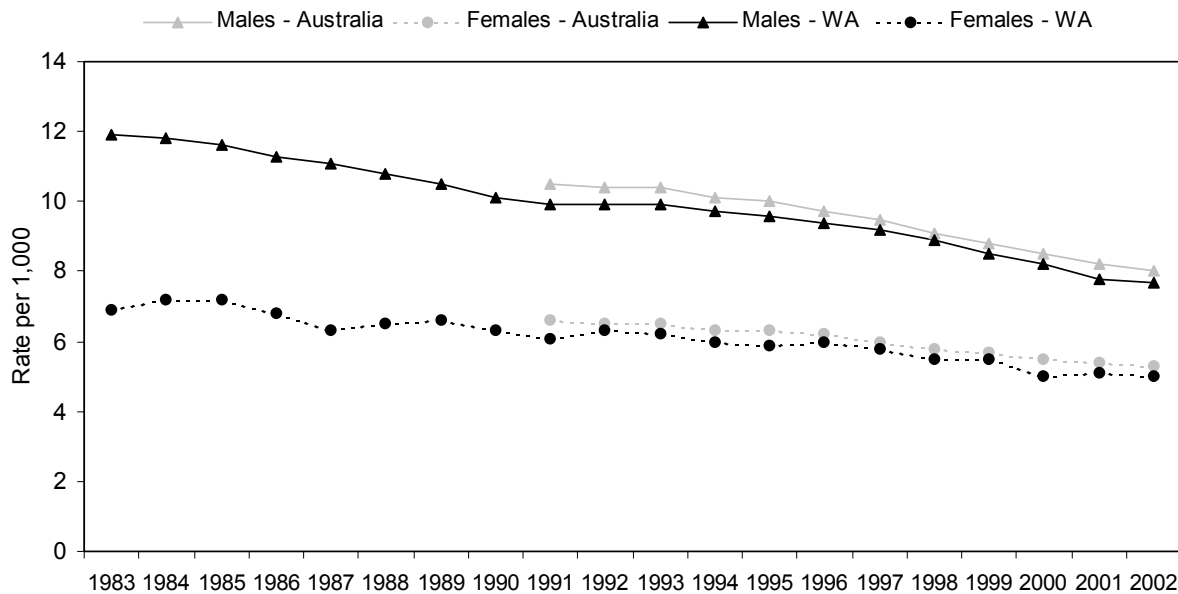
Source: UNAIDS: <http://www.unaids.org/html/pub/Global>.

- All-cause mortality is used to mirror the overall health of the population. While not reflecting disease severity or quality of life, all-cause mortality, like life expectancy, provides insight into the effects of long-term changes in social, economic and environmental circumstances and health care provision.
- In 2002, there were 10,792 deaths in Western Australia, consisting of 5,551 male deaths (7.7 deaths per 1,000 males) and 5,241 female deaths (5.0 deaths per 1,000 females). These death rates were lower than the national rates of 8.0 deaths per 1,000 males and 5.3 deaths per 1,000 females. Death rates for both WA and Australian males and females have exhibited statistically significant downward trends over time (Figure 39).
- WA and Australian females have enjoyed lower mortality rates than males, although the differentials between males and females have decreased over time. This is largely due to decreasing male mortality from cardiovascular disease and injury, and increasing female lung cancer mortality. In 1983 the female mortality rate was 5.0 per 1,000 less than males, but has decreased to 2.7 per 1,000 in 2002 (Figure 39).
- Australia ranked well against its international counterparts. Australian males and females had the second lowest mortality rates, surpassed only by Japanese males and females. Ireland had the highest mortality rates for males and females (786 deaths per 100,000 males; 519 deaths per 100,000 females) (Figures 40 and 41).

# Mortality

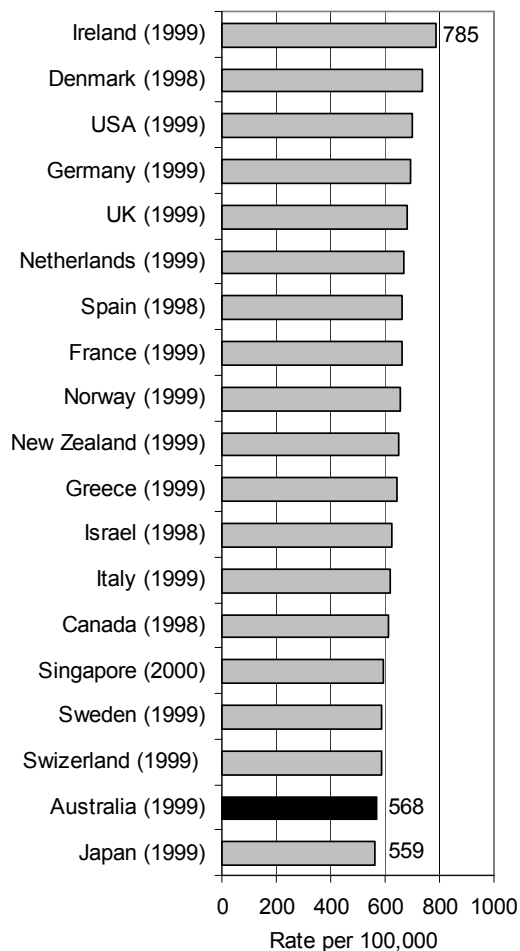
# All causes

**Figure 39: Age-standardised all-cause death rate by gender, Australia and WA, 1983 to 2002**

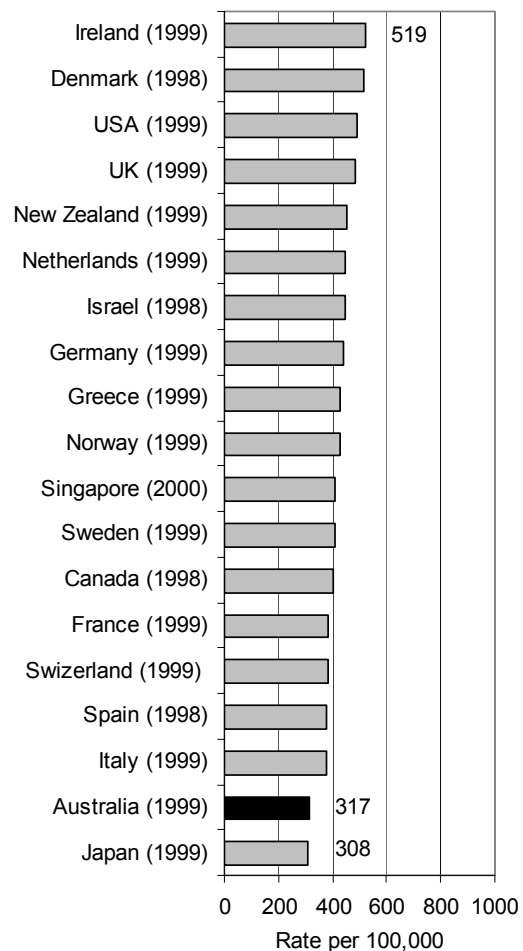


Source: Mortality Database, Department of Health, WA.

**Figure 40: Age-standardised male all-cause death rate, 1998 to 2000**



**Figure 41: Age-standardised female all-cause death rate, 1998 to 2000**



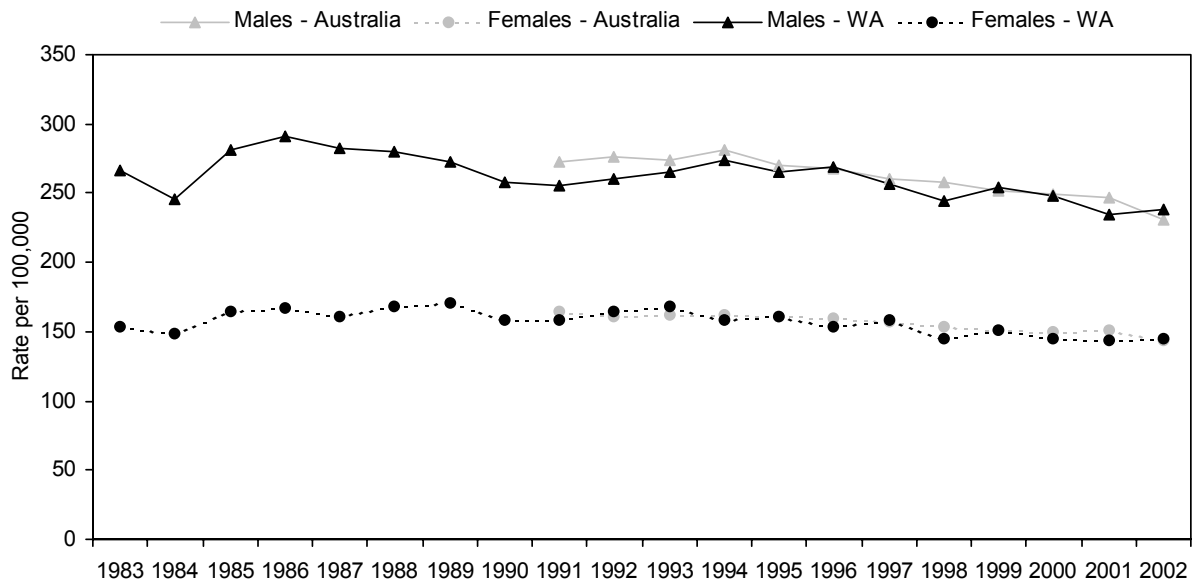
Source: World Health Organisation Mortality Database, 2003.

- Grouping diseases by ICD-10 chapters, cancer was the second leading cause of death in Western Australia in 2002, resulting in 33.6% of all male deaths and 26.9% of all female deaths in the State. The major types of cancer resulting in death among males were lung, colorectal and prostate cancers, and for females were breast, lung and colorectal cancers.
- In 2002 Western Australian mortality rates for all cancers were 239 deaths per 100,000 males and 144 deaths per 100,000 females. The male rates were marginally higher than the equivalent Australian rate, whereas the WA female rate was similar (males: 231, females: 144). Between 1983 and 2002 male age-adjusted rates for Western Australia were generally below that of their national counterparts, while Western Australian and Australian female age adjusted rates were similar (Figure 42).
- Cancer mortality rates have significantly declined among both males and females in the Western Australian and Australian population (Figure 42).
- In 2001, the Australian male cancer death rate was lower than many comparable developed countries, with the Australian females death rate ranking comparatively higher than males. Israeli males had the lowest cancer mortality rate at 135 deaths per 100,000 population, while French males had the highest (202 deaths per 100,000 population). At 82 deaths per 100,000 population, Greek females ranked the lowest; and females from Denmark had the highest cancer mortality rate at 144 deaths per 100,000 (Figures 43 and 44).
- Differences in cancer coding, completeness of mortality data, environmental factors, lifestyle behaviours and genetic predispositions to cancer may account for differences in cancer death rates between countries.

# Mortality

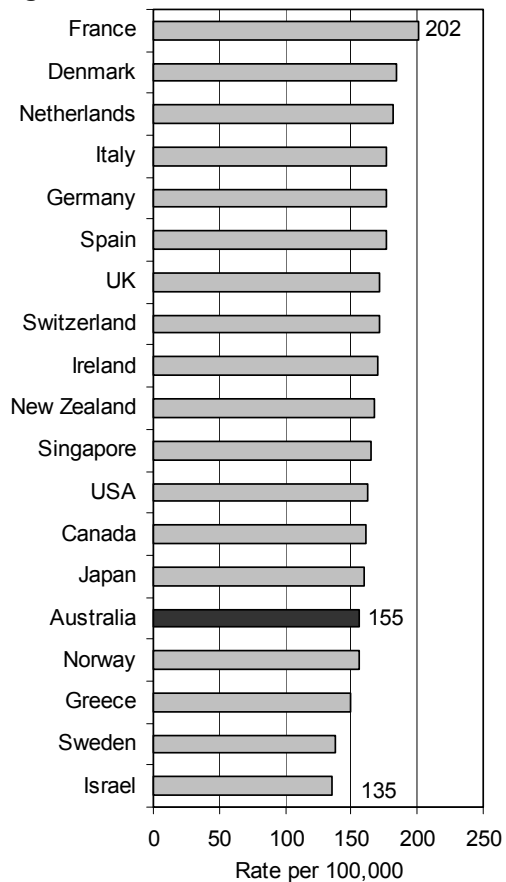
# All cancers

**Figure 42: Age-standardised cancer deaths by gender, Australia and WA, 1983 to 2002**

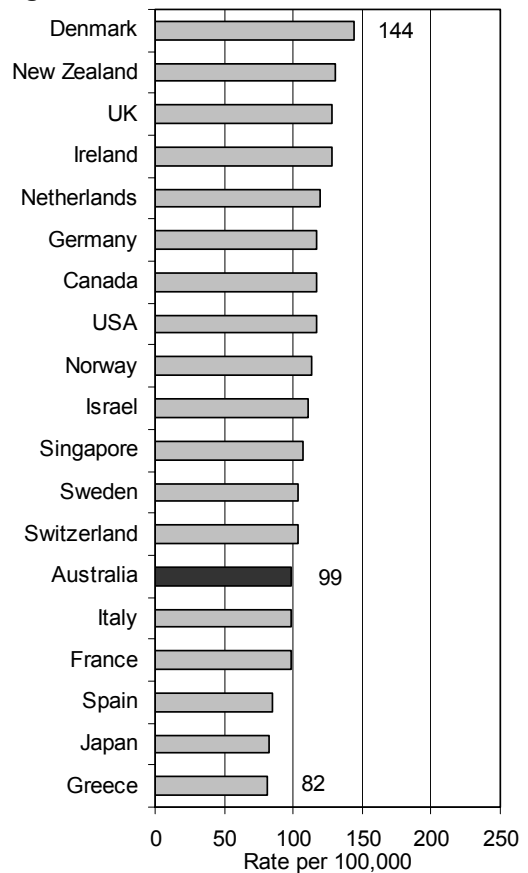


Source: WA Cancer Registry, Department of Health, WA. Mortality Database, Department of Health, WA.

**Figure 43: Male cancer deaths, 2000**



**Figure 44: Female cancer deaths, 2000**



Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

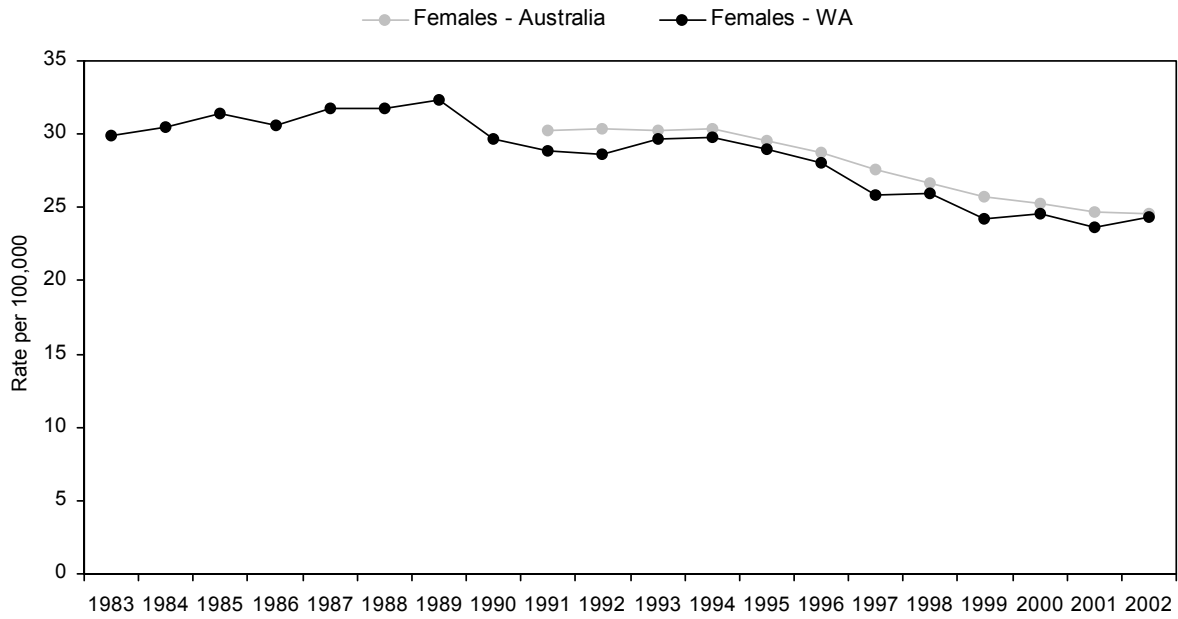
- Breast cancer in females is a significant public health issue. There is still no evident cause for breast cancer and no means of preventing the disease. Certain risk factors have been identified, but only account for one-third of breast cancers. Women who have a genetic predisposition to the disease, those who have never had children, those whose first term pregnancy occurred later in life, those with a history of benign breast disease, and those who have had high exposure to ionising radiation are at higher risk of acquiring this form of cancer (AIHW, 2001).
- Breast cancer was the leading cause of female cancer deaths in Western Australia in 2002, causing 16.4% of all female cancer deaths in the State.
- In 2001, one in 10.6 Western Australian women developed the disease before reaching age 75. There were 232 female breast cancer deaths in the State in 2002, and after adjusting for age, there were 24 deaths per 100,000 women. This was similar to the 2002 Australian rate of 25 deaths per 100,000 women (Figure 45).
- Both Western Australian and Australian female breast cancer mortality rates have significantly declined over the period 1983 to 2002, with the Australian rate of decline slightly greater. In the main, the Western Australian death rates have been lower than those of the nation. The average annual decline since 1983 in WA is significant at 1.6% (Figure 45).
- In 2000, the Australian female breast cancer death rate was lower than the majority of comparable developed countries. At 7.7 deaths per 100,000 women, Japan had the lowest mortality rate, while Denmark had the highest mortality rate at 29 deaths per 100,000 women (Figure 46).



# Mortality

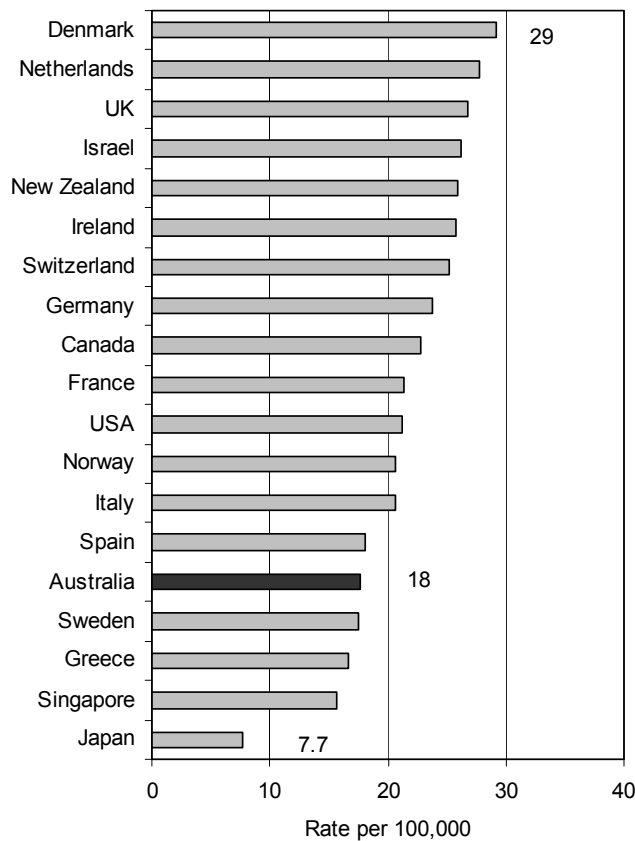
# Female breast cancer

**Figure 45: Age-standardised female breast cancer death rates, Australia and WA, 1983 to 2002**



Source: WA Cancer Registry, Department of Health, WA.  
Mortality Database, Department of Health, WA.

**Figure 46: Age-standardised female breast cancer deaths, 2000**



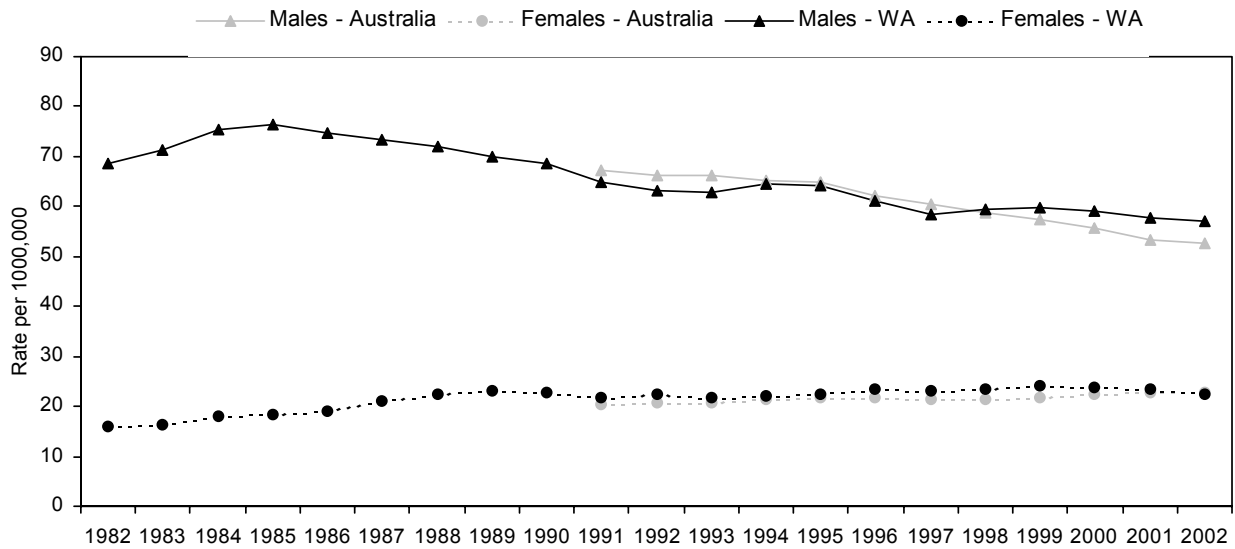
Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

- Lung cancer was the most commonly diagnosed cancer in Western Australia in 2001 and occurs in parts of the lung or the trachea. Lung cancer was the leading cause of male cancer deaths in Western Australia in 2002, causing 24.9% of all male cancer deaths, and the second leading cause of female cancer deaths at 15.7%.
- In 2002 the lung cancer death rate among Western Australian males was 57 per 100,000, marginally higher than the rate among Australian males (53). Females in Western Australia (22 per 100,000) and Australia (23) had similar lung cancer death rates in 2002 (Figure 49).
- The male age-standardised rates for Western Australia were generally below that of Australian male age-standardised rates before 1998, but were marginally higher after that year. However, Western Australian female age-standardised rates were generally higher than their Australian counterparts over the same period (Figure 47).
- While the Western Australian and Australian male age-standardised rates have declined over time, there has been an increasing trend for Western Australian and Australian females (Figure 47).
- In 2000, the Australian male lung cancer death rate was lower than the majority of comparable developed countries, while the Australian female lung cancer death rate ranked more highly when compared to the same countries (Figures 48 and 49). Swedish males had the lowest mortality rate of 23 deaths per 100,000 while males from the Netherlands had the highest (60 deaths per 100,000). Spanish females had the lowest mortality rate of 4.2 deaths per 100,000 and females from the United States had the highest (27 deaths per 100,000 population).

# Mortality

# Lung cancer

**Figure 47: Age-standardised lung cancer deaths by gender, Australia and WA, 1983 to 2002**

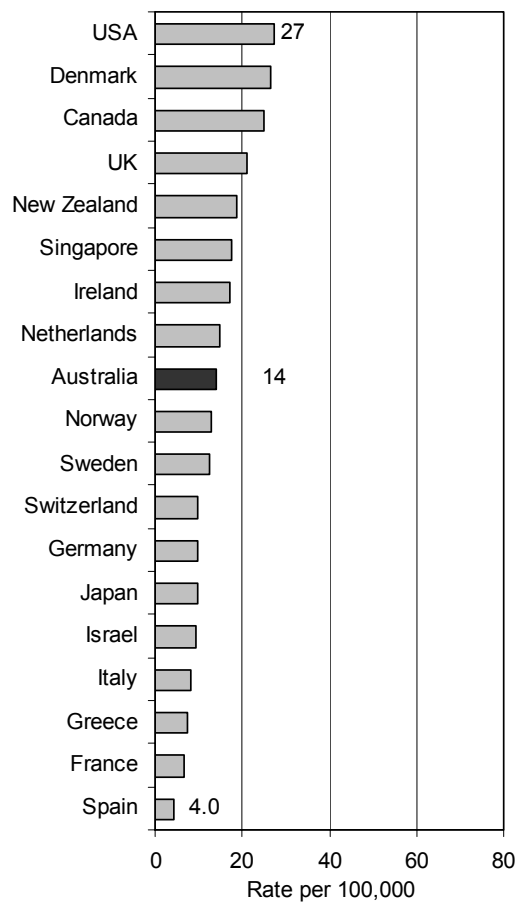


Source: WA Cancer Registry, Department of Health, WA. Mortality Database, Department of Health, WA.

**Figure 48: Male lung cancer deaths, 2000**



**Figure 49: Female lung cancer deaths, 2000**



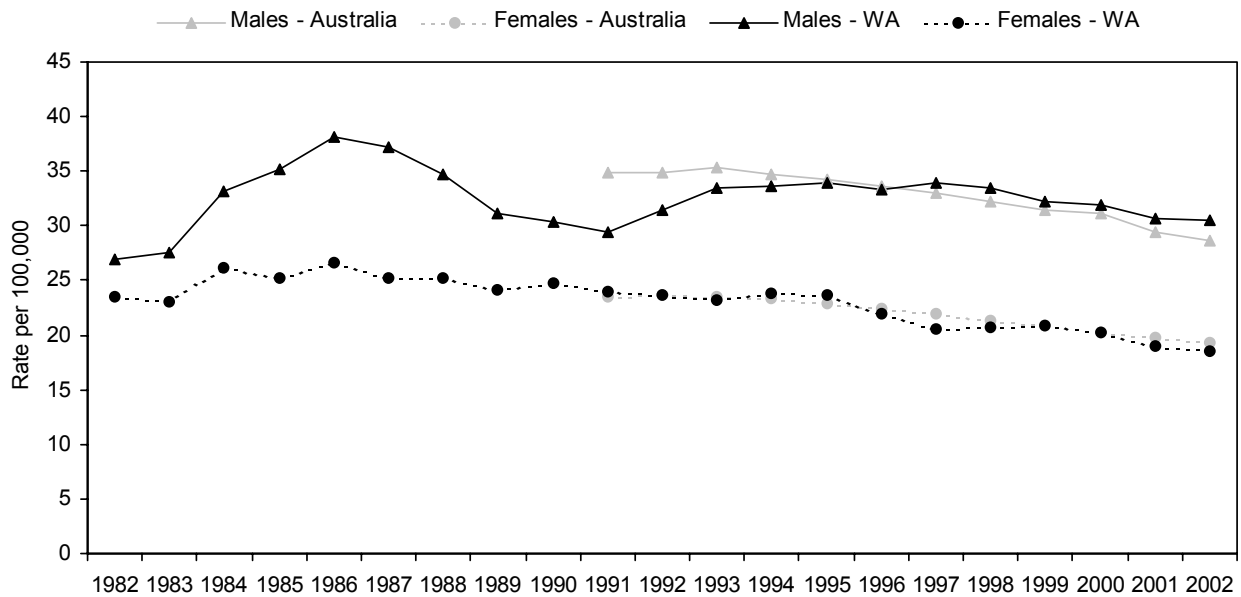
Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

- Colorectal cancer is one of the most potentially preventable cancers in both men and women. While some colorectal cancers are hereditary, the main risk factor for the disease is a high fat, high meat, and low fibre diet.
- Despite being largely preventable, colorectal cancer was the second leading cause of cancer deaths in Western Australia in 2002, causing 12.1% of all male cancer deaths, and 12.6% of all female cancer deaths.
- In 2002, the age-standardised mortality rate for Western Australian males (30 deaths per 100,000 population) and females (19) was similar to that of their national counterparts (males: 29, females: 19). Mortality rates have generally decreased for Western Australian and Australian males and females over time (Figure 50).
- The overall decrease in mortality rates thus far have been due to identifying families with adenomatous polyposis of the colon, improvements in diet, early diagnosis from faecal occult blood tests, colonoscopy and improved clinical management (AIHW, 2002).
- Australian male mortality ranked above the middle of comparable developed countries and Australian females ranked only slightly lower (Figures 51 and 52). While Australian mortality rates were not as high as New Zealand (males 26, females 20 deaths per 100,000 population) they were higher than that of Greece, which ranked the lowest (males 8.4, females 6.8 deaths per 100,000 population).

# Mortality

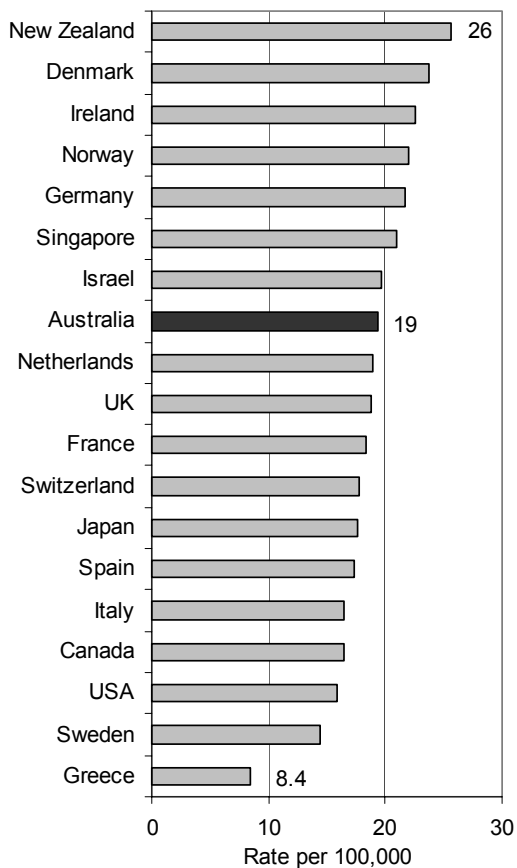
# Colorectal cancer

**Figure 50: Age-standardised colorectal cancer deaths, Australia and WA, 1983 to 2002**

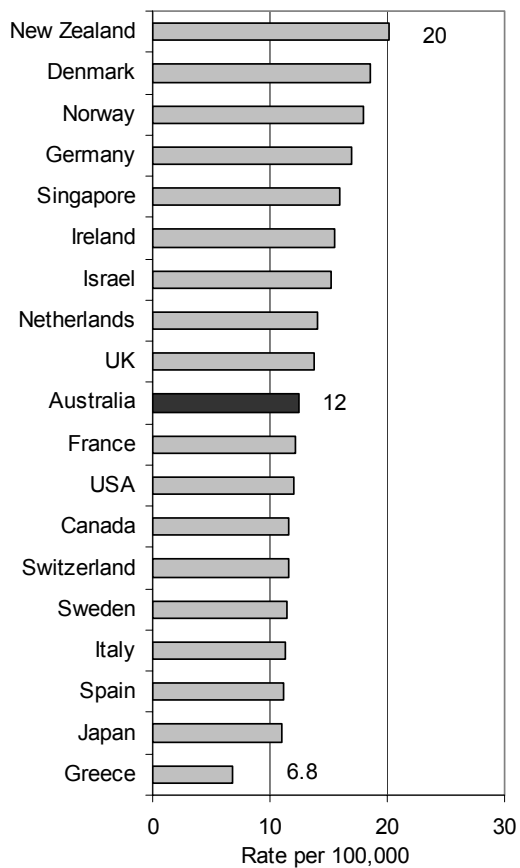


Source: WA Cancer Registry, Department of Health, WA. Mortality Database, Department of Health, WA.

**Figure 51: Male colorectal cancer deaths, 2000**



**Figure 52: Female colorectal cancer deaths, 2000**



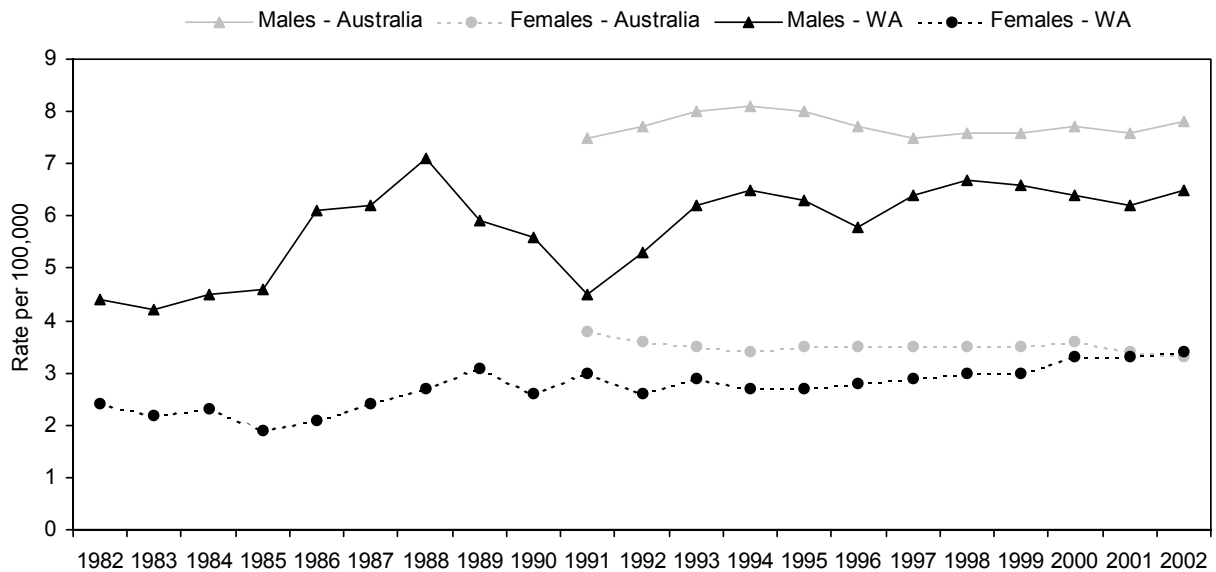
Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. Lyon, IARC Press, 2001.

- Malignant melanoma is the most common type of skin cancer. People who are more likely to develop melanoma include those who have had unprotected exposure to the sun in the first fifteen years of life (this more than doubles the chance of getting skin cancer later in life), spend a lot of time in the sun, have many moles, skin which burns easily and doesn't tan, and have a family history of melanoma.
- In 2002, malignant melanoma was the ninth most common cause of cancer deaths in Western Australia, causing 55 male deaths and 27 female deaths. After adjusting for age, there were 6.5 per 100,000 male deaths and 3.4 per 100,000 female deaths due to melanoma in 2002. The Western Australian male mortality rate was lower than that of the nation (7.8 per 100,000) while the State's female mortality rate was similar to the National female rate (3.3 per 100,000) (Figure 53).
- While male mortality rates were higher than female rates throughout the period 1983 to 2002, the female rate increased whereas the male rate remained unchanged in Western Australia. From 1991 to 2002, both the male and female rates in Australia remained unchanged (Figure 53).
- In comparison to other developed countries, Australian males ranked the highest for melanoma deaths, just above the New Zealand mortality rate of 5.3 deaths per 100,000 population. Australian females also ranked highly, although not as highly as New Zealand females at 3.2 deaths per 100,000 population. The country with the lowest mortality rates was Japan, with 0.2 deaths per 100,000 for both males and females. (Figures 54 and 55).

# Mortality

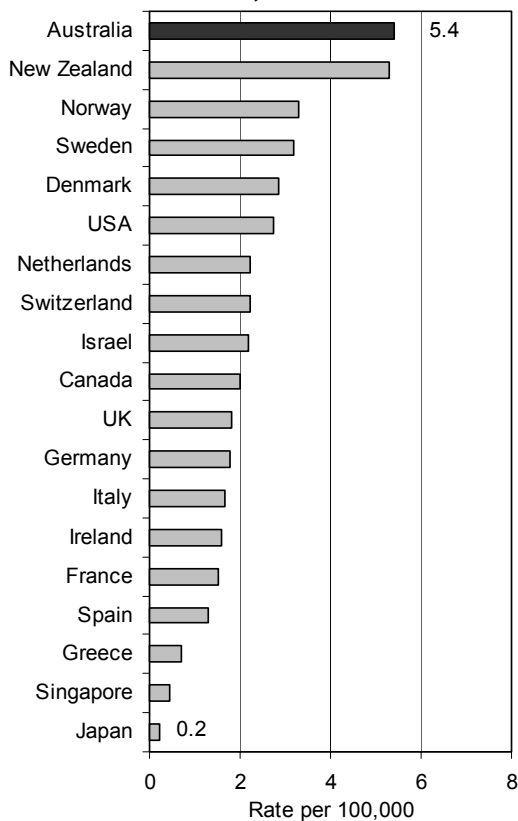
# Malignant melanoma

**Figure 53: Age-standardised malignant melanoma deaths, Australia and WA, 1983 to 2002**

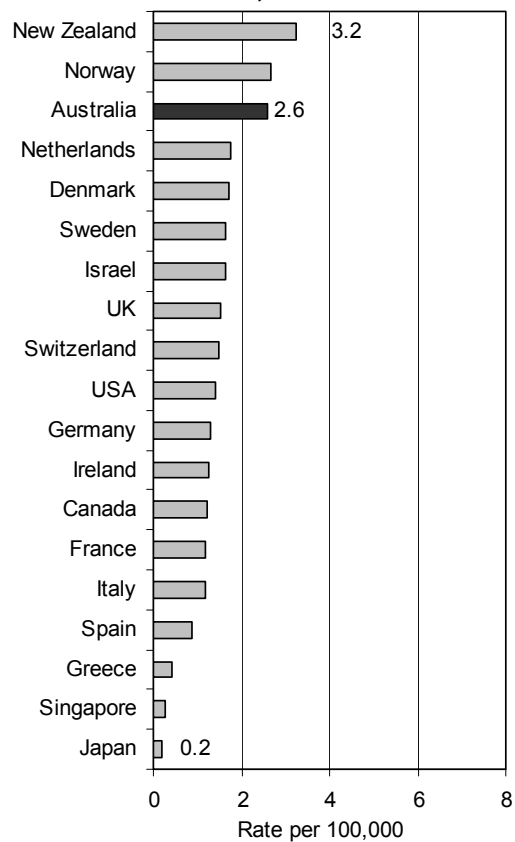


Source: WA Cancer Registry, Department of Health, WA. Mortality Database, Department of Health, WA.

**Figure 54: Male malignant melanoma deaths, 2000**



**Figure 55: Female malignant melanoma deaths, 2000**

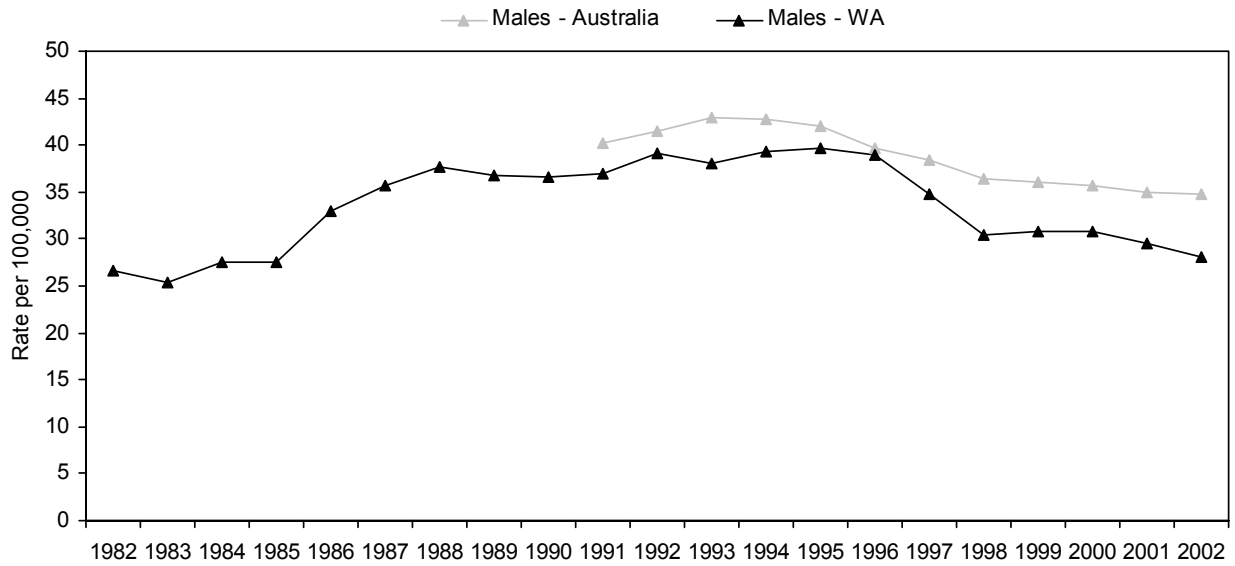


Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. IARC Lyon, IARC Press, 2001.

- Prostate cancer is uncommon among males younger than 40 years of age. But as age increases, so does prostate cancer mortality, such that prostate cancer is the most common cause of death in males 80 years and over (AIHW, 2002).
- In 2002, 97.4% of all Western Australian prostate cancer deaths occurred in men aged 60 years and over. Prostate cancer followed lung and colorectal cancers as the third most common cause of male cancer death in Western Australia in 2002, resulting in 188 deaths. In 2001, one in 11.0 Western Australian males developed prostate cancer before the age of 75.
- After adjusting for age, there were 28 deaths per 100,000 population, fewer than that of the nation (35 deaths per 100,000 population) (Figure 56).
- The Western Australian mortality rates have generally been lower than that of the nation. Western Australian death rates increased over the period 1983 to 1996, after which they decreased slightly. Between 1991 and 2002, the average annual decline in national mortality rates was statistically significant (Figure 56).
- In 2000 the Australian mortality rate was more than three times that of Japan, which at 5.5 deaths per 100,000 population was ranked the lowest. Sweden ranked the highest at 27 deaths per 100,000 population (Figure 57).

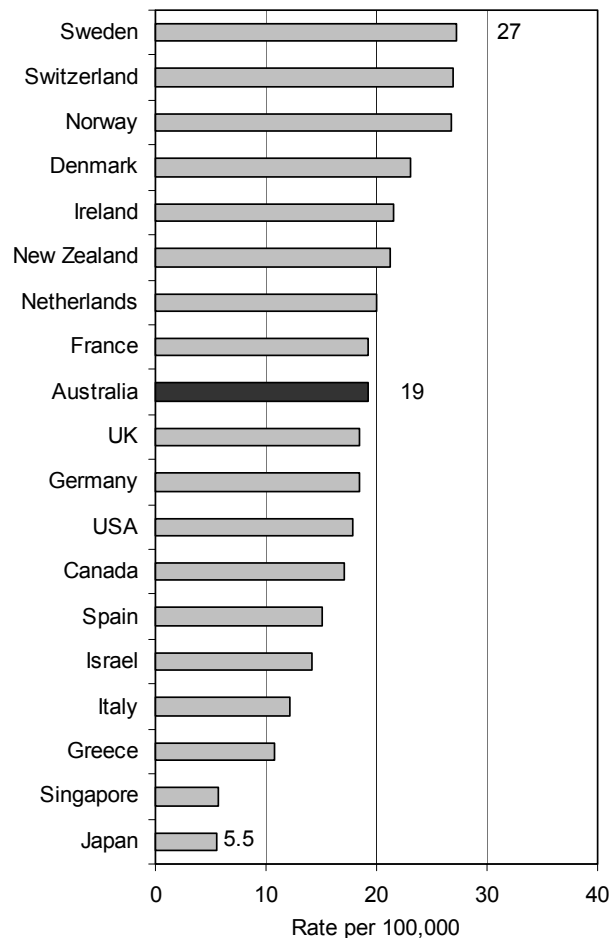


Figure 56: Age-standardised prostate cancer deaths, Australia and WA, 1983 to 2002



Source: WA Cancer Registry, Department of Health, WA. Mortality Database, Department of Health, WA.

Figure 57: Male death rate from prostate cancer, 2000



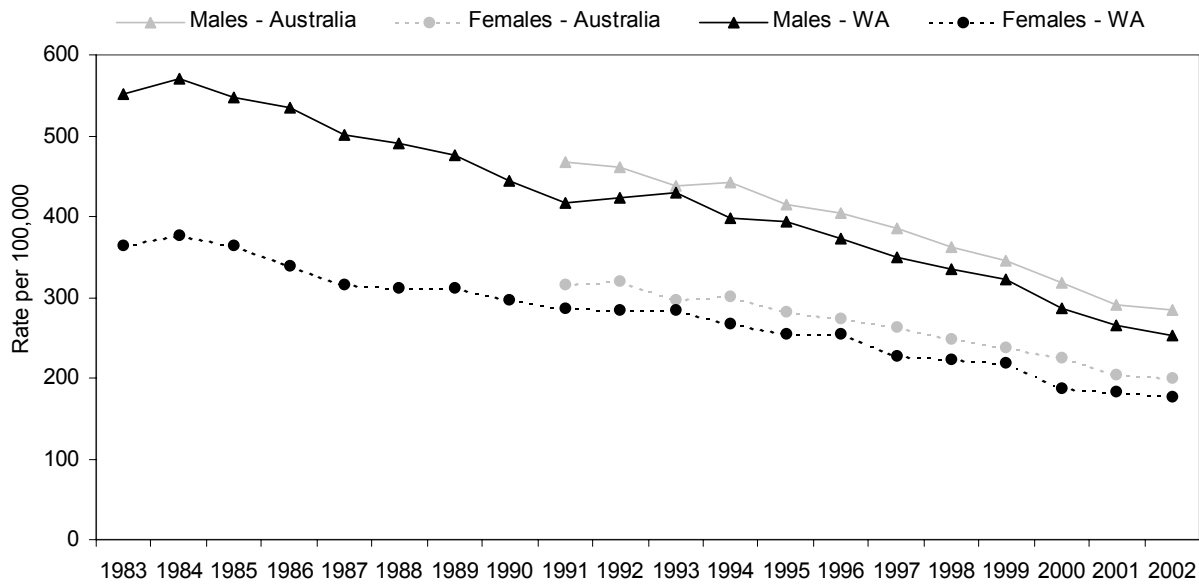
Source: GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. IARC. Lyon, IARC Press, 2001.

- Cardiovascular disease includes; acute and chronic rheumatic heart diseases, hypertensive diseases, ischaemic heart diseases, pulmonary heart disease and diseases of the pulmonary circulation, cerebrovascular diseases, and diseases of the blood vessels. Atherosclerosis, where fatty deposits clog blood vessels, is the most common factor causing cardiovascular disease.
- Cardiovascular disease was the leading cause of death in Western Australia in 2002, resulting in 3684 deaths, or 31.9% of all male deaths and 36.9% of all female deaths in the state.
- The most common type of cardiovascular disease in WA in 2002 was acute myocardial infarction, resulting in 57.1% of the male and 48.1% of the female cardiovascular disease deaths.
- In 2002, the age-standardised mortality rate for WA males was 252 deaths per 100,000 population, and for WA females it was 178 deaths per 100,000 population. These were below the national male and female rates of 284 and 200 deaths per 100,000 population. In fact, throughout the time period shown, both the male and female age-standardised rates for Western Australia remained below that of their Australian counterparts (Figure 58). There have been statistically significant declines in cardiovascular mortality both in Western Australia and Australia.
- In 2001, the male and female Australian cardiovascular disease death rates both ranked lower than the majority of comparable developed countries. Japan had the lowest cardiovascular disease mortality rates at 153 male and 99 female deaths per 100,000 population. At 312 deaths per 100,000 population, Irish males fared the worst, while Greece had the highest female age-standardised mortality rate of 218 deaths per 100,000 population (Figures 59 and 60).

# Mortality

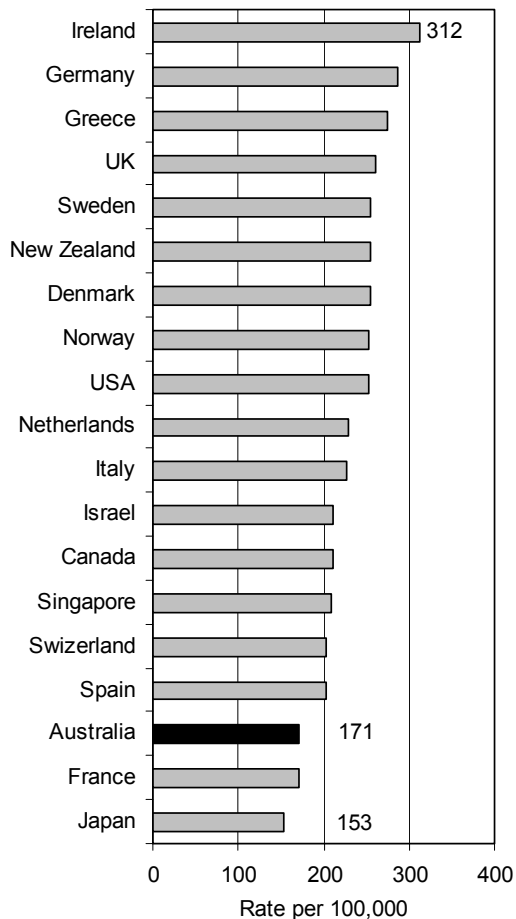
# Cardiovascular disease

**Figure 58: Age-standardised death rate for cardiovascular disease, Australia and WA, 1983 to 2001**

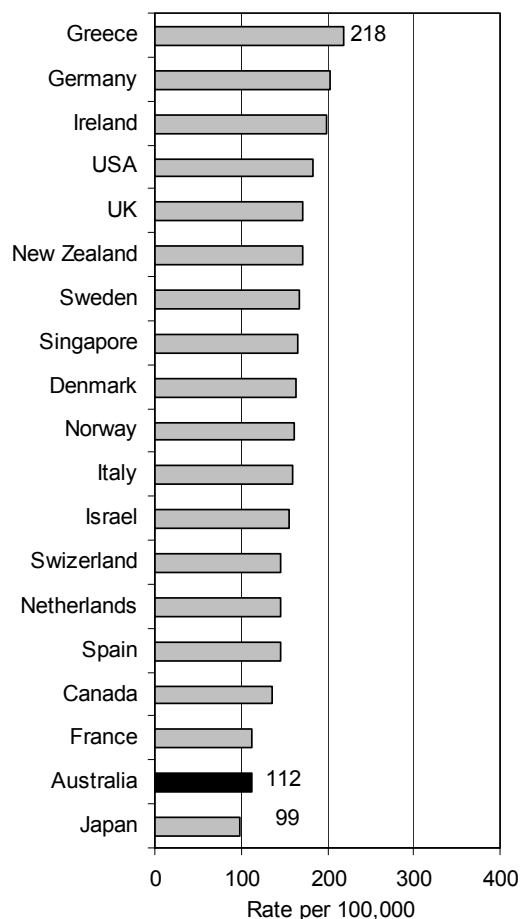


Source: Mortality Database, Department of Health, WA.

**Figure 59: Male cardiovascular disease deaths, 2001**



**Figure 60: Female cardiovascular disease deaths, 2001**



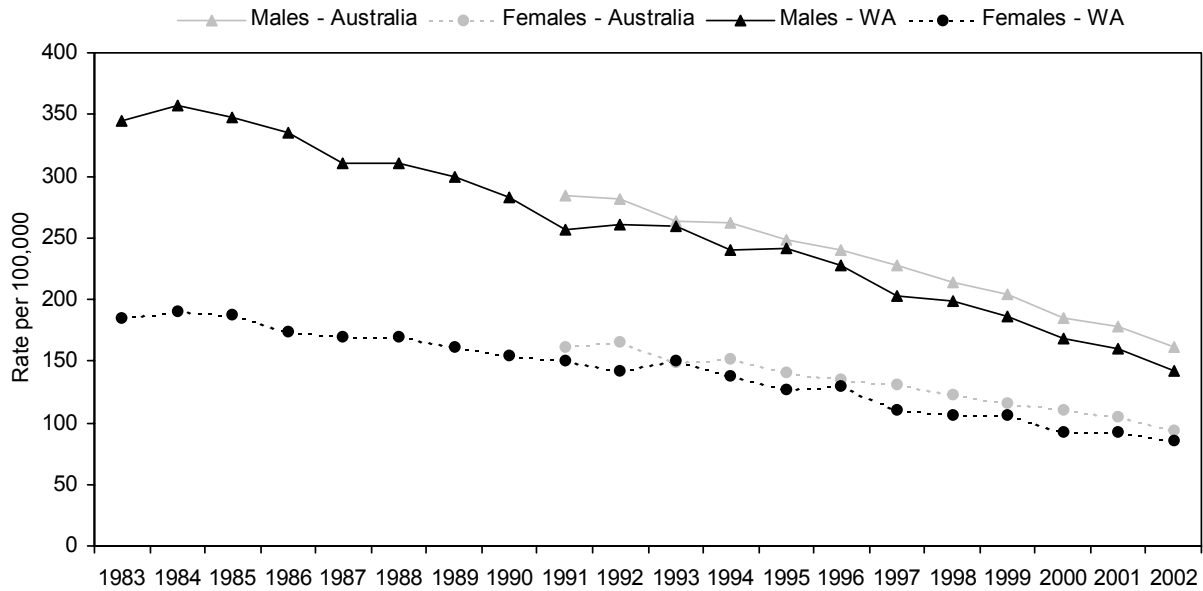
Source: World Health Organisation Mortality Database, 2001.

- Ischaemic or coronary heart disease (CHD) is the most common cause of sudden death in Western Australia. It consists mainly of acute myocardial infarction (AMI) and angina. AMI occurs when a vessel supplying blood to the heart becomes blocked, while angina is temporary chest pain when blood supply to the heart is diminished.
- Coronary heart disease is the greatest individual cause of death in Western Australia. It accounted for 52.4% of all cardiovascular deaths in Western Australia in 2002, and was the underlying cause of death for 1,931 Western Australians, or 18% of all male and 17.6% of all female deaths.
- In 2002 the age-standardised mortality rate for WA males was 142 deaths per 100,000 population, and for WA females it was 86 deaths per 100,000 population. These were below the national male and female rates of 161 and 93 deaths per 100,000 population. Throughout the time period shown, the Western Australian male and female CHD death rates remained below those of their national counterparts, and females had consistently lower rates than males. Both national and State male and female rates declined significantly over time (Figure 61).
- Internationally, Australia ranked below the majority of comparable developed countries, with males comparatively higher than females (Figures 62 and 63). Ireland ranked the highest for both males (183 deaths per 100,000 population) and females (94 deaths per 100,000 population) while Japan ranked the lowest (40 males; 21 females).

# Mortality

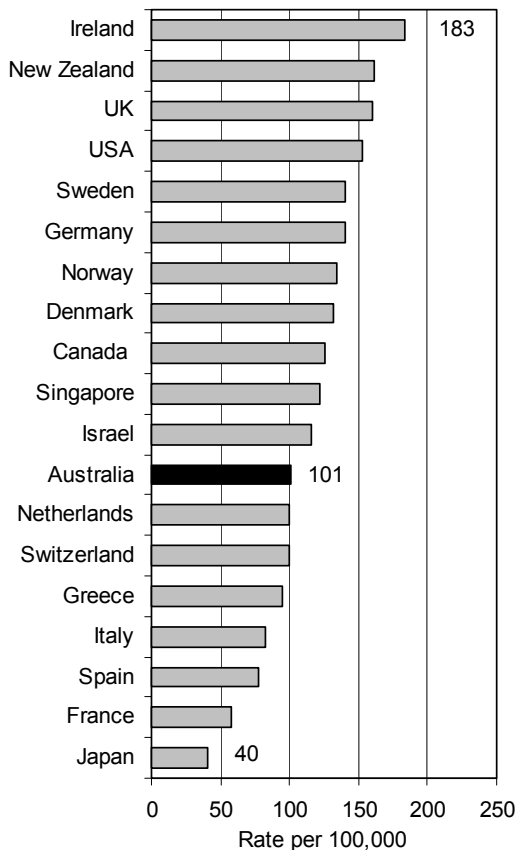
# Ischaemic heart disease

**Figure 61: Age-standardised death rate for ischaemic heart disease by gender, Australia and WA, 1983 to 2002**

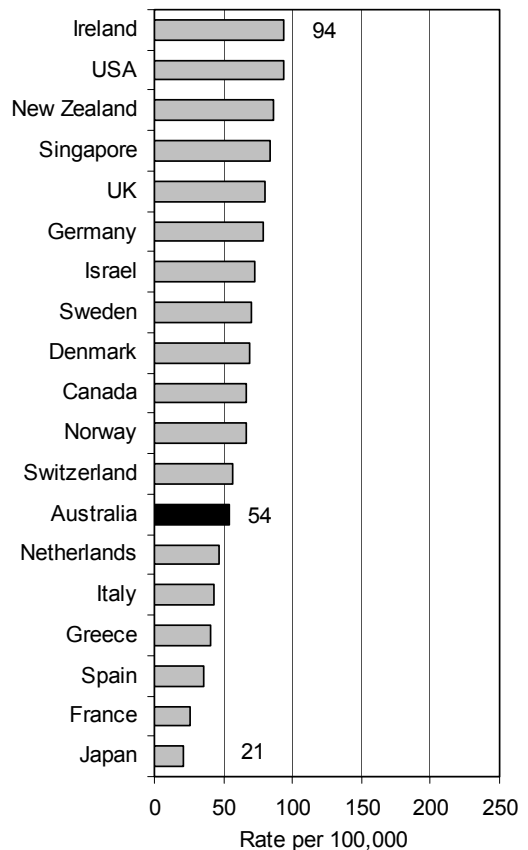


Source: Mortality Database, Department of Health, WA.

**Figure 62: Male death rate, ischaemic heart disease, 2001**



**Figure 63: Female death rate, ischaemic heart disease, 2001**



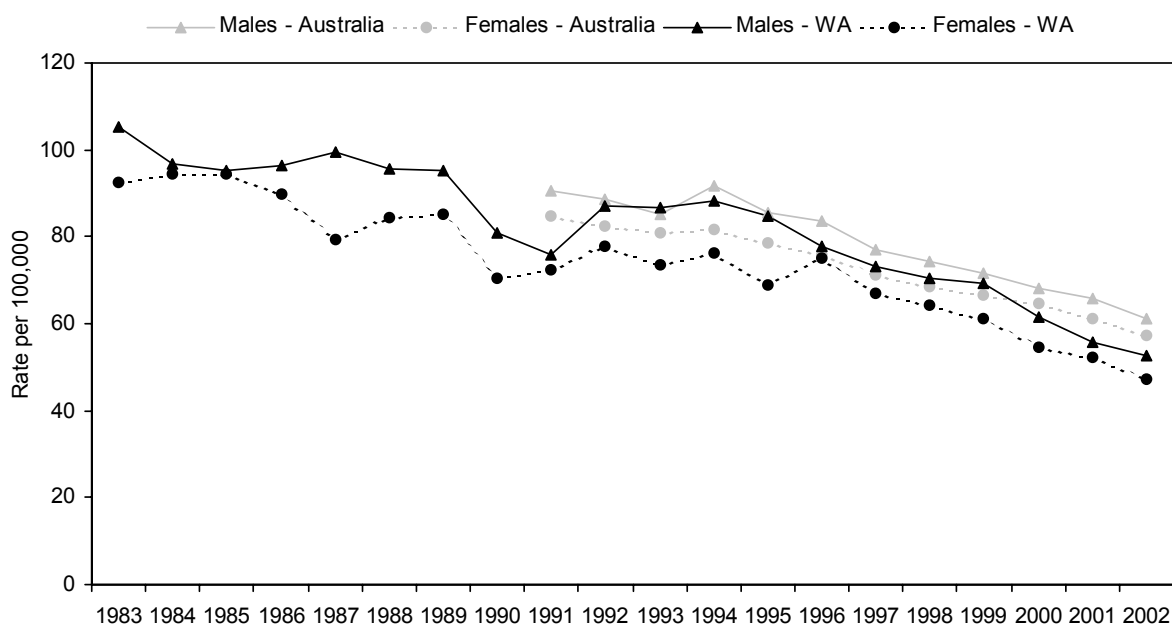
Source: World Health Organisation Mortality Database, 2001.

- Cerebrovascular disease, or stroke, occurs when an artery supplying blood to part of the brain is interrupted by a blockage (ischaemic stroke) or sudden bleeding (haemorrhagic stroke). More women than men are killed by stroke, due to the higher number of elderly females than males, although the proportion of males dying due to stroke is greater.
- Stroke was the second leading cause of death behind coronary heart disease in Western Australia for both sexes in 2002. There is a direct link between age and stroke - in 2002, 93% of all Western Australian stroke deaths occurred in persons aged 65 years and over.
- In 2002, the Western Australian age-standardised mortality rate per 100,000 persons was 53 for males and 47 for females. These rates are lower than those of the nation (males 61; females 57 deaths per 100,000 population). Western Australian mortality rates have for the most part been lower than Australian rates (Figure 64).
- In 2001, Australia ranked relatively low against its international counterparts. Males from Greece had the highest mortality rate of 82 deaths per 100,000 population, and Switzerland had the lowest male mortality rate, with 33 deaths per 100,000 population. Greece also had the highest female mortality rate of 85 deaths per 100,000 population, and France had the lowest (30 female deaths per 100,000 population), which was similar to the Australian female rate (Figures 65 and 66).

# Mortality

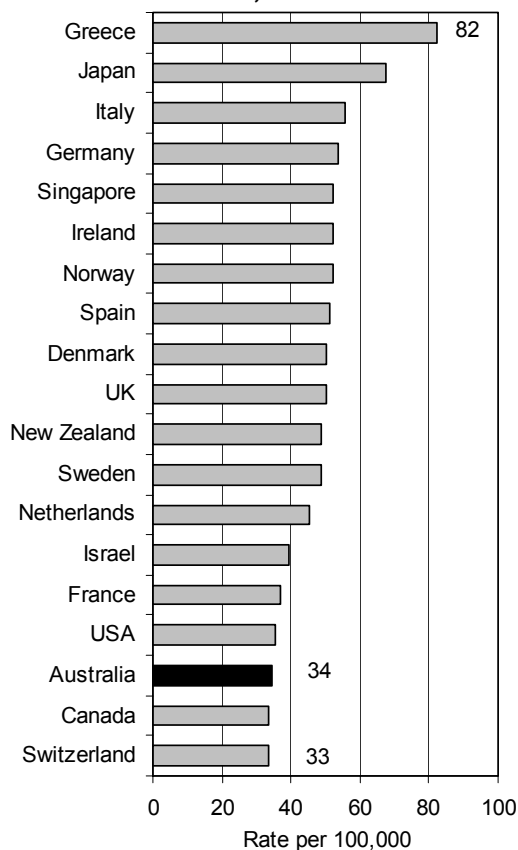
# Stroke

**Figure 64: Age-standardised death rate for stroke by gender, Australia and WA, 1983 to 2002**

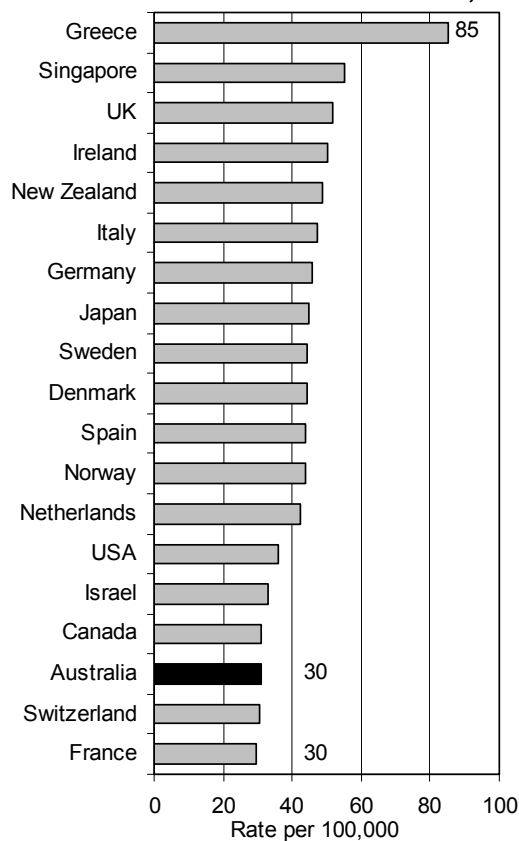


Source: Mortality Database, Department of Health, WA.

**Figure 65: Age-standardised male death rate for stroke, 2001**



**Figure 66: Age-standardised female death rate for stroke, 2001**



Source: World Health Organisation Mortality Database, 2001.

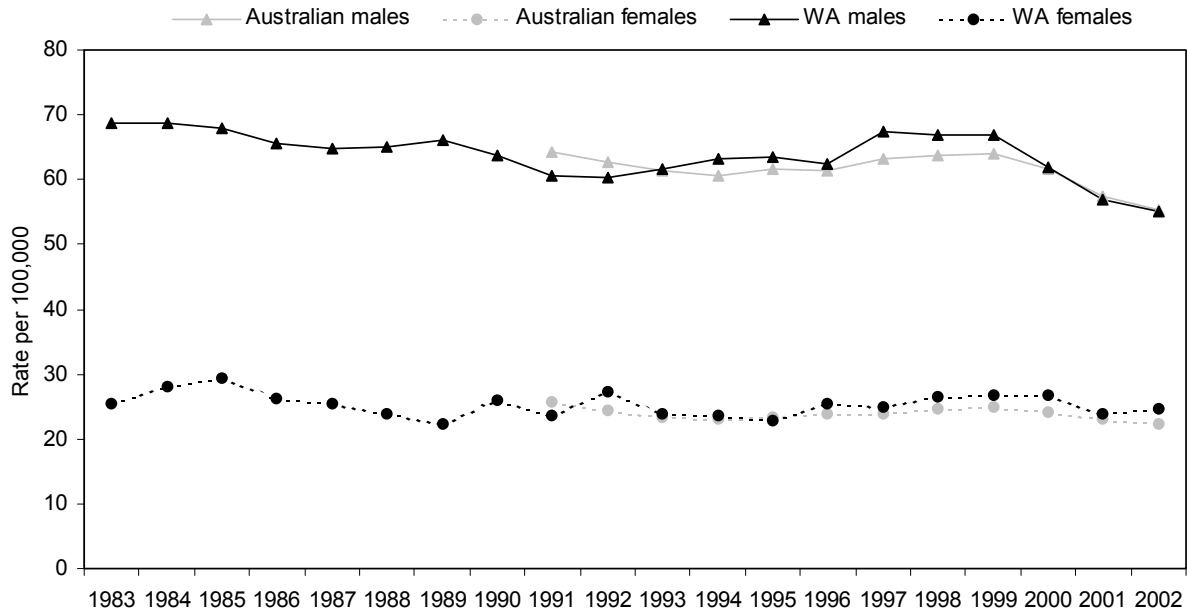
- In 2002, 450 males and 249 females in Western Australia died due to injury and poisoning. After adjusting for age, in Western Australia there were 55 deaths per 100,000 males and 25 deaths per 100,000 females. The female rate was higher than the Australian female rate (22), while the male rates of the two populations were similar. Over the time period shown, death rates for males have been consistently higher than for females for both WA and Australia (Figure 67).
- Throughout the period 1983 to 2002 the Western Australian male mortality rate has significantly decreased, while the female rate has remained unchanged. There was also a significant decrease among females and males in the Australian population from 1991 to 2002 (Figure 67).
- The Australian injury and poisoning mortality rates ranked highly for males and moderately for females compared to other developed countries (Figures 68 and 69). While not as high as France (60 per 100,000 males; 26 females), the Australian injury and poisoning death rates were higher than Israel (11 males; 3.4 females).



## Mortality

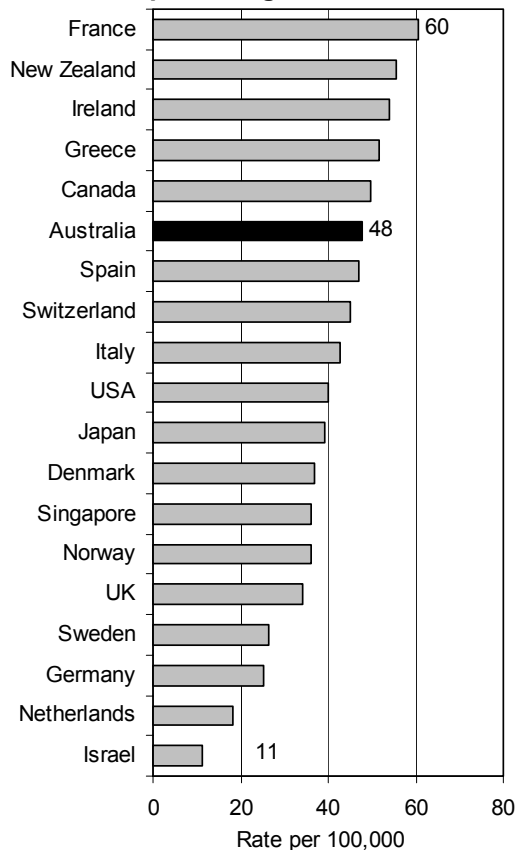
## Injury and poisoning

**Figure 67: Age-standardised death rate for injury and poisoning by gender, Australia and WA, 1983 to 2002**

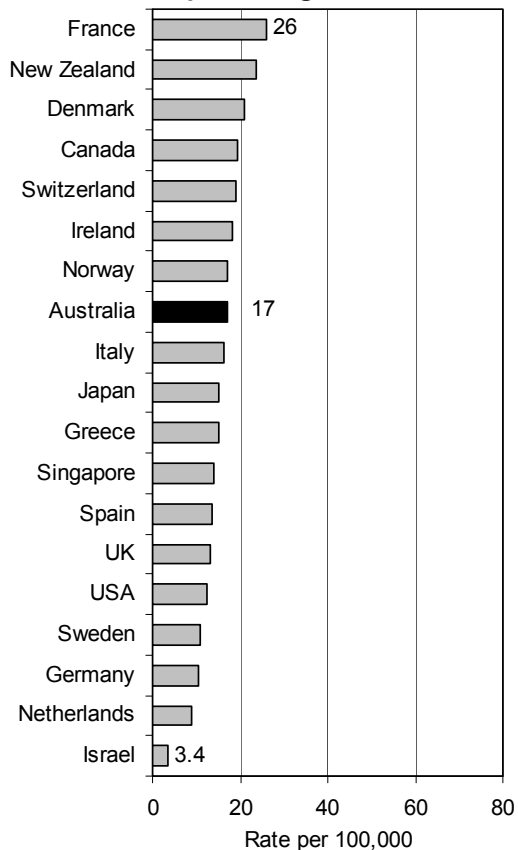


Source: Mortality Database, Department of Health, WA.

**Figure 68: Age-standardised male death rate, injury and poisoning, 2001**



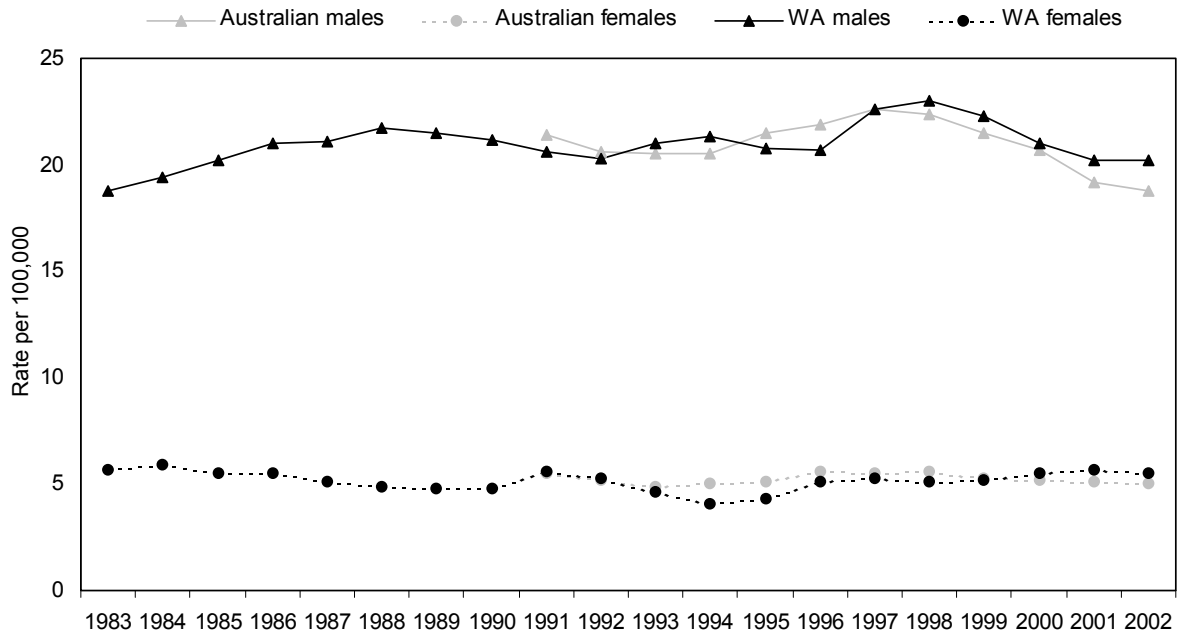
**Figure 69: Age-standardised female death rate, injury and poisoning, 2001**



Source: World Health Organisation Mortality Database, 2001.

- Because depression and other mental disorders are major risk factors for suicide, a population's rate of suicide is often used as a proxy measure of the extent of mental illness within that population (De Looper, 2001). Other groups at higher risk include young and in particular indigenous males, females born overseas, individuals who have previously attempted suicide, and youth in remote or rural areas.
- Suicide was a significant cause of death in Western Australia, in 2002, 177 male and 53 female Western Australians committed suicide. The age-standardised rates for suicide were 18 deaths per 100,000 males and 5.4 deaths per 100,000 females, marginally higher than the national rates (males 17; females 4.6) (Figure 70).
- Male suicide rates have consistently been three to four times higher than female rates for both Western Australia and Australia. While the WA and Australian female rates remained unchanged over the time period shown, the Australian and WA male suicide rate has decreased after a peak in 1998 (Figure 70).
- Australia ranks moderately against equivalent countries, with males ranking comparatively higher than females (Figures 71 and 72. Japan had the highest suicide rates, at 28 deaths per 100,000 males and 10 deaths per 100,000 females, and Greece had the lowest (males 4.8, females 1.3 deaths per 100,000 people).

Figure 70: Age-standardised suicide rate by gender, Australia and WA, 1983 to 2002



Source: Mortality Database, Department of Health, WA.

Figure 71: Age-standardised male suicide rate, 2001

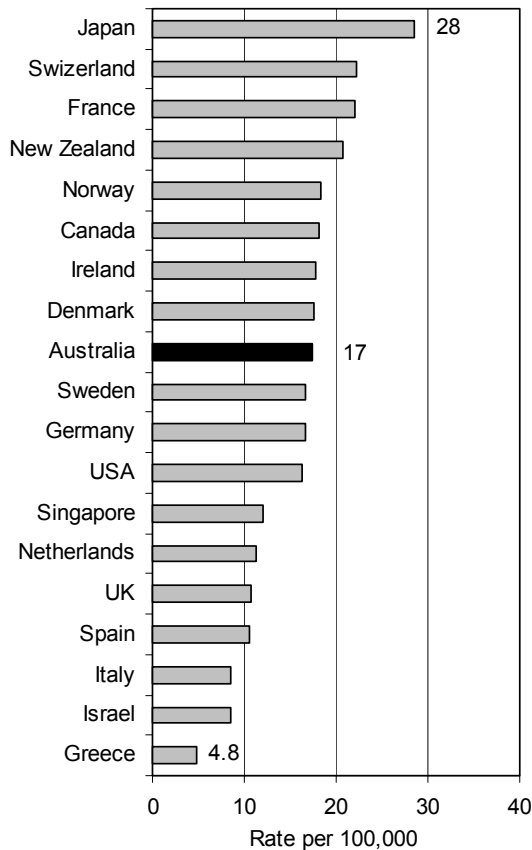


Figure 72: Age-standardised female suicide rate, 2001



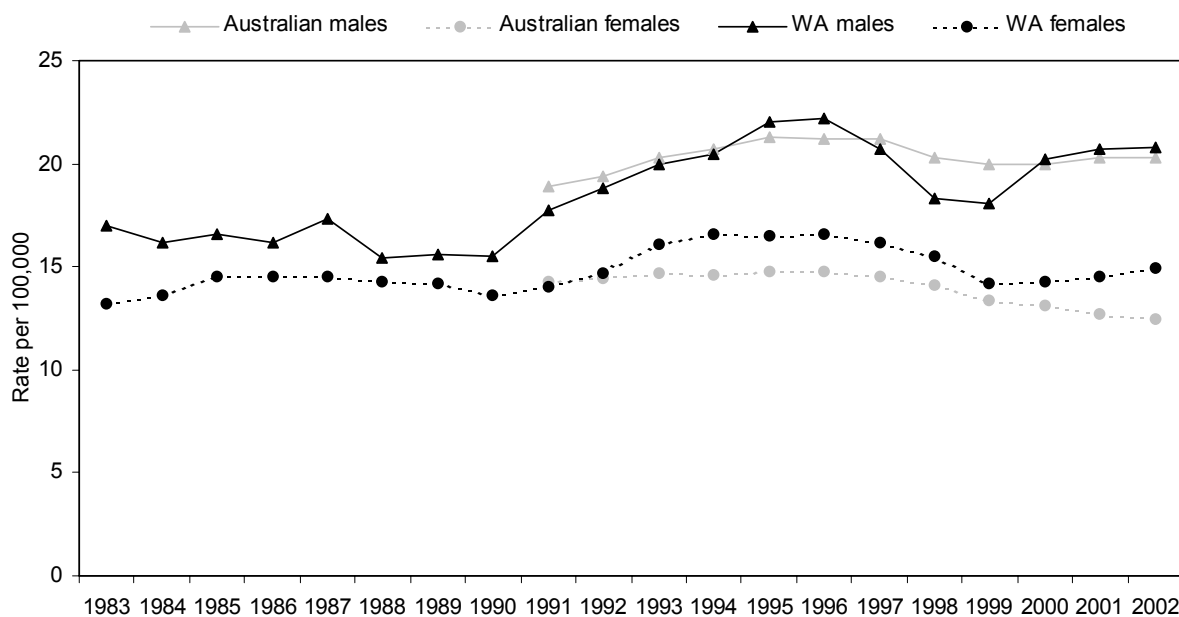
Source: World Health Organisation Mortality Database, 2001.

- There are three forms of diabetes, each with different causes. The most common form of diabetes is Type 2 diabetes, which is typified by reduced insulin levels or insulin resistance. Type 1 diabetes is the next most common form, caused by the body destroying its insulin producing cells. Gestational diabetes occurs during pregnancy in some females.
- Conditions associated with diabetes (such as ischaemic heart disease, kidney-related diseases, stroke and heart failure) are usually listed in death certificates as causes of death more often than diabetes itself. Therefore the extent of the impact of diabetes is difficult to assess because of the under-reporting of diabetes as the underlying cause of death. Also the contribution of complications arising from diabetes to conditions such as end-stage renal failure, coronary heart disease and stroke are not included in death rates.
- In 2002, the Western Australian age-standardised mortality rates for diabetes were 21 male deaths per 100,000 and 15 female deaths per 100,000 population. Figure 75 shows these rates were slightly higher than the national rates (20 and 12 deaths per 100,000 population).
- While the male diabetes death rate has shown an increase over time, there was little change among females in Western Australia. From 1991 to 2002 the Australian females rate has decreased significantly, whilst the male rate has remained unchanged (Figure 73).
- In 2001 the Australian female mortality rate ranked below, while the male mortality rate ranked in the middle of comparable developed countries (Figures 74 and 75. Mortality rates for Greece were lowest (males 4.3, females 3.9 deaths per 100,000 population) and Israel were highest (males 34; females 31 deaths per 100,000 population).

# Mortality

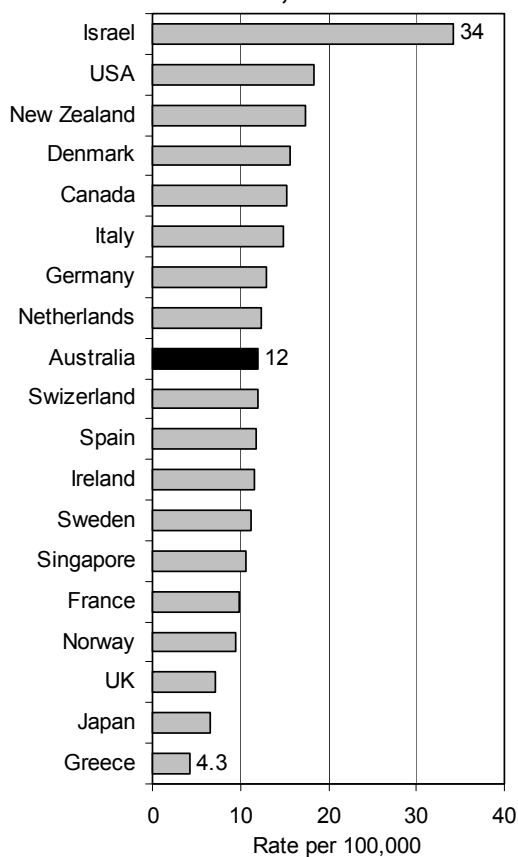
# Diabetes

**Figure 73: Age-standardised death rate for diabetes, Australia and WA, 1983 to 2002**

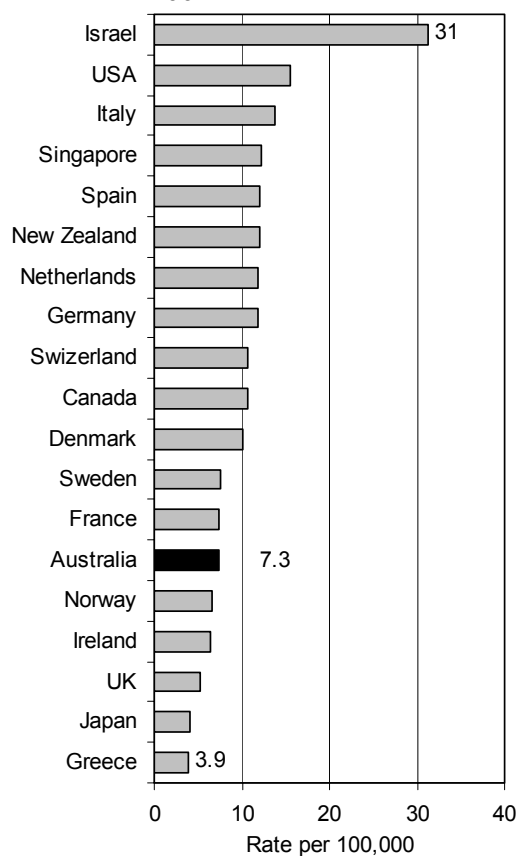


Source: Mortality Database, Department of Health, WA.

**Figure 74: Age-standardised male death rate for diabetes, 2001**



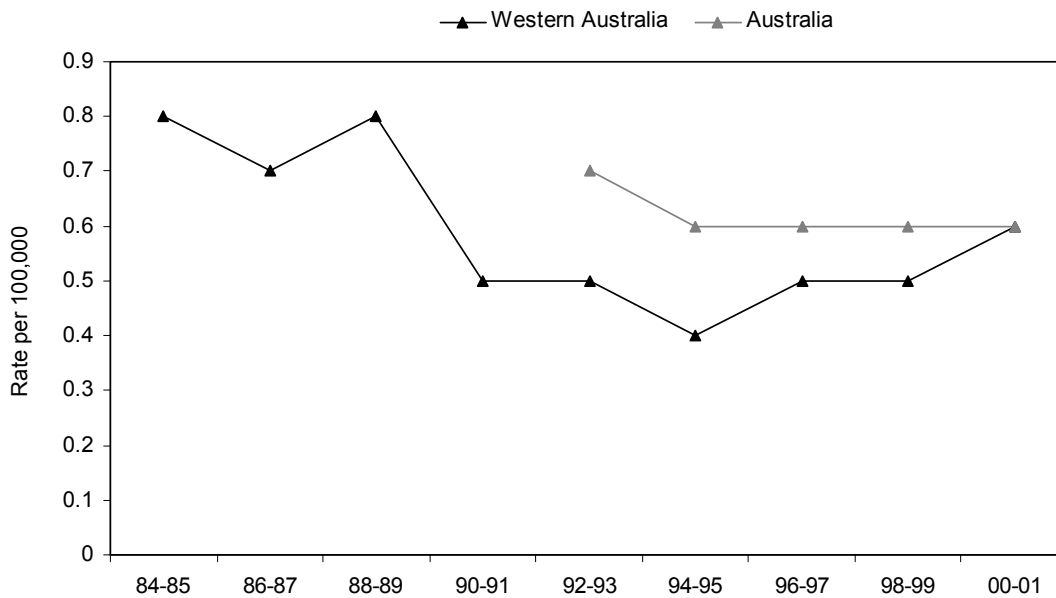
**Figure 75: Age-standardised female death rate for diabetes, 2001**



Source: World Health Organisation Mortality Database, 2001.

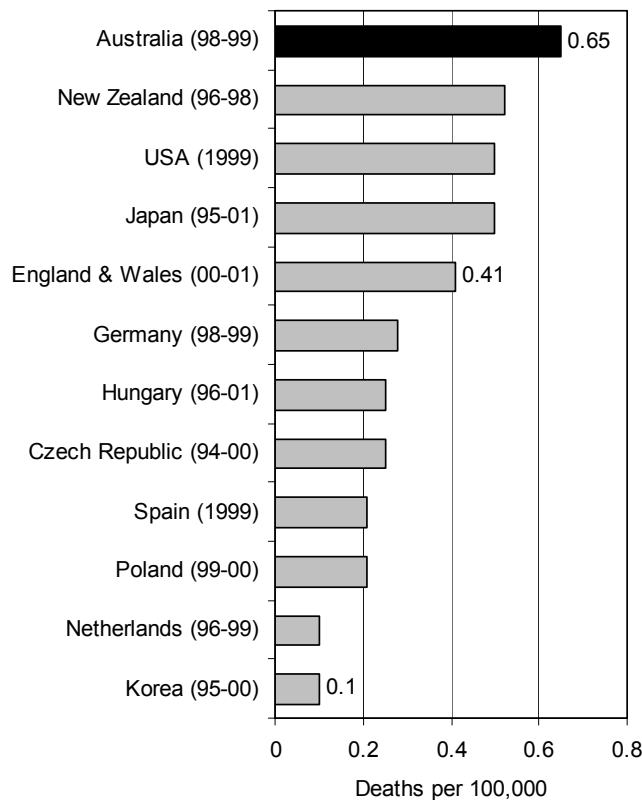
- Asthma mortality is reported in the population based on those aged between 5 and 35 years of age. This age group is chosen because the coding of asthma deaths is most accurate in this group. However, the numbers are small and therefore estimates may be imprecise over the periods reported.
- The actual number of deaths attributed to asthma were low, with 31 deaths being recorded in Australia and 5 deaths in Western Australia during 2002.
- Asthma death rates decreased among Western Australian males and females between 1984 and 2001. The rate among Western Australians was generally lower than among Australians for the period 1992 to 2001. A trend analysis conducted over this period showed a non-significant decrease in asthma deaths in WA. The rate among Western Australians and Australians over the two-year period 2000 to 2001 was the same at 0.6 per 100,000 (Figure 76).
- Australian death rates from asthma were highest internationally in the late 1990's at approximately 0.7 per 100,000 population (Figure 77), however, they have since decreased to 0.4 per 100,000 population in 2002. Korea had the lowest deaths from asthma at 0.1 per 100,000 population between 1995 and 2000.

Figure 76: Age-standardised death rate for asthma, Australia and WA, 5 to 34 years, 1984 to 2001



Source: Mortality Database, Department of Health, WA.

Figure 77: Asthma mortality in persons 5 to 34 years, 1995 to 2001



Source: Australian Centre for Asthma Monitoring, 2003. Asthma in Australia, 2003. AIHW Asthma Series 1. AIHW Cat. no. ACM 1. Canberra: AIHW.

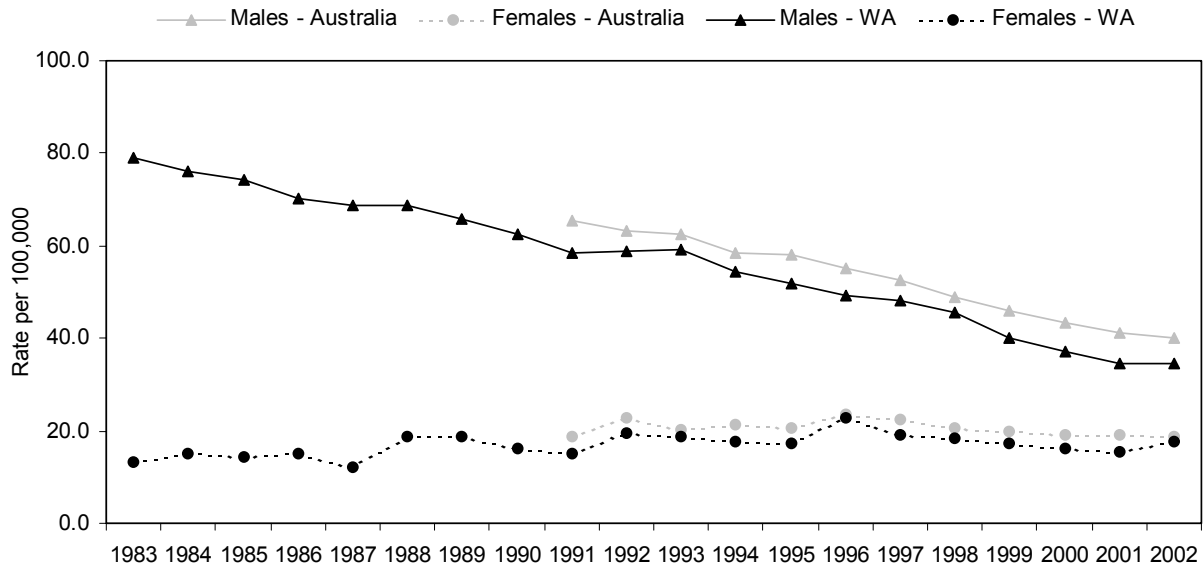
- A very striking example of smoking related disease, Chronic Obstructive Pulmonary Disease, (COPD) is a leading cause of death and disability worldwide. It is largely preventable and expensive to treat. The World Bank estimates that COPD is responsible for more than 29 million disability-adjusted life-years and 1 million years of life lost per annum around the world. These figures place COPD as the fifth most significant global health problem, and COPD is expected to become the third leading cause of death in the first quarter of the this century (Dagli, 2001).
- Between 1983 and 2002 COPD death rates decreased among Western Australian males but increased among Western Australian females. COPD death rates decreased among Australian males and females between 1991 and 2001. The rate among Western Australian males was generally lower than among Australian males for this period. In 2002, the rate among Western Australian males was 35 per 100,000 compared with 40 nationally (Figure 78). Among Western Australian females, the rate was lower than among Australian females from 1991 to 2002. In 2002, the Western Australian female rate was 18 per 100,000 compared with 19 nationally (Figure 78).
- During 2001, Australia's mortality rate from COPD was moderately high when compared to other developed countries. Female mortality ranked higher in comparison to other countries than male mortality. Denmark featured highest for males and females, with Greece ranking lowest (Figures 79 and 80).



# Mortality

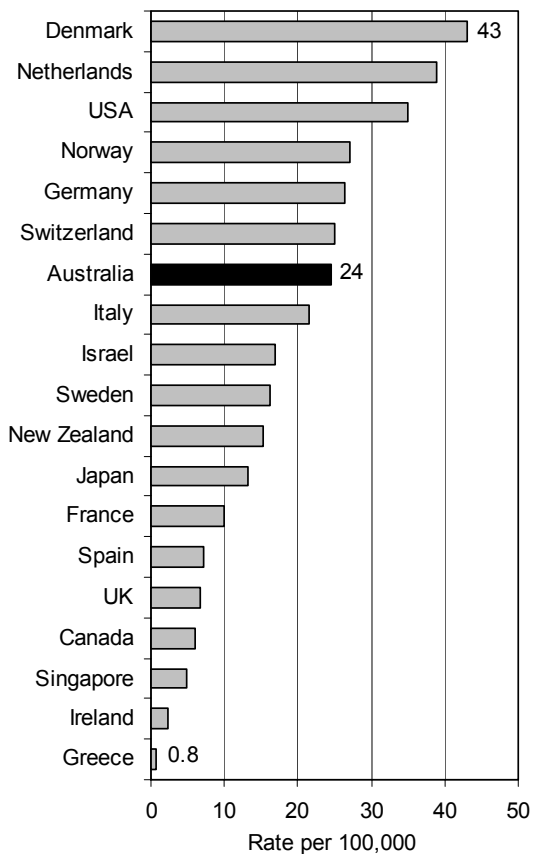
# COPD

**Figure 78: Age-standardised death rate for COPD, Australia and WA, 1983 to 2001**

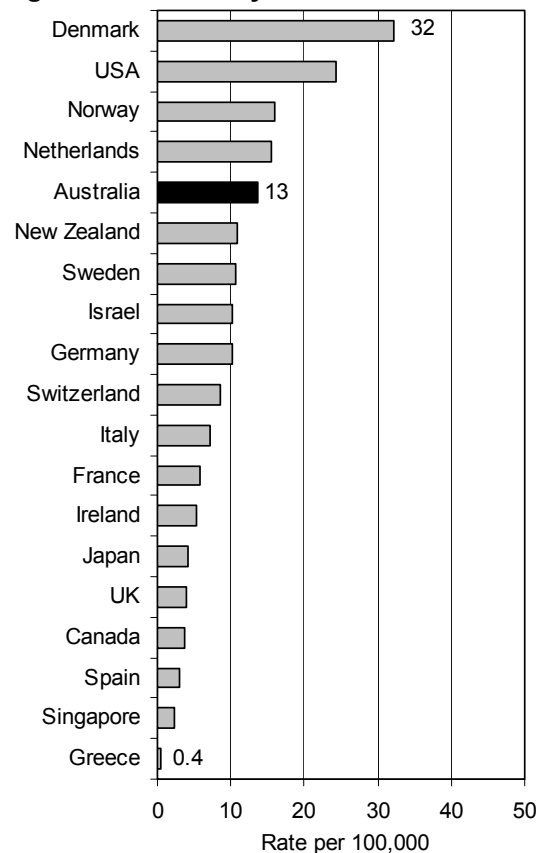


Source: Mortality Database, Department of Health, WA.

**Figure 79: Mortality in males from COPD, 2001**



**Figure 80: Mortality in females from COPD, 2001**



Source: Smoking Prevention Committee, European Respiratory Society, World Health Organisation.

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