Your health

A report on the health of Victorians 2007

A Victorian Government initiative

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Please note that, as with all statistical reports, there is the potential for minor revisions to data or text in *Your health – A report on the health of Victorians 2007* over its life. The latest version and an errata will be published at www.health.vic.gov.au/healthstatus

Foreword

Your health 2007 is the second in a series of biennial reports from the Office of the Chief Health Officer. This publication provides a comprehensive picture of the health and wellbeing of Victorians, drawing on a wide range of population-based data. Information from the series will inform policy and planning for the improvement of health and wellbeing in Victoria.

Your health 2007 expands on *Your health 2005*. This edition incorporates new chapters, including oral health and screening participation. A key feature of this edition is a new section titled 'Population subgroups', which contains information about the health of various subgroups in the Victorian population, including refugee, prison, culturally and linguistically diverse and socio-economically disadvantaged populations. The chapters on the mothers' and children's health, Aboriginal and Torres Strait Islander health and rural health are also in this new section. Many other chapters are expanded to include new public health indicators, such as the 'Health and the environment' chapter. As in the previous edition, *Your health 2007* incorporates information on the general health status of Victorians (for example, life expectancy and burden of disease), health-related behaviours (for example, smoking and physical activity), and health outcomes (for example, cardiovascular disease and cancer).

I would like to take this opportunity to thank the Health Intelligence Unit in Public Health, together with other government and non-government agencies that provided their time and expertise in developing this report.

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Chief Health Officer

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We thank many areas within the department and various external organisations for their contribution to *Your health 2007*.

Department of Human Services

Public Health Branch:

- Cancer Prevention and Screening
- Communicable Disease Control
- Environmental Health Unit

Statewide Quality Branch:

- Clinical Councils
- Quality and Safety Programs

Other organisations

Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)

BreastScreen Victoria

Cancer Council Victoria

Department of Education and Early Childhood Development

Department of Justice

Environmental Protection Authority (EPA)

Victorian Cervical Cytology Register

Victorian Injury Surveillance Unit, Monash University Accident Research Centre (MUARC)

Executive summary

Differences compared with *Your Health 2005*

This report presents a snapshot using the latest available data on key indicators of the heath of Victorians, drawing on a wider range of population-based data. The report finds that while most Victorians are doing well, there are areas where further gains in health and well being could be achieved, particularly among Aboriginal Victorians, individuals living in rural and regional areas and those who are socioeconomically disadvantaged.

Comparing *Your Health 2007* with *Your Health 2005* is not straightforward, in part because the reference population used for the purposes of age-adjustment has been changed to 2001, for indicators such as ambulatory care sensitive conditions (ACSCs). There has also been a change of emphasis in the content of the report. Unlike the *Your Health 2005* report, this report does not provide ambulatory care sensitive condition indicators at a small area level. A new interactive website has been developed to provide more timely access to ASCS indicators, by local government area, primary care partnership and region, by quintile of the Index of Relative Socio-Economic Disadvantage (IRSED) and by the Accessibility/Remoteness Index of Australia (ARIA). This website (www.health.vic.gov.au/healthstatus/vhiss/index.htm) will provide routine updates on a range of statistics for total and specific ACSC conditions. The new website will also provide the latest available information at the same level of detail for avoidable mortality (AM), as well as to the most recent (2001) estimates of the burden of disease for Victoria. In addition, it will also permit time-series comparisons to be made for these indicators.

Your Health 2007 also includes an expanded coverage of population subgroups. There are chapters on mothers' and children's health, Aboriginal and Torres Strait Islander health and rural health, that featured in *Your Health 2005*, as well as several new chapters on the health of other subgroups of the Victorian population, including refugees, prisoners, culturally and linguistically diverse groups and socioeconomically disadvantaged populations. The findings with respect to these population subgroups are summarised below, as are key findings on each of the subgroups covered in the *Your Health 2005* report.

Focusing on the indicators that are common to the reports, the picture is largely one of continued steady progress, particularly for what may be viewed as headline indicators of population-based health. For example, life expectancy has continued to increase for both males and females. The significant increases observed in life expectancy at birth are mirrored, to some extent, in the fall in avoidable mortality rates that has occurred in the recent past. Indications that the hospitalisation rates for cardiovascular disease may have decreased are manifest in a significant decline in admission rates for both ischaemic heart disease (IHD) and stroke.

The levels of a range of other indicators are unchanged. In part, this is accounted for by the time interval between the reports. For some indicators (for example, screening participation, notifications of invasive pneumococcal disease (IPD) and short term risk levels due to alcohol consumption) a two-year time is interval is too short for significant changes to be observed, even where a few more observations are being added to a times-series that already stretches back over a number of years. Sometimes the value of health surveillance lies in adopting a longer term perspective, as in the case of asthma, where it is possible to show that the overall hospitalisation rates and the death rates from asthma have declined significantly, over an extended time period, due to improvements in the management of asthma. The value of health various vaccination programs is underscored in the communicable disease section of the report, where notifications are charted by month and year of notification, so that the season and trend components of changes are able to be discerned. Adding two additional years of notifications data has helped to affirm the impact of a number of vaccination programs, including those for Q fever, pertussis, measles, meningococcal disease (serogroup C) and influenza. Other indicators may be unchanged in the *Your Health 2007* report, in part, because of the role that is played by social determinants of health that can have an impact across generations, rather than by the accessibility of services within the health care system per se. This is particularly relevant in the case of disadvantaged groups, such as Aboriginal Victorians. This reflects the tension that exists between prevention and cure when allocating resources.

For some indicators, a lack of recent and reliable data in key areas has been a concern. Resources to close important data gaps are scarce in a health care system that is often judged by its performance in delivering services, but there is now a greater appreciation of the role that health intelligence can play in targeting of programs and interventions, particularly where there are documented health inequalities. A significant gap in the wealth of data that is available on the health and wellbeing of Victorians has been addressed by the *Victorian population health survey* (VPHS) which commenced in 2001. Estimates from the VPHS indicate that the self-reported prevalence of current smoking among

adults (aged 18 years and over) has decreased significantly since 2001, down from 24.5 per cent to 20.5 per cent. Similarly, the prevalence of exposure to second-hand smoke at home has decreased; between 2003 and 2006, there has been a significant increase in the proportion of households with at least one current smoker and dependent children who report that they maintain a smoke-free household. Future reports on the health of Victorians should be able to document any changes over time in health behaviours that are risk factors for chronic diseases and in the reported prevalence of chronic diseases per se.

A number of indicators have changed for the worse compared to the *Your Health 2005* report and some indicators have maintained their already unfavourable trends. In the area of communicable diseases there has been a rise in notification rates for sexually transmissible infections, particularly chlamydia. Compared to 2005, there was an 11.8 per cent increase in notifications of chlamydia in 2006. The proportion of forceps births has continued to decline, with a corresponding increase in both elective and emergency caesarean births and vacuum extractions. Between 2000–01 and 2005–06, the admission rate per 1,000 persons for dental ambulatory care sensitive conditions increased by 41.1 per cent. The overall rate of hospital admission for osteoarthritis has increased by 31 per cent since 1999–00 (although this may in part be attributable to increases in the volume of hip and knee replacements). The hospital admission rate for diabetes has continued to increase, but the rate of change has not increased. This may be explained by the fact that the initial increase in diabetes (principal diagnosis) admissions was due in part to a change in coding practices.

Key findings by section

Health status

Health status indicators suggest that overall, Victorians enjoy very good health. In 2006, survey estimates from the *Victorian population health survey* (VPHS) indicate that a majority (84.5 per cent) of people reported their health as either excellent, very good or good.

Other measures of health status suggest further overall improvement in health and wellbeing. Life expectancy, for example, continues to rise in both males and females. A male born in Victoria in 2005 can expect to live 79.8 years, while a female can expect to live 84.3 years. Life expectancy at birth increased significantly, by two to four years, for both males and females, regardless of socioeconomic status between 1996 and 2005. Avoidable mortality rates in both males and females also declined steadily between 1997 and 2003.

There is scope for future health gain in Victoria. Hospitalisation rates for ambulatory care sensitive conditions appear to be rising, as are avoidable mortality rates for specific conditions, such as poisoning in both males and females, and suicide in females.

Health-related behaviour

A range of lifestyle behaviours influence health status and the health risk profile of individuals. Modifiable risk factors, such as smoking, poor nutrition, alcohol intake and physical inactivity, contribute significantly to the burden of disease in Victoria, providing opportunities for future health gain through early prevention and appropriate management.

There have been some important gains in reducing the health risk profile of the Victorian population in recent years. Tobacco smoking, for instance, is the single largest preventable cause of the disability burden in Victoria, accounting for 8.2 per cent of total disability-adjusted life years (DALYs) in 2001. The self-reported prevalence rate for current smoking has decreased significantly since 2001, down from 24.5 per cent to 20.5 per cent for adults in 2006.

Other risk factors, such as being overweight or obese, are also detrimental to the health and wellbeing of individuals, and can contribute to the development of several chronic diseases. In 2006, estimates derived from the VPHS showed that 56.3 per cent of adult males and 39.7 per cent of adult females were overweight or obese. While the prevalence of overweight and obesity is known to be underestimated in data from self-reported surveys, such indicators still have value in health surveillance.

A positive indicator of health-related behaviour is participation in population-based screening programs. Screening aims to detect disease in the early stages, or to find changes in the body that indicate a disease may develop in the future. In Victoria, the estimated two-year (2005–2006 calendar years) participation rate for cervical cancer screening

in women aged 20–69 years was 63.4 per cent. The estimated two-year (2005–07 financial years) participation rate for breast cancer screening in women aged 50–69 years was 58.6 per cent. Phase 1 of the new National Bowel Cancer Screening Program commenced in Victoria in January 2007. At 31 July 2007 over 44,708 Victorians eligible for the program completed and returned the screening test, resulting in a crude participation rate of 35.2 per cent. This is an impressive response in light of the early stages of the program.

Determinants of health

Consistent evidence shows that various factors (such as education, occupation and income) influence a range of health outcomes, including depression and other mental health-related problems and chronic illnesses, such as cardiovascular disease. Other factors, such as social support, connectedness and participation, also influence health. These factors are referred to as determinants of health.

The mean equivalised disposable household income of all households in Victoria in 2005–06 was $635 per week; the median was somewhat lower at $564. Total weekly earnings rose steadily for both males and females from 1983 to 2006.

Some improvements have occurred in the area of education. Years 10–12 retention rates in Victorian schools were 81 per cent in 1999 and 84 per cent in 2006, with higher retention rates in non-government schools compared to government schools.

Sexual assault rates were highest in 1997 but were almost 20 per cent lower in 2001. However, rates have remained relatively static since then. Most other offence rates show an overall decline since 2001, except for the rate of assaults, which increased by almost 13 per cent in 2006, compared to the 2001 rate.

Regarding social support, connectedness and participation, survey estimates from VPHS 2006 suggest that only 7.6 per cent of males and 7.5 per cent of females did not feel valued by society. Survey estimates for 2006 indicate that most people felt they could get help from friends, family or neighbours when needed. Less than four out of ten persons (38.6 per cent) agreed that most people could be trusted 'yes, definitely'. A higher proportion of people (41.2 per cent) indicated that most people could be trusted 'sometimes'.

Health outcomes

Cardiovascular disease

Cardiovascular disease was responsible for 17 per cent of the total disease burden (DALYs) in Victoria in 2001. Ischaemic heart disease and stroke were the major contributors, accounting for 53 per cent and 29 per cent of the cardiovascular disease burden respectively.

Survey estimates for 2006 suggest that 6.8 per cent of persons aged 18 years or over had ever been told by a doctor that they had heart disease and 1.9 per cent had ever suffered a stroke.

High blood pressure and high cholesterol are risk factors for cardiovascular disease. Survey estimates for 2006 also suggest that almost one-quarter (24.5 per cent) of persons aged 18 years or over had ever been told by a doctor that they had high blood pressure. More than three-quarters of all persons aged 18 years or over in Victoria were estimated to have had a blood pressure check in the previous two years, and just over half had had their cholesterol checked.

In 2005–06, there were more than 118,000 hospital admissions for cardiovascular disease in Victoria. Just over one third of these admissions were for ischaemic heart disease (IHD). Hospitalisation rates for both IHD and stroke declined significantly between 1999–00 and 2005–06.

Diabetes

Diabetes was responsible for four per cent of the total disease burden (DALYs) in Victoria in 2001. Just over 25 per cent of the burden was due to premature death. When the attributable burden of cardiovascular disease was included, the diabetes burden increased to eight per cent, and diabetes became the leading cause of the disease burden.

Estimates from the VPHS 2006 showed that approximately 5.8 per cent of persons aged 18 years and over in Victoria had ever been diagnosed with diabetes, of which 68.0 per cent had been diagnosed with Type 2 diabetes.

Almost half of all adults reported having had a test for diabetes in the previous two years. Among those with diabetes, almost a quarter reported having been diagnosed with heart disease and 6.6 per cent reported having suffered a stroke. Survey estimates also showed that the prevalence of cardiovascular disease risk factors was high among respondents with diabetes.

In 2005–06, there were 139,290 admissions for diabetes on any diagnosis (principal and additional diagnoses combined), accounting for 6.99 per cent of all hospital admissions, with an average of 5.83 bed days. Admission rates were significantly higher in rural areas compared to metropolitan areas in 2005-06.

Cancer

Cancer was the leading cause of death in 2004 and accounted for approximately 30 per cent of all deaths in Victoria.

In 2004 prostate cancer became the leading site for new cancers in Victoria. Prostate cancer incidence rates increased significantly in 2003 and 2004 and accounted for 16 per cent of all cancers and 29 per cent of cancers in men.

Bowel cancer, breast cancer, lung cancer and melanoma were the second, third, fourth, and fifth-most common cancers in Victoria in 2004.

Incidence rates for bowel cancer, breast cancer, lung cancer and melanoma neither increased nor decreased over the interval 1992 to 2004.

Asthma

Asthma was endorsed as a national health priority area in 1999, in recognition that it is one of Australia's most serious chronic diseases. The current focus for minimising the burden of asthma is directed at appropriate management of the disease.

Chronic respiratory disease was responsible for seven per cent of the total disease burden in Victoria in 2001 and asthma accounted for over one-third of this burden. In terms of the contribution to the overall burden in Victoria, asthma ranked thirteenth for males and seventh for females.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that approximately one in five persons aged 18 years and over had ever been told by a doctor that they had asthma, and one in ten had 'current' asthma (that is, they had experienced asthma symptoms in the previous 12 months). Younger adults were more likely than older adults to have ever been diagnosed with asthma, with 32.5 per cent of males and 31.0 per cent of females aged 18–24 years ever having been told by a doctor that they had the condition.

Survey estimates also showed that people with current asthma were more likely to experience poorer health-related quality of life than people who had never had asthma, and that approximately one in five adults with current asthma were also current smokers. More pleasing to see was that just over half of all adults who reported having current asthma in 2006 had an asthma action plan.

The overall hospital admission rate for asthma decreased significantly from 2.15 per 1,000 persons in 1999–00 to 1.96 per 1,000 persons in 2005-06. This decline in the rate of hospital admissions for asthma occurred in both metropolitan and rural areas, though the admission rate for asthma in rural areas has remained greater than the rate in metropolitan areas.

The death rate for asthma has decreased significantly over the last twenty years, from 7.1 deaths per 1,000 persons (95% CI 6.2–8.0) in 1987 to 1.5 (1.2–1.9) per 1,000 persons in 2004, a 78.9 per cent reduction in the death rate over this period. The reduction in mortality is largely attributed to improvements over time in the management of asthma, leading to a reduction in the risk of death for people with asthma.

Injury and poisoning

The hospital admission rate due to injury and poisoning increased significantly from 1,056 per 100,000 in 1994–95 to 1,095 per 100,000 persons in 2005–06. This represents an estimated annual change of 0.4 per cent and an overall increase of 4.3 per cent over this twelve-year period.

The four leading causes of multi-day hospital admissions due to injury and poisoning in 2005–06 were falls (47 per cent), transport (15 per cent), other unintentional injuries (10 per cent) and self-harm (six per cent).

The age-adjusted death rate due to injury and poisoning did not change significantly between 1990-91 and 2004-05 and was 34.4 per 100,000 persons in 2004–05.

The four leading causes of death due to injury and poisoning in 2004–05 were falls (27 per cent), intentional self-harm injury (27 per cent), transport (21 per cent) and unintentional poisoning (11 per cent).

Mental health

Mental illness was responsible for approximately 15 per cent of the total disease burden in Victoria in 2001. Less than five per cent of the attributable burden of 46,390 disability-adjusted life years (DALYs) in males and 48,027 DALYs in females was due to premature mortality. Anxiety and depression ranked second in the top ten leading causes of disease burden in Victoria in 2001, representing 7.1 per cent of the total disease burden.

In 2006, 2.4 per cent of Victorian males and 3.3 per cent of Victorian females aged 18 years or over had scores of 30 or greater on the Kessler 10 scale, and were classified as likely to be at high risk of being affected by psychological distress.

Estimates from the 2006 VPHS indicate that approximately seven per cent of males and 12 per cent of females reported having sought professional help for a mental health-related problem during the previous year.

There were 50,885 hospital admissions for males with a mental health-related principal diagnosis in 2005–06, a rate of 200.5 admissions per 10,000 males, accounting for 471,681 patient days. Among females, there were 80,646 hospital admissions in 2005–06, a rate of 311.3 admissions per 10,000 females, accounting for 574,336 patient days.

Between 2000 and 2004 males aged 20–39 years were consistently at higher risk of suicide death than any other age group, although this difference was statistically significant only in 2000 and 2001.

Musculoskeletal conditions

Arthritis and musculoskeletal disorders were endorsed as a national health priority area in July 2002. Musculoskeletal disease was responsible for three per cent of the total Victorian disease burden in 2001, or 7,114 DALYs in males and 11,121 DALYs in females. Osteoarthritis was the single largest contributor, accounting for approximately 53 per cent of the overall burden attributable to musculoskeletal disease.

In 2005–06 there were 20,753 hospital admissions for osteoarthritis, with an average of 5.3 bed days. The overall rate of hospital admission for osteoarthritis has increased by 31 per cent since 1999–00. Admission rates for osteoarthritis were higher in rural areas than in metropolitan areas between 1999-00 and 2005-06.

Estimates from the VPHS 2006 suggest that one in five (20.0 per cent) Victorians aged 18 years or over had ever been diagnosed with arthritis, and 4.4 per cent diagnosed with osteoporosis.

Oral health

After diabetes, hospital admissions for dental ambulatory care sensitive conditions (ACSCs) were the second highest cause of all potentially avoidable hospital admissions in Victoria in 2005–06. Between 2000–01 and 2005–06, the admission rate per 1,000 population for dental ACSCs increased by 41.1 per cent. Rural rates were higher than metropolitan rates, with the gap narrowing over the period, as the increase in metropolitan rates was greater than the increase in rural rates.

There were almost 25,900 procedures for adults involving the removal or restoration of teeth in Victorian hospitals in 2005–06. More than half of these procedures involved the removal of wisdom teeth. Procedure rates for adults increased significantly between 2000-01 and 2005-06. The female procedure rate was significantly higher than the rate for males in 2005–06, and the rate for metropolitan areas was significantly higher than the rate for rural areas.

Regular visits to see a dentist for a check-up are important for the prevention, early detection and timely treatment of oral disease. The *National dental telephone interview survey 2002* shows that 93 per cent of Victorian children aged 5–11 years, and 81 per cent aged 12–17 years visited a dentist at least once in the previous two years, and almost three-quarters (73 per cent) of Victorian adults (18 years or over) visited a dentist in the previous two years.

Communicable diseases

In 2006 there were 62, 979 children aged 24-27 months in Victoria recorded on the Australian Childhood Immunisation Register (ACIR) of whom 93.5 per cent were fully immunised. The proportion of children aged 24–27 months who had had all their age-appropriate vaccinations was 94.8 per cent for rural areas and 93.0 per cent for metropolitan areas of the state. There were also 63,887 children aged 72–75 months recorded on the register, of whom 87.8 per cent had been fully immunised (88.6 per cent for rural regions and 87.5 per cent for metropolitan regions).

Surveillance on infectious diseases is undertaken to pinpoint outbreaks and to prevent the spread of infection. Notifications of infectious diseases from medical practitioners and laboratories are the fundamental component of the surveillance. In Victoria, surveillance for communicable diseases occurs under the the authority of the Health (Infectious Diseases) Regulations. These Regulations require medical practitioners and pathology laboratories to notify the Department when they diagnose certain communicable diseases.

The 2006 communicable disease notification data reflects some noteworthy public health successes with respect to interventions. For example, there was a decline in the number of cases of invasive meningococcal group C disease between 2003 and 2006, attributable to the introduction of the national Meningococcal C Immunisation Program which commenced in January 2003.

Some notifications of communicable disease also increased in 2006. There were 1,111 notifications of cryptosporidiosis in 2006, double that in 2005. Much of the increase in cases is attributed to outbreaks associated with swimming pools. The number of notified cases of specific organisms or agents (not reported elsewhere) associated with gastrointestinal illness potentially linked to food or water also rose sharply in 2006, although the number of confirmed or suspected food-borne outbreaks remained stable compared to previous years.

Other challenges in the area of communicable disease included the continuing rise in notification rates of sexually transmissible infections, particularly chlamydia. In 2006, there were 10,012 notifications of chlamydia, representing an 11.8 per cent increase in notifications since 2005. A 100 per cent increase on the 2005 number of notifications for infectious syphilis was also observed in 2006, with 234 notifications received by the Department of Human Services.

Health and the environment

Victoria generally enjoys a pleasant physical environment, with good to very good air quality and visibility. For example, in 2005 in Melbourne, the four-hour ozone air quality index was classified as ‘good’ or ‘very good’ on 98 per cent of days.

In Victoria, cases of legionellosis are more strongly associated with cooling tower systems. The number of notified cases of legionellosis attributed to *Legionella pneumophilia* is an important health outcome indicator used to measure the success of the government’s Legionella Reform Strategy, which aims to improve the controls and maintenance of cooling towers and to reduce the incidence of legionellosis. Reductions in the number of notified cases of legionellosis have been observed since 2000 in Victoria, with cases falling from 239 in 2000 to 51 in 2006. The percentages of cooling tower water samples taken by the department that tested positive for *Legionella* also declined from 9.5 per cent in 2000 to 2.8 per cent in 2006.

The quality of the drinking water in Victoria is generally very good, although there is room for improvement. The water quality standard for *Escherichia coli (E. coli)* states that 98 per cent of samples collected over any 12-month period should contain no E. coli per 100 mL if drinking water. In the 2005–06 reporting period only 471 out of 493 water sampling localities (95.54 per cent) met the *E. coli* standard.

Population subgroups

Mothers and children

Mothers’ and children’s health are important indicators of the overall health and wellbeing of population.

The perinatal mortality rate was 12.7 per 1,000 births in 2005, up from 9.4 per 1,000 births in 2000. The maternal mortality ratio was 10.5 per 100,000 confinements in 2005, compared with 16.0 per 100,000 confinements in 2004.

The average age of women giving birth in 2004 was 31 years, and the proportion aged 35 years and over rose to 22.4 per cent, an increase of almost 30 percent since 1998.

The proportion of forceps births continues to decline, with a corresponding increase in both elective and emergency caesarean births and vacuum extractions. In 2004, caesarean births accounted for 29.5 per cent of births, compared to 28.7 per cent in the previous year.

In 2006, more than one in five Victorian infants (22.1 per cent) had been exposed to maternal tobacco smoke at some stage *in utero*. This proportion was similar across rural (23.2 per cent) and metropolitan areas (21.8 per cent).

Based on the 2006 *Victorian child health and wellbeing survey*, the majority of Victorian children (aged 4–12 years) do not have any significant social and emotional problems, although 5.7 per cent of children have 'borderline' scores, and a further 5.3 per cent have 'of concern' scores on the Strengths and Difficulties questionnaire. Similarly, very few Victorian children (from 0–12 years of age) have a main carer who is at high risk of psychological distress (2.9 per cent).

Aboriginal and Torres Strait Islanders

The estimated resident Aboriginal population of Victoria was 30,140, or 0.6 per cent of the total Victorian population at the 2006 census. Victoria has 6.6 per cent of the total Australian Aboriginal population. Considerably more Victorians are of Aboriginal descent than Torres Strait Islanders or both Aboriginal and Torres Strait Islander descent. Just under half the Aboriginal population in Victoria were resident in metropolitan areas, with the northern and western metropolitan areas home to 25 per cent of the total Aboriginal population.

The life expectancy of Aboriginal Victorians was approximately 17 years below that of all Victorians in 2001. For many socioeconomic factors that influence health, Aboriginal Victorians were at a greater disadvantage compared to the non-Aboriginal population.

In 2004, almost 75 per cent of live-born babies to Aboriginal mothers in Victoria had a birth weight in the range 2,500–3,999 grams. The mean birth weight was 3,110 grams. Sixteen per cent of live-born babies to Aboriginal mothers fell within the low birth weight range. The higher rate of perinatal deaths of Aboriginal babies appears in both Victorian and national data. In Victoria such small numbers are involved that the numbers can fluctuate from year to year and no trend can be reliably determined.

While Aboriginal status is likely to be under-reported in the Victorian hospital data collection, age-adjusted hospitalisation rates among Aboriginal people were higher than those for non-Aboriginal people for a range of health problems and disease conditions in 2005–06.

Rural/regional populations

In 2006, approximately 73 per cent of the state's population lived in metropolitan areas, and 27 per cent lived in rural/regional areas. More than 91.6 per cent of Victoria is classified as highly accessible and 7.3 per cent is classified as accessible, based on the Accessibility/Remoteness Index of Australia (ARIA). Nonetheless, there is some variability within departmental regions with respect to the degree of remoteness of populations from services.

Hospital admission rate ratios for total ACSCs varied significantly by degree of remoteness, as measured by ARIA. Admission rate ratios of total ACSCs were 1.26 (95% CI: 1.23–1.29) in moderately accessible areas (ARIA 3.51–5.80), 1.20 (1.19–1.22) in accessible areas (ARIA 1.84–3.51) and 0.98 (0.97–0.98) in highly accessible areas (ARIA 0–1.84). The highest ACSC admission rate ratio was 1.59 (95% CI: 1.46–1.72) for dental conditions, in remote areas, compared to highly accessible areas. For selected health priority areas, such as diabetes and osteoporosis, the admission rate for diabetes was 21 per cent higher in areas that were moderately accessible, compared to highly accessible areas; however, osteoporosis admission rates were 33 per cent lower.

Socio–economically disadvantaged populations

Socioeconomic disadvantage is typically associated with low income, high unemployment and low levels of education.The Index of Relative Socio-Economic Disadvantage (IRSED) is widely used to categorise geographical areas based on their social and economic characteristics. IRSED refers to the average disadvantage of all people who live in a geographic area. Quintiles of relative socio-economic disadvantage were identified using IRSED scores for local government areas (LGAs), such that each quintile contained approximately 20 per cent of the Victorian population. Quintile 1 (Q1) represents the fifth of the population living in the most relatively disadvantaged LGA areas and quintile 5 (Q5) represents the fifth of the population residing in the least relatively disadvantages LGA areas.

Between 1996 and 2005, life expectancy at birth for males born in the least disadvantaged population quintile areas improved from 78.0 to 81.4 years, while for males born in the most disadvantaged population quintile areas, it rose from 74.6 to 78.9 years. The gap in male life expectancy at birth between the most and least advantaged population quintiles decreased from 3.3 years in 1996 to 2.5 years in 2005. Over the same period, the gap in female life expectancy at birth between the most and least advantaged population quintiles decreased from 2.2 to 1.6 years.

Admission rates for total ambulatory care sensitive conditions (ACSCs) ranged from 50.2 per 1,000 persons (95% CI: 49.8–50.6) for individuals living in areas in the most disadvantaged areas (Q1) to 34.6 per 1,000 persons (34.3–35.0) for individuals in areas in the least disadvantaged areas (Q5). The admission rate ratios for individuals in the most disadvantaged quintile areas were significantly higher in 2005–06 than the Victorian estimate for eight of the top ten ACSCs admissions (diabetes complications, COPD, pyelonephritis, congestive heart failure, asthma, angina, cellulitis and iron deficiency anaemia).

There were significant differences in the admission rates for selected health priority areas conditions, between the least and most disadvantaged population quintiles. The admission rates for diabetes as the first diagnosis (principal) ranged from 4.6 per 1,000 persons (95% CI: 4.4–4.7) in Q1 (most disadvantaged areas) to 2.9 per 1,000 persons (2.8–3.0) in Q5 (least disadvantaged areas). The admission rates for ischaemic heart disease (IHD) ranged from 8.1 per 1,000 persons (95% CI: 8.0–8.3) in IRSED Q1 (most disadvantaged areas) to 5.8 per 1,000 persons (5.7–6.0) in Q5 (least disadvantaged areas). The admission rates for stroke ranged from 2.9 per 1,000 persons (95% CI: 2.8–3.0) in Q1 to 2.3 per 1,000 persons (2.2–2.4) in Q5. Admission rates in 2005–06 for asthma ranged from 2.1 per 1,000 persons (95% CI: 2.0–2.2) in Q1 to 1.4 per 1,000 persons (1.3–1.5) in Q5.

Victorians from non-English speaking backgrounds

The proportion of the Victorian population that were born overseas was approximately 25 per cent in 1996 and 2001, but was approximately 22 per cent in 2006. Between 1996 and 2001, the proportion of the Victorian population born in the UK or Europe fell, and the proportion of those born in Asia rose.

Between 1996 and 2006, the proportion of skilled settlers grew steadily from 14.4 per cent to 47.0 per cent, while the proportion of family settlers fell from 53.2 per cent to 28.5 per cent, as did the proportion of humanitarian settler arrivals (19.6 per cent to 10.6 per cent). Based on self-reporting in the 2006 census data, almost four per cent of the Victorian population spoke English either not well, or not at all.

Recent mortality data for Victoria from 2005 also shows that Australian-born residents, together with residents born in the UK, Ireland and Poland, had a significantly higher mortality rate than the rate for all Victorians. Victorian residents born in China and Greece had significantly lower mortality rates than the overall Victorian rate.

Refugees

In the period 2000–05, an estimated 19,000–24,000 people of refugee background settled in Victoria, including humanitarian entrants, asylum seekers and migrants of refugee background. Over the five-year period 1 January 2000 to 1 January 2005, most (14,756 people, in total) were were processed through the Humanitarian Program. In 2006–07, 3,629 humanitarian entrants were settled in Victoria. There were almost equal numbers of females and male entrants in all age groups. Over half of all entrants were children and young people aged under 20 years.

When compared with the Australia-born population, rate ratios of total hospital admissions were lower for those born in the 67 percent (10 of 15) of refugee-source countries. When compared with Australia-born averages, emergency admission rate ratios were similar for 40 per cent (six of 15) or lower for 33 per cent (five of 15) of the refugee-source countries. Rate ratios of length of stay (that is, hospital bed days) were lower than the Australia-born average for 93 per cent (14 of 15) of the refugee-source countries. One country reported no clear patterns over the six-year period.

Total ACSCs admission rate ratios were lower than the Australia-born average for 40 per cent (six of 15) of the refugee-source countries. Equally, 40 per cent of the refugee-source countries reported similar total ACSCs admission rate ratios when compared with the Australia-born. Lower rate ratios of admission due to mental/behavioural disorders were found for 93 per cent (14 of 15) of the refugee-source countries, when compared with Australia-born averages. No refugee-source country recorded a pattern of higher mental/behavioural disorders admission rate ratios.

Prisoners

There were 4,183 adults (aged 18 years and over) in Victorian prisons at 30 June 2007, comprising 15.4 per cent of all prisoners in Australia. The majority of prisoners were male (93.9 per cent), with only 257 female prisoners in Victorian prisons at 30 June 2007. The population was relatively young, with almost one-third (32.5 per cent) of prisoners aged under 30 years.

Estimates derived from the *Victorian prisoner health study 2002* showed that the prevalence of self-reported chronic conditions were generally higher in the prison population than in the wider community. Overall, 29 per cent of prisoners in the study reported having been diagnosed with asthma by a doctor, and half (50 per cent) reported having been diagnosed with at least one cardiovascular condition.

Research shows that the prison population is at increased risk of communicable disease, especially from blood-borne viruses. Estimates derived from serological testing undertaken in Victorian prisons in 2002 suggest that approximately half of all prisoners were seropositive for hepatitis A virus antibodies, one-third were seropositive for hepatitis B core antibodies and 58 per cent were seropositive for hepatitis C.

Estimates from the *Victorian prisoner health study 2002* showed that 28 per cent of prisoners had ever been told they have a mental health disorder by a health professional. The most common mental health disorder reported by prisoners was depression, with one in five (21 per cent) reporting having ever been diagnosed with the condition. This was followed by schizophrenia (five per cent) and bipolar disorder (four per cent).

There were 608 separations for prisoners from Victorian hospitals in 2005–06. The average length of stay in hospital was 3.01 days, and the leading causes for hospital separations were injury and poisoning, accounting for 18.6 per cent of all separations for prisoners in 2005–06, followed by digestive system diseases (18.1 per cent) and less well-defined conditions (16.0 per cent).

The results of the *Victorian prisoner health study 2002* showed the prevalence of health risk behaviours as high among prisoners in comparison to the wider population. In line with similar studies undertaken in other jurisdictions, prisoners had high levels (41 per cent) of harmful or hazardous use of alcohol, more than three-quarters (69 per cent) had ever injected illicit substances, they were unlikely to use sun protection when out in the sun, approximately half (52 per cent) usually added salt to their food and one in five (20 per cent) did not purposefully engage in any exercise in the four weeks prior to survey.

Introduction

Public health surveillance refers to the ongoing collection, analysis, interpretation and dissemination of data pertaining to the health and wellbeing of populations. Surveillance systems that contain comprehensive and contemporary information about the health and wellbeing of entire populations give us not only basic facts about the extent of health determinants, behaviours or outcomes, but also provide:

- insights into the distribution of various diseases across population groups and geographic regions
- recognition (or substantiation) of trends in the causal and associated determinants of health
- opportunities to identify emerging public health issues.

A key component of surveillance is the ability to **understand** and **use** the information provided through the process of surveillance, in order to improve the health and wellbeing of populations. This is referred to as 'health intelligence', and is essential for planning, implementation and evaluation of public health policies and programs.

Publications such as this edition of *Your health* are important products of surveillance. This report contains a suite of public health indicators pertaining to health determinants, health-related behaviours and health outcomes of Victorians. Understanding, using and transferring the knowledge gained from the information contained is this report is the next important step for readers concerned with improving the health and wellbeing of all Victorians.

About this report

This report is the second in the 'Your health' series. The report contains selected public health indicators, many of which are standardised to monitor trends over time. Several sources of data were used to develop these indicators. We have presented the most recent data available, or if no new data was available we have presented data from the previous report. In some instances information has been presented by calendar year, in others by financial year, however this has been clearly stated in every case. Most of the information provided in this report was based on Victorian data, however, in the absence of Victorian data, specific sections of the report refer to Australian data.

Some indicators are based on pre-existing analyses of data from the Health Intelligence Unit of the Victorian Department of Human Services, such as the *Victorian ambulatory care sensitive conditions study*, the *Victorian population health survey* and the *Victorian burden of disease study*. Other indicators were developed from other program areas within the department, such as those pertaining to mothers' and children's health, environmental health and communicable diseases. External sources of data were also used, such as data from the Victorian Cancer Council and the Australian Bureau of Statistics.

Content

This report has six sections:

Section 1: Health status

Section 2: Health-related behaviours

Section 3: Determinants of health

Section 4: Health outcomes

Section 5: Health and the environment

Section 6: Population subgroups

Section 1 includes indicators of health status, such as burden of disease, life expectancy at birth, avoidable mortality, ambulatory care sensitive conditions and self-reported health. Time series and cross-sectional data are provided at a state-wide and small-area level, to identify changes in health status and present current health profiles.

Section 2 contains information on health-related behaviours, such as smoking, nutrition, alcohol intake and physical inactivity among adults. It also includes indicators on population-based screening participation.

Section 3 contains information on the various determinants of health, such as education, employment and income. It also contains other determinants of health, such as social support, connectedness and community participation.

Section 4 contains information on various health outcomes, including cardiovascular disease, diabetes, cancer, asthma, injury and poisoning, mental health, musculoskeletal conditions and oral health. Key communicable diseases indicators are also presented.

Section 5 contains information pertaining to health and the environment. It includes indicators such as air quality, legionellosis notifications, fluoridation of local water supplies and numbers of hot days and nights.

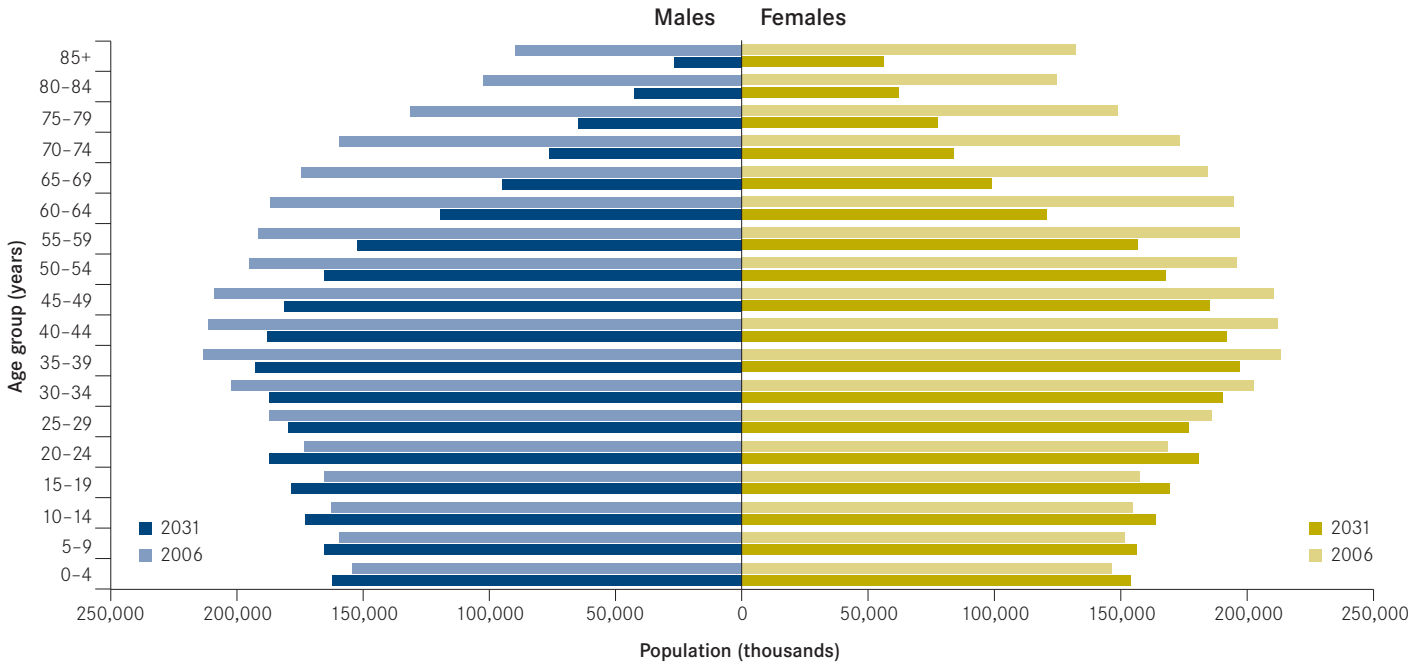
Section 6 contains information pertaining to various population subgroups. This section incorporates chapters about the health of mothers and children, Aboriginal and Torres Strait Islanders, refugees and prisoners. It also contains chapters about populations from rural Victoria, the culturally and linguistically diverse and the socio-economically disadvantaged.

Sources and methods

A wide range of data sources was used to develop and analyse the public health indicators presented in this report. The data sources are referenced for each indicator and statistical methods summarised in the appendix.

Victorian population

Estimated resident population of 2006 and projected population of 2031, Victoria



Note: Population estimates are at 30 June each year.

Source: Australian Bureau of Statistics, 2005, *Population Projections, Australia, 2004 to 2101*, Catalogue no 3222.0 (reissue), Canberra: ABS

The estimated resident population (ERP) is an estimate of the Victorian population that links people to a usual place of residence in Victoria. It is obtained by adding to the estimated population at the beginning of each period to the components of natural increase (on a usual residence basis) and net overseas migration. It also takes account of estimated interstate movements involving a change of usual residence. 'Usual residence' is defined as where each person lived or intends to live for six months or more from the reference date for data collection. After each census estimates for the preceding intercensal period are revised to ensure that the total intercensal increase agrees with the difference between the ERPs at the two respective census dates.

In the 2006 Census (held on 8 August 2006) there were 4,932,422 persons usually resident in Victoria; 49.1 per cent were males and 50.9 per cent were females. Of the total population in Victoria 0.6 per cent were Aboriginal and Torres Strait Islanders persons.[1] The female population only slightly outnumbered the male population in 2006: there were 2,512,007 females and 2,420,415 males. Children aged between 0–14 years made up 19.3 per cent of the Victorian population, and 24.5 per cent were persons aged 55 years and over. The median age of persons in Victoria was 37 years, which was equal to the median age for all persons in Australia.

Approximately 73 per cent of the Victorian population lived in the metropolitan department regions in 2006, with the remaining 27 per cent living in rural department regions.

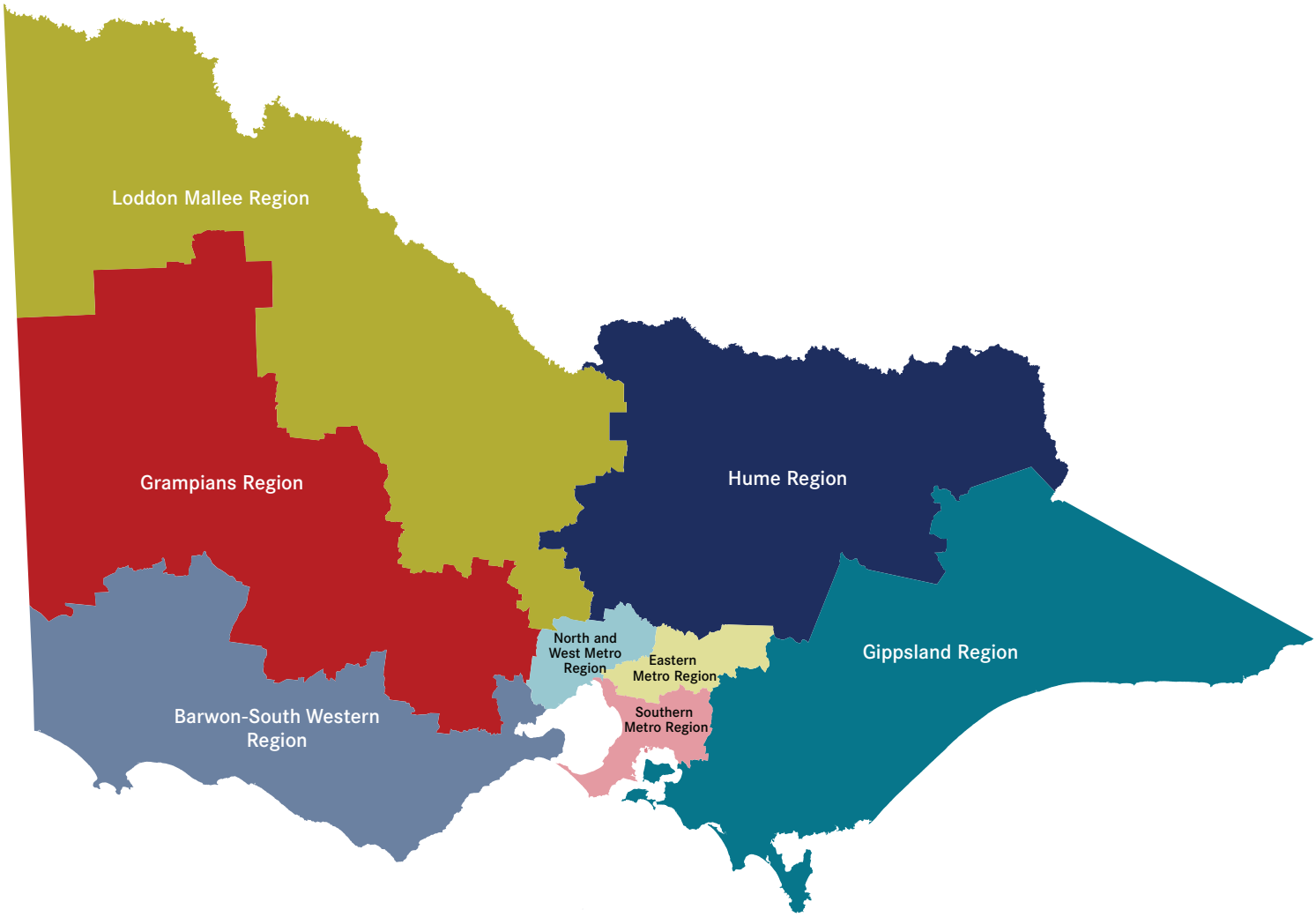
For more information

Australian Bureau of Statistics (ABS) website: www.abs.gov.au

Australian Bureau of Statistics (ABS), 1995, D*emographic estimates and projections: concepts, sources and methods*, Catalogue no 3228.0, Canberra: ABS.

1. This report uses the term 'Aboriginal people' to include all those who self-identify as Aboriginal, Torres Strait Islander or both.

Victorian Department of Human Services regions



There are eight Department of Human Services regions, which are aggregations of local government areas:

The **Barwon–South Western Region** incorporates an area of 29,635 square kilometres. It covers the south-west of the state, from Queenscliff in the east to the far south-west border which Victoria shares with South Australia. This region had an estimated population of 355,285 on 30 June 2006.

The **Grampians Region** covers an area of 47,980 square kilometres and extends east to west from Bacchus Marsh to the South Australian border, and north to south from Patchwollock to Lake Bolac. It had an estimated population of 216,292 in 2006.

The **Loddon Mallee Region** is located in the north-west corner of Victoria and covers an area of 59,149 square kilometres (approximately 26 per cent of the state), making it the largest department region in terms of geographic area. It had an estimated population of 307,644 in 2006.

The **Hume Region** covers an area of 40,427 square kilometres in provincial north–east Victoria and provides services to several cities, a range of small towns and many farming and agricultural communities, some of which are relatively isolated. The region also includes Victoria's alpine areas. It had an estimated population of 265,842 in 2006.

The **Gippsland Region** covers an area of 41,538 square kilometres (approximately 18 per cent of the state). The region extends from the outskirts of the Eastern Metropolitan Region growth area of Cardinia Shire, to the New South Wales border. It had an estimated population of 247,929 in 2006.

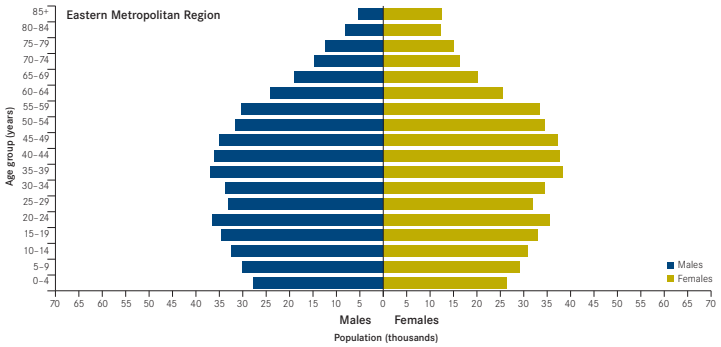
The **North and West Metropolitan Region** (formerly two separate regions: the Northern Metropolitan Region and the Western Metropolitan Region, which were combined in February 2004) has a total area of 2,980 square kilometres. This region had an estimated population of 1,495,281 in 2006, the largest of the department's regions.

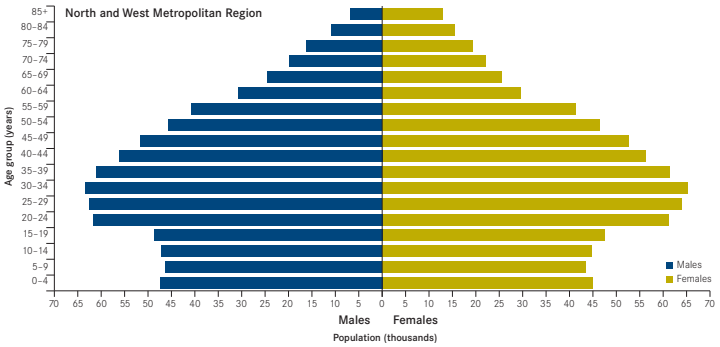
The **Eastern Metropolitan Region** covers an area of 2,966 square kilometres and includes inner suburbs such as Kew and Hawthorn, large outer metropolitan suburbs such as Croydon, and semi-rural townships such as Healesville. It had an estimated population of 986,537 in 2006.

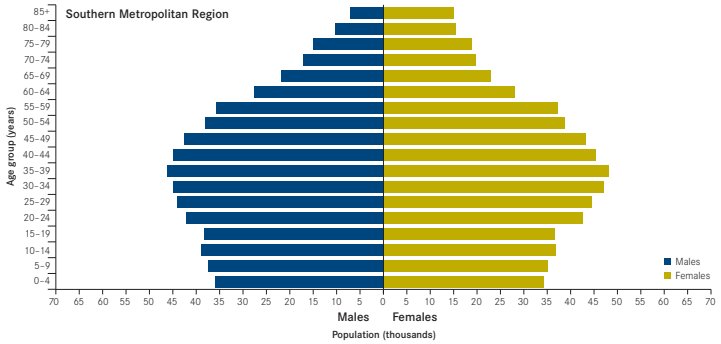
The **Southern Metropolitan Region** covers an area of 2,888 square kilometres and extends from inner urban suburbs such as Port Melbourne to the Mornington Peninsula, eastward across suburban and industrial areas through to Pakenham and numerous small towns on the metropolitan and rural fringe. This region had an estimated population of 1,220,011 in 2006.

Population pyramids, department regions, 2006

Metropolitan regions





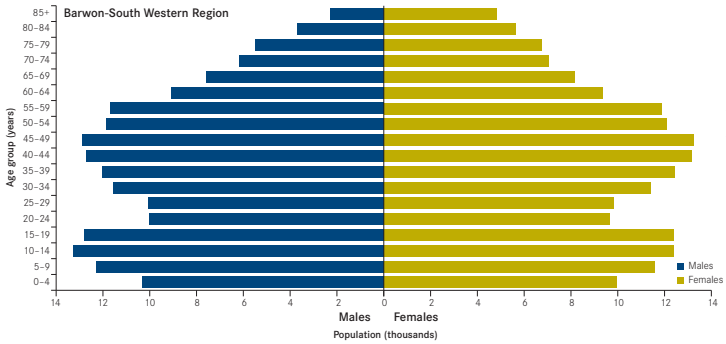


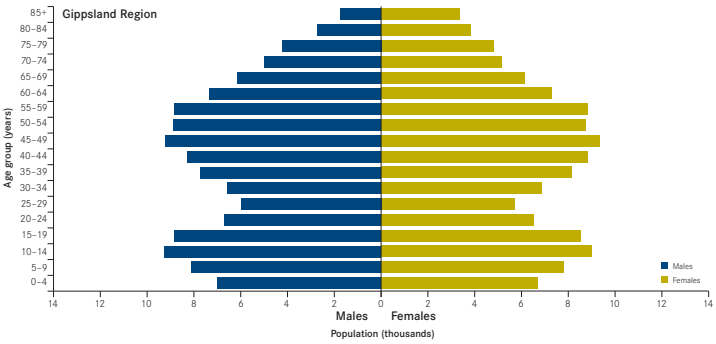
The earlier map of the department regions reflects the differences in their geographical area, and proximity to Melbourne. The population pyramids for each of the department's regions reflect differences in the size of the regions with respect to estimated resident population.

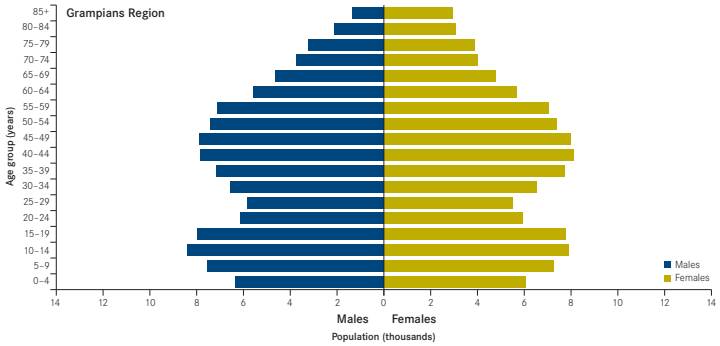
For more information

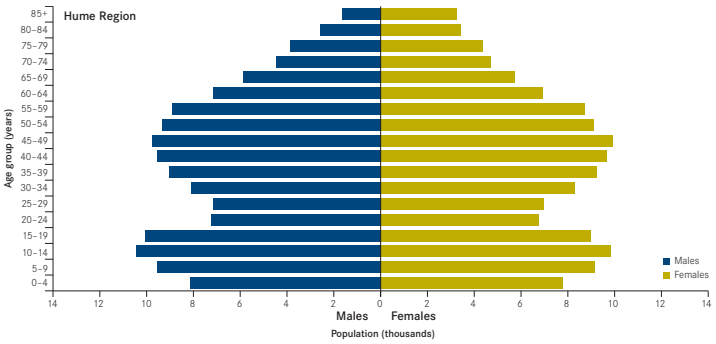
Australian Bureau of Statistics (ABS) website: www.abs.gov.au

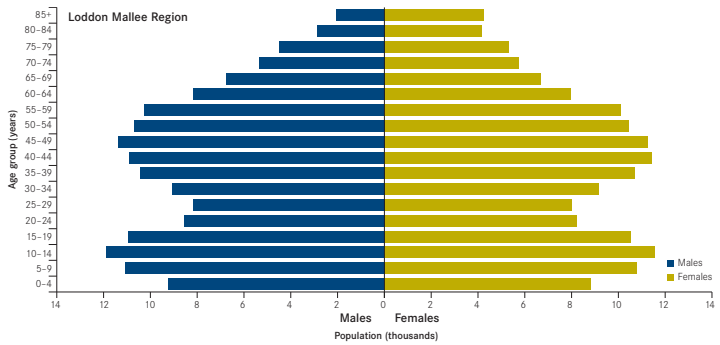
Rural regions











For more information

Australian Bureau of Statistics (ABS) website: www.abs.gov.au

Population age structure, department regions

The populations used to compute rates often vary considerably according to age, race, sex and other demographic factors. Therefore, in order to compare different populations (states, regions, primary care partnerships) or to compare the experience over time for one area with a changing population, it is advisable to adjust or standardise the effects of such factors as age and/or sex in these groups.

The most commonly used adjustment is for age. Age–standardisation is a method of removing the influence of age when comparing populations with different age structures. This may be important because the rates of many diseases vary strongly (usually increasing) with age. The age specific rates of the different populations are applied to the same 'standard' structure, then the disease rates (or other rate of interest) that would have occurred with that standard population structure are calculated and compared. Similarly, age– and sex–standardisation adjusts for the influence of age and sex differences in order to facilitate comparisons across different populations. In this report, the reference population is usually the mid-year Victorian population for 2001.

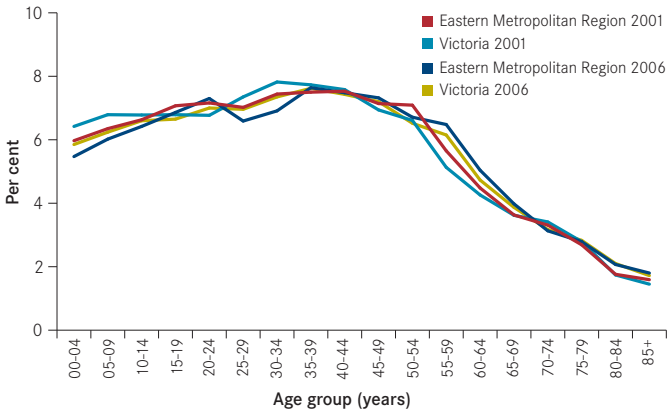
Many of the indicators in this report are age-standardised, or age-and-sex standardised, to a reference population, usually the Victorian population in 2001. While an age–adjusted rate evens the differences in demographic factors such as age distribution, in the process, it becomes an artificial figure. An adjusted rate is an artificially created figure that enables comparison across time and space. It should be compared only with another adjusted rate that was computed using the same "standard population" or "reference population". For example, an age–adjusted mortality rate is not an indicator of the absolute level of mortality in a population. It is only useful for purposes of comparison. For purposes of health planning and service delivery in a given area, it may be important to focus on the counts or numbers of cases, rather than age- or age-and-sex adjusted rates (since the latter are based on what is, from the area health planner's perspective, a 'hypothetical' population).

The graphs below provide an indication of the differences in population age structures for persons (i.e., males and females) in each of the Department of Human Services regions compared with Victoria, for 2001 and 2006. Relative to Victoria as a whole, the rural regions (Barwon–South Western, Grampians, Loddon Mallee, Hume and Gippsland) tend to have a higher proportion of children aged 5–14 years, and a lower proportion of adults aged 20–39 years. The North and West Metropolitan Region has a higher proportion of people aged 15–34 years than the Victorian average.

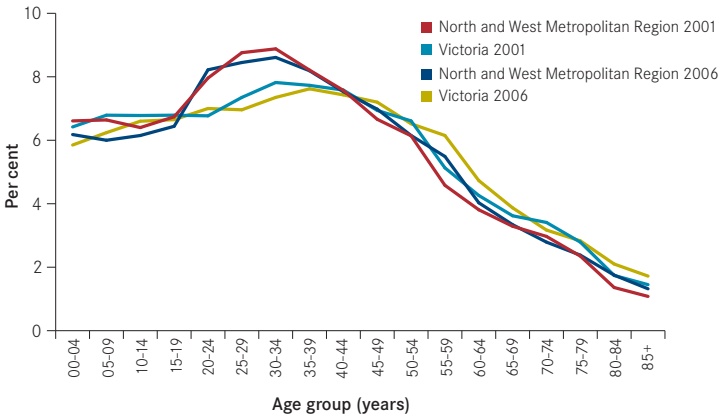
Population structure, departmental regions compared with Victoria, by age group, 2001 and 2006

Metropolitan regions

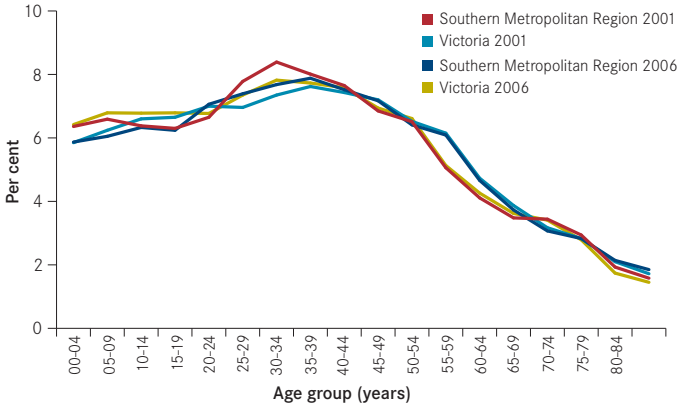
Eastern Metropolitan Region



North and West Metropolitan Region



Southern Metropolitan Region

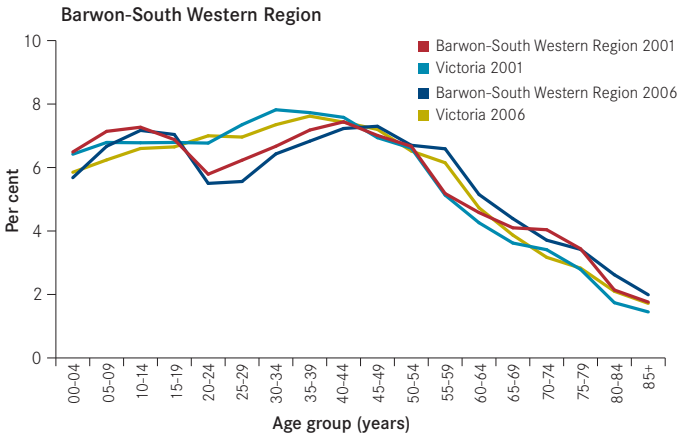


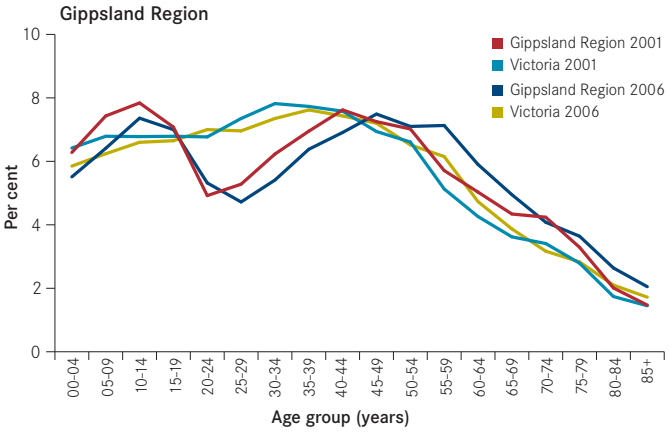
For more information

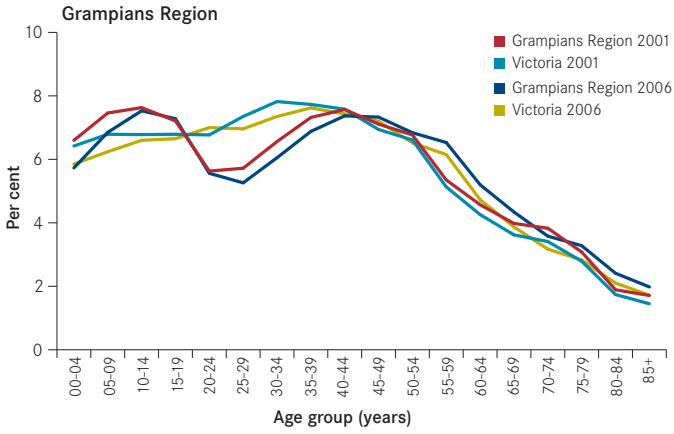
Australian Bureau of Statistics (ABS) website: www.abs.gov.au

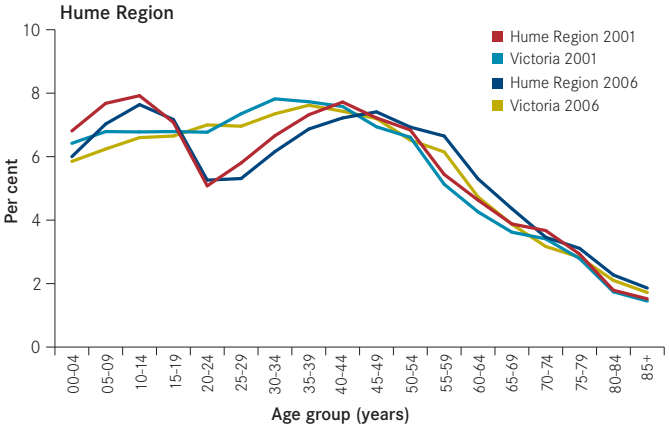
Population structure, departmental regions compared with Victoria, by age group, 2001 and 2006

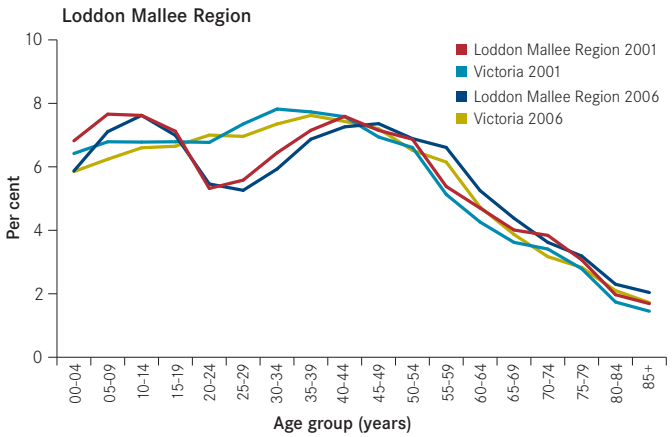
Rural regions











For more information

Australian Bureau of Statistics (ABS) website: www.abs.gov.au

Health status

This section presents information on general health status and health outcome indicators on burden of disease, life expectancy, avoidable mortality, ambulatory care sensitive conditions and self-reported health.

Burden of disease

In this chapter

- **disease and injury burden**
- **mortality burden in YLLs**
- **disability burden in YLDs**
- **burden of disease for major disease groups**
- **top 20 causes of burden of disease**
- **disease burden attributed to selected risk factors**

Summary

The 2001 *Burden of disease study* quantifies the contribution to the burden of disease of mortality, disability, impairment, illness and injury in 2001 from over 175 diseases, injuries and risk factors in a single indicator: the disability-adjusted life year (DALY).

One DALY can be thought of as one lost year of 'healthy' life, and is calculated as a combination of:

(a) years of life lost (YLL) as a result of premature mortality

(b) equivalent 'healthy' years of life lost as a result of disability (YLD).

The burden of disease measures the gap between current health status and an ideal situation in which everyone lives into old age free of disease and disability. It indicates the 'unfinished' health agenda, identifying areas in which additional health gains can be made.

The inclusion of non-fatal health outcomes provides a substantially different picture from that provided by traditional mortality statistics. For example, mental disorders are the third leading cause of burden after cancers and cardiovascular diseases.

Disability also contributes to the prominent position of neurological and sense disorders and chronic respiratory diseases ahead of the burden from injuries, which predominantly has a mortality component.

The leading main disease groups contributing to the burden of disease are:

- cancer (21 per cent)
- cardiovascular disease (18 per cent)
- mental disorders (14 per cent)
- neurological and sense disorders (12 per cent)
- chronic respiratory conditions (seven per cent)
- injuries (six per cent).

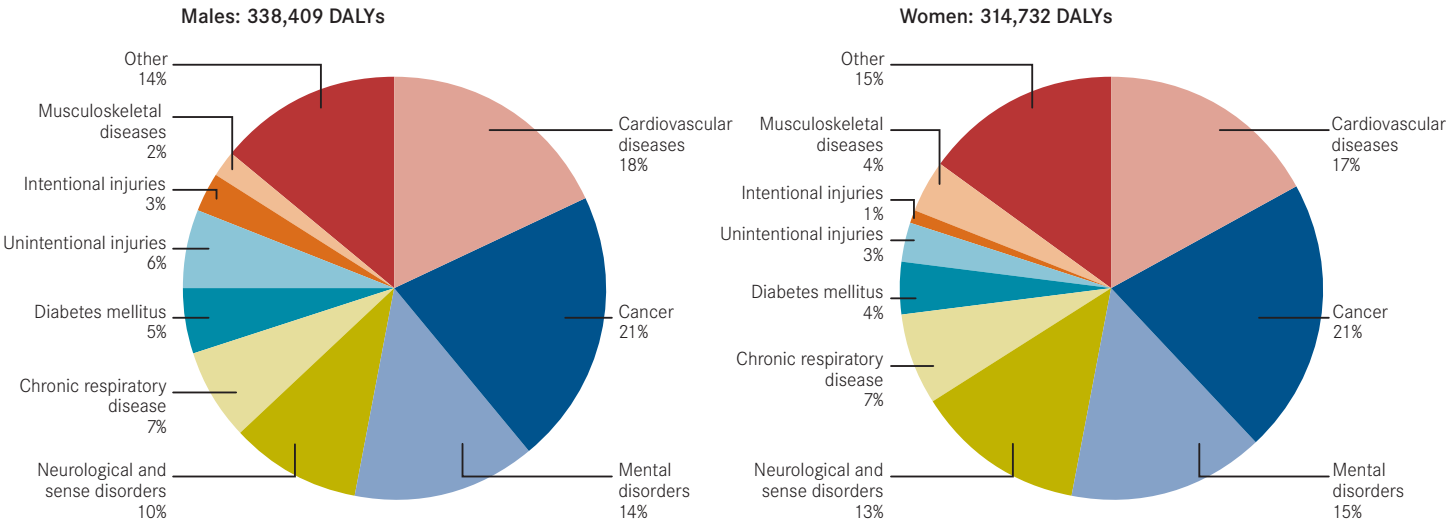
The total burden of disease and injury in Victoria in 2001 amounted to just over 650,000 DALYs, or 136 DALYs lost per 1,000 population. For every 1,000 Victorians, during 2001, the years of healthy life lost represents approximately 14 per cent of the total life years lived.

The male burden (in total DALYs) was approximately 11 per cent higher than the female burden. In terms of specific conditions, ischaemic heart disease and stroke head the list in females, together causing almost 14 per cent of the total disease burden. In males, ischaemic heart disease and diabetes account for almost 15 per cent of the total disease burden. Dementia, depression and breast cancer are the third, fourth and fifth leading causes in females, together accounting for over 16 per cent of the total female burden of disease and injury. Stroke, lung cancer and depression occupy the third, fourth and fifth ranks for males, together accounting for just over 12 per cent of the total male burden.

Risk factors, including lifestyle factors (such as tobacco smoking, physical inactivity, alcohol consumption, diet, unsafe sex and intimate partner violence), physiological states (such as obesity, high blood pressure and high cholesterol) and societal conditions (such as occupational exposures and air pollution) are responsible for a sizeable proportion of the total burden of disease in Victoria. Tobacco use (8.2 percent of total DALYs), obesity (8.0 per cent of total), blood pressure (7.3 per cent) and cholesterol (6.1 per cent) are each responsible for a greater burden than stroke, the second leading cause of disease burden.

Disability–adjusted life years (DALYs)

The disease and injury burden, by sex and broad disease grouping, Victoria, 2001



The overall size of the burden of disease and injury in Victoria in 2001 was 338,409 disability adjusted life years (DALYs) lost in men, and 314,732 in women. With the exception of injuries, musculoskeletal diseases and neurological and sense disorders, the proportions attributable to selected main causes are similar for both sexes. Cardiovascular diseases and cancer contribute equally, together accounting for 38 per cent of the total burden. Mental disorders are the next largest contributors, accounting for a further 15 per cent in both sexes. In men, nine per cent of the total burden was attributable to injuries, which was more than twice that experienced by women.

For more information

Department of Human Services (DHS) 2001, *The Victorian burden of disease study: mortality and morbidity in 2001,* Melbourne: Victorian Government Department of Human Services. www.health.vic.gov.au/healthstatus

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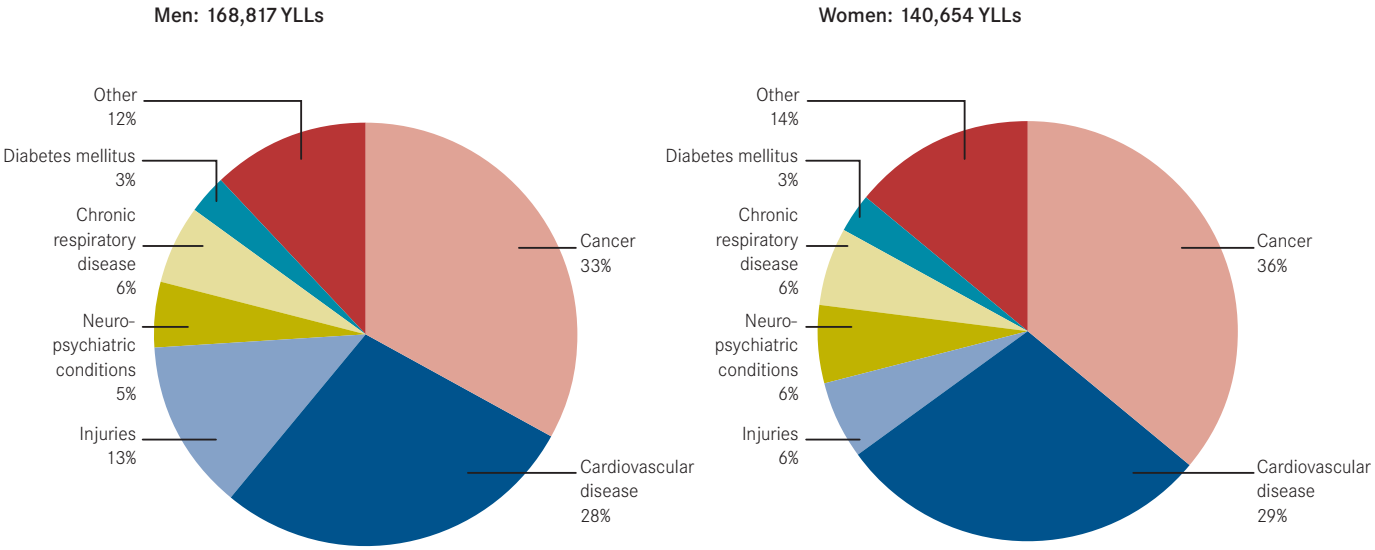
Years of life lost (YLLs)

The mortality burden in YLLs, by sex and broad disease grouping, Victoria, 2001



Premature mortality was responsible for 168,817 years of life lost (YLLs) in men and 140,654 YLLs in women in 2001. Cardiovascular disease, cancers and injuries were responsible for 73 per cent of the total mortality burden in both men and women. Cancers are a more important cause of YLLs than cardiovascular disease at all adult ages below 75 years. In people 75 years and over, cardiovascular diseases are responsible for over 40 per cent of the number of years lost. In young adult life, injuries are the main cause of years of life lost. Neonatal conditions dominate the mortality burden in the under five years age group.

For more information

Department of Human Services, (DHS), 2001, *The Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services: www.health.vic.gov.au/healthstatus

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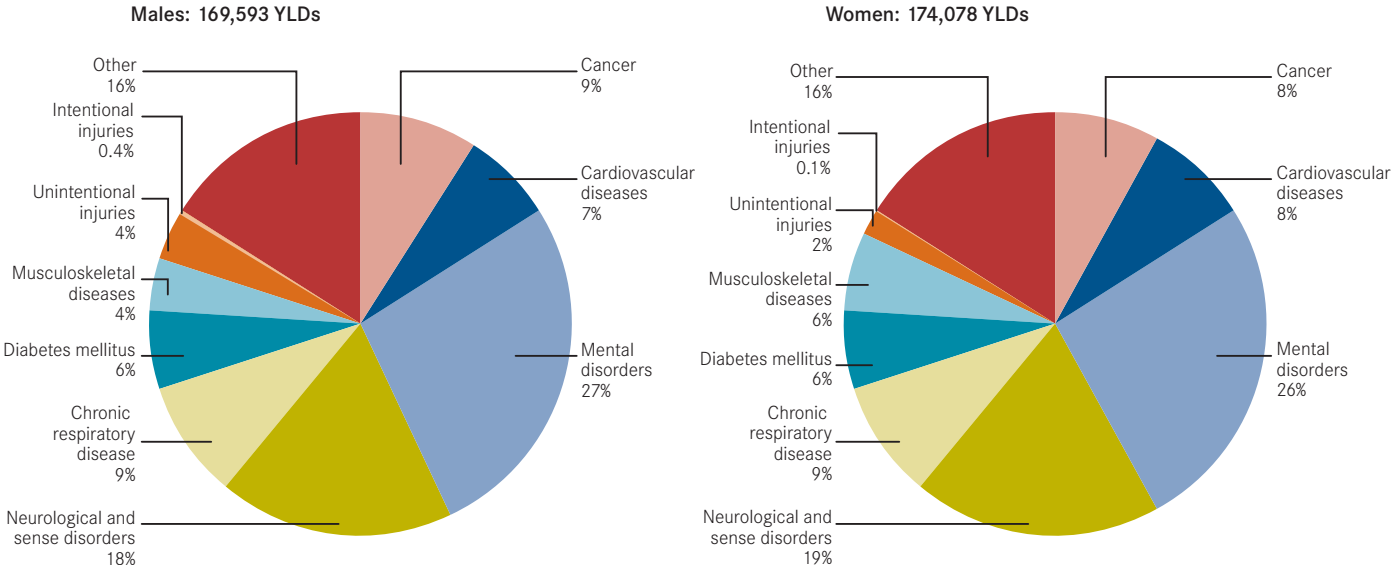
Years of life lost due to disability (YLDs)

The disability burden in YLDs, by sex and broad disease grouping, Victoria 2001



Non-fatal diseases and injuries were responsible for 169,593 years lost due to disability (YLDs) in males and 174,078 YLDs in females in 2001, or approximately half the total burden of disease and injury in Victoria. Mental disorders and neurological conditions contributed most to the total non-fatal burden, accounting for over 40 per cent in both men and women. While cardiovascular disease, cancer and injuries were responsible for over 70 per cent of the total mortality burden, these disease categories account for only approximately 20 per cent of the total YLDs.

For more information

Department of Human Services, (DHS), 2001, *The Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services: www.health.vic.gov.au/healthstatus

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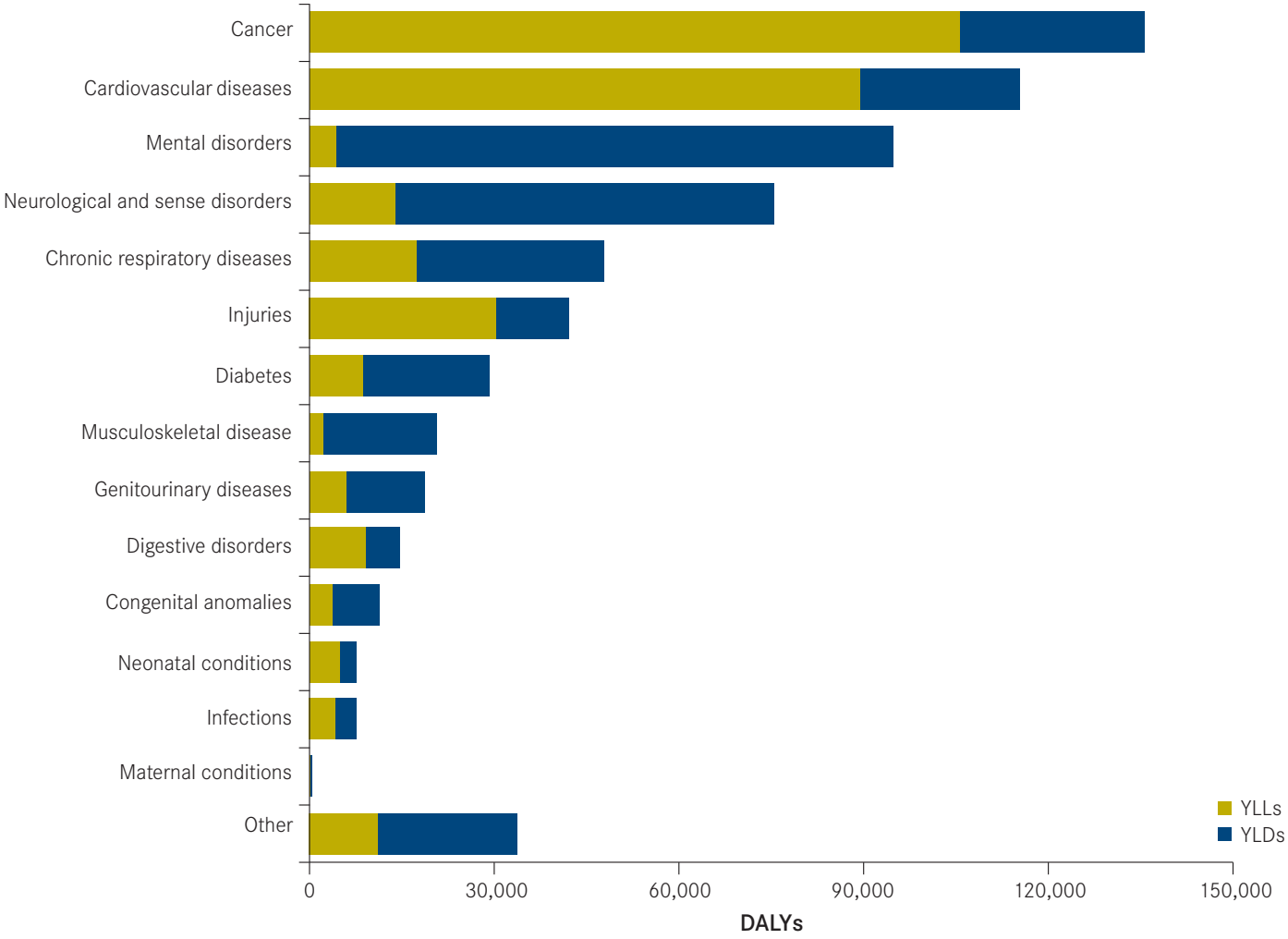
DALYs by specific disease and injury categories

Burden of disease (YLLs, YLDs and DALYs) for major disease groups, Victoria, 2001



Note: DALYs = disability-adjusted life years, YLDs = years of life lost due to disability, YLLs = years of life lost.

The inclusion of non-fatal health outcomes provides a substantially different picture from that provided by traditional mortality statistics. Mental disorders become the third leading cause of ill-health in Victoria, after cancer and cardiovascular disease. Neurological and sense disorders and chronic respiratory diseases make a larger contribution than injuries.

For more information

Department of Human Services, (DHS), 2001, *The Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services: www.health.vic.gov.au/healthstatus

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Top 20 causes of burden of disease

Top 20 causes of burden of disease in DALYs, by sex, Victoria, 2001

	Males	DALYs	Per cent of total DALYs		Females	DALYs	Per cent of total DALYs
1	Ischaemic heart disease	35,233	10.4	1	Ischaemic heart disease	25,557	8.1
2	Diabetes	15,315	4.5	2	Stroke	19,096	6.1
3	Stroke	14,713	4.3	3	Alzheimer's and other dementias	17,647	5.6
4	Lung cancer	14,240	4.2	4	Depression	17,346	5.5
5	Depression	13,927	4.1	5	Breast cancer	16,182	5.1
6	Chronic obstructive pulmonary disease	11,680	3.5	6	Diabetes	13,868	4.4
7	Prostate cancer	11,362	3.4	7	Asthma	9,106	2.9
8	Alzheimer's and other dementias	10,629	3.1	8	Lung cancer	8,824	2.8
9	Bowel cancer	10,039	3.0	9	Chronic obstructive pulmonary disease	8,631	2.7
10	Suicide	9,346	2.8	10	Bowel cancer	8,489	2.7
11	Hearing loss	9,082	2.7	11	Generalised anxiety disorder	8,382	2.7
12	Road traffic accidents	8,329	2.5	12	Osteoarthritis	6,036	1.9
13	Asthma	7,748	2.3	13	Hearing loss	5,288	1.7
14	Osteoarthritis	4,847	1.4	14	Caries	4,190	1.3
15	Psychoses	4,040	1.2	15	Borderline personality disorder	3,803	1.2
16	Caries	4,002	1.2	16	Ovary cancer	3,626	1.2
17	Generalised anxiety disorder	3,943	1.2	17	Rheumatoid arthritis	3,443	1.1
18	Alcohol dependence and harmful use	3,691	1.1	18	Psychoses	3,256	1.0
19	Heroin or poly-drug use and dependence	3,591	1.1	19	Road traffic accidents	3,174	1.0
20	Borderline personality	3,530	1.0	20	Suicide	3,129	1.0

Note: DALYs = disability-adjusted life years.

Ischaemic heart disease was the largest single cause of DALYs in both men and women, accounting for approximately 10.4 per cent and 8.1 per cent of the total burden in Victorian males and females respectively in 2001. Stroke, dementia, depression and breast cancer are the next four leading causes of DALYs in women. In men, diabetes, stroke, lung cancer and depression make up the next top four causes of DALYs.

For more information

Department of Human Services, (DHS), 2001, *The Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services: www.health.vic.gov.au/healthstatus

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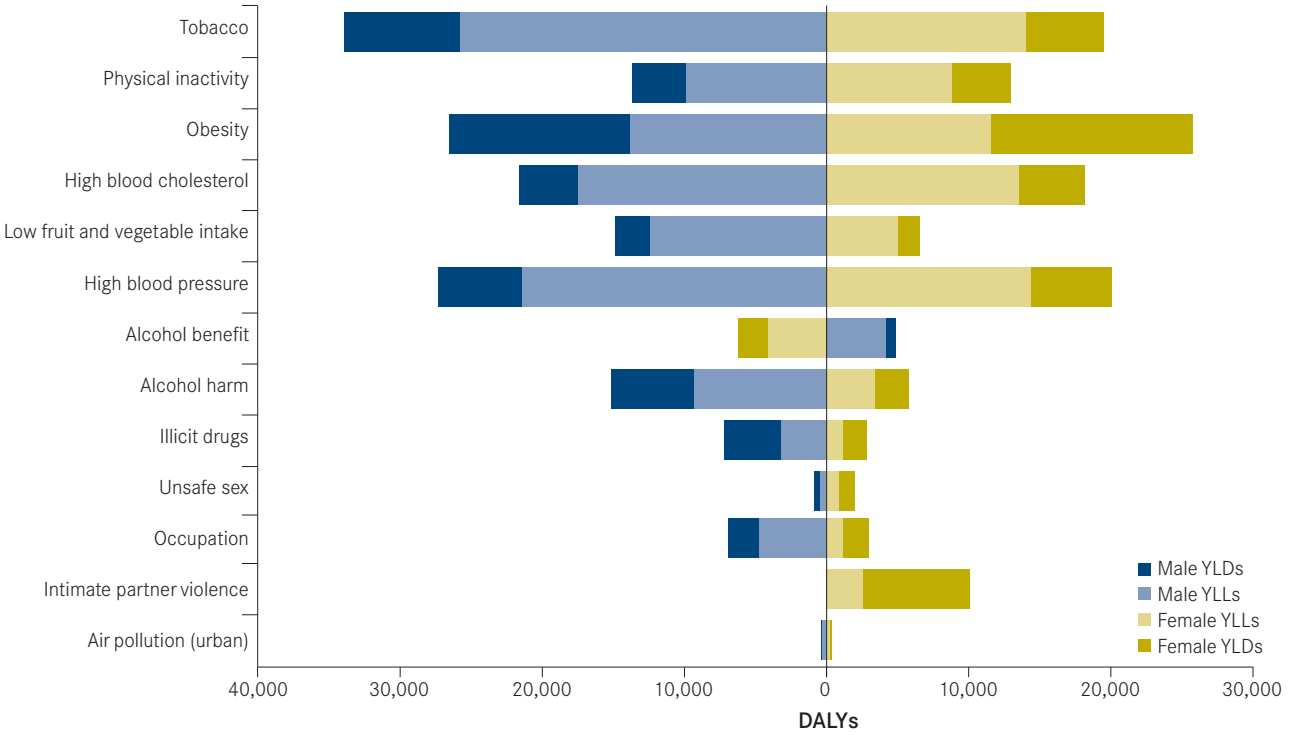
Disease burden of selected risk factors

Disease burden attributed to selected risk factors by sex, Victoria, 2001



Note: DALYs = disability-adjusted life years, YLDs = years of life lost due to disability, YLLs = years of life lost.

Risk factors, including lifestyle factors (such as tobacco smoking, physical inactivity, alcohol consumption, diet, unsafe sex, intimate partner violence), physiological states (such as obesity, high blood pressure, high cholesterol) and societal conditions (such as occupational exposures, air pollution), are responsible for a sizeable proportion of the total burden of disease in Victoria.

Tobacco use (8.2 per cent of total), body mass (8.0 per cent of total), blood pressure (7.3 per cent of total) and cholesterol (6.1 per cent) are each responsible for a greater burden than stroke, the second leading cause of disease burden. Physical inactivity (4.1 per cent), inadequate intake of fruits and vegetables (3.3 per cent), intimate partner violence (3.2 per cent in women) and the harm caused by alcohol (3.1 per cent) compare in size with the top ten conditions, while, illicit drugs (1.5 per cent), occupational hazards (1.5 per cent) and unsafe sex (0.4 per cent of total) compare in size with diseases in the second half of the top twenty causes of burden.

Tobacco smoking was the risk factor responsible for the greatest burden of disease in Victoria: approximately 10.0 per cent of the total burden of disease in males and 6.2 per cent in females.

The net harm associated with alcohol consumption was approximately 1.4 per cent of the total burden, because the injury and chronic disease burden associated with harmful and hazardous levels of alcohol consumption was offset by the burden of cardiovascular disease prevented by alcohol consumption. The protective effect is only relevant after age 45, whereas the harmful effects of alcohol are apparent at all ages.

For more information

Department of Human Services, (DHS), 2001, *The Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services: www.health.vic.gov.au/healthstatus

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Life expectancy

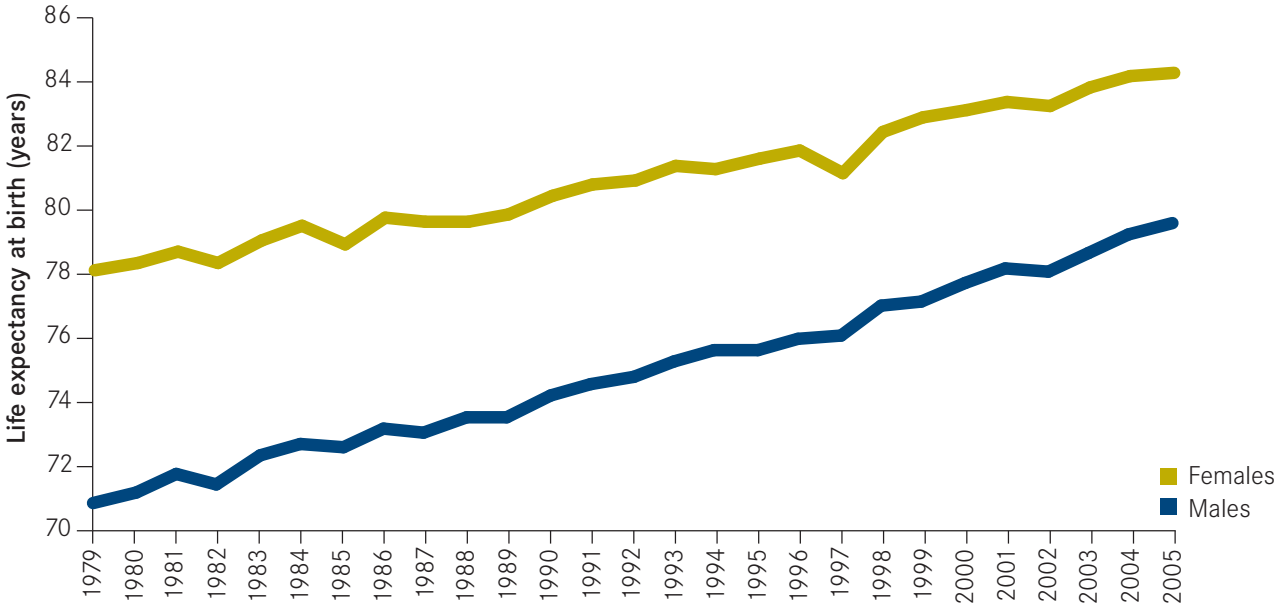
In this chapter

Summary

- Life expectancy at birth for all Victorians continues to rise. Whether measured for Victoria as a whole, or for the smallest Victorian local government area, there was improvement.
- A male born in Victoria in 2005 can expect to live 79.8 years, while a female can expect to live 84.3 years.
- Between 1996 and 2005 in Victoria, life expectancy at birth for a male born in metropolitan Melbourne increased from 76.6 to 80.3 years, while for a male born in rural Victoria it increased from 75.3 to 78.5 years. During the same period in Victoria, life expectancy at birth for a female born in metropolitan Melbourne increased from 82.0 to 84.7 years, while for a female born in rural Victoria it increased from 81.2 to 83.4 years.
- The difference in life expectancy between males and females is narrowing slowly (because life expectancy has increased at a faster rate in males than in females), and the metropolitan–rural difference in life expectancy has increased during this interval.
- Over the five-year intervals 1997-2001, 1999-2003 and 2000-04, the difference between the highest and lowest male life expectancy in LGAs has increased, by 5.8, 6.2 and 7.0 years respectively. The gap in male life expectancy across LGAs remained at 7.0 years in the 2001-2005 period. The differential in female life expectancy across LGAs also increased during the same periods, increasing from 4.7 years in 1997-2001 to 4.9 years in 1999-2003, to 5.6 years in 2000-04. In the period 2000-2005 the difference in female life expectancy at birth between the LGAs that ranked highest and lowest was 5.5 years.
- Life expectancy at birth increased significantly, by two to four years, for both males and females, regardless of socioeconomic status between 1996 and 2005.

Life expectancy at birth: Victoria

Life expectancy at birth, by sex, Victoria, 1979-2005



Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

Life expectancy at birth for Victorian males and females was calculated using an abridged period-life table with five-year age groups to 85 years and over. It is constructed using the age group and sex-specific mortality rates obtained during each year, and applied to a synthetic cohort of 100,000 people. This is a convenient summary index of mortality conditions prevailing in a population at a point in time.

Life expectancy at birth is an estimate of the average length of time that a person can expect to live, assuming that the current mortality rates for each age group will remain constant for the lifetime of that person. Mortality rates can, however, be expected to change during a person's lifetime.

Life expectancy at birth for all Victorians continued to rise. Whether measured for Victoria as a whole, or for the smallest Victorian local government area, there was improvement. A male born in Victoria in 2005 can expect to live 79.8 years, while a female can expect to live 84.3 years.

For more information

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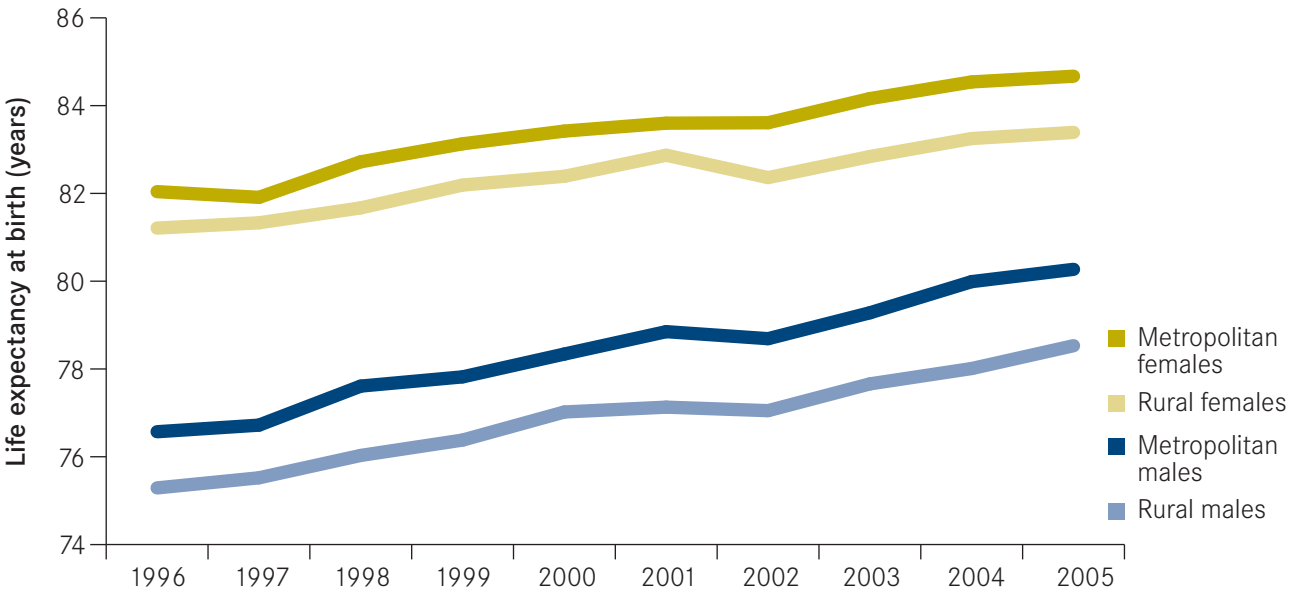
Life expectancy at birth: metropolitan–rural comparison

Life expectancy at birth, by sex, metropolitan–rural comparison, Victoria, 1996-2005



Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

The life expectancy estimate and rate of improvement varies between men and women and between rural and metropolitan areas of the state. Rural areas are defined as the Victorian Department of Human Service's rural regions, with the Melbourne metropolitan area as the comparator.

Between 1996 and 2005 in Victoria, life expectancy at birth for a male born in metropolitan Melbourne increased from 76.6 to 80.3 years, while for a male born in rural Victoria it increased from 75.3 to 78.5 years. During the same period in Victoria, life expectancy at birth for a female born in metropolitan Melbourne increased from 82.0 to 84.7 years, while for a female born in rural Victoria it increased from 81.2 to 83.4 years.

In rural Victoria in 2005 life expectancy at birth for both males and females (78.5 and 83.4 years respectively) was significantly lower than the state estimate, while in metropolitan Melbourne life expectancy at birth for both males and females (80.3 and 84.7 years respectively) was significantly higher than the state estimate.

The difference in life expectancy at birth in 2005 between rural and metropolitan Victoria was 1.7 years in males (2.0 years in 2004) and 1.3 years in females (1.3 years in 2004).

For more information

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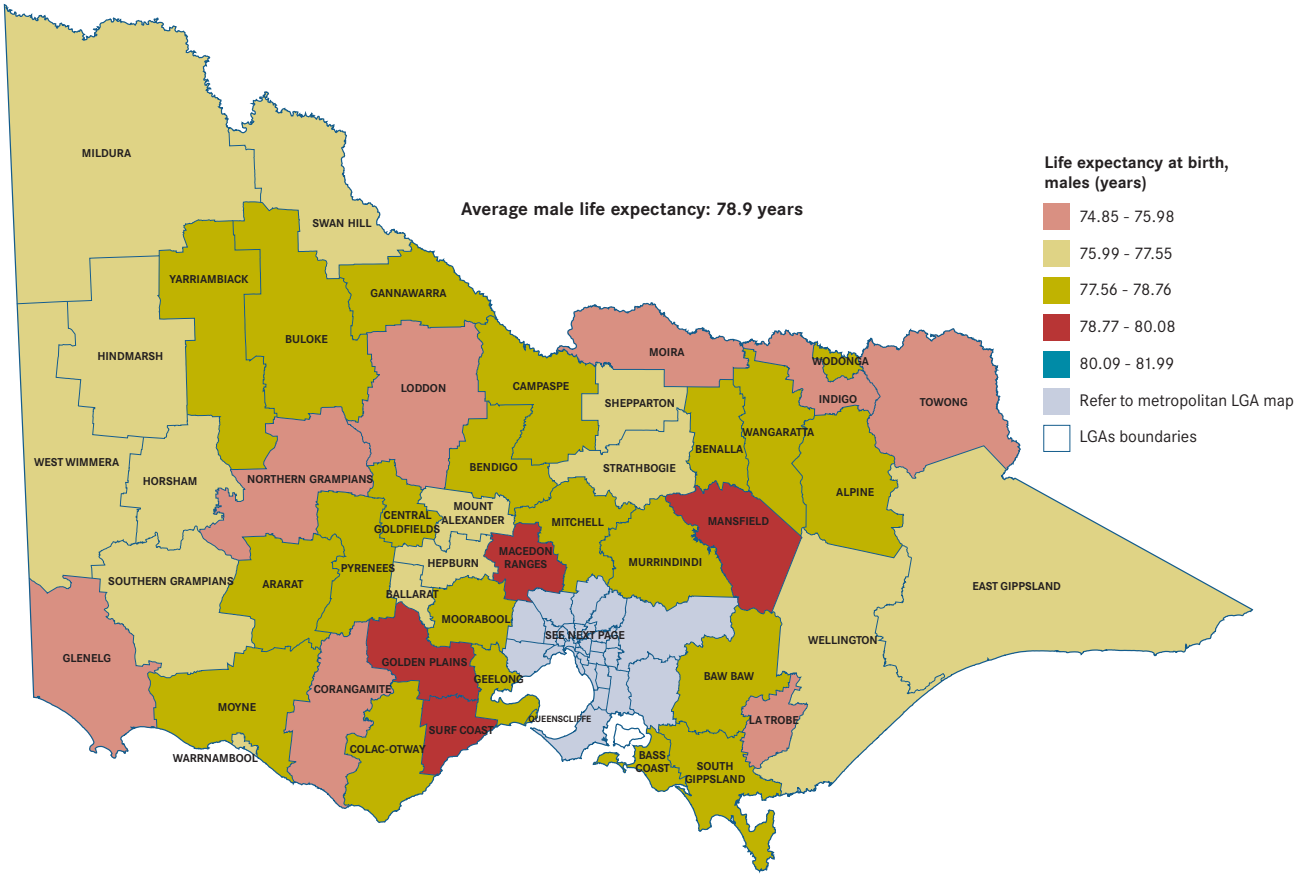
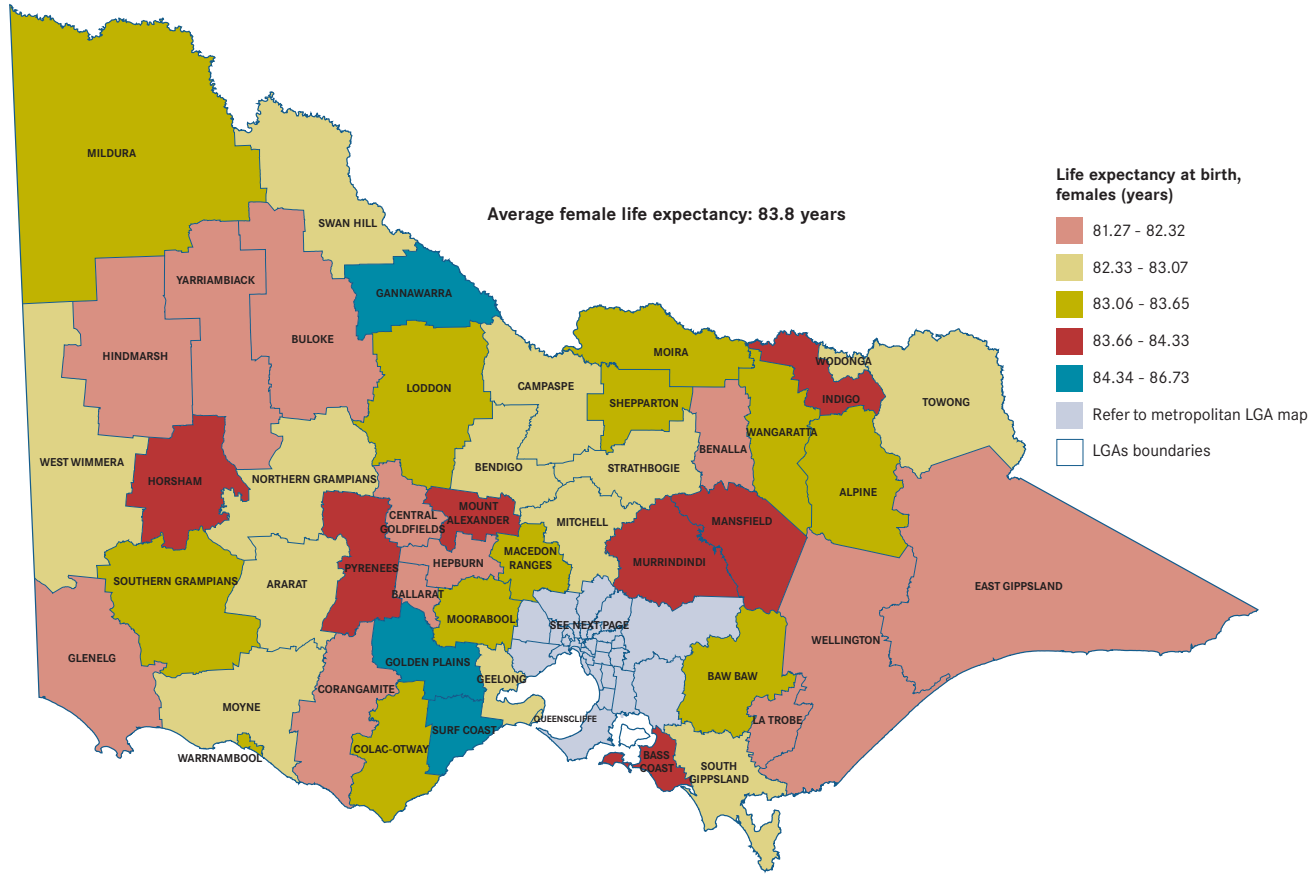
Life expectancy at birth: small areas

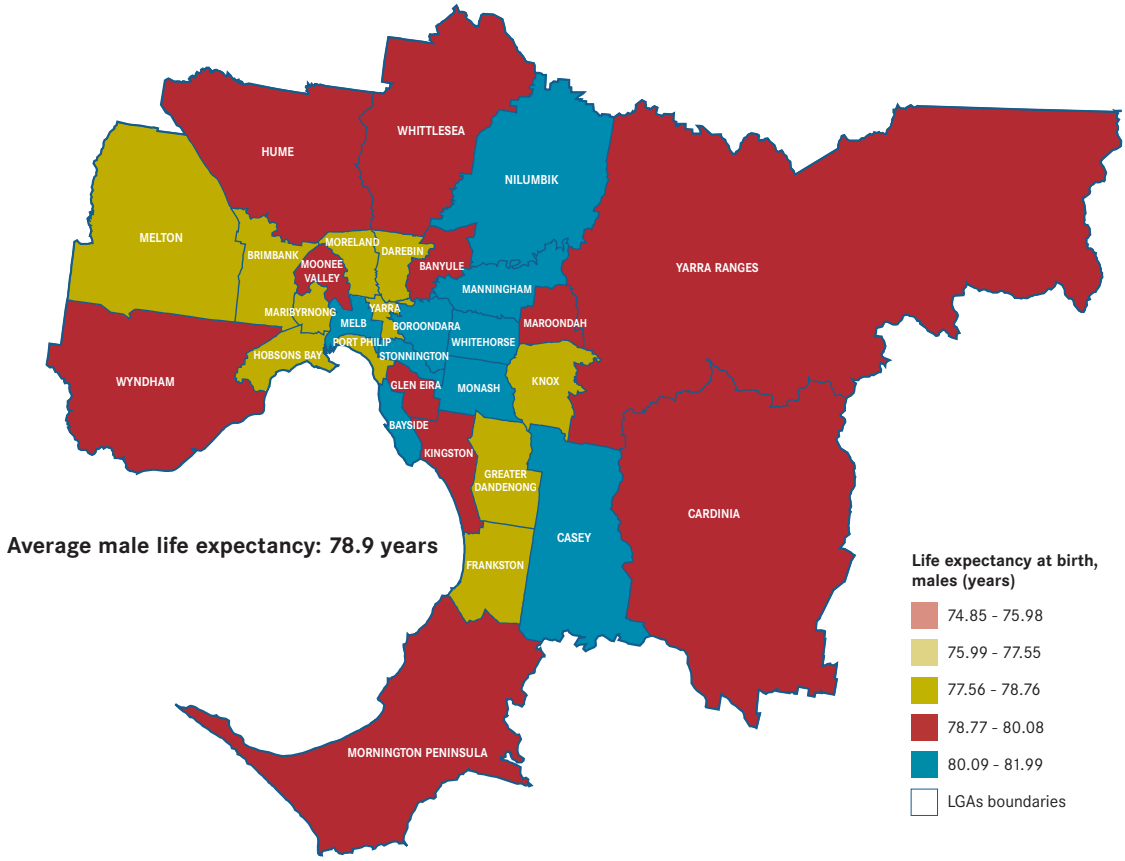
Life expectancy at birth, by local government area (LGA), males, rural Victoria, 2001–2005



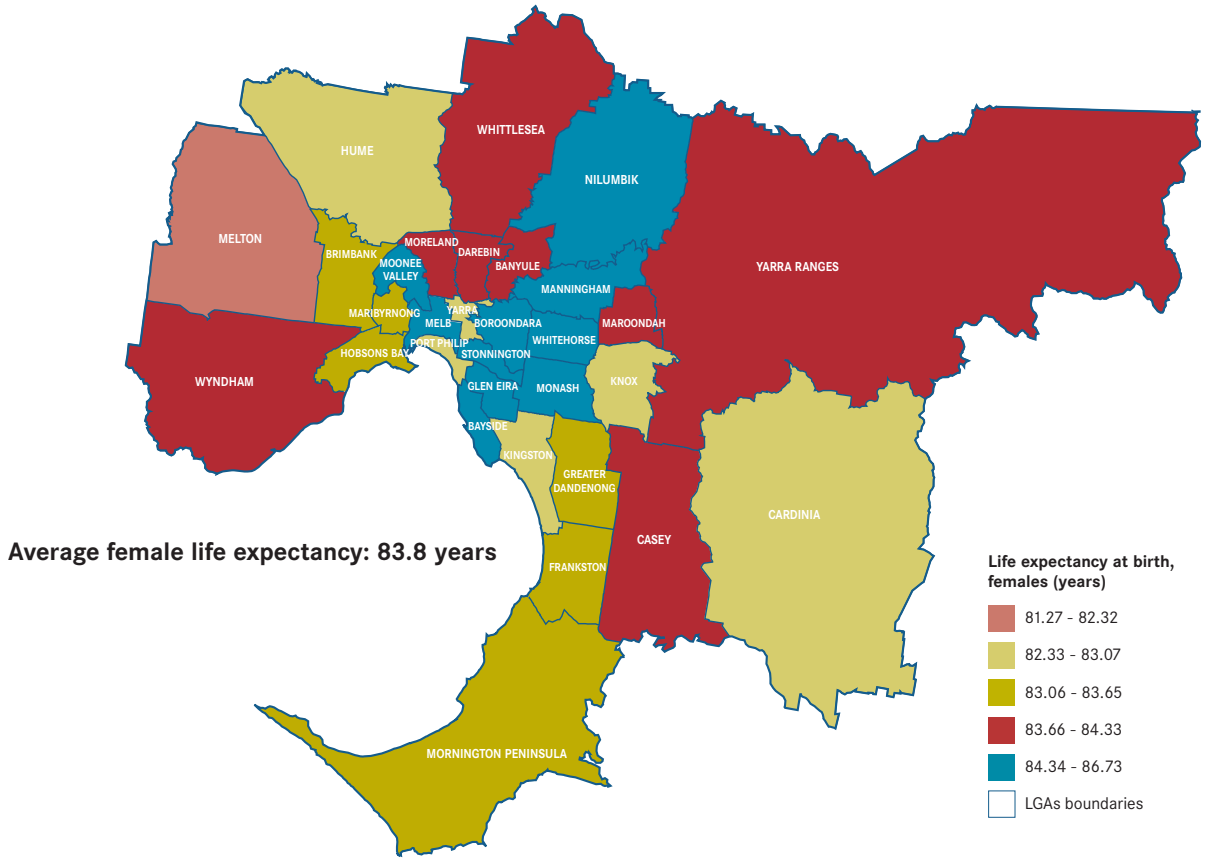
Life expectancy at birth, by local government area (LGA), females, rural Victoria, 2001–2005



Life expectancy at birth, by local government area (LGA), males, metropolitan Melbourne, 2001–2005



Life expectancy at birth, by local government area (LGA), females, metropolitan Melbourne, 2001–2005



DHS regions

- Life expectancy at birth was highest in the Eastern Metropolitan Region for both males (81.0 years) and females (85.1 years), and was significantly ($p<0.05$) higher than the state estimate, as was the life expectancy for females in the North and West Metropolitan Region (84.9 years).
- Life expectancy at birth for males in Barwon-South Western (78.2 years), Grampians (78.6 years) and Hume (78.2 years) regions and for females in Barwon-South Western (83.0 years) and Hume (83.1 years) regions were significantly below ($p<0.5$) the state estimate.

Primary Care Partnerships (PCPs)

- Males in Central East PCP had the highest life expectancy at birth: 82.0 years, while females in Moonee Valley-Melbourne PCP had the highest life expectancy at birth of 87.4 years, in 2005.
- Six PCPs had a life expectancy at birth for males below the state estimate of 79.8 years, while only two PCPs had a life expectancy at birth for females below the state estimate of 84.3 years.

Local government areas (LGAs)

- Five years (2001 to 2005) of mortality and population data were aggregated by LGA, to estimate life expectancy at birth for LGAs within Victoria.
- The LGA of Nillumbik had the highest male life expectancy of 81.9 years, while Melbourne had the highest female life expectancy of 86.7 years, for the period 2001–05, compared to 78.9 years for all males and 83.8 years for all females in Victoria for the same five-year period.
- The difference between the highest and lowest male life expectancy among LGAs was 7.0 years (Nillumbik 81.9 and Loddon 74.8 years). The difference between the highest and lowest female life expectancy in LGAs was 5.5 years (Melbourne 86.7 and Glenelg 81.3 years), for the 2001–05 period.
- The difference between highest and lowest male life expectancy in LGAs increased over the periods 1997–2001 (5.8 years), 1999–2003 (6.2 years) and 2000–04 (7.0 years), but the gap was stable in the 2001–05 period (7.0 years). This was also true for females during the first three periods, where the difference increased (4.7, 4.9 and 5.6 years respectively); however, the difference fell slightly in the 2001–05 period (5.5 years).

For more information

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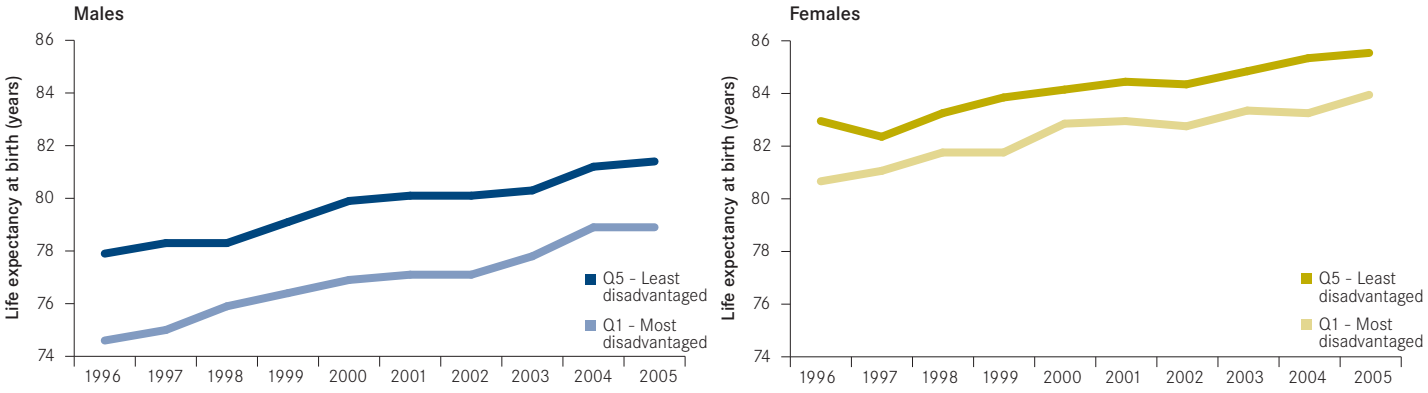
Life expectancy at birth: most and least disadvantaged quintiles

Expectancy in Victoria, by IRSED end-quintiles (Q1 and Q5)



Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

The Index of Relative Socio-Economic Disadvantage (IRSED) score for an area is derived from attributes such as low income, low educational attainment, high unemployment, jobs in relatively unskilled occupations and variables that reflect disadvantage, rather than measure specific aspects of disadvantage. High scores on the IRSED occur when the area has few families of low income and few people with little training and in unskilled occupations. Low scores on the index occur when the area has many low-income families and people with little training and in unskilled occupations. Further information on IRSED is available in the chapter on 'Socio-economically disadvantaged populations'.

Life expectancy at birth increased significantly, by two to four years, for both males and females, regardless of socioeconomic status (grouped into five strata based on the IRSED score, from most to least disadvantaged) between 1996 and 2005.

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Avoidable mortality

In this chapter

Summary

- Avoidable mortality is a simple population-based method of counting untimely and unnecessary deaths that may have been preventable if effective public health programs and medical interventions had been available.
- Ischaemic heart disease was the leading cause of avoidable deaths during the period 1997 to 2003, accounting for 23.4 per cent of all avoidable deaths in Victoria. This was followed by lung cancer, colorectal cancer and suicide.
- There was an overall decline in the rates of all of the top 20 causes of avoidable death between 1997 and 2003, with the exception of poisoning in both males and females, and suicide in females.
- The absolute number of avoidable deaths declined from 8,642 deaths in 1997 to 7,165 deaths in 2003, and total avoidable mortality rates have continued to decline. In males, the standardised avoidable mortality rate declined from to 264 per 100,000 males in 1997 to 202 per 100,000 males in 2003. For females, the standardised avoidable mortality rate declined from 142 per 100,000 females to 110 per 100,000 females in 2003.
- The age-adjusted total avoidable mortality rate was 13 to 24 per cent higher in males from rural areas compared to metropolitan areas during 1997 to 2003.
- The total avoidable mortality rate among males and females living in the most disadvantaged areas of Victoria was consistently higher than for males and females living in the least disadvantaged areas.
- The age-adjusted total avoidable mortality rate was 19 to 34 per cent higher in males from the least accessible areas of Victoria, compared to males from the most accessible areas during 1997 to 2003.

Introduction

The term 'avoidable mortality' (AM), used as an indicator of the quality of medical care, stems from work initiated in the US by Rutstein et al. in the mid 1970s (Rutstein et al., 1976). Avoidable mortality is a simple and practical population-based method of counting untimely and unnecessary deaths from diseases for which effective public health and medical interventions are available. An excess of deaths due to preventable causes suggest shortcomings in the healthcare system that warrant further investigation.

The first widely accepted list of causes of AM was assembled in 1983 (Charlton et al., 1983). Tobias and Jackson (2001) since expanded the list to include causes of AM defined by the ninth revision of the International Classification of Disease (ICD-9) codes. The NSW Department of Health (2002) subsequently developed appropriate groupings of ICD–10 Australian Modification codes, and these have been used in Victoria after ensuring that the codes in each category of disease and injury were mutually exclusive (DHS, 2005). All deaths due to these conditions under the age of 75 years were considered to be avoidable. All other causes of mortality in those under the age of 75 years were assumed to be 'unavoidable mortality' (UM). Analyses are performed using year of death, for the death registration period 1997–2004 and annual population estimates for 1997 to 2003 supplied by the Australian Bureau of Statistics, for Victoria. Because more than 99 per cent of deaths in a particular year were registered in two consecutive calendar years, we excluded deaths occurring in 2004 from the analysis, but included deaths occurring in 2003 but registered in 2004. The top 20 causes of AM in 1997–2003 are determined from the total number of deaths by cause during this period.

Three categories of potentially avoidable death were devised by Tobias and Jackson (2001):

Primary avoidable mortality (PAM)

This category was heavily weighted for conditions that are preventable, whether through individual behaviour change (lifestyle modification) or population level intervention (healthy public policy), for example, immunisation preventable diseases, burns, HIV/AIDS infection, SIDS, lung cancer and drowning. The conditions are preventable by addressing their respective risk or protective factors, that is, primary prevention.

Secondary avoidable mortality (SAM)

This category was heavily weighted for conditions that respond to early detection and intervention, typically in a primary health care setting. As well as clinical preventive services (such as cancer screening), it includes chronic disease management of high blood pressure, epilepsy, diabetes and newborn screening conditions (such as congenital hypothyroidism and so on). This approach constitutes 'secondary prevention'.

Tertiary avoidable mortality (TAM)

This category was heavily weighted for conditions whose case fatality rate can be significantly reduced by existing medical or surgical treatments (typically, but not necessarily, in a hospital setting, such as Hodgkin's disease, appendicitis, intestinal obstruction and hernia), even when the disease process is fully developed. This constitutes 'tertiary prevention'.

Total and disease specific avoidable mortality rates by sex in Victoria between 1997 and 2003, and presented in this chapter, are age standardised (standardised) using the direct method, with Victoria's 2001 population as the reference. In addition, comparisons of total and disease specific AM rates by sex were made between metropolitan and rural Victorian local government areas (LGAs), between LGAs grouped into quintiles based on their Index of Relative Socio-Economic Disadvantage (IRSED) score (ABS, 2004), and between LGAs grouped by categories of remoteness, based on their Accessibility/Remoteness Index of Australia (ARIA) score (DHAC, 2001). ARIA measures remoteness in terms of access via the road network from population localities to each of five categories of service centre. It describes the distance that people have to travel to obtain services. Further information on ARIA is provided in the chapter 'Rural health'.

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Top 20 causes of avoidable deaths

Top 20 causes of avoidable death, persons, Victoria, 1997–2003

Rank	Cause	Persons	Proportion of all avoidable deaths (per cent) <75 years
1	Ischaemic heart disease	12,956	23.4
2	Lung cancers	7,238	13.1
3	Colorectal cancer	4,598	8.3
4	Suicide	3,726	6.7
5	Breast cancer	3,223	5.8
6	Chronic obstructive pulmonary disease	3,156	5.7
7	Stroke	2,628	4.8
8	Diabetes	2,562	4.6
9	Road traffic injury	2,477	4.5
10	Poisoning	1,396	2.5
11	Alcohol-related conditions	1,375	2.5
12	Stomach cancer	1,274	2.3
13	Skin cancers	1,184	2.1
14	Hepatitis and liver cancer	985	1.8
15	Oral cancers	841	1.5
16	Hypertensive disease	531	1.0
17	Congenital anomalies	459	0.8
18	Asthma	413	0.7
19	Leukaemia	367	0.7
20	Epilepsy	356	0.6
	Total avoidable deaths	**55,252**	**63**
	Total unavoidable deaths	**32,269**	**37**

Note: Rates are age standardised (standardised) using the direct method, with Victoria's 2001 population as the reference.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

Top 20 causes and absolute number of avoidable deaths by year, Victoria, 1997–2003

	Year						
	1997	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Ischaemic heart disease	2,197	2,084	1,913	1,826	1,733	1,700	1,503
Lung cancers	1,105	1,083	971	1,011	1,065	987	1,016
Colorectal cancer	699	676	680	651	644	622	626
Suicide	574	556	535	492	525	523	521
Breast cancer	496	457	474	468	427	429	472
Chronic obstructive pulmonary disease	540	459	465	414	470	413	395
Stroke	439	418	371	395	360	341	304
Diabetes	392	358	377	351	345	355	384
Road traffic accidents	339	378	345	363	396	361	295
Poisoning	83	146	417	301	116	153	180
Alcohol-related conditions	230	194	223	183	160	195	190
Stomach cancer	180	211	194	168	181	166	174
Skin cancers	170	173	173	160	180	159	169
Hepatitis and liver cancer	157	123	142	137	132	148	146
Oral cancers	125	118	123	125	127	108	115
Hypertensive disease	90	103	71	84	72	52	59
Congenital anomalies	61	71	69	76	55	61	66
Asthma	75	70	64	62	60	51	31
Leukaemia	51	59	56	58	50	48	45
Epilepsy	51	39	59	50	56	43	58
Total avoidable deaths	**8,642**	**8,267**	**8,222**	**7,872**	**7,643**	**7,441**	**7,165**
Total unavoidable deaths	**4,810**	**4,729**	**4,478**	**4,621**	**4,457**	**4,700**	**4,474**

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

There was a steady decline in the absolute number of avoidable deaths between 1997 and 2003, from 8,642 to 7,165. The absolute number of unavoidable deaths also declined from 4,810 to 4,474, but this decline was not as pronounced as the avoidable deaths. The absolute number of deaths due to most of the top 20 causes of avoidable death also declined. The notable exception was poisonings. Most deaths due to poisonings were due to overdoses of illicit drugs.

For more information

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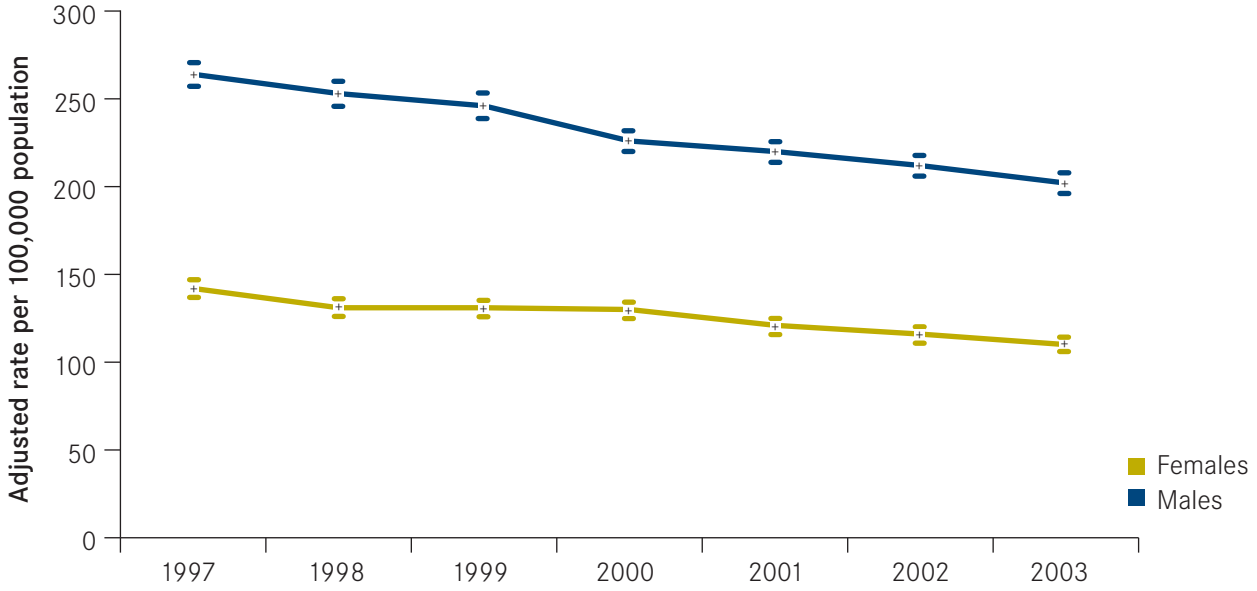
Total avoidable mortality rates

Total avoidable mortality rate by sex, Victoria, 1997–2003



Note: Rates are age standardised (adjusted) using the direct method, with Victoria's 2001 population as the reference.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

The standardised total avoidable mortality (AM) rate was 75 to 100 per cent higher in males, compared to females, between 1997 and 2003, the difference being statistically significant in all seven years.

The standardised total AM rate in males per 100,000 in 2003 was 202 (95% CI: 196–207), which was significantly lower than the rate in 1997 of 264 (257–271) per 100,000 males. The standardised total AM rate in females per 100,000 in 2003 was 110 (95% CI: 106–114), which was significantly lower than the rate in 1997 of 142 (137–147) per 100,000 females.

For more information

Department of Human Services, Health Status website: www.health.vic.gov.au/healthstatus

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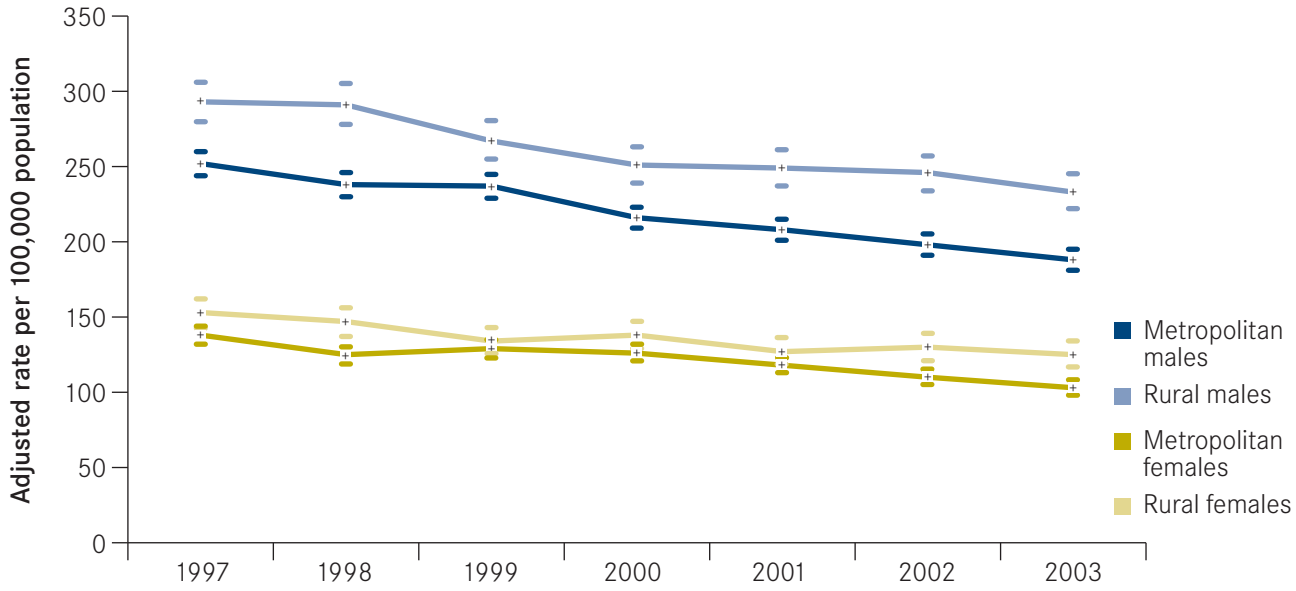
Total avoidable mortality rates: metropolitan–rural comparison

Total avoidable mortality rate by sex, metropolitan and rural Victoria, 1997–2003



Note: Rates are age standardised (adjusted) using the direct method, with Victoria's 2001 population as the reference. Rural areas are defined as the Victorian Department of Human Service's rural regions, with the Melbourne metropolitan area as the comparator. CI = confidence interval.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

Males

- The standardised total avoidable mortality (AM) rate was 13 to 24 per cent higher (the difference being statistically significant in all seven years) in males from rural LGAs, compared to metropolitan LGAs, during this period.
- The standardised total AM rate in males from rural LGAs per 100,000 in 2003 was 233 (95% CI: 222–245), which was significantly lower than the rate in 1997 of 293 (280–306) per 100,000.
- The standardised total AM rate in males from metropolitan LGAs per 100,000 in 2003 was 188 (95% CI: 181–195), which was significantly lower than the rate in 1997 of 252 (244–260) per 100,000.

Females

- The standardised total AM rate was four to 21 per cent higher (the difference being statistically significant in three of the seven years) in females from rural LGAs, compared to metropolitan LGAs, during this period.
- The standardised total AM rate in females from rural LGAs per 100,000 in 2003 was 125 (95% CI: 117–34), which was significantly lower than the rate in 1997 of 153 (143–162) per 100,000.
- The standardised total AM rate in females from metropolitan LGAs per 100,000 in 2003 was 103 (95% CI: 98–108), which was significantly lower than the rate in 1997 of 138 (132–144) per 100,000.

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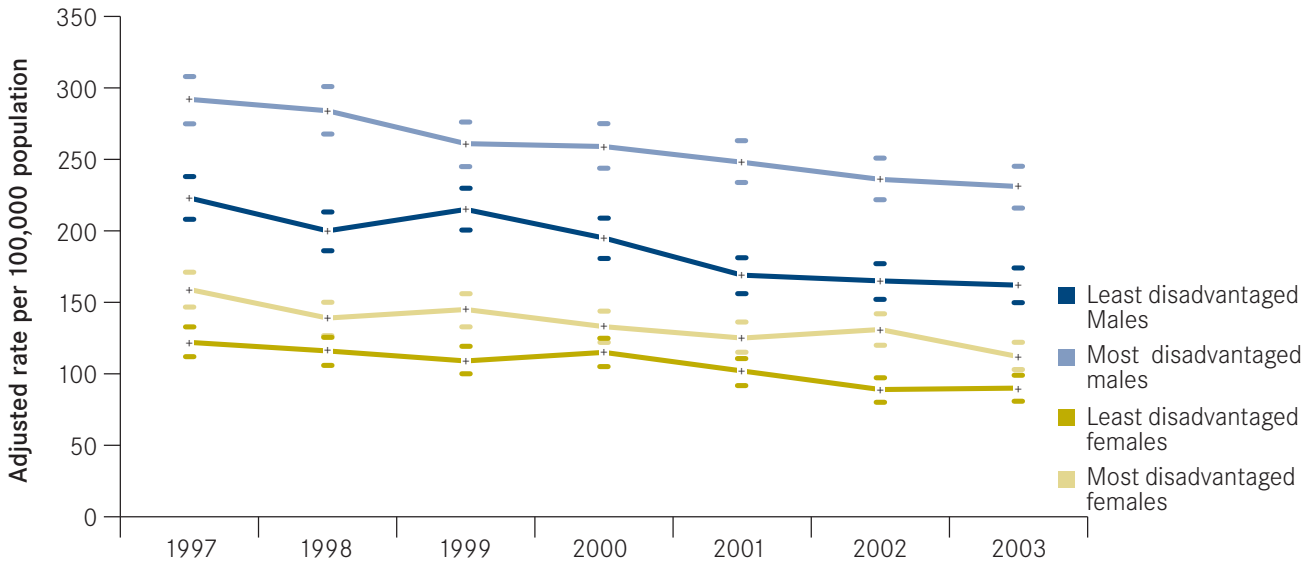
Total avoidable mortality rates: most and least disadvantaged quintiles

Total avoidable mortality rate, by sex and IRSED (most and least disadvantaged areas), Victoria, 1997–2003



Note: Rates are age standardised (standardised) using the direct method, with Victoria's 2001 population as the reference, and expressed per 100,000 persons. Only the end-quintiles, which represent most and least disadvantaged areas by IRSED are shown. CI = confidence interval.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

The Index of Relative Socio-Economic Disadvantage (IRSED) score for an area is derived from attributes such as low income, low educational attainment, high unemployment, jobs in relatively unskilled occupations and variables that reflect disadvantage, rather than measure specific aspects of disadvantage. High scores on the IRSED occur when the area has few families of low income and few people with little training and in unskilled occupations. Low scores on the index occur when the area has many low-income families and people with little training and in unskilled occupations. Further information on IRSED is available in the chapter on 'Socio-economically disadvantaged populations'.

Males

- The standardised total avoidable mortality (AM) rate was 21 to 47 per cent higher (the difference being statistically significant in all seven years) in males from the most disadvantaged LGAs, compared to the least disadvantaged LGAs, during this period.
- The standardised total AM rate in males from the most disadvantaged LGAs per 100,000 in 2003 was 231 (95% CI: 216–245), which was significantly lower than the rate in 1997 of 292 (275–308) per 100,000 males.
- The standardised total AM rate in males from the least disadvantaged LGAs per 100,000 in 2003 was 162 (95% CI:150–174), which was significantly lower than the rate in 1997 of 223 (208–238) per 100,000 males.

Females

- The standardised total AM rate was 16 to 48 per cent higher (the difference being statistically significant in six of seven years) in females from the most disadvantaged LGAs, compared to the least disadvantaged LGAs, during this period.
- The standardised total AM rate in females from the most disadvantaged LGAs per 100,000 in 2003 was 112 (95% CI:103–122), which was significantly lower than the rate in 1997 of 159 (147–171) per 100,000 females.
- The standardised total AM rate in females from the least disadvantaged LGAs per 100,000 in 2003 was 90 (95% CI: 81–99), which was significantly lower than the rate in 1997 of 122 (112–133) per 100,000 females.

For more information

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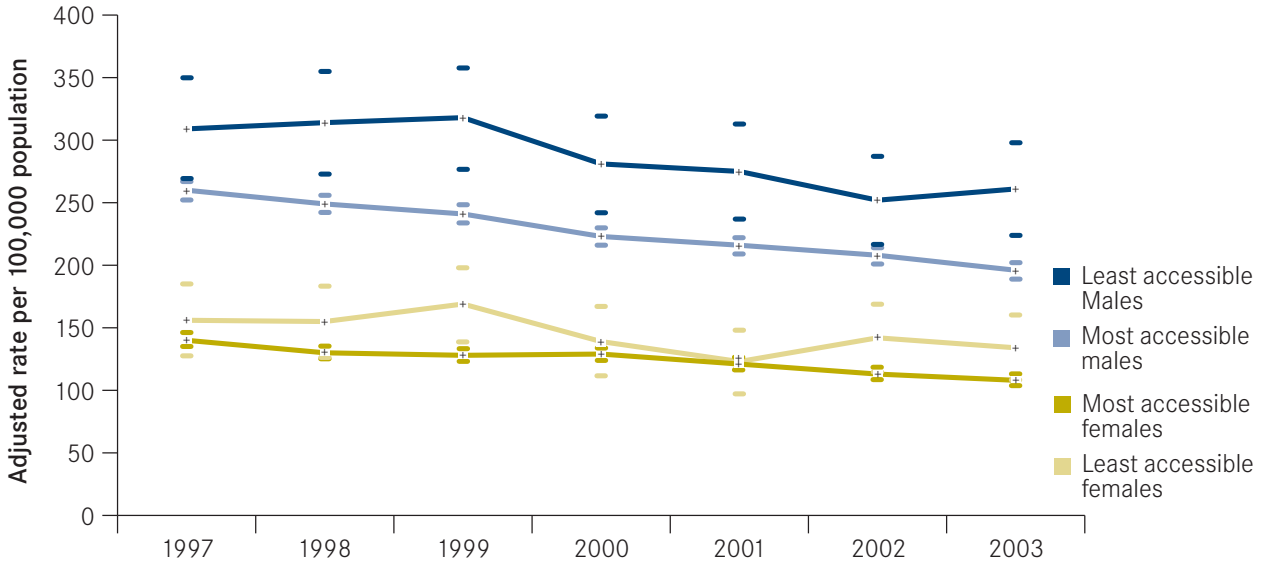
Total avoidable mortality rates: most and least accessible areas

Total avoidable mortality rate by sex and ARIA (most and least accessible areas), Victoria, 1997–2003



Note: Rates are age standardised (standardised) using the direct method, with Victoria's 2001 population as the reference. 'Most accessible' refers to the ARIA category 'Highly accessible', and 'Least accessible' refers to the ARIA category 'Moderately accessible'. CI = confidence interval.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

The Accessibility/Remoteness Index of Australia (ARIA) measures remoteness in terms of access via the road network from population localities to each of five categories of service centre. It describes the distance that people have to travel to obtain services. Further information on ARIA is provided in the chapter on 'Rural/regional populations'.

Males

- The standardised total avoidable mortality (AM) rate was 19 to 34 per cent higher (the difference being statistically significant in all seven years) in males from the least accessible LGAs, compared to the most accessible LGAs, during this period.
- The standardised total AM rate in males from the least accessible LGAs per 100,000 in 2003 was 261 (95% CI: 224–298), which was significantly lower than the rate in 1997 of 309 (269–350) per 100,000 males.
- The standardised total AM rate in males from the most accessible LGAs per 100,000 in 2003 was 196 (95% CI: 189–202), which was significantly lower than the rate in 1997 of 260 (252–267) per 100,000 males.

Females

- The standardised total AM rate was one to 31 per cent higher (the difference being statistically significant in one of seven years) in females from the least accessible LGAs, compared to the most accessible LGAs, during this period.
- The standardised total AM rate in females from the least accessible LGAs per 100,000 in 2003 was 134 (95% CI: 108–160), which was not significantly lower ($p > 0.05$) than the rate in 1997 of 156 (128–185) per 100,000 females.
- The standardised total AM rate in females from the most accessible LGAs per 100,000 in 2003 was 108 (95% CI: 104–113), which was significantly lower than the rate in 1997 of 140 (135–146) per 100,000 females.

For more information

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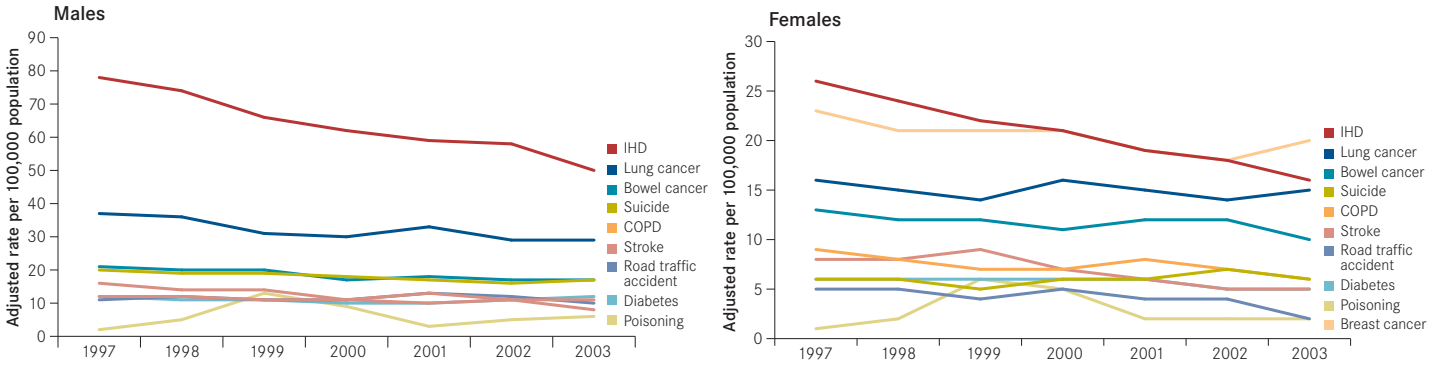
Avoidable mortality rates for the top causes of mortality

Total avoidable mortality rate for the top causes of mortality, Victoria, 1997–2003



Note: Rates are age standardised (standardised) using the direct method, with Victoria's 2001 population as the reference.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

There was an overall decline in the rates of all of the top 10 causes of avoidable death, with the exception of poisoning in both males and females and suicide in females. The greatest annual decline was observed for IHD (-6.8 per cent) in males and road traffic accidents (-9.4 per cent) for females.

For more information

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Annual change in avoidable mortality rates

Annual change in standardised rate of the summary measures of avoidable mortality, Victoria, 1997–2003

	Per cent change 1997-2003	
Summary measures of avoidable mortality	**Males**	**Females**
Total avoidable mortality	-4.6	-4.0
Primary avoidable mortality	-4.6	-3.6
Secondary avoidable mortality	-4.6	-4.6
Tertiary avoidable mortality	-4.2	-4.0
Unavoidable mortality	-2.2	-1.9

Annual change in standardised rate of the top ten causes of avoidable mortality, Victoria, 1997–2003

	Per cent change 1997-2003	
Cause	**Males**	**Females**
Ischaemic heart disease	-7.0	-7.9
Lung cancer	-4.0	-0.3
Bowel cancer	-3.7	-3.2
Suicide	-3.9	1.6
Chronic obstructive respiratory diseases	-5.8	-3.8
Breast cancer		-3.1
Stroke	-5.4	-8.4
Road traffic accidents	-0.4	-9.8
Diabetes	-0.4	-4.6
Poisoning	3.5	2.7

Note: Rates are age standardised (adjusted) using the direct method, with Victoria's 2001 population as the reference.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

The annual rate of change in unavoidable mortality (UM) was less than 50 per cent that of total avoidable mortality (AM), and for all categories of avoidable mortality (PAM, SAM and TAM), in both males and females. There was an overall decline in the rates of all of the top 10 causes of avoidable mortality, with the exception of poisoning in both males and females and suicide in females. The greatest annual decline was observed for ischaemic heart disease (-7.0 per cent) in males and road traffic accidents (-9.8 per cent) for females.

For more information

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Ambulatory care sensitive conditions

In this chapter

Summary

- Ambulatory care sensitive conditions (ACSCs) are diseases or health conditions for which it may be possible to prevent the need for hospital admission if individuals receive timely and effective health care as outpatients. They represent potentially avoidable hospitalisations. The acute care hospitalisation rate for ACSCs is a population-based indicator of access to appropriate medical care in the community. It is generally agreed that managing ACSCs before a patient requires hospitalisation improves the patient's health, contributes to better overall health status and may result in savings to the health system because hospital-based care usually costs more than outpatient care.
- There were 215,784 hospital admissions for all ambulatory care sensitive conditions (ACSCs) in 2005–06, involving an average of 4.84 bed days per admission. The rate of total ACSCs admissions has increased from 30.96 per 1,000 persons in 2000–01 to 41.52 per 1,000 persons in 2005–06.
- The admission rate for total ACSCs in rural areas increased from 36.37 per 1,000 persons in 2000–01 to 44.52 per 1,000 persons in 2005–06. During the same period, the admission rate for total ACSCs in metropolitan areas increased from 28.82 per 1,000 persons to 40.35 per 1,000 persons.
- In 2005–06, ACSCs for chronic disease and for dental conditions were the four leading causes of the top five ACSC admissions, accounting for more than two-thirds (67.9 per cent) of 215,784 ACSCs admissions in 2005-06. The next most common condition in 2005-06 was an acute ACSC, pyelonephritis, for which there were 12,381 admissions requiring a total of 55,638 bed days.
- The highest number of admissions was for diabetes complications (n=104,308), accounting for 50.56 per cent of the top ten ACSC admissions.
- In 2005–06, admission rates for total ACSCs varied across the eight regions in Victoria, from 33.83 admissions per 1,000 persons in the Eastern Metropolitan region to 46.04 admissions per 1,000 persons in the Hume region.

Introduction

Ambulatory care sensitive conditions (ACSCs) are those for which hospitalisation is thought to be avoidable if preventative care and early disease management are applied, usually in the ambulatory setting. In theory, timely and effective ambulatory care can reduce the risks of hospitalisation by preventing the onset of an illness or condition, controlling an acute episodic illness or condition, or managing a chronic disease or condition. The concept of preventable or avoidable hospitalisation was developed as an indicator of health outcomes for evaluating the adequacy of primary care. ACSCs admission rates were also proposed as a measure of access to health care.

Better access to primary health care increases the use of ambulatory care, prevents unnecessary hospitalisations and improves the health status of the population. Analyses from the *Victorian ambulatory care sensitive conditions study* identified significant differentials and inequalities in access to the primary health care system in Victoria. They provided an evidence-based platform for policies which aim to reduce demand on hospital services by offering opportunities for targeted interventions at the Primary Care Partnership (PCP) level.

For more information

Department of Human Services (Rural and Regional Health and Aged Care Services Division), 2002, the *Victorian ambulatory care sensitive conditions study: opportunities for targeting public health and health services interventions*, Melbourne, Victorian Government Department of Human Services:
www.health.vic.gov.au/healthstatus/acsc/targetinterventions.htm

Department of Human Services, Health Status website: www.health.vic.gov.au/healthstatus

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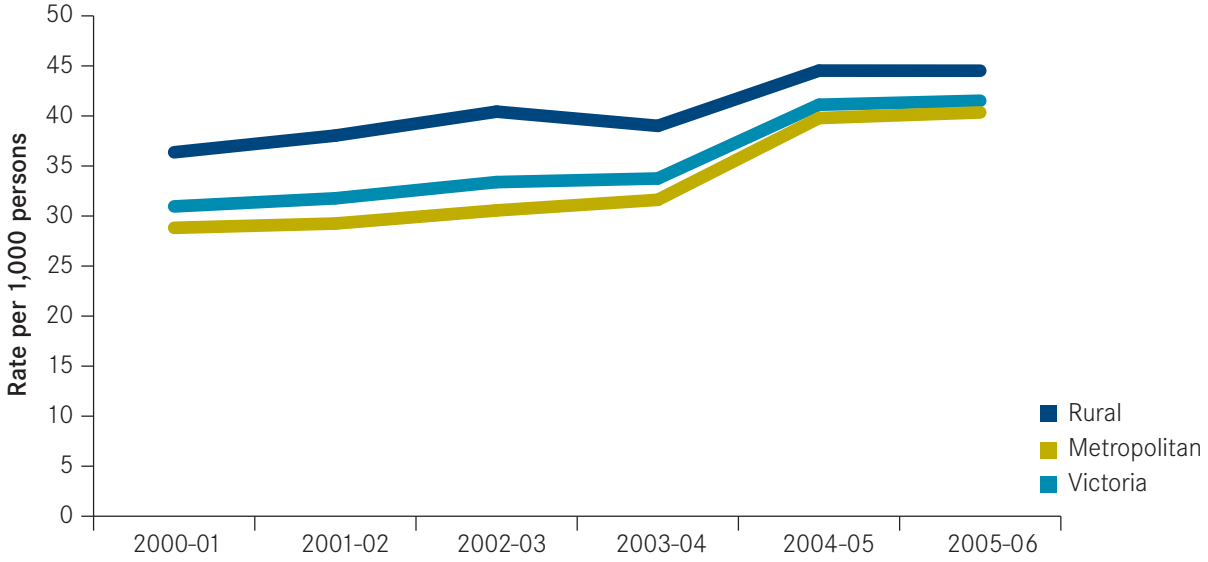
Total ACSCs admission rates

Total ACSC admission rates for rural and metropolitan Victoria, 2000-01 to 2005-06



Standardised rate per 1,000 persons	2000–01	2001-02	2002-03	2003-04	2004-05	2005-06
Rural	36.37	38.04	40.43	39.01	44.53	44.52
Metro	28.82	29.25	30.56	31.62	39.79	40.35
Victoria	30.96	31.77	33.39	33.75	41.12	41.52
Number of admissions						
Rural	50,497	53,899	58,305	57,461	67,466	69,110
Metro	95,073	98,680	105,092	110,812	141,829	146,674
Victoria	145,570	152,579	163,397	168,273	209,295	215,784

Note: ACSCs were classified using ICD–9 for 1993–94 to 1997–98. ICD–10 was used for 1998–99 to 2003–04. Rates are age and sex standardised (adjusted) using the direct method, with Victoria's 2001 population as the reference.

Source: Department of Human Services, Victorian Admitted Episodes Dataset; Australian Bureau of Statistics, Estimated resident population data.

There were 215,784 admissions for ACSCs in 2005–06, with an average of 4.84 bed days.

The admission rate for ACSCs in rural areas increased from 36.37 per 1,000 persons (95 % CI: 36.06–36.68) in 2000–01 to 44.52 per 1,000 persons (44.20–44.84) in 2005–06. During the same six-year period, the admission rate for ACSCs in metropolitan areas increased from 28.82 per 1,000 persons (28.64–28.99) to 40.35 per 1,000 persons (40.16–40.55).

Analyses of ACSC indicators identify gaps in the delivery of primary health care services in rural and regional Victoria. The differentials in admission rates for these indicators offer opportunities for targeting public health services interventions which can decrease access barriers, improve the adequacy of primary care and reduce demand on the hospital system in Victoria.

For more information

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Top ten ACSCs admissions

Top ten ACSC admissions in Victoria, 2005–06

ACSC	Number of admissions	Standardised rate per 1,000 persons	Lower limit 95% CI	Upper limit 95% CI	Average bed days	Total bed days
Diabetes complications	104,308	19.80	19.69	19.92	6.23	649,817
Dental conditions	14,502	2.92	2.88	2.97	1.16	16,781
Dehydration and gastroenteritis	14,263	2.78	2.73	2.82	2.26	32,191
Chronic obstructive pulmonary disease (COPD)	13,606	2.57	2.53	2.61	6.74	91,658
Pyelonephritis	12,381	2.38	2.34	2.42	4.49	55,638
Congestive cardiac failure	11,883	2.21	2.17	2.25	7.36	87,464
Angina	10,185	1.92	1.88	1.96	2.12	21,628
Asthma	9,039	1.84	1.80	1.87	2.22	20,108
Cellulitis	8,167	1.58	1.55	1.61	5.34	43,647
Iron deficiency anaemia	7,940	1.52	1.49	1.55	1.82	14,460

Note: ACSCs admission rates were age and sex standardised (adjusted) using the direct method, using Victoria's 2001 population as the reference. CI = Confidence interval.

Source: Department of Human Services, Victoria Admitted Episodes Dataset 2005–06.

The top ten ACSC admissions accounted for 95.59 per cent of the total ACSC admissions for Victoria. The highest number of admissions was for diabetes complications (n=104,308), accounting for 50.56 per cent of the top ten ACSC admissions. Chronic ACSCs and dental conditions were the leading causes of the top five ACSC admissions.

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Total ACSCs admissions by region

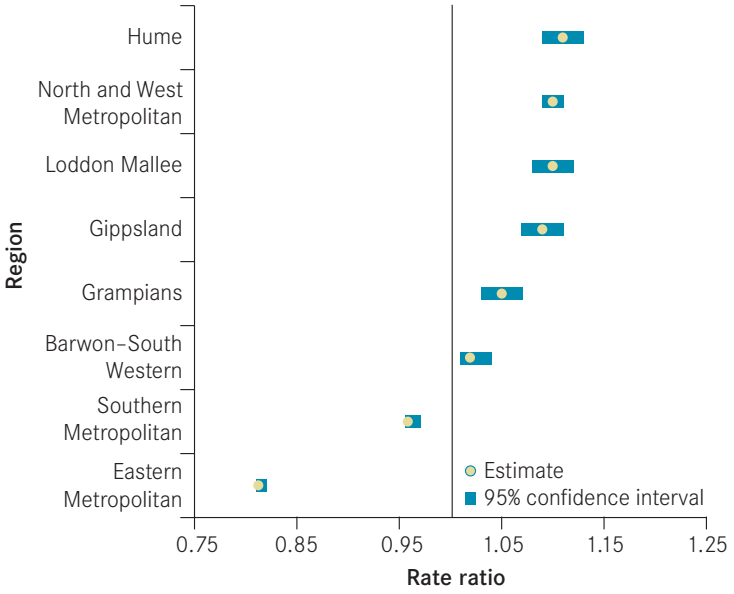
Total ACSC admissions by region, 2005–06

Region	Number of Admissions	Standardised rate per 1,000 persons	Lower limit of 95% CI	Upper limit of 95% CI	Average Bed days	Total Bed Days
Hume	13,143	46.04	45.29	46.78	4.43	58,262
North and West Metropolitan	62,302	45.68	45.35	46.02	5.04	313,761
Loddon Mallee	15,613	45.59	44.90	46.27	4.61	71,901
Gippsland	13,141	45.23	44.48	45.97	4.35	57,206
Grampians	10,286	43.64	42.83	44.46	4.86	50,035
Barwon-South Western	16,927	42.43	41.81	43.05	4.85	82,124
Southern Metropolitan	49,578	40.05	39.72	40.39	4.82	238,862
Eastern Metropolitan	34,794	33.83	33.49	34.17	4.98	173,243

Note: ACSCs admission rates were age and sex standardised (adjusted) using the direct method, using Victoria's 2001 population as the reference. CI = Confidence interval. Regions are listed in descending order of standardised ACSC rates per 100,000 persons.

Source: Department of Human Services, Victoria Admitted Episodes Dataset 2005–06.

Rate ratios of total ACSCs, by regions, (Victoria=1), 2005-06



Hume Region had the highest ACSC admissions rate, with 46.04 admissions per 1,000 persons in 2005–06. Eastern Metropolitan Region had the lowest ACSC admissions rate, with 33.83 admissions per 1,000 persons in 2005–06. Compared with the Victoria average, ACSCs admission rates were higher for all rural regions and for the North and West Metropolitan Region in 2005–06.

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Total ACSCs admissions by Primary Care Partnership (PCP)

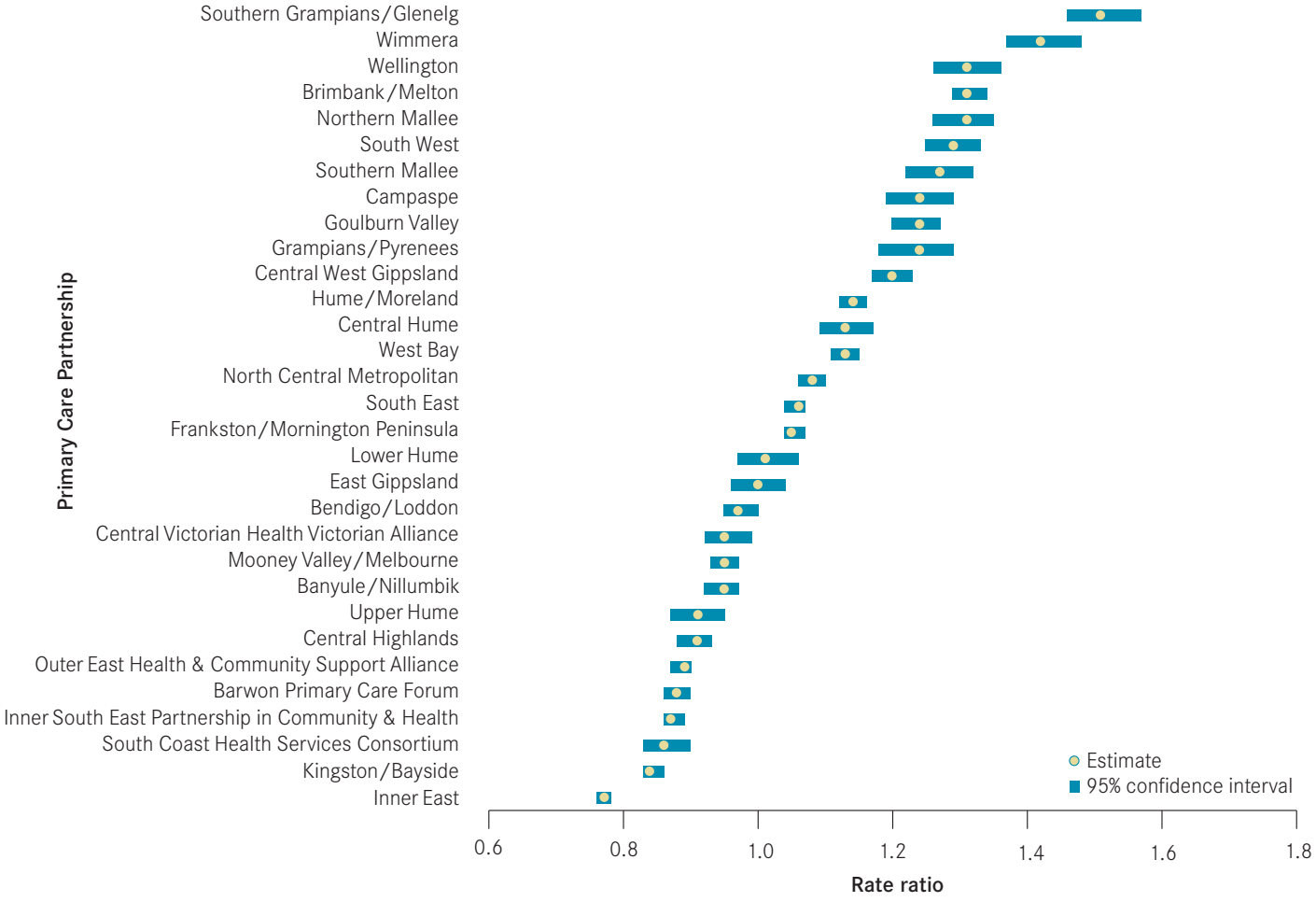
Total ACSCs admissions and bed days, by Primary Care Partnership (PCP), 2005–06

Primary Care Partnership	Number of admissions	Standardised rate per 1,000 persons	Lower limit of 95% CI	Upper limit of 95% CI	Average bed days	Total bed days
Southern Grampians/Glenelg	2,716	62.80	60.60	64.99	4.02	10,906
Wimmera	2,776	59.09	56.93	61.26	4.70	13,059
Wellington	2,578	54.47	52.51	56.43	3.41	8,799
Brimbank/Melton	10,941	54.45	53.50	55.40	4.68	51,247
Northern Mallee	3,184	54.24	52.45	56.03	3.42	10,882
South West	3,770	53.61	51.98	55.25	4.66	17,573
Southern Mallee	2,436	52.58	50.55	54.61	4.41	10,753
Campaspe	2,242	51.44	49.40	53.48	4.60	10,309
Goulburn Valley	5,597	51.38	50.10	52.65	4.38	24,502
Grampians/Pyrenees	1,863	51.32	49.01	53.63	4.89	9,117
Central West Gippsland	5,726	49.76	48.55	50.97	4.72	27,004
Hume/Moreland	12,988	47.48	46.72	48.23	5.14	66,747
Central Hume	3,539	46.94	45.45	48.43	4.06	14,362
West Bay	10,956	46.87	46.04	47.69	5.05	55,328
North Central Metropolitan	13,936	44.87	44.18	45.56	5.17	72,067
South East	15,256	43.85	43.19	44.51	4.14	63,103
Frankston/Mornington Peninsula	13,119	43.79	43.08	44.50	5.06	66,432
Lower Hume	1,865	42.05	40.25	43.86	4.81	8,969
East Gippsland	2,271	41.53	39.80	43.26	3.86	8,763
Bendigo/Loddon	4,674	40.41	39.30	41.51	5.44	25,427
Central Victorian Health Victorian Alliance	3,077	39.54	38.19	40.88	4.72	14,530
Mooney Valley/Melbourne	6,507	39.38	38.46	40.30	5.47	35,621
Banyule/Nillumbik	6,974	39.32	38.45	40.20	4.70	32,751
Upper Hume	2,142	37.65	36.15	39.16	4.87	10,429
Central Highlands	5,647	37.62	36.68	38.56	4.93	27,859
Outer East Health and Community Support Alliance	13,525	36.84	36.25	37.43	4.63	62,627
Barwon Primary Care Forum	10,441	36.58	35.90	37.26	5.14	53,645
Inner South East Partnership in Community and Health	11,730	36.32	35.68	36.96	5.27	61,786
South Coast Health Services Consortium	2,566	35.89	34.48	37.30	4.93	12,640
Kingston/Bayside	9,473	35.01	34.32	35.69	5.02	47,541
Inner East	21,269	32.12	31.70	32.54	5.20	11,0616

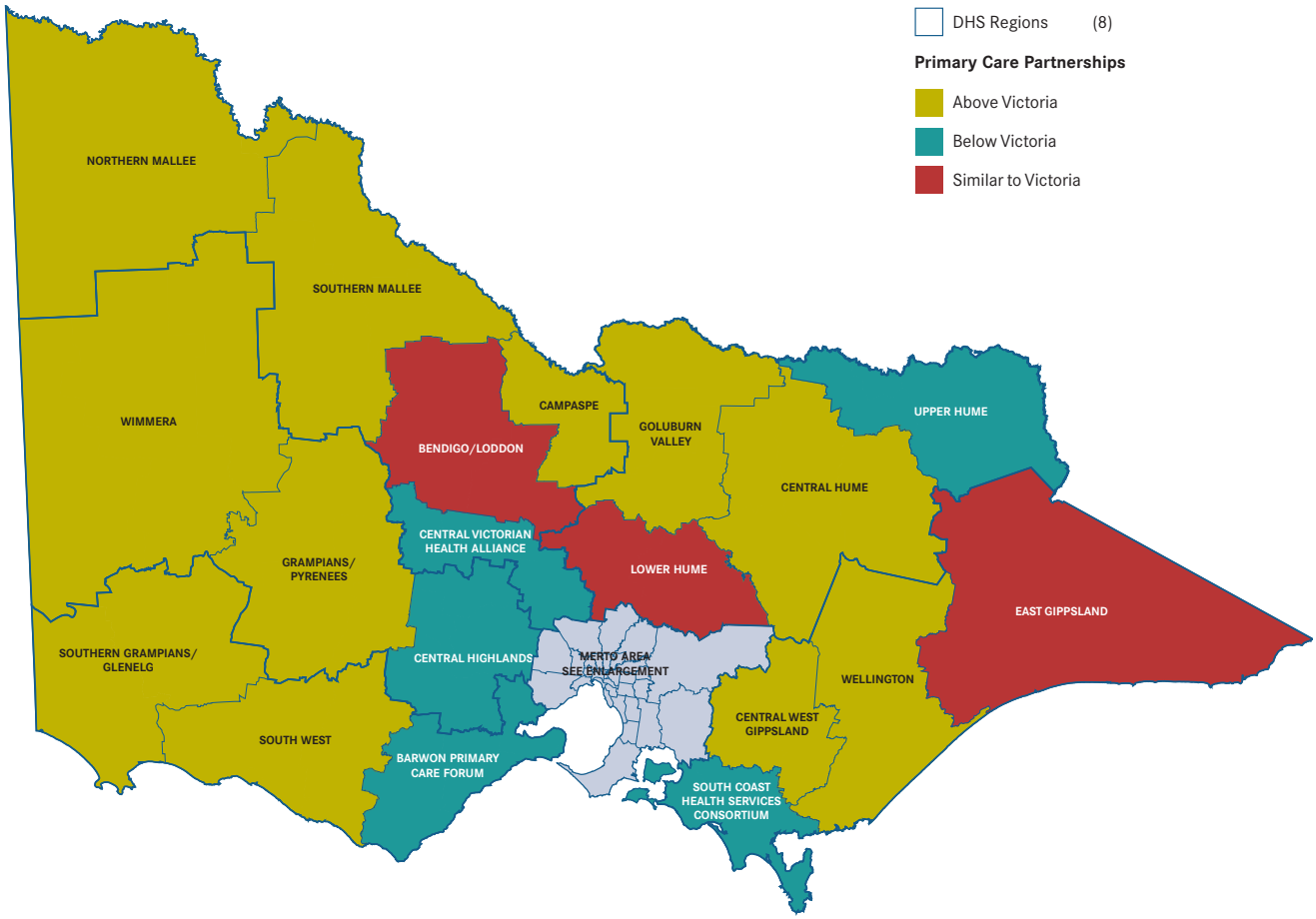
Note: ACSCs admission rates were age and sex standardised (adjusted) using the direct method, using Victoria's 2001 population as the reference. Primary Care Partnerships (PCPs) are listed in descending order of standardised ACSC rates per 100,000 persons. CI = Confidence interval.

Source: Department of Human Services, Victoria Admitted Episodes Dataset 2005–06.

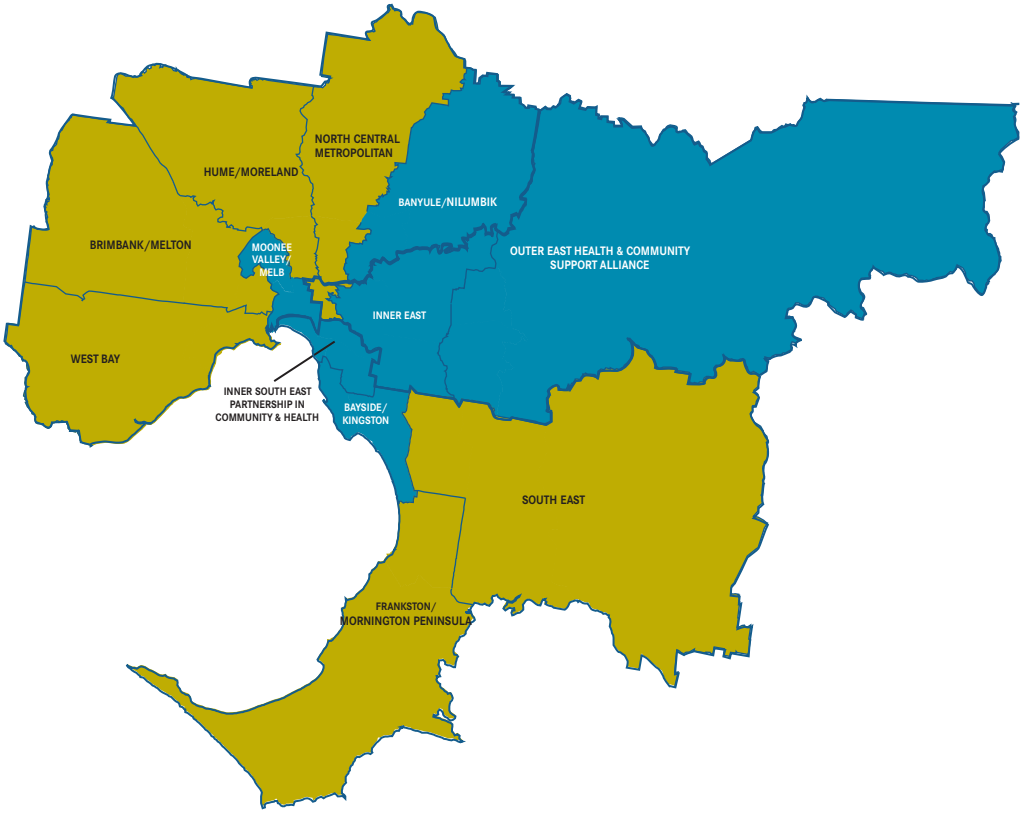
Rate ratios of total ACSCs, by Primary Care Partnership (Victoria=1), 2005-06



Total ACSCs admission rate ratios, rural Primary Care Partnerships (Victoria =1), 2005–06



Total ACSCs admission rate ratios, metropolitan Primary Care Partnerships (Victoria =1), 2005–06



Southern Grampians/Glenelg PCP had the highest ACSCs admissions rate, with 62.80 admissions per 1,000 persons in 2005–06. Inner East PCP had the lowest ACSC admissions rate, with 32.12 admissions per 1,000 persons in 2005–06. ACSCs admission rate ratios for 17 PCPs were significantly higher compared to Victoria in 2005–06.

For more information

Department of Human Services, Health Status website: www.health.vic.gov.au/healthstatus

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Self-rated health status

In this chapter

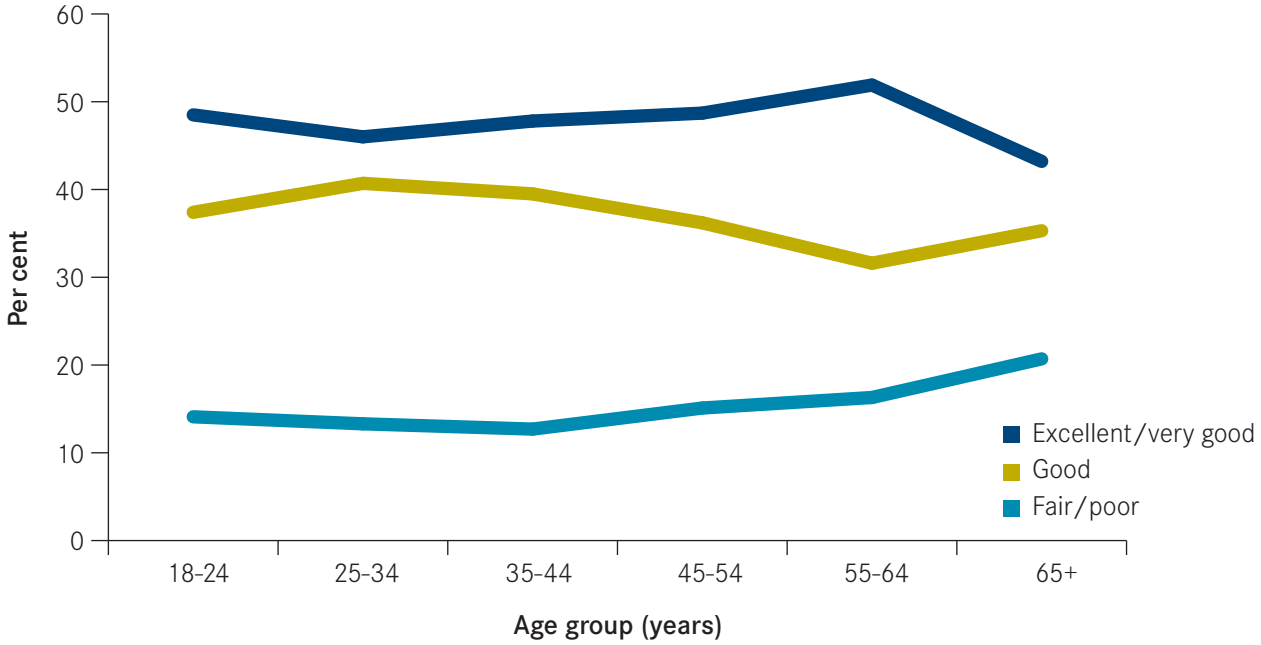
- **self-rated health status**

Summary

- In 2006, 84.5 per cent (83.4-85.6) of adults reported their health as either excellent, very good or good, compared to 82.1 per cent (95% CI: 80.9-83.3) in 2001.

Self-rated health status

Self-rated health status, persons aged 18 years and over, by age group, Victoria, 2006



Source: Department of Human Services, *Victorian population health survey*, 2006.

Self–rated health status has been shown to be a reliable predictor of future health care use and mortality, independent of other medical, behavioural or psychosocial risk factors (Idler and Benyami, 1997, Miilunpalo et al., 1997).

The *Victorian population health survey* (VPHS) asks respondents to rate their health as excellent, very good, good, fair or poor. There have been significant increases in the percentage of Victorian adults reporting their health as either excellent, very good or good over time. In 2006, 84.5 per cent (95% CI: 83.4-85.6) of adults reported their health as either excellent, very good or good, compared to 82.1 per cent (80.9-83.3) in 2001.

Although self-rated health varied by sex and age group in 2006, the differences observed were not statistically significant.

For more information

Department of Human Services, Health Intelligence Unit, Public Health Branch, *Victorian population health survey* 2006: www.health.vic.gov.au/healthstatus

Idler, E, Benyami, Y, 1997, 'Self-rated health and mortality: a review of twenty–seven community studies', *Journal of Health and Social Behaviour*, Volume 38, pp. 21–37.

Miilunpalo, S, Vuori, I, Oja, P, 1997, 'Self-rated health as a health measure: the predictive value of self-reported health status on the use of physician services and on mortality in the working age population', *Journal of Clinical Epidemiology*, Volume 50 (5), pp. 517–28.

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Health–related behaviours

This section presents information on various risk factors and health–related behaviours. The selected public health indicators are smoking, nutrition, alcohol consumption, physical inactivity and screening participation.

Smoking

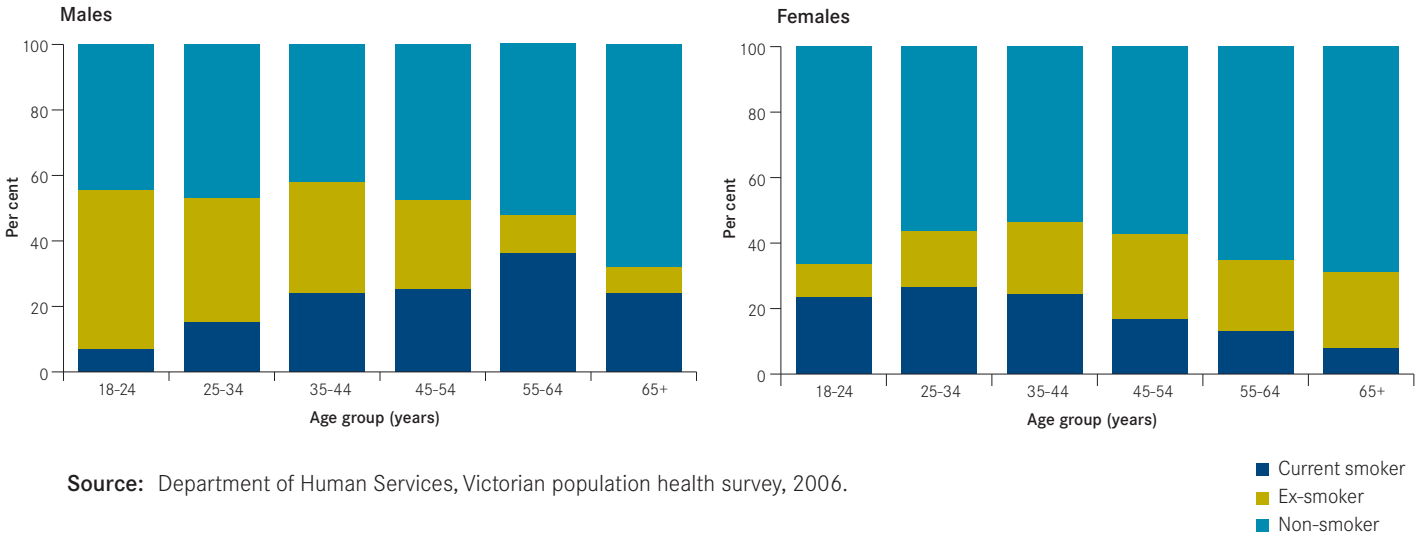
In this chapter

Summary

- Tobacco smoking accounted for 8.2 per cent of total disability-adjusted life years (DALYs) lost for Victoria in 2001. It is a major risk factor for coronary heart disease, stroke, peripheral vascular disease, numerous cancers and a range of other diseases. Smoking is of concern during pregnancy, because of its teratogenic potential and environmental tobacco smoke, or passive smoking, can cause serious health effects.
- In 2006, survey estimates show that approximately one in five (20.5 per cent) adults aged 18 years and over were current smokers, almost one-quarter (24.1) were ex-smokers and more than a half (55.4 per cent) were non-smokers.
- Current smoking rates were significantly higher for males (22.6 per cent) compared to females (18.5 per cent) and current smoking rates declined with age.

Smoking status

Smoking status, persons aged 18 years and over, by age group and sex, Victoria, 2006



Source: Department of Human Services, Victorian population health survey, 2006.

Tobacco smoking is the single largest preventable cause of the disability burden in Victoria, accounting for 8.2 per cent of total disability-adjusted life years (DALYs) in 2001. It is a major risk factor for coronary heart disease, stroke, peripheral vascular disease, numerous cancers and a range of other diseases. Smoking is of concern during pregnancy, because of its teratogenic potential and environmental tobacco smoke, or passive smoking, can cause serious health effects.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that approximately one in five (20.5 per cent) adults aged 18 years and over were current smokers, almost one-quarter (24.1 per cent) were ex-smokers and more than a half (55.4 per cent) were non-smokers.

The self reported prevalence rate for current smoking has decreased significantly since 2001, down from 24.5 per cent (95% self-reported CI: 23.2-25.9) to 20.5 per cent (19.2–21.9) for adults in 2006. The prevalence among males (22.6 per cent, 95% CI: 20.4–25.0) was significantly higher than that for females (18.5 per cent, 17.0–20.1) in 2006, although the rate for males has also decreased significantly since 2001 (28.3 per cent, 26.2–30.5), when the first VPHS survey was undertaken.

The prevalence of current smoking in 2006 decreased with age, from 23.4 per cent (95% CI: 19.2–28.6) for young adults aged 18–24 years to 7.4 per cent (5.9–9.3) for adults aged 65 years and over.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

Department of Human Services, 2005, *The Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: www.health.vic.gov.au/healthstatus

National Health and Medical Research Council (NHMRC), 1997, *The health effects of passive smoking*, Canberra: NHMRC.

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Nutrition

In this chapter

- fruit and vegetable guidelines
- daily vegetable consumption
- daily fruit consumption

Summary

- Inadequate consumption of fruit and vegetables has been identified as a risk factor in the development of a number of chronic diseases, including coronary heart disease, stroke and many types of cancer (including cancers of the mouth, pharynx, oesophagus, stomach and lungs). The *Victorian burden of disease study 2001* estimated that 3.3 per cent of total disability-adjusted life years (DALYs) were attributable to inadequate fruit and vegetable intake (less than 600 grams per day). This contribution exceeded that made by alcohol (3.1 per cent), illicit drugs (1.5 per cent), unsafe sex (0.4 per cent) and occupational hazards and exposures (1.5 per cent).
- The *Dietary guidelines for Australian adults* (2000) recommend that adults aged 19 years or over (excluding pregnant and lactating females) consume at least 300 grams (two serves) of fruit and 300 grams (five serves) of vegetables (including legumes) each day to meet their need for essential nutrients. The *Dietary guidelines for children and adolescents in Australia* recommend children and adolescents, aged 12–18 years, consume at least three serves of fruit and three serves of vegetables every day.
- Estimates from the *Victorian population health survey 2006* (VPHS) showed that approximately one in ten (9.9 per cent) adults (aged 18 years and over) met the guidelines for vegetable intake, consuming five or more serves of vegetables each day. The rates for females were significantly higher than the rates for males and older people (65 years and over) had significantly higher rates than the rates for younger adults (aged 18-24 years).
- Forty seven per cent of adults met the guidelines for fruit intake, consuming two or more serves of fruit each day. The rates for females were significantly higher than the rates for males and young adults aged 25-34 years had significantly lower rates than all other age groups.
- In 2006, 7.5 per cent of adults met the guidelines for both fruit and vegetable consumption, 2.8 per cent met the guidelines for vegetables only, 39.1 per cent met the guidelines for fruit only and 48.5 per cent did not meet either the fruit or vegetable guidelines.

Fruit and vegetable guidelines

Inadequate consumption of fruit and vegetables has been identified as a risk factor in the development of a number of chronic diseases, including coronary heart disease, stroke and many types of cancer (including cancers of the mouth, pharynx, oesophagus, stomach and lungs). The *Victorian burden of disease study 2001* estimated that 3.3 per cent of total disability-adjusted life years (DALYs) were attributable to inadequate fruit and vegetable intake (less than 600 grams per day). This contribution exceeded that made by alcohol (3.1 per cent), illicit drugs (1.5 per cent), unsafe sex (0.4 per cent) and occupational hazards and exposures (1.5 per cent).

The *Dietary guidelines for Australian adults* (2000) recommend that persons aged 19 years or over (excluding pregnant and lactating females) consume at least 300 grams (two serves) of fruit and 300 grams (five serves) of vegetables (including legumes) each day to meet their need for essential nutrients. The *Dietary guidelines for children and adolescents in Australia* recommend children and adolescents, aged 12–18 years, consume at least three serves of fruit and three serves of vegetables every day.

National Health and Medical Research Council's recommended daily intake of fruit and vegetables

Note: Excluding pregnant and breastfeeding women.

References

Department of Human Services, 2005, T*he Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: www.health.vic.gov.au/healthstatus

National Health and Medical Research Council (NHMRC), 2003, *Dietary guidelines for Australian adults*, Canberra: AusInfo.

National Health and Medical Research Council (NHMRC), 2003, *Dietary guidelines for children and adolescents in Australia* incorporating the infant feeding guidelines for health workers, Canberra: AusInfo.

For more information

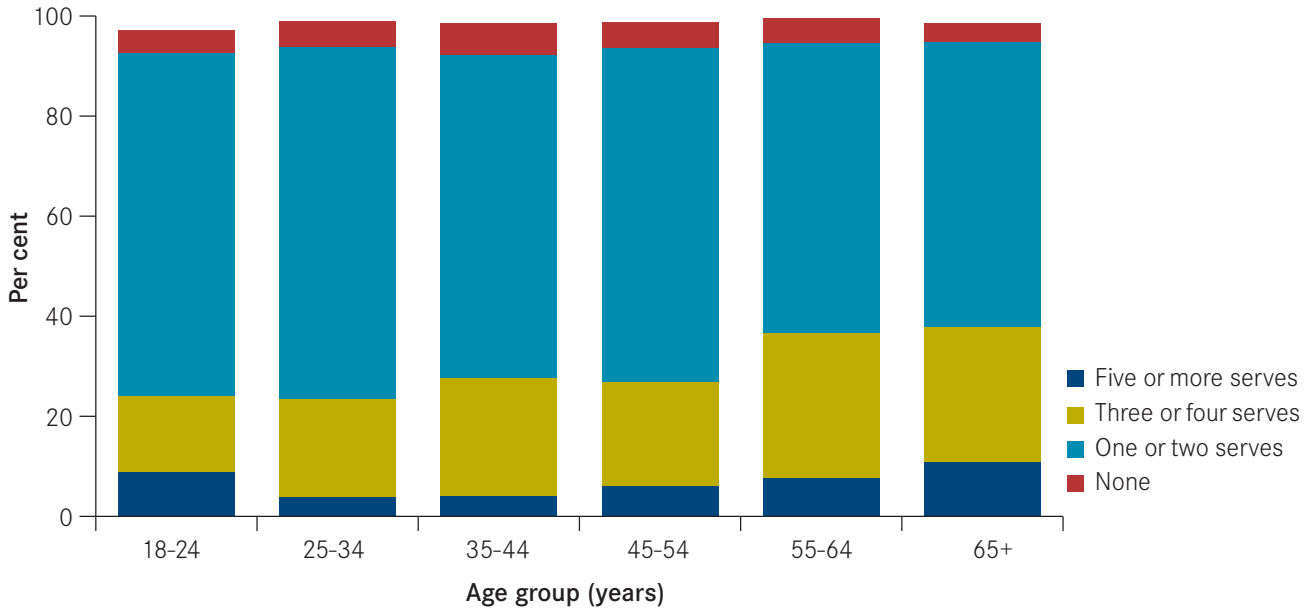
Department of Human Services, Go for your life website: www.goforyourlife.vic.gov.au

Daily vegetable consumption

Daily consumption of vegetables, persons aged 18 years or over, by sex, Victoria, 2006

	Males		Females		Persons	
Serves	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
None	**5.1**	0.6	**3.9**	0.4	**4.5**	0.4
One or two serves	**64.4**	1.3	**44.5**	1.0	**54.2**	0.8
Three or four serves	**22.5**	1.0	**37.5**	1.0	**30.2**	0.7
Five or more serves	**6.6**	0.7	**13.1**	0.6	**9.9**	0.5

Daily vegetable consumption, persons aged 18 years and over, by age group, Victoria, 2006



Note: SE = standard error.
Figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.
A serve is half a cup of cooked vegetables or a cup of salad vegetables.

Source: Department of Human Services, Victorian population health survey 2006.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that approximately one in ten (9.9 per cent) adults aged 18 years and over consumed five or more serves of vegetables each day, 30.2 per cent consumed 3–4 serves, more than half (54.2 per cent) consumed 1–2 serves and 4.5 per cent reported consuming less than one or no serves of vegetables on a daily basis.

The percentage of females (13.1 per cent, 95% CI: 11.9–14.5) who reported consuming the recommended number of serves of vegetables was significantly higher than the percentage for males (6.6 per cent, 5.3–8.1).

Vegetable consumption also varied by age group. The percentage of persons aged 65 years or over (13.7 per cent, 95% CI: 11.6–16.1) who reported consuming five or more serves of vegetables was significantly higher than the percentage for younger adults aged 18–24 years (7.2 per cent, 4.5–11.5).

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, www.health.vic.gov.au/healthstatus

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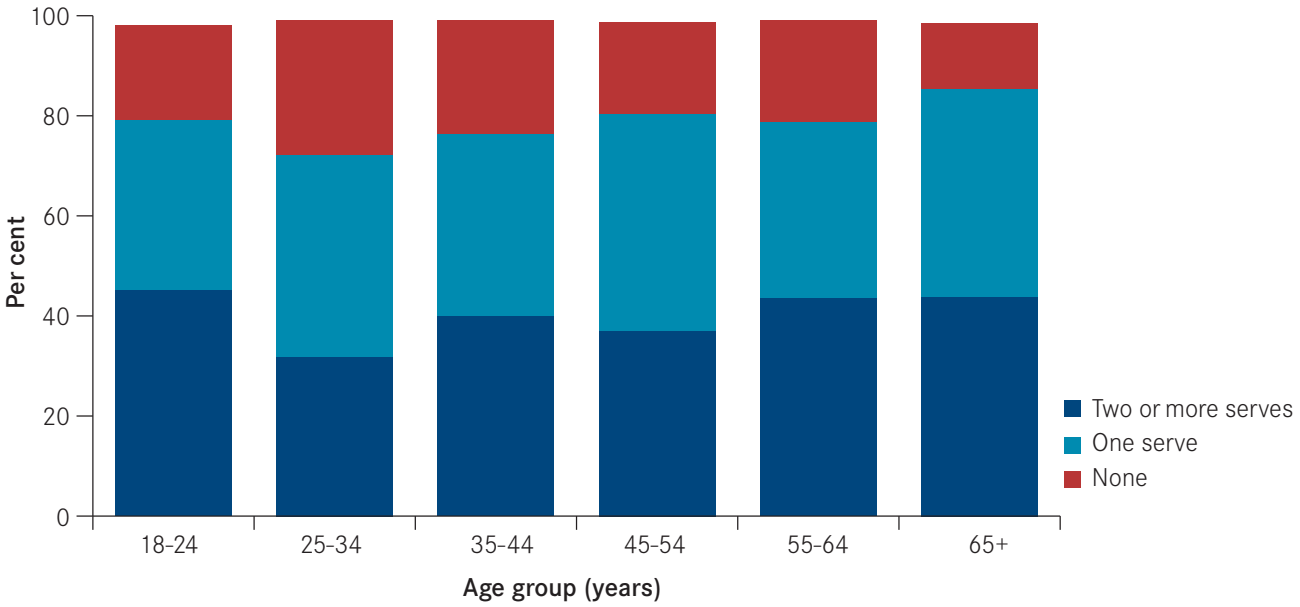
Daily fruit consumption

Daily fruit consumption, persons aged 18 years or over, by sex, Victoria, 2006

	Males		Females		Persons	
Serves	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
None	**20.3**	1.0	**11.1**	0.6	**15.6**	0.6
One serve	**38.8**	1.3	**34.0**	1.0	**36.3**	0.8
Two or more serves	**39.8**	1.3	**53.8**	1.0	**47.0**	0.8

Daily consumption of fruit, persons aged 18 years and over, by age group, Victoria, 2006



Note: SE = standard error.
Figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.
A serve is one medium piece or two small pieces of fruit, or one cup of diced pieces.

Source: Department of Human Services, Victorian population health survey, 2006.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that almost a half (47.0 per cent) of adults reported consuming two or more serves of fruit each day, 36.3 per cent reported consuming one serve and 15.6 per cent reported consuming less than one serve, or no serves of fruit, on a daily basis.

The percentage of females (53.8 per cent, 95% CI: 51.9–55.8) who reported consuming the recommended serves of fruit was significantly higher than the percentage for males (39.8 per cent, 37.3–42.3).

There were also some differences in fruit consumption by age group. The percentage of adults aged 25–34 years who reported consuming two or more serves of fruit per day (37.2 per cent, 95% CI 33.0–41.6) was significantly lower than for any other age group.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, www.health.vic.gov.au/healthstatus

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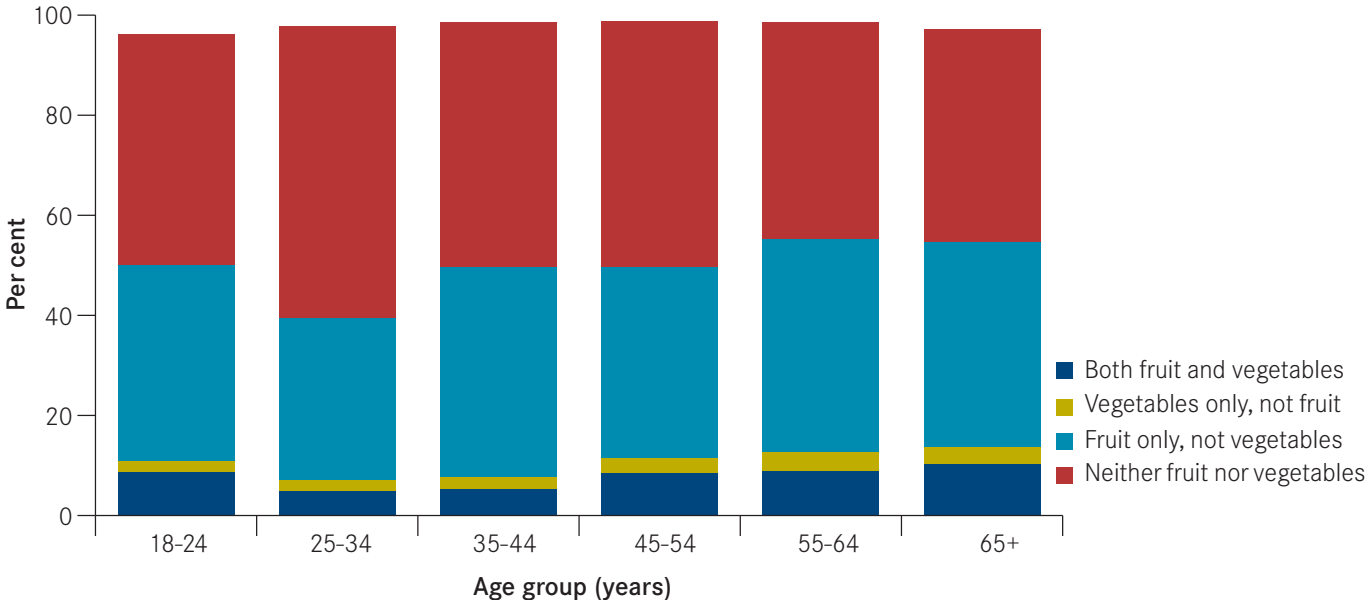
Recommended daily serves of fruit and/or vegetables

Meeting guidelines for consumption of fruit and/or vegetables, persons aged 18 years and over, by sex, Victoria, 2006

	Males		Females		Persons	
Guidelines met:	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
Fruit and vegetables	**5.1**	0.7	**9.9**	0.6	**7.5**	0.4
Vegetables only, not fruit	**1.9**	0.3	**3.6**	0.3	**2.8**	0.2
Fruit only, not vegetables	**34.3**	1.2	**43.6**	1.0	**39.1**	0.8
Neither fruit nor vegetables	**56.4**	1.3	**41.0**	1.0	**48.5**	0.8

Meeting guidelines for consumption of fruit and/or vegetables, persons aged 18 years and over, by age group, Victoria, 2006



Note: SE = standard error.
Figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Source: Department of Human Services, *Victorian population health survey*, 2006.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that 7.5 per cent of the adults met the guidelines for both fruit and vegetable consumption, 2.8 per cent met the guidelines for vegetables only, 39.1 per cent met the guidelines for fruit only and 48.5 per cent did not meet either the fruit or vegetable guidelines.

The percentage of females (9.9 per cent, 95% CI: 8.8–11.1) who reported consuming the recommended serves of fruit and vegetables was significantly higher than the percentage for males (5.1 per cent, 3.9–6.6).

One in ten older persons aged 65 years and over (10.2 per cent, 95% CI: 8.3–12.4) met the guidelines for both fruit and vegetable consumption, which was significantly higher than the comparable rate for adults aged 25–34 years (4.8 per cent, 3.0–7.7) and adults aged 35–44 years (5.3 per cent, 4.1–6.8).

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, www.health.vic.gov.au/healthstatus

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Alcohol consumption

In this chapter

Summary

- Regular excessive consumption of alcohol over time places people at increased risk of chronic ill health and premature death, and episodes of heavy drinking may place the drinker (and others) at risk of injury or death. The consequences of heavy regular use of alcohol may include cirrhosis of the liver, cognitive impairment, heart and blood disorders, ulcers, cancers and damage to the pancreas. Intoxication and acute alcohol related problems include violence, risky behaviour, road trauma and injury. Significant psychosocial and economic consequences also arise from such patterns of drinking, not only for the individuals concerned, but also for their families and the wider community. Excessive alcohol consumption is estimated to account for 3.1 per cent of the total burden of disease for Victoria.
- The *Australian Alcohol Guidelines* are currently under review by the National Health and Medical Research Council. Proposed changes to the guidelines include a single guideline for Australian adults with a recommended low-risk drinking level to reduce both the immediate and long-term harm from alcohol consumption. The proposed new guidelines also recommend two standard drinks or less in any one day for both men and women.
- The results presented in this chapter relate to the existing 2001 *Australian Alcohol Guidelines*, which emphasise patterns of drinking, as opposed to levels of consumption (the average amount consumed).
- Survey estimates from the *Victorian population health survey 2006* showed that one in ten (10.3 per cent) adults aged 18 years and over reported consuming alcohol at risky or high risk levels, at least weekly, above the threshold for short-term harm. The rates for males were significantly higher than the rates for females, and younger adults (18–24 years) had significantly higher rates than older adults (65 years and over).
- Survey estimates also showed that 4.3 per cent of adults (aged 18 years and over) reported consuming alcohol at risky/high risk levels for long-term alcohol-related harm. The differences in the rates between the sexes and age groups at this level of consumption were not statistically significant.
- Survey estimates also showed that a significantly higher percentage of females (21.6 per cent) reported being abstainers, or non-drinkers, than males (11.8 per cent).

Alcohol consumption guidelines

At low or moderate levels, the consumption of alcohol yields health benefits for some people. In particular, it may help reduce the risk of heart disease from middle age. Regular excessive consumption of alcohol over time, however, places people at increased risk of chronic ill health and premature death, and episodes of heavy drinking may place the drinker (and others) at risk of injury or death. The consequences of heavy regular use of alcohol may include cirrhosis of the liver, cognitive impairment, heart and blood disorders, ulcers, cancers and damage to the pancreas. Intoxication and acute alcohol related problems include violence, risky behaviour, road trauma and injury. Significant psychosocial and economic consequences also arise from such patterns of drinking, not only for the individuals concerned, but also for their families and the wider community.

Excessive alcohol consumption is estimated to account for 3.1 per cent of the total burden of disease for Victoria. Allowing for the beneficial effects of low to moderate levels of alcohol, the net harm associated with alcohol consumption accounts for around 1.4 per cent of the total burden of disease in 2001.

The data presented in this chapter on alcohol consumption was taken from the 2006 *Victorian population health survey* (VPHS). The VPHS asked respondents about their alcohol consumption based on the 2001 *Australian alcohol guidelines*. The National Health Medical Research Council is currently reviewing the *Australian alcohol guidelines*. Proposed changes to the guidelines include a single guideline for Australian adults with a recommended low–risk drinking level to reduce both the immediate and long–term harm from alcohol consumption. The proposed new guidelines also recommend two standard drinks or less in any one day for both men and women.

The results presented in this report relate to the existing 2001 *Australian Alcohol Guidelines*, which emphasise patterns of drinking, as opposed to levels of consumption (the average amount consumed). 'Patterns of drinking' refers to aspects of drinking behaviour other than the level of drinking, including the context or circumstances of drinking (when, where and with whom the drinking behaviour occurs), the types of drink consumed, the number of heavy drinking occasions and their characteristics and the norms associated with drinking behaviour. Two main patterns of drinking were identified as creating a risk to health–excessive alcohol intake on a particular occasion, and consistent high–level intake over months and years.

The 2001 guidelines specify the risks (for various drinking levels) for males and females of average or larger-than-average body size (60 kilograms for males and 50 kilograms for females) in the short and long term for the whole population. Risk is categorised as either:

- low (a level of drinking at which the risk of harm is minimal and there are possible benefits for some of the population)
- risky (a level of drinking at which the risk of harm outweighs any possible benefit)
- high (a level of drinking at which there is substantial risk of serious harm, above which risk increases rapidly).

2001 Short-term risk guidelines

2001 Australian alcohol guidelines for short-term drinking and the levels of risk to health

	Risk of harm in the short term*		
	Low risk	**Risky**	**High risk**
Males	Up to six drinks on any one day; no more than three days per week	Seven to ten drinks on any one day	11 or more drinks on any one day
Females	Up to four drinks on any one day; no more than three days per week	Five to six drinks on any one day	Seven or more drinks on any one day

Note: *Based on a standard drink containing 10 grams or 12.5 millilitres of alcohol.

Source: National Health and Medical Research Council (NHMRC) 2001, *Australian alcohol guidelines: Health risks and benefits*, Canberra: AusInfo.

For the purpose of determining the potential for alcohol-related harm, the short-term risk is defined in terms of the number of standard drinks consumed per drinking occasion. The guidelines for the whole population indicate that males who drink up to six standard drinks and females who drink up to four standard drinks are at low risk of alcohol-related harm in the short term. Males who drink 11 or more drinks, and females who consume seven or more drinks, are categorised as being at high risk. Between these levels, alcohol consumption behaviour is classified as risky in the short term. In specifying these short-term risks, it is assumed that heavier drinking days occur on a maximum of three occasions per week, and remain within the levels of long-term harm.

2001 Long-term risk guidelines

Australian alcohol guidelines for long-term drinking and the level of risk to health

	Risk of harm in the long term*		
	Low risk	**Risky**	**High risk**
Males			
On an average day	Up to four drinks per day	Five to six drinks per day	Seven or more drinks per day
Overall weekly level	Up to 28 per week	29–42 per week	43 or more per week
Females			
On an average day	Up to two drinks per day	Three to four drinks per day	Five or more drinks per day
Overall weekly level	Up to 14 per week	15–28 per week	29 or more per week

Note: *Based on a standard drink containing ten grams or 12.5 millilitres of alcohol.

Source: National Health and Medical Research Council (NHMRC) 2001, *Australian alcohol guidelines: Health risks and benefits*, Canberra: AusInfo.

Long-term risk of poor health outcomes due to alcohol consumption is associated with regular daily patterns of drinking, defined in terms of the amount of alcohol typically consumed each week. The Australian alcohol guidelines indicate that males are at high risk of long-term alcohol-related health problems if they consume seven or more drinks on an average day, or an overall weekly level of more than 43 standard drinks per week. For females, high long-term risk is equated with the consumption of five or more standard drinks on an average day, or more than 29 drinks per week. Alcohol consumption is classified as risky in the long term if males consume five to six drinks on an average day (29–42 per week) and if females consume more than three to four drinks daily (15–28 per week).

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, www.health.vic.gov.au/healthstatus

NHMRC (National Health and Medical Research Council) 2001, *Australian alcohol guidelines: Health risks and benefits*, AusInfo, Canberra.

NHMRC (National Health and Medical Research Council) 2007, *Australian alcohol guidelines: Draft for public consultation*, AusInfo, Canberra.

Short–term risk from alcohol consumption

Frequency of drinking alcohol at above short–term risk levels, persons aged 18 years and over, by age group and sex, Victoria, 2006

					Risky or high risk					
	Abstainer		Low risk		At least yearly		At least monthly		At least weekly	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
Males										
18–24	**5.4**	1.8	**13.7**	2.8	**30.0**	4.1	**26.9**	3.9	**21.7**	3.4
25–34	**12.1**	2.6	**18.0**	2.9	**32.7**	3.7	**15.8**	2.4	**21.4**	3.1
35–44	**9.5**	1.7	**27.1**	2.6	**28.7**	2.6	**20.5**	2.2	**13.3**	1.9
45–54	**10.0**	1.6	**34.1**	2.6	**25.1**	2.2	**16.6**	1.9	**13.6**	1.8
55–64	**13.3**	2.0	**43.2**	2.9	**22.5**	2.4	**8.1**	1.4	**12.0**	1.9
65+	**20.2**	1.9	**53.4**	2.3	**12.0**	1.5	**7.2**	1.3	**5.9**	1.1
Total	**11.8**	**0.8**	**31.3**	**1.2**	**25.5**	**1.2**	**15.9**	**1.0**	**14.7**	**1.0**
Females										
18–24	**14.1**	3.0	**16.8**	2.8	**32.8**	3.8	**19.9**	3.0	**16.0**	2.8
25–34	**19.2**	2.2	**30.8**	2.4	**28.6**	2.3	**14.0**	1.8	**7.2**	1.2
35–44	**17.0**	1.6	**39.5**	2.0	**25.1**	1.7	**11.0**	1.2	**6.5**	1.0
45–54	**18.1**	1.7	**47.4**	2.2	**21.5**	1.8	**7.7**	1.0	**4.9**	0.9
55–64	**24.4**	2.0	**52.3**	2.2	**15.0**	1.6	**3.7**	0.7	**3.2**	0.8
65+	**34.4**	2.1	**50.9**	2.2	**7.8**	1.2	**3.2**	0.8	**1.7**	0.6
Total	**21.6**	**0.8**	**40.4**	**1.0**	**21.4**	**0.9**	**9.6**	**0.6**	**6.1**	**0.5**
Persons										
18–24	**9.7**	1.8	**15.2**	2.0	**31.4**	2.8	**23.5**	2.5	**18.9**	2.2
25–34	**15.7**	1.7	**24.5**	1.9	**30.7**	2.2	**14.9**	1.5	**14.3**	1.7
35–44	**13.3**	1.1	**33.4**	1.6	**26.9**	1.6	**15.7**	1.2	**9.8**	1.0
45–54	**14.1**	1.2	**40.9**	1.7	**23.3**	1.4	**12.1**	1.1	**9.2**	1.0
55–64	**18.9**	1.4	**47.8**	1.8	**18.7**	1.5	**5.9**	0.8	**7.6**	1.0
65+	**28.1**	1.4	**52.0**	1.6	**9.7**	0.9	**5.0**	0.7	**3.6**	0.6
Total	**16.8**	**0.6**	**36.0**	**0.8**	**23.4**	**0.7**	**12.7**	**0.6**	**10.3**	**0.5**

Note: SE = standard error.
Figures may not add to 100 per cent (excluding abstainers) due to a proportion of 'don't know' or 'refused' responses.

Based on current guidelines (under review), risk levels are defined in terms of the number of standard drinks per drinking occasion (subject to qualifications for specific population groups), and differ for males and females.

For males, the risk categories are:

- low risk–less than six standard drinks per day
- risky–seven to 10 standard drinks per day
- high risk–11 or more standard drinks per day.

For females the corresponding thresholds are:

- low risk–less than four standard drinks per day
- risky–five to six standard drinks per day
- high risk–seven or more standard drinks per day.

Source: Department of Human Services, Victorian population health survey, 2006.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that one in ten (10.3 per cent) adults aged 18 years or over reported consuming alcohol at risky or high risk levels, at least weekly, above the threshold for short-term harm. There were statistically significant differences between the sexes and between age groups. The rate for males (14.7 per cent, 95% CI: 12.9–16.7) was significantly higher than the rate for females (6.1 per cent, 5.2–7.2) and the rate for younger adults aged 18–24 years (18.9 per cent, 95% CI: 14.9–23.6) was significantly higher than the rate for older adults aged 65 years and over (3.6 per cent, 2.6–4.9).

Approximately one-quarter (23.4 per cent) of adults reported risky or high risk levels of alcohol consumption, at least yearly, above the threshold for short term harm, and 12.7 per cent reported risky or high risk levels of consumption at least monthly.

The percentage of females (21.6 per cent, 95% CI: 20.0–23.3) who reported being an abstainer (do not drink, or no longer drink) was significantly higher than the percentage of males (11.8 per cent, 10.3–13.5).

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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Long-term risk from alcohol consumption

Long–term risk of alcohol related harm, persons aged 18 years and over, by age group and sex, Victoria, 2006

	Abstainer		Low risk		Risky		High risk	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
Males								
18–24	**5.4**	1.8	**87.8**	2.8	**4.7**	1.8	**0.3**	0.3
25–34	**12.1**	2.6	**81.0**	3.0	**5.1**	1.7	**1.5**	0.7
35–44	**9.5**	1.7	**83.7**	2.0	**4.1**	1.0	**1.4**	0.6
45–54	**10.0**	1.6	**84.9**	1.8	**2.8**	0.9	**1.6**	0.6
55–64	**13.3**	2.0	**80.6**	2.2	**3.3**	0.9	**1.8**	0.7
65+	**20.2**	1.9	**75.3**	2.0	**2.8**	0.6	**0.6**	0.2
Total	**11.8**	**0.8**	**82.2**	**1.0**	**3.8**	**0.5**	**1.2**	**0.2**
Females								
18–24	**14.1**	3.0	**77.8**	3.4	4.3	1.5	**2.0**	1.3
25–34	**19.2**	2.2	**77.0**	2.3	2.3	0.7	**1.1**	0.5
35–44	**17.0**	1.6	**79.5**	1.6	1.9	0.5	**0.7**	0.3
45–54	**18.1**	1.7	**76.9**	1.8	4.5	0.9	**0.0**	0.0
55–64	**24.4**	2.0	**70.8**	2.1	3.1	0.7	**0.0**	0.0
65+	**34.4**	2.1	**61.1**	2.2	1.9	0.6	**0.7**	0.3
Total	**21.6**	**0.8**	**73.7**	**0.9**	**2.9**	**0.3**	**0.7**	**0.2**
Persons								
18–24	**9.7**	1.8	**82.9**	2.2	**4.5**	1.2	**1.1**	0.7
25–34	**15.7**	1.7	**79.0**	1.9	**3.7**	0.9	**1.3**	0.4
35–44	**13.3**	1.1	**81.6**	1.3	**3.0**	0.6	**1.0**	0.3
45–54	**14.1**	1.2	**80.8**	1.3	**3.6**	0.6	**0.8**	0.3
55–64	**18.9**	1.4	**75.7**	1.5	**3.2**	0.5	**0.9**	0.3
65+	**28.1**	1.4	**67.4**	1.5	**2.3**	0.4	**0.6**	0.2
Total	**16.8**	**0.6**	**77.8**	**0.7**	**3.3**	**0.3**	**1.0**	**0.2**

Note: SE = standard error.
Figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Based on current guidelines (under review), risk levels are defined in terms of the number of standard drinks per drinking occasion (subject to qualifications for specific population groups), and differ for males and females.

For males, the risk categories are:

- low risk– up to 28 standard drinks per week
- risky– 29-42 standard drinks per week
- high risk– 43 or more standard drinks per week.

For females the corresponding thresholds are:

- low risk– up to 14 standard drinks per week
- risky– 15-28 standard drinks per week
- high risk– 29 or more standard drinks per week.

Source: Department of Human Services, *Victorian population health survey, 2006.*

The quantity/frequency method was used to estimate the proportion of the population drinking at long term risky or high-risk levels. This method combines the data on how often respondents usually had an alcoholic drink of any kind with data on the number of standard drinks that respondents usually had on a day when consuming an alcoholic drink.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that 3.3 per cent of adults aged 18 years and over reported consuming alcohol at risky levels for long-term alcohol-related harm and a further one per cent reported high-risk levels of consumption.

Although there were differences in the rates for risky and high risk levels of alcohol consumption for long term harm between the sexes and different age groups, these differences were not statistically significant.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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Physical activity/inactivity

In this chapter

- **physical activity guidelines**
- **types of physical activity**
- **levels of physical activity**
- **overweight/obesity**

Summary

- Physical inactivity is a major modifiable risk factor for a range of diseases and conditions, including cardiovascular disease, diabetes, some cancers, obesity and falls among the elderly. The evidence available suggests that health benefits accrue with increased physical activity, and that the protective effect of physical activity occurs even if adopted in middle and later life.
- Estimates from the *Victorian population health survey 2006* showed that five per cent of adults (aged 18 years or over) did not undertake any physical activity (sedentary behaviour) during the previous week. Approximately one-quarter of adults reported walking only; 5.3 per cent reported undertaking vigorous activity only; and, 59.7 per cent reported undertaking both walking and vigorous physical activity in the previous week.
- Survey estimates showed that 64.1 per cent of adults reported undertaking sufficient time and sessions of physical activity to confer a health benefit in the previous week. The percentage of younger adults (71.7 per cent, 95% CI: 66.2–76.6) who reported sufficient time and sessions of physical activity was significantly higher than the percentage of older adults aged 65 years and over (50.2 per cent, 47.1–53.4). Differences in the rates of sufficient activity between the sexes were not significant.
- Overweight and obesity, which together can be termed 'excess weight', are major contributors to several chronic diseases. Excess weight is a condition of abnormal and excessive fat accumulation, to the extent that a person's health and wellbeing may be adversely affected. The primary cause of excess weight is an imbalance in the long-term energy equation, with energy intake exceeding energy consumption.
- VPHS 2006 survey estimates also showed that approximately one-half (47.8 per cent) of adults aged 18 years and over were classified as overweight or obese, with a body mass index of 25 or greater. The rate for males (56.3 per cent) was significantly higher than the rate for females (39.7 per cent) and a greater percentage of older adults aged 65 years and over (52.5 per cent) were classified as overweight or obese compared to younger adults aged 18–24 years (22.9 per cent).

Physical activity guidelines

Physical inactivity is a major modifiable risk factor for a range of diseases and conditions, including cardiovascular disease, diabetes, some cancers, obesity and falls among the elderly. The evidence available suggests that health benefits accrue with increased physical activity, and that the protective effect of physical activity occurs even if adopted in middle and later life. In Victoria, physical activity levels are monitored at the population level to investigate the outcomes of health promotion efforts in this area.

The level of health benefit achieved from physical activity partly depends on the intensity of the activity. In general, participation in moderate-intensity activities (at least) is required to obtain a health benefit from physical activity. Accruing 150 minutes of (at least) moderate-intensity physical activity (such as brisk walking) over one week is believed to be sufficient to confer health benefits, and is the recommended threshold of physical activity according to *National physical activity guidelines for Australian*s (NHMRC 1999). For those who achieve an adequate baseline level of fitness, extra health benefits may be gained by undertaking at least 30 minutes of regular vigorous exercise on three to four days per week.

The measure 'sufficient time and sessions' is the preferred risk indicator for measuring participation in a sufficient level of health–enhancing physical activity at a population level. Consistent with *Guideline 3*, the 'sufficient time and sessions' definition of physical activity requires that an individual accumulate at least 150 minutes of at least moderate physical activity regularly. The 'sufficient' time element of physical activity is calculated by adding the minutes of walking and the minutes of moderate–intensity activity, plus two times the minutes of vigorous activity (that is, the minutes of vigorous intensity activity are weighted by a factor of two).

Given this definition, a person is classified as being 'sedentary' if they report no minutes of physical activity for the relevant time period. 'Insufficient' physical activity is defined as some reported physical activity within the specified time period, but either not spending enough time participating in physical activity (that is, less than 150 minutes) or undertaking fewer than five sessions of physical activity per week. Individuals who satisfy the requirements with respect to both the amount of time and the number of sessions are classified as doing 'sufficient' physical activity.

References

Department of Health and Aged Care (DoHAC), 1999, *National physical activity guidelines for adults*, Canberra: DoHAC. www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pubhlth-strateg-phys-act-guidelines

For more information

Department of Human Services, Go for your life website: www.goforyourlife.vic.gov.au

Department for Victorian Communities, Sports and Recreation Victoria website: www.sport.vic.gov.au

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Types of physical activity

Types of physical activity undertaken during the previous week, persons aged 18 years and over, by age group and sex, Victoria, 2006.

	Sedentary		Walking only		Vigorous activity only		Walking and vigorous activity	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
Males								
18–24	**3.9**	1.6	**10.1**	2.6	**8.5**	2.6	**73.9**	3.9
25–34	**2.1**	0.8	**21.3**	3.3	**5.7**	1.6	**64.7**	3.7
35–44	**3.7**	1.1	**28.1**	2.6	**5.2**	1.1	**60.4**	2.8
45–54	**6.1**	1.3	**28.6**	2.4	**5.5**	1.2	**56.4**	2.6
55–64	**5.3**	1.6	**37.3**	2.9	**4.9**	1.3	**50.0**	2.9
65+	**7.1**	1.1	**41.0**	2.3	**4.9**	1.1	**43.0**	2.3
Total	**4.6**	**0.5**	**27.8**	**1.2**	**5.7**	**0.6**	**58.1**	**1.3**
Females								
18–24	**2.5**	1.0	**18.3**	3.1	**2.7**	1.3	**73.9**	3.4
25–34	**3.7**	0.9	**16.3**	2.0	**6.0**	1.2	**72.8**	2.4
35–44	**3.8**	0.8	**17.7**	1.6	**6.1**	1.0	**69.5**	1.9
45–54	**3.8**	0.8	**26.5**	1.9	**3.2**	0.7	**64.1**	2.1
55–64	**4.8**	0.9	**33.1**	2.2	**4.7**	0.9	**55.4**	2.2
65+	**12.7**	1.6	**41.5**	2.2	**5.7**	1.0	**35.4**	2.1
Total	**5.4**	**0.5**	**25.7**	**0.9**	**4.9**	**0.4**	**61.3**	**1.0**
Persons								
18–24	**3.2**	0.9	**14.1**	2.0	**5.6**	1.5	**73.9**	2.6
25–34	**2.9**	0.6	**18.8**	1.9	**5.8**	1.0	**68.8**	2.2
35–44	**3.7**	0.7	**22.9**	1.5	**5.6**	0.7	**65.0**	1.7
45–54	**4.9**	0.8	**27.5**	1.5	**4.3**	0.7	**60.3**	1.7
55–64	**5.0**	0.9	**35.2**	1.8	**4.8**	0.8	**52.7**	1.8
65+	**10.2**	1.0	**41.3**	1.6	**5.4**	0.7	**38.8**	1.6
Total	**5.0**	**0.3**	**26.7**	**0.7**	**5.3**	**0.4**	**59.7**	**0.8**

Note: SE = standard error.
Figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Walking for a minimum of ten minutes is categorised as a moderate-intensity physical activity. Vigorous activity includes household chores (excluding gardening) and vigorous 'other' activities (for example, tennis, jogging, cycling and 'keep-fit' exercises).

Source: Department of Human Services, Victorian population health survey, 2006.

The *Victorian population health survey 2006* collected data on three types of physical activity:

- time spent walking (for more than ten minutes at a time) for recreation, exercise or to get to and from places
- time spent doing vigorous household chores (excluding gardening)
- time spent doing vigorous activities other than household chores and gardening (for example, tennis, jogging, cycling and 'keep-fit' exercises).

Data were also collected on the number of sessions and the duration of each type of physical activity.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that five per cent of adults aged 18 years or over did not undertake any physical activity (sedentary behaviour) during the week before the survey. Approximately one-quarter of adults surveyed reported walking only; 5.3 per cent reported undertaking vigorous activity only; and, 59.7 per cent reported undertaking both walking and vigorous physical activity in the week before the survey.

Sedentary behaviour varied significantly between age groups with 10.2 per cent (95% CI: 8.4–12.3) of older adults aged 65 years and over reporting no physical activity in the week before the survey compared to 3.2 per cent (1.8–5.7) of younger adults aged 18–24 years. Differences in the rates of sedentary behaviour between the sexes were not significant.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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Levels of physical activity

Adequacy of physical activity undertaken during the previous week, persons aged 18 years and over, by age group and sex, Victoria, 2006

	Sedentary		Insufficient time and sessions		Sufficient time and sessions	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
Males						
18-24	**3.9**	1.6	**20.2**	3.5	**72.3**	3.9
25-34	**2.1**	0.8	**24.8**	3.2	**66.9**	3.5
35-44	**3.7**	1.1	**28.7**	2.6	**64.9**	2.7
45-54	**6.1**	1.3	**24.7**	2.2	**65.7**	2.5
55-64	**5.3**	1.6	**31.6**	2.8	**60.5**	3.0
65+	**7.1**	1.1	**32.2**	2.2	**56.7**	2.3
Total	**4.6**	**0.5**	**27.1**	**1.1**	**64.5**	**1.2**
Females						
18-24	**2.5**	1.0	**23.9**	3.4	**71.0**	3.5
25-34	**3.7**	0.9	**22.4**	2.1	**72.7**	2.3
35-44	**3.8**	0.8	**25.2**	1.8	**68.1**	1.9
45-54	**3.8**	0.8	**27.3**	1.9	**66.4**	2.0
55-64	**4.8**	1.0	**31.7**	2.1	**61.5**	2.2
65+	**12.7**	1.6	**37.6**	2.1	**45.0**	2.2
Total	**5.4**	**0.5**	**28.1**	**0.9**	**63.7**	**1.0**
Persons						
18–24	**3.2**	0.9	**22.0**	2.5	**71.7**	2.6
25–34	**2.9**	0.6	**23.6**	1.9	**69.8**	2.1
35–44	**3.7**	0.7	**26.9**	1.6	**66.5**	1.6
45–54	**4.9**	0.8	**26.0**	1.5	**66.1**	1.6
55–64	**5.0**	0.9	**31.7**	1.8	**61.0**	1.8
65+	**10.2**	1.0	**35.2**	1.5	**50.2**	1.6
Total	**5.0**	**0.3**	**27.6**	**0.7**	**64.1**	**0.8**

Note: SE = standard error.
Figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

'Sufficient activity' is defined as participating in 150 or more minutes of at least moderate-intensity physical activity over five or more sessions per week. Physical activity is classified as 'insufficient' if fewer than 150 minutes of activity are accumulated and/or fewer than five sessions are undertaken.

Source: Department of Human Services, *Victorian population health survey, 2006*.

Estimates from the *Victorian population health survey 2006* (VPHS) showed that 64.1 per cent of adults aged 18 years and over reported undertaking sufficient time and sessions of physical activity to confer a health benefit in the week before the survey.

The percentage of younger adults (71.7 per cent, 95% CI: 66.2–76.6) who reported sufficient time and sessions of physical activity was significantly higher than the percentage of older adults aged 65 years and over (50.2 per cent, 47.1–53.4).

Differences in the rates of sufficient activity between the sexes were not significant. Overall, 64.5 per cent of males and 63.7 per cent of females reported sufficient time and sessions of physical activity to confer health benefits, as recommended in the *National physical activity guidelines for Australian*s (NHMRC 1999).

References

Department of Health and Aged Care (DoHAC), 1999, *National physical activity guidelines for adults*, Canberra: DoHAC.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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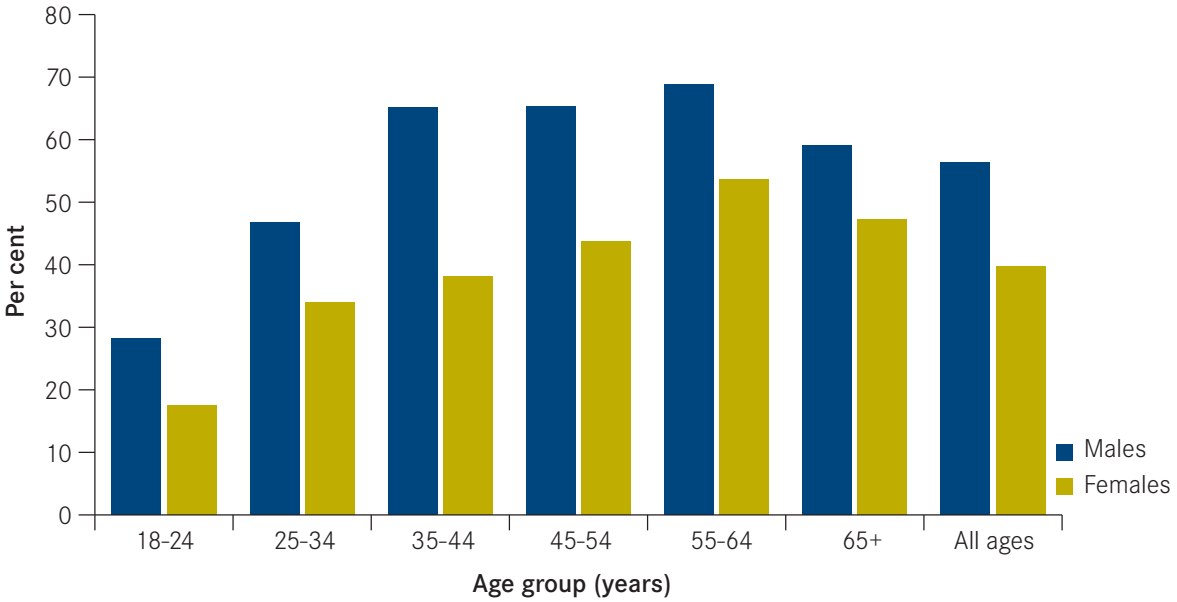
Overweight/obesity

Overweight or obese persons, aged 18 years or over, by age group and sex, Victoria, 2006



Note: Body mass index (BMI) = weight (kilograms)/height^2 (metres).

BMI categories are:

- underweight (<18.5)
- normal weight (BMI 18.5–25)
- overweight (BMI 25–30)
- obese (BMI $\geq$ 30).

Source: Department of Human Services, *Victorian population health survey, 2006*.

Overweight and obesity, which together can be termed 'excess weight', are major contributors to several chronic diseases. Excess weight is a condition of abnormal and excessive fat accumulation, to the extent that a person's health and wellbeing may be adversely affected. The primary cause of excess weight is an imbalance in the long-term energy equation, with energy intake exceeding energy consumption. The measurement of excess weight as a risk factor for chronic diseases is not simple, because both overall fat and the regional distribution of fat contribute to chronic disease development and progression. At the population level, a common indicator of excess weight (approximating body fat) is the body mass index (BMI).

Estimates from the 2006 *Victorian population health survey* (VPHS) showed that 47.8 per cent of adults aged 18 years and over were classified as overweight or obese, with a body mass index of 25 or greater. The rate for males (56.3 per cent, 95% CI: 53.7–58.9) was significantly higher than the rate for females (39.7 per cent, 37.8–41.6).

Levels of overweight and obesity also varied by age group. The rate for older adults aged 65 years and over (52.5 per cent, 95% CI: 49.3–55.7) was significantly higher than the rate for younger adults aged 18–24 years (22.9 per cent, 18.6–28.0).

For more information

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Screening participation

In this chapter

Summary

- Screening refers to the use of simple tests across a healthy population in order to identify individuals who have disease, but do not yet have symptoms, or who have precursors to the disease. The aim of screening is to find the disease or condition in its early stages, or to find changes in the body that indicate the disease is likely to develop in future. In most cases, early detection of a disease increases the chances of successful treatment. The benefits of population screening programs include a reduction in the impact of diseases on individuals, families and society, and a reduced demand on the health system.
- In Victoria, the estimated two-year (2005–2006) participation rate for cervical cancer screening in women aged 20–69 years was 63.4 per cent. Participation varied by department region of residence, ranging from 58.4 per cent in the Grampians region to 66.8 per cent in the Eastern region.
- Survey estimates for 2006 indicate 14.2 per cent of adults aged 18 years and over had been screened for bowel cancer in the previous two years. Although the percentage of adults who reported having been screened varied between regions, these differences were not statistically significant.
- At 31 July 2007 the new National Bowel Cancer Screening Program (NBCSP) had registered 44,708 participants (aged either 55 or 65 years) who had completed and returned a faecal occult blood screening test, representing a crude participation rate of 35.2 per cent.
- In Victoria the estimated two-year (2005–2007) participation rate for breast cancer screening in women aged 50–69 years was 58.6 per cent. Participation since 2000–2002 has remained steady at just under 60 per cent.
- The estimated proportion of babies undergoing newborn screening was 99.4 per cent statewide in 2003.

Introduction

Screening refers to the use of simple tests across a healthy population in order to identify individuals who have disease, but do not yet have symptoms, or who have precursors to the disease. The aim of screening is to find the disease or condition in its early stages, or to find changes in the body that indicate the disease is likely to develop in future. In most cases, early detection of a disease increases the chances of successful treatment.

The benefits of population screening programs include a reduction in the impact of diseases on individuals, families and society, and a reduced demand on the health system. Four population-based screening programs operate in Victoria:

- BreastScreen Victoria, which provides mammography screening for women aged 50–69 every two years
- National Cervical Screening Program, which provides screening for cervical cancer in women aged 20–69 every two years
- National Bowel Cancer Screening Program, which provides screening for bowel cancer (this new program is currently focused on people aged 55 or 65 only)
- Newborn Screening Program, which tests newborn babies for serious conditions such as phenylketonuria (PKU), congenital hypothyroidism, cystic fibrosis and several metabolic conditions.

One of the key determinants of the community effectiveness of a screening program is the extent of its population coverage. The term 'participation' is used to describe the percentage of the eligible target population attending for screening.

For more information

Screening and early detection of cancer, World Health Organization website: www.who.int/cancer/detection/en/

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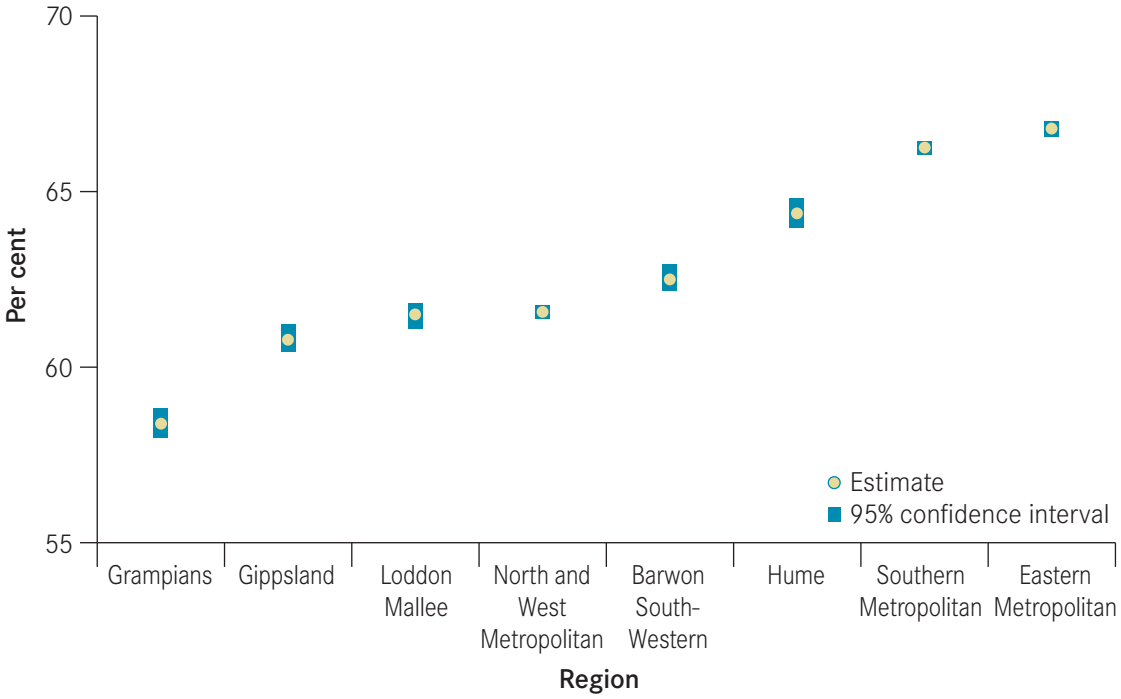
Cervical cancer screening

Biennial cervical screening participation rates, by region, Victoria, 1 January 2005–31 December 2006



	Grampians	Gippsland	Loddon Mallee	North and West Metropolitan	Barwon-South Western	Hume	Southern Metropolitan	Eastern Metropolitan
Participation (per cent screened)	58.4	60.8	61.5	61.6	62.5	64.4	66.3	66.8
Lower 95% CI	58.0	60.5	61.1	61.4	62.2	64.0	66.1	66.6
Upper 95% CI	58.8	61.2	61.8	61.7	62.9	64.8	66.4	67.0

Note: CI = confidence interval. Participation is defined by region of residence of women in the target population. Regions are listed in order of increasing participation rates.

Source: Victorian Cervical Cytology Registry, *Statistical Report, 2006*.

The National Cervical Screening Program screens for cervical cancer in women aged 20–69 every two years. The test used in the screening program is the Pap test (Pap smear), which is a quick and simple test used to check for changes to the cells of the cervix that may lead to cervical cancer.

In 2006, more than 572,000 Pap tests were registered by the Victorian Cervical Cytology Registry (VCCR), representing almost 541,000 women. The estimated two-year (2005–06) participation rate for women in the target population in Victoria was 63.4 per cent. Participation varied by department region of residence, ranging from 58.4 per cent in the Grampians region to 66.8 per cent in the Eastern region.

There were significant differences in the percentage of women aged 20-69 years who were screened during the two-year interval 2005–06 for all regions except between the Gippsland and Loddon Mallee regions and between Loddon Mallee and the North and West Metropolitan regions.

For more information

Victorian Cervical Cytology Register, *Statistical Report, 2006*: www.vccr.org/stats.html

PapScreen Victoria website: www.papscreen.org.au

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Bowel cancer screening

Self-reported bowel cancer screening within previous 2 years, by region, Victoria, 2006

	Rural Regions					Metropolitan Regions			
	Barwon-South Western	Grampians	Loddon Mallee	Hume	Gippsland	North and West Metropolitan	Eastern Metropolitan	Southern Metropolitan	Victoria
Estimate (per cent)	16.9	14.9	15.2	15.2	16.0	12.4	14.4	14.5	14.2
Lower 95% CI	14.4	12.4	12.7	12.5	13.3	10.2	12.0	12.1	13.2
Upper 95% CI	19.4	17.4	17.7	17.9	18.7	14.6	16.8	16.9	15.2

Note: CI = confidence interval.

Source: Department of Human Services, Victorian population health survey, 2006.

Bowel cancer was the second most common cancer in Victorians and the second ranking site of cancer death, accounting for 1,087 deaths (11 per cent) in 2004. Research shows that the risk of developing bowel cancer rises after the age of 50 years. Bowel cancer can be treated successfully if detected in its early stages, when it is still localised within the bowel, however, current estimates show that less than 40 per cent of bowel cancers are detected early. Diet is the principle risk factor, particularly high-fat, animal meat and low fibre diets. Smoking, obesity and low levels of physical activity are also risk factors for the development of the disease.

The 2006 *Victorian population health survey* (VPHS) asked respondents to indicate whether they had been screened for bowel cancer in the previous two years. Screening tests included a colonoscopy, faecal occult blood test (FOBT), flexible sigmoidoscopy or barium enema. Overall for Victoria, 14.2 per cent of respondents indicated that they had been screened for bowel cancer in the previous two years. Although the percentage of adults who reported having been screened varied between regions, these differences were not statistically significant.

The new National Bowel Cancer Screening Program (NBCSP) aims to reduce incidence and mortality from bowel cancer by offering population screening with a faecal occult blood test for people turning 55 or 65 years of age between May 2006 and June 2008. Victoria commenced Phase I of the program on 29 January 2007 and will invite more than 230,000 Victorians to participate by June 2008.

The faecal occult blood test is a simple test which can be completed at home and mailed to a laboratory for analysis. An invitation to complete the test is sent to all eligible participants through the mail. These screening tests were shown in overseas clinical trials and in the Bowel Cancer Screening Pilot Program to be simple to use and highly effective. People with a positive faecal occult blood test result are advised to discuss their results with their doctor, who will generally refer them for further investigation, usually a colonoscopy.

At 31 July 2007 more than 126,900 eligible Victorians had received an invitation to be screened. There were 44,708 tests completed, representing a crude participation rate of 35.2 per cent. By the end of July 2007 3,156 Victorian program participants had received a positive faecal occult blood test result and were advised to consult their GP for further assessment and referral for colonoscopy.

For more information

Australian Cancer Network Colorectal Cancer Guidelines Revision Committee, 2005, *Clinical practice guidelines for the prevention, early detection and management of colorectal cancer*, Sydney: The Cancer Council Australia and Australian Cancer Network.

Department of Health and Ageing, National Bowel Cancer Screening Program website: www.cancerscreening.gov.au

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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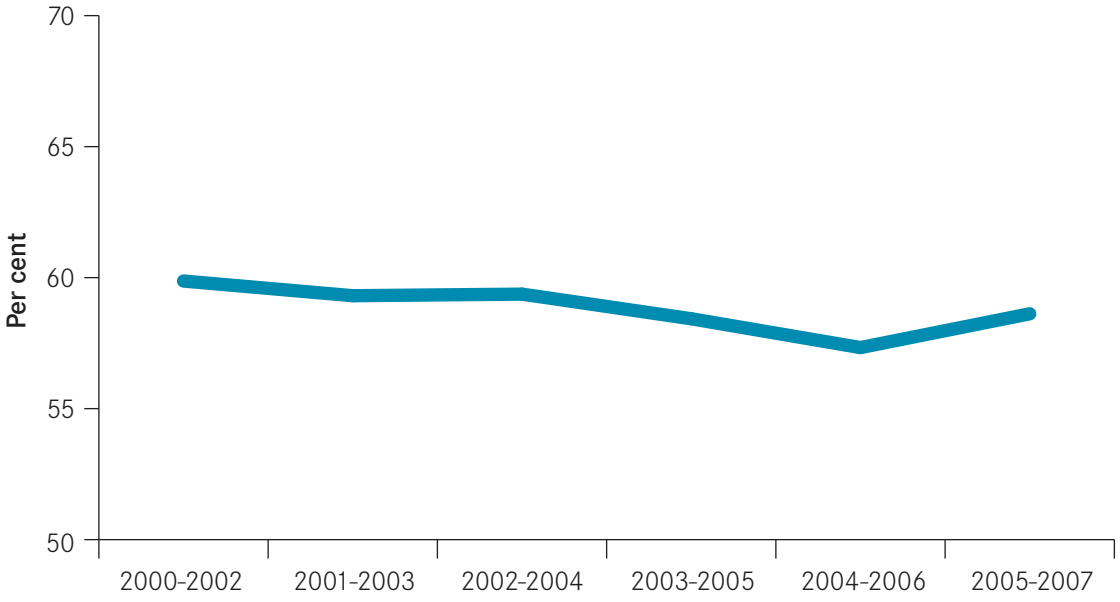
Breast cancer screening

Two–year screening cycle BreastScreen participation rates, Victoria, financial years 2000–2002 to 2005–2007



Source: BreastScreen Victoria, 2008.

BreastScreen Victoria is part of a government–funded mammography screening program in Australia for women without breast cancer signs or symptoms. The program aims to reduce mortality from breast cancer through early detection of the disease. Free screening mammograms at two-yearly intervals are provided for women aged 50–69, because breast X–ray screening is most effective with women in this age group. The program aims to achieve a 70 per cent participation rate amongst eligible women.

During 2005–2007 58.6 per cent of eligible Victorian women participated in the breast screening program. Participation since 2000–2002 has remained steady at just under 60 per cent.

For more information

BreastScreen Victoria website: www.breastscreen.org.au/

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Newborn screening

Newborn screening (NBS) is offered to all babies and has been available in Victoria for approximately 30 years. The screening includes testing for phenylketonuria (PKU), cystic fibrosis, congenital hypothyroidism and, since 2002, approximately 25 other metabolic conditions. The Department of Human Services' *Guidelines for newborn screening* (2001) and the *Newborn screening policy* of the HGSA-RACP Joint Subcommittee (2004) state that NBS tests for conditions where early detection and intervention provide demonstrable benefit should be available to all newborn babies.

Until recently, the proportion of babies in Victoria having NBS had not been formally assessed. A study that involved record linkage of NBS tests (from Genetic Health Services Victoria) with birth data from the Perinatal Morbidity Statistics System (a register of all births 20 weeks and over in Victoria), estimated the proportion of babies undergoing the NBS in 2003. Results indicated that the uptake in Victoria is extremely high, with an estimated 99.4 per cent of babies undergoing NBS. There were 375 births that were not matched to a NBS screening test, suggesting that these births did not have NBS.

Factors significantly associated with births not being matched to a NBS test included neonatal death, having a homebirth, living in rural Victoria, having a short length of stay after birth and not having any other children.

For more information

Department of Human Services, 2001, *Guidelines for Newborn Screening*, Melbourne: Victorian Government Department of Human Services.

Human Genetics Society of Australasia – Royal Australasian College of Physicians (HGSA-RACP), Newborn Screening Joint Subcommittee 2004, *Newborn screening policy*, Melbourne: HGSA.

Jacques, D, Collins, V, Halliday, J, 2007, *Coverage of the Victorian newborn screening program*, Public Health Genetics, Murdoch Children's Research Institute, Melbourne.

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Determinants of health

This section presents information on various determinants of health: the social and economic factors that influence health. It contains indicators such as educational attainment, household income and unemployment. Indicators of social capital are also presented.

Determinants of health

In this chapter

Summary

Social determinants of health are the economic and social conditions under which people live and work which determine their health. For example, consistent evidence shows that unemployment is detrimental to health, and influences a range of health outcomes, including depression, other mental health-related problems and chronic illnesses such as cardiovascular disease, and is associated with high levels of risk behaviours such as smoking. While medical care can prolong survival and improve prognosis after some serious diseases, more important for the health of the population as a whole are the social and economic conditions that make people ill and in need of medical care in the first place. Recognition of the role that factors in society or in our living conditions play in determining health has led public policy to place greater emphasis on shaping the social environment in ways conducive to better health. This chapter presents data on social and economic factors that are associated with health. These include indicators of household income, income sources, hosing tenure, private health insurance coverage, unemployment rates, financial stress, school retention rates, crime rates and social capital. The indicators are based on data from the Australian Bureau of Statistics (ABS); the *Victorian population health survey*; and the Private Health Insurance Administration Council (PHIAC).

The mean equivalised disposable household income of all households in Victoria in 2005–06 was $635 per week, the median was somewhat lower at $564.

Average weekly total earnings increased for both males and females from 1983 to 2006. In November 2006, average weekly ordinary-time earnings for adults working full-time was $1098 for males and $931 for females.

A key determinant of housing affordability is the amount of rent or mortgage payments per week compared to household income. In 2006 the mean rental payment per week was $186, compared with a mean weekly mortgage payment of $301.

The proportion of individuals who are owners with a mortgage was almost four times greater for households with equivalised gross incomes in the highest quintile, compared with those in the lowest quintile (27.8 per cent and 7.6 per cent respectively).

Approximately 79 per cent of those from jobless one–parent family households were renters, compared with 21 per cent of those described as jobless two-parent family households.

Private health insurance coverage in Victoria remained stable between 1999 and 2007, with participation rates for hospital cover of 42.9 per cent at September 2007. The proportion of the adult population covered by private hospital insurance was greatest in the age group 55–59 years, and lowest in the age group 25–29 years.

Opportunities to undertake formal education have improved over time. The proportion of people who had not completed Year 12 or equivalent increased with increasing age, as did the proportion that had not been to school. Year 10–12 retention rates in Victorian schools have increased, from 81 per cent in 1999 to 84 per cent in 2006, with higher retention rates in non-government schools compared to government schools.

The unemployment rate in Victoria declined from approximately 12 per cent in 1993 to approximately five per cent in August 2006. Over the four-year period 2003-06 the male labour force participation rate increased from 71.2 per cent to 72.9 per cent. In the same period, the female participation rate increased from 54.8 per cent in 2003 to 57.1 per cent in 2006. In 2006 Victoria performed similarly to Australia on most measures of labour underutilisation (unemployment and underemployment).

Financial stress arises when individuals and families encounter difficulties in meeting regular or unexpected commitments due to an inability to find the cash or other resources to discharge their obligations. The proportion of individuals who were unable to raise $2,000 within a week for something important ranged from a high of 29 per cent of those in the lowest quintile of equivalised gross household income to less than two per cent of those in the highest quintile.

Estimates from the 2006 ABS *Personal safety survey* indicate that a greater proportion of males under 25 years experienced physical violence compared to females in this age group; however, a greater proportion of females 45 years and over experienced physical violence. More than twice the number of females experienced sexual violence compared to males.

Sexual assault rates fell from 1997 to 2001, but have since remained static. Most other offence rates have shown an overall decline since 2001, with the exception of the rate of assaults, which increased from 2001–06.

For women under the age of 45 years, intimate partner violence was responsible for an estimated 9.0 per cent of the total disease burden. For all Victorian women it represented 3.2 per cent of the total disease burden.

In a socially connected, inclusive community, people feel cared for and valued. Research consistently shows strong links between social inclusion and individual health and wellbeing. Estimates from the *Victorian population health survey* (VPHS) 2006 reveal that 7.6 per cent of males and 7.5 per cent of females did not feel valued by society in 2006.

Trust is an important aspect of social capital because it underlies and contributes to the quality and number of interactions between people. VPHS 2006 survey estimates indicate that most Victorians agreed that people can be trusted either 'sometimes', or 'yes definitely' (79.8 per cent). Males (41.4 per cent) were significantly more likely than females (35.8 per cent) to agree that people can be trusted 'yes, definitely'.

Volunteering helps individuals form interpersonal ties and develop their social networks. Increased social contact and stronger support networks are associated with better health. Results from the VPHS 2006 reveal that participation rates in volunteer work increased with age with Victorians aged 65 years and over (38.4 per cent) being significantly more likely to engage in volunteer work than people in the youngest age group (24.2 per cent).

Household income and income distribution

Household income and income distribution, Victoria and Australia, 2005–06

Household characteristics	Unit	Victoria	RSE (%)	Australia	RSE (%)
Equivalised disposable household income (per week)					
Mean income	$	635	1.5	644	0.8
Median income	$	564	1.4	563	0.6
Mean household net worth	$	566,312	6.6	562,859	3.1
Proportion of households with characteristic					
Principal source of household income					
Zero or negative income	per cent	0.3	39.3	0.5	14.3
Wages and salaries	per cent	58.9	1.5	59.3	0.7
Own unincorporated business income	per cent	5.7	10.6	6.1	5.3
Government pensions and allowances	per cent	26.8	3.0	26.1	1.4
Other income	per cent	8.3	8.5	8.0	3.9
Contribution of government pensions and allowances to gross household income					
Nil or less than 1 per cent	per cent	43.8	2.3	43.7	0.9
1 per cent to less than 20 per cent	per cent	20.5	4.9	20.2	2.1
20 per cent to less than 50 per cent	per cent	8.9	7.2	9.5	3.4
50 per cent to less than 90 per cent	per cent	9.6	7.3	8.6	3.4
90 per cent and over	per cent	16.9	3.7	17.3	2.1

Note: RSE = relative standard error. The relative standard error is a measure of accuracy of a survey estimate, calculated as the ratio of standard error to the estimate.

Source: Australian Bureau of Statistics, 2007, Household income and income distribution, Australia, 2005-06, Catalogue no 6523.0. DO001, Canberra.

Disposable income is defined as gross income minus income tax and the Medicare levy (if applicable). Income data are generally reported at the household level even though income is usually received by individuals. This practice is followed because income tends to be shared by co-resident family members and, to a lesser extent, by other household members, who benefit from economies of scale. Equivalence scales are then applied to incomes measured at the household level to account for the different income levels required by households of different sizes to achieve a similar standard of living. The data reported for this indicator are standardised to the equivalent income requirements of a single-person household.

Income distribution in Victoria in 2005–06 generally reflected that of Australia as a whole. While the average (mean) equivalised disposable household income of all households in Victoria in 2005–06 was $635 per week, the median (that is, the midpoint, when all people are ranked in ascending order of income) was more than $60 lower, at $564. This difference reflects the typically skewed pattern distribution of income, where a relatively small number of people have relatively very high household incomes, and a large number of people have relatively lower household incomes.

For a majority of households in Victoria and Australia in 2005–06, wages and salaries represented the principal source of income (58.9 per cent and 59.3 per cent, respectively). Transfer payments or government pensions and allowances represented the principal source of income for a further 26.8 per cent of Victorian households, compared with 26.1 per cent of Australian households. Government pensions and allowances contributed 90 per cent or more of the gross household income of 16.9 per cent of Victorian households in 2005–06.

Reference

Australian Bureau of Statistics, 2007, Household income and income distribution, Australia, 2005-06, Catalogue no 6523.0. DO001, Canberra.

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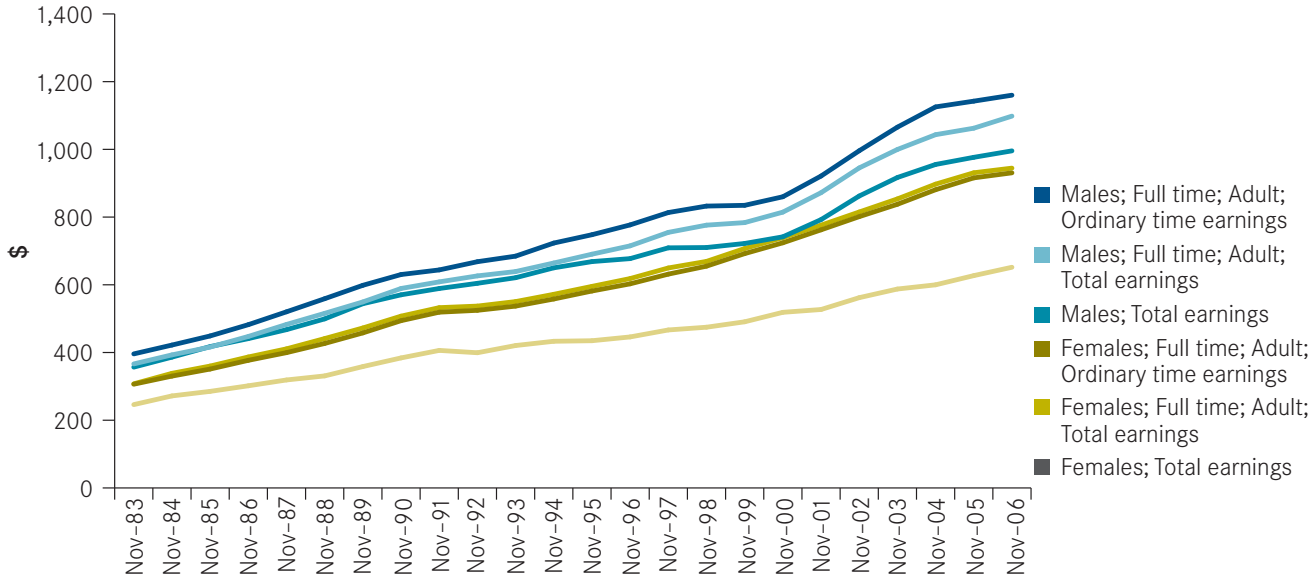
Average weekly earnings

Average weekly earnings, trend series, by sex, Victoria, 1983–2006



Source: Australian Bureau of Statistics, *Average weekly earnings, Australia*, 2007, Catalogue no. 6302.0, Canberra

Average weekly earnings statistics represent average gross (before tax) earnings of employees and do not relate to average award rates, nor to the earnings of the 'average person'. Estimates of average weekly earnings are derived by dividing estimates of weekly total earnings by estimates of number of employees.

'Weekly ordinary time earnings' refers to one week's earnings of employees for the reference period attributable to award, standard or agreed hours of work. 'Weekly total earnings' of employees is equal to weekly ordinary time earnings plus weekly overtime earnings. Several aspects can contribute to changes, including variations over time in the proportions of full-time, part-time, casual and junior employees, variations in the occupational distribution within and across industries, variations in the distribution of employment between industries and variations in the proportion of male and female employees.

The ratio of female-to-male trend average weekly total earnings was stable between 1983 and 2006, varying between 0.63 and 0.70 during this period. Total weekly earnings rose steadily for both males and females from 1983 to 2006. Adult average weekly, full-time, ordinary-time earnings in November 2006 was $1098 for males and $931 for females.

Weekly ordinary earnings

Weekly ordinary earnings is calculated before taxation and any other deductions (for example, superannuation, board and lodging) are made. Included in ordinary time earnings are award, workplace and enterprise bargaining payments, other agreed base rates of pay, over-award and over-agreed payments, penalty payments, shift and other allowances, commissions and retainers, bonuses and similar payments related to the reference period, payments under incentive or piecework, payments under profit sharing schemes normally paid each pay period, payment for leave taken during the reference period, all workers' compensation payments made through the payroll and salary payments made to directors. Excluded are overtime payments, retrospective pay, pay in advance, leave loadings, severance, termination and redundancy payments and other payments not related to the reference period.

Reference

Australian Bureau of Statistics, *Average weekly earnings,* Australia, 2007, Catalogue no. 6302.0, Canberra.

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Housing tenure and affordability

Characteristics of the household to which the selected person belongs, by remoteness, Victoria 2006

	Major cities	RSE (%)	**Inner regional**	RSE (%)	**Other areas**	RSE (%)	**All persons**	RSE (%)
Owner without a mortgage (per cent)	35.6	4.4	38.3	7.7	51.6	10.0	**37.1**	3.2
Owner with a mortgage (per cent)	41.1	4.0	35.7	9.4	30.2	13.8	**39.3**	3.1
Renter with state or territory housing authority (per cent)	1.9	26.9	NA	NA	NA	NA	**2.5**	22.8
Renter with private landlord (per cent)	18.4	6.9	13.8	12.2	9.5	29.4	**16.9**	5.6
All other tenure types (per cent)	3.0	18.8	7.4	32.0	7.1	49.3	**4.2**	15.9
Mean equivalised gross household income per week ($)	899	7.7	634	4.3	595	9.9	**830**	6.2
Mean mortgage payments per week ($)	318	2.2	255	6.9	205	15.3	**301**	2.1
Mean rent payments per week ($)	201	3.6	141	5.9	136	12.2	**186**	3.3
Number of persons aged 18 years and over ('000)	2,829	1.8	795	9.5	224	25.5	**3,848**	0.0

Note: NA = not available for publication, but included in totals where applicable.

Source: Australian Bureau of Statistics, 2007, *General social survey – Victoria*, 2006, Catalogue no 4159.2.55.001, Canberra.

Household tenure type is one of a number of indicators of the housing circumstances of Victorians. Housing tenure relates to the issues of stability and security. Homeownership provides household members with autonomy in terms of their social and recreational activities and is a form of social insurance to owners. Housing equity is also a major component of personal wealth.

In Victoria in 2006 37.1 per cent of adults described themselves as owners without a mortgage. The proportion of individuals who were owners without a mortgage varied by area remoteness: from 35.6 per cent of those from major cities, to 38.3 per cent of those from inner regional areas, and 51.6 per cent of those from other areas. A little more than one-fifth (23.6 per cent) of those aged 18 years and over were renters, and 39.3 per cent were owners with a mortgage. The proportion of individuals who were renters was 23.3 per cent in major cities.

For renters, the amount of rent paid per week compared to household income is a key determinant of housing affordability. For owners with a mortgage, the corresponding figure is the weekly mortgage payment. The mean rent payment per week was $186, compared with a mean weekly mortgage payment of $301. In major cities the mean weekly rental payments for households was $201 (22.4 per cent of mean equivalised weekly household income) and the mean weekly mortgage was $318 (35.4 per cent of mean weekly equivalised household income). In inner regional areas the mean weekly rental payment was $141 and the mean weekly mortgage payment was $255.

Reference

Australian Bureau of Statistics, 2007, *General social survey – Victoria*, 2006, Catalogue no 4159.2.55.001, Canberra.

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Characteristics of the household to which the selected person belongs, by household tenure and landlord type, Victoria

Equivalised gross household income quintile	Owner without a mortgage (per cent)	RSE (%)	Owner with a mortgage (per cent)	RSE (%)	Renter with state or territory housing authority (per cent)	RSE (%)	Renter with private landlord (per cent)	RSE (%)	All other tenure types (per cent)	RSE (%)	All persons (per cent)	RSE (%)
Lowest	28.3	7.4	7.6	15.4	71.1	9.7	18.1	14.8	19.0	27.8	19.2	6.1
Second	18.8	9.2	14.4	11.8	27.9	23.3	20.1	15.9	14.9	32.8	17.3	5.4
Third	18.8	11.1	23.0	7.9	0.0	0.0	23.3	15.5	21.4	31.1	20.8	6.5
Fourth	16.4	9.3	27.2	8.5	0.0	0.0	20.4	14.9	24.7	21.3	21.3	6.4
Highest	17.6	13.2	27.8	7.8	0.0	0.0	18.1	14.1	19.9	27.4	21.4	5.8

Note: RSE = relative standard error. The relative standard error is a measure of accuracy of a survey estimate, calculated as the ratio of standard error to the estimate.

Source: Australian Bureau of Statistics, 2007, *General social survey – Victoria*, 2006, Catalogue no 4159.2.55.001, Canberra.

Income data are generally reported at the household level because income tends to be shared by co resident family members and, to a lesser degree, by other household members who benefit from economies of scale, even though it is usually received by individuals. Equivalised gross household income is household income that is adjusted for the household's size and composition. This allows the relative standard of living of different households to be compared. For example, an adjustment is made to more accurately account for the difference that would exist in the standard of living between a couple with children and a couple without children who both receive the same gross household income. When comparing equivalised gross household income, it is the relative magnitude of the figures is most relevant, rather than the absolute levels.

The proportion of individuals from households that rent with a private landlord ranged from a low of 18.1 per cent of those in the highest and lowest quintiles of equivalised gross household income to a high of 23.3 per cent of those in the third quintile. The proportion of individuals who were owners with a mortgage was almost four times greater for households with equivalised gross incomes in the highest quintile, compared with those in the lowest quintile (27.8 per cent and 7.6 per cent respectively).

Reference

Australian Bureau of Statistics, 2007, *General social survey – Victoria*, 2006, Catalogue no 4159.2.55.001, Canberra.

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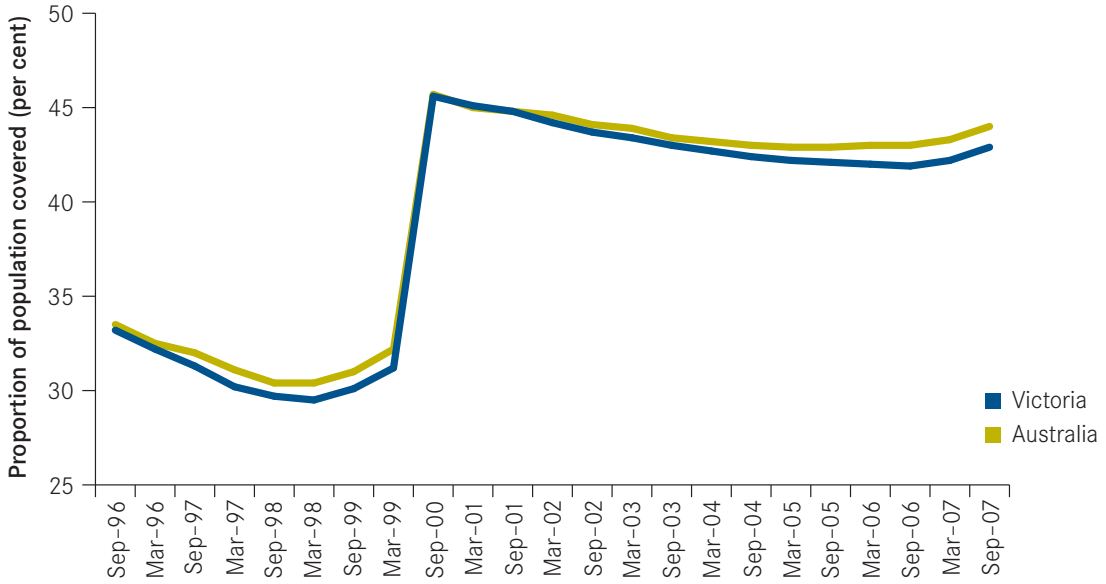
Private health insurance coverage

Private health insurance coverage, Victoria, 1996–2007



Source: The Private Health Insurance Administration Council (PHIAC).

Medicare is a tax-financed public health insurance system available to all permanent Australian residents. It provides cover for a range of primary care services, including visits to medical practitioners and entitlement to treatment as a public patient in a public hospital, free of direct charge. The Medicare system is supplemented by optional private insurance. Private health insurance is provided through private health insurers registered under the *Private Health Insurance Act 2007*. Depending on the type of cover purchased, private hospital insurance provides cover for all or part of hospital theatre, accommodation and medical costs in private hospitals, or in public hospitals if individuals choose to be admitted as private patients. Private health insurance also provides cover for ancillary services not insured by Medicare, including private dental services, optical, chiropractic, home nursing, ambulance and natural therapies. Private health cover is considered to be one of the main vehicles for enhanced choice of provider and level of care.

Participation in private health insurance in Victoria, particularly private hospital insurance, declined steadily from the introduction of Medicare in 1984. While 34.1 per cent of Victorians had private hospital cover and 25.5 per cent had ancillary cover in 1995, by 1999 the proportion of Victorians with private hospital cover decreased to 29.8 per cent. The Australian Government introduced several policy initiatives (including a 30 per cent rebate on private health insurance in 1999, and the age-rated Lifetime Health Cover in 2000), which increased participation in private hospital insurance and in ancillary cover by 12.6 per cent and six per cent respectively. Private health insurance coverage in Victoria remained stable between 1999 and 2007, with participation rates for hospital cover of 42.9 per cent at September 2007.

For more information

The Private Health Insurance Administration Council (PHIAC): www.phiac.gov.au

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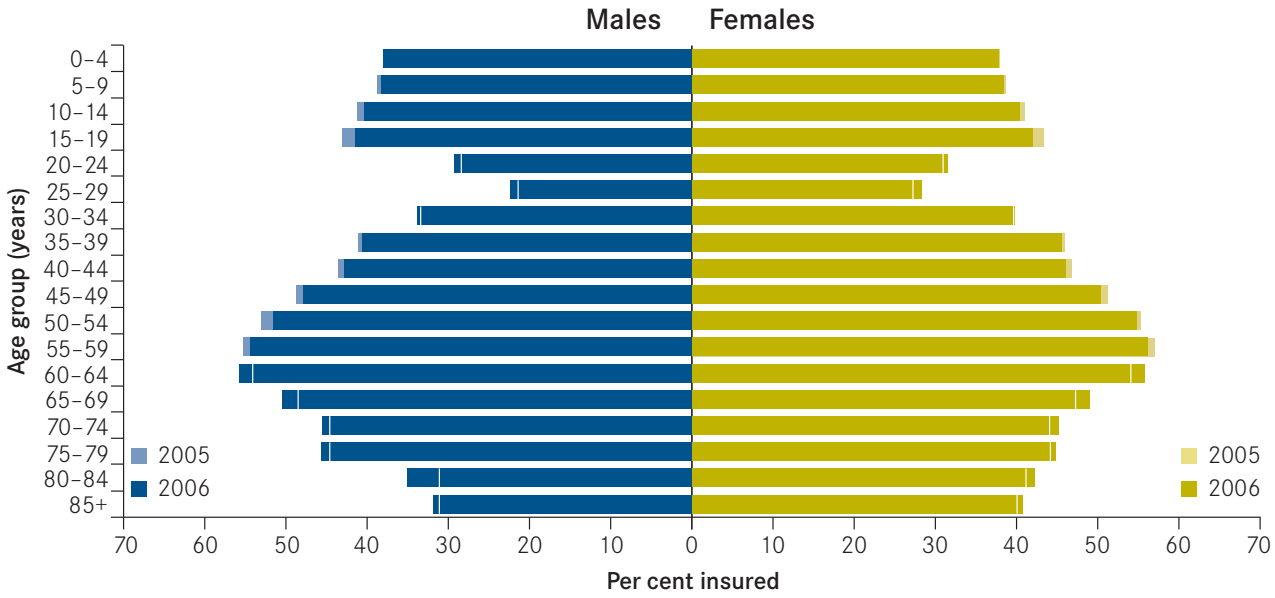
Private hospital insurance coverage

Private hospital insurance coverage, by sex and age group, Victoria, December 2005 and 2006



Note: Where a bar does not have a segment for 2005, the number of people in that category is less than that of 2006. The number is shown as a white line on the overlying 2006 bar.

Source: The Private Health Insurance Administration Council (PHIAC).

The financial performance of registered private health insurers is monitored by the Private Health Insurance Council (PHIAC), an independent Australian Government body. In fulfilling this mandate the PHIAC reports on the age and sex distribution of the proportion of the population with private health insurance coverage, based on an annual survey of registered health insurance funds.

Because insurance involves risk-pooling and age is an important determinant of the need for and use of health care, the age distribution of the pool of individuals with private hospital insurance is a key determinant of premium levels. One government initiative that impacts directly on the age distribution of the population with private hospital insurance coverage is a policy known as Lifetime Health Cover. Under this policy, which commenced on 1 July 2000, the premium that a person pays for private hospital insurance depends upon the length of time they have had hospital cover with a registered health fund.

To ensure the lowest premiums for life under Lifetime Health Cover, a person needs to take out hospital cover with a registered fund by the first of July following their 31st birthday. If a person decides to take out hospital cover after this cut-off, they are required to pay an extra 2 per cent on top of their premium for every year they are aged over 30. People who were born on or before 1 July 1934 are exempt from Lifetime Health Cover and are able to join a health fund at any time in the future and pay the same premium as someone who takes out cover at age 30. Based on a recent a review of Lifetime Health Cover, the loading that a person is required to pay now ceases if a person has had hospital cover for a continuous period of ten years.

The proportion of the adult population covered by private hospital insurance was greatest in the age group 55–59 years and lowest in the age group 25–29 years. These proportions ranged from 21 per cent to 55 per cent for males. The proportion of the female population with private hospital insurance ranged from 27 per cent of those aged 25–29 years to 57 per cent of those aged 55–59 years. The proportion of adults aged 85+ years with private hospital insurance was 31 per cent for males, compared with approximately 40 per cent for females.

For more information

The Private Health Insurance Administration Council (PHIAC): www.phiac.gov.au

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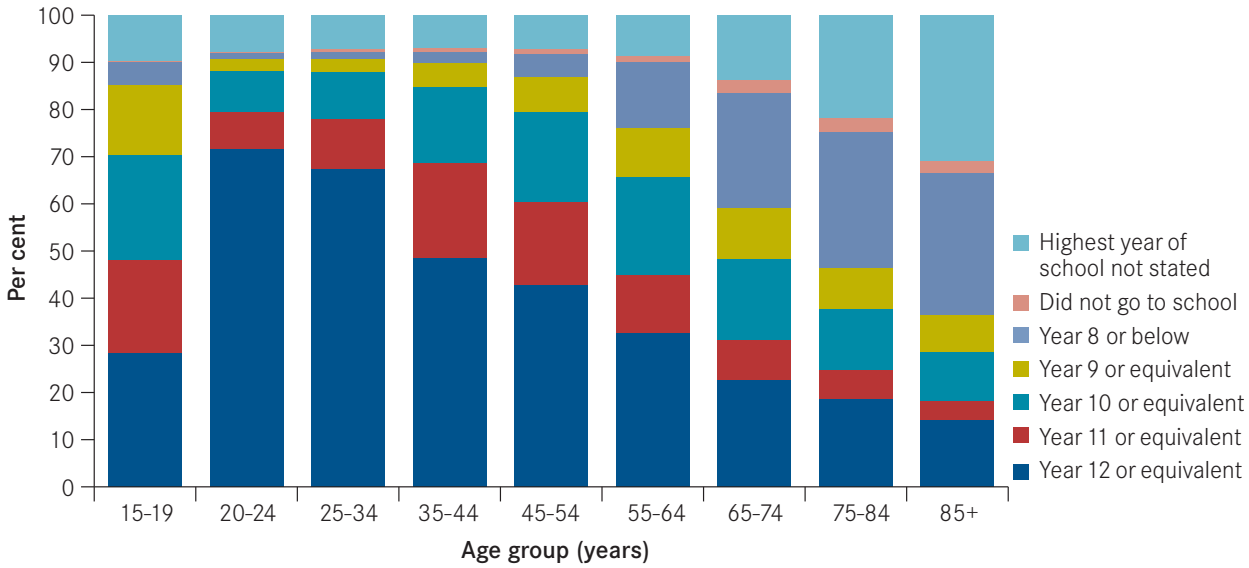
Education level

Highest year of school completed by age group, Victoria, 2006



Note: Based on counts of persons aged 15 years and over.

Source: Australian Bureau of Statistics, 2008, *Census of population and housing – Community profile series 2006*, Cat. no. 2001.0 Canberra.

Education and knowledge help to empower individuals, allowing them to be more autonomous within society. Education also relates to other facets of society including health and participation in the cultural and social life of communities. The ability to use various forms of written information has become increasingly important to function in society.

Opportunities to stay in secondary school have changed over time. The proportion of people who had not completed Year 12 or equivalent increased with increasing age, as did the proportion that had not been to school. Overall, 44 per cent completed Year 12 or equivalent and approximately 75 per cent completed Year 10 or equivalent or higher. Ten per cent of the population did not state their highest year school completed.

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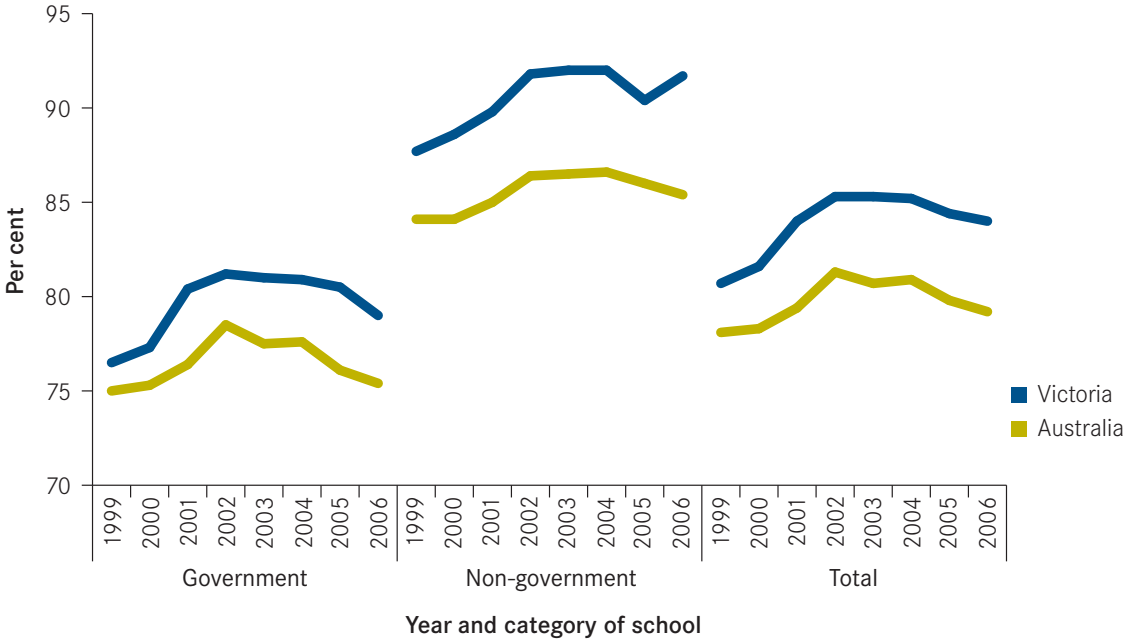
Participation in education

Apparent retention rates, all secondary students, from Year 10 to Year 12, by category of school, Victoria and Australia



Source: Australian Bureau of Statistics, 2007, *Schools, Australia, 2006*, Catalogue no 4221.0, Canberra.

The lifetime costs of leaving school early include both direct monetary costs and social costs. The costs that are borne largely by an individual who leaves school early include reduced chances of employment, decreased financial security, fewer opportunities for mobility and job training and reduced cultural participation. Costs to the government and community due to early school leaving may include increased social welfare costs, increased use of health care services, higher costs of crime prevention and detection, and decreased cohesion within the society (King, 1999).

Apparent retention rates reflect the proportion of students in a given cohort who are considered to be continuing students. The data for this indicator refers to students who remained at school beyond Year 10. The retention rates are considered 'apparent' because the figures do not include mature-age, part-time or repeating students, or those who have relocated to a different schooling jurisdiction (e.g., interstate).

The Year 10–12 retention rates in Victorian schools increased from 81 per cent in 1999 to 84 per cent in 2006, with higher retention rates in non-government schools compared to government schools. Victoria's overall retention rate of 84 per cent in 2006 was above the Australian average retention rate of 79 per cent, with the pattern maintained for the period 1999–2006 regardless of the category of school.

Reference

King, A, 1999, *The cost to Australia of early school leaving*, Report commissioned by the Dusseldorp Skills Forum, National Centre for Social and Economic Modelling, University of Canberra, Canberra.

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Unemployment and labour force participation

Unemployment and labour force participation for those 15+ years, Victoria 2003–06

		Males				Females			
	Unit	**2003**	**2004**	**2005**	**2006**	**2003**	**2004**	**2005**	**2006**
Trend									
Employed full time	('000)	1,105.8	1,133.0	1,169.8	1,179.2	556.4	587	594.5	608.4
Total employed	('000)	1,303.7	1,333.0	1,377.6	1,399.2	1,049.7	1,081.7	1,106.1	1,146.9
Total unemployed	('000)	75.2	84.4	71.4	69.5	66.3	68	70.7	59.8
Unemployment rate	(per cent)	5.5	6	4.9	4.7	5.9	5.9	6	5
Participation rate	(per cent)	71.4	72.2	72.8	72.8	55	55.8	56.4	57.2
Seasonally adjusted									
Employed full time	('000)	1,103.5	1,135.2	1,174.8	1,181.5	554.6	591.8	587.7	610.1
Total employed	('000)	1,301.0	1,332.9	1,388.0	1,403.1	1,045.7	1,084.2	1,109.1	1,149.7
Total unemployed	('000)	74.4	85.2	67.6	67.5	66.6	74.6	71.5	55
Unemployment rate	(per cent)	5.4	6	4.6	4.6	6	6.4	6.1	4.6
Participation rate	(per cent)	71.2	72.2	73.1	72.9	54.8	56.2	56.6	57.1
Population aged 15 years+	('000)	1,931.1	1,964.1	1,991.6	2,018.6	2,029.6	2,062.1	2,085.3	2,111.3

Source: Australian Bureau of Statistics, 2006, *Labour force–Australia*, August 2006. 2006. Catalogue no 6202.0, Canberra

The relationship between unemployment and health is complex and varies for different population groups. However, consistent evidence shows that unemployment is detrimental to health and influences a range of health outcomes, including depression and other mental health-related problems, chronic illnesses such as cardiovascular disease, and is associated with high levels of risk behaviours such as smoking.

The labour force consists of all people who were employed for pay, profit or commission for one hour or more per week during the reference period for a labour force survey, plus those who were looking for work and available to start work in the reference week, regardless of whether they received unemployment benefits. The unemployment rate is calculated as a percentage of those participating in the labour force, rather than of the entire population of working age.

The unemployment rate in Victoria declined from approximately 12 per cent in 1993 to approximately five per cent in August 2006. The seasonally adjusted unemployment rate was 4.6 per cent for males and females in August 2006. Over the four-year period 2003–06 the male labour force participation rate increased from 71.2 per cent to 72.9 per cent. In the same period the female participation rate increased from 54.8 per cent in 2003 to 57.1 per cent in 2006.

Reference

Mathers, CD and Schofield, DJ, 1998, 'Health consequences of unemployment: the evidence', *Medical Journal of Australia*, volume 168, pp. 178–82.

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Unemployment rates by local government area (LGA)

Unemployment rate estimates, by local government area, Victoria 2006–07

	Unemployment rate (percent)					
	2006				2007	
Local government area	Mar Qtr	Jun Qtr	Sep Qtr	Dec Qtr	Mar Qtr	Jun Qtr
Metropolitan regions						
Banyule (C)	3.3	3.3	3.1	3.0	3.1	3.0
Bayside (C)	2.2	2.5	2.7	2.9	2.8	2.5
Boroondara (C)	3.8	3.8	3.7	3.7	3.4	3.2
Brimbank (C)	8.5	8.4	8.3	8.3	8.6	8.8
Cardinia (S)	3.4	3.4	3.4	3.7	3.7	3.7
Casey (C)	4.2	4.1	4.1	4.2	4.2	4.3
Darebin (C)	7.6	7.5	7.0	6.6	6.6	6.2
Frankston (C)	5.9	5.9	5.3	4.8	4.7	4.6
Glen Eira (C)	3.2	3.7	3.8	4.2	4.0	3.6
Greater Dandenong (C)	7.2	6.9	6.8	7.1	6.9	6.9
Hobsons Bay (C)	4.9	4.9	4.8	4.9	5.1	5.2
Hume (C)	8.8	8.0	7.5	7.1	6.5	6.5
Kingston (C)	3.8	4.5	4.8	5.3	5.2	4.7
Knox (C)	4.1	4.1	3.9	3.6	3.8	3.6
Manningham (C)	4.4	4.3	4.1	4.1	3.9	3.8
Maribyrnong (C)	8.7	8.6	8.4	8.3	8.6	8.8
Maroondah (C)	4.5	4.5	4.3	3.8	4.0	3.8
Melbourne (C)	5.3	4.9	5.2	4.9	5.2	5.4
Melton (S)	5.6	5.6	5.7	5.8	6.2	6.5
Monash (C)	5.5	5.5	5.3	5.3	5.0	4.8
Moonee Valley (C)	4.0	3.9	3.8	3.7	3.7	3.7
Moreland (C)	6.7	6.0	5.5	5.2	4.5	4.4
Mornington Peninsula (S)	4.5	4.5	4.1	3.7	3.6	3.5
Nillumbik (S)	1.7	1.7	1.6	1.6	1.6	1.5
Port Phillip (C)	3.6	3.4	3.6	3.4	3.5	3.7
Stonnington (C)	2.4	2.5	2.6	2.6	2.6	2.5
Whitehorse (C)	5.6	5.6	5.3	5.3	5.0	4.8
Whittlesea (C)	5.9	5.8	5.5	5.2	5.2	4.9
Wyndham (C)	5.5	5.4	5.3	5.4	5.7	6.0
Yarra (C)	5.1	4.7	5.1	4.9	5.1	5.4
Yarra Ranges (S)	4.5	4.5	4.2	3.8	3.9	3.9

Unemployment rate estimates, by local government area, Victoria 2006–07 (continued)

	Unemployment rate (percent)					
	2006				2007	
Local government area	**Mar Qtr**	**Jun Qtr**	**Sep Qtr**	**Dec Qtr**	**Mar Qtr**	**Jun Qtr**
Rural regions						
Alpine (S)	5.7	5.4	4.9	4.3	3.9	3.4
Ararat (RC)	6.4	7.1	7.6	7.9	7.7	7.4
Ballarat (C)	7.9	8.9	9.3	9.3	8.7	8.5
Bass Coast (S)	7.7	7.0	5.7	5.5	5.8	5.8
Baw Baw (S)	4.4	3.9	3.1	3.0	3.2	3.4
Buloke (S)	3.8	3.9	3.7	3.5	3.1	2.9
Campaspe (S)	4.7	4.6	4.2	3.6	3.3	3.1
Central Goldfields (S)	11.1	11.6	11.0	10.5	9.0	8.5
Colac-Otway (S)	5.5	5.2	5.0	4.9	4.6	4.5
Corangamite (S)	3.7	3.5	3.5	3.3	3.2	3.2
Delatite (S)	6.4	6.1	5.7	4.9	4.5	4.0
East Gippsland (S)	7.5	6.7	5.5	5.2	5.6	5.7
Gannawarra (S)	3.8	3.9	3.8	3.7	3.3	3.3
Glenelg (S)	7.9	7.6	7.7	7.7	7.5	7.3
Golden Plains (S)	4.5	4.3	4.4	4.3	4.1	3.9
Greater Bendigo (C)	7.3	7.5	7.1	6.7	5.9	5.6
Greater Geelong (C)	7.2	7.0	7.0	7.0	6.8	6.7
Greater Shepparton (C)	7.1	7.1	6.7	6.0	5.4	4.8
Hepburn (S)	8.2	9.0	9.3	9.3	8.6	8.5
Hindmarsh (S)	4.4	5.0	5.3	5.3	5.3	5.4
Horsham (RC)	6.2	6.8	7.1	6.9	6.7	6.9
Indigo (S)	3.9	4.0	3.8	3.3	3.0	2.5
La Trobe (S)	9.3	8.3	6.6	6.2	6.5	6.7
Loddon (S)	6.0	6.1	5.6	5.4	4.8	4.7
Macedon Ranges (S)	3.0	3.0	2.9	2.7	2.4	2.4
Mildura (RC)	7.7	8.0	7.7	7.6	6.8	6.6
Mitchell (S)	5.8	5.6	5.0	4.3	3.8	3.4
Moira (S)	5.3	5.2	4.7	4.1	3.7	3.3
Moorabool (S)	4.6	5.1	5.4	5.4	5.1	5.0
Mount Alexander (S)	8.1	8.3	7.9	7.4	6.4	6.1
Moyne (S)	4.2	4.1	4.0	3.8	3.6	3.5
Murrindindi (S)	5.0	5.0	4.5	3.9	3.5	3.0
Northern Grampians (S)	6.6	7.3	7.7	7.7	7.2	7.2
Pyrenees (S)	7.5	8.5	9.0	8.8	8.3	8.1
Queenscliff (B)	4.7	4.6	4.4	4.2	3.8	3.4
South Gippsland (S)	4.5	4.0	3.1	3.0	3.1	3.3
Southern Grampians (S)	5.5	5.3	5.1	5.1	4.8	4.8
Strathbogie (S)	4.6	4.5	4.2	3.9	3.6	3.3
Surf Coast (S)	3.9	3.8	3.8	3.9	3.7	3.6
Swan Hill (RC)	6.0	6.4	6.0	5.8	5.1	4.8
Towong (S)	2.9	2.8	2.6	2.3	2.2	2.0
Wangaratta (RC)	6.2	6.0	5.5	4.8	4.3	3.8
Warrnambool (C)	6.7	6.5	6.5	6.5	6.2	6.2
Wellington (S)	6.2	5.5	4.4	4.0	4.2	4.3
West Wimmera (S)	3.4	3.8	3.8	3.8	3.5	3.3
Wodonga (RC)	5.9	5.7	5.1	4.3	3.8	3.4
Yarriambiack (S)	5.6	6.2	6.5	6.6	6.4	6.2
Unincorporated Vic	3.4	3.4	1.7	1.7	1.7	1.7

Source: Australian Bureau of Statistics, 2007, *State and Regional Indicators, Victoria*, September 2007, Catalogue no 1367.2, Canberra.

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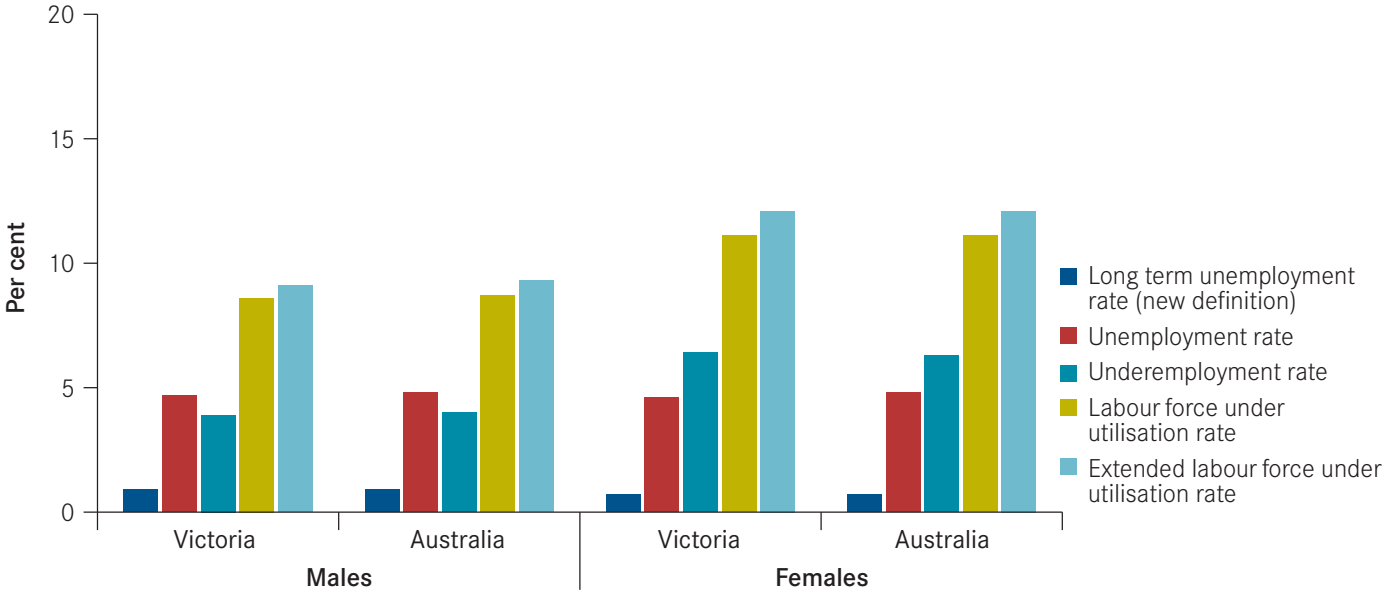
Unemployment and underemployment: Victoria compared with Australia

Underutilised labour rates, for Victoria and Australia, 2006



Note: The unemployment rate is the number of unemployed expressed as a proportion of the labour force. The long-term unemployment rate is the number of long-term unemployed persons expressed as a percentage of the labour force. The underemployment rate is the number of underemployed expressed as a proportion of the labour force. The labour force underutilisation rate is the unemployed, plus the underemployed, expressed as a proportion of the labour force. The extended labour force underutilisation rate includes the unemployed, plus the underemployed, plus persons who are classified as discouraged job seekers and those who are marginally attached to the labour force, as a proportion of the labour force.

Source: Australian Bureau of Statistics, 2007, *Australian Labour Market Statistics*, *January 2007*, Catalogue no. 6105.0, 2007, Canberra.

Employment is recognised as an integral part of adult participation in a society. It is a major determinant of the material standard of living enjoyed by individuals for whom work is the main source of income. In addition, it provides individuals with opportunities for social interaction and personal development. Lack of work, whether due to unemployment or underemployment, is associated with reduced financial wellbeing, decreased social cohesion, crime and poor health.

At a given point in time, the labour force – the labour supply available for the production of economic goods and services – consists of those who were employed, unemployed and underemployed (as defined below). Those who are unemployed may be unemployed for a shorter or a longer period of time. Similarly, those who are employed may be employed for fewer hours per week than they are willing and able to work.

At a societal level, these distinctions are reflected in various measures of labour underutilisation that exist to track changes in the structure of the labour force and associated work conditions and security.

Using most measures of underutilised labour, the situation in Victoria mirrored that of Australia as a whole in 2006. However, as the previous indicator illustrates, there is likely to have been considerable variation across local government areas in the extent of labour underutilisation according to these measures.

Labour force terms

Long-term unemployed (new definition)

Person unemployed for 12 months or more, where duration of unemployment was based on the previous job.

Unemployed person

Person aged 15 years or more who was not employed during the reference week but who had actively looked for work or was currently available for work.

Underemployed person

Employed person working less than 35 hours per week who is willing and available to work more hours.

Discouraged jobseeker

Person with marginal attachment to the labour force who wanted to work and was available to start work within the next four weeks, but was not actively looking for work because they believed that, for various reasons (e.g., considered to be too young/too old by employers, difficulties because of language or ethnic background, no jobs in their locality or line of work) they would not be able to find a job.

Marginal attached to the labour force

Person who was not in the labour force in the reference week, wanted to work and (a) was actively looking for work, but did not meet the availability criteria to be classified as unemployed; or (b) was not actively looking for work, but was available to start work within four weeks or could start work within four weeks if child care was available.

For more information

Australian Bureau of Statistics, *Australian Labour Market Statistics, January 2007,* Catalogue no. 6105.0, 2007, Canberra.

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Financial stress

Financial stress, by equivalised gross household income quintile, Victoria, 2006

	Equivalised gross household income quintile										All persons	
	Lowest		Second		Third		Fourth		Highest			
	Estimate	RSE (%)	**Estimate**	RSE (%)	**Estimate**	RSE (%)	**Estimate**	RSE (%)	**Estimate**	RSE (%)	**Estimate**	RSE (%)
Unable to raise $2,000 within a week for something important (per cent)	**29.1**	11.1	**25.0**	13.1	**12.2**	16.7	**5.9**	24.9	**1.6**	54.8	**13.9**	7.4
Had at least one cash flow problem in previous 12 months (per cent)	**23.5**	11.3	**22.2**	14.5	**19.4**	13.2	**13.7**	12.3	**6.7**	26.6	**16.4**	8.1
Took at least one dissaving action in previous 12 months (per cent)	**21.5**	12.2	**24.3**	10.3	**17.3**	16.8	**19.4**	11.1	**11.9**	16.0	**18.5**	7.3
Mean equivalised gross household income per week ($)	**231**	1.7	**410**	0.9	**635**	0.6	**909**	0.7	**2,078**	11.1	**830**	6.2

Note: RSE = relative standard error.

Source: Australian Bureau of Statistics, 2007, *General social survey, Victoria, 2006*, Catalogue no 4159.2.55.001, Canberra.

The proportion of individuals who were unable to raise $2,000 within a week for something important ranged from a high of 29 per cent of those in the lowest quintile of equivalised gross household income to less than two per cent of those in the highest quintile.

Between one-fifth and one-quarter of individuals in the lowest to third quintiles of equivalised gross household income reported having had at least one cash flow problem in the previous 12 months, compared with under seven per cent of those in the highest quintile.

The proportion of individuals who reported taking at least one 'dissaving' action in the previous 12 months was not similar across quintiles of equivalised gross household income. It ranged from 24 per cent of those in the second quintile to 12 per cent of those in the highest quintile.

For more information

Australian Bureau of Statistics, 2007, *General social survey, Victoria, 2006*, Catalogue no 4159.2.55.001, Canberra.

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Experience of violence

Experience of violence during the previous 12 months, by type of violence in most recent incident, by age group and sex, Victoria, 2005

	Males		Females	
	Rate per 100,000	**Per cent**	**Rate per 100,000**	**Per cent**
Never experienced violence				
18–24	190.7	11.9	206.3	11.3
25–34	260.4	16.2	324.4	17.8
35–44	310.8	19.3	352.6	19.4
45–54	309.1	19.2	330.2	18.1
55 and over	538.0	33.4	607.1	33.3
Total	**1,608.9**	**100.0**	**1,820.5**	**100.0**
Experienced physical violence [(a)]				
18–24	74.6	39.6	26.9	26.2
25–34	57.7	30.7	29.9	29.1
35–44	37.1	19.7	22.9	22.3
45–54	*11.0	*5.9	*15.1	*14.8
55 and over	*7.8	*4.1	*7.8	*7.6
Total	**188.1**	**100.0**	**102.6**	**100.0**
Experienced sexual violence [(b)]				
Total	***17.2**	***100.0**	**40.9**	**100.0**
Total of those who experienced violence [(c)]				
18–24	76.5	38.9	32.3	25.4
25–34	57.7	29.4	36.9	29.0
35–44	40.2	20.5	28.9	22.7
45–54	*12.1	*6.2	*17.7	*13.9
55 and over	*10.0	*5.1	*11.3	*8.9
Total	**196.5**	**100.0**	**127.1**	**100.0**
Total	**1,805.4**	**100.0**	**1,947.6**	**100.0**

Note: * Estimate has a relative standard error of 25% to 50%, and should be used with caution.
(a) Includes physical threat and physical assault.
(b) Includes sexual threat and sexual assault.
(c) Components may not add to total because a person may have experienced both physical and sexual violence.

Source: Australian Bureau of Statistics, 2006 (reissue), *Personal safety survey, Australia: State tables, 2005*, Catalogue no. 4906.0.55.004, Canberra.

Measuring violence in the community through household surveys is a complex task. It tests people's memories by asking about events that occurred in the past, which may have been traumatic and which may have involved people closely related to them. The accuracy of the statistics can be affected if respondents feel threatened by the act of providing information or if they are concerned that the information might be used against the perpetrator. Through consultation with experts in the field and testing, the ABS gave attention to the type of information collected and the manner in which it was collected. Special steps were taken to improve the quality of the survey results, including detailed and precise questioning and the use of personal interviews. Respondents were informed that the survey was not compulsory, and a specific requirement was that interviews were conducted in private, thus ensuring confidentiality of any information disclosed. The use of specially trained interviewers ensured that rapport could be established with respondents and that the relevant concepts and definitions could be explained as necessary.

'Violence' is any incident involving the occurrence, attempt or threat of either physical or sexual assault. 'Physical assault' involves the use of physical force with the intent to harm or frighten. An attempt or threat to inflict physical harm is included only if a person believes it is likely to be carried out. 'Sexual assault' includes acts of a sexual nature carried out against a person's will through the use of physical force, intimidation or coercion, or any attempts to do this. Unwanted sexual touching was excluded from sexual assault. 'Sexual threat' involves the threat of an act of a sexual nature which the person believes is likely to be carried out. 'Experience of violence' includes any incident involving the occurrence, attempt or threat of either physical or sexual assault.

In the 12 months prior to the survey, a greater proportion of males under 25 years experienced physical violence compared to females. However, a greater proportion of females 45 years and over experienced physical violence. More than twice the number of females experienced sexual violence than males.

For more information

Australian Bureau of Statistics, 2006 (reissue), *Personal safety survey, Australia: State tables, 2005*, Catalogue no. 4906.0.55.004, Canberra.

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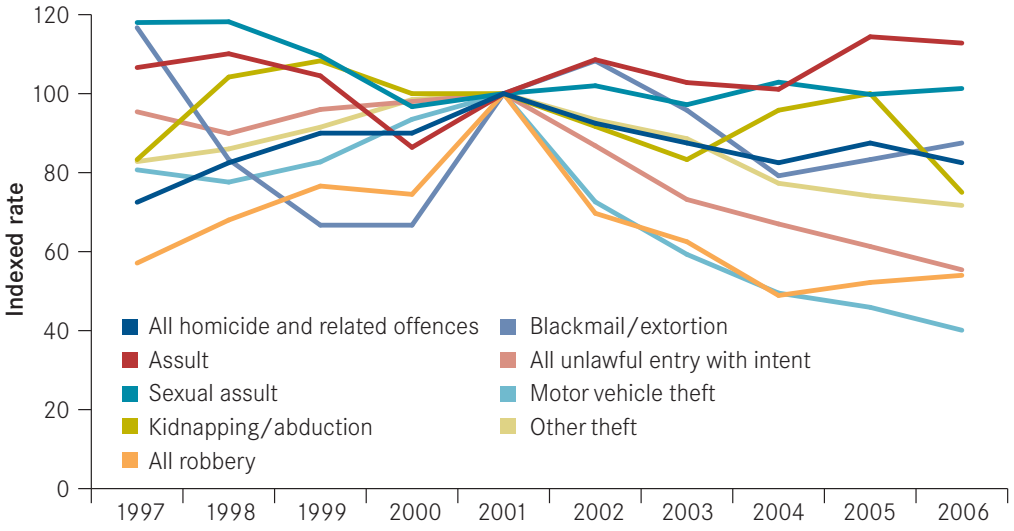
Recorded crime

Recorded crime victims, by offence category, Victoria, 1997–2006



Note: In order to compare two values of recorded crime it was necessary to designate one of the time periods as the 'reference' period and set its value to 100.0. This period is referred to as the base period or year, because it is the first period for constructing the index. The index for all other periods (that is, the comparison values) is calculated by determining the ratio of the comparison period value to the reference period value and then multiplying by 100. The indexes refer to victimisation rates per 100,000 persons, and 2001 was selected as the base year.

Source: Australian Bureau of Statistics, 2007, *Recorded crime – victims, Australia,* Catalogue no 4510.0, Canberra.

The definition of a victim varies according to the category of the offence. Depending on the type of offence, a victim in the recorded crime collection can be a person, premises, an organisation or a motor vehicle. A person reporting a crime with multiple offences in the same incident may be counted multiple times, depending on the types of offence. For example, a victim who was robbed and abducted in the same incident would be counted separately as a victim under the offences of robbery and kidnapping/abduction. Conversely, a victim of multiple assaults in the same incident would be counted only once, because the offences committed fall within the same offence group. As a result, it is not meaningful to aggregate the number of victims across each offence type and produce a 'total number of victims'. For this reason, only victim counts within each offence category are meaningful.

Sexual assault rates fell from 1997 to 2001, but remained static since then. Most other offence rates showed an overall decline since 2001, with the exception of the rate of assaults, which increased from 2001–06. However, the *Family violence code of practice for the investigation of family violence* was introduced in August 2004, and continues to have an impact on the assault data, resulting in an increase from 2005. This initiative involved a proactive approach by police and prosecutions in gathering evidence, investigation and laying charges, where appropriate, relating to family violence, and it may also have led to more victims feeling confident in reporting family violence to police. The code of practice also introduced mandatory reporting of alleged offenders. All family and domestic violence related assaults are recorded, even if the victim does not want to proceed.

For more information

Australian Bureau of Statistics, 2006, *Recorded crime – victims, Australia*, Catalogue no 4510.0, Canberra.

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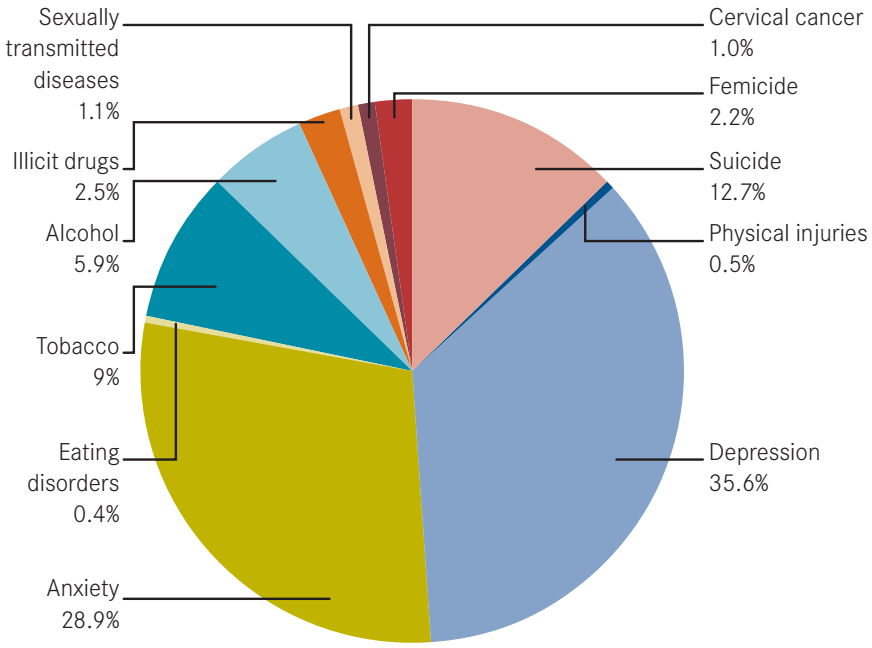
Intimate partner violence

Health outcomes contributing to the disease burden of intimate partner violence in women, Victoria, 2001



Total disability–adjusted life years attributable to intimate partner violence, females, Victoria, 2001

Condition	18–44 years	45+ years	Total DALYs	Per cent of intimate partner violence burden
Femicide	134	91	225	2
Suicide	958	321	1,279	13
Physical injuries	38	14	52	1
Depression	2,377	1,206	3,583	36
Anxiety	2,304	612	2,916	29
Eating disorders	44	-	45	0
Tobacco	178	733	911	9
Alcohol	271	327	598	6
Drug use	229	22	251	2
Sexually transmitted diseases	104	10	114	1
Cervical cancer	31	67	98	1
Total burden	**6,669**	**3,404**	**10,073**	**100**

Note: DALYs = disability–adjusted life years.

The overall size of burden of disease and injury due to intimate partner violence (IPV) in Victoria in 2001 was 10,073 disability–adjusted life years (DALYs). The greatest proportion of the IPV disease burden for women was from mental health problems (depression, anxiety, eating disorders, alcohol and illicit drug use–accounting for greater than 80 per cent). Suicide and smoking are also significant contributors. In women under the age of 45 years, intimate partner violence was responsible for an estimated 9.0 per cent of the total disease burden. The proportion was lower for older women and for 3.2 per cent of the disease burden in all Victorian women. Intimate partner violence had a greater impact than that of any other risk factor on the health of Victorian women under the age of 45 years. The burden contributed by this form of violence was greater than for many other risk factors, such as elevated body mass, cholesterol, blood pressure and illicit drug use.

For further information

Victorian Health Promotion Foundation, 2004, *The health costs of violence. Measuring the burden of disease caused by intimate partner violence: a summary of findings*, www.vichealth.vic.gov.au

Department of Human Services, (DHS), 2001, *The Victorian burden of disease study: mortality and morbidity in 2001,* Melbourne: Victorian Government Department of Human Services: www.health.vic.gov.au/healthstatus

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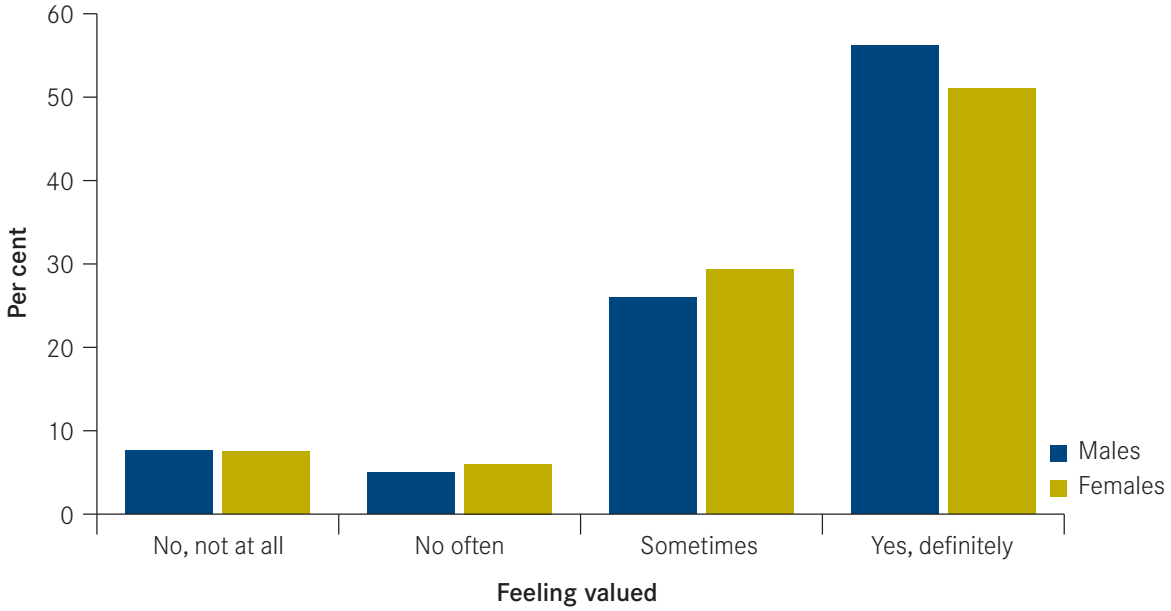
Feeling valued by society

Feeling valued by society, persons aged 18 years or over, by sex, Victoria, 2006



	Males		Females		Persons	
	%	SE (%)	%	SE (%)	%	SE (%)
No, not at all	7.6	0.6	7.5	0.6	7.5	0.4
No often	5.0	0.5	6.0	0.5	5.5	0.4
Sometimes	26.0	1.1	29.3	0.9	27.7	0.7
Yes, definitely	56.2	1.3	51.0	1.0	53.6	0.8

Note: SE = standard error. Column totals may not add to 100% as some respondents replied 'don't know'.

Source: Department of Human Services, *Victorian population health survey 2006*.

Having a sense of social inclusion involves communication with others and the development of personal relationships and social networks. Being socially connected involves the sharing of values and beliefs between individuals who meet their own needs, but also reach out to meet the needs of others. In a socially connected, inclusive community, people feel cared for and valued, and research consistently shows strong links between social inclusion and individual health and wellbeing.

The *2006 Victorian population health survey* included questions about social inclusion and whether people felt valued by society. Survey estimates indicate that, although most adults aged 18 years or more felt valued, 7.6 per cent of males and 7.5 per cent of females did not feel valued by society in 2006.

Reference

Wilkinson, R and Marmot, M, 2003, *Social determinants of health: The solid facts*, 2nd edition, Geneva: World Health Organization.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

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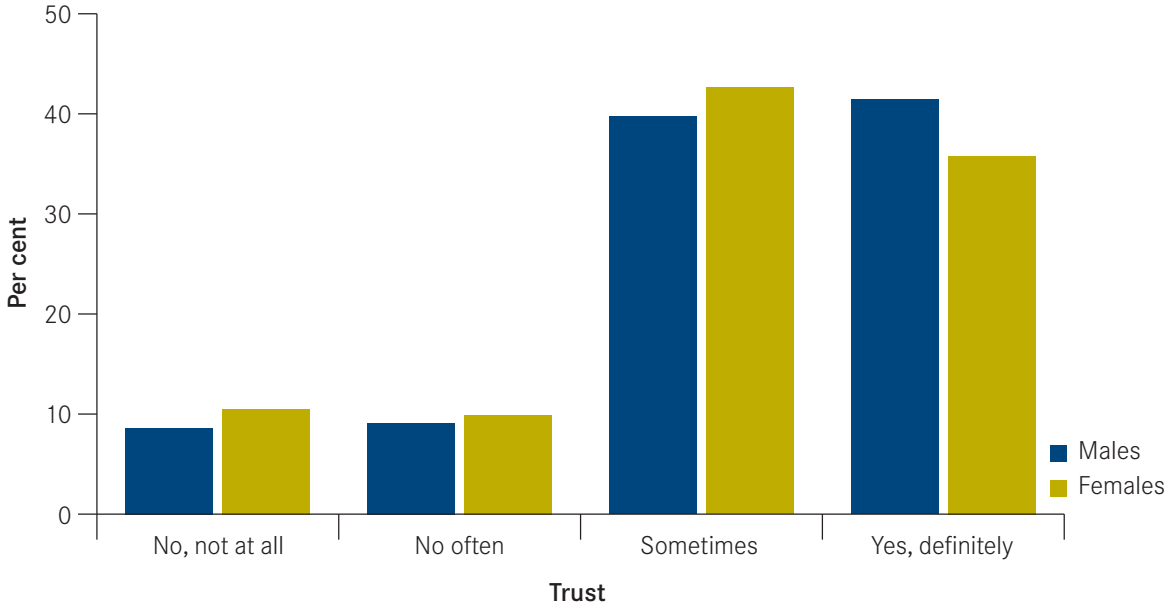
Trust

Trust other people, persons aged 18 years or over, Victoria, 2006



	Males		Females		Persons	
	%	SE (%)	%	SE (%)	%	SE (%)
No, not at all	8.6	0.8	10.5	0.6	9.6	0.5
No often	9.1	0.8	9.9	0.6	9.5	0.5
Sometimes	39.7	1.3	42.6	1.0	41.2	0.8
Yes, definitely	41.4	1.3	35.8	1.0	38.6	0.8

Note: SE = standard error. Column totals may not add to 100% as some respondents replied 'don't know'.

Source: Department of Human Services, *Victorian population health survey, 2006*.

Social capital refers to the social connections between individuals. This includes the social networks, social reciprocity and interdependence that develop between individuals and their community, which can affect the opportunities that arise and the choices that individuals make in their lives. Research suggests that health and wellbeing is influenced by social capital. Communities with high levels of social capital have better health outcomes than those with lower levels, regardless of the level of economic capital available.

A variety of indicators are used to measure different aspects of social capital. The 2006 Victorian population health survey included a series of questions about social and support networks, including a question about trust. Trust is an important aspect of social capital because it underlies and contributes to the quality and number of interactions between people. Trust underlies all positive social interactions, and is a critical component of social cohesion that bonds people in groups and communities through common interests.

Based on VPHS 2006 estimates, most Victorians agreed that people can be trusted either 'sometimes', or 'yes definitely' (79.8 per cent). Males (41.4 per cent, 95% CI 38.9–43.9) were significantly more likely than females (35.8 per cent, 95% CI 33.8–37.8) to agree that people can be trusted 'yes, definitely'.

Reference

Putnam, R, 2000, *Bowling alone–The collapse and revival of American community*, New York: Simon and Schuster.

Wilkinson, R and Marmot, M, 2003, *Social determinants of health: The solid facts*, 2nd edition, Geneva: World Health Organization.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

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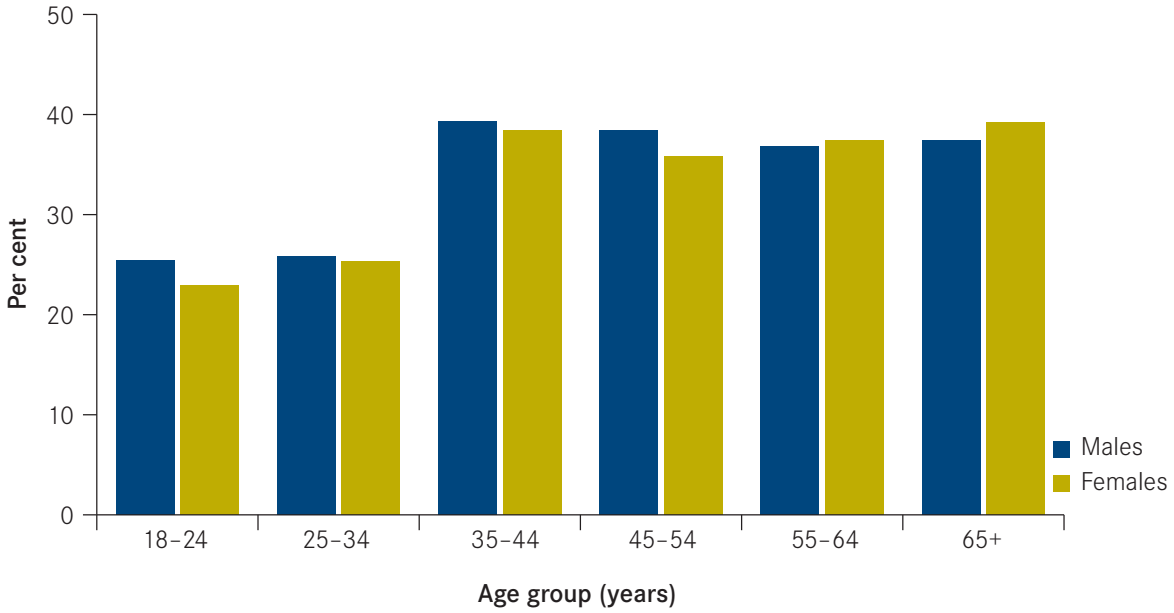
Volunteering

Helped out a local group as a volunteer, persons aged 18 years or over, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
18–24	25.4	3.9	22.9	3.3	24.2	2.6
25–34	25.8	3.3	25.3	2.2	25.5	2.0
35–44	39.3	2.8	38.4	1.9	28.8	1.7
45–54	38.4	2.6	35.8	2.0	37.1	1.6
55–64	36.8	2.8	37.4	2.2	37.1	1.8
65+	37.4	2.2	39.2	2.1	38.4	1.5
Total	**34.1**	**1.2**	**33.7**	**0.9**	**33.9**	**0.8**

Note: SE = standard error. Data includes responses from adults aged 18 years or more.

Source: Department of Human Services, *Victorian population health survey 2006*.

Volunteering helps individuals form interpersonal ties and develop their social networks. It provides a sense of purpose and connectedness within a group or community. Increased social contact and stronger support networks are associated with better health, and some studies conclude that the benefits of strong social relationships may be as important to health as health risks such as tobacco smoking, physical inactivity, poor nutrition and high blood pressure.

The *2006 Victorian population health survey* measured the amount of voluntary effort undertaken by individuals in their local community. One in three people (33.9 per cent) aged 18 years or more were involved in helping out a local group as a volunteer at the time of the survey.

Participation rates in volunteer work increased with age, and people in the oldest age group (38.4 per cent, 95% CI 35.4–41.4) were significantly more likely to participate than people in the youngest age group (24.2 per cent, 95% CI 19.2–29.2).

Reference

Wilkinson, R and Marmot, M, 2003, *Social determinants of health: The solid facts*, 2nd edition, Geneva: World Health Organization.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

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Health outcomes

This section presents information on various health outcomes, including: cardiovascular disease, diabetes, cancer, asthma, injury and poisoning, mental health, musculoskeletal conditions and oral health. Communicable diseases are also presented in this section.

Cardiovascular disease

In this chapter

- burden of cardiovascular disease
- prevalence of heart disease and stroke
- cardiovascular disease hospitalisations
- cardiovascular disease procedures
- cardiovascular disease deaths
- blood pressure and cholesterol checks

Summary

Cardiovascular disease was responsible for 17 per cent of the total disease burden (DALYs) in Victoria in 2001. Ischaemic heart disease and stroke were the major contributors, accounting for 53 per cent and 29 per cent of the cardiovascular disease burden respectively. More than three-quarters of the cardiovascular disease burden was due to mortality.

Survey estimates for 2006 indicate approximately 6.8 per cent of adults had ever been told by a doctor that they had heart disease, and approximately 1.9 per cent had ever suffered a stroke. Self-reported prevalence rates for males were significantly higher than rates for females.

In 2005–06, there were more than 118,000 hospital admissions in Victoria with a cardiovascular disease (CVD) recorded as the principal (first) diagnosis, accounting for 5.9 per cent of all Victorian resident hospitalisations. Just over one-third (33.8 per cent) of CVD hospitalisations were for ischaemic heart disease (IHD). Hospitalisation rates for IHD and stroke declined significantly between 1999–00 and 2005–06.

Coronary artery bypass graft (CABG) procedure rates for Victorian residents decreased over time with developments in the less-invasive percutaneous transluminal coronary angioplasty (PTCA) procedure. Between 2000–01 and 2005–06, the number of CABGs performed declined by 16 per cent, while PTCA procedures increased by 46 per cent over this period.

A computerised tomographic (CT) scan of the brain for people diagnosed with a stroke enables diagnosis of stroke type. There were 9,475 CT scans of the brain for people with a principal (first) diagnosis of stroke in 2005–06. This represents an increase of 17 per cent in the number of scans since 2000–01.

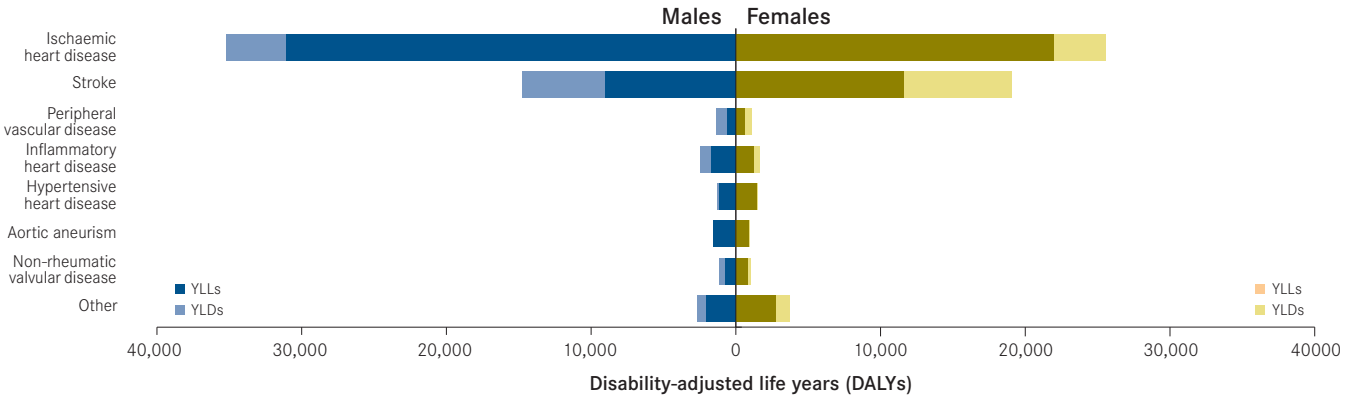
Carotid endarterectomy is a surgical procedure that involves the removal of atherosclerotic plaque from the lining of the carotid arteries in the neck, which supply blood to the brain. In 2005–06, there were 1,058 carotid endarterectomies performed on Victorian residents in Victorian hospitals, a decrease of 24 per cent since 2000–01.

There were 11,290 deaths with a cardiovascular disease listed as the underlying cause in 2004, accounting for more than one-third (34.7 per cent) of all deaths for Victoria in that year. Just over half (51.1 per cent) were due to ischaemic heart disease and one-quarter (24.9 per cent) were due to stroke. The death rate for cardiovascular disease decreased significantly over the last two decades, down from 466.9 deaths per 100,000 persons (95% CI: 459.4–474.4) in 1987 to 215.2 per 100,000 persons (211.3–219.1) in 2004, a 52.2 per cent reduction in the rate over this period.

High blood pressure and high cholesterol are risk factors for cardiovascular disease. Survey estimates for 2006 suggest that almost one-quarter (24.5 per cent) of adults aged 18 years and over had ever been told by a doctor that they had high blood pressure. More than three-quarters (78.2 per cent) of all adults in Victoria were estimated to have had a blood pressure check in the previous two years, and just over half (51.1 per cent) had had their cholesterol checked.

Burden of cardiovascular disease

The burden of cardiovascular disease, by disease and sex, Victoria, 2001



	Males			Females		
Cardiovasacular diseases	**DALYs**	**YLLs**	**YLDs**	**DALYs**	**YLLs**	**YLDs**
Other	2,647	2,008	639	3,747	2,764	983
Non-rheumatic valvular disease	1,130	760	369	1,045	797	248
Aortic aneurism	1,591	1,549	43	933	917	16
Hypertensive heart disease	1,296	1,139	158	1,550	1436	114
Inflammatory heart disease	2,465	1,691	775	1,627	1,230	397
Peripheral vascular disease	1,313	620	693	1,109	602	507
Stroke	14,713	9,036	5,677	19,096	11,582	7,514
Ischaemic heart disease	35,233	31,050	4,184	25,557	21,936	3,621
Total	**60,389**	**47,852**	**12,537**	**54,664**	**41,264**	**13,400**

Note: DALYs = disability adjusted life years, YLLs = years of life lost, YLDs = years lived with disability.

Source: Department of Human Services, 2005, *The Victorian burden of disease study: mortality and morbidity in 2001*, Appendix 2.

In 2001, cardiovascular disease accounted for 17 per cent of the total burden of disease in Victoria. More than 75 per cent of this burden was due to mortality. Ischaemic heart disease and stroke were the major contributors, accounting for 53 per cent and 29 per cent of the cardiovascular disease burden respectively. Overall, these two diseases were the top two causes of the disease burden in Victoria. The burden of ischaemic heart disease was approximately 25 per cent higher in males compared to females and the stroke burden was approximately 30 per cent higher in females.

The cardiovascular disease burden for Victoria was very similar to the burden for Australia. Cardiovascular disease accounted for 18 per cent of the national burden of disease in 2003, with mortality accounting for 78 per cent of the burden. Together, ischaemic heart disease and stroke were the major contributors, accounting for 81 per cent of the national cardiovascular disease burden.

For more information

Department of Human Services, 2005, *Victorian burden of disease study: Mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/healthstatus

Australian Institute of Health and Welfare, 2007, *The burden of disease and injury in Australia 2003*, Catalogue no PHE 82, Canberra: Australian Institute of Health and Welfare.

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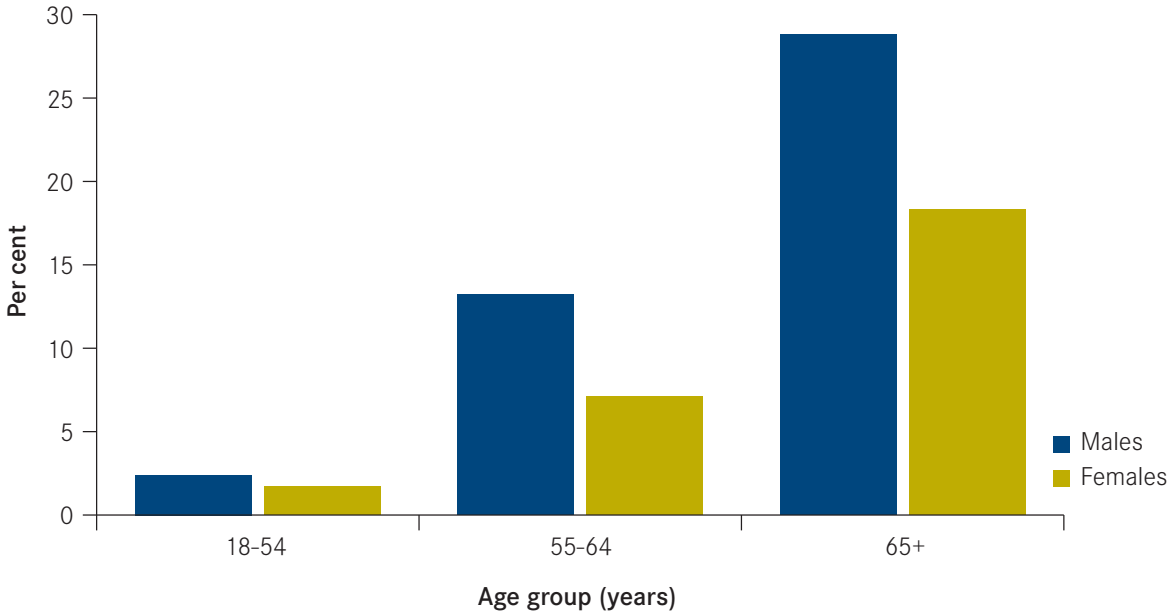
Prevalence of heart disease

Self-reported prevalence of heart disease, persons aged 18 years or over, by age group and sex, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
18-54	2.4	0.4	1.7	0.3	2.0	0.3
55-64	13.2	2.0	7.1	1.1	10.1	1.1
65+	28.8	2.1	18.3	1.7	23.0	1.3
Total	**8.1**	**0.6**	**5.6**	**0.4**	**6.8**	**0.4**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

Estimates from the *Victorian population health survey 2006* (VPHS) indicate that more than 260,000 adults (6.8 per cent) aged 18 years or over had ever been told by a doctor that they had heart disease in 2006. Self-reported prevalence rates for males (8.1 per cent, 95% CI: 7.1–9.3) were significantly higher than prevalence rates for females (5.6 per cent, 4.8–6.5) and prevalence increased with age, from 2.0 per cent for adults 18–54 years (1.57–2.61) to 23.0 per cent for adults aged 65 years and over (20.4–25.7).

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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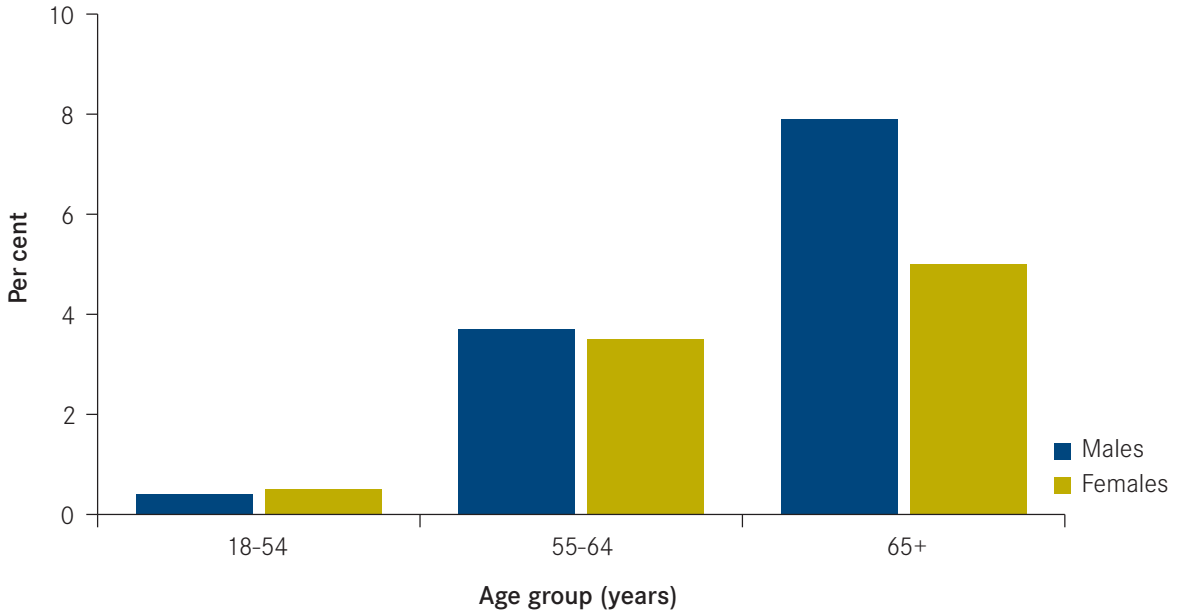
Prevalence of stroke

Self-reported prevalence of stroke, persons aged 18 years or over, by age group and sex, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
18-54	0.4	0.2	0.5	0.1	0.5	0.1
55-64	3.7	1.2	3.5	0.8	3.6	0.7
65+	7.9	1.2	5.0	0.9	6.3	0.7
Total	**2.1**	**0.3**	**1.8**	**0.2**	**1.9**	**0.2**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

Stroke includes a group of diseases that affect the arteries supplying blood to the brain. Stroke is the second leading cause of death in Australia, a large contributor to disability, and places a heavy burden on family members and care providers.

Estimates from the *Victorian population health survey 2006* (VPHS) suggest more than 74,000 adults (1.9 per cent) aged 18 years and over in Victoria had ever had a stroke. The survey results showed that males (2.1 per cent, 95% CI: 1.6–2.7) were more likely to report having had a stroke than females (1.8 per cent, 1.4–2.3), and rates increased with age.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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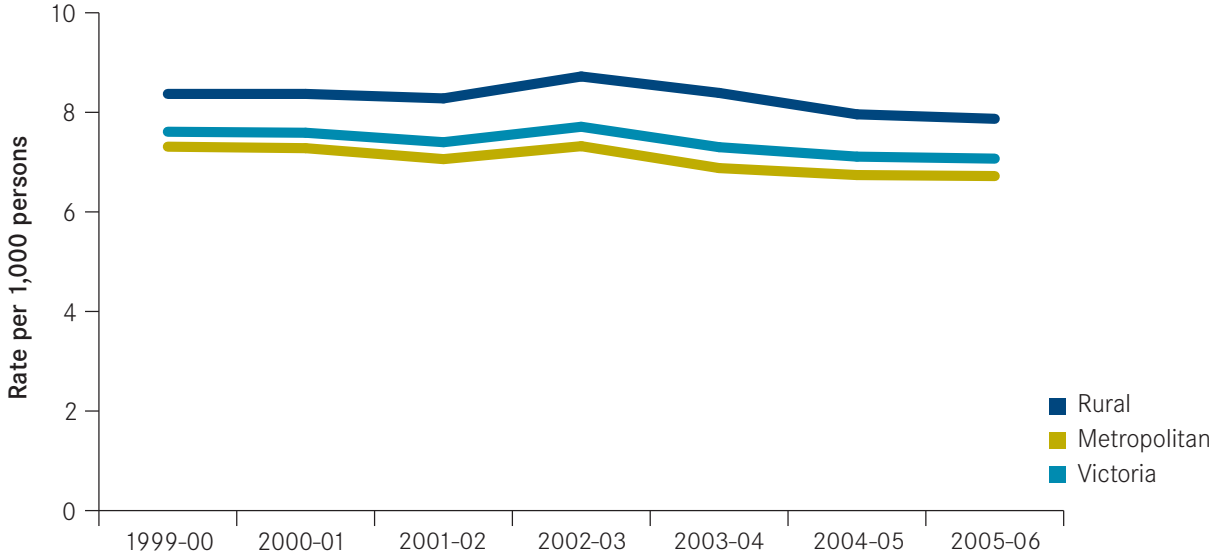
Ischaemic heart disease (principal diagnosis) admissions

Ischaemic heart disease (principal diagnosis) admission rates for rural and metropolitan regions, Victoria, 1999-00 to 2005-06



		1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	8.37	8.37	8.28	8.72	8.39	7.96	7.87
per 1,000 persons	Metropolitan	7.31	7.28	7.06	7.32	6.88	6.74	6.72
	Victoria	7.61	7.59	7.40	7.71	7.30	7.11	7.07
Rural:Metro rate ratios (Metro=1)		**1.15**	**1.15**	**1.17**	**1.19**	**1.22**	**1.18**	**1.17**

Note: Ischaemic heart disease has been defined by ICD-10-AM codes principal (first) diagnosis 'I20–I25'. Rural and metropolitan areas are defined based on Department of Human Services regions. Rates are expressed per 100,000 population and have been age standardised to the June 2001 Victorian population. Hospital admissions data includes only Victorian residents hospitalised in Victorian hospitals.

Source: Department of Human Services, Victorian Admitted Episodes Dataset, 1999–00 to 2005–06; Australian Bureau of Statistics population data 1999 to 2006.

Ischaemic heart disease is the largest single cause of premature death in Australia. It is caused by inadequate blood flow to the heart, resulting from blockages in the arteries supplying blood to the heart muscle. These blockages are usually due to the accumulation of fatty and fibre-like substances in the inner wall of the artery.

In 2005–06 there were more than 118,000 hospital admissions in Victoria with a cardiovascular disease (CVD) recorded as the principal (first) diagnosis, accounting for 5.9 per cent of all Victorian resident hospitalisations. Just over one-third (33.8 per cent) of CVD hospitalisations were for ischaemic heart disease (IHD).

There were approximately 39,900 admissions for IHD as a principal diagnosis in 2005–06, with an average of 3.83 bed days. Admission rates for IHD declined significantly over time, from 7.61 admissions per 1,000 persons (95% CI: 7.72–7.68) in 1999–2000 to 7.07 (7.00–7.14) in 2005–06. During this period admission rates for rural areas were between 13–18 per cent higher than admission rates for metropolitan areas.

For more information

Department of Health and Ageing: www.health.gov.au/internet/main/publishing.nsf/Content/pq-cardio

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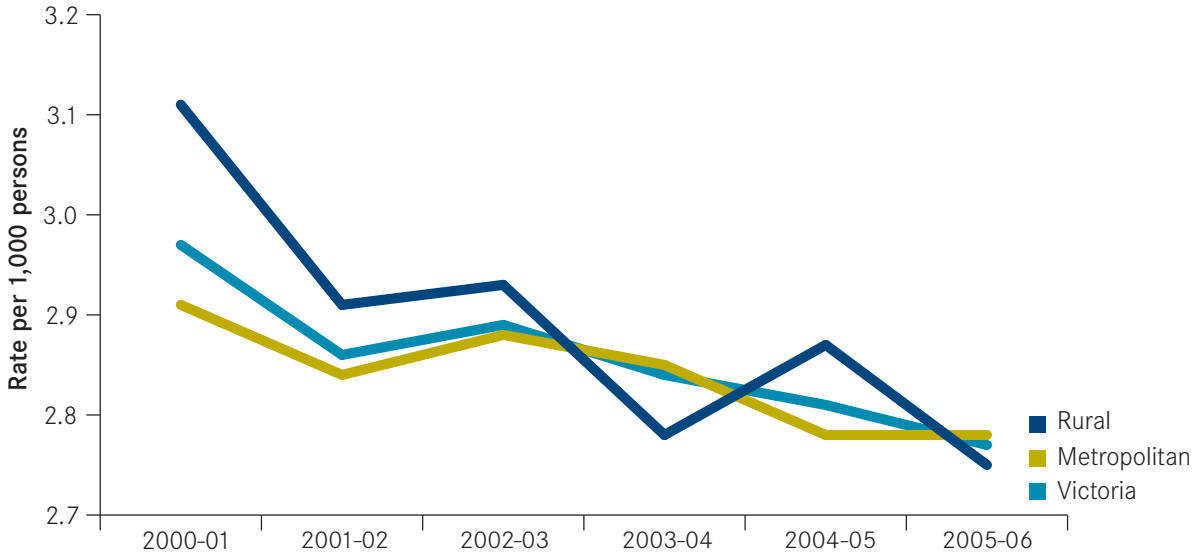
Stroke (principal diagnosis) admissions

Stroke (principal diagnosis) separation rates for rural and metropolitan regions, Victoria, 2000–01 to 2005–06



		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	3.11	2.91	2.93	2.78	2.87	2.75
per 1,000 persons	Metropolitan	2.91	2.84	2.88	2.85	2.78	2.78
	Victoria	2.97	2.86	2.89	2.84	2.81	2.77
Rural:Metro rate ratios (Metro=1)		**1.07**	**1.02**	**1.02**	**0.98**	**1.03**	**0.99**

Note: Stroke has been defined by ICD-10-AM codes principal (first) diagnosis 'G45–G46' and 'I60–I69'. Rural and metropolitan areas have been defined based on Department of Human Services regions. Rates are expressed per 100,000 population and have been age-standardised to the June 2001 Victorian population.

Source: Department of Human Services Victorian Admitted Episodes Dataset, 2000–01 to 2005–06; Australian Bureau of Statistics population data 2001 to 2006.

There were 14,582 hospital admissions where stroke was listed as the principal (first) diagnosis in 2005–06, with an average of 3.1 bed days. The admission rate for stroke decreased significantly between 2000–01 to 2005–06 from 2.97 (95% CI: 2.92–3.02) admissions per 1,000 persons in 2000–01 to 2.77 (2.72–2.81) in 2005–06.

A disparity exists in the separation rates for stroke between rural and metropolitan areas; however, this difference decreased over time, with the rural to metropolitan area rate ratio declining from 1.07 in 2000–01 to 0.99 in 2005–06.

For more information

Department of Health and Ageing: www.health.gov.au/internet/main/publishing.nsf/Content/pq-cardio

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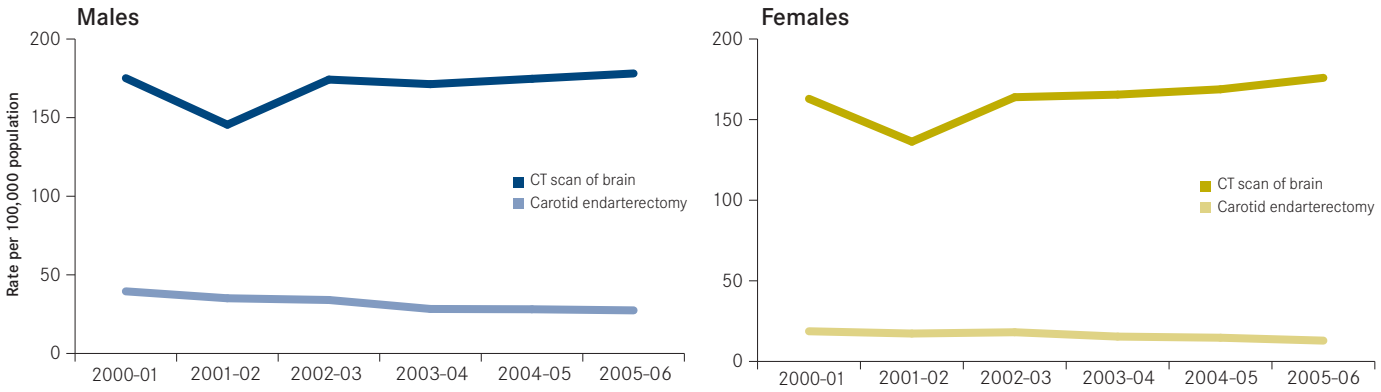
Carotid endarterectomy and CT scan of the brain, with principal (first) diagnosis of stroke

Computerised tomographic (CT) scan of brain (with a principal diagnosis of stroke) and carotid endarterectomy rates, by sex, Victoria 2000–01 to 2005–06



Note: CT scan of brain defined based on any procedure codes ICD-10-AM '56001–00','56007–00','56010–02', '56010–03' (blocks '1952','1953'), with stroke as a principal (first) diagnosis (codes: 'G45'–'G46' and 'I60'–'I69'). Carotid endarterectomy defined based on any procedure codes ICD-10-AM '33500–00' (block '700'). Rates are expressed per 100,000 population and have been standardised to the June 2001 Victorian population.Procedures data includes only Victorian residents hospitalised in Victorian hospitals.

Source: Department of Human Services, Victorian Admitted Episodes Datasets 2000–01 to 2005–06; Australian Bureau of Statistics Victorian population data: 2001 to 2006.

Carotid endarterectomy is a surgical procedure that involves the removal of atherosclerotic plaque from the lining of the carotid arteries in the neck, which supply blood to the brain. The plaque is removed to prevent clots forming and to prevent sections breaking off and travelling to the brain and blocking blood flow.

In 2005–06, 1,058 carotid endarterectomies were performed on Victorian residents in Victorian hospitals, a decrease of 24 per cent since 2000–01. The average length of stay in hospital was 8.4 days in 2005–06, and male procedure rates (27.4 per cent, 95% CI: 25.4–29.5) were significantly higher than female procedure rates (12.9 per cent, 11.5–14.3).

A computerised tomographic (CT) scan of the brain for people diagnosed with a stroke allows for diagnosis of stroke type. An accurate diagnosis of the type of stroke, whether an ischaemic stroke (the result of a blockage, or blocked blood supply to the brain) or a haemorrhagic stroke (the result of bleeding within or on the surface of the brain) guides treatment options for stroke patients.

There were 9,475 CT scans of the brain for people with a principal (first) diagnosis of stroke in 2005–06. This represents an increase of 17 per cent in the number of scans since 2000–01. The average length of stay in hospital for patients who had a CT scan was 7.8 days in 2005–06. There was no statistically significant difference in CT scan rates between males (178.1 per cent, 95% CI: 173.0–183.1) and females (175.9 per cent, 170.9–180.8) in 2005–06.

For more information

ACT Health, 2006, *ACT Chief Health Officer's Report 2006*, Canberra: ACT Health.

AIHW (Australian Institute of Health and Welfare), 2004, *Heart, stroke and vascular diseases, Australian Facts 2004*, Catalogue no CVD 27, Canberra: AIHW.

NSW Health, 2006, *The health of the people of NSW: Report of the NSW Chief Health Officer 2006*, Sydney: NSW Health.

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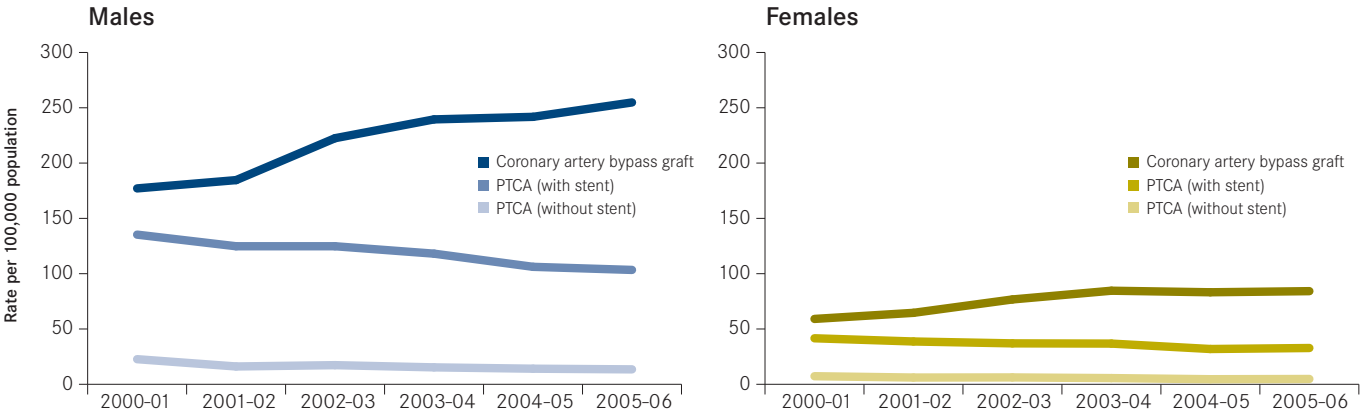
Revascularisation procedures

Revascularisation procedure rates, by sex, Victoria, 2000–01 to 2005–06



Note: Percutaneous transluminal coronary angioplasty (PTCA) without a coronary stent based on any procedure codes ICD-10-AM '35304–00', '35305-–00' (block '670'). PTCA with coronary stenting based on any procedure codes ICD-10-AM '35310–00' (block '671'). Coronary artery bypass graft defined based on any procedure codes ICD-10-AM '38497','38500','38503','90201' (blocks '672'–'679'). Rates are expressed per 100,000 population and have been standardised to the June 2001 Victorian population. Procedures data includes only Victorian residents hospitalised in Victorian hospitals.

Source: Department of Human Services, Victorian Admitted Episodes Datasets 2000–01 to 2005–06; Australian Bureau of Statistics Victorian population data: 2001 to 2006.

Significant advances have occurred in the quality and range of surgical interventions for ischaemic heart disease (IHD) over the last thirty years. Revascularisation procedures, which include coronary artery bypass graft surgery and coronary angioplasty, restore blood flow to coronary arteries, providing symptomatic benefit to people with IHD.

Coronary artery bypass graft (CABG) surgery has been practised in Australia since the 1970s and involves opening up a patient's chest to construct new passages to improve blood flow from the aorta to coronary arteries, by avoiding blocked arteries. Percutaneous transluminal coronary angioplasty (PTCA) is a less-invasive procedure which has been practised in Australia since the early 1980s, and involves the insertion of a catheter with a balloon into a blocked artery, and inflation of the balloon to clear a blockage, thereby restoring blood flow. Coronary stenting, which has been practised since the early 1990s, involves inserting and then expanding a metal mesh tube in an artery to hold the artery open to improve blood flow and prevent a blockage from occurring.

CABG procedure rates for Victorian residents decreased over time with developments in the less invasive PTCA procedure, which usually requires only a few days hospitalisation. Between 2000–01 and 2005–06 the number of CABGs performed declined by 16 per cent. In 2005–06, CABGs accounted for 28 per cent of all revascularisation procedures performed in Victoria, compared to 40 per cent in 2000–01. In comparison, the number of PTCA procedures increased by 46 per cent between 2000–01 and 2005–06. PTCA with coronary stenting accounted for more than two-thirds (69 per cent) of all revascularisation procedures in 2005–06, and PTCA without the insertion of a stent accounted for four per cent of revascularisation procedures.

Revascularisation rates for males were significantly higher than the rates for females. In 2005–06, the male CABG rate (103.4 per 100,000 population, 95% CI: 99.5–107.3) was 3.2 times higher than the rate for females (32.8 per 100,000 population, 30.6–35.0). The male rate for PTCA with coronary stenting (254.8 per 100,000 population, 95% CI: 248.7–261.0) was 3.0 times the rate for females (84.2 per 100,000 population, 80.7–87.7) and the male rate for PTCA without coronary stenting (13.5 per 100,000 population, 12.1–15.0) was 2.8 times the rate for females (4.8 per 100,000 population, 4.0–5.6).

For more information

ACT Health, 2006, *ACT Chief Health Officer's Report 2006*, Canberra ACT Health.

AIHW (Australian Institute of Health and Welfare), 2004, *Heart, stroke and vascular diseases, Australian Facts 2004*, Catalogue no CVD 27, Canberra: AIHW.

NSW Health, 2006, *The health of the people of NSW: Report of the NSW Chief Health Officer 2006*, NSW Sydney: Health.

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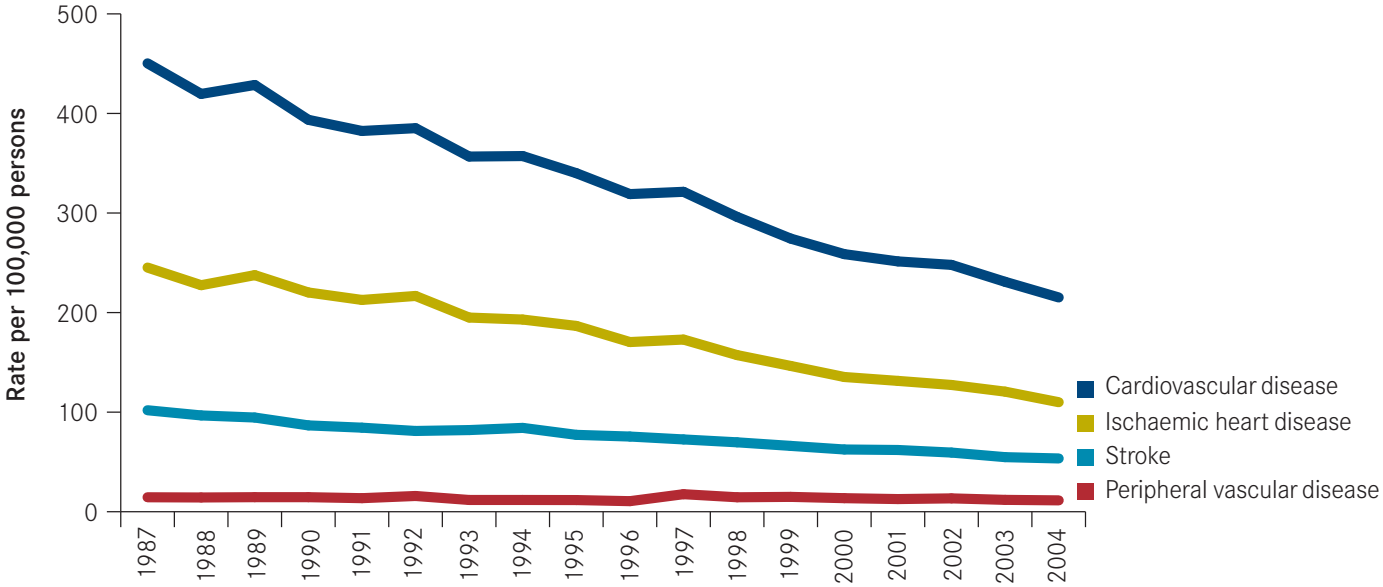
Cardiovascular disease deaths

Cardiovascular disease death rates, by disease type, Victoria, 1987 to 2004



Cardiovascular disease–standardised death rate per 100,000 persons, by disease type, Victoria, 1987 to 2004

Cardiovascular diseases	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Ischaemic heart disease	245.2	227.5	237.6	220.2	212.7	216.7	195.0	139.0	186.6
Stroke	101.9	96.7	94.6	86.7	84.4	81.1	82.0	84.2	77.2
Peripheral vascular disease	14.5	14.3	14.3	14.6	13.6	15.8	11.8	11.8	11.7
All cardiovascular disease	**450.3**	**419.6**	**428.6**	**393.6**	**382.4**	**385.2**	**356.7**	**357.2**	**340.0**

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Ischaemic heart disease	170.4	172.9	157.3	146.4	135.3	131.4	127.3	120.6	110.0
Stroke	75.5	72.6	69.7	66.1	62.5	62.0	59.4	54.8	53.5
Peripheral vascular disease	10.6	17.6	14.5	14.9	13.6	12.7	13.4	11.9	11.4
All cardiovascular disease	**319.0**	**321.3**	**396.1**	**274.3**	**258.7**	**251.4**	**247.9**	**230.9**	**215.2**

Note: See Appendix for ICD-10 disease definition codes. All Victorian residents included in deaths data, regardless of where they died in Australia. Victorian residents who died overseas are excluded from the data. Rates are expressed per 100,000 population and have been standardised to the June 2001 Victorian population.

Source: Australian Bureau of Statistics Victorian population data: 1987 to 2004; Australian Bureau of Statistics Victorian deaths data: 1987 to 2005.

There were 11,290 deaths with a cardiovascular disease listed as the underlying cause in 2004, accounting for more than one-third (34.7 per cent) of all deaths for Victoria. Just over half (51.1 per cent) were due to ischaemic heart disease and one-quarter (24.9 per cent) were due to stroke.

The death rate for cardiovascular disease has decreased significantly over the last two decades, down from 466.9 deaths per 100,000 persons (95% CI: 459.4–474.4) in 1987 to 215.2 per 100,000 persons (211.3–219.1) in 2004, a 52.2 per cent reduction in the rate over this period.

The decrease in the death rate is largely due to a decline in the death rate for ischaemic heart disease, which is attributed to a decrease in the incidence of heart attack and improved survival following a heart attack. The death rate for stroke, which also declined, is thought to reflect a decrease in the incidence of stroke, rather than an improvement in survival following stroke. This trend has coincided with an ongoing reduction in the prevalence of risk factors (such as smoking and high blood pressure) and an increase in the use of prescription drugs to lower blood pressure and cholesterol.

For more information

AIHW (Australian Institute of Health and Welfare), 2004, *Heart, stroke and vascular diseases, Australian Facts 2004*, Catalogue no CVD 27, Canberra: AIHW.

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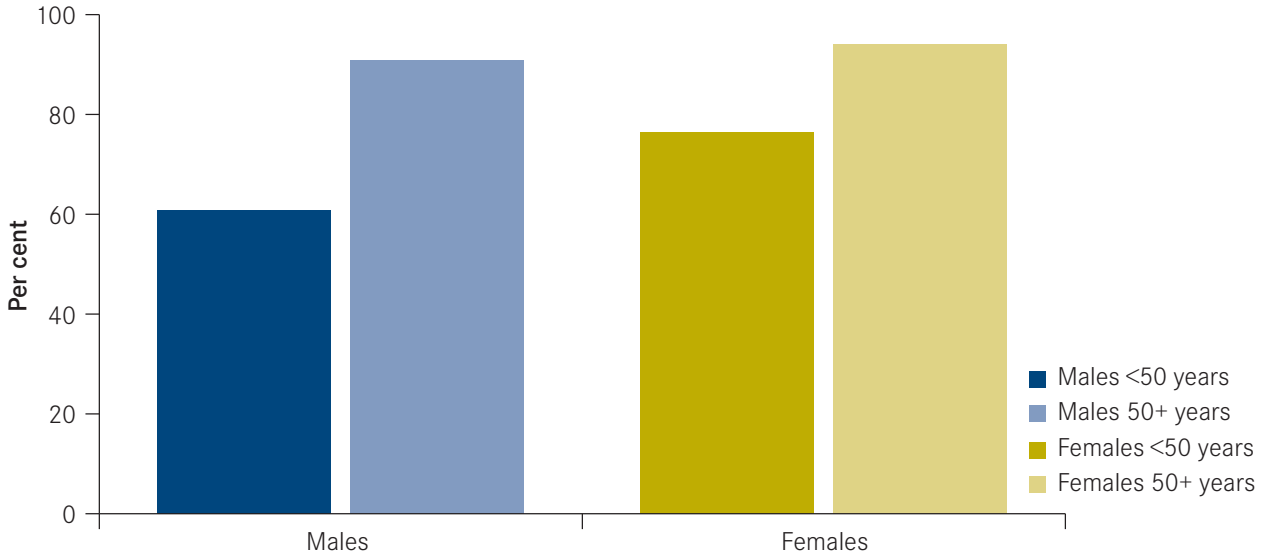
Blood pressure checks

Blood pressure checks in the past two years, persons aged 18 years or over, by sex and age group, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
<50	60.8	1.8	76.4	1.2	68.7	1.1
50+	90.8	1.0	94.0	0.6	92.5	0.6
Total	**72.6**	**1.2**	**83.6**	**0.8**	**78.2**	**0.7**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

High blood pressure is a major risk factor for ischaemic heart disease, stroke, heart failure and kidney failure. The risk of disease increases with increases in blood pressure. The modifiable causes of high blood pressure include having a poor diet (especially a high salt intake), being overweight or obese, having high levels of alcohol consumption and insufficient levels of physical activity. In 2001, 7.3 per cent of the burden of disease in Victoria was attributed to high blood pressure, and the results of the *Victorian population health survey 2006* (VPHS) show that almost one-quarter (24.5 per cent) of adults aged 18 years or over had ever been told by a doctor that they had high blood pressure. The average age at which they were advised of their condition was 47 years.

The results of the VPHS also show that in the two years before the survey, 78.2 per cent of adults aged 18 years or over had had their blood pressure checked. Statistically significant differences were apparent in the reporting of blood pressure checks between the sexes and age groups in 2006. Females (83.6 per cent, 95% CI: 82.0–85.1) were significantly more likely to report having had their blood pressure checked than males (72.6 per cent, 70.1–74.9), and those aged 50 years and over (92.5 per cent, 91.3–93.5) were significantly more likely to report having had a blood pressure check than those aged under 50 years (68.7 per cent, 66.5–70.8).

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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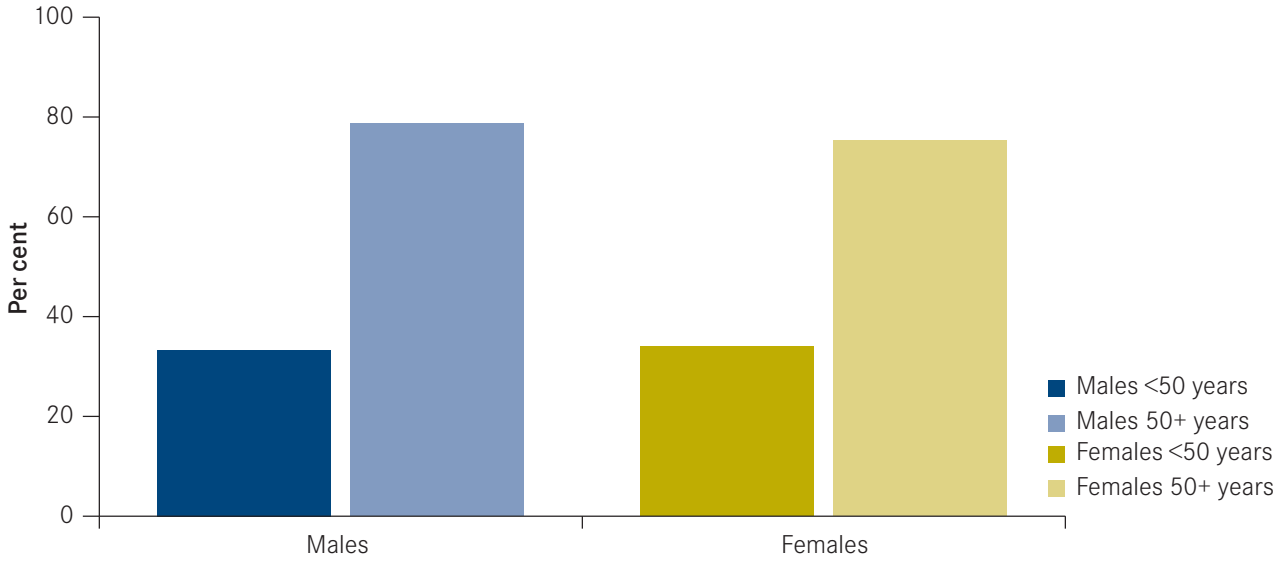
Cholesterol checks

Cholesterol checks in the past two years, persons aged 18 years or over, by sex and age group, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
<50	33.3	1.7	34.0	1.3	33.7	1.1
50+	78.7	1.4	75.3	1.2	76.9	0.9
Total	**51.1**	**1.3**	**50..9**	**1.0**	**51.0**	**0.8**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

High blood cholesterol is a risk factor for ischaemic heart disease and stroke, and it is a major cause of atherosclerosis. The risk of disease increases with rising cholesterol levels, which, for most people, can be managed by controlling the level of saturated fat in the diet. In 2001, high blood cholesterol was estimated to account for 6.1 per cent of the burden of disease in Victoria (DHS, 2005), similar to the estimate for Australia in 2003 (Begg et al, 2007).

Results from the *Victorian population health survey 2006* (VPHS) show that in the two years before the survey, 51.1 per cent of adults aged 18 years and over reported having had their cholesterol levels checked. The results for males and females were very similar; however, those aged 50 years and over (76.9 per cent, 95% CI: 75.1–78.6) were significantly more likely to report having had their cholesterol checked than those aged under 50 years (33.7 per cent, 31.6–35.8).

References

Department of Human Services (DHS), 2005, *Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Humans Services, www.health.vic.gov.au/healthstatus

Begg, S, Vos, T, Barker, B, Stevenson, C, Stanley, L, Lopez, AD, 2007, *The burden of disease and injury in Australia 2003*, PHE 82. Canberra: Australian Institute of Health and Welfare.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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Diabetes

In this chapter

- burden of diabetes
- prevalence of diabetes
- diabetes hospital admissions
- amputations
- diabetes deaths
- risk factors

Summary

Diabetes was responsible for four per cent of the total disease burden (DALYs) in Victoria in 2001. Just over 25 per cent of the burden was due to premature death. When the attributable burden of cardiovascular disease was included, the diabetes burden increased to eight per cent, and diabetes became the leading cause of the disease burden.

The burden from diabetes includes both Type 1 and Type 2 diabetes mellitus. Type 2 diabetes is the second leading cause of the disease burden for males, and is ranked sixth for females.

Survey estimates for 2006 indicate that approximately 5.8 per cent of adults in Victoria had ever been diagnosed with diabetes. Among those with a diagnosis of diabetes, 14.0 per cent were diagnosed with Type 1 diabetes, 68.0 per cent with Type 2 diabetes and 15.2 per cent with gestational diabetes during pregnancy. When gestational diabetes is excluded, the diagnosed diabetes prevalence estimate for adults was 4.9 per cent in 2006.

Almost half (47.8 per cent) of all adults surveyed in the *Victorian population health survey 2006* (VPHS) reported having had a test for diabetes in the previous two years.

In 2005–06 the admission rate for diabetes as a principal diagnosis was 3.64 per 1,000 population (95% CI: 3.59–3.69). However, diabetes is more likely to be recorded as an additional diagnosis, especially where cardiovascular disease is recorded as a principal diagnosis. When admissions for diabetes as either a principal or additional diagnosis are combined (that is, diabetes coded in any diagnoses field), the admission rate increases to 24.98 admissions per 1,000 population (95% CI: 24.85–25.10).

A disparity between metropolitan and rural area hospital admission rates for diabetes is apparent when the principal and additional diagnoses of diabetes are combined. In 2005–06 the admission rate for rural areas of 26.63 admissions per 1,000 population (95% CI 26.69–26.86) was significantly higher than the rate for metropolitan areas, 24.34 admissions per 1,000 population (95% CI 24.19–24.49).

People with diabetes have a higher risk of lower limb amputation than people without diabetes. In 2005–06, there were 889 hospitalisations for lower limb amputations in Victoria, with diabetes listed as a comorbidity. Amputation rates increased with age, and male amputation rates (24.8 per 100,000 population, 95% CI: 22.9–26.7) were significantly higher than the rates for females (9.1 per 100,000 population, 7.9–10.2) in 2005–06.

There were 1,079 deaths in Victoria with diabetes listed as the underlying cause in 2004, accounting for 3.3 per cent of all deaths. However, this is an underestimate of diabetes-related deaths, because diabetes is a contributing factor in a number of deaths, particularly where the underlying cause of death is cardiovascular or renal disease.

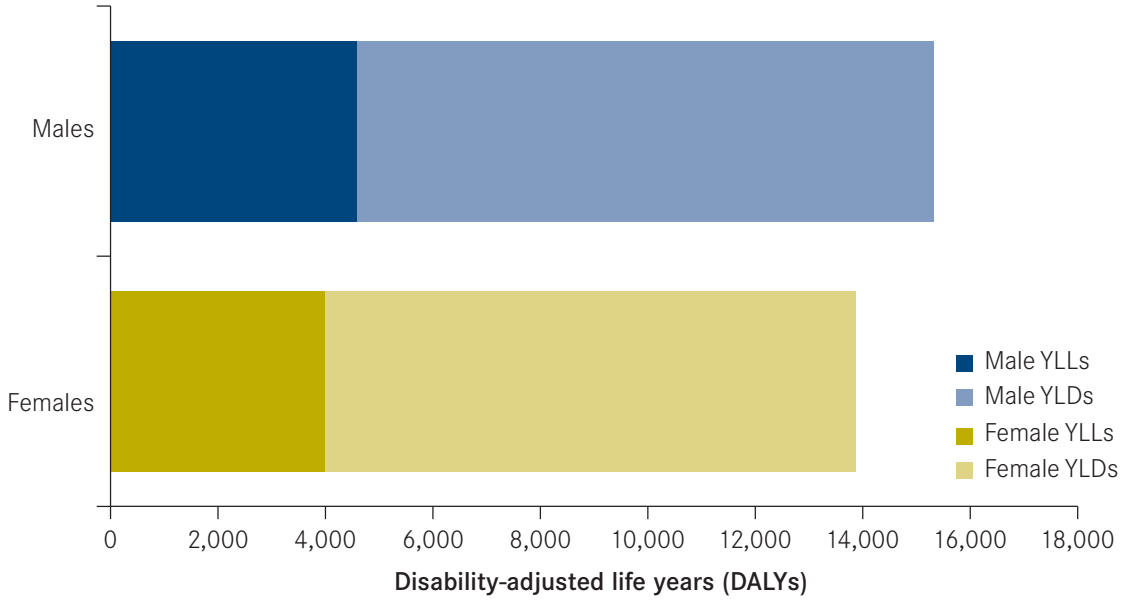
In 2004 there were 126 deaths in Victoria with Type 1 diabetes listed as the underlying cause of death. The number of deaths each year from Type 1 diabetes has not changed significantly since the late 1990s; however, the number of deaths with Type 2 diabetes listed as the underlying cause of death has increased, from 287 deaths in 1997 to 448 deaths in 2004.

Survey estimates from the *Victorian population health survey 2006* show that approximately 23.3 per cent of adults aged 18 years and over with doctor-diagnosed diabetes had also been diagnosed with heart disease, and 6.6 per cent had been diagnosed with stroke.

Survey estimates also showed that risk factors for cardiovascular disease were high among adults with diabetes. In 2006, 86.4 per cent of adults with diabetes consumed insufficient levels of vegetables, and almost half (46.7 per cent) consumed insufficient levels of fruit to meet the national guidelines. Two-thirds (67.4 per cent) were overweight or obese and 41.1 per cent did not meet the recommendations set out in the national physical activity guidelines.

Burden of diabetes

The burden of diabetes, by sex, Victoria, 2001



Diabetes	DALYs	YLLs	YLDs
Males	15,315	4,581	10,733
Females	13,868	3,984	9,884
Persons	29,183	8,565	20,617

Note: DALYs = disability adjusted life years, YLLs = years of life lost, YLDs = years lived with disability.

Source: Department of Human Services, *Victorian burden of disease study: mortality and morbidity in 2001*, Appendix 2.

In 2001, diabetes mellitus accounted for four per cent of the total burden of disease in Victoria. Just over 25 per cent of the burden is due to premature death. When the attributable burden of cardiovascular disease is included, the diabetes burden increases to eight per cent, and diabetes becomes the leading cause of the disease burden.

The burden from diabetes includes both Type 1 and Type 2 diabetes mellitus. Type 2 diabetes is the second leading cause of the disease burden for males and sixth for females.

The diabetes burden for Victoria in 2001 was very similar to the burden for Australia in 2003. Diabetes accounted for 5.5 per cent of the Australian burden of disease in 2003. Twenty-two per cent of the diabetes burden was due to premature death. The diabetes burden increases to 8.3 per cent of the Australian burden of disease when the attributable burden of cardiovascular disease is included, and Type 2 diabetes mellitus is ranked as the second leading cause of the Australian disease burden for males, and fourth for females.

For more information

Department of Human Services 2005, *Victorian burden of disease study: mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/healthstatus

Begg S, Vos T, Barker B, Stevenson C, Stanley L, Lopez AD, 2007, *The burden of disease and injury in Australia 2003*, PHE 82. Canberra: Australian Institute of Health and Welfare.

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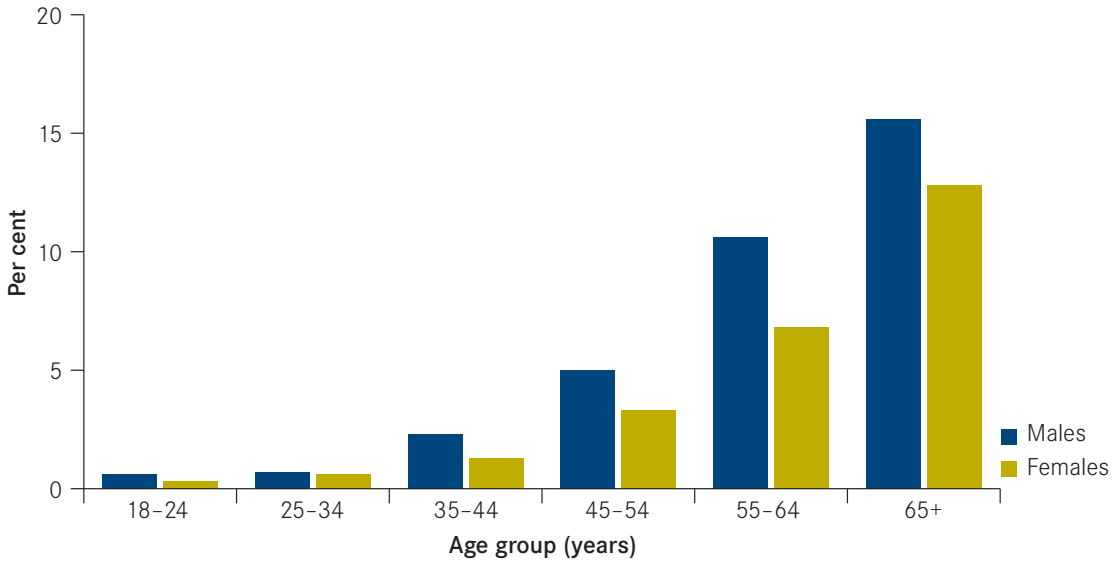
Prevalence of diabetes

Prevalence of doctor-diagnosed diabetes, persons aged 18 years or over, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE (%)**
18–24	0.6	0.6	0.3	0.3	0.5	0.3
25–34	0.7	0.7	0.6	0.5	0.6	0.4
35–44	2.3	0.8	1.3	0.5	1.8	0.5
45–54	5.0	1.2	3.3	0.7	4.1	0.7
55–64	10.6	2.0	6.8	1.1	8.7	1.1
65+	15.6	1.7	12.8	1.5	14.0	1.1
Total	**5.5**	**0.5**	**6.0**	**0.4**	**5.8**	**0.3**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

Estimates from the *Victorian population health survey 2006* (VPHS) indicate that approximately 220,000 adults (5.8 per cent) aged 18 years and over had ever been told by a doctor that they had diabetes in 2006. Overall, prevalence increased with age, and adults aged 65 years and over reported the highest prevalence rates (14.0 per cent).

Among adults reporting doctor-diagnosed diabetes, 14.0 per cent reported having been diagnosed with Type 1 diabetes, 68.0 per cent with Type 2 diabetes and 15.2 per cent with gestational diabetes during pregnancy. If gestational diabetes is excluded, the doctor-diagnosed diabetes prevalence estimate for adults was 4.9 per cent in 2006.

Almost half (47.8 per cent) of all adults reported having had a test for diabetes in the previous two years.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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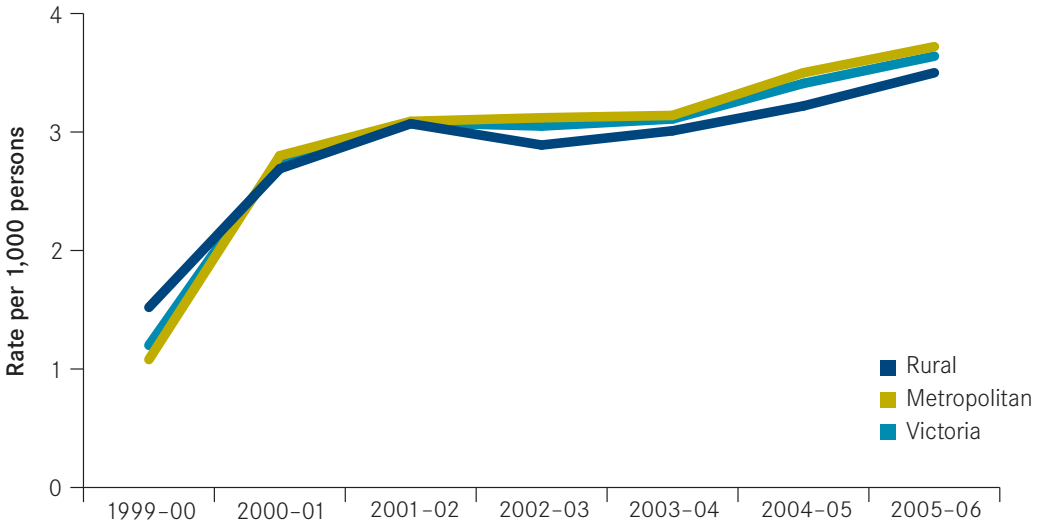
Diabetes (principal diagnosis) admissions

Diabetes (principal diagnosis) admission rates for rural and metropolitan areas, Victoria, 1999–00 to 2005–06



		1999–00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission	Rural	1.52	2.69	3.07	2.89	3.01	3.22	3.50
rate per 1,000 persons	Metropolitan	1.08	2.80	3.09	3.12	3.14	3.50	3.72
	Victoria	1.20	2.77	3.08	3.05	3.11	3.41	3.64
Rural: Metro rate ratios (Metro=1)		**1.41**	**0.96**	**0.99**	**0.93**	**0.96**	**0.92**	**0.94**

Note: Diabetes has been defined by ICD-10-AM codes principal (first) diagnosis 'E09'–'E14'. Rural and metropolitan areas have been defined based on Department of Human Services regions. Rates are expressed per 1,000 population and have been age-standardised to the June 1996 Victorian population. Hospital admissions data includes only Victorian residents hospitalised in Victorian hospitals.

Source: Department of Human Services, Victorian Admitted Episodes Dataset: 1999–00 to 2005–06; Australian Bureau of Statistics population data 1996 to 2006.

In 2005–06, there were more than 19,900 admissions to hospitals in Victoria with a principal diagnosis of diabetes, accounting for one per cent of all hospital admissions, and 14.3 per cent of all diabetes admissions, with an average of 4.83 bed days. The overall admission rate for diabetes as a principal diagnosis gradually increased, following a coding practice change introduced in 2000–01.

In 2005–06, the admission rate for diabetes as a principal diagnosis in metropolitan areas (3.72 per 1,000 persons, 95% CI: 3.66–3.78) was significantly higher than the rate for rural areas (3.50, 3.41–3.59). The admission rate in metropolitan areas was consistently higher than the rate for rural areas from 2000–01.

For more information

Department of Human Services (Health Evaluation and Surveillance Section, Public Health Division) 2002, *The Victorian ambulatory care sensitive conditions study*: www.health.vic.gov.au/healthstatus/acsc

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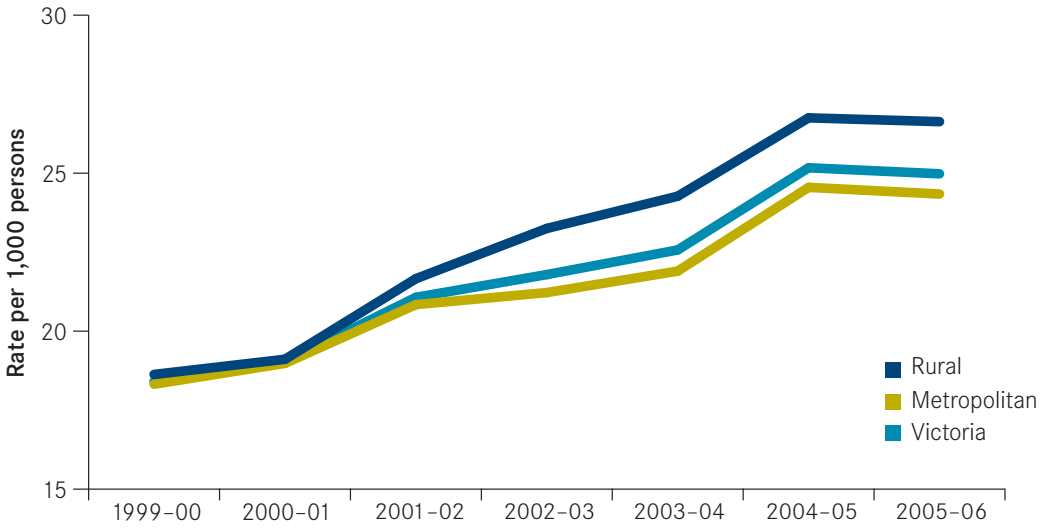
Diabetes (any diagnosis) admissions

Diabetes (any diagnosis) admission rates for rural and metropolitan areas, Victoria, 1999–00 to 2005–06



		1999–00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission	Rural	18.63	19.11	21.66	23.25	24.27	26.75	26.63
rate per 1,000 persons	Metropolitan	18.32	18.98	20.84	21.22	21.90	24.55	24.34
	Victoria	18.41	19.02	21.07	21.79	22.57	25.17	24.98
Rural: Metro rate ratios (Metro=1)		**1.02**	**1.01**	**1.04**	**1.10**	**1.11**	**1.09**	**1.09**

Note: Diabetes has been defined by ICD-10-AM codes (any diagnosis) 'E09'–'E14'. Rural and metropolitan areas have been defined based on Department of Human Services regions. Rates are expressed per 1,000 population and have been age-standardised to the June 1996 Victorian population. Hospital admissions data includes only Victorian residents hospitalised in Victorian hospitals.

Source: Department of Human Services, Victorian Admitted Episodes Dataset: 1999–00 to 2005–06; Australian Bureau of Statistics population data 1996 to 2006.

In 2005–06, there were 139,290 admissions for diabetes on any diagnosis (principal and additional diagnoses combined), accounting for 6.99 per cent of all hospital admissions, with an average of 5.83 bed days. The overall admission rates for diabetes on any diagnosis increased significantly from 18.41 per 1,000 persons in 1999–00 (95% CI: 18.28–18.53) to 24.98 per 1,000 persons in 2005–06 (24.85–25.10).

A disparity exists in admission rates for diabetes, on any diagnosis, between metropolitan and rural areas. In 2005–06, the admission rate for rural areas (26.63 per 1,000 persons, 95% CI: 26.39–26.86) was significantly higher than the rate for metropolitan areas (24.34 per 1,000 persons, 24.19–24.49).

For more information

Department of Human Services (Health Evaluation and Surveillance Section, Public Health Division) 2002, *The Victorian ambulatory care sensitive conditions study*: www.health.vic.gov.au/healthstatus/acsc

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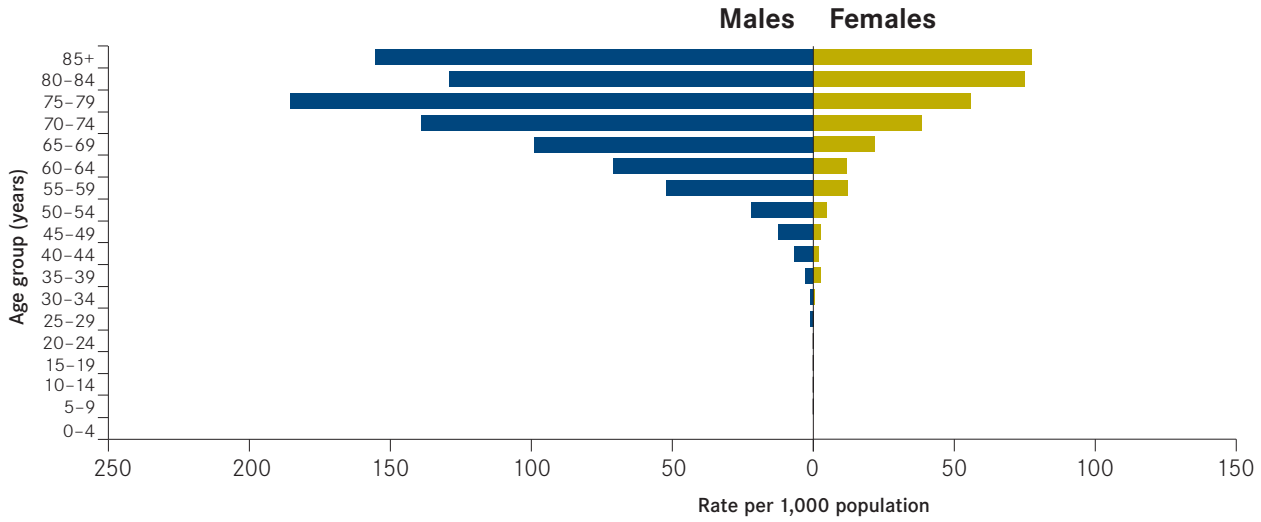
Amputations

Age-specific procedure rates for amputation of a lower limb in people with diabetes, by sex, Victoria 2005–06



Note: Amputation of lower limb (with any diagnosis of diabetes) has been defined based on any procedure codes ICD-10-AM 3700','4436700','4436702','4436100–01','4435800','4436400–01','4436401','4433800', with any diagnosis code 'E10'–'E14'.

Source: Department of Human Services Victorian Admitted Episodes Dataset 2005–06; Australian Bureau of Statistics population data 2006.

People with diabetes have a higher risk of lower limb amputation than people without diabetes. Lower limb loss is most commonly the result of diabetic foot problems such as ulcers and infections, arising from complications of diabetes such as impaired peripheral circulation, nerve function and sensation. Amputation has a considerable impact on individual quality of life and general mobility, and involves a lengthy period of rehabilitation.

In 2005–06, there were 889 hospitalisations for lower limb amputations in Victoria, with diabetes listed as a comorbidity. The average number of bed days per patient was 21.4 days. Amputation rates increased with age, and male amputation rates (24.8 per 100,000 persons, 95% CI: 22.9–26.7) were significantly higher than the rates for females (9.1 per 100,000 persons, 7.9–10.2) in 2005–06.

Appropriate care and management of diabetes can help prevent infection leading to amputation, and people with diabetes are advised to have their feet checked regularly. In 2006, 64.5 per cent of adults with diabetes surveyed in the *Victorian population health survey 2006* reported having had their feet checked by a health professional at least once in the previous 12 months.

For more information

Australian Centre for Diabetes Strategies, 2001, *National evidence based guidelines for the management of Type 2 diabetes mellitus: Primary prevention, case detection and diagnosis*, Sydney: Diabetes Australia Guidelines Development Consortium.

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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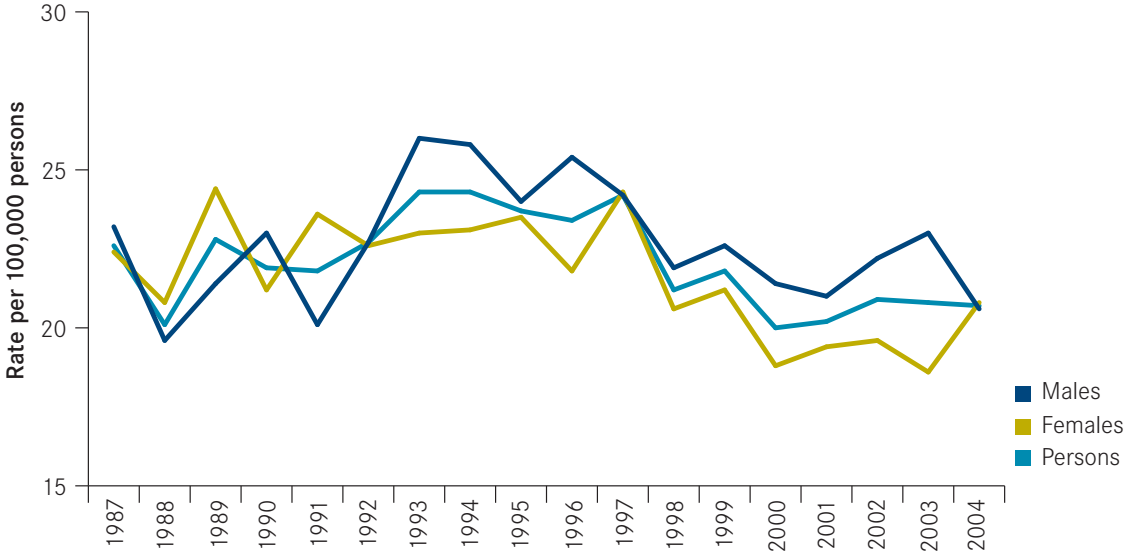
Diabetes deaths

Diabetes death rates for Victoria, by sex, 1987 to 2004



	1987	1988	1989	1990	1991	1992	1993	1994	1995
Males	23.2	19.6	21.4	23.0	20.1	22.7	26.0	25.8	24.0
Females	22.4	20.8	24.4	21.2	23.6	22.9	23.0	23.1	23.5
Persons	22.6	20.1	22.8	21.9	21.8	22.7	24.3	24.3	23.7

	1987	1988	1989	1990	1991	1992	1993	1994	1995
Males	25.4	24.2	21.9	22.6	21.4	21.0	22.2	23.0	20.6
Females	21.8	24.3	20.6	21.2	18.8	19.4	19.6	18.6	20.8
Persons	23.4	24.2	21.2	21.8	20.0	20.2	20.9	20.8	20.7

Note: See Appendix for ICD-10 disease definition codes. All Victorian residents included in deaths data, regardless of where they died in Australia. Victorian residents who died overseas are excluded from the data. Rates are expressed per 100,000 population and are standardised to the June 2001 Victorian population.

Source: Australian Bureau of Statistics Victorian population data: 1987 to 2004; Australian Bureau of Statistics Victorian deaths data: 1987 to 2005.

There were 1,079 deaths in Victoria with diabetes listed as the underlying cause in 2004, accounting for 3.3 per cent of all deaths. However, this is an underestimate of diabetes-related deaths, because diabetes is a contributing factor in a number of deaths, particularly where the underlying cause of death is cardiovascular or renal disease. Diabetes death rates generally increase with age, and in 2004, 89.3 per cent of all diabetes deaths for Victoria occurred among persons aged 65 years and over.

The death rate for diabetes has been relatively constant over the last two decades, however, the last peak occurred in 1997, when there were 1,032 deaths with diabetes listed as the underlying cause of death. Since the early 1990s, male death rates for diabetes have generally been higher than death rates for females.

For more information

AIHW (Australian Institute of Health and Welfare), 2006, *Chronic diseases and associated risk factors in Australia*, 2006, Catalogue no PHE 81, Canberra: Australian Institute of Health and Welfare.

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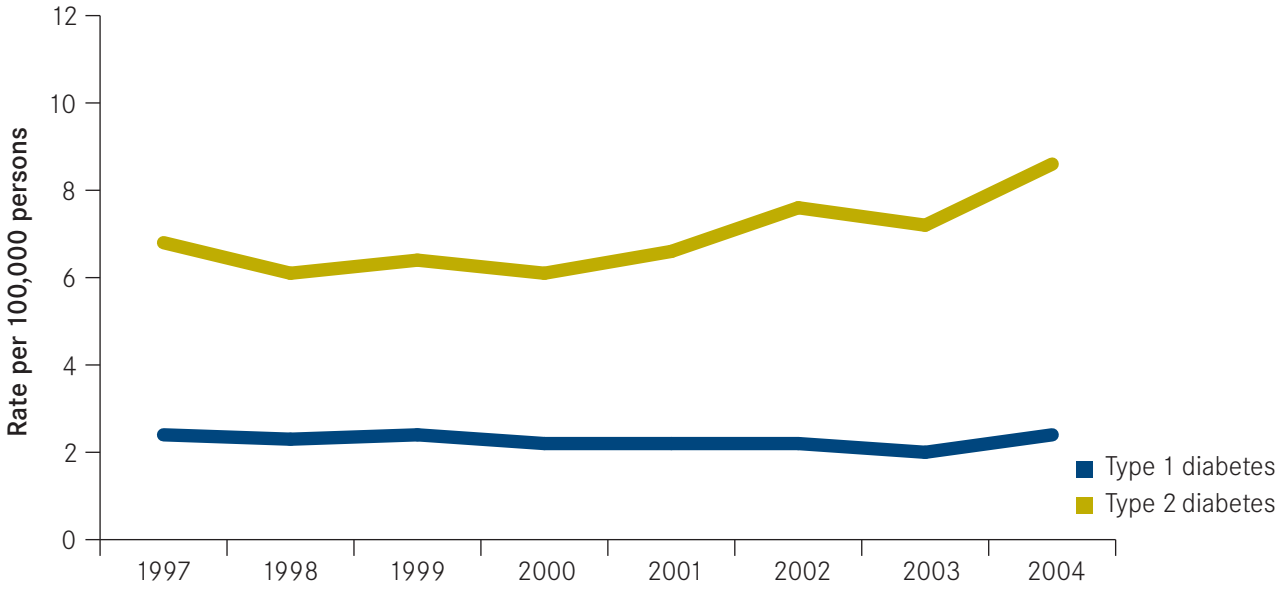
Diabetes deaths by disease type

Diabetes death rates for Victoria, by diabetes type, 1997 to 2004



Standardised admission rate per 1,000 persons	1997	1998	1999	2000	2001	2002	2003	2004
Type 1 diabetes	2.4	2.3	2.4	2.2	2.2	2.2	2.0	2.4
Type 2 diabetes	6.8	6.1	6.4	6.1	6.6	7.6	7.2	8.6

Note: See Appendix for ICD-10 disease definition codes. All Victorian residents included in deaths data, regardless of where they died in Australia. Victorian residents who died overseas are excluded from the data. Rates are expressed per 100,000 population and are standardised to the June 2001 Victorian population.

Source: Australian Bureau of Statistics Victorian population data: 1997 to 2004; Australian Bureau of Statistics Victorian deaths data: 1997 to 2005.

In 2004, there were 126 deaths in Victoria with Type 1 diabetes listed as the underlying cause of death. The number of deaths each year from Type 1 diabetes has not changed significantly since the late 1990s, so the death rate has remained relatively constant. However, the number of deaths with Type 2 diabetes listed as the underlying cause of death increased from 287 deaths in 1997 to 448 deaths in 2004. The death rate increased significantly over this period, up from 6.8 deaths (6.0–7.6) per 100,000 persons in 1997 to 8.6 deaths (7.8–9.4) per 100,000 persons in 2004.

For more information

AIHW (Australian Institute of Health and Welfare), 2006, *Chronic diseases and associated risk factors in Australia*, 2006, Catalogue no PHE 81, Canberra: Australian Institute of Health and Welfare.

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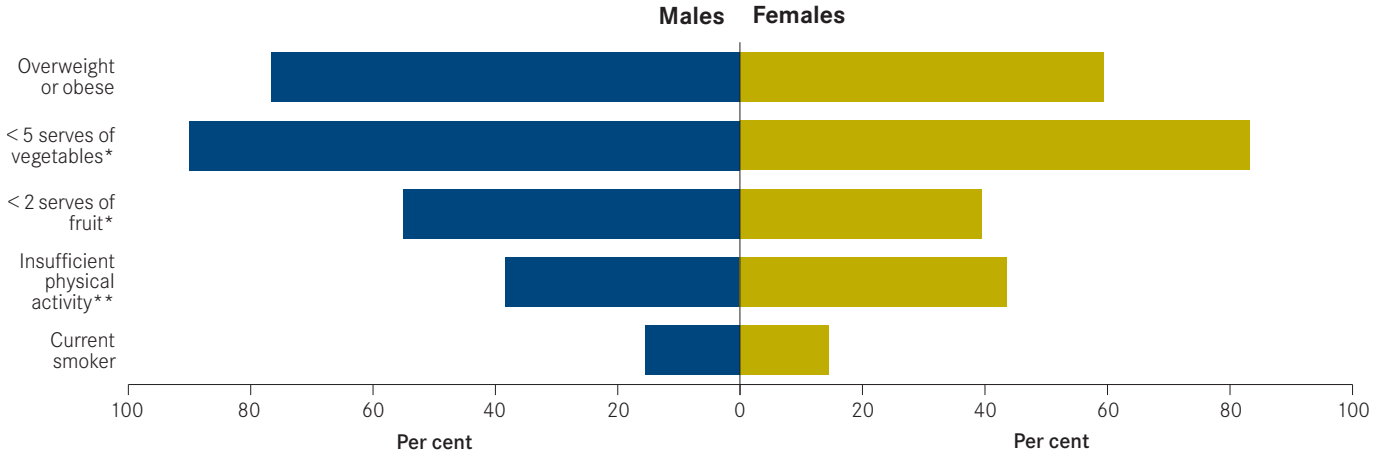
Cardiovascular disease risk factors for persons diagnosed with diabetes

Cardiovascular disease risk factors for persons aged 18 years or over with doctor-diagnosed diabetes, by sex, Victoria, 2006.



	Males		Females		Persons	
	%	SE (%)	%	SE (%)	%	SE (%)
Overweight or obese	76.6	4.1	59.3	3.7	67.4	2.8
< 5 serves of vegetables*	90.0	2.3	83.2	2.8	86.4	1.9
< 2 serves of fruit*	55.0	4.6	39.5	3.7	46.7	3.0
Insufficient physical activity**	38.4	4.7	43.6	3.8	41.1	3.0
Current smoker	15.5	3.8	14.5	2.6	15.0	2.3

Note: SE = standard error. * Current national nutrition guidelines recommend consumption of two serves of fruit and five serves of vegetables a day for adults. ** Current national physical activity guidelines recommend at least 30 minutes of moderate intensity physical activity on most, preferably all, days for adults.

Source: Department of Human Services, Victorian population health survey 2006.

Diabetes is a risk factor for cardiovascular disease. The results of the *Victorian population health survey 2006* (VPHS) show that approximately 23.3 per cent of adults aged 18 years and over with doctor-diagnosed diabetes had also been diagnosed with heart disease, and 6.6 per cent had been diagnosed with stroke. This compares to prevalence rates of 6.8 per cent for heart disease and 1.9 per cent for stroke in the wider population.

The survey showed that the prevalence of cardiovascular disease risk factors were high among adults with doctor-diagnosed diabetes. Two-thirds (67.4 per cent) of adults who reported doctor-diagnosed diabetes also reported being overweight or obese. The majority (86.4 per cent) reported that they consumed less than the recommended number of serves of vegetables each day and almost half (46.7 per cent) reported consuming less than the recommended number of serves of fruit each day. Insufficient physical activity levels were also high, with 41.1 per cent of adults reporting insufficient levels of physical activity to meet national guidelines.

For more information

Department of Health and Aged Care, 1999, *National physical activity guidelines for adults*, Canberra: DoHAC.

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

National Health and Medical Research Council, 2003, *Dietary guidelines for australian adults*, Canberra: AusInfo.

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Cancer

In this chapter

- **burden of cancer**
- **all cancer**
- **bowel cancer**
- **breast cancer**
- **prostate cancer**
- **lung cancer**
- **melanoma**

Summary

Cancer was responsible for approximately 20 per cent of the total disease burden in Victoria in 2001, or 71,141 DALYs in males and 64,011 DALYs in females.

Cancer was the leading cause of death in Victoria in 2004, accounting for 29.6 per cent of all deaths.

Prostate cancer was the leading site of new cancer in Victorians in 2004. It accounted for 16 per cent of all new cancers in 2004 and 29 per cent of new cancers in men. Incidence rates, which fell sharply from 1995 to 1997, then stabilised until 2002, rose significantly in 2003 and 2004.

Bowel (colon and rectum) cancer was the second-most common new cancer in Victoria in 2004, with 3,424 cases (14 per cent of all cancers). The standardised incidence rates in 2004 were significantly different for males and females, with 78.5 new case per 100,000 males (95% CI: 75.0–82.1) and 54.9 (52.3–57.7) new cases per 100,000 females. Incidence rates have remained stable over the period 1992 to 2004.

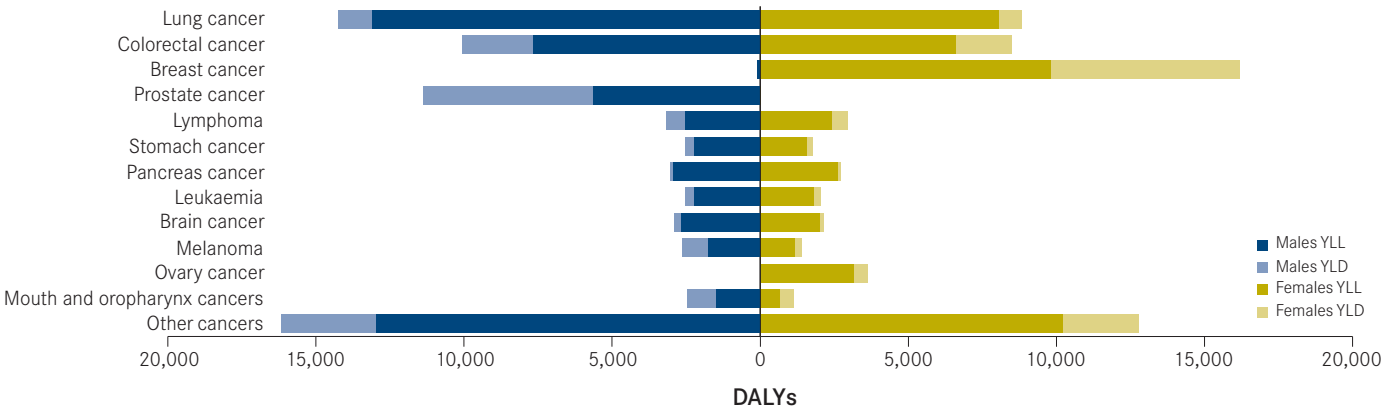
Breast cancer was the third-most common new cancer in 2004. There were 3,047 new cases of breast cancer in females in 2004. Incidence rates in women have remained stable since 1995.

Lung cancer remained the fourth-most common new cancer in Victoria and the leading cause of cancer death in 2004. Incidence rates have remained stable for both males and females over the interval 1992 to 2004 although rates were significantly lower among females. In 2004, the age-standardised incidence rate was 63.2 per 100,000 males (95% CI: 60.1–66.5) and 29.4 (27.5–31.4) per 100,000 females.

Melanoma was the fifth-most common new cancer in Victorians in 2004. Incidence rates have been stable for both males and females over the period 1992–2004. In 2004 there were 1,090 new cases in males and 869 new cases in females.

Burden of cancer

Burden of cancer for top twelve sites, by sex, Victoria, 2001



	Males			Females		
Cancer	**DALYs**	**YLLs**	**YLDs**	**DALYs**	**YLLs**	**YLDs**
Other cancers	16,176	12,961	3,215	12,762	10,211	2,551
Mouth and oropharynx cancers	2,448	1,479	969	1,112	666	446
Ovary cancer	-	-	-	3,626	3,172	453
Melanoma	2,628	1,733	895	1,386	1,166	221
Brain cancer	2,907	2,642	265	2,152	2,002	150
Leukaemia	2,538	2,222	316	2,046	1,807	238
Pancreas cancer	3,030	2,920	110	2,716	2,613	103
Stomach cancer	2,533	2,226	307	1,762	1,560	202
Lymphoma	3,153	2,533	620	2,954	2,430	524
Prostate cancer	1,1362	5,614	5,748	-	-	-
Breast cancer	85	85	-	16,182	9,797	6,385
Colorectal cancer	10,039	7,636	2,403	8,489	6,599	1,890
Lung cancer	14,240	13,079	1,161	8,824	8,070	755
Total	**71,141**	**55,131**	**16,010**	**64,011**	**50,093**	**13,919**

Note: DALYs = disability-adjusted life years; YLLs = years of life lost; YLDs = years lived with disability.

Source: Department of Human Services, 2005, *The Victorian burden of disease study: mortality and morbidity in 2001*, Appendix 2.

Cancer was responsible for approximately 20 per cent of the total disease burden in Victoria in 2001, or 71,141 DALYs in males and 64,011 in females. Almost 80 per cent of this attributable burden was due to mortality. In males, the picture was dominated by lung, prostate and colorectal cancers, which accounted for almost 50 per cent of the overall burden attributable to cancer. Lung cancer was the fourth leading cause of overall burden in males, while prostate cancer and colorectal cancer were seventh and ninth respectively.

Cancer in females was dominated by breast, lung and colorectal cancers, which together accounted for over 50 per cent of the overall burden attributable to cancer. Breast cancer was the fifth leading cause of the overall burden in females, while lung and colorectal cancers were eighth and tenth respectively.

The contribution of lung, mouth and oropharynx cancers was almost twice as large in males as in females. This was largely due to the higher prevalence of smoking in males, compared to females, more than 20 years ago. The per capita burden from cancer increased exponentially with age, from insignificant proportions in young adulthood to almost 20 per cent of the total burden in the elderly.

For more information

Department of Human Services, 2005, *Victorian burden of disease study: Mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/healthstatus

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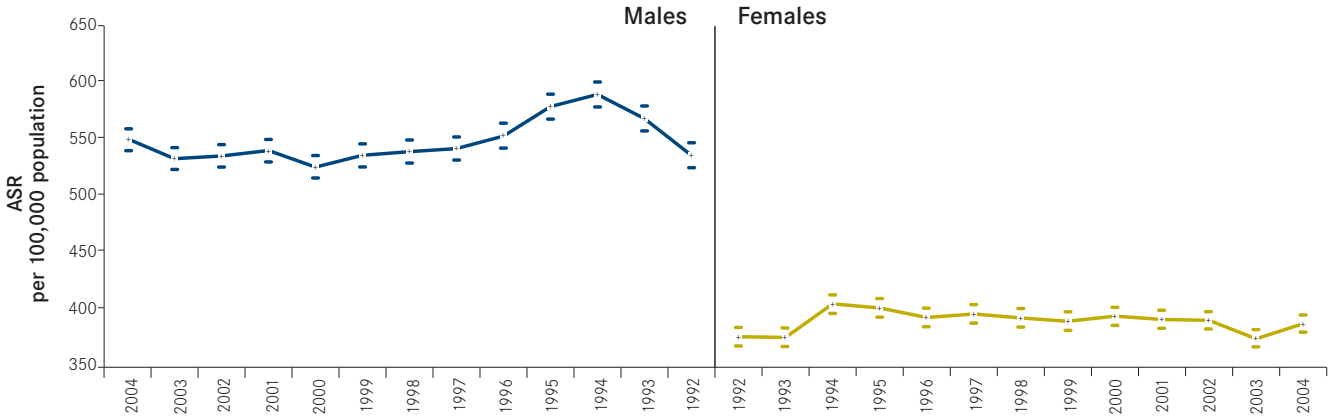
All cancers

Overall cancer incidence (age-standardised rates), by sex, Victoria, 1992–2004



		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Males	Cases	9,397	10,244	10,806	10,840	10,644	10,692	10,832	11,032	11,096	11,681	12,022	12,291	13,019
	ASR	**536.6**	**569.0**	**590.3**	**579.6**	**553.6**	**542.6**	**539.9**	**536.7**	**526.3**	**540.9**	**536.1**	**533.7**	**551.2**
	Lower 95% CI	525.9	558.1	579.3	568.8	543.2	532.5	529.9	526.8	516.6	531.2	526.6	524.4	541.8
	Upper 95% CI	547.6	580.1	601.5	590.6	564.3	553.0	550.2	546.8	536.2	550.8	545.8	543.3	560.8
Females	Cases	8,221	8,318	9,109	9,164	9,218	9,490	9,607	9,734	10,054	10,176	10,445	10,236	10,791
	ASR	**376.8**	**376.2**	**405.7**	**402.1**	**393.7**	**396.8**	**393.3**	**390.4**	**394.9**	**392.0**	**391.2**	**375.0**	**388.3**
	Lower 95% CI	368.7	368.2	397.4	393.9	385.8	388.9	385.5	382.7	387.2	384.5	383.8	367.8	381.0
	Upper 95% CI	385.0	384.4	414.1	410.4	401.9	404.9	401.2	398.2	402.7	399.7	398.8	382.3	395.6

Notes: ASR = age-standardised incidence rate per 100,000 (standardised to Victorian 2001 population) males and females respectively.
Cases = new diagnoses in calendar year.
CI = confidence interval.

Source: The Cancer Council Victoria, Cancer Epidemiology Centre, Cancer Control Research Institute.

Cancer incidence is defined as the occurrence of new cancers in a defined population in a specified time period. Cancer incidence is usually reported in terms of age-standardised rates to minimise the effects of differences in age composition and thus facilitate valid comparison of rates for populations with different age compositions. Differences in age composition may emerge over time or between population sub-groups.

There were 23,810 new cases of cancer in Victoria in 2004, 13,019 in men and 10,791 in women. The age-standardised incidence rates in 2004 were 551.2 per 100,000 males and 388.3 per 100,000 females.

Survival is usually defined as the estimated proportion of persons with cancer who survive at least five years from their diagnosis, referred to as five-year survival.

In 2004 the overall five-year survival rate for all cancers in Victorians was 61 per cent. However five-year survival was significantly higher for females than males. In 2004, 64 per cent (95% CI: 63–65) of females with cancer survived at least five years compared with 58 per cent (57–59) of males.

Cancer was the leading cause of death in Victoria in 2004. There were a total of 9,613 deaths from cancer, which accounted for 29.6 per cent of all deaths.

For more information

English, D, Farrugia, H, Thursfield, V, Chang, P, and Giles, G, 2007, *Cancer survival Victoria 2007: estimates of survival in 2004 (and comparisons with earlier periods)*, Melbourne, Australia: Victorian Cancer Registry, Cancer Epidemiology Centre, The Cancer Council Victoria.

The Cancer Council Victoria, 2006, *Canstat: Cancer in Victoria 2004*.

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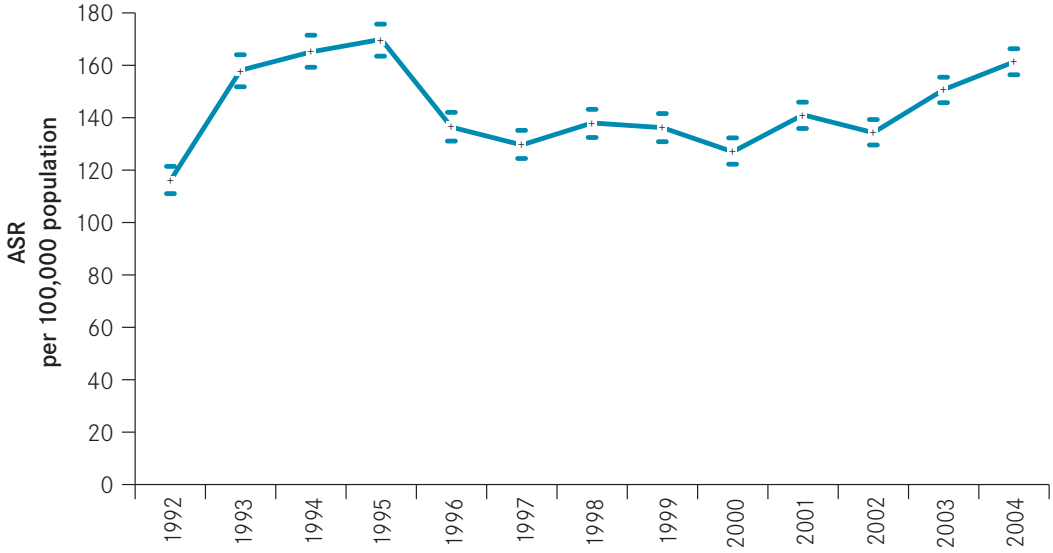
Prostate cancer

Prostate cancer incidence (age-standardised rates), males, Victoria, 1992–2004



		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Males	Cases	1,868	2,707	2,917	3,107	2,559	2,470	2,677	2,729	2,624	2,994	2,991	3,461	3,838
	ASR	**116.0**	**158.1**	**165.1**	**169.9**	**136.4**	**129.6**	**138.0**	**136.2**	**127.0**	**141.1**	**134.3**	**150.7**	**161.3**
	Lower 95% CI	110.8	152.2	159.3	164.0	131.2	124.6	132.8	131.1	122.2	136.1	129.6	145.7	156.3
	Upper 95% CI	121.3	164.1	171.3	176.0	141.8	134.8	143.3	141.4	131.9	146.2	139.2	155.8	166.5

Notes: ASR = age-standardised incidence rate per 100,000 (standardised to Victorian 2001 population) males. Cases = new diagnoses in calendar year. CI =confidence interval.

Source: The Cancer Council Victoria, Cancer Epidemiology Centre, Cancer Control Research Institute.

In 2004 prostate cancer became the leading site for new cancers. It accounted for 16 per cent of all cancers and 29 per cent of cancers in men.

Incidence rates, which fell sharply from 1995 to 1997 then stabilised until 2002, have increased significantly in 2003 and 2004. In 2004, 3,838 new cases of prostate cancer were reported, with an age-standardised incidence rate of 161.3 per 100,000 persons. This represents a significant increase of almost 20 per cent since 2002.

In 2004 the five-year survival rate for prostate cancer was 84 per cent.

For more information

English, D, Farrugia, H, Thursfield, V, Chang, P, and Giles, G, 2007, *Cancer survival Victoria 2007: estimates of survival in 2004 (and comparisons with earlier periods)*, Melbourne, Australia: Victorian Cancer Registry, Cancer Epidemiology Centre, The Cancer Council Victoria.

The Cancer Council Victoria, 2006, *Canstat: Cancer in Victoria 2004*.

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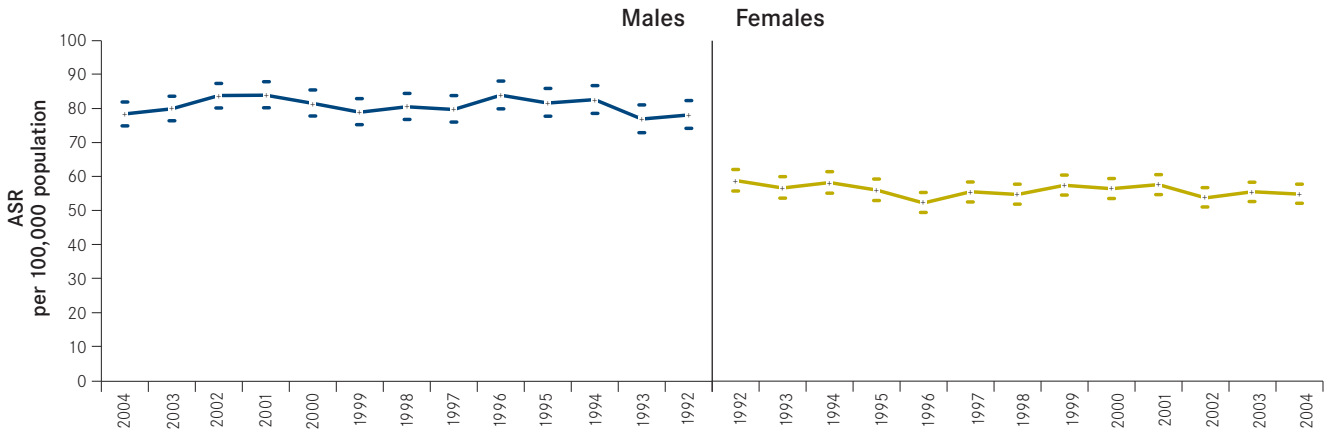
Bowel cancer

Bowel cancer incidence (age-standardised rates), by sex, Victoria, 1992–2004



		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Males	Cases	1,362	1,395	1,511	1,523	1,617	1,569	1,627	1,635	1,717	1,813	1,879	1,844	1,850
	ASR	**78.2**	**77.0**	**82.7**	**81.7**	**84.0**	**79.8**	**80.6**	**79.0**	**81.6**	**84.0**	**83.9**	**80.0**	**78.5**
	Lower 95% CI	74.2	73.0	78.6	77.7	80.0	76.0	76.8	75.2	77.8	80.3	80.2	76.4	75.0
	Upper 95% CI	82.5	81.1	87.0	85.9	88.2	83.9	84.6	82.9	85.5	88.0	87.7	83.7	82.1
Females	Cases	1,297	1,272	1,326	1,303	1,256	1,360	1,372	1,469	1,476	1,539	1,478	1,561	1,574
	ASR	**58.9**	**56.7**	**58.3**	**56.1**	**52.3**	**55.6**	**54.8**	**57.5**	**56.5**	**57.7**	**53.8**	**55.6**	**54.9**
	Lower 95% CI	55.8	53.7	55.2	53.1	49.5	52.7	52.0	54.7	53.7	54.9	51.1	52.9	52.3
	Upper 95% CI	62.2	59.9	61.5	59.2	55.3	58.6	57.8	60.5	59.4	60.7	56.6	58.4	57.7

Notes: ASR = age-standardised incidence rate per 100,000 (standardised to Victorian 2001 population) males and females respectively. Cases = new diagnoses in calendar year. CI = confidence interval.

Source: The Cancer Council Victoria, Cancer Epidemiology Centre, Cancer Control Research Institute.

Bowel (colon and rectum) cancer was the second-most common new cancer in Victoria in 2004, with 3,424 cases (14 per cent of all cancers). The standardised incidence rates in 2004 were significantly different for males and females, with 78.5 new case per 100,000 males (95% CI: 75.0-82.1) and 54.9 (52.3-57.7) new cases per 100,000 females. Incidence rates have remained stable over the period 1992 to 2004.

In 2004 the five-year survival rate for both colon and rectal cancer was 63 per cent. There was no significant difference between males and females.

For more information

English, D, Farrugia, H, Thursfield, V, Chang, P, and Giles, G, 2007, *Cancer survival Victoria 2007: estimates of survival in 2004 (and comparisons with earlier periods)*, Melbourne, Australia: Victorian Cancer Registry, Cancer Epidemiology Centre, The Cancer Council Victoria.

The Cancer Council Victoria, 2006, *Canstat: Cancer in Victoria 2004*.

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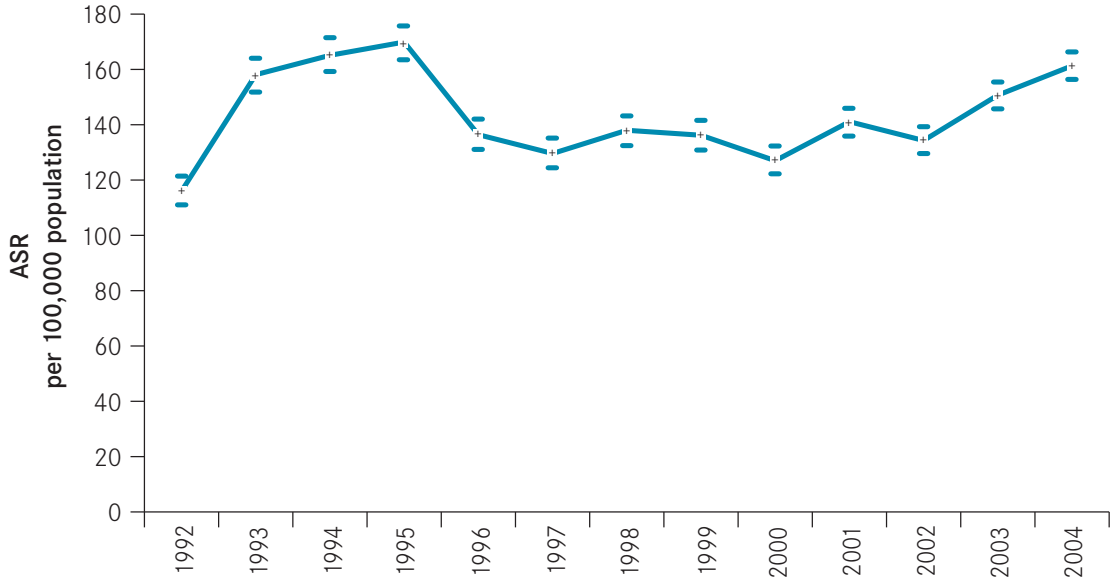
Breast cancer

Breast cancer incidence (age-standardised rates), females, Victoria, 1992–2004



		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Females	Cases	2,140	2,266	2,672	2,658	2,626	2,619	2,738	2,806	2,903	2,974	2,983	2,880	3,047
	ASR	**101.0**	**105.1**	**122.0**	**119.6**	**115.0**	**112.6**	**115.0**	**115.7**	**117.2**	**117.8**	**114.9**	**108.5**	**112.5**
	Lower 95% CI	96.8	100.9	117.5	115.2	110.7	108.3	110.7	111.5	113.0	113.6	110.9	104.6	108.6
	Upper 95% CI	105.3	109.6	126.7	124.3	119.5	116.9	119.4	120.0	121.5	122.1	119.1	112.5	116.6

Notes: ASR = age-standardised incidence rate per 100,000 (standardised to Victorian 2001 population) females. Cases = new diagnoses in calendar year. CI = confidence interval.

Source: The Cancer Council Victoria, Cancer Epidemiology Centre, Cancer Control Research Institute.

Breast cancer was the third-most common new cancer in 2004, with 3,047 cases in females and 23 cases in males. Incidence rates in females have remained stable since 1995. The 2004 age-standardised incidence rate was 112.5 (95% CI: 108.6–116.6) per 100,000 females.

In 2004 the five-year survival for breast cancer for females was 87 per cent.

For more information

English, D, Farrugia, H, Thursfield, V, Chang, P, and Giles, G, 2007, *Cancer survival Victoria 2007: estimates of survival in 2004 (and comparisons with earlier periods)*, Melbourne, Australia: Victorian Cancer Registry, Cancer Epidemiology Centre, The Cancer Council Victoria.

The Cancer Council Victoria, 2006, *Canstat: Cancer in Victoria 2004*.

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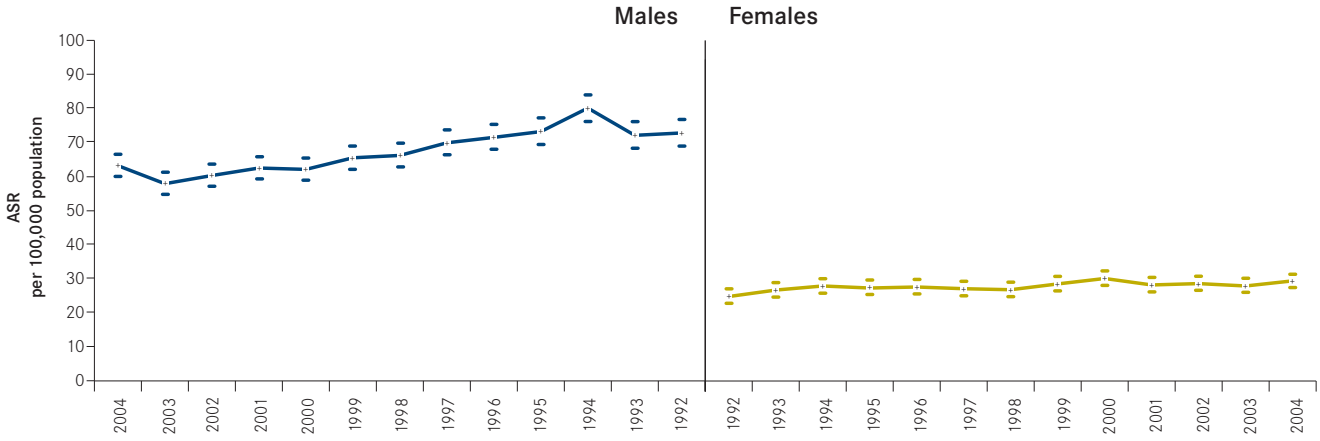
Lung cancer

Lung cancer incidence (age-standardised rates), by sex, Victoria, 1992–2004



		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Males	Cases	1,288	1,313	1,477	1,376	1,374	1,373	1,324	1,334	1,304	1,345	1,338	1,315	1,472
	ASR	**72.8**	**72.1**	**80.1**	**73.2**	**71.5**	**69.9**	**66.2**	**65.5**	**62.1**	**62.5**	**60.3**	**57.9**	**63.2**
	Lower 95% CI	68.9	68.3	76.1	69.4	67.8	66.3	62.7	62.1	58.8	59.3	57.2	54.8	60.1
	Upper 95% CI	76.9	76.1	84.2	77.2	75.4	73.7	69.8	69.1	65.5	66.0	63.7	61.1	66.5
Females	Cases	554	597	634	631	654	660	661	721	774	744	777	774	837
	ASR	**24.8**	**26.7**	**27.9**	**27.3**	**27.6**	**27.1**	**26.8**	**28.5**	**30.1**	**28.2**	**28.6**	**27.9**	**29.4**
	Lower 95% CI	22.8	24.6	25.8	25.3	25.6	25.1	24.8	26.5	28.0	26.2	26.7	26.0	27.5
	Upper 95% CI	27.0	28.9	30.1	29.6	29.8	29.3	28.9	30.6	32.3	30.3	30.7	30.0	31.4

Notes: ASR = age-standardised incidence rate per 100,000 (standardised to Victorian 2001 population) males and females respectively. Cases = new diagnoses in calendar year. CI = confidence interval.

Source: The Cancer Council Victoria, Cancer Epidemiology Centre, Cancer Control Research Institute.

Lung cancer remained the fourth-most common new cancer in Victoria with 2,309 new cases in 2004. Incidence rates continue to remain stable for both males and females although rates are significantly lower among females. The age-standardised incidence rate in 2004 was 63.2 per 100,000 in males and 29.4 per 100,000 in females.

The overall five-year survival rate from lung cancer was 11 per cent and is significantly higher in women (14 per cent; 95% CI: 12–16) than in men (9 per cent, 8–10).

For more information

English, D, Farrugia, H, Thursfield, V, Chang, P, and Giles, G, 2007, *Cancer survival Victoria 2007: estimates of survival in 2004 (and comparisons with earlier periods)*, Melbourne, Australia: Victorian Cancer Registry, Cancer Epidemiology Centre, The Cancer Council Victoria.

The Cancer Council Victoria, 2006, *Canstat: Cancer in Victoria 2004*.

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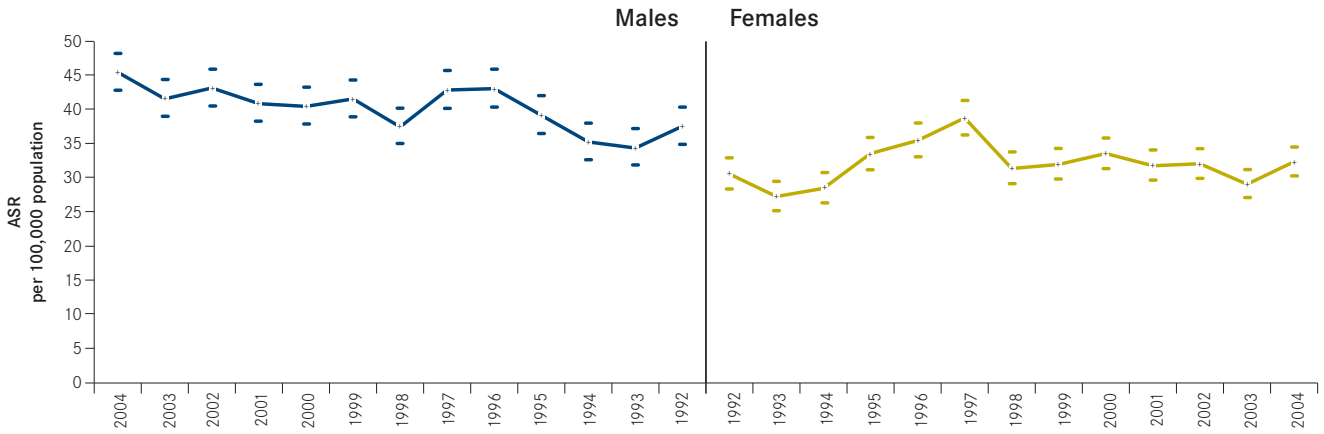
Melanoma

Melanoma cancer incidence (age-standardised rates), by sex, Victoria, 1992–2004



		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Males	Cases	712	657	687	773	870	899	788	884	886	914	993	978	1,090
	ASR	**37.6**	**34.4**	**35.3**	**39.2**	**43.1**	**42.9**	**37.5**	**41.6**	**40.5**	**40.9**	**43.2**	**41.6**	**45.5**
	Lower 95% CI	34.9	31.9	32.7	36.6	40.3	40.2	35.0	39.0	37.9	38.3	40.6	39.1	42.9
	Upper 95% CI	40.5	37.2	38.0	42.1	46.0	45.8	40.2	44.4	43.2	43.7	45.9	44.3	48.3
Females	Cases	670	600	633	760	816	913	749	783	838	801	833	771	869
	ASR	**30.6**	**27.3**	**28.5**	**33.6**	**35.5**	**38.8**	**31.4**	**32.0**	**33.6**	**31.8**	**32.1**	**29.1**	**32.4**
	Lower 95% CI	28.4	25.2	26.3	31.3	33.1	36.4	29.2	29.9	31.4	29.7	30.0	27.1	30.3
	Upper 95% CI	33.0	29.5	30.8	36.0	38.0	41.5	33.8	34.4	35.9	34.1	34.3	31.2	34.6

Notes: ASR = age-standardised incidence rate per 100,000 (standardised to Victorian 2001 population) males and females respectively. Cases = new diagnoses in calendar year. CI = confidence interval.

Source: The Cancer Council Victoria, Cancer Epidemiology Centre, Cancer Control Research Institute.

Melanoma was the fifth-most common new cancer 2004 with 1,959 new cases. Incidence rates remained stable for both males and females over the period 1992–2004. The 2004 age-standardised incidence rate was lower in males than in females, at 45.5 per 100,000 in males (95% CI: 42.9-48.3) and 32.4 (30.3-34.6) per 100,000 in females.

In 2004 the overall five-year survival rate for melanoma was 90 per cent and was significantly higher for females (93 per cent; 95% CI: 91–95) compared with males (88 per cent; 85–90). This was the highest survival rate of any cancer, except testicular cancer in males and thyroid cancer in females.

For more information

English, D, Farrugia, H, Thursfield, V, Chang, P, and Giles, G, 2007, *Cancer survival Victoria 2007: estimates of survival in 2004 (and comparisons with earlier periods)*, Melbourne, Australia: Victorian Cancer Registry, Cancer Epidemiology Centre, The Cancer Council Victoria.

The Cancer Council Victoria, 2006, *Canstat: Cancer in Victoria 2004*.

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Asthma

In this chapter

- burden of asthma
- prevalence of asthma
- asthma admissions
- asthma deaths
- asthma and quality of life

Summary

Chronic respiratory disease was responsible for seven per cent of the total disease burden (DALYs) in Victoria in 2001. Asthma was responsible for over one-third of the burden, with the attributable burden due to premature mortality less than 10 per cent.

Estimates from the *Victorian population health survey 2006* (VPHS) indicate that approximately one in five adults (21.2 per cent) aged 18 years and over had ever been told by a doctor that they had asthma, and one in ten (10.5 per cent) had current asthma (had experienced asthma symptoms in the previous 12 months). Younger adults were more likely than older adults to have ever been diagnosed with asthma, with 32.5 per cent of males and 31.0 per cent of females aged 18–24 years ever having been told by a doctor that they had the condition.

Just over half (53.7 per cent) of all adults aged 18 years and over diagnosed with current asthma had an asthma action plan in 2006.

Based on the VPHS 2006, approximately one in five (22.5 per cent) adults with current asthma were also current smokers.

VPHS 2006 survey estimates also suggest that people with asthma are more likely to experience poor health-related quality of life than people who do not have asthma. In 2006 42.0 per cent (95% CI: 37.1–46.9) of adults with current asthma rated their health as 'excellent' or 'very good', compared to 49.3 per cent (47.5–51.1) of adults who had never had asthma.

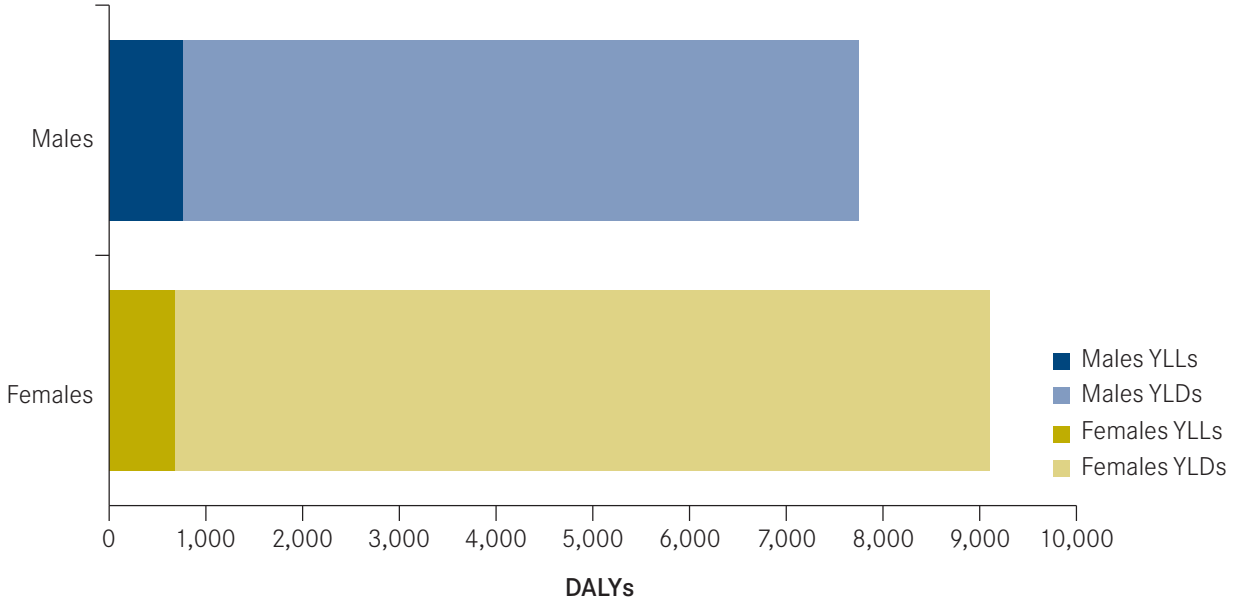
There were 9,022 hospital admissions for asthma in 2005–06 with an average of 2.22 bed days. The overall admission rate for asthma has decreased significantly, from 2.15 per 1,000 persons (95% CI: 2.11–2.20) in 1999–00 to 1.96 (1.92–2.00) per 1,000 persons in 2005–06, an 8.8 per cent reduction in admission rates over this period.

Hospital admission rates for asthma have declined in both rural and metropolitan areas. The rural admission rates for asthma declined significantly, from 2.66 per 1,000 persons (95% CI: 2.57–2.76) in 1999–2000 to 2.09 (2.01–2.17) in 2005–06 (a 21.4 per cent reduction). During the same period, admission rates in metropolitan areas declined slightly from 1.95 (95% CI: 1.90–2.00) to 1.91 (1.87–1.96) per 1,000 persons.

There were 78 deaths registered for Victorian residents in which asthma was the underlying cause in 2004, accounting for 0.2 per cent of all deaths. The death rate for asthma has decreased significantly over the last twenty years, from 7.1 deaths per 1,000 persons (95% CI: 6.2–8.0) in 1987 to 1.5 (1.2–1.9) per 1,000 persons in 2004, a 78.9 per cent reduction in the death rate over this period. The reduction in mortality is largely attributed to improvements in the management of asthma over time, leading to a reduction in the risk of death for people with asthma.

Burden of asthma

Burden of asthma, by sex, Victoria, 2001



Asthma	DALYs	YLLs	YLDs
Females	9,109	681	8,425
Males	7,748	758	6,990
Persons	16,854	1,439	15,415

Note: DALYs = disability adjusted life years, YLLs = years of life lost, YLDs = years lived with disability.

Source: Department of Human Services, Victorian burden of disease study: mortality and morbidity in 2001, Appendix 2.

Chronic respiratory disease was responsible for seven per cent of the total disease burden in Victoria in 2001. Asthma was responsible for over one-third of the burden, with the attributable burden due to premature mortality less than 10 per cent. In terms of the contribution to the overall burden in Victoria, asthma ranked thirteenth for males and seventh for females.

The asthma burden for Victoria in 2001 (DHS, 2005) was very similar to the burden for Australia in 2003 (Begg et al, 2007). Chronic respiratory disease was responsible for 7.1 per cent of the national burden of disease in 2003. Asthma accounted for over one-third of the chronic respiratory disease burden and 2.4 per cent of the total disease burden for Australia. Most of the national asthma burden was due to morbidity, with only six per cent attributable to mortality in 2003.

The current focus for minimising the burden of asthma is directed at appropriate management of the disease. This includes maintaining regular contact with a doctor, developing a personalised asthma action plan, monitoring symptoms, taking medications appropriately (especially corticosteroids), identifying and avoiding asthma triggers, and being physically active.

For more information

Department of Human Services (DHS), 2005, *Victorian burden of disease study: Mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/healthstatus

ACT Health 2006, *ACT Chief Health Officer's Report 2006*, ACT Health, Canberra.

Australian Centre for Asthma Monitoring (ACAM), 2007, *Asthma in Australia: Findings from the 2004–05 National Health Survey*, Catalogue no ACM 10, Canberra: Australian Institute of Health and Welfare.

Australian Centre for Asthma Monitoring (ACAM), 2005, *Asthma in Australia 2005*, Catalogue no ACM 6, Canberra: Australian Institute of Health and Welfare.

Begg, S, Vos, T, Barker, B, Stevenson, C, Stanley, L, Lopez, AD, 2007, *The burden of disease and injury in Australia 2003*, PHE 82. Canberra: Australian Institute of Health and Welfare.

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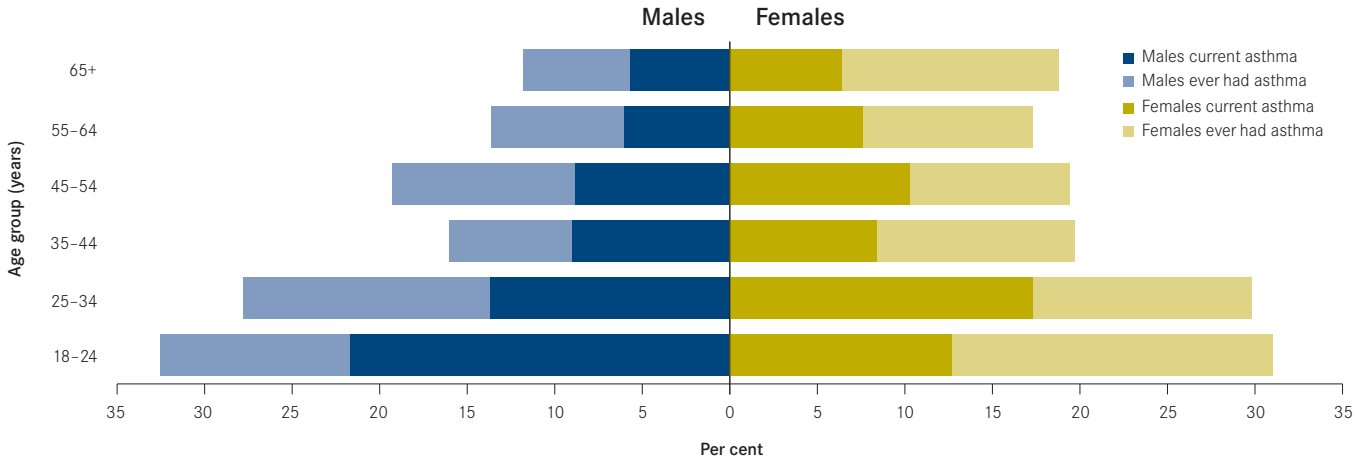
Prevalence of asthma

Prevalence of asthma, by sex and age group, Victoria 2006



	Ever had asthma				Current asthma			
	Males		Females		Males		Females	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE(%)**	**%**	**SE (%)**
18–24	32.5	4.0	31.0	3.6	21.7	3.4	12.7	2.4
25–34	27.8	3.4	29.8	2.4	13.7	2.4	17.3	2.1
35–44	16.0	2.0	19.7	1.5	9.0	1.6	8.4	1.1
45–54	19.3	2.0	19.4	1.7	8.8	1.4	10.3	1.3
55–64	13.6	2.0	17.3	1.6	6.0	1.3	7.6	1.2
65+	11.8	1.5	18.8	1.7	5.7	1.1	6.4	1.1
Total	**20.0**	**1.1**	**22.4**	**0.9**	**10.6**	**0.8**	**10.4**	**0.6**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

Estimates from the *Victorian population health survey 2006* (VPHS) indicate that approximately 820,000 adults (21.2 per cent) aged 18 years or over had ever been diagnosed with asthma, and just over 400,000 (10.5 per cent) had current asthma, or asthma symptoms in the previous 12 months. Although self-reported prevalence levels were similar between males and females, survey estimates suggest that asthma prevalence varied by age, with younger adults more likely than older adults to report having ever been diagnosed with asthma, or having current asthma.

When asked about asthma action plans, just over half (53.7 per cent) of all adults reporting current asthma in the VPHS also reported having been given an asthma action plan by their doctor. Among those with a plan, 91.2 per cent reported it helpful with the day-to-day management of their condition, 88.9 per cent reported it helpful for knowing when to seek medical advice and 69.2 per cent reported it helpful for managing an acute attack.

Estimates from the VPHS also indicate that approximately one in five (22.5 per cent) adults reporting current asthma also reported being a current smoker.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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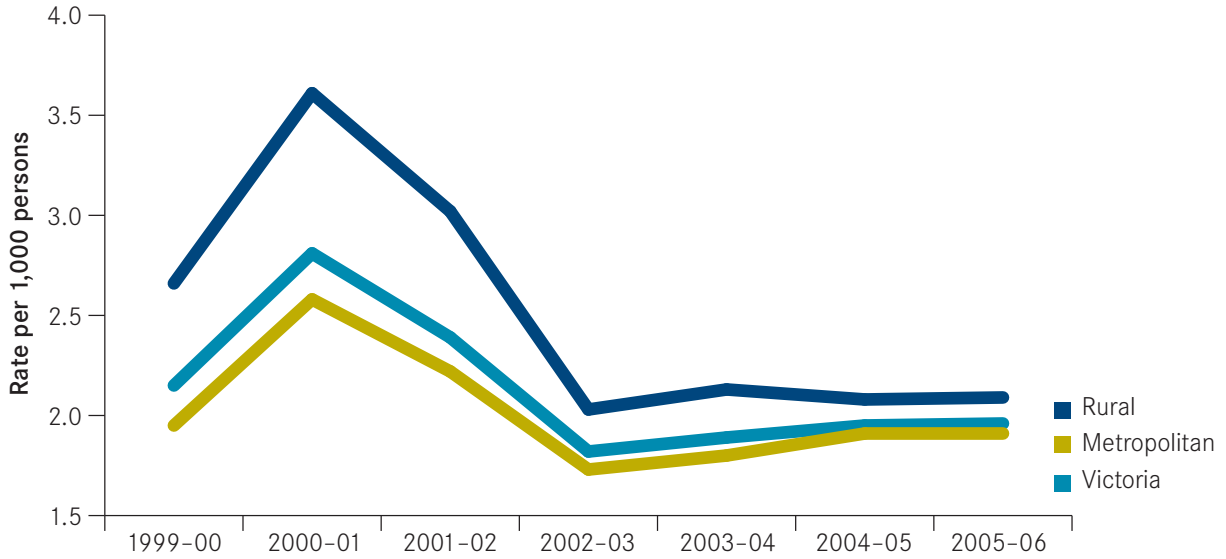
Asthma (principal diagnosis) admissions

Asthma admission rates for rural and metropolitan areas, Victoria, 1999–00 to 2005–06



		1999–00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	2.66	3.61	3.02	2.03	2.13	2.08	2.09
per 1,000 persons	Metropolitan	1.95	2.58	2.22	1.73	1.80	1.91	1.91
	Victoria	2.15	2.81	2.39	1.82	1.89	1.95	1.96
Rural:Metro rate ratios (Metro=1)		**1.36**	**1.40**	**1.36**	**1.17**	**1.18**	**1.12**	**1.09**

Note: Asthma has been defined by ICD-10-AM codes principal (first) diagnosis 'J45' & 'J46'. Rural and metropolitan areas have been defined based on Department of Human Services regions. Rates are expressed per 1,000 population and have been age-standardised to the June 1996 Victorian population. Admissions data includes only Victorian residents admitted to Victorian hospitals.

Source: Department of Human Services, Victorian Admitted Episodes Dataset: 1999-00 to 2005-06; Australian Bureau of Statistics population data 1999 to 2006.

There were 9,022 hospital admissions for asthma in 2005–06, with an average of 2.22 bed days, where asthma was listed as the principal (first) diagnosis. The overall admission rate for asthma decreased significantly from 2.15 per 1,000 persons (95% CI: 2.11–2.20) in 1999–00 to 1.96 (1.92–2.00) per 1,000 persons in 2005–06, an 8.8 per cent reduction in admission rates over this period.

This significant decline in asthma admission rates occurred in both rural and metropolitan areas. The rural admission rates for asthma declined from 2.66 per 1,000 persons (95% CI: 2.57–2.76) in 1999–2000 to 2.09 (2.01–2.17) per 1,000 persons in 2005–06 (a 21.4 per cent reduction). During the same period, admission rates in metropolitan areas declined slightly from 1.95 per 1,000 persons (95% CI: 1.90–2.00) to 1.91 (1.87–1.96) per 1,000 persons. Rural asthma admission rates were higher than rates for metropolitan areas over the entire period 1999–2000 to 2005–06.

Variations in hospital admission rates for asthma may indicate higher prevalence of the condition in the community, an appropriate response by the hospital system to respond to a higher level of need, or, it may indicate there is an issue in the ambulatory setting.

For more information

Department of Human Services (Health Evaluation and Surveillance Section, Public Health Division) 2002, *The Victorian ambulatory care sensitive conditions study*: www.health.vic.gov.au/healthstatus/acsc

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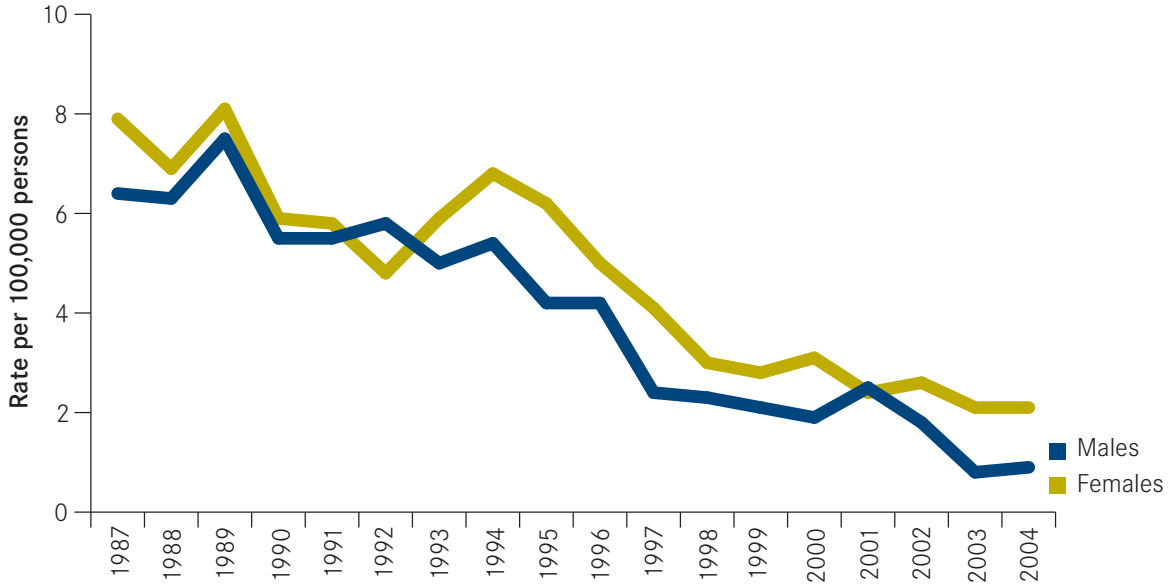
Asthma deaths

Asthma death rates for Victoria, by sex, 1987 to 2004



Standardised death rate per 100,000 persons	1987	1988	1989	1990	1991	1992	1993	1994	1995
Males	6.4	6.3	7.5	5.5	5.5	5.8	5.0	5.4	4.2
Females	7.9	6.9	8.1	5.9	5.8	4.8	5.9	6.8	6.2
Persons	**7.1**	**6.6**	**7.8**	**5.7**	**5.7**	**5.3**	**5.4**	**6.1**	**5.2**

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Males	4.2	2.4	2.3	2.1	1.9	2.5	1.8	0.8	0.9
Females	5.0	4.1	3.0	2.8	3.1	2.4	2.6	2.1	2.1
Persons	**4.6**	**3.3**	**2.7**	**2.4**	**2.5**	**2.4**	**2.2**	**1.5**	**1.5**

Note: See Appendix for ICD-10 disease definition codes. All Victorian residents included in deaths data, regardless of where they died in Australia. Victorian residents who died overseas are excluded from the data. Rates are expressed per 100,000 population and are standardised to the June 2001 Victorian population.

Source: Australian Bureau of Statistics, Victorian population data: 1987 to 2004; Australian Bureau of Statistics, Victorian deaths data: 1987 to 2005.

There were 78 deaths in Victoria with asthma listed as the underlying cause in 2004, accounting for 0.2 per cent of all deaths. Asthma death rates generally increased with age, and in 2004, almost three-quarters (73.1 per cent) of all asthma deaths in Victoria occurred among persons aged 65 years and over.

The death rate for asthma has decreased significantly over the last twenty years, from 7.1 deaths per 1,000 persons (95% CI: 6.2–8.0) in 1987 to 1.5 (1.2–1.9) per 100,000 persons in 2004, a 78.9 per cent reduction in the death rate over this period. The last peak in the death rate from asthma for Victoria was in 1994 (239 deaths). Since the early 1990s female death rates for asthma have been higher than death rates for males, and in 2004 the female death rate for asthma was 2.3 times higher than the male death rate.

The trend for Victoria is a reflection of the national trend, where a similar reduction in mortality rates is observed over time, along with the disparity between male and female death rates. The reduction in mortality is largely attributed to improvements in the management of asthma over time, leading to a reduction in the risk of death for people with asthma. Changes in treatment practice and environmental change, resulting in lower levels of asthma severity, are also thought to have played a role in the reduction in mortality, while the impact of changes in asthma prevalence, diagnostic and death data coding changes were discounted as having a major impact on rates.

For more information

Australian Centre for Asthma Monitoring (ACAM), 2005, *Asthma in Australia 2005*, Catalogue no ACM 6, Canberra: Australian Institute of Health and Welfare.

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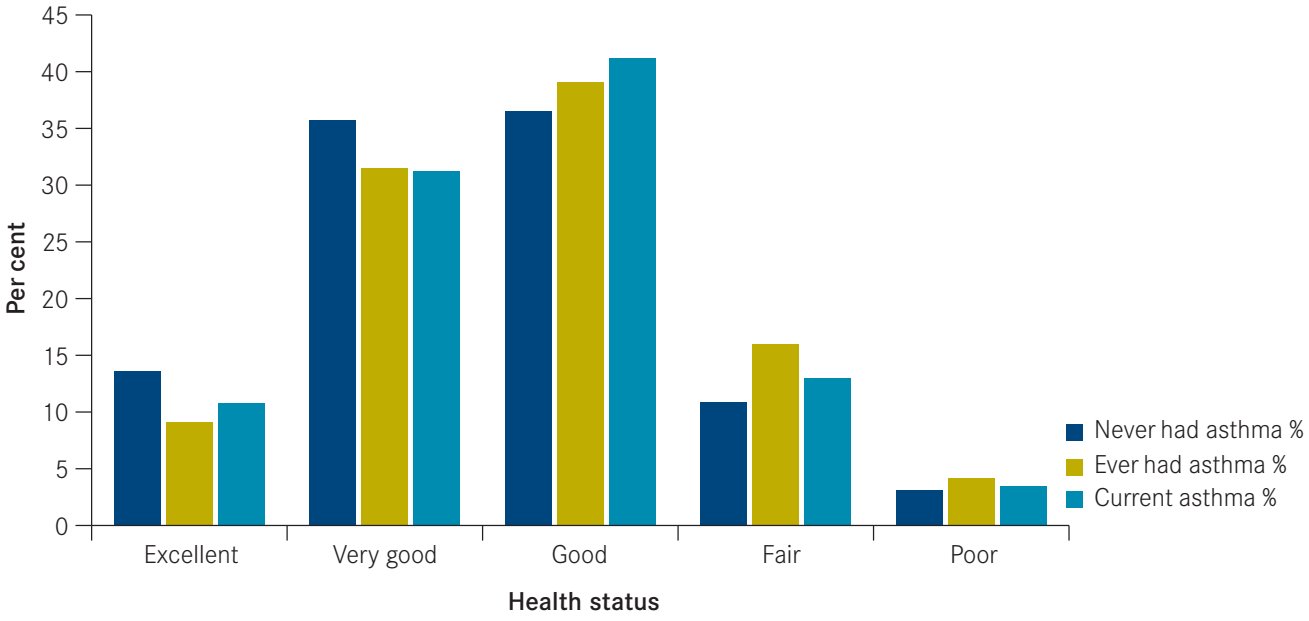
Asthma and quality of life

Asthma and self-rated health status, persons aged 18 years or over, Victoria, 2006



	Never had asthma		Ever had asthma		Current asthma	
	%	SE (%)	%	SE (%)	%	SE(%)
Excellent	13.6	0.6	9.1	1.0	10.8	1.4
Very good	35.7	0.9	31.5	1.7	31.2	2.4
Good	36.5	0.9	39.1	1.8	41.2	2.6
Fair	10.9	0.5	16.0	1.3	13.0	1.7
Poor	3.1	0.3	4.2	0.7	3.5	0.9

Note: SE = standard error. Column totals may not add to 100 per cent due to 'don't know' responses.

Source: Department of Human Services, *Victorian population health survey 2006*.

People with asthma are more likely to experience poor health-related quality of life than people who do not have asthma. Estimates from the *Victorian population health survey 2006* (VPHS) show that adults with current asthma were significantly less likely to rate their health status as highly as adults who had never had asthma. In 2006, 42.0 per cent (95% CI: 37.1–46.9) of adults with current asthma rated their health as 'excellent' or 'very good', compared to 49.3 per cent (47.5–51.1) of adults who had never had asthma.

Survey estimates also show that people with asthma generally experience higher levels of psychological distress. The Kessler Psychological Distress Scale–10 (K–10) is a ten-item questionnaire that yields a measure of the extent of any psychological distress in the previous four weeks, based on questions about anxiety levels and depressive symptoms. Although the difference was not statistically significant, a higher proportion of adults with current asthma (10.7 per cent, 95% CI: 7.8–13.5) reported 'high' or 'very high' levels of psychological distress, as measured by the K–10, compared to adults without asthma (10.2 per cent, 9.0–11.3) in 2006.

When asked directly about depression and anxiety, 22.8 per cent (95% CI: 18.9–26.7) of adults with current asthma reported having ever been told by a doctor they had depression and/or anxiety, compared to 17.6 per cent (16.4–18.9) of adults who did not have current asthma.

For more information

Australian Centre for Asthma Monitoring (ACAM), 2005, *Asthma in Australia 2005*, Catalogue no ACM 6, Canberra: Australian Institute of Health and Welfare.

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*: www.health.vic.gov.au/healthstatus

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Injury and poisoning

In this chapter

Summary

Injury remains a leading cause of death, illness and disability. Injuries were responsible for approximately nine per cent of the overall disease burden in men in 2001, or 29,707 DALYs. The burden in females was less than half this total, at 12,203 DALYs.

In 2004–05, 1,769 persons died in Victoria due to injury and poisoning, an age-adjusted death rate of 34.4 per 100,000 persons. The age-adjusted injury and poisoning death rate decreased over a fifteen-year period from 40.1 per 100,000 in 1990–91 to 34.4 per 100,000 persons in 2004-05, although this decrease was not statistically significant.

The four leading causes of injury deaths in 2004–05 were falls (mainly unspecified falls –27 per cent), intentional self-harm injury (mainly hanging, strangulation and poisoning – 27 per cent), transport (mainly car occupants, pedestrians and motorcyclists – 21 per cent) and unintentional poisoning (11 per cent).

In 2005–06, 56,735 persons were admitted to Victorian hospitals for an over-night stay due to injury and poisoning, an age-adjusted multi-day admission rate of 1,095 per 100,000 persons. These figures excluded 22,581 medical injury hospitalisations and a further 36,278 same-day injury hospitalisations. The age-adjusted injury and poisoning admission rate increased significantly, from 1,056 per 100,000 persons in 1994–95, to the current rate of 1,095 per 100,000 persons in 2005–06, representing an overall increase of 4.3 per cent (95% CI: 1.2-7.5) over the twelve-year period.

The four leading causes of injury hospital admissions in 2005–06 were falls (47 per cent), transport (15 per cent), other unintentional injuries (10 per cent) and self-harm (six per cent).

Injury and poisoning indicators

An injury indicator is a summary measure that denotes or reflects, directly or indirectly, variations in trends in injuries, or injury-related or injury control-related phenomena (Cryer, 2003). Injury is defined as:

> *'…tissue damage resulting from either the acute transfer to individuals of the five forms of physical energy (kinetic or mechanical, thermal, chemical, electrical or radiation) or from the sudden interruption of normal energy patterns to maintain life patterns'* **(Waller, 1985).**

This chapter describes trends in the frequency and rate of injury deaths and hospitalisations related to a set of indicators that reflect the effect of some of the planned or current priority injury prevention interventions in Victoria.

The source of indicators based on mortality data is the Death Unit Record File (DURF) provided to the Victorian Injury Surveillance Unit (VISU) by the Australian Bureau of Statistics (ABS). The ABS codes the data provided by the Victorian Registrar of Births, Deaths and Marriages, utilising information on the cause of death supplied by medical practitioners certifying a death, or coroners to whom a death is reported (Harrison and Steenkamp, 2002).The source of indicators based on morbidity data is the Victorian hospital admissions data, as extracted from the Victorian Admitted Episodes Dataset (VAED) compiled by the Department of Human Services. Cases of injury are identified as those that had a primary diagnosis of injury or poisoning, and then by the presence of the relevant external cause codes. Only first admissions were included, and deaths and transfers (subsequent to first admission) within and between hospitals were excluded to avoid double counting. Episodes of inpatient care related to the late effects (sequelae) of injury were also excluded. Details of the selection criteria applied to define cases for each indicator are summarised in the Appendix (Table 3).

Indicators relating to mortality and morbidity included in this chapter are aligned to the extent possible with the priority areas for prevention identified in the major Victorian injury prevention strategies and policies. These include the Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation), the Victorian Road Safety Strategy 2002–07 and the Victorian Suicide Prevention Strategy (see table below). Due to several factors (predominantly related to data availability, data quality and coding changes), the indicators included here do not represent a complete coverage of injury-related priorities in these documents.

Indicators and their links to government injury prevention strategies and policies

Indicator	Injury prevention strategy link
Injury and poisoning (all causes): deaths and hospital admissions	Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation)
Unintentional injury and poisoning (all causes): deaths and hospital admissions	Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation)
Intentional self-harm: deaths and hospital admissions	Victorian Suicide Prevention Strategy
Assaultive injury: deaths and hospital admissions	Department of Justice, Strategic Priorities 2007: *A statement of our focus and direction*
Unintentional motor vehicle traffic injury: deaths and hospital admissions	*arrive alive!* Victoria's Road Safety Strategy 2002–07
Poisoning (all intents): hospital admissions Poisoning in 0–4 year olds: hospital admissions	Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation) Victorian Suicide Prevention Strategy Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation)
Unintentional injury-related forearm and wrist fracture	Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation)
Unintentional hip fracture among persons aged 65–74 years Unintentional hip fracture in persons aged 75 years and over	Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation); Victorian Falls Prevention Policy: Making this the age to be in Victoria: a forward agenda for senior Victorians
Unintentional glass cutting and piercing injury: hospital admissions	Victorian Unintentional Injury Prevention Strategy/Action Plan (in preparation)

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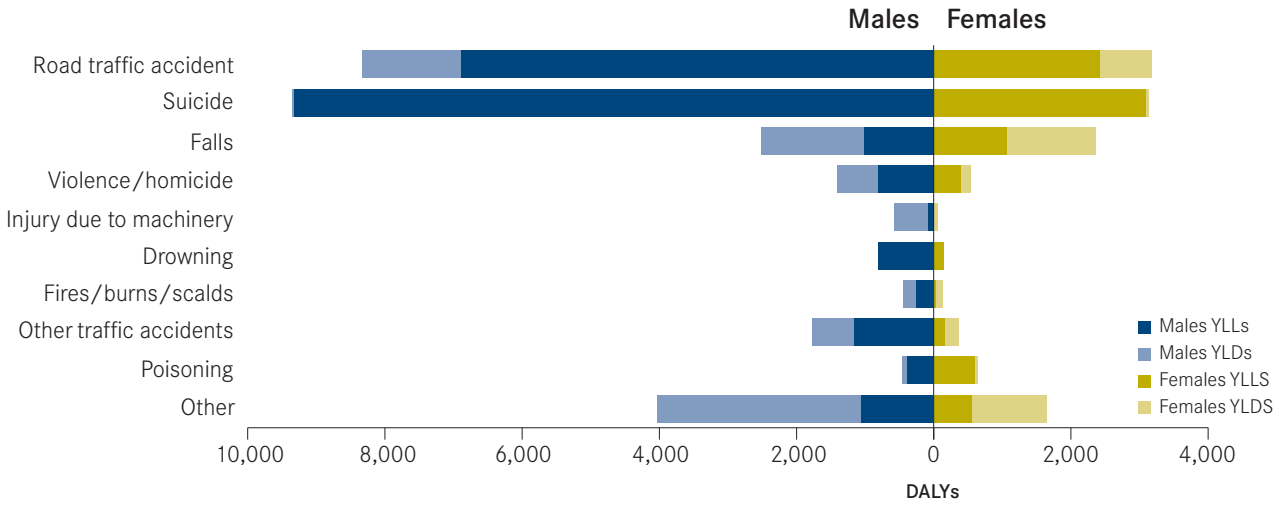
Burden of injuries

Burden of injuries, by cause and sex, Victoria, 2001



	Males			Females		
Injuries	**DALYs**	**YLL**	**YLD**	**DALYs**	**YLL**	**YLD**
Other	4,028	1,054	2,975	1,647	562	1,085
Poisoning	462	389	74	647	606	42
Other traffic accidents	1,773	1,155	618	367	158	210
Fires/burns/scalds	447	251	196	123	35	88
Drowning	812	811	1	150	150	1
Injuries due to machinery	570	85	486	54	-	54
Violence/homicide	1,416	809	607	545	391	154
Falls	2,522	1,008	1,515	2,366	1,063	1,304
Suicide	9,346	9,313	33	3,129	3,091	38
Road traffic accident	8,329	6,880	1,449	3,174	2,426	748
Total	**29,707**	**21,753**	**7,953**	**12,203**	**8,481**	**3,722**

Note: DALYs = disability adjusted life years, YLL = years of life lost, YLD = years lived with disability.

Source: Department of Human Services, *Victorian burden of disease study: mortality and morbidity in 2001*, Appendix 2.

Injuries were responsible for approximately nine per cent of the overall disease burden in men 2001, or 29,707 DALYs. The burden in females was less than half this total, at 12,203 DALYs. Almost 70 per cent of the injury burden was due to premature mortality. For males the picture was dominated in equal proportions by suicide, road traffic accidents (RTA) and falls, which together accounted for almost 70 per cent of the male burden attributable to injuries. The first two injury types were also the tenth and twelfth leading cause of overall male burden. In females the picture was also dominated by RTAs, suicides and falls, which together accounted for just over 70 per cent of the female burden attributable to injuries. The first two of these injury types were also the nineteenth and twentieth leading cause of overall female burden.

For more information

Department of Human Services (DHS), 2005, *Victorian burden of disease study: Mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/healthstatus

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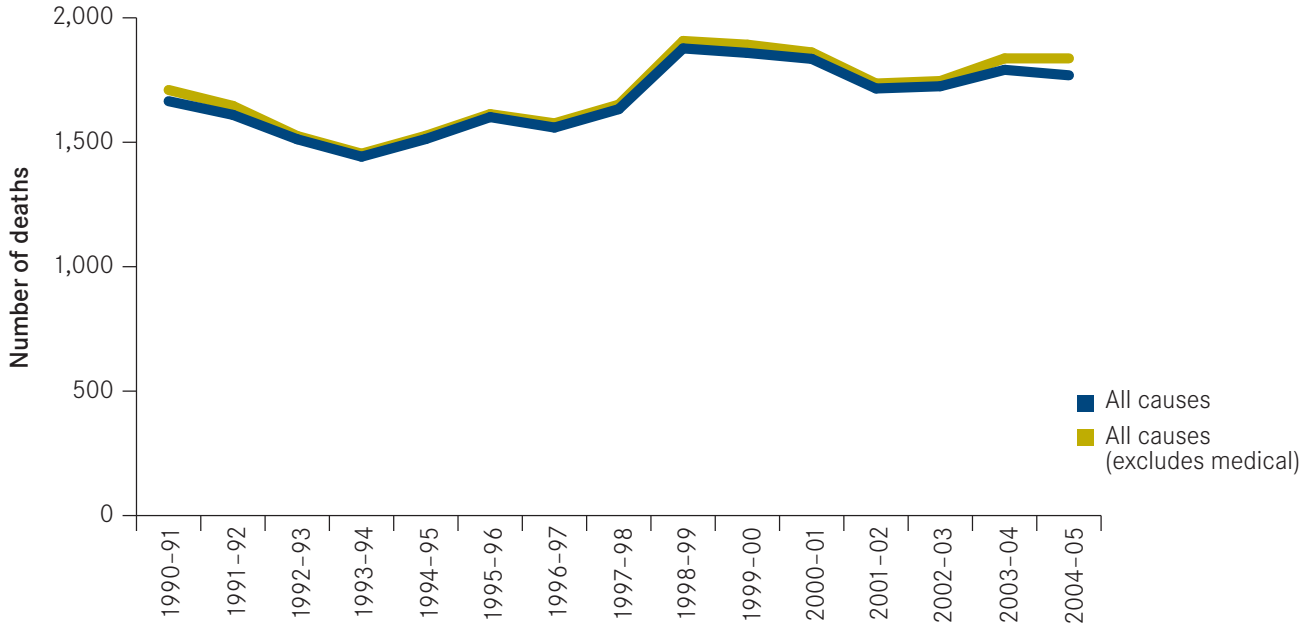
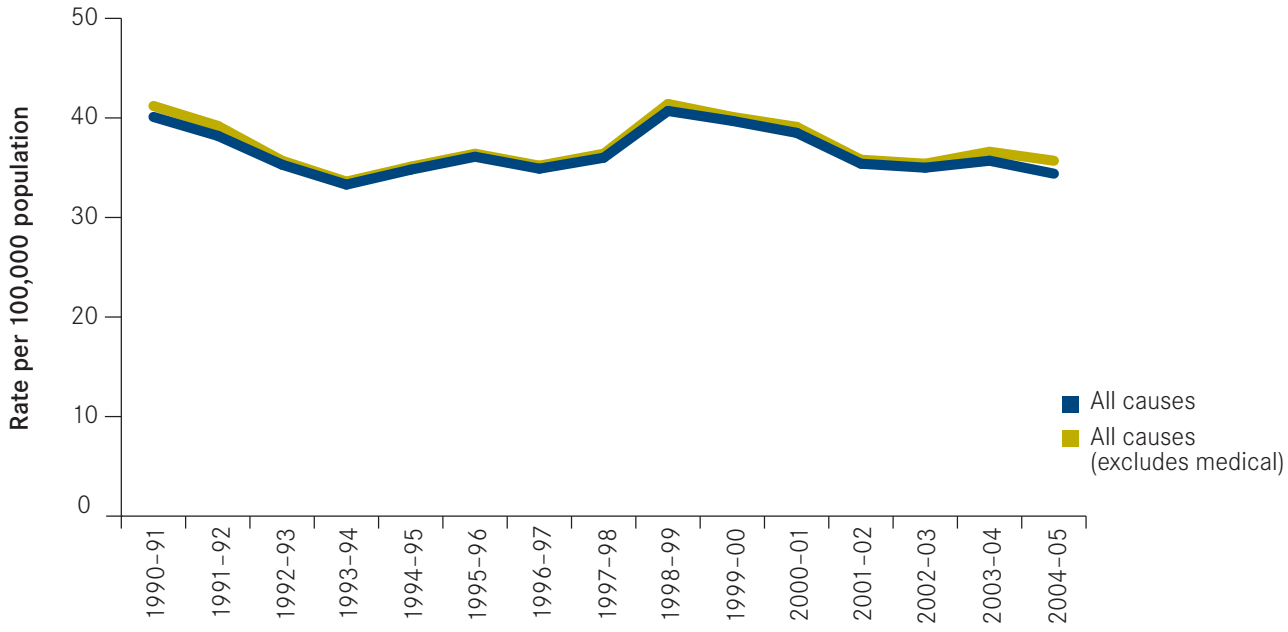
Injury and poisoning (all causes): deaths

Injury and poisoning deaths, Victoria, 1990–91 to 2004–05



Injury and poisoning death rates, Victoria, 1990–91 to 2004–05



Note: The following selection criteria were applied: (1) An ICD–9 cause of death code in the range 800–928, 930–958, 960–968, 970–978 or 990–998, or an ICD–10 cause of death code in the range V00–Y84; (2) Deaths resulting from medical causes (adverse events and medical misadventure) were then excluded for final analysis (an ICD–9 external cause code in the range 870–879 or an ICD–10 code in the range Y40–Y84).

Source: Australian Bureau of Statistics, *Death Unit Record File (ABS-DURF), July 1990-June 2005.*

In 2004–05, 1,769 persons died in Victoria due to injury and poisoning, an age-adjusted death rate of 34.4 per 100,000 persons. These figures excluded 68 deaths from medical injury causes. Males accounted for 64 per cent (n=1,137) of all injury and poisoning deaths in 2004–05.

The four leading causes of injury and poisoning deaths in 2004–05 were falls (n=471, 27 per cent), intentional self-harm injury (n=470, 27 per cent), transport (n=378, 21 per cent) and unintentional poisoning (n=197, 11 per cent).

The number of injury and poisoning deaths increased significantly over the fifteen-year period from 1,665 deaths in 1990–91 to 1,769 deaths in 2004–05, representing an estimated annual change of 1.2 per cent (95% CI: 0.4–2.0), and an overall increase of 20.3 per cent (6.7–37.9) based on the trend line.

The age-adjusted injury and poisoning death rate decreased over the fifteen-year period from 40.1 per 100,000 persons in 1990–91 to 34.4 per 100,000 persons in 2004–05, representing an estimated annual change of -0.2 per cent (95% CI: -1.1–0.6) and an overall reduction of 3.4 per cent (-14.7–11.2) based on the trend line. This decrease was not statistically significant.

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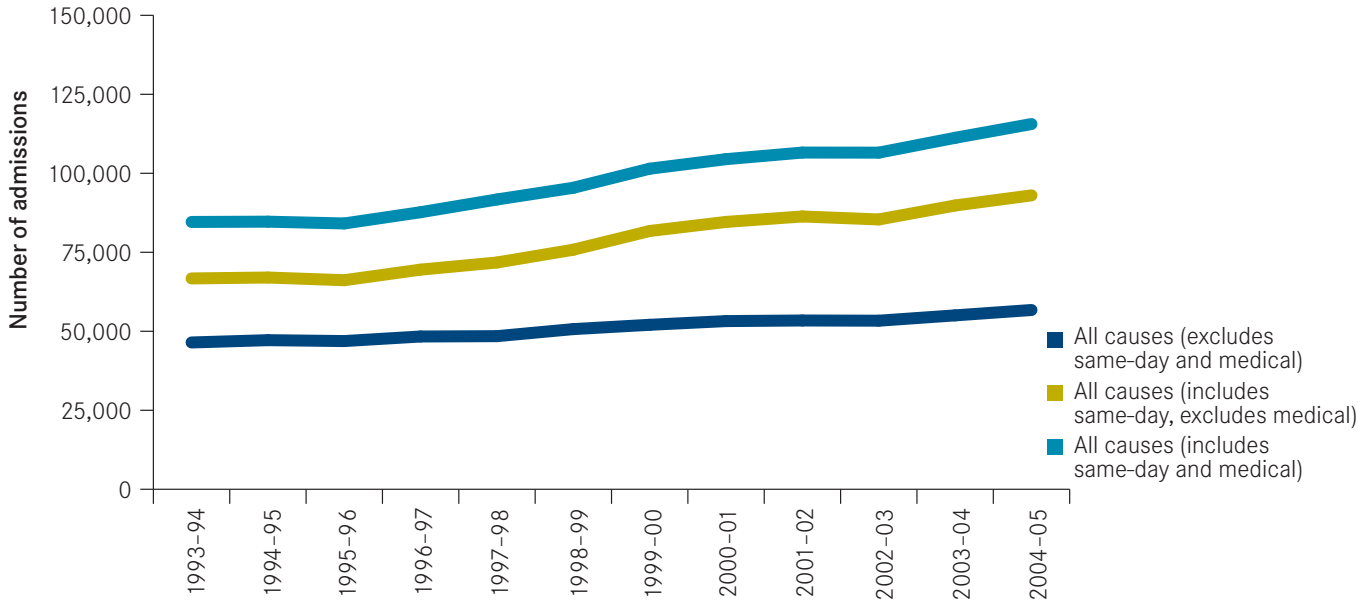
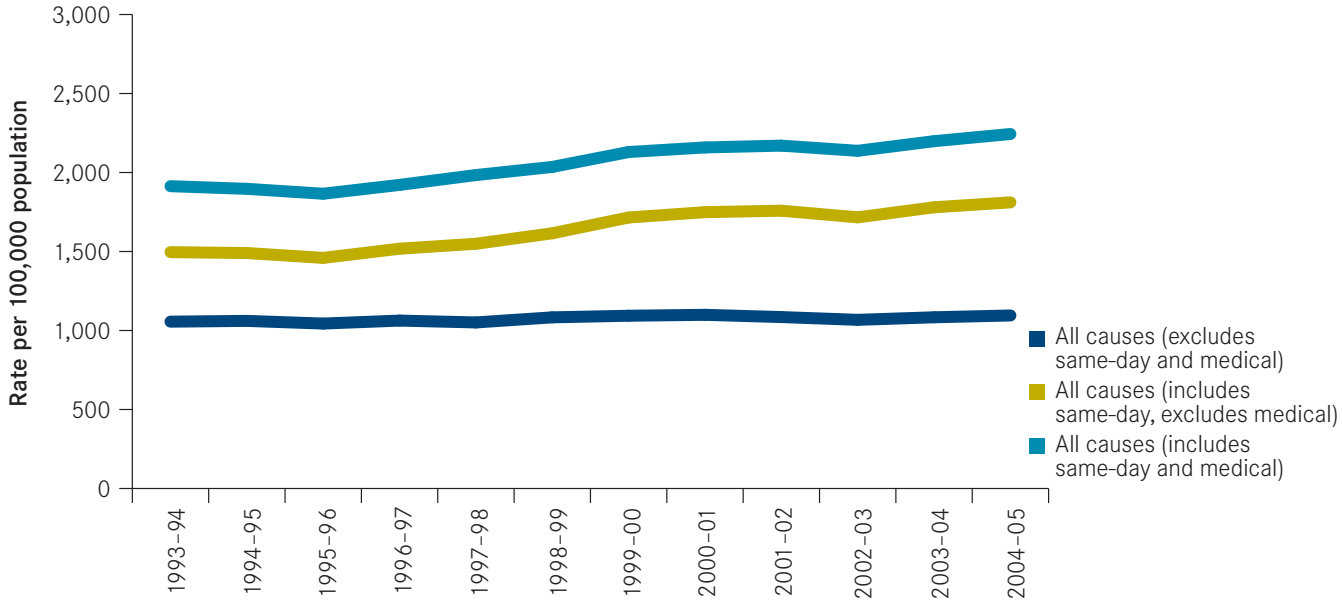
Injury and poisoning (all causes): hospital admissions

Injury and poisoning hospital admissions, Victoria, 1993–94 to 2005–06



Injury and poisoning hospital admission rates, Victoria, 1993–94 to 2005–06



Note: All causes excludes deaths, transfers and records without injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD–9 primary injury or poisoning diagnosis codes in the range 800–904, 910–999 or an ICD–10 primary injury or poisoning diagnosis code in the range S00–T89; (2) Deaths and transfers within and between hospitals were excluded; (3) Admissions resulting from medical causes (an ICD–9 cause code in the range 870–879 or an ICD–10 cause code in the range Y40–Y84) and same-day records were excluded from final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1993–94 to 2005–06.*

In 2005–06, 56,735 persons were admitted to Victorian hospitals due to injury and poisoning, an age-adjusted admission rate of 1,095 per 100,000 persons. These figures excluded 22,581 medical injury hospitalisations and a further 36,278 same-day injury hospitalisations.

Males accounted for 52 per cent (n=29,445) of all injury and poisoning hospital admissions in 2005–06.

The four leading causes of injury and poisoning admissions in 2005–06 were falls (n=26,619, 47 per cent), transport (n=8,298, 15 per cent), other unintentional (n=5,675, 10 per cent) and self-harm (n=3,568, six per cent).

The frequency of injury and poisoning admissions increased significantly over the twelve-year period, from 46,462 admissions in 1994–95 to 56,735 admissions in 2005–06, representing an estimated annual change of 1.9 per cent (95% CI: 1.6–2.1) and an overall increase of 24.9 per cent (20.9–28.4) based on the trend line.

The age-adjusted injury and poisoning admission rate increased significantly over the twelve-year period from 1,056 per 100,000 persons in 1994–05 to 1,095 per 100,000 persons in 2005-06, representing an estimated annual change of 0.4 per cent (95% CI: 0.1–0.6) and an overall increase of 4.3 per cent (1.2–7.5).

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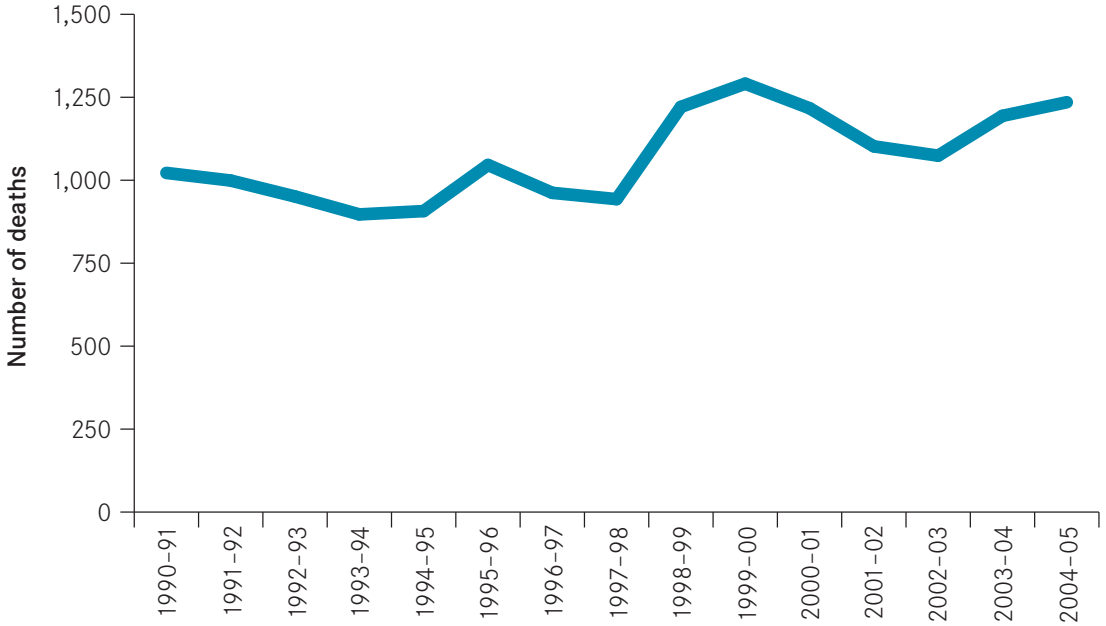
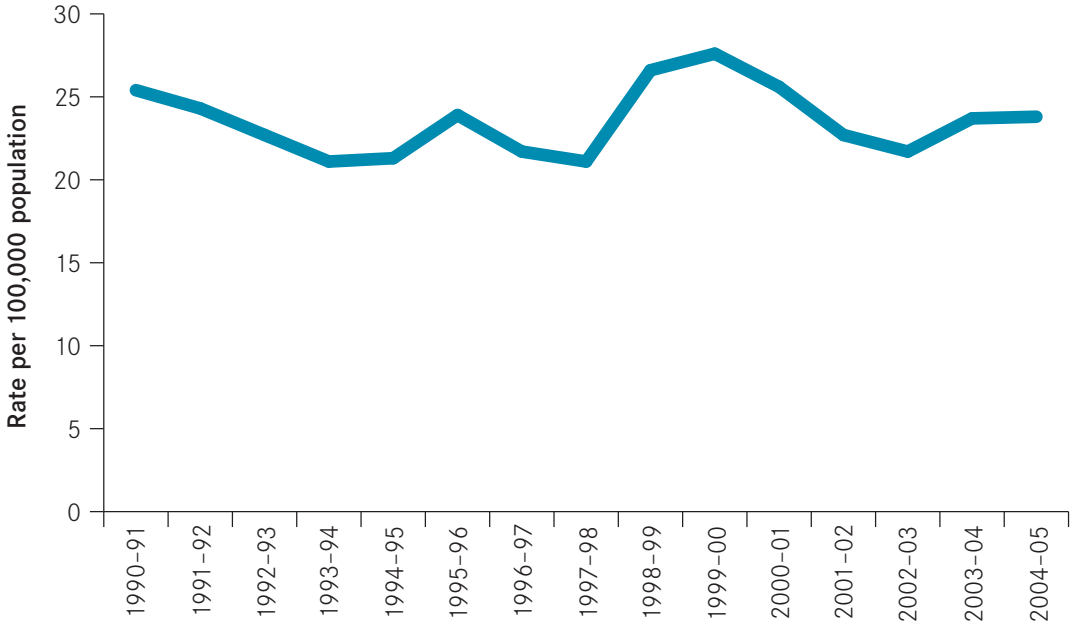
Unintentional ('accidental') injury and poisoning (all causes): deaths

Unintentional injury and poisoning deaths, Victoria, 1990–91 to 2004–05



Unintentional injury and poisoning death rates, Victoria, 1990–91 to 2004–05



Note: Unintentional ('accidental') injury and poising deaths were identified as deaths with an ICD–9 cause of death code in the range 800–928, 930–950 or an ICD–10 code in the range V00–X59.

Source: Australian Bureau of Statistics, *Death Unit Record File (ABS-DURF), July 1990-June 2005.*

In 2004–05, 1,235 persons died in Victoria due to unintentional ('accidental') injury and poisoning, an age-adjusted death rate of 23.8 per 100,000 persons.

Males accounted for 60 per cent (n=737) of all unintentional injury and poisoning deaths in 2004–05.

The four leading causes of unintentional injury and poisoning deaths in 2004–05 were falls (n=471, 38 per cent), transport (n=378, 31 per cent), poisoning (n=197, 16 per cent) and choking/suffocation (n=52, four per cent).

The frequency of unintentional injury and poisoning deaths increased significantly over the fifteen-year period, from 1,022 deaths in 1990–91 to 1,235 deaths in 2004–05, representing an estimated annual change of 2.0 per cent (95% CI: 0.8–3.1) and an overall increase of 33.6 per cent (12.1–62.9) based on the trend line.

Although the age-adjusted unintentional injury and poisoning death rate decreased over the fifteen-year period from 25.4 per 100,000 persons in 1990–91 to 23.8 per 100,000 persons in 2004–05, the trend analysis shows an actual overall increase in the death rate of 2.7 per cent (95% CI: -13.8–23.9), with an estimated annual change of 0.2 per cent (-1.0–1.4). This increase was not statistically significant.

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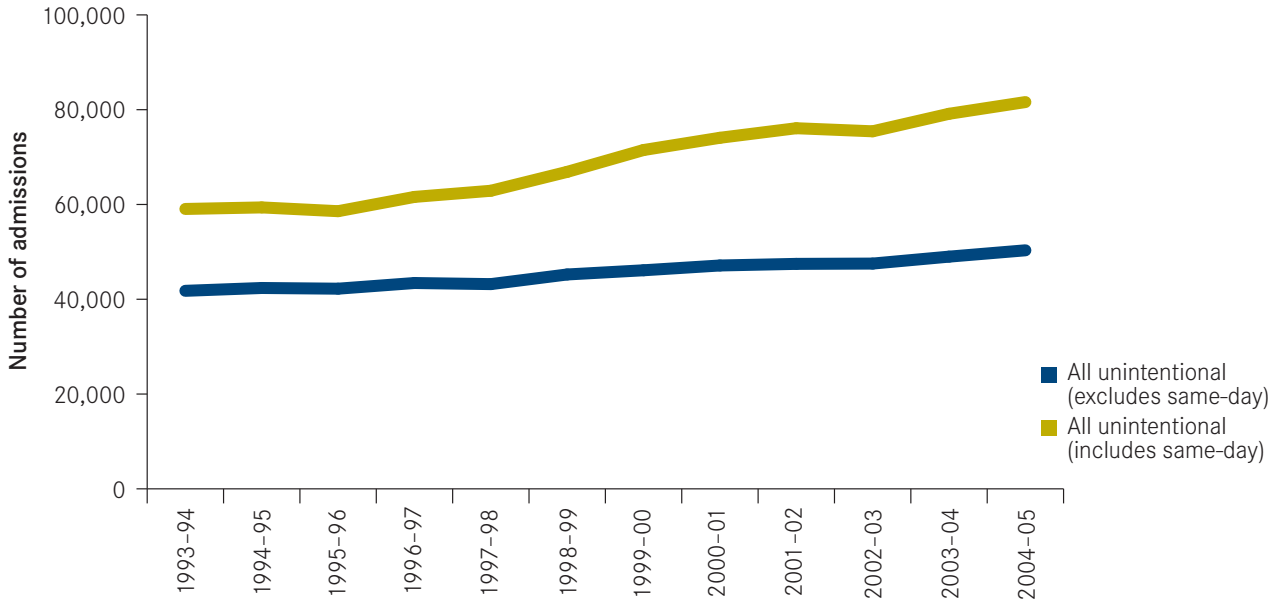
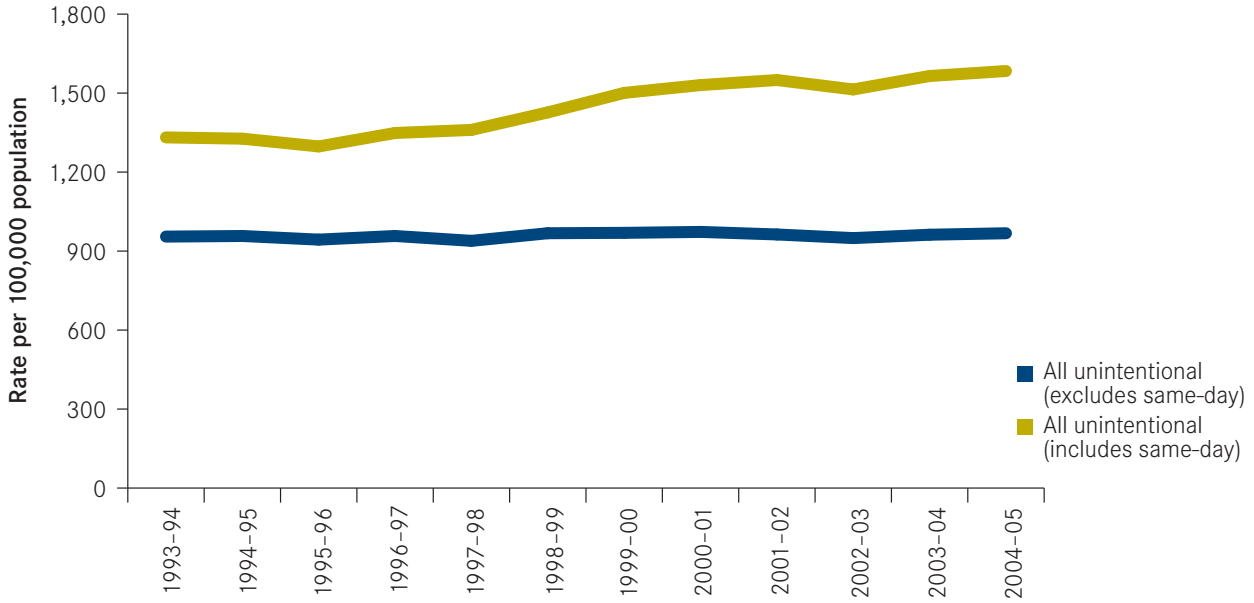
Unintentional ('accidental') injury and poisoning (all causes): hospital admissions

Unintentional injury and poisoning hospital admissions, Victoria, 1993–94 to 2005–06



Unintentional injury and poisoning hospital admissions, Victoria, 1993–94 to 2005–06



Note: All causes excludes deaths, transfers and records without injury as a primary diagnosis.The following selection criteria were applied: (1) An ICD–9 injury or poisoning diagnosis code in the range 800–904, 910–999 or an ICD–10 diagnosis code in the range S00–T89 where the cause of injury was unintentional; (2) Deaths and transfers within and between hospitals were excluded; (3) Same-day records were excluded from the final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1993–94 to 2005–06.*

In 2005–06, 50,328 persons were admitted to Victorian hospitals due to unintentional ('accidental') injury and poisoning, an age-adjusted admission rate of 968 per 100,000 persons. These figures exclude 31,278 same-day injury hospitalisations.

Males accounted for 52 per cent (n=26,265) of all unintentional injury and poisoning hospital admissions in 2005–06.

The four leading causes of unintentional injury and poisoning admissions in 2005–06 were falls (n=26,619, 53 per cent), transport (n=8,298, 17 per cent), other unintentional (n=5,675, 11 per cent) and hit/struck/crush incidents (n=3,077, six per cent).

The frequency of unintentional injury and poisoning admissions increased significantly over the twelve-year period from 41,781 admissions in 1994–95 to 50,328 admissions in 2005–06, representing an estimated annual change of 1.7 per cent (95% CI: 1.5–2.0) and an overall increase of 22.9 per cent (19.4–26.1) based on the trend line.

The age-adjusted unintentional injury and poisoning admission rate increased over the twelve-year period from 955 per 100,000 persons in 1994–95 to 968 per 100,000 persons in 2005–06, representing an estimated annual change of 0.1 per cent (95% CI: -0.1–0.3) and an overall increase of 1.6 per cent (-0.9–4.1). The increase in rate was not statistically significant.

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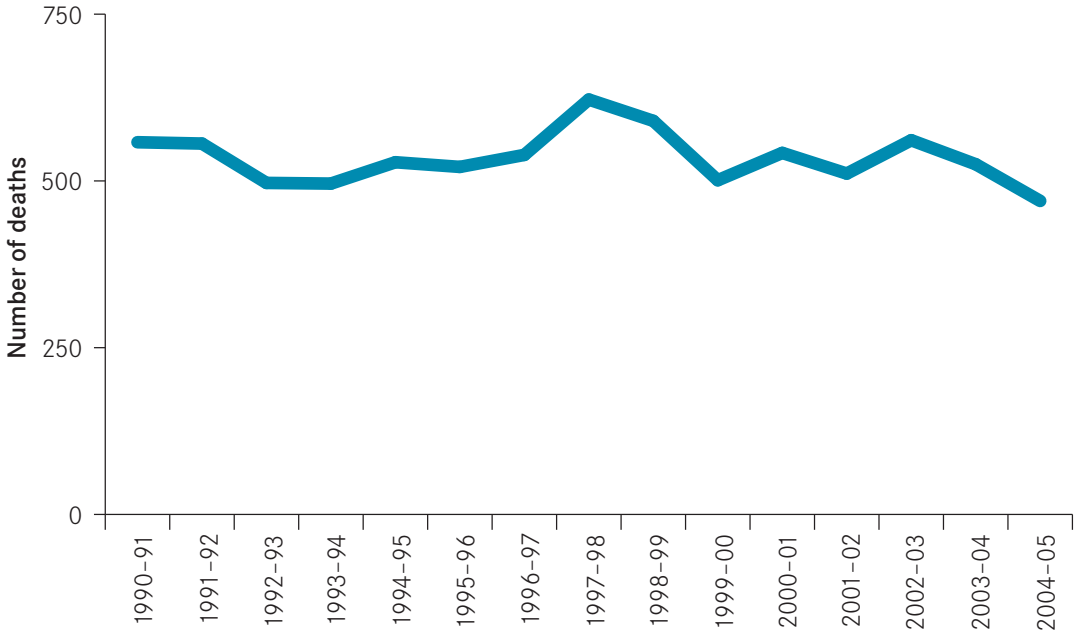
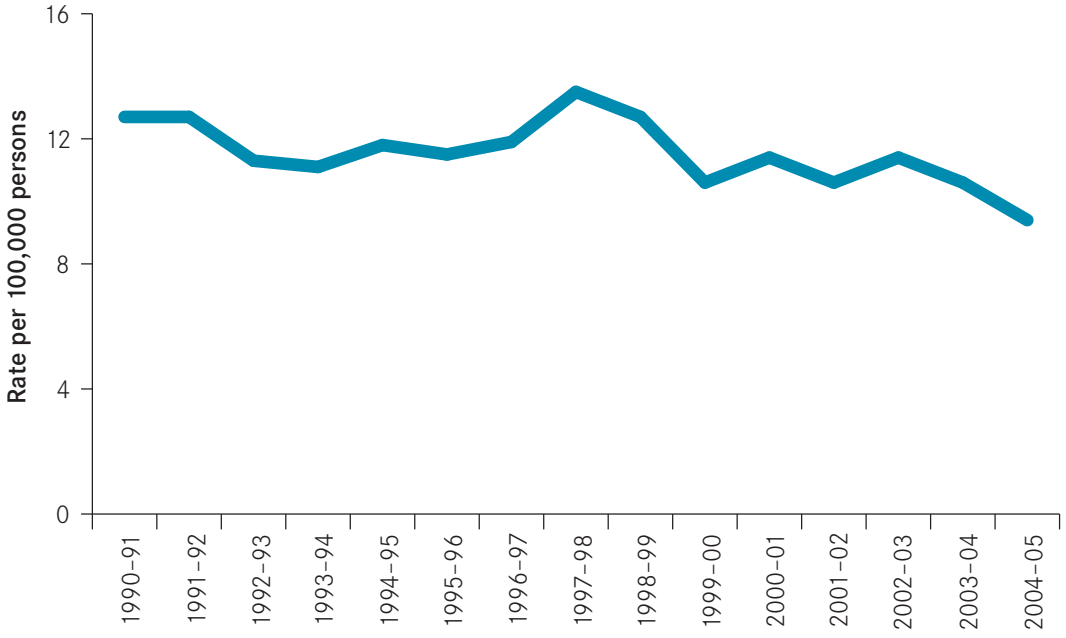
Intentional self-harm injury: deaths

Intentional self-harm injury deaths, Victoria, 1990–91 to 2004–05



Intentional self-harm injury death rates, Victoria, 1990–91 to 2004–05



Note: Intentional self-harm injury deaths were identified as deaths with an ICD–9 cause of death code in the range 950–959 or an ICD–10 cause of death code in the range X60–X84.

Source: Australian Bureau of Statistics, *Death Unit Record File (ABS-DURF) July 1990-June 2005*.

In 2004–05, 470 persons died in Victoria due to intentional self-harm injury, an age-adjusted death rate of 9.4 per 100,000 persons.

Males accounted for 75 per cent (n=353) of all intentional self-harm injury deaths in 2004–05.

The five leading causes of intentional self-harm injury deaths in 2004–05 were hanging, strangulation and suffocation (n=216, 46 per cent), poisoning by other gases and vapours (mostly carbon monoxide) (n=89, 19 per cent), poisoning by pharmaceuticals (n=65, 14 per cent), firearms (n=27, six per cent) and jumping or lying before a moving object (n=24, five per cent).

The frequency of self-harm injury and poisoning deaths decreased over the fifteen-year period from 558 deaths in 1990–91 to 470 deaths in 2004–05, representing an estimated annual change of -0.3 per cent (95% CI: -1.2–0.8) and an overall reduction of 3.7 per cent (-16.8–12.2) based on the trend line. This increase in frequency was not statistically significant.

The age-adjusted self-harm injury and poisoning death rate decreased significantly over the fifteen-year period from 12.7 per 100,000 persons in 1990–91 to 9.4 per 100,000 persons in 2004–05, representing an estimated annual change of -1.2 per cent (95% CI: -2.2 – -0.2) and an overall reduction of 16.7 per cent (-28.5 – -3.6).

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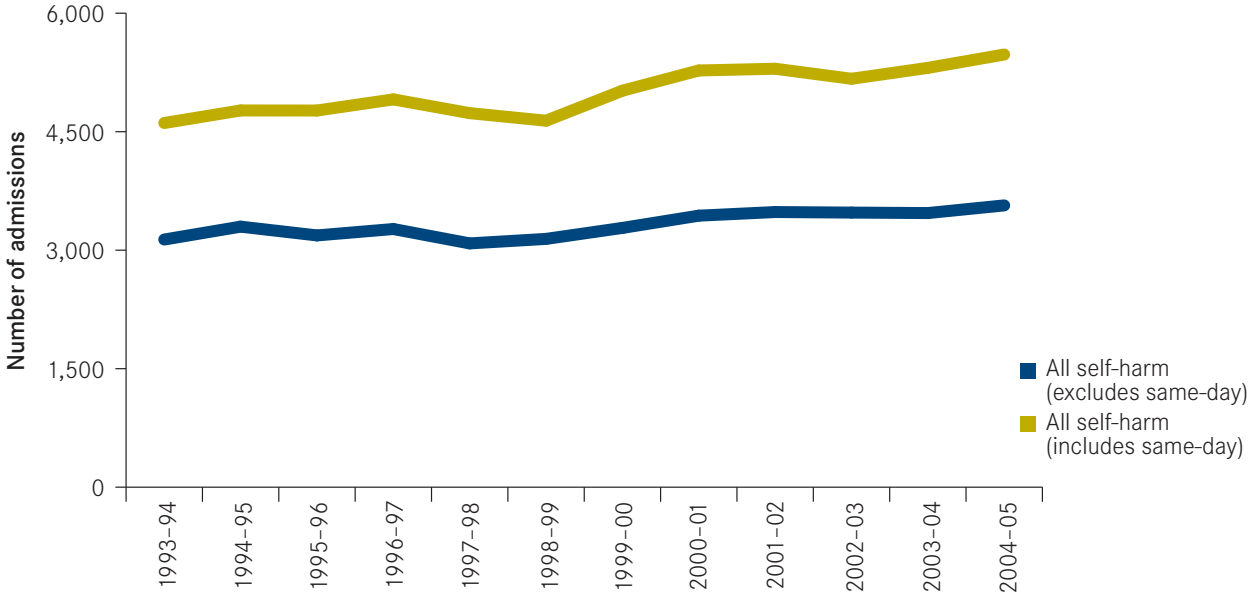
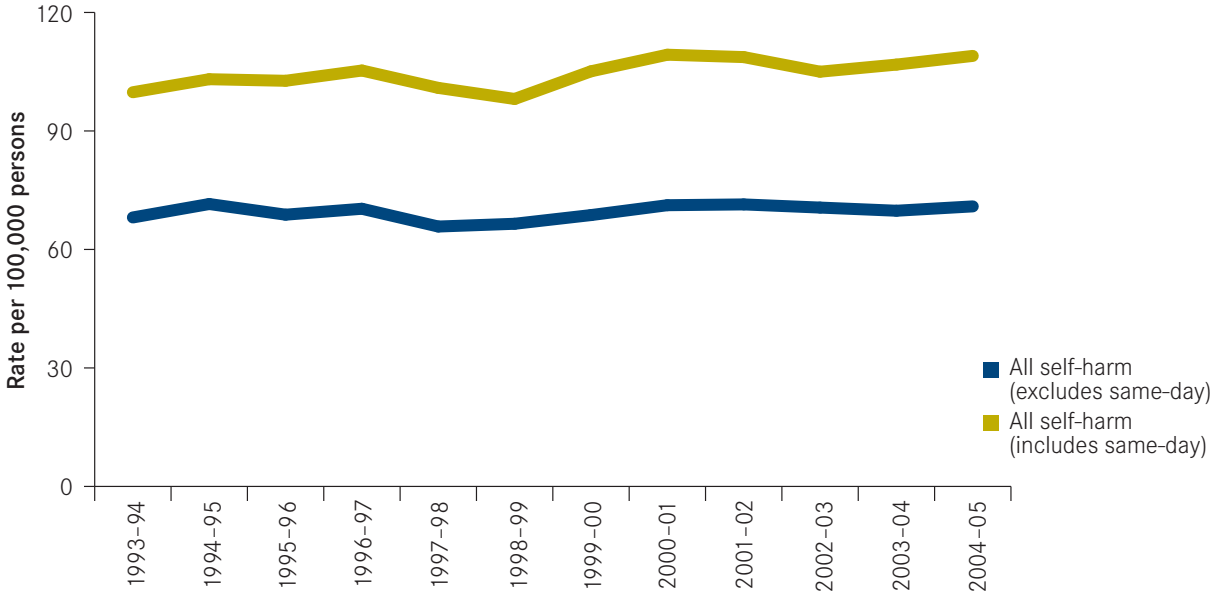
Intentional self-harm injury: hospital admissions

Intentional self-harm injury hospital admissions, Victoria, 1993–94 to 2005–06



Intentional self-harm injury hospital admission rates, Victoria, 1993–94 to 2005–06



Note: All unintentional excludes deaths, transfers and records without injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD–9 injury or poisoning diagnosis code in the range 800–904, 910–999 or an ICD–10 diagnosis code in the range S00–T89 if the cause of injury was intentional self-harm; (2) Deaths and transfers within and between hospitals were excluded; (3) Same-day records were excluded from the final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1993–94 to 2005–06*.

In 2005–06, 3567 persons were admitted to Victorian hospitals due to intentional self-harm injury, an age-adjusted admission rate of 70.9 per 100,000 persons. These figures exclude 1,910 same-day hospitalisations.

Females accounted for 64 per cent (n=2,283) of intentional self-harm injury hospital admissions in 2005–06.

The leading causes of intentional self-harm injury admissions in 2005–06 were poisoning by pharmaceuticals (n=2,777, 78 per cent), sharp objects (n=432, 12 per cent), and poisoning by other substances (n=186, five per cent).

The frequency of intentional self-harm injury admissions increased significantly over the twelve-year period from 3,135 admissions in 1994–95 to 3,567 admissions in 2005–06, representing an estimated annual change of 1.1 per cent (95% CI: 0.5–1.7) and an overall increase of 14.4 per cent (6.7–22.4) based on the trend line.

The age-adjusted intentional self-harm injury admission rate increased over the twelve-year period from 68.1 per 100,000 persons in 1994–95 to 70.9 per 100,000 persons in 2005–06, representing an estimated annual change of 0.3 per cent (95% CI: -0.3–0.8) and an overall increase of 3.2 (-3.2–9.9). The increase in rate was not statistically significant.

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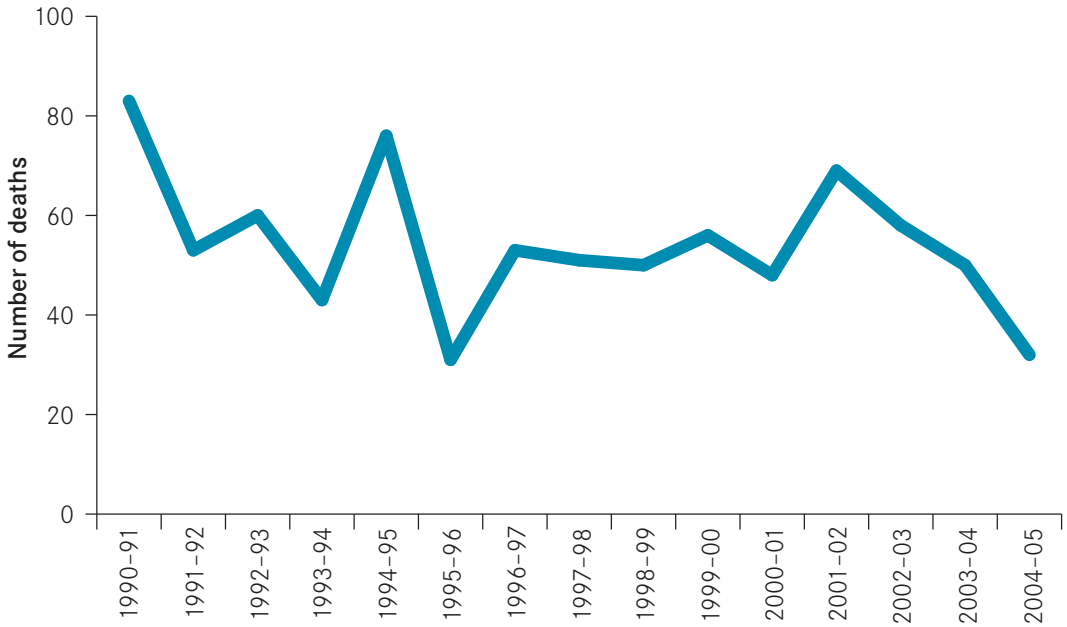
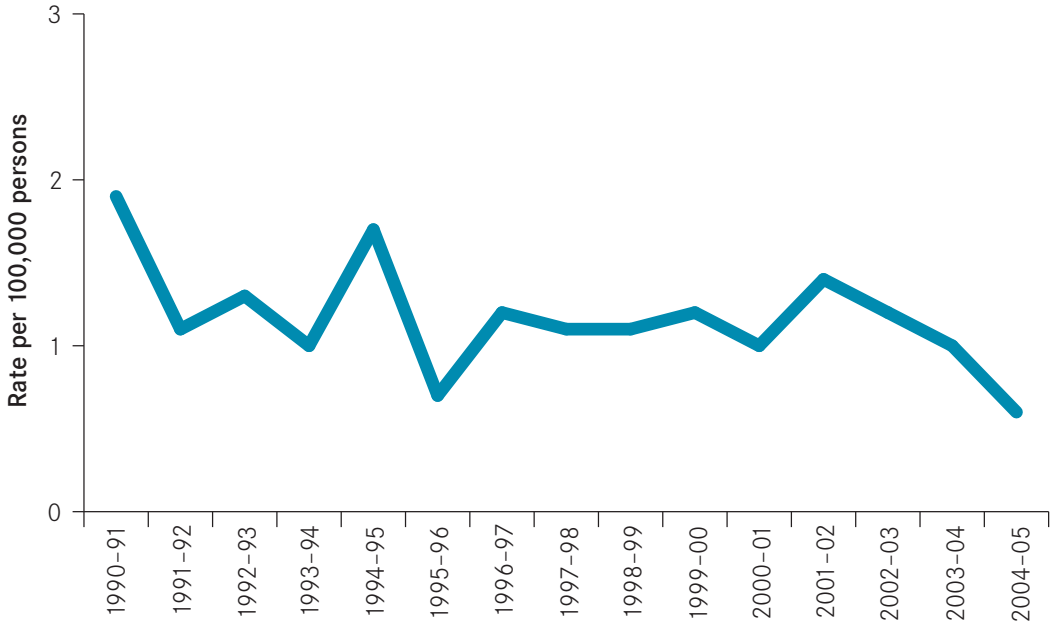
Assaultive injury: deaths

Assaultive injury deaths, Victoria, 1990–91 to 2004–05



Assaultive injury deaths, Victoria, 1990–91 to 2004–05



Note: Assaultive injury deaths were identified as deaths with an ICD–9 cause of death code in the range 960–969 or an ICD–10 code in the range X85–Y09.

Source: Australian Bureau of Statistics, *Death Unit Record File (ABS-DURF), July 1990-June 2005*.

In 2004–05, 32 persons died in Victoria due to assaultive injury, an age-adjusted death rate of 0.6 per 100,000 persons.

Males accounted for 72 per cent (n=23) of all assaultive injury deaths in 2004–05.

The leading causes of assaultive injury deaths in 2004–05 were assault by sharp objects (n=16, 50 per cent) and assault by bodily force (n=7, 22 per cent).

The frequency of assaultive injury and poisoning deaths decreased over the fifteen-year period from 83 deaths in 1990–91 to 32 deaths in 2004–05, representing an estimated annual change of -2.1 per cent (95% CI: -5.4–1.2) and an overall reduction of 27 per cent (-56.4–20.7) based on the trend line. This decrease was not statistically significant.

The age-adjusted assaultive injury death rate decreased over the fifteen-year period from 1.9 per 100,000 persons in 1990–91 to 0.6 per 100,000 persons in 2004–05, representing an estimated annual change of -3.0 per cent (95% CI: -6.4–0.3) and an overall reduction of 36.3 per cent (-62.7–5.6). This decrease was not statistically significant.

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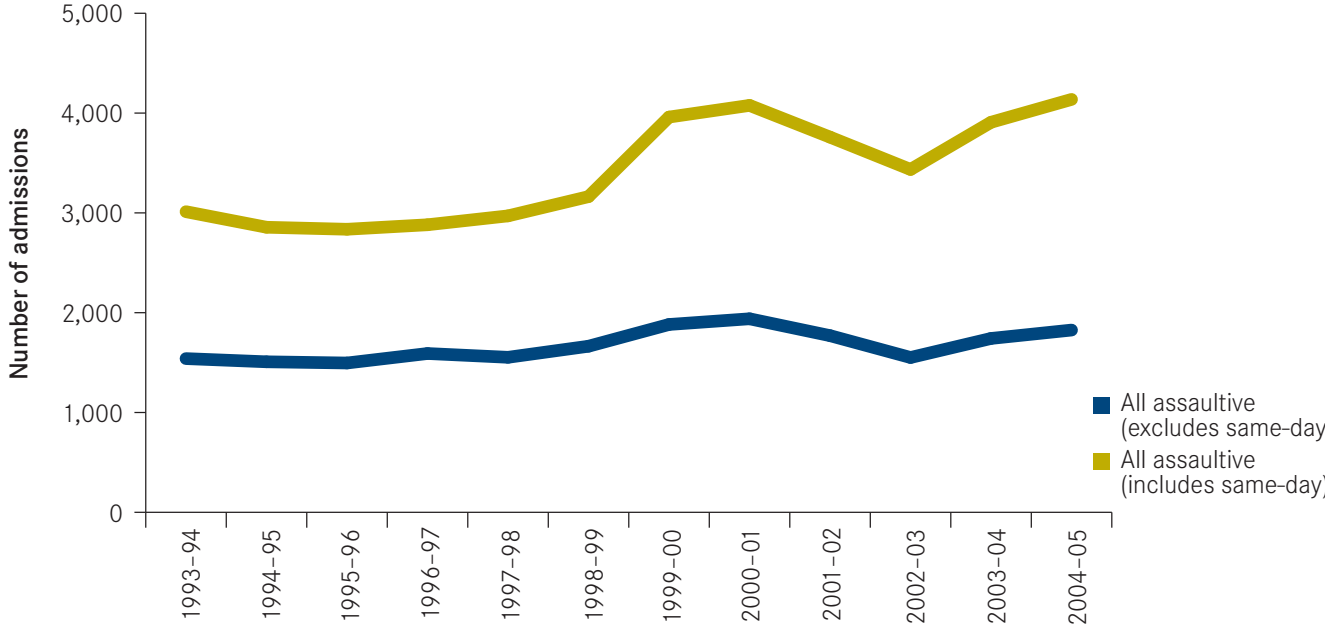
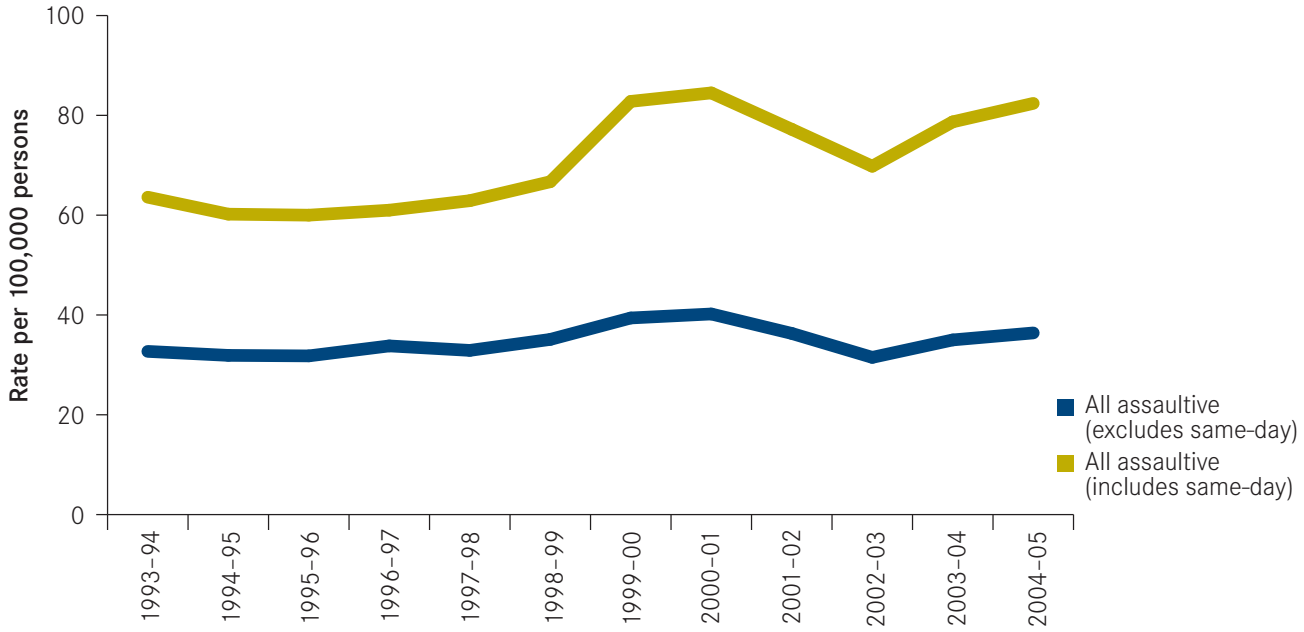
Assaultive injury: hospital admissions

Assaultive injury hospital admissions, Victoria, 1993–94 to 2005–06



Assaultive injury hospital admissions, Victoria, 1993–94 to 2005–06



Note: The following selection criteria were applied: (1) An ICD–9 injury or poisoning diagnosis code in the range 800–904, 910–999 or an ICD–10 diagnosis code in the range S00-T89 if the cause of injury was assaultive; (2) Deaths and transfers within and between hospitals were excluded; (3) Same-day records were excluded from the final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1993–94 to 2005–06.*

In 2005–06, 1,826 persons were admitted to Victorian hospitals due to assaultive injury, an age-adjusted admission rate of 36.4 per 100,000 persons. These figures excluded 2,311 same-day hospitalisations.

Males accounted for 78 per cent (n=1,427) of all assaultive injury hospital admissions in 2005–06.

The leading causes of assaultive injury admissions in 2005–06 were bodily force (n=981, 54 per cent), sharp objects (n=300, 16 per cent) and blunt objects (n=237, 13 per cent).

The frequency of assaultive injury admissions increased significantly over the twelve-year period from 1,540 admissions in 1994–05 to 1,826 admissions in 2005–06, representing an estimated annual change of 1.7 per cent (95 % CI: 0.2–3.1) and an overall increase of 22 per cent (2.8–44.1) based on the trend line.

The age-adjusted assaultive injury admission rate increased over the twelve-year period from 32.7 per 100,000 persons in 1994–95 to 36.4 per 100,000 persons in 2005–06, representing an estimated annual change of 1.1 per cent (-0.4–2.5) and an overall increase of 13.6 per cent (-4.9–35.1). This increase in rate was not statistically significant.

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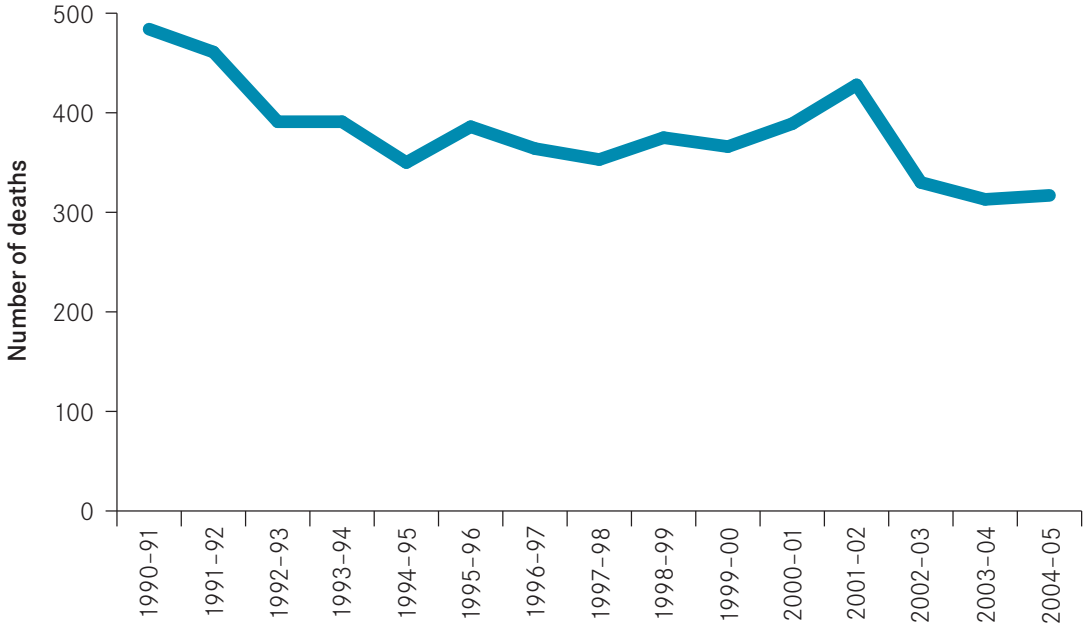
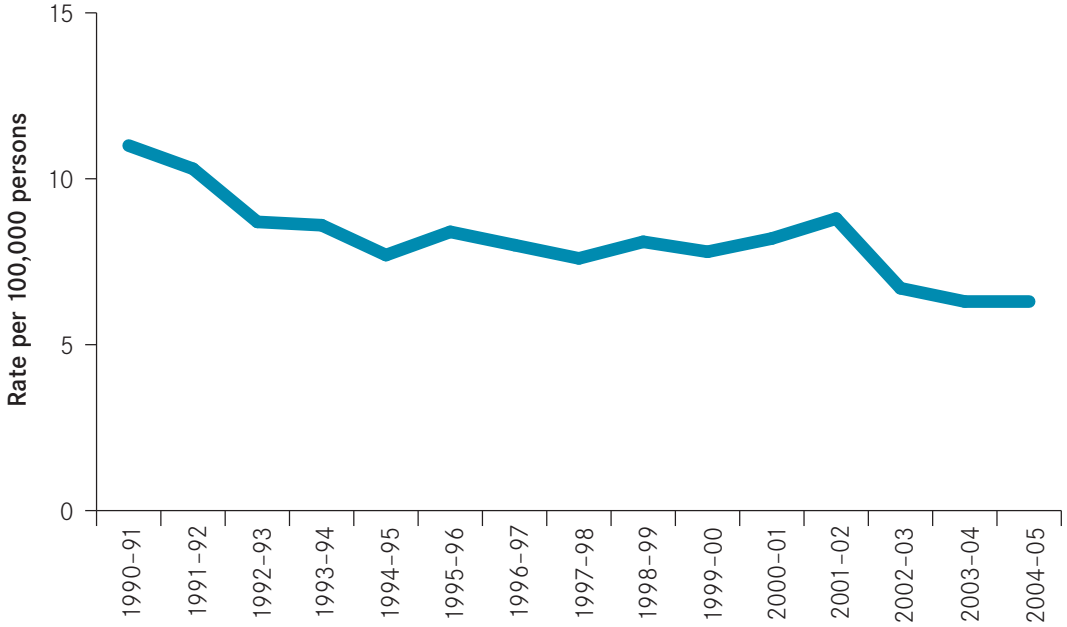
Unintentional ('accidental') motor vehicle traffic injury: deaths

Unintentional motor vehicle traffic deaths, Victoria, 1990–91 to 2004–05



Unintentional motor vehicle traffic death rates, Victoria, 1990–91 to 2004–05



Note: All motor vehicle traffic includes car occupants, motorcyclists and pedestrians injured in motor vehicle incidents. The following selection criteria were applied: (1) An ICD–9 cause of death code in the range 810–819 (.0-.3, .7) or an ICD–10 cause of death code in the range V02-V04 (.1–.9), V09.2, V20–V28 (.3-.9), or V29 (.4-.9), V40-V49 (.4-.9). These codes include only motor vehicle traffic deaths of car occupants, motorcyclists and pedestrians.

Source: Australian Bureau of Statistics, *Death Unit Record File (ABS-DURF), July 1990-June 2005*.

In 2004–05, 317 persons died in Victoria due to unintentional ('accidental') motor vehicle traffic (MVT) incidents, an age-adjusted death rate of 6.3 per 100,000 persons.

Males accounted for 68 per cent (n=216) of all unintentional MVT deaths in 2004–05.

Of persons fatally injured in unintentional MVT incidents in 2004–05, 71 per cent were car occupants (n=224), 18 per cent were pedestrians (n=58) and the remaining 11 per cent were motorcyclists (n=35).

The frequency of unintentional MVT deaths decreased significantly over the fifteen-year period, from 484 deaths in 1990–91 to 317 deaths in 2004–05, representing an estimated annual change of -2.0 per cent (95% CI: -3.2- -0.8) and an overall reduction of 25.9 per cent (-38.7– -11.9) based on the trend line.

The age-adjusted unintentional MVT death rate decreased significantly over the fifteen-year period, from 11.0 per 100,000 persons in 1990–91 to 6.3 per 100,000 persons in 2004–05, representing an estimated annual change of -2.8 per cent (95% CI: -4.1 – -1.7) and an overall reduction of 35.1 per cent (-46.6 – -23.6).

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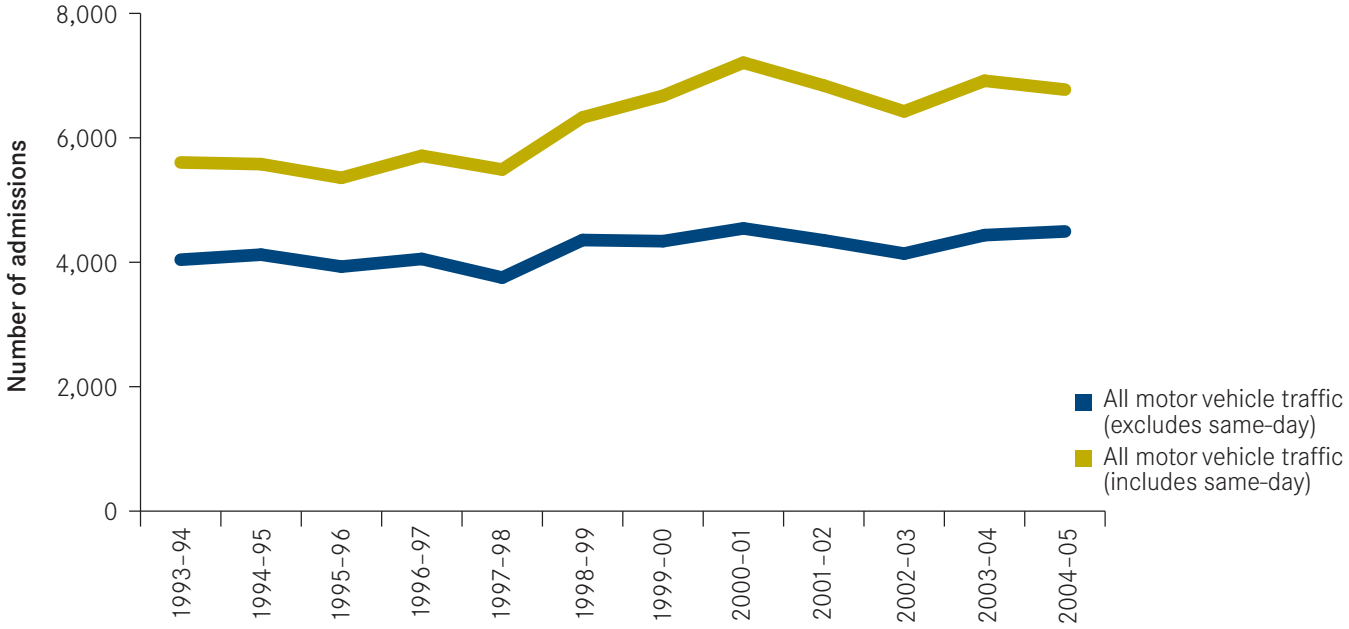
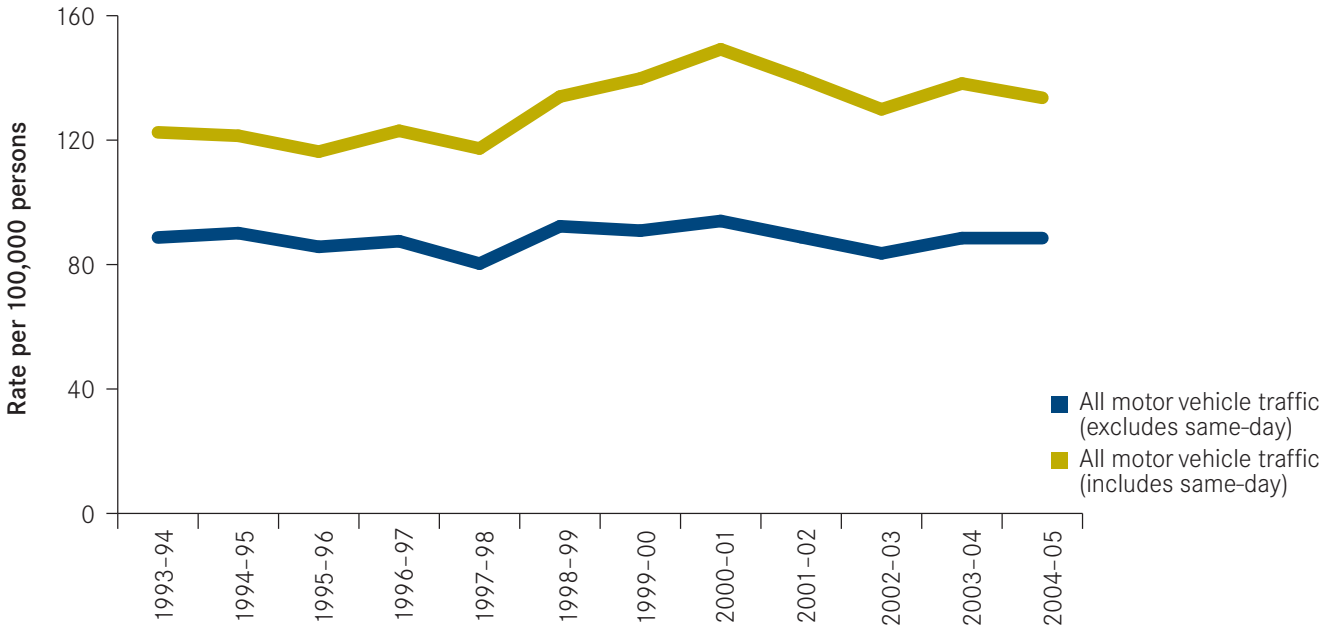
Unintentional ('accidental') motor vehicle traffic injury: hospital admissions

Unintentional motor vehicle traffic hospital admissions, Victoria, 1993–94 to 2005–06



Unintentional motor vehicle traffic hospital admissions, Victoria, 1993–94 to 2005–06



Note: All motor vehicle traffic includes car occupants, motorcyclists and pedestrians injured in motor vehicle incidents. The following selection criteria were applied: (1) An ICD-9 first external cause code in the range 810–819 (.0 –.3,.7) or an ICD-10 first external cause code in the range V02-V04 (.1,.9), V09.2, V20-V28 (.3 –.9), or V29 (.4 –.9), V40-V49 (.4 –.9). These codes include motor vehicle traffic injuries to car occupants, motorcyclists and pedestrians; (2) Deaths and transfers within and between hospitals were excluded; (3) Same-day records were also excluded from the final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1993–94 to 2005–06.*

In 2005–06, 4,495 persons were admitted to Victorian hospitals due to unintentional ('accidental') motor vehicle traffic (MVT) injury, an age-adjusted admission rate of 88.5 per 100,000 persons. These figures excluded 2,280 same-day hospitalisations.

Males accounted for 62 per cent (n=2,780) of all unintentional MVT injury hospital admissions in 2005–06.

Almost two-thirds of persons injured in unintentional MVT incidents in 2005–06 were car occupants (n=2,896, 64 per cent), 24 per cent were motorcyclists (n=1,058) and the remaining 12 per cent were pedestrians (n=541).

The frequency of unintentional MVT injury admissions increased significantly over the twelve-year period, from 4,041 admissions in 1994–95 to 4,495 admissions in 2005–06, representing an estimated annual change of 1.1 per cent (95% CI: 0.2–2.0) and an overall increase of 14 per cent (2.6–26.3) based on the trend line.

Although the age-adjusted unintentional MVT injury admission rate decreased over the twelve-year period from 88.7 per 100,000 persons in 1994–95 to 88.5 per 100,000 persons in 2005–06. The trend analysis shows this was an actual overall increase in the death rate of 0.7 per cent (95% CI: -9.1–11.5), with an estimated annual change of 0.1 per cent (-0.8–0.9). This decrease was not statistically significant.

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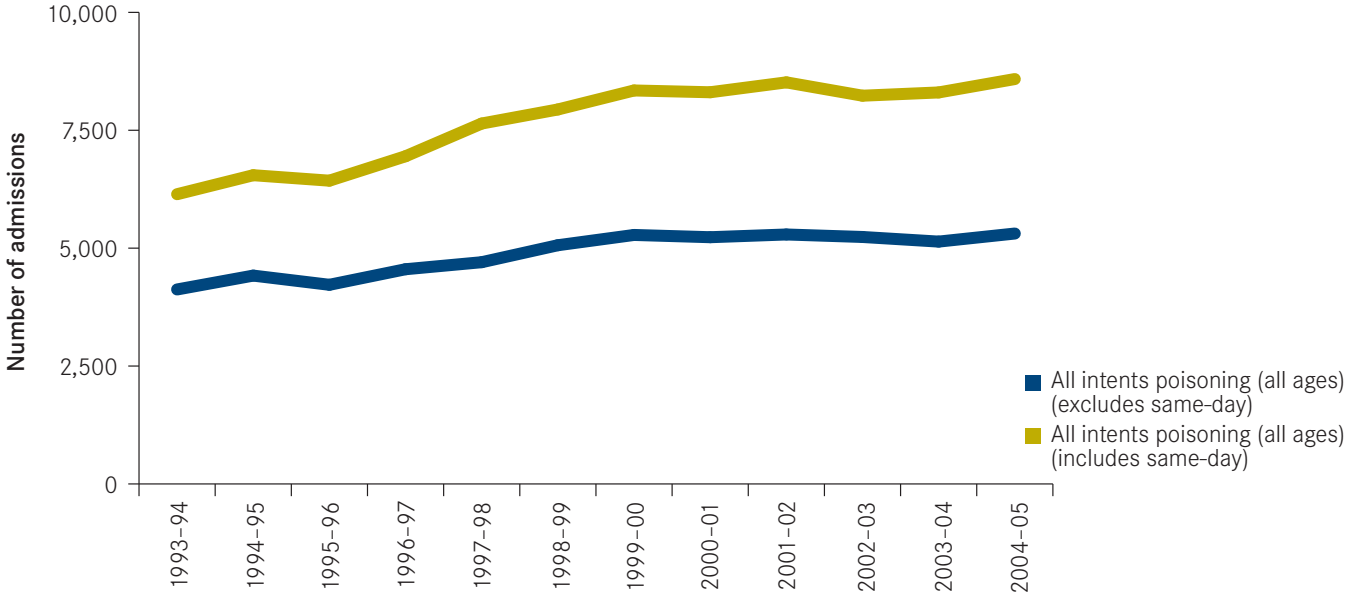
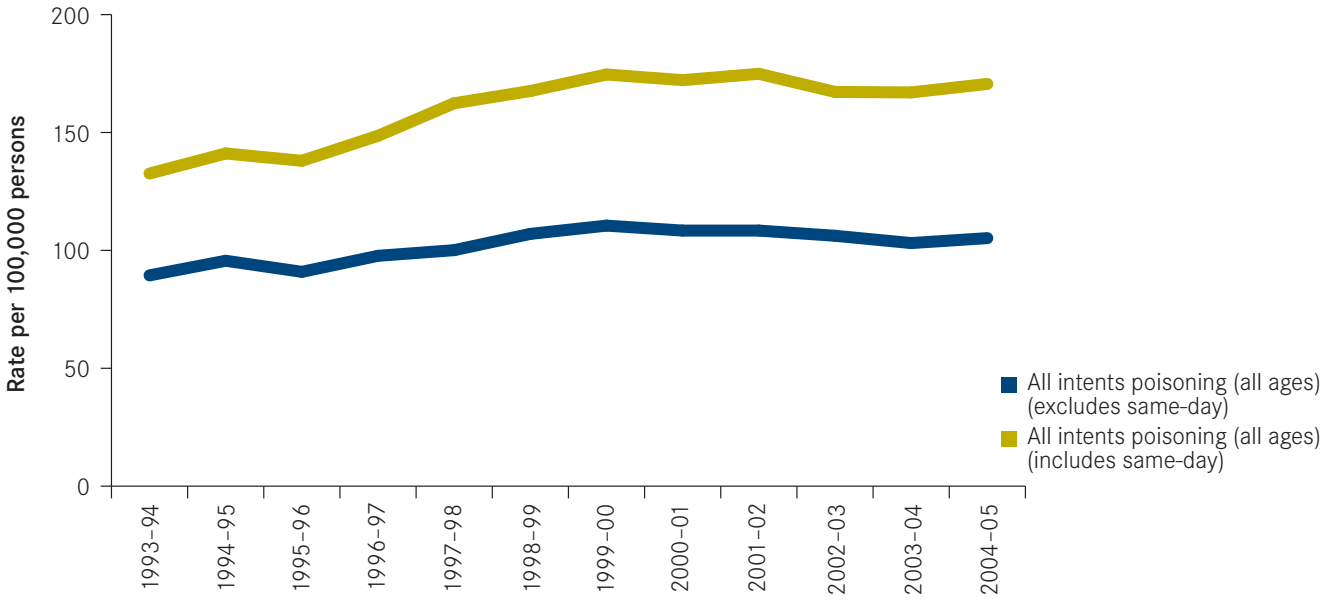
Poisoning (all intents): hospital admissions

Poisoning (all intents) hospital admissions, Victoria, 1993–94 to 2005–06



Poisoning (all intents) hospital admission rates, Victoria, 1993–94 to 2005–06



Note: All intents poisoning excludes deaths, transfers and records missing injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD–9 first external cause diagnosis code in the range 850–858, 950–959, 962–962.9, 980–982.9 or an ICD–10 first external cause code in the range X40–X49, X60–X69, X85–X90, Y10-Y19; (2) Deaths and transfers within and between hospitals were excluded; (3) Same-day records were also excluded from the final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1993–94 to 2005–06.*

All poisoning cases, regardless of intent were selected. Separate indicators for unintentional and intentional poisoning were not developed, due to reservations about the reliability of coding for intent for adolescent and adult poisoning cases.

In 2005–06, 5,310 persons were admitted to Victorian hospitals due to poisoning (excluding medical injury), an age-adjusted admission rate of 105.2 per 100,000 persons. These figures excluded 3,276 same-day hospitalisations.

Females accounted for 62 per cent (n=3,272) of poisoning hospital admissions in 2005–06.

The leading causes of poisoning admissions in 2005–06 were intentional self-poisoning by pharmaceuticals (n=2,777, 52 per cent), unintentional poisoning by other and unspecified chemicals and noxious substances (n=401, eight per cent), unintentional poisoning by antiepileptic, sedative-hypnotic, antiparkinsonism and psychotrophic drugs (n=384, seven per cent), and unintentional poisoning by other and unspecified drugs, medicaments and biological substances (n=350, seven per cent).

The frequency of poisoning admissions increased significantly over the twelve-year period from 4,124 admissions in 1994–95 to 5,310 admissions in 2005–06, representing an estimated annual change of 2.3 per cent (95% CI: 1.5–3.2) and an overall increase of 31.8 per cent (18.8–45.1) based on the trend line.

The age-adjusted poisoning admission rate increased significantly over the twelve-year period from 89.4 per 100,000 persons in 1994–95 to 105.2 per 100,000 prsons in 2005–06, representing an estimated annual change of 1.5 per cent (95% CI: 0.6–2.4) and an overall increase of 19.4 per cent (6.9–34.0).

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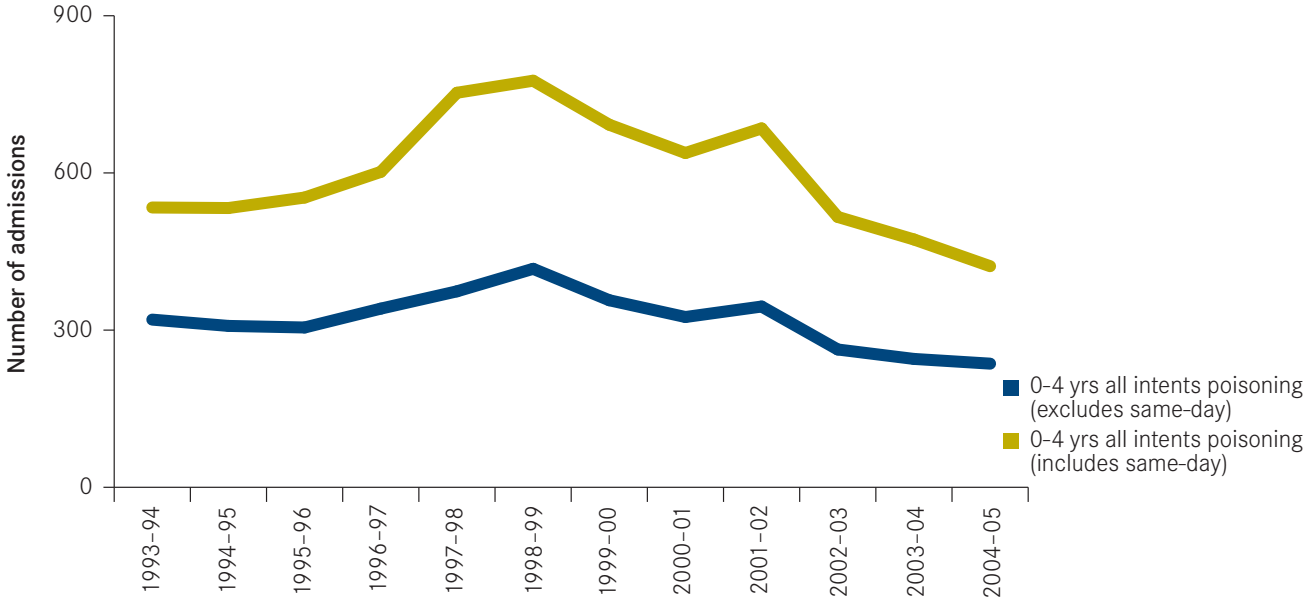
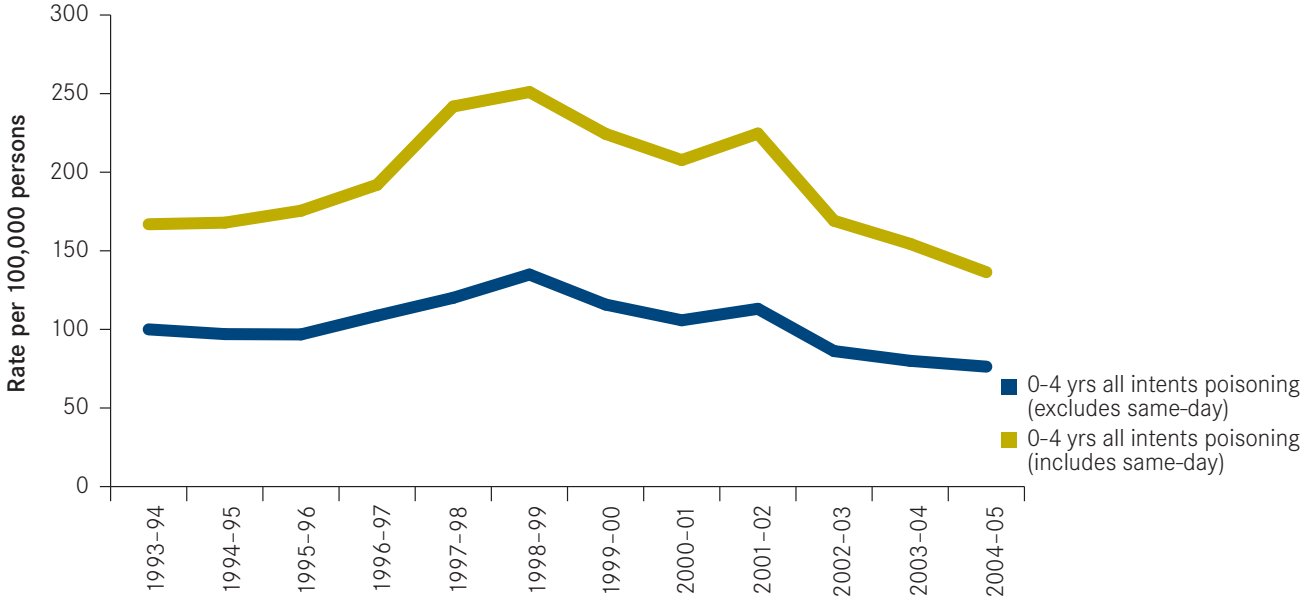
Poisoning (all intents) in children aged 0–4 years: hospital admissions

Poisoning (all intents) hospital admissions, persons aged 0–4 years, Victoria, 1993–94 to 2005–06



Poisoning (all intents) hospital admission rates, persons aged 0–4 years, Victoria, 1993–94 to 2005–06



Note: All intents poisoning excludes deaths, transfers and records missing injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD-9 first external cause diagnosis code in the range 850–858, 950–959, 962–962.9, 980–982.9 or an ICD-10 first external diagnosis cause code in the range X40–X49, X60–X69, X85–X90, Y10–Y19 if the person was aged between 0–4 years; (2) Deaths and transfers within and between hospitals were excluded; (3) Same-day records were excluded from the final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1993–94 to 2005–06.*

In 2005–06, 236 children aged 0–4 years were admitted to Victorian hospitals due to poisoning (excluding medical injury), an age-adjusted admission rate of 76.3 per 100,000 children aged under 5 years. These figures excluded 186 same-day hospitalisations.

Males accounted for 56 per cent (n=132) of all these poisoning hospital admissions in 2005–06.

The leading causes of these poisoning admissions in children aged 0–4 years in 2005–06 were unintentional poisoning by other and unspecified chemicals and noxious substances (n=65, 28 per cent), unintentional poisoning by other and unspecified drugs, medicaments and biological substances (n=64, 27 per cent), and unintentional poisoning by antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs (n=50, 22 per cent).

The frequency of poisoning admissions decreased over the twelve-year period from 320 admissions in 1994–95 to 236 admissions in 2005–06, representing an estimated annual change of 2.1 per cent (95% CI: -5.2–0.8) and an overall reduction of 22.8 per cent (-47.0–10.5) based on the trend line. This decrease in frequency was not statistically significant.

The age-adjusted poisoning admission rate decreased over the twelve-year period from 100 per 100,000 population in 1994–95 to 76.3 per 100,000 persons in 2005–06, representing an estimated annual change of -1.8 per cent (95% CI: -4.9–1.3) and an overall reduction of 19.4 per cent (-45.4–17.0). This decrease in the hospital admission rate due to poisoning in young children was not statistically significant.

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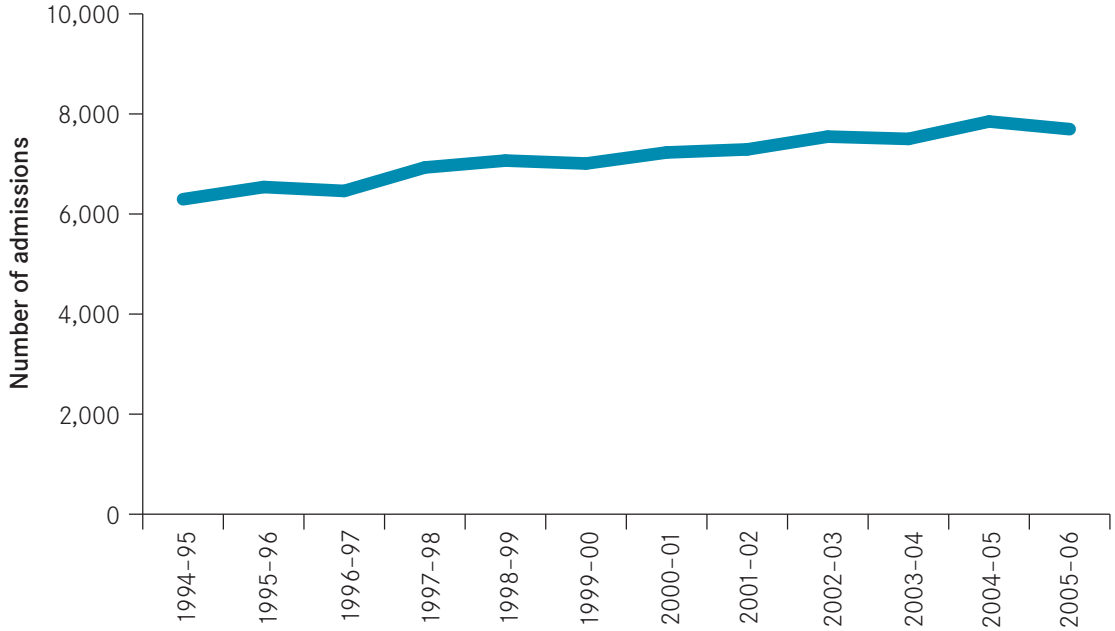
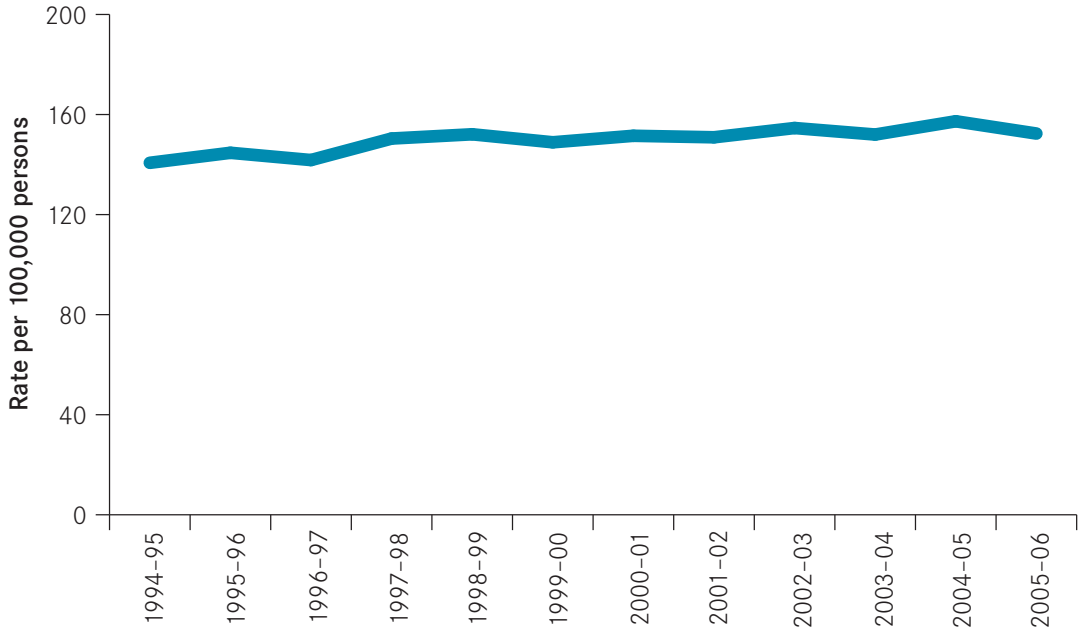
Unintentional ('accidental') injury-related forearm and wrist fracture: hospital admissions

Unintentional injury-related forearm and wrist fracture hospital admissions, Victoria, 1994–95 to 2005–06



Unintentional injury-related forearm and wrist fracture hospital admission rates, Victoria, 1994–5 to 2005–06



Note: All forearm and wrist fractures excludes deaths, transfers and records missing injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD–9 injury diagnosis code in the range 813–814 or an ICD–10 diagnosis code in the range S52.0–S52.9, S62.0–S62.1 if the injury was unintentional; (2) Deaths and transfers within and between hospitals were excluded.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1994–95 to 2005–06.*

In 2005–06, 7,696 persons were admitted to Victorian hospitals with unintentional ('accidental') injury-related wrist and forearm fracture, giving an age-adjusted admission rate of 152 per 100,000 persons.

Females were slightly over-represented, accounting for 51 per cent (n=3,912) of all unintentional injury-related wrist and forearm fracture hospital admissions in 2005–06.

The leading cause of unintentional injury-related wrist and forearm fracture admissions in 2005–06 was falls (78 per cent, n=6,029). The most frequent causes of falls were slips, trips or stumbles (22 per cent of falls, n=1,342) and mishaps involving playground equipment (15 per cent of falls, n=877).

The frequency of unintentional injury-related wrist and forearm fracture admissions increased significantly over the twelve-year period from 6,295 admissions in 1994–95 to 7,696 admissions in 2005–06, representing an estimated annual change of 1.9 per cent (95% CI: 1.5–2.2) and an overall increase of 25.5 per cent (20.2–30.4) based on the trend line.

The age-adjusted unintentional injury-related wrist and forearm fracture admission rate increased significantly over the twelve-year period from 140.7 per 100,000 persons in 1994–95 to 152.4 per 100,000 persons in 2005–06, representing an estimated annual change of 0.8 per cent (95% CI: 0.4–1.2) and an overall increase of 9.8 per cent (5.1–14.7).

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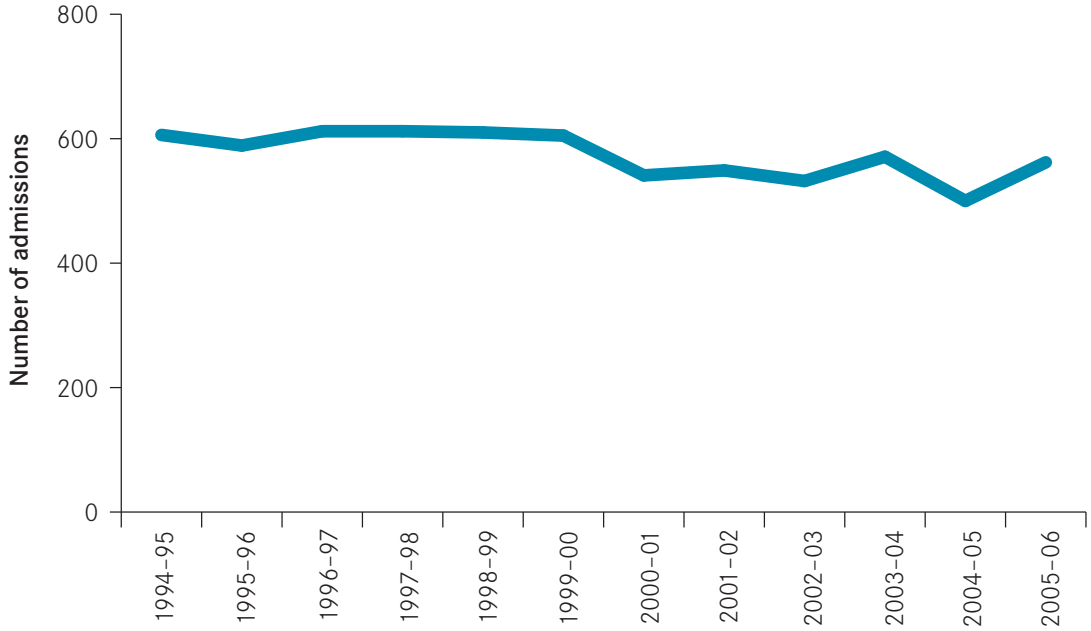
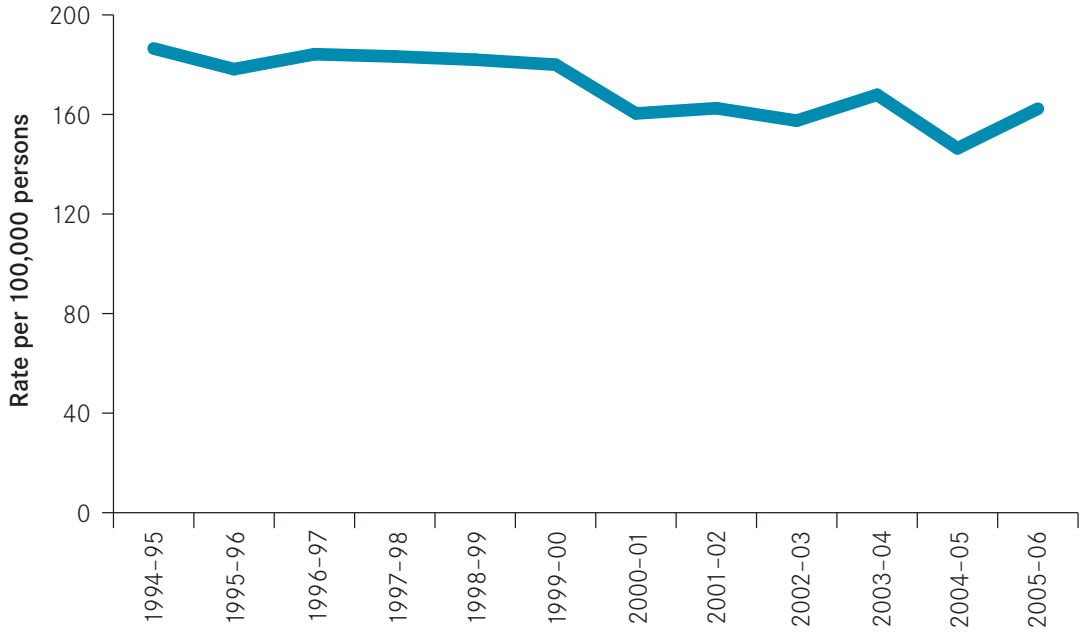
Unintentional ('accidental') injury-related hip fracture in persons aged 65–74 years: hospital admissions

Unintentional injury-related hip fracture hospital admissions, persons aged 65–74 years, Victoria, 1994–95 to 2005–06



Unintentional hip fracture hospital admissions, persons aged 65–74 years, Victoria, 1994–95 to 2005–06



Note: All hip fractures excludes deaths, transfers and records missing injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD-9 injury diagnosis code in the range 820–820.9 or an ICD-10 injury diagnosis code in the range S72.0–S72.2 if the cause of injury was unintentional and the person was aged between 65–74 years; (2) Deaths and transfers within and between hospitals were excluded.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1994–95 to 2005–06.*

In 2005–06, 562 persons aged 65–74 years were admitted to Victorian hospitals with unintentional ('accidental') injury-related hip fracture, an age-adjusted admission rate of 162 per 100,000 persons.

Females accounted for 66 per cent (n=372) of injury-related hip fracture hospital admissions.

The leading cause of injury-related hip fracture in persons aged 65–74 years in 2005–06 was falls, accounting for 94 per cent of all hospital admissions (n=530). Falls were commonly the result of slips, trips and stumbles (44 per cent of falls, n=232).

The frequency of unintentional injury-related hip fracture admissions decreased significantly over the twelve-year period from 606 admissions in 1994–95 to 562 admissions in 2005–06, representing an estimated annual change of -1.3 per cent (95% CI: -2.3 – -0.5) and an overall decrease of 15 per cent (-23.9 – -5.3) based on the trend line.

The age-adjusted unintentional injury-related hip fracture admission rate in persons aged 65–74 years decreased significantly over the twelve-year period from 187 per 100,000 persons in 1994–95 to 162 per 100,000 persons in 2005–06, representing an estimated annual change of -1.8 per cent (95% CI: -2.6 – -0.9) and an overall reduction of 19.3 per cent (-27.5 – -10.7) based on the trend line.

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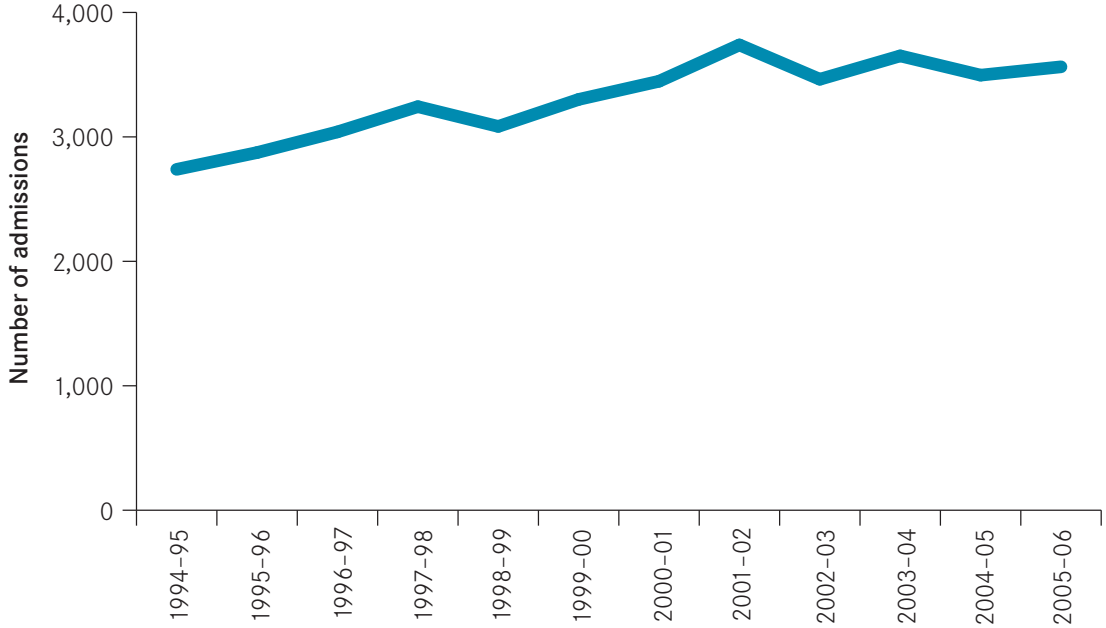
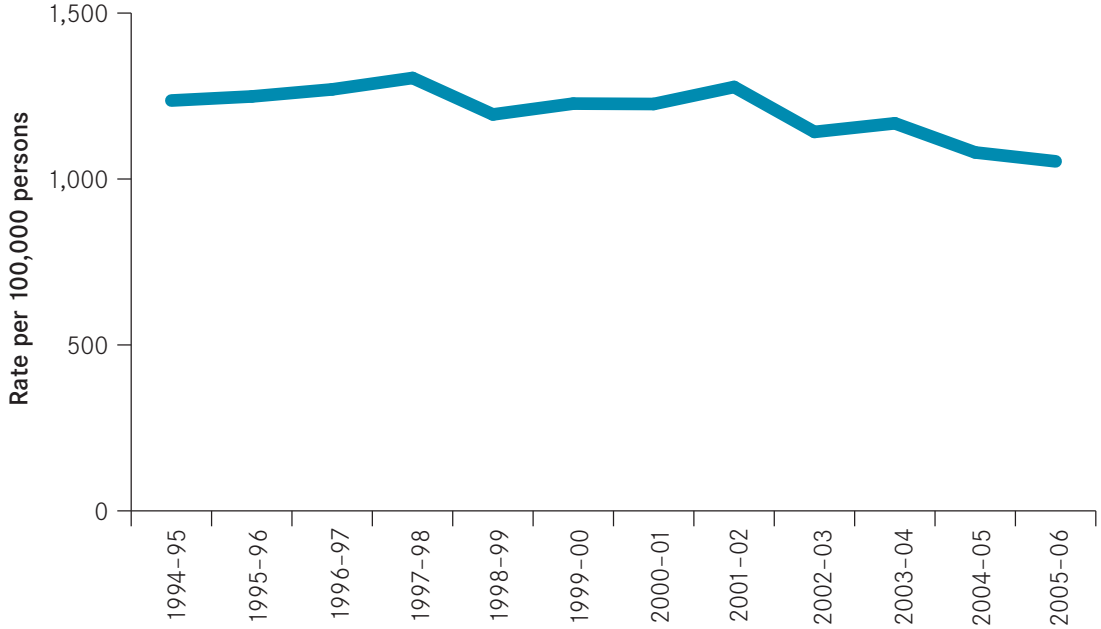
Unintentional ('accidental') injury-related hip fracture in persons aged 75 years and over: hospital admissions

Unintentional injury-related hip fracture hospital admissions, persons aged 75 years or over, Victoria, 1994–95 to 2005–06



Unintentional injury-related hip fracture hospital admission rates, persons aged 75 years or over, Victoria, 1994–95 to 2005–06



Note: All hip fractures excludes deaths, transfers and records missing injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD–9 injury diagnosis code in the range 820–820.9 or an ICD–10 injury diagnosis code in the range S72.0–S72.2 if the cause of injury was unintentional and the person aged 75 years and over; and (2) Deaths and transfers within and between hospitals were excluded.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1994–95 to 2005–06.*

In 2005–06, 3,563 persons aged 75 years and over were admitted to Victorian hospitals with unintentional ('accidental') injury-related hip fracture, an age-adjusted admission rate of 1,053 per 100,000 persons.

Females accounted for 76 per cent (n=2,704) of unintentional injury-related hip fracture hospital admissions in 2005–06.

The leading cause of unintentional injury-related hip fracture in persons aged 75 years and over in 2005–06 was falls, accounting for 98 per cent of all hospital admissions (n=3,475). Falls were commonly the result of slips, trips and stumbles (34 per cent of falls, n=1,191).

The frequency of unintentional injury-related hip fracture admissions increased significantly over the twelve-year period, from 2,739 admissions in 1994–95 to 3,563 admissions in 2005–06, representing an estimated annual change of 2.4 per cent (95% CI: 1.4–3.3) and an overall increase of 32.6 per cent (18.5–47.2) based on the trend line.

The age-adjusted unintentional injury-related hip fracture admission rate decreased significantly over the twelve-year period from 1,237 per 100,000 persons in 1994–95 to 1,053 per 100,000 persons in 2005–06, representing an estimated annual change of -1.4 per cent (95% CI: -2.3 – -0.6) and an overall reduction of 15.5 per cent (-23.9 – -6.4).

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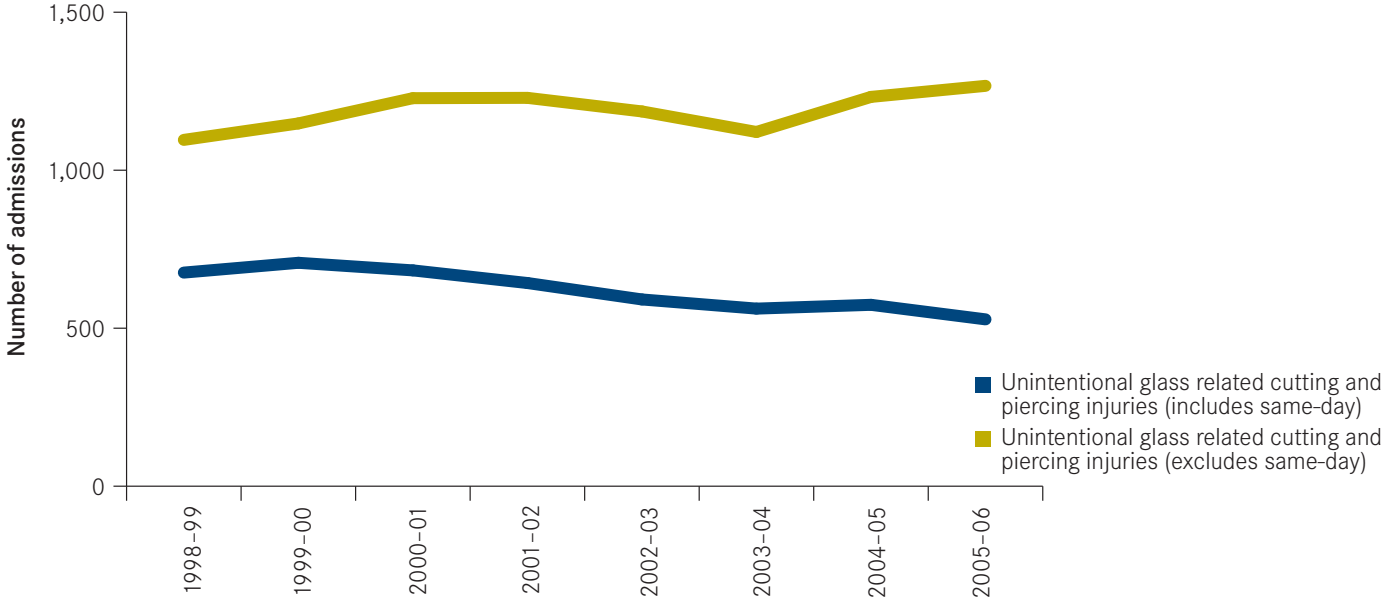
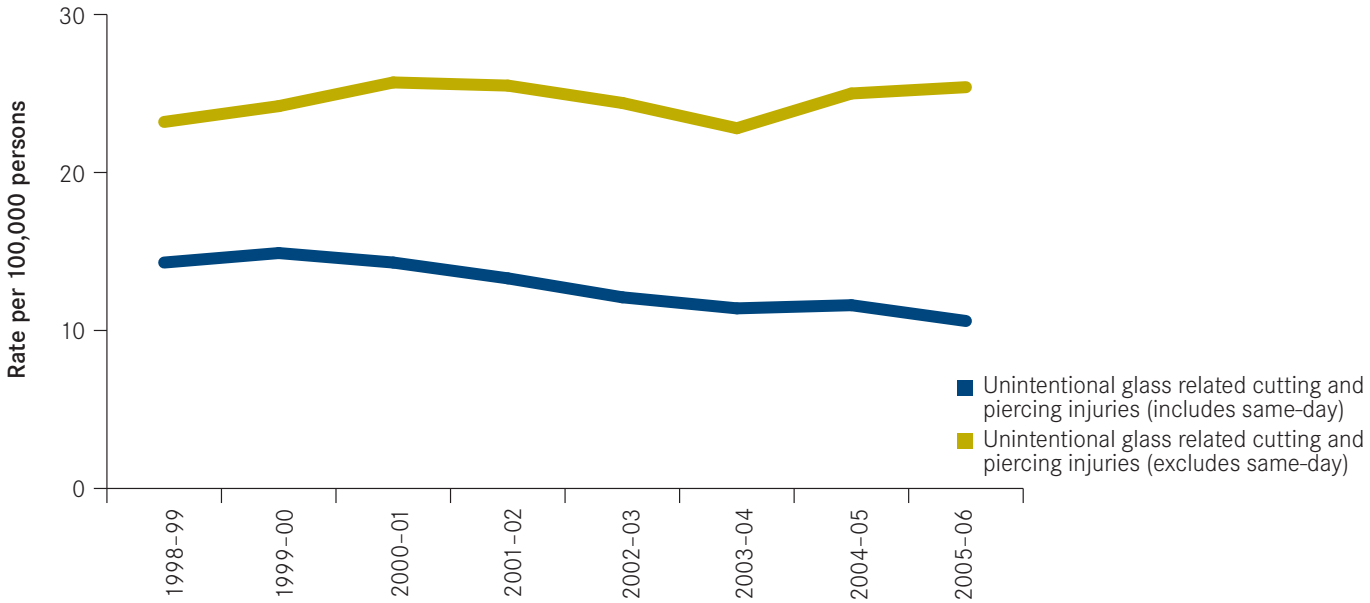
Unintentional ('accidental') glass cutting and piercing injury: hospital admissions

Unintentional glass cutting and piercing hospital admissions, Victoria, 1998–99 to 2005–06



Unintentional glass cutting and piercing hospital admission rates, Victoria, 1998–99 to 2005–06



Note: Glass related injuries excludes deaths, transfers and records missing injury as a primary diagnosis. The following selection criteria were applied: (1) An ICD–10 first external-cause diagnosis code of W25. There is no equivalent code in ICD–9; (2) Deaths and transfers within and between hospitals were excluded; and (3) Same-day records were excluded from the final analysis, but are shown on figures.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset (VAED), 1998–99 to 2005–06.*

In 2005–06, 528 persons were admitted to Victorian hospitals due to unintentional ('accidental') glass cutting and piercing injury, an age-adjusted admission rate of 10.6 per 100,000 persons. These figures exclude 739 same-day records that occurred in 2005–06.

Males accounted for 71 per cent (n=374) of all glass cutting and piercing injury hospital admissions in 2005–06.

The frequency of glass cutting and piercing injury admissions decreased significantly over the eight-year period, from 676 admissions in 1998–99 to 528 admissions in 2005–06, representing an estimated annual change of -4.0 per cent (95% CI: -5.5 – -2.6) and an overall reduction of 27.8 per cent (-36.5 – -19.2) based on the trend line.

The age-adjusted glass cutting and piercing injury admission rate decreased significantly over the eight–year period, from 14.3 per 100,000 persons in 1998–99 to 10.6 per 100,000 persons in 2005–06, representing an estimated annual change of -4.8 per cent (95% CI: -6.4 – -3.3) and an overall reduction of 32.3 (-41.2 – -23.7).

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Mental health

In this chapter

- burden of mental illness
- psychological distress
- professional help sought for mental health–related problems
- private psychiatrist visits
- hospitalisations for mental health conditions
- suicide deaths

Summary

Mental illness was responsible for approximately 15 per cent of the total disease burden in Victoria in 2001. Anxiety and depression ranked second in the top ten leading causes of this disease burden, representing 7.1 per cent of the total disease burden.

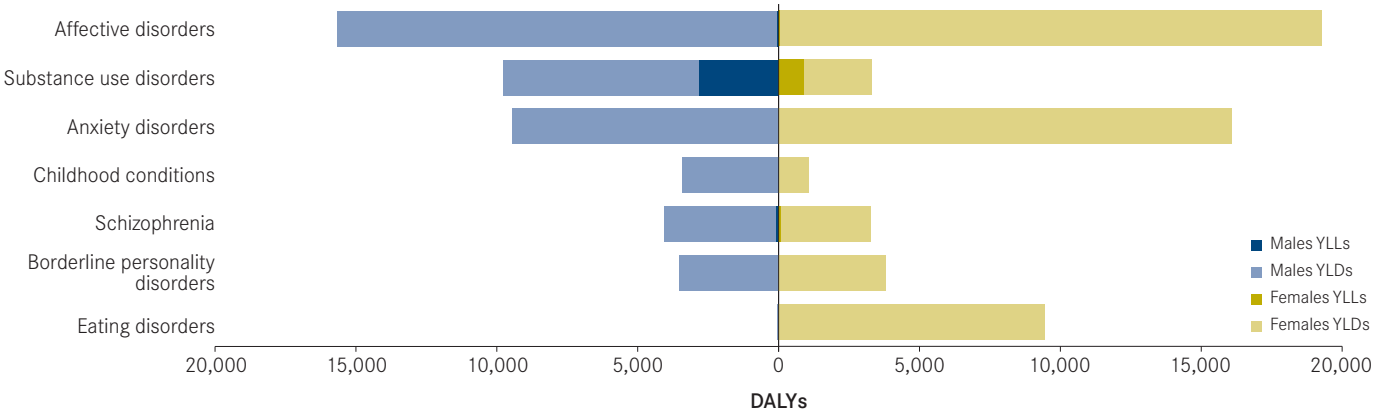
In 2006 2.4 per cent of Victorian males and 3.3 per cent of Victorian females aged 18 years or over had scores of 30 or greater on the Kessler 10 (K10) scale, and were classified as likely to be at high risk of being affected by psychological distress. Among males the proportion classified as being at high risk of psychological distress was greatest among those aged 25-34 years (six per cent). The proportion of the population with K10 scores in the high range (30 or more) was also greatest for the 25-34 year age group (4.8 per cent).

There were 50,885 hospital admissions for males with a mental health-related primary diagnosis in 2005–06, an admission rate of 200.5 per 10,000 males, accounting for 471,681 patient days. Among females, 80,646 hospital admissions occurred in 2005–06, accounting for 574,336 patient days. The admission rate for females for mental health-related diagnoses was 311.3 per 10,000 females.

Age-adjusted suicide rates did not change significantly for any age group between 2000 and 2004. During this five-year period males aged 20–39 years were at consistently higher risk of suicide death than any other age group, although this difference was statistically significant only in 2000 and 2001.

Burden of mental illness

Burden of mental illness, by disorder and sex, Victoria, 2001



	Males			Females		
Mental illness	**DALYs**	**YLL**	**YLD**	**DALYs**	**YLL**	**YLD**
Eating disorders	62	-	62	949	3	945
Borderline personality disorder	3,530	-	3,530	3,803	-	3,803
Schizophrenia	4,040	90	3,950	3,256	96	3,159
Childhood conditions	3,421	-	3,421	1,057	-	1,057
Anxiety disorders	9,474	-	9,474	16,102	-	16,102
Substance use disorders	9,773	2,827	6,946	3,304	900	2,404
Affective disorders	15,672	41	15,631	19,276	62	19,215
Total	**46,390**	**3,079**	**43,311**	**48,027**	**1,138**	**46,889**

Note: DALY = disability adjusted life year, YLL = years of life lost, YLD = years of life lost due to disability.

Source: Department of Human Services, *Victorian burden of disease study: mortality and morbidity in 2001*, Appendix 2.

Mental illness was responsible for approximately 15 per cent of the total disease burden in Victoria in 2001, or 46,390 DALYs in males and 48,027 DALYs in females. Less than five per cent of this attributable burden was due to premature mortality, most of which can be accounted for by fatal outcomes associated with substance use disorders. The picture was dominated by affective and substance use disorders, which accounted for almost 80 per cent of the burden attributable to mental illness. In males, depression ranked as the fifth leading cause of overall disease burden, while schizophrenia, generalised anxiety disorder, alcohol dependence, heroin or poly-drug use and borderline personality disorder ranked fifteenth and seventeenth to twentieth respectively. In females, depression ranked as the fourth leading cause of overall disease burden, while generalised anxiety disorder, borderline personality disorder and schizophrenia ranked eleventh, fifteenth and eighteenth respectively.

For more information

Department of Human Services (DHS), 2005, *Victorian burden of disease study: Mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/healthstatus

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Psychological distress

Kessler 10 (K10) score category, persons aged 18 years or over, by age group and sex, Victoria, 2006

	Kessler 10 Score							
	< 16		16-21		22-29		30+	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE(%)**	**%**	**SE (%)**
Males								
18-24	**62.1**	4.3	**24.6**	4.0	**10.1**	2.4	**0.8**	0.5
25-34	**59.8**	3.8	**23.9**	3.2	**7.0**	1.7	**6.0**	2.1
35-44	**68.8**	2.6	**20.4**	2.3	**5.7**	1.2	**1.9**	0.6
45-54	**68.1**	2.5	**20.9**	2.2	**5.9**	1.3	**1.3**	0.3
55-64	**71.1**	2.7	**15.3**	2.2	**7.4**	1.6	**2.4**	0.7
65+	**75.6**	2.0	**12.5**	1.6	**4.4**	0.8	**1.1**	0.5
Total	**67.5**	1.3	**19.7**	1.1	**6.6**	0.6	**2.4**	0.5
Females								
18-24	**47.8**	4.0	**32.1**	3.6	**15.0**	2.9	**3.8**	1.5
25-34	**52.9**	2.6	**29.9**	2.4	**11.1**	1.6	**3.7**	1.0
35-44	**59.2**	2.0	**26.0**	1.8	**8.7**	1.1	**3.7**	0.7
45-54	**62.2**	2.1	**23.1**	1.8	**7.5**	1.1	**4.4**	1.1
55-64	**69.9**	2.1	**17.7**	1.7	**5.9**	1.0	**2.6**	0.7
65+	**65.4**	2.2	**20.5**	1.9	**6.4**	1.1	**1.8**	0.6
Total	**59.8**	1.0	**24.8**	0.9	**8.9**	0.6	**3.3**	0.4
Persons								
18-24	**55.1**	2.9	**28.3**	2.7	**12.5**	1.9	**2.3**	0.8
25-34	**56.3**	2.3	**26.9**	2.0	**9.1**	1.2	**4.8**	1.2
35-44	**63.9**	1.6	**23.2**	1.4	**7.2**	0.8	**2.8**	0.5
45-54	**65.1**	1.6	**22.0**	1.4	**6.7**	0.9	**2.9**	0.6
55-64	**70.5**	1.7	**16.5**	1.4	**6.7**	0.9	**2.5**	0.5
65+	**69.9**	1.5	**17.0**	1.3	**5.5**	0.7	**1.5**	0.4
Total	**63.5**	0.8	**22.3**	0.7	**7.8**	0.4	**2.9**	0.3

Note: SE = standard error. Figures may not add to 100 per cent due to a proportion of 'Don't know' or 'refused' responses.

Source: Department of Human Services, *Victorian population health survey 2006*.

Good mental health is fundamental to the wellbeing of individuals, their families and the wider community. Findings from the 2004–05 *National Health Survey* (Australian Bureau of Statistics, 2006) indicated that anxiety-related problems and mood (affective) problems were the most commonly reported mental health and behavioural problems. Australia-wide, these problems were each self-reported by four per cent of males and six per cent of females (Australian Bureau of Statistics, 2006). Psychological distress has a major effect on people's ability to work, study and manage their everyday activities.

The *Victorian population health survey 2006* includes the Kessler 10 scale (K10), a measure designed to assess non-specific psychological distress. It has been validated as a simple indicator of anxiety, depression and worry at a population level (Kessler, Andrews, Colpe et al, 2002). The K10 includes ten questions that collect information on the degree of non-specific psychological distress which a person might have experienced in the four weeks before the interview. Deriving a total score on the K10 is based on how frequently in the previous four weeks an individual reports having experienced negative emotional states. A K10 score provides a guide to the degree of psychological distress experienced by an individual and in general, the higher the K10 score, the greater the likelihood that a person has

psychological distress. The maximum score of 50 indicates severe psychological distress and the minimum score indicates no distress. However, because the K10 instrument is merely a tool, anyone experiencing depression, anxiety or worry should be properly assessed by a mental health professional.

Among those aged 18 years and over, 2.4 per cent of males and 3.3 per cent of females had scores of 30 or greater on the K10 in 2006, and were classified as likely to be at high risk of being affected by psychological distress. For reporting purposes, the middle risk level was divided into an upper range (K10 scores of 22–29) and a lower range (K10 scores of 16–21). Almost nine per cent (8.9 per cent) of females and 6.6 per cent of males had scores in the upper range of the middle-risk category. Approximately one-fifth (19.7 per cent) of males and 24.8 per cent of females had scores in the lower range of the middle-risk category. Almost two-thirds of the population (67.5 percent of males and 59.8 per cent of females) aged 18 years and over reported low levels of psychological distress.

Overall, a higher proportion of females had higher K10 scores across all age groups compared to males, with the exception of the 25–34 year age group, where 6.0 per cent of males, and 3.7 per cent of females, had K10 scores of 30 or greater, and the 55–64 year age group, where 7.4 per cent of males, and 6.7 per cent of females had K10 scores of 22–29.

References

Australian Bureau of Statistics, 2006, *National health survey 2004–05: mental health*, Australian Bureau of Statistics, Catalogue no. 4364.0, Canberra.

Kessler, RC, Andrews, GC, Colpe, IJ, Hiripi, E, Mroczek, DK, Normand, SL, Walters, EE, Zaslavsky, AM, 2002, 'Short screening scales to monitor population prevalences and trends in non-specific psychological distress', *Psychological Medicine,* Volume 32, pp. 959–76.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

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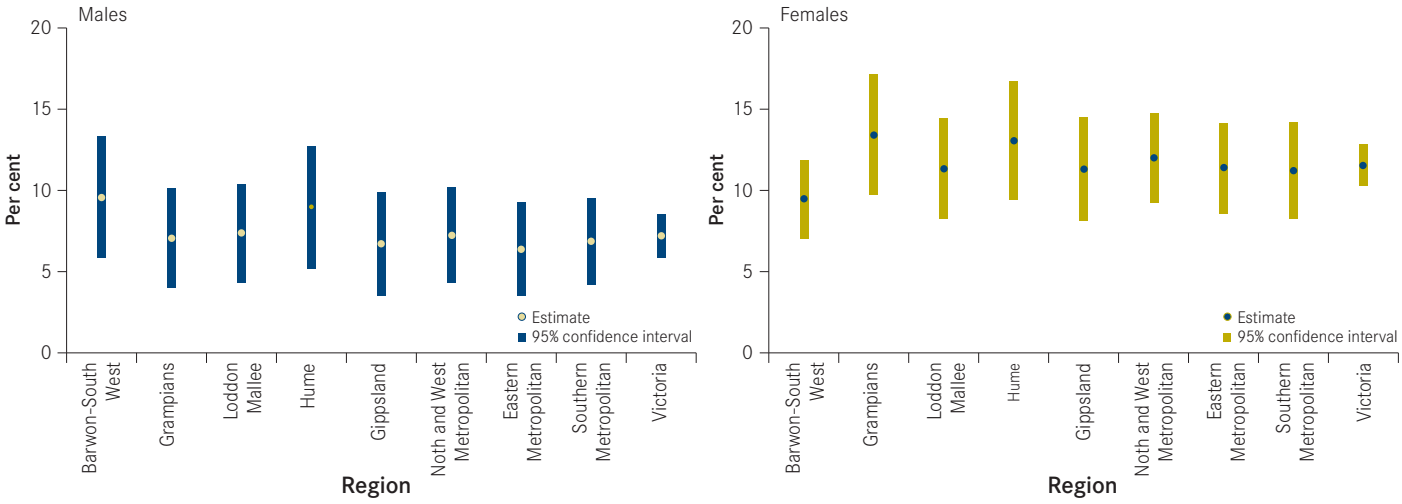
Professional help sought for mental health-related problems

Self-reported professional help sought for mental health-related problems during the last year, persons aged 18 years of over, by sex and region, Victoria, 2006



The *Victorian population health survey 2006* asked respondents whether they had sought help for a mental health-related problem during the previous year. Approximately seven per cent of males reported having sought professional help in 2006. The proportion of males who had sought help ranged from 6.4 per cent in the Eastern Metropolitan Region to 9.0 per cent in the Hume Region.

Almost 12 per cent of females in Victoria in 2006 reported having sought professional help for a mental health-related problem during the previous year. The proportion of females who had sought help ranged from 9.4 per cent in the Barwon-South Western Region to 13.4 per cent in the Grampians Region.

No statistically significant differences were apparent across the regions in the proportion of males or females who reported seeking help for a mental health-related problem during the previous year.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

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Private psychiatrist visits

Private psychiatrist services subsidised through Medicare, by location of patient attendance and Medical Benefits Schedule (MBS) item, Victoria, 2005-06

Patient attendances in consulting rooms MBS Item No.	Description	Number of services	Per cent
300, 310	15 minutes or less	9,506	1.7
302, 312	16 to 30 minutes	79,467	14.1
304, 314	31 to 45 minutes	155,596	27.5
306, 316	46 to 75 minutes	278,666	49.3
308, 318	Over 75 minutes	12,939	2.3
319	selected cases (> 45 minutes)	29,251	5.2
Total		**565,425**	**100.0**

Patient attendances in hospital MBS Item No.	Description	Number of services	Per cent
320	15 minutes or less	5,555	8.2
322	16 to 30 minutes	26,901	39.8
324	31 to 45 minutes	18,852	27.9
326	46 to 75 minutes	14,186	21.0
328	Over 75 minutes	2,155	3.2
Total		**67,649**	**100.0**

Patient attendances in other locations MBS Item No.	Description	Number of services	Per cent
330	15 minutes or less	335	9.6
332	16 to 30 minutes	1,049	30.0
334	31 to 45 minutes	968	27.7
336	46 to 75 minutes	940	26.9
338	Over 75 minutes	200	5.7
Total		**3,492**	**100.0**

Other services MBS Item No.	Description	Number of services	Per cent
342, 344, 346	Group psychotherapy	21,625	92.9
348, 350, 352	Interview with non-patient	1,353	5.8
353–370	Telepsychiatry	39	0.2
855-866	Case conferencing	271	1.2
Total		**23,288**	**100.0**

Total services	**659,854**
Per 1,000 persons	131.4

Note: MBS = Medical Benefits Schedule. Patient attendances in hospital includes private psychiatrist services delivered to patients admitted to hospital. Some of these services may be considered non-ambulatory. Some of the services included in the category 'Other services' may have been delivered to patients admitted to hospital and may be considered to be non-ambulatory. Services for electro convulsive therapy have not been included as they are usually provided to non-ambulatory-equivalent admitted patients. See AIHW (2007) for further details of mental health-related separations. The rate per 1,000 persons is a crude rate based on the estimated resident population at 31 December 2005.

Source: Australian Institute of Health & Welfare, 2007, *Mental health services in Australia 2004-05*, Mental health series no 9, Canberra: AIHW. Based on Medicare data from the Commonwealth Department of Health and Ageing.

Individuals may seek professional help for mental health-related problems from a range of sources, including hospitals, community-based services, general practitioners and private psychiatrists.

There were 659,854 services provided to patients by private psychiatrists (and subsidised by Medicare) in 2005–06, equivalent to 131.4 services per 1,000 persons. Almost 96 per cent of private psychiatrist services were provided in psychiatrists' consulting rooms, rather than in hospitals or other locations. More than half of these services were longer than 45 minutes.

For more information

Australian Institute of Health and Welfare, 2007, *Mental health services in Australia 2004–05*, Mental health series no. 9, Canberra: AIHW, www.aihw.gov.au/publications/index.cfm/title/10381

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Hospitalisations for mental health conditions

		Males				Females			
ICD-10-AM code	**Primary diagnosis**	**Separations**	**Patient days**	**Patients**	**Separations per patient**	**Separations**	**Patient days**	**Patients**	**Separations per patient**
F00-F99	All mental health disorders	50,885	471,681	25,902	1.96	80,646	574,336	33,747	2.39
F00-F03	Dementia	5,356	91,013	3,643	1.47	7,927	131,191	5,620	1.41
F04-F09	Other organic mental disorders	3,070	58,845	2,518	1.22	3,391	52,905	2,757	1.23
F10	Mental behavioural disorders due to alcohol	13,089	77,331	7,810	1.68	8,540	38,544	3,514	2.43
F11-F19	Mental behavioural disorders due to other psychoactive substances use	5,494	55,944	3,758	1.46	4,438	33,710	2,747	1.62
F20	Schizophrenia	6,026	93,335	2,915	2.07	4,428	51,622	1,874	2.36
F21-F29	Other schizophrenic, schizotypical, delusional disorders	3,534	34,435	1,968	1.80	5,000	45,522	1,995	2.51
F30	Manic episode	152	1,484	131	1.16	199	1,955	166	1.20
F31	Bipolar affective disorders	2,469	24,734	1,066	2.32	5,946	44,095	1,833	3.24
F32-F33	Depressive disorders	12,004	93,840	4,962	2.42	30,456	169,382	10,102	3.01
F34-F39	Other affective disorders	435	2,966	340	1.28	1,434	4,315	551	2.60
F40-F48	Neurotic, stress-related and somatoform disorders	8,503	51,246	4,571	1.86	17,799	99,529	9,527	1.87
F50	Eating disorders	153	972	46	3.33	2,258	20,100	590	3.83
F51-F59	Other behavioural syndromes associated with physiological disturbances, physical factors	204	1,095	187	1.09	1,287	6,311	902	1.43
F60-F69	Disorders of adult personality and behaviour **	2,199	17,169	1,135	1.94	7,457	37,811	1,893	3.94
F70-F79	Mental retardation	583	8,011	437	1.33	598	6,787	411	1.45
F80-F89	Disorders of psychological development	394	2,004	250	1.58	173	1,547	132	1.31
F90-F98	Disorders onset usually occurring in childhood, adolescence	869	6,006	744	1.17	590	3,158	515	1.15
F99	Mental disorder not otherwise specified	129	2,222	119	1.08	1,122	3,127	1,067	1.05

Note: Hospital separations were selected if an ICD-10-AM code of F00–F99 occurred anywhere in the forty diagnostic fields (TDIAG1 to TDIAG40) and was considered to be a primary diagnosis. A primary diagnosis is a condition that was present at the time of admission and required treatment, or diagnostic procedures, or increased nursing and/or monitoring, or active evaluation.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset, 2005–06* and the *Victoria Data Linkage Study*.

In Victoria in 2005–06, there were 50,885 hospital admissions for males with a mental health-related primary diagnosis, a rate of 200.5 admissions per 10,000 males. These separations accounted for 471,681 patient days. Among females, there were 80,646 hospital admissions in 2005–06, a rate of 311.3 admissions per 10,000 females, accounting for 574,336 patient days.

Of the separations for disorders of adult personality and behaviour (F60-F69) 74 per cent were for borderline personality disorder (F60.31) in females and 29 per cent in males.

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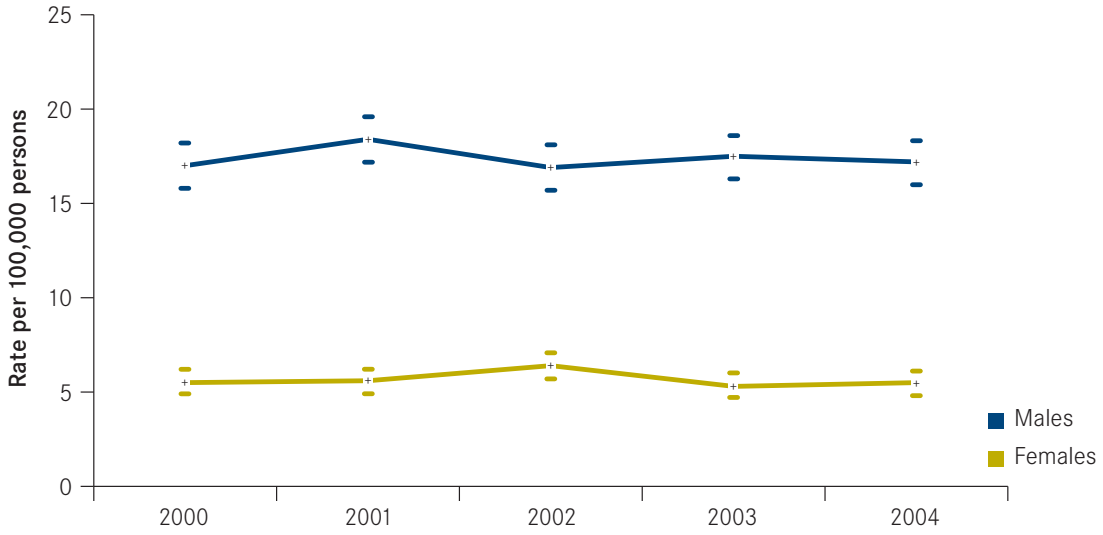
Suicide deaths

Age-adjusted suicide death rates, by sex, Victoria, 2000–2004

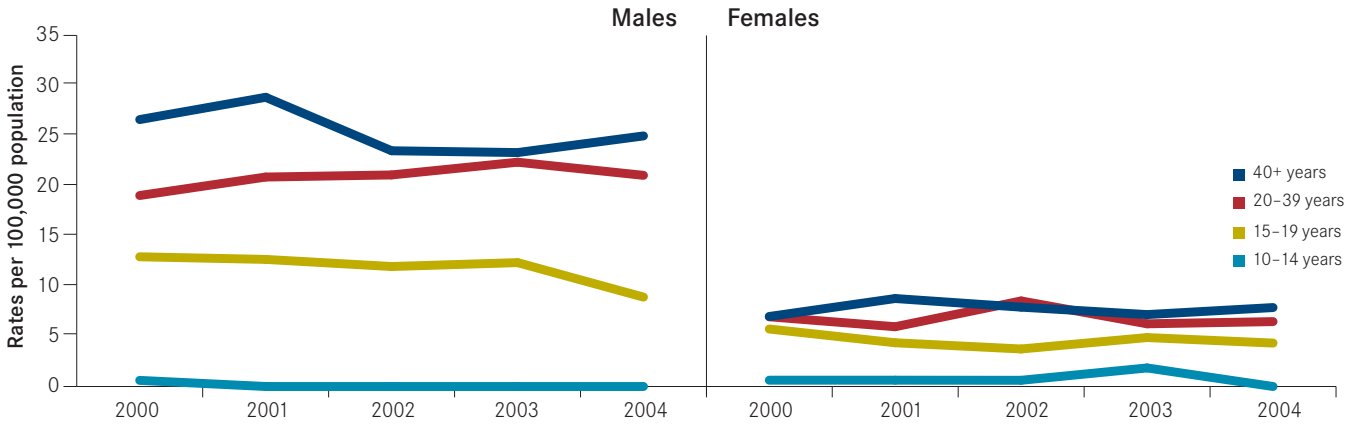


Note: CI = confidence interval. Deaths were classified using ICD-10 codes X60–X85, Y87.0 (intentional self-harm) and Y10-Y34 (undetermined intent). Rates were directly standardised to the Victorian 2004 population.

Source: Australian Bureau of Statistics mortality data and population estimates.

Suicide death rates in Australia were ranked eleventh among the highest in the 26 OECD countries in 2001 (OECD, 2003).

Suicide death rates are significantly greater among men compared to women. The age-adjusted suicide rate in Victoria for 2004 was 17.2 per 100,000 persons for males, representing 75 per cent of the total deaths, while the rate for females was 5.5 per 100,000 persons, representing 25 per cent of total deaths. By contrast, females represented approximately 63 per cent of hospital admissions for intentional self-harm in 2003–04, while males accounted for only 37 per cent (VAED, 2003–04). Hence there is debate about whether males are at higher risk of suicide. It has been proposed that the propensity of males to use more lethal methods compared with females may account, at least in part, for the gender difference, (OECD, 2003; Beautrais, 2003).



Note: Deaths were classified using ICD–10 codes (X60–X84; Y87.0; Y10–Y34).

Source: Australian Bureau of Statistics, mortality data and population estimates.

Age-adjusted suicide rates did not change significantly over time between the period 2000 to 2004 for either sex. Males aged 20–39 years were at a consistently higher risk of suicide death than any other age group, although this difference was statistically significant only in 2000 and 2001.

For more information

Organisation for Economic Cooperation and Development (OECD), 2003, *Health at a glance: OECD indicators 2003*, Paris: OECD.

Beautrais, AL, 2003, 'Suicide and serious suicide attempts in youth: A multiple-group comparison study', *American Journal of Psychiatry*, Volume 160, pp. 1093–99.

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Musculoskeletal conditions

In this chapter

Summary

Musculoskeletal disease was responsible for three per cent of the total Victorian disease burden in 2001, or 7,114 DALYs in males and 11,121 in females. Only 10 per cent of this attributable burden was due to mortality.

Osteoarthritis was the single biggest contributor, accounting for approximately 53 per cent of the overall burden attributable to musculoskeletal disease. In 2005–06 there were 20,753 hospital admissions for osteoarthritis, with an average of 5.3 bed days. The overall hospital admission rate for osteoarthritis has increased by 31 per cent since 1999–00. Admission rates for osteoarthritis were higher in rural areas than in metropolitan areas over the period.

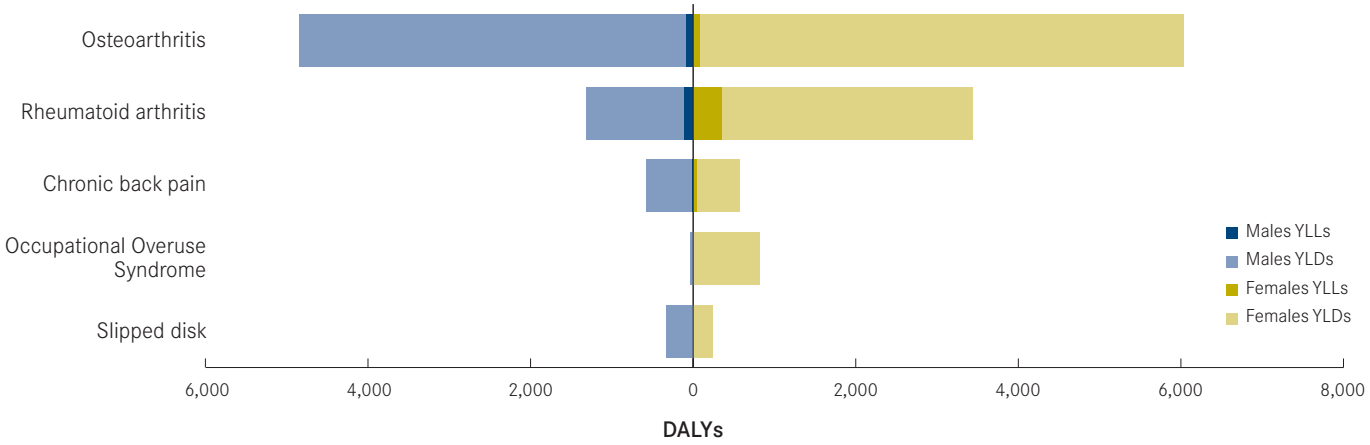
In 2005–06, there were 1,803 hospital admissions (74.4 per cent female and 25.6 per cent male) for rheumatoid arthritis, with an average of 3.4 bed days. The overall rate of admission for rheumatoid arthritis has increased since 1999–00. Admission rates for rheumatoid arthritis were higher in rural areas than in metropolitan areas over the period, although there was an increase in the rates for metropolitan areas in 2004–05.

In 2005–06, there were 2,176 hospital admissions (79.2 per cent female and 20.8 per cent male) for osteoporosis, with an average of 5.5 bed days. The overall hospital admission rate for osteoporosis increased from 3.01 per 10,000 persons in 1999–2000 to 3.67 per 10,000 persons in 2005–06. A similar trend was observed for metropolitan areas, however, rural admission rates decreased over the period.

Estimates from the 2006 *population health survey* suggest that one in five (20.0 per cent) Victorian adults aged 18 years or over had been diagnosed with arthritis, and 4.4 per cent had been diagnosed with osteoporosis.

Burden of musculoskeletal disease

Burden of Musculoskeletal Disease by Condition and Sex, Victoria, 2001



	Males			Females		
Musculoskeletal disease	**DALYs**	**YLL**	**YLD**	**DALYs**	**YLL**	**YLD**
Slipped disk	334	-	334	244	-	244
Occupational Overuse Syndrome	37	-	37	818	-	818
Chronic back pain	586	8	578	581	41	540
Rheumatoid arthritis	1,311	109	1,202	3,443	350	3,093
Osteoarthritis	4,847	82	4,765	6,036	75	5,961
Total	**7,114**	**198**	**6,916**	**11,121**	**466**	**10,655**

Note: DALYs = disability adjusted life years, YLLs = years of life lost, YLDs = years lived with disability.

Source: Department of Human Services, *Victorian burden of disease study: mortality and morbidity in 2001*, Appendix 2.

Musculoskeletal disease was responsible for three per cent of the total Victorian disease burden in 2001, or 7,114 DALYs in males and 11,121 in females. Only 10 per cent of this attributable burden was due to mortality. Osteoarthritis was by far the single biggest contributor, accounting for approximately 53 per cent of the overall burden attributable to musculoskeletal disease. Osteoarthritis was the twelfth and fourteenth leading cause of the overall female and male burden, respectively. The greater female burden due to osteoarthritis was largely due to higher female life expectancy. For rheumatoid arthritis, it was largely due to the higher incidence of the condition in women.

For more information

Department of Human Services (DHS), 2005, *Victorian burden of disease study: Mortality and morbidity in 2001*, Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/healthstatus

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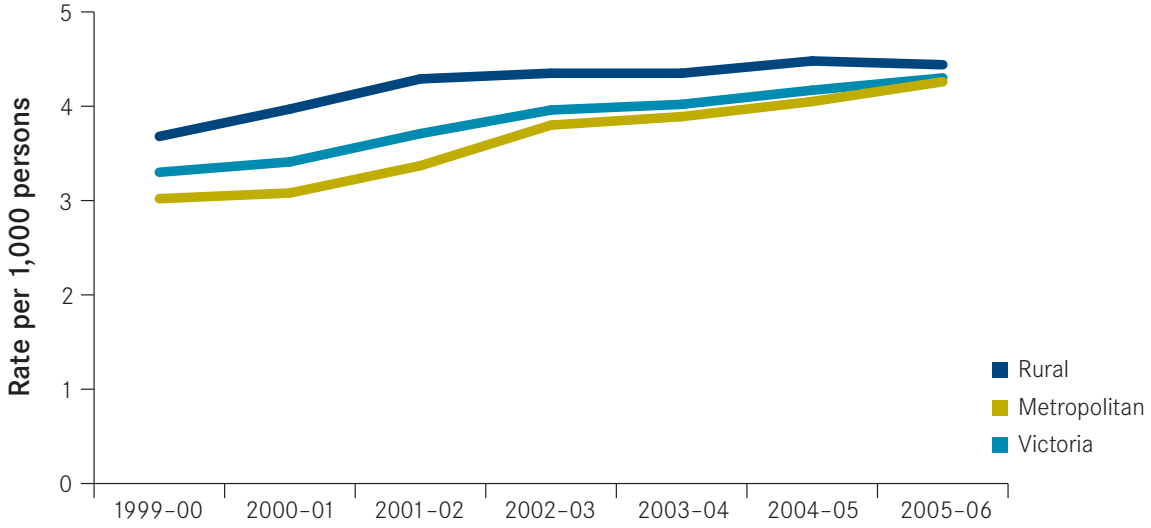
Osteoarthritis, rheumatoid arthritis and osteoporosis admissions

Osteoarthritis, rheumatoid arthritis and osteoporosis admission rates for rural and metropolitan areas, Victoria, 1999–2000 to 2005–2006



		1999–00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	3.68	3.97	4.29	4.35	4.35	4.48	4.44
per 1,000 persons	Metropolitan	3.02	3.08	3.37	3.80	3.89	4.05	4.26
	Victoria	3.30	3.41	3.71	3.96	4.02	4.17	4.30
Rural:Metro rate ratios (Metro=1)		**1.22**	**1.29**	**1.27**	**1.115**	**1.12**	**1.11**	**1.04**

Note: ICD–10–AM codes were used to identify all osteoarthritis, rheumatoid arthritis and osteoporosis separations in 1999–2000 to 2005–06. Rural and metropolitan areas are based on the Department of Human Services regions. Admissions were selected by first (principal) diagnosis. Rates are age- and sex-standardised using the Victorian population at June 1996.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset: 1999-00 to 2005-06*; Australian Bureau of Statistics population data 1999 to 2006.

There were 24,737 admissions for osteoarthritis, rheumatoid arthritis and osteoporosis as first (principal) diagnoses in 2005–06, with an average of 5.14 bed days. Admission rates increased from 3.2 per 1,000 persons (95% CI: 3.15–3.25) in 1999–00 to 4.30 per 1,000 persons (4.24–4.35) in 2005–06. Admission rates were higher among persons residing in rural areas of Victoria, compared with metropolitan areas over the period, although this difference has decreased over time.

For more information

ACT Health, 2003, *Australian Capital Territory Chief Health Officer's Report 2000–2002*, Canberra: ACT Health.

Department of Health and Ageing website: www.health.gov.au/internet/main/publishing.nsf/Content/pq-arthritis

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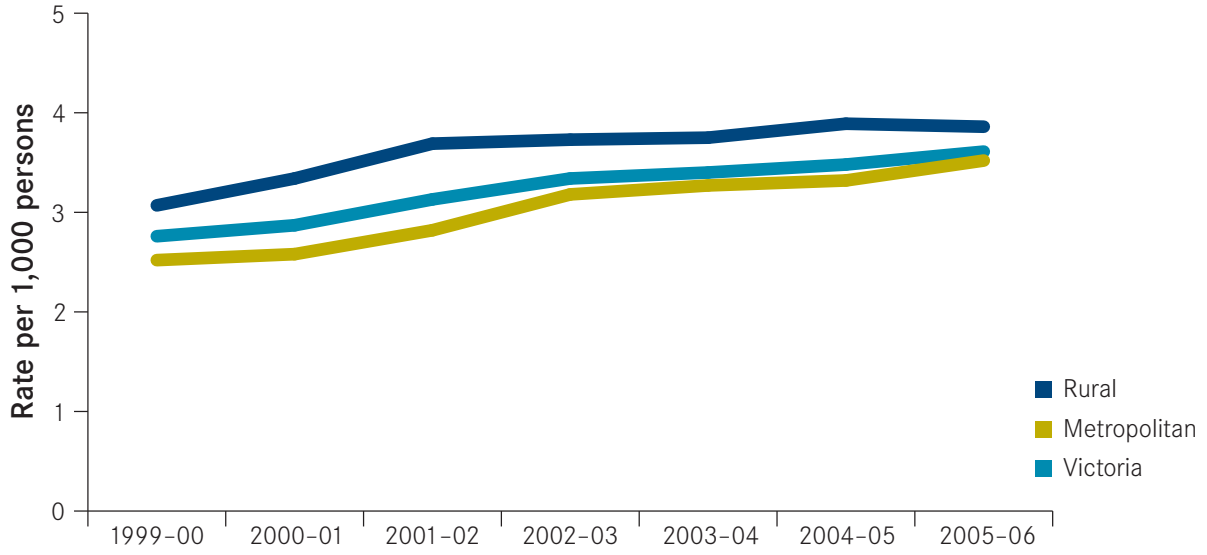
Osteoarthritis admissions: metropolitan-rural comparison

Osteoarthritis admission rates for rural and metropolitan health regions, Victoria, 1999–2000 to 2005–06



		1999–00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	3.07	3.34	3.69	3.73	3.75	3.89	3.86
per 1,000 persons	Metropolitan	2.52	2.58	2.82	3.18	3.27	3.32	3.52
	Victoria	2.76	2.87	3.13	3.34	3.40	3.48	3.61
Rural:Metro rate ratios (Metro=1)		**1.22**	**1.30**	**1.31**	**1.17**	**1.15**	**1.17**	**1.10**

Note: ICD–10–AM codes were used to identify all osteoarthritis separations in 1999–2000 to 2005–06. Rural and metropolitan areas are based on the Department of Human Services regions. Admissions were selected by first (principal) diagnosis. Rates are age and sex standardised using the Victorian population at June 1996.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset: 1999-00 to 2005-06*; Australian Bureau of Statistics population data 1999 to 2006.

Osteoarthritis is one of the most common types of arthritis, affecting the cartilage in the joints. Cartilage cushions the ends of bones where they meet to form a joint, but in osteoarthritis, this cartilage degenerates. Osteoarthritis is most commonly found in the knees, neck, lower back, hip and fingers. It most commonly develops between the ages of 45–90 years, and increases with age. By the age of 65 years, nearly 30 per cent of females and 18 per cent of males report having osteoarthritis. A history of trauma to the knee is a strong risk factor for the development of osteoarthritis.

There were 20,753 admissions for osteoarthritis in 2005–06, with an average of 5.26 bed days. The overall rate of admission for osteoarthritis increased from 2.76 per 1,000 persons (95% CI: 2.71–2.80) in 1999–2000 to 3.61 per 1,000 persons (3.56–3.66) in 2005–06. This reflects a 30.8 per cent increase in total admission rates for osteoarthritis over the period. Rural admission rates for osteoarthritis were significantly higher than for metropolitan areas over the period.

For more information

ACT Health, 2003, *Australian Capital Territory Chief Health Officer's Report 2000–2002*, Canberra: ACT Health.

Department of Health and Ageing website: www.health.gov.au/internet/main/publishing.nsf/Content/pq-arthritis

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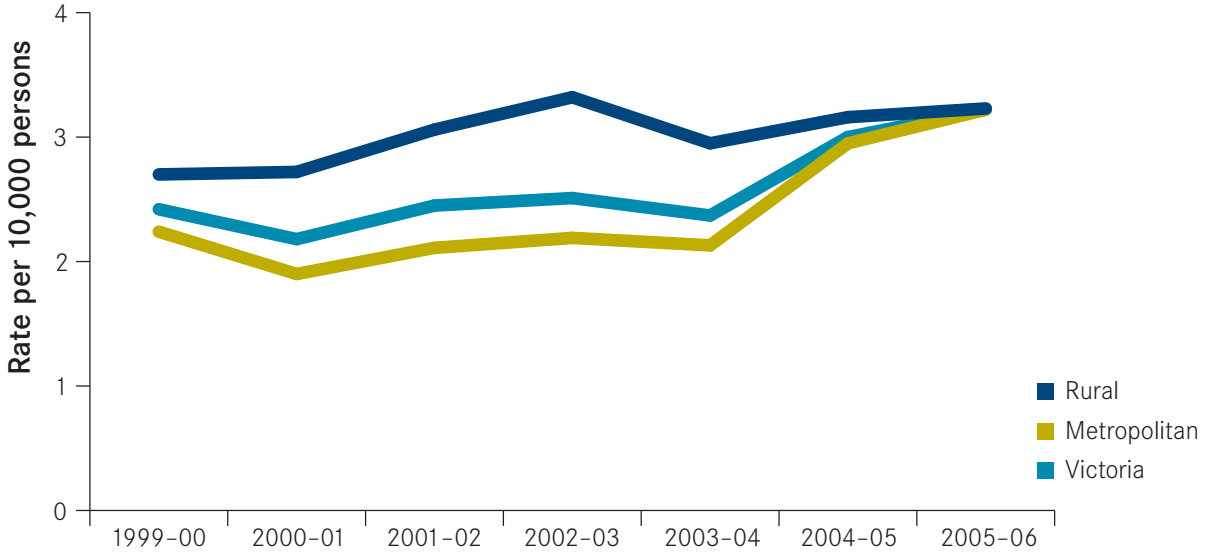
Rheumatoid arthritis admissions: metropolitan-rural comparison

Rheumatoid arthritis admission rates for rural and metropolitan regions Victoria, 1999-2000 to 2005-06



		1999–00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	2.70	2.72	3.06	3.32	2.95	3.16	3.23
per 10,000 persons	Metropolitan	2.24	1.90	2.11	2.19	2.13	2.95	3.22
	Victoria	2.42	2.18	2.45	2.51	2.37	3.00	3.22
Rural:Metro rate ratios (Metro=1)		**1.21**	**1.43**	**1.45**	**1.51**	**1.38**	**1.07**	**1.00**

Note: ICD-10-AM codes were used to identify all rheumatoid arthritis separations in 1999–2000 to 2005–06. Rural and metropolitan areas are based on the Department of Human Services regions. Admissions were selected by first (principal) diagnosis. Rates are age- and sex-standardised using the Victorian population at June 1996.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset: 1999-00 to 2005-06*; Australian Bureau of Statistics population data 1999 to 2006.

Rheumatoid arthritis is an auto-immune disease which is more prevalent in females. In rheumatoid arthritis, the immune system attacks the tissues lining the joints and inflammation occurs, causing pain, heat and swelling. Juvenile rheumatoid arthritis occurs in children, and resembles adult rheumatoid arthritis in most respects, but it may also have some distinctive patterns, including fever, rash and an enlarged spleen, particularly in the systemic form. Rheumatoid arthritis can begin at any age, but mostly develops between 45–90 years of age.

There were 1,803 admissions (74.4 per cent female and 25.6 per cent male) for rheumatoid arthritis in 2005–06, with an average of 3.4 bed days. The overall rate of admission for rheumatoid arthritis increased from 2.42 per 10,000 persons (95% CI: 2.29–2.57) in 1999–2000 to 3.22 per 10,000 persons (3.05–3.35) in 2005–06. Rural admission rates for rheumatoid arthritis were higher than for metropolitan areas over the period, although rates for metropolitan areas increased in 2004–05.

For more information

ACT Health, 2003, *Australian Capital Territory Chief Health Officer's Report 2000–2002*, Canberra: ACT Health.

Department of Health and Ageing website: www.health.gov.au/internet/main/publishing.nsf/Content/pq-arthritis

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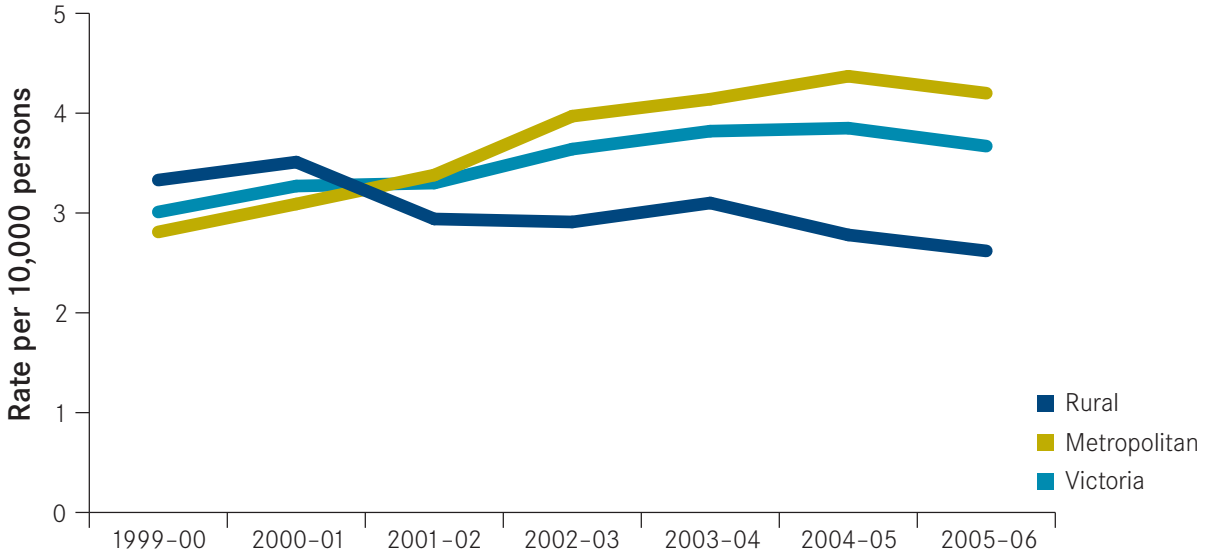
Osteoporosis admissions: metropolitan-rural comparison

Osteoporosis admission rates for rural and metropolitan health regions, Victoria, 1999-2000 to 2005-06



		1999–00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	3.33	3.51	2.94	2.91	3.10	2.78	2.62
per 10,000 persons	Metropolitan	2.81	3.09	3.38	3.97	4.14	4.37	4.20
	Victoria	3.01	3.27	3.30	3.64	3.82	3.85	3.67
Rural:Metro rate ratios (Metro=1)		**1.19**	**1.14**	**0.87**	**0.73**	**0.75**	**0.64**	**0.6**

Note: ICD–10–AM codes were used to identify all osteoporosis separations in 1999–2000 to 2005–06. Rural and metropolitan areas are based on the Department of Human Services regions. Admissions were selected by first (principal) diagnosis. Rates are age- and sex-standardised using the Victorian population at June 1996.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset: 1999-00 to 2005-06*; Australian Bureau of Statistics population data 1999 to 2006.

Osteoporosis is not a form of arthritis, but is another type of musculoskeletal disorder. Osteoporosis is characterised by bones becoming fragile and breaking easily due to a loss of calcium. As a result of osteoporosis, fractures commonly occur in the bones of the spine, hip and wrist. Bone strength is affected by lifestyle, exercise and hormonal factors. Peak bone development occurs during younger ages such as childhood and adolescence. Building stronger bones during this period is likely to provide protection against fractures in later years of life.

There were 2,176 admissions (79.2 per cent female and 20.8 per cent male) for osteoporosis in 2005–06, with an average of 5.5 bed days. The overall rate of admission for osteoporosis increased from 3.01 per 10,000 persons (95% CI: 2.86–3.17) in 1999–2000 to 3.67 per 10,000 persons (3.51–3.83) in 2005–06. A similar trend was observed for metropolitan areas, with a peak in rates in 2004–05. However, the rural admission rate decreased from 3.33 per 10,000 persons (95% CI: 3.05–3.63) in 1999–2000 to 2.62 per 10,000 persons (95% CI: 2.45–2.79) in 2005–06. Rural admission rates for osteoporosis varied from 16 per cent higher to 60 per cent lower than metropolitan areas over the period.

For more information

ACT Health, 2003, *Australian Capital Territory Chief Health Officer's Report 2000–2002*, Canberra: ACT Health.

Department of Health and Ageing website: www.health.gov.au/internet/main/publishing.nsf/Content/pq-arthritis

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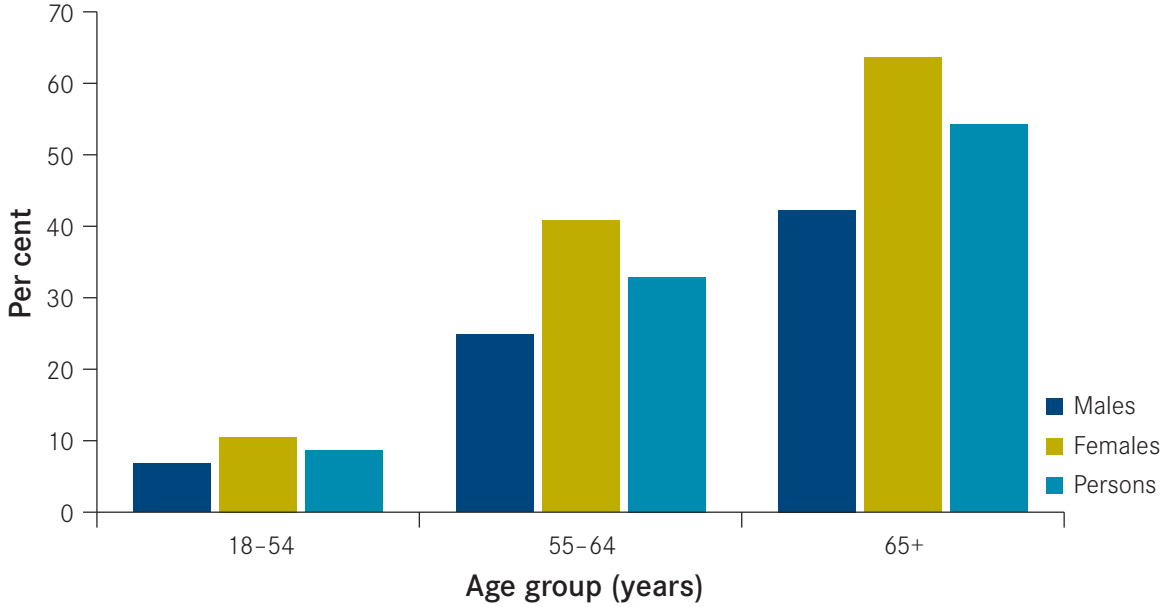
Prevalence of arthritis

Self-reported prevalence of arthritis, persons aged 18 years or over, by sex and age group, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE(%)**
18–54 years	6.8	0.8	10.5	0.7	8.6	0.5
55–64 years	24.9	0.2	40.8	2.2	32.9	1.7
65+ years	42.3	2.3	63.9	0.2	54.2	1.6
Total	**15.0**	**0.8**	**24.7**	**0.8**	**20.0**	**0.6**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

Estimates from the *Victorian population health survey 2006* (VPHS) indicate that more than 770,000 adults (20.0 per cent) aged 18 years or over had ever been told by a doctor that they had arthritis in 2006. Self-reported prevalence rates for females (24.7 per cent, 95% CI: 23.1–26.4) were significantly higher than rates for males (15.0 per cent, 13.4–16.7), and prevalence increased with age.

Among adults who reported having been diagnosed with arthritis, two-thirds (67.3 per cent) reported having been diagnosed with osteoarthritis and 18.7 per cent reported having been diagnosed with rheumatoid arthritis.

Pain and disability have a substantial impact on quality of life, and together they account for most of the burden of arthritis. VPHS 2006 survey estimates indicate that, among adults who reported having been diagnosed with arthritis, 45.1 per cent reported having experienced pain, aching, stiffness or swelling in their joints in the previous 12 months.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

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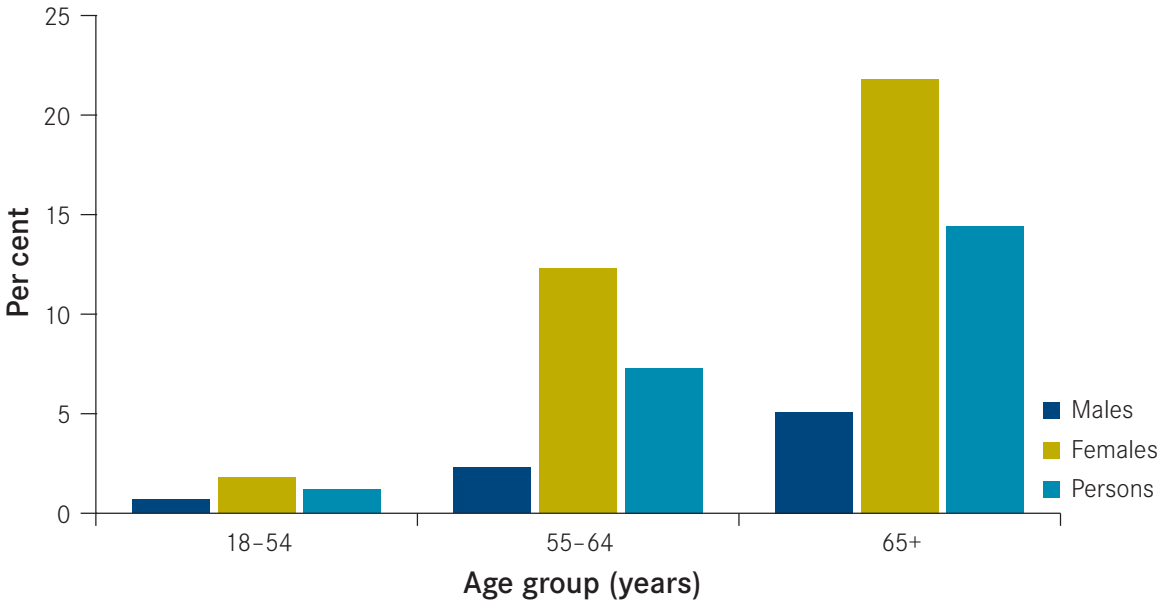
Prevalence of osteoporosis

Self-reported prevalence of osteoporosis, persons aged 18 years or over, by sex and age group, Victoria, 2006



	Males		Females		Persons	
Age group (years)	**%**	**SE (%)**	**%**	**SE (%)**	**%**	**SE(%)**
18–54 years	0.7	0.2	1.8	0.3	1.2	0.2
55–64 years	2.3	0.8	12.3	1.5	7.3	0.9
65+ years	5.1	1.0	21.8	1.8	14.4	1.1
Total	**1.6**	**0.2**	**7.1**	**0.5**	**4.4**	**0.3**

Note: SE = standard error.

Source: Department of Human Services, *Victorian population health survey 2006*.

Estimates from the *Victorian population health survey 2006* (VPHS) indicate that almost 170,000 adults (4.4 per cent) aged 18 years and over had ever been told by a doctor that they had osteoporosis in 2006. Females (7.1 per cent, 95% CI: 6.2–8.1) were significantly more likely than males (1.6 per cent, 1.2–2.1) to report having ever been diagnosed with the condition. Prevalence rates increased with age, especially for females, where more than one in five (21.8 per cent) aged 65 years and over reported having been diagnosed with osteoporosis.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

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Oral health

In this chapter

- dental ambulatory care sensitive condition admissions
- admissions for removal and restoration of teeth (adults)
- oral health status (children)
- dental ambulatory care sensitive condition admissions (children)
- admissions for removal and restoration of teeth (children)
- dental visits within previous two years

Summary

Dental ambulatory care sensitive conditions (ACSCs) were the second highest cause of all ACSC admissions in Victoria in 2005–06. Between 2000–01 and 2005–06, the Victorian rate for dental ACSCs per 1,000 population increased by 41.1 per cent. Rural rates were higher than metropolitan rates, with the gap narrowing over the period, as the increase in metropolitan rates was greater than the increase in rural rates.

There were almost 25,900 procedures for adults involving the removal or restoration of teeth in Victorian hospitals in 2005–06. More than half of these procedures involved the removal of wisdom teeth. Procedure rates for adults increased significantly between 2000-01 and 2005-06. The procedure rate among females was significantly higher than the rate for males in 2005–06, and the rate for metropolitan areas was significantly higher than the rate for rural areas.

Good oral health in childhood contributes to good oral health in later life, with less decay and reduced loss of natural teeth. The results of the *Victorian child health and wellbeing survey 2006* (VCHWS) showed that more than three-quarters (77.1 per cent) of Victoria's children (aged six months to 12 years) had either excellent or very good oral health. However, children living in rural areas were more likely than children in metropolitan areas to have ever had a filling, toothache, a tooth extracted or to have ever had dental treatment in hospital under a general anaesthetic.

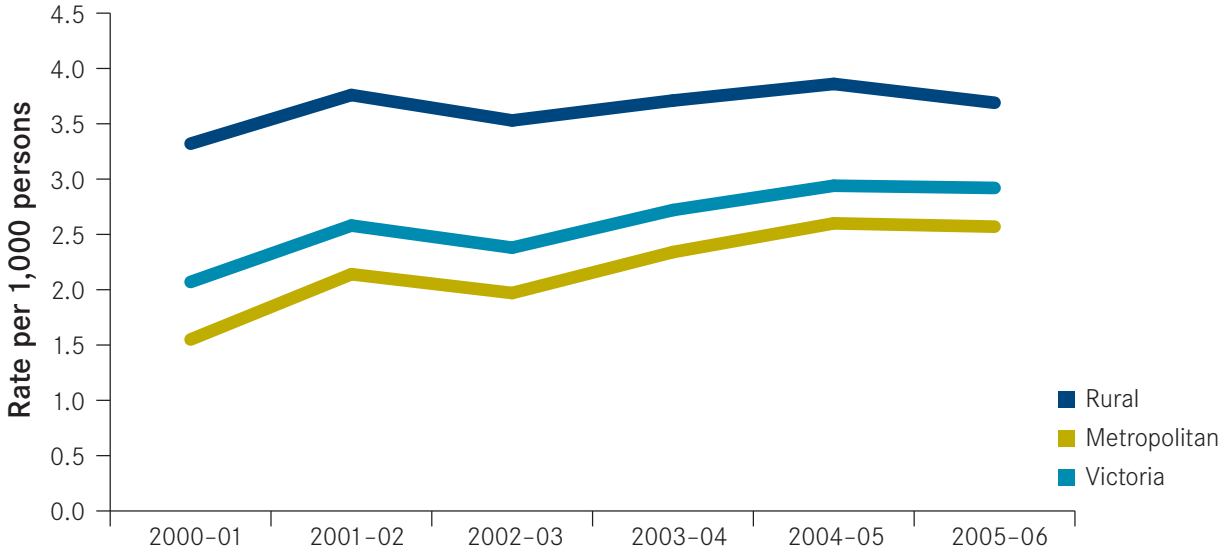
Dental ACSCs were the leading ACSC cause of admission to hospital for children aged under 18 years in Victoria in 2004–05. Dental caries and associated conditions accounted for more than 80 per cent of these admissions. Admission rates were significantly higher in primary care partnership catchment areas with lower levels of access to a fluoridated water supply and where the proportion of households living in poverty was higher.

There were almost 7,550 procedures involving the removal or restoration of teeth undertaken in Victorian hospitals in 2005–06 for children aged under 15 years. Sometimes, because of difficulties with these procedures at younger ages, children need to be admitted to hospital. Between 2000–01 and 2005–06, procedure rates for children increased significantly. The rate for rural areas was higher than the rate for metropolitan areas in 2005–06.

Regular visits to see a dentist for a check-up are important for the prevention, early detection and timely treatment of oral disease. The results of the *National dental telephone interview survey 2002* showed that 93 per cent of Victorian children aged 5–11 years, and 81 per cent of those aged 12–17 years, had visited a dentist at least once in the previous two years, and that almost three-quarters (73 per cent) of Victorian adults (18 years and over) had visited a dentist in the previous two years.

Dental ambulatory care sensitive condition admissions (adults)

Dental ambulatory care sensitive condition admission (principal diagnosis) rates for rural and metropolitan areas, Victoria, 2000–01 to 2005–06



		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	3.32	3.76	3.53	3.71	3.86	3.69
per 1,000 persons	Metropolitan	1.55	2.14	1.97	2.34	2.60	2.57
	Victoria	2.07	2.58	2.38	2.72	2.94	2.92
Rural:Metro rate ratios (Metro=1)		**2.14**	**1.76**	**1.79**	**1.59**	**1.48**	**1.44**

Note: Dental ambulatory care sensitive conditions defined by ICD-10-AM codes principal (first) diagnosis 'K02'–'K06', 'K08', 'K098'–'K099', 'K12'–'K13'. Rates are expressed per 1,000 population and have been standardised to the Victorian population as at 30 June 2001.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset: 2000-01 to 2005-06*; Australian Bureau of Statistics population data 2001 to 2006.

Ambulatory care sensitive conditions (ACSCs) are conditions for which hospitalisation is considered avoidable with the application of preventive care and early disease management, usually delivered in the ambulatory care setting. In 2004–05 dental conditions were the highest cause of acute preventable hospital admissions in Australia (Willcox, 2006) and the second highest cause of ambulatory care sensitive condition admissions in Victoria (Department of Human Services, 2006).

There were 14,502 dental ACSC admissions in Victoria in 2005–06, accounting for 6.72 per cent of all ACSC admissions. The rate per 1,000 population was 2.92, the second highest rate of all ACSC admissions, after admission for diabetes complications.

Between 2000–01 and 2005–06, the Victorian admission rate for dental ACSCs per 1,000 population increased by 41.1 per cent. Rural rates continued to be higher than metropolitan rates. However, the gap between rural and metropolitan rates narrowed over the period because the increase in metropolitan rates was greater (65.5 per cent, up from 1.55 to 2.57 per 1,000 population) than the increase in rural rates (11.3 per cent, up from 3.32 to 3.69 per 1,000 population) over time.

For more information

Department of Human Services 2006, *Ambulatory Care Sensitive Conditions Update 2004–05*: www.health.vic.gov.au/healthstatus/acsc/update0405.htm

Willcox, S, 2006, *Purchasing prevention: Making every cent count, Background paper for National Health Policy Roundtable*, Melbourne: Australian Institute of Health Policy Studies.

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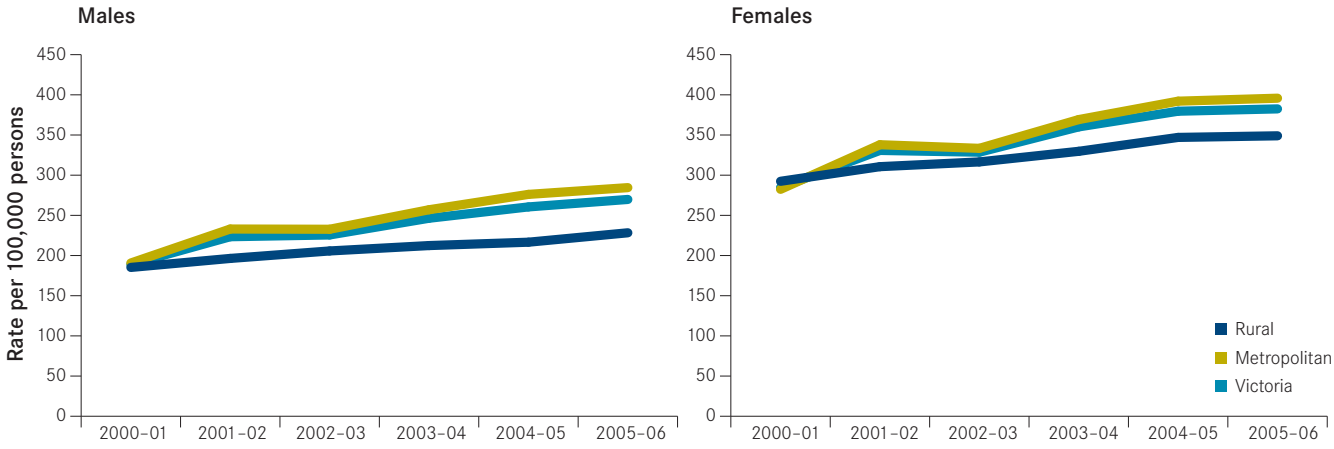
Admissions for removal and restoration of teeth (adults)

Hospital admisson rates for removal and restoration of teeth, persons aged 15 years or over, by sex, rural and metropolitan area, Victoria, 2000–01 to 2005–06



Males		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	185.2	196.4	205.7	212.4	216.6	228.3
per 100,000 persons	Metropolitan	190.7	233.0	232.7	257.0	276.1	284.5
	Victoria	189.0	223.4	225.6	246.4	260.5	269.8
Rural:Metro rate ratios (Metro=1)		**0.97**	**0.84**	**0.88**	**0.83**	**0.78**	**0.80**

Females		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	292.4	310.6	316.5	329.7	347.0	349.0
per 100,000 persons	Metropolitan	282.4	337.9	333.4	369.2	392.1	395.8
	Victoria	284.7	330.8	328.6	360.1	379.6	382.5
Rural:Metro rate ratios (Metro=1)		**1.04**	**0.92**	**0.95**	**0.89**	**0.88**	**0.88**

Note: Removal and restoration of teeth defined as ICD-10-AM block procedure codes (any procedure) '457'-'458', '462'-'473'. Rural and metropolitan areas have been defined based on Department of Human Services regions. Rates are expressed per 100,000 population and have been age standardised to the June 2001 Victorian population. Data includes only Victorian residents hospitalised in Victorian hospitals.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset: 2000-01 to 2005-06*; Australian Bureau of Statistics population data 2001 to 2006.

There were almost 25,900 procedures for adults involving the removal or restoration of teeth in Victorian hospitals in 2005–06, accounting for 1.4 per cent of all adult separations. More than half of these procedures involved the removal of wisdom teeth.

Between 2000–01 and 2005–06 procedure rates for the removal or restoration of teeth increased significantly. The procedure rate for males increased by 42.8 per cent, up from 189.0 per 100,000 population (95% CI: 184.7–193.3) in 2000–01 to 269.8 per 100,000 persons (264.7–274.8) in 2005–06. The procedure rate for females increased by 34.4 per cent over the same period, up from 284.7 per 100,000 persons (95% CI: 279.4–290.0) to 382.5 per 100,000 population (376.5–388.6). In 2005–06, the procedure rate for females accounted for more than half (56.3 per cent) of all procedures for the removal or restoration of teeth.

A disparity exists in procedure rates between metropolitan and rural areas, although the difference in rates has decreased over time. The procedure rate for metropolitan areas (339.8 per 100,000 persons 95% CI: 335.2–344.5) remained significantly higher than the rate for rural areas (287.9 per 100,000 persons, 280.3–295.4) in 2005–06.

For more information

NSW Health 2006, *The health of the people of NSW: Report of the NSW Chief Health Officer 2006*, NSW Health, Sydney.

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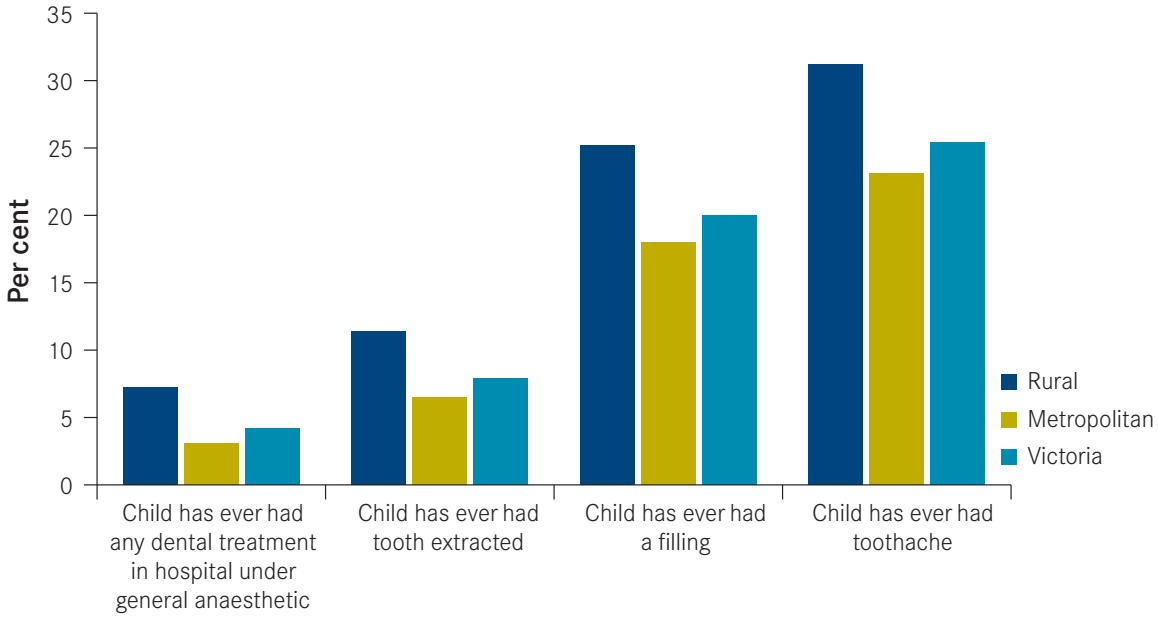
Oral health status (children)

Oral health status of children aged 6 months to 12 years, rural and metropolitan areas, Victoria, 2006



	Child has ever had any dental treatment in hospital under general anaesthetic	Child has ever had tooth extracted	Child has ever had a filling	Child has ever had a toothache
Rural	7.2	11.4	25.2	31.2
Metropolitan	3.1	6.5	18.0	23.1
Victoria	4.2	7.9	20.0	25.4

Note: 'Child' refers to children aged six months to 12 years of age. Rural and metropolitan areas have been defined based on Department of Human Services regions.

Source: Department of Human Services, *Victorian child health and wellbeing survey 2006*.

Good oral health in childhood contributes to good oral health in later life, with less decay and reduced loss of natural teeth. The results of the *Victorian child health and wellbeing survey 2006* (VCHWS) showed that more than three-quarters (77.1 per cent) of Victoria's children (aged six months to 12 years) had either excellent or very good oral health.

The survey also showed that one in five (20 per cent) Victorian children had ever had a filling, one-quarter (25.4 per cent) had ever had toothache, 7.9 per cent had ever had a tooth extracted and 4.2 per cent had ever had dental treatment in hospital under a general anaesthetic. However, children living in rural areas were more likely than children in metropolitan areas to have ever had a filling, toothache, a tooth extracted or to have ever had dental treatment in hospital under a general anaesthetic

For more information

Department of Human Services 2007, *The State of Victoria's children report 2006: Every child every chance*: www.office-for-children.vic.gov.au/statewide-outcomes/report_2006

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Dental ambulatory care sensitive condition admissions (children)

Dental ambulatory care sensitive condition admission rates, children (0–14 years), by primary care partnership, Victoria, 2004–05

Primary Care Partnership	Rate per 1,000 population	Access to fluoridated water (per cent)	Households in poverty (per cent)*
Northern Mallee	16.5	1.1	12.4
Wimmera	14.3	11.8	13.4
Central Highlands	12.5	0.0	11.7
Central West Gippsland	12.1	5.7	13.9
Central Victoria	10.0	7.4	11.9
Central Hume	9.4	0.0	12.4
Bendigo Loddon	9.3	0.0	12.4
Southern Mallee	9.0	10.7	13.9
East Gippsland	8.5	0.0	14.6
Grampians Pyrenees	8.2	0.0	14.3
Campaspe	8.1	46.7	11.3
SouthWest	7.5	4.8	12.1
SouthCoast	7.2	0.0	14.0
Barwon	6.8	0.1	11.7
Southern Grampians-Glenelg	6.3	33.7	13.2
Goulburn Valley	6.1	55.5	11.6
Moonee Valley-Melbourne	6.1	100.0	12.8
Hume-Moreland	6.0	90.4	10.3
LowerHume	5.7	0.0	10.1
Brimbank-Melton	5.6	99.6	9.6
North Central Metropolitan	5.4	98.4	11.4
Banyule-Nillumbik	5.2	99.7	7.6
Boroondara	5.0	100.0	7.7
Outer East	4.8	92.4	7.4
Wellington	4.7	55.9	12.9
Westbay	4.5	100.0	10.2
Inner East	4.5	100.0	8.1
South East	4.4	96.4	9.0
Inner South	4.3	100.0	9.3
Frankston and Peninsula	3.5	100.0	9.7
Kingston-Bayside	3.1	100.0	8.6
Upper Hume	2.4	NA	11.0

Note: Dental ambulatory care sensitive conditions defined by ICD-10-AM codes principal (first) diagnosis 'K02'–'K06', 'K08', 'K098'–'K099', K12'–'K13'. Rates are expressed per 1,000 population and have been standardised to the Victorian population as at 30 June 1996. Primary care partnerships are ordered from highest to lowest with respect to dental ACSCs admission rates. The percentages of the child population with access to fluoridated water supplies is based on information from January 2000. More recent information on fluoridated water supplies in Victoria is presented in the chapter on Environmental Health. NA = not available. Details of access to fluoridated water for Upper Hume catchment is unavailable as households are connected to New South Wales water supplies. * Poverty is based on modelling of household disposable income.

Source: Department of Human Services, 2007, *Improving Victoria's Oral Health, July 2007*.

Dental ambulatory care sensitive conditions (ACSCs) were the leading ACSC cause of admission to hospital for children aged under 18 years in Victoria in 2004–05. Dental caries and associated conditions accounted for more than 80 per cent of these admissions, and 95 per cent of ACSC dental admissions for children aged 0–9 years.

Significant differences exist in dental ACSC admission rates for children across Victoria, and access to fluoridated water and household poverty were shown to be significant predictors of these differences. In 2004–05, child dental ACSC admission rates were significantly higher in primary care partnership catchment areas with lower levels of access to fluoridated water supply and where the proportion of households in poverty was higher.

For more information

Department of Human Services (DHS), 2007, *Improving Victoria's Oral Health, July 2007*: Melbourne: Victorian Government Department of Human Services, www.health.vic.gov.au/dentistry/publications/improve_oralhealth.htm

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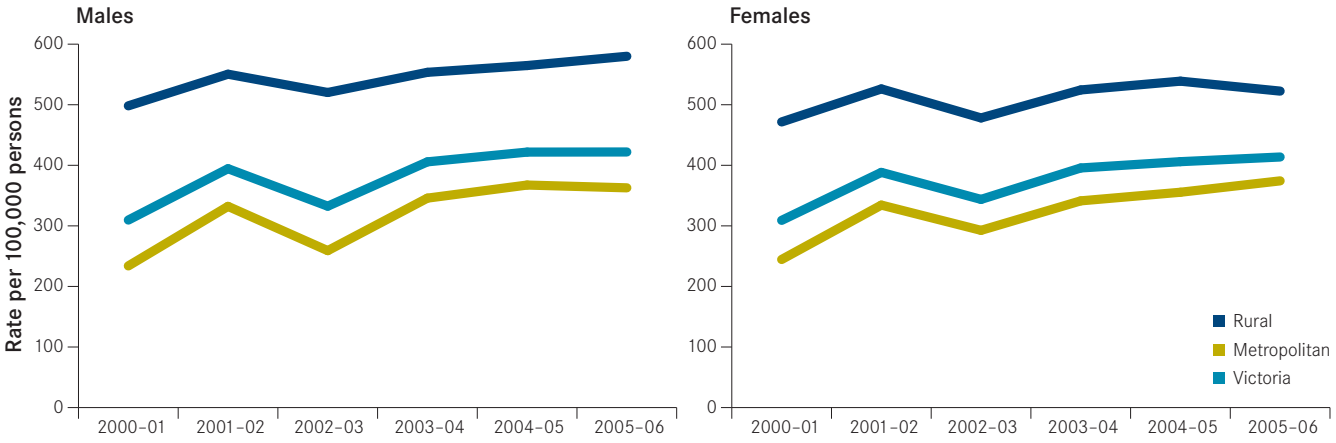

Males		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	498.2	550.4	520.2	553.5	564.7	580.0
per 100,000 persons	Metropolitan	233.9	332.2	259.1	345.8	367.4	362.8
	Victoria	309.6	394.4	332.5	405.7	421.8	422.0
Rural:Metro rate ratios (Metro=1)		**2.13**	**1.66**	**2.01**	**1.60**	**1.54**	**1.60**

Females		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Standardised admission rate	Rural	471.6	526.1	478.2	524.4	538.9	522.5
per 100,000 persons	Metropolitan	244.5	334.3	292.6	341.3	355.5	374.3
	Victoria	309.1	388.3	343.7	395.6	406.0	413.7
Rural:Metro rate ratios (Metro=1)		**1.93**	**1.57**	**1.63**	**1.54**	**1.52**	**1.40**

Note: Removal and restoration of teeth defined as ICD-10-AM block procedure codes (any procedure) '457'-'458', '462'-'473'. Rural and metropolitan areas have been defined based on Department of Human Services regions. Rates are expressed per 100,000 population and have been age-standardised to the June 2001 Victorian population. Data includes only Victorian residents hospitalised in Victorian hospitals.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset: 2000-01 to 2005-06*; Australian Bureau of Statistics population data 2001 to 2006.

There were almost 7,550 procedures for children aged under 15 years involving the removal or restoration of teeth in Victorian hospitals in 2005–06. Children are sometimes admitted to hospital because of difficulties with these procedures at this age in outpatient settings. The main causes of dental caries in childhood are poor dietary and oral hygiene practices. In 2005–06 the removal or restoration of teeth accounted for 4.5 per cent of all hospital admissions for children.

Between 2000–01 and 2005–06 procedure rates for the removal or restoration of teeth in children increased significantly. Procedure rates for males increased by 36.3 per cent, up from 309.6 per 100,000 persons (95% CI: 298.4–320.8) in 2000–01 to 422.0 per 100,000 persons (408.6–435.3) in 2005–06. Procedure rates for females increased by 33.8 per cent over the same period, up from 309.1 per 100,000 persons (95% CI: 297.9–320.4) to 413.7 per 100,000 persons (400.4–426.9). Although male children had slightly higher rates than females in 2005–06, the difference in procedure rates between the sexes was not statistically significant.

The difference in procedure rates between rural and metropolitan areas has decreased over time, although a statistically significant difference remains between geographical areas of Victoria. In 2005–06, the procedure rate for rural areas was 551.2 per 100,000 population (95% CI: 530.9–571.6), significantly higher than the rate for metropolitan areas (368.5 per 100,000 population, 358.0–378.9).

For more information

NSW Health 2006, *The health of the people of NSW: Report of the NSW Chief Health Officer 2006*, NSW Health, Sydney.

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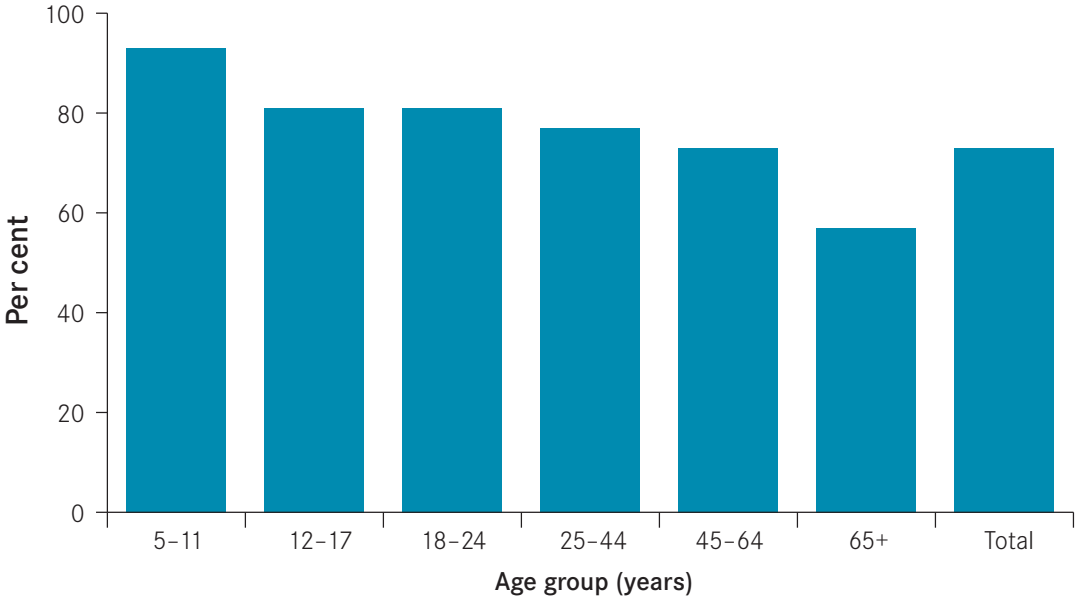
Dental visits within previous 2 years

Visited dentist within previous two years, by age group, Victoria, 2002



Source: Australian Institute of Health and Welfare Dental Statistics and Research Unit, *National Dental Telephone Interview Survey 2002*.

Regular visits to see a dentist for a check-up are important for the prevention, early detection and timely treatment of oral disease. Waiting until there is a problem is more likely to result in less desirable treatment, including extraction. The results of the *National dental telephone interview survey 2002* show that just over half (52.8 per cent) of all Victorian respondents reported that their last dental appointment was for a check-up.

The results of the survey showed that 93 per cent of Victorian children aged 5–11 years and 81 per cent aged 12–17 years had visited a dentist at least once in the previous two years. Almost three-quarters (73 per cent) of Victorian adults had visited a dentist in the previous two years, with 13 per cent reporting not having visited a dentist in the previous five years.

Approximately half (49.8 per cent) of all Victorian respondents to the survey who visited a dentist in the previous 12 months reported having had at least one filling, 16.9 per cent reported having had an extraction and 71.4 per cent reported having had a scale and clean.

For more information

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Communicable diseases

In this chapter

Summary

In 2006, there were 424 cases of confirmed influenza notified to the Department of Human Services. As expected these cases were concentrated in the winter months of June to August.

Notifications of invasive pneumococcal disease were marginally lower in 2006 than in 2005, with children aged under two years and the elderly continuing to have the highest notification rates.

A few notifications of measles occurring in young adults continued to be received in 2006, particularly among those born between 1966 and 1982, and for unvaccinated children.

In general, pertussis notifications among children have declined over the last five years; however, in 2006 more than 90 per cent of notifications were in adults, indicating a shift in the age distribution of this disease.

There has been a decline in the number of cases of invasive meningococcal group C disease between 2003 and 2006, attributable to the introduction of the national meningococcal C immunisation program, which commenced in January 2003.

In 2006, there were 62,979 children from Victoria aged 24–27 months recorded on the Australian Childhood Immunisation Register (ACIR), of whom 93.5 per cent had been fully immunised (94.8 per cent for rural regions and 93.0 per cent for metropolitan regions). There were also 63,887 children aged 72–75 months recorded on the Register, of whom 87.8 per cent had been fully immunised (88.6 per cent for rural regions and 87.5 per cent for metropolitan regions).

In 2004, the coverage of influenza vaccination among individuals aged 65 years and over was 81.6 per cent in Victoria, compared with a national average of 79.1 per cent. Valid usage of influenza vaccine was 72.6 per cent for Australia and 76.2 per cent for Victoria.

Approximately 1,000 cases of salmonellosis are notified in Victoria each year. In 2006, there were five point source outbreaks of salmonellosis that were investigated.

There were 1,111 cases of cryptosporidiosis notified in 2006, more than double the number of cases notified in 2005. Much of the rise in cases was attributed to outbreaks associated with swimming pools.

The number of notified cases of specific organisms/agents (not reported elsewhere) associated with gastrointestinal illnesses potentially linked to food or water, and the total number of gastrointestinal illness outbreaks reported, rose sharply in 2006, although the number of confirmed or suspected food-borne outbreaks remained stable compared to previous years.

A large number of hepatitis A cases occurred between mid–1999 and mid–2000, due to an outbreak among injecting drug users. In 2006, there were 46 notified cases, the lowest since 1997. The rate was highest among children aged 0–9 years.

In 2006, 34 cases of Q fever were notified, compared with 31 in 2005 and 27 in 2004. There were two outbreaks in 2006 associated with abattoirs in regional Victoria.

The number of notified cases of psittacosis in Victoria in 2006 was 62, compared to 40 in 2005 and 155 in 2004. The most recent outbreaks occurred in 2004 at a poultry processing plant in rural Victoria (26 cases) and a game processing plant (four cases).

The number of Ross River virus disease notifications in 2006 was the highest since 2001, but still considerably lower than the 1997 epidemic season.

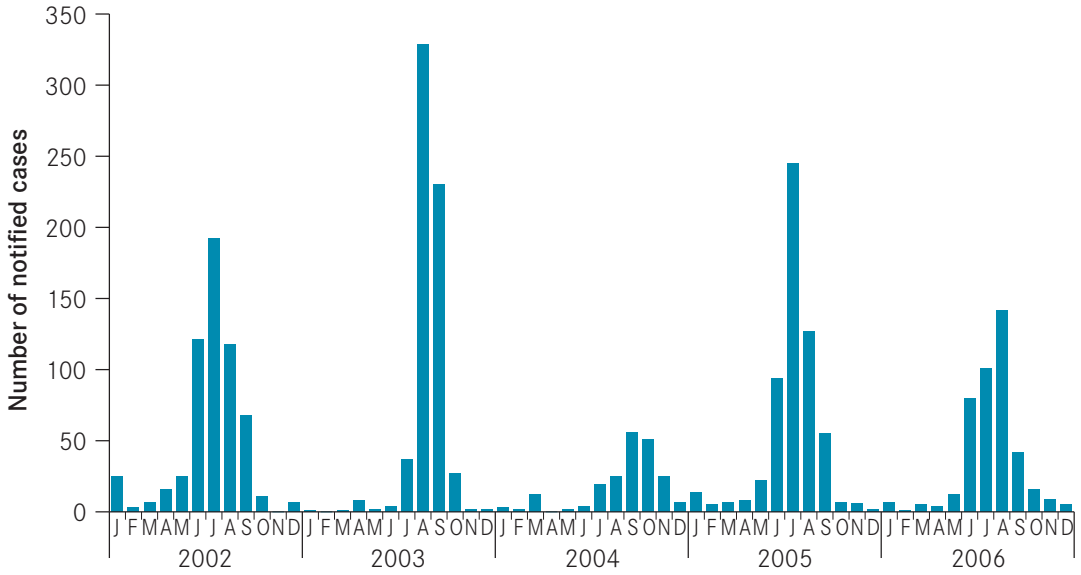
In 2006, there were 10,012 notifications of chlamydia, an 11.8 per cent increase on notifications for 2005. Of these, 41.6 per cent were for males and 57.6 per cent for females. Among cases notified in 2006, the median age for males was 26 years and 22 years for females.

In 2006, there were 591 notifications of syphilis, of which there were 234 notifications of infectious syphilis, a 100 per cent increase on the notifications received in 2005.

In 2006, there were 61 notifications of *Mycobacterium ulcerans* infection, compared to an annual average of 21 between 2001 and 2004.

Influenza notifications

Notified cases of confirmed influenza, Victoria, 2002-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Influenza is an acute viral infection caused by the influenza virus (comprising several types), of which influenza type A and influenza type B cause the majority of human infections. Influenza is highly seasonal, with most cases occurring in winter/spring. Laboratory-confirmed influenza became notifiable in Victoria in 2001. Since then, the highest number of laboratory confirmed influenza cases were notified in 2003 (n=643), and 424 cases were notified to the Department of Human Services in 2006.

Victoria commenced a free influenza vaccination program for those aged 65 years and over in 1997, which has reduced morbidity and mortality from influenza in this age group.

For more information

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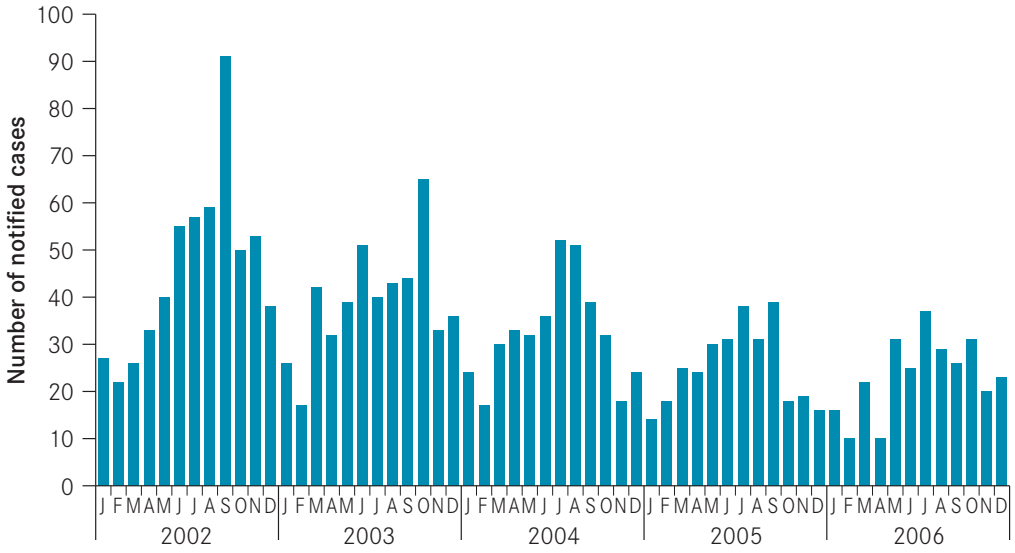
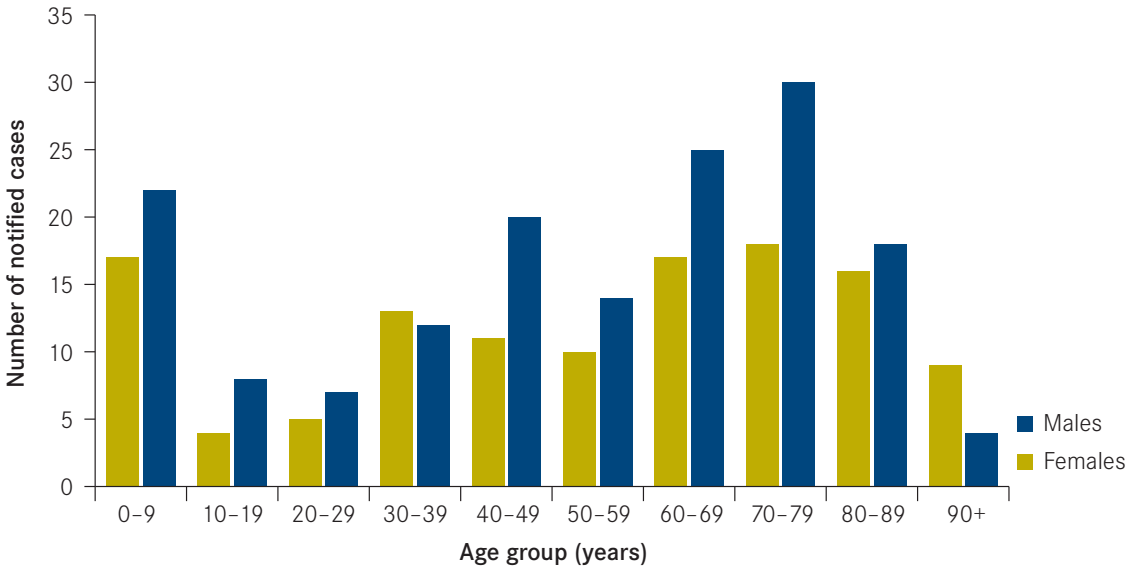
Invasive pneumococcal disease notifications

Notified cases of confirmed invasive pneuumoccocal disease, Victoria, 2002-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Notified cases of confirmed invasive pneumoccal disease, by age and sex, Victoria, 2006



Invasive pneumococcal disease (IPD), caused by *Streptococcus pneumoniae* infection, has several clinical manifestations, including septicaemia, pneumonia and meningitis.

IPD became notifiable in Victoria in May 2001. Incidence rates of IPD are highest at the extremes of age. Victoria began a free pneumococcal polysaccharide vaccination program for those aged 65 years and over in 1998, to complement the free influenza program commenced in 1997. Conjugate pneumococcal vaccine became available in 2001, and a targeted program for Indigenous children, and children with medical risk factors up to the age of five years, was implemented.

Although notification rates in those aged 65 years and over have declined, the targeted program for children failed to make a significant impact on the incidence in young children. This program was implemented as a universal program from 1 January 2005.

In 2006, there were 280 notified cases of IPD, slightly lower than the 303 cases notified in 2005. There were 35 notified cases aged 0–4 years in 2006, compared to 42 in 2005 and 113 in 2004. The number of notified cases aged 65 years and over decreased every year from 2002 (174 cases) to 2005 (107 cases), but increased slightly in 2006 (118 cases).

For more information

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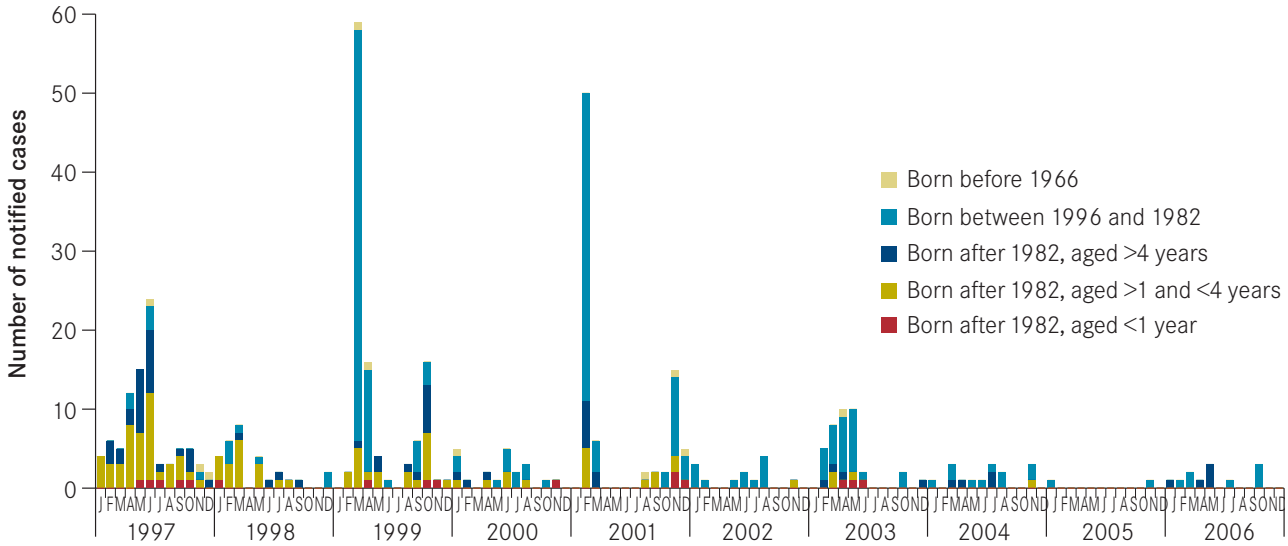
Measles notifications

Notified cases of confirmed and probable measles by age group, Victoria, 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Measles is a highly infectious viral illness caused by a morbillivirus. An effective live vaccine against measles has been used in Australia since 1970, then a two-dose regime was introduced in 1994. The recommended age of the second dose was lowered from 12 years to four years in 1998, with a mass catch-up campaign conducted for children between these ages.

Because of changes in the population immunity profile to measles, the cohort of those born between 1966 and 1982 are now the most susceptible to measles. Outbreaks of measles in Victoria in 1999 and 2001 were a result of importation of the index case (that is, a case of measles in an unvaccinated individual who entered from overseas), with resultant cases overwhelmingly infecting young adults.

Fourteen cases of measles were notified from January 2005 to December 2006, with ten cases born between 1966 and 1982. The other cases were aged 11, 13 and 19 years. Six of the cases were acquired overseas and eight were acquired locally. Of the locally acquired cases, four were epidemiologically linked to cases in which the infection was acquired overseas or from overseas visitors. Ten cases were not vaccinated, and the vaccination status of four was unknown.

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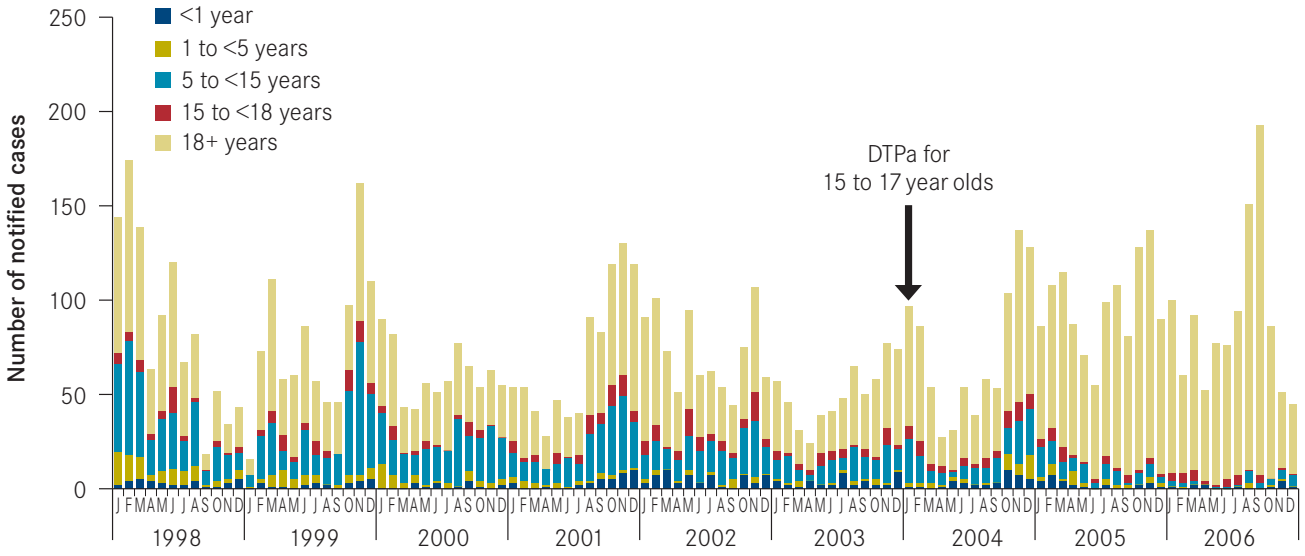
Pertussis notifications

Notified cases of confirmed and probably pertussis by age greoup, Victoria, 1999-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Pertussis is an acute bacterial respiratory disease caused by infection with *Bordetella pertussis*. The disease is characterised by a cough that may persist for up to three months, and may be associated with vomiting.

Two changes have been made to the vaccine for pertussis in the Australian Standard Vaccination Schedule since 1997. The fourth dose was moved from five years to four years in January 1998, reinforcing the importance of vaccination before school, and has resulted in a sustained decrease in the number of cases among those of school age. However, the number of cases aged 18 years and over has generally increased each year since 2000 (particularly in 2005 and 2006), and has comprised an increasing proportion of the total notified cases, from approximately 50 per cent in 2000 to 92 per cent in 2006. A pertussis vaccine booster for 15–17 year olds was introduced in January 2004 to reduce morbidity in this age group and reduce transmission to infants. In the three years since the program's introduction the number of notified cases in the 15–17 years age group has decreased by more than one-quarter (compared to the three years prior to the program's introduction), on average.

For more information

Victorian Government Health Information, *Infectious Diseases Epidemiology and Surveillance*:
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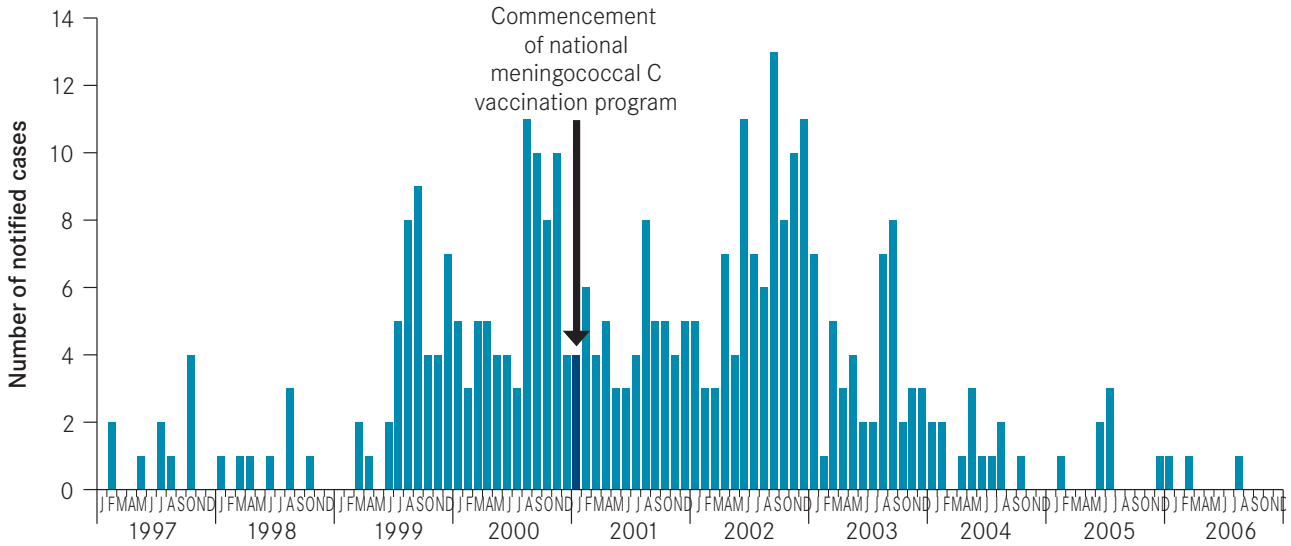
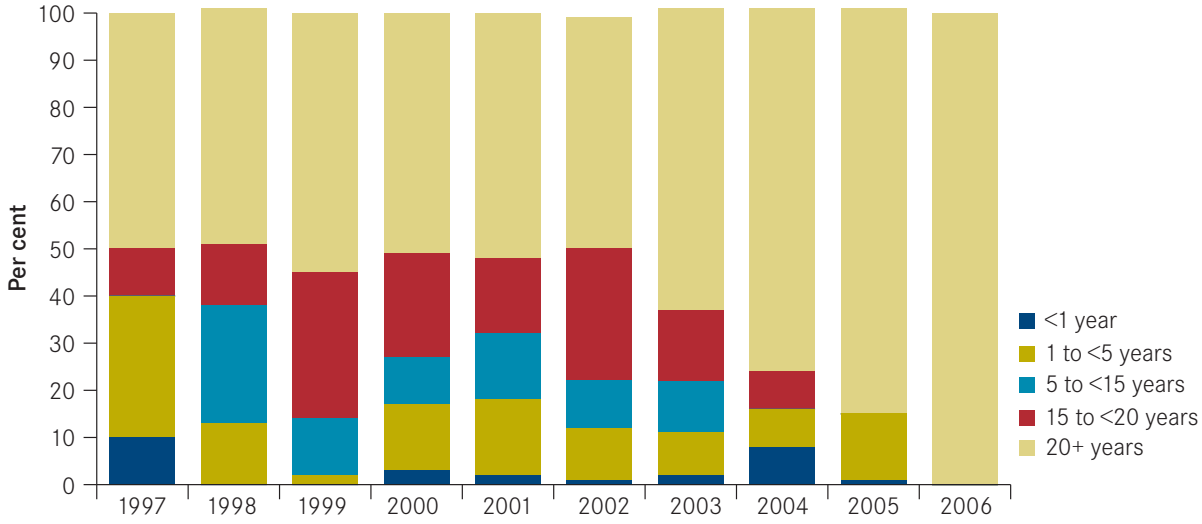
Meningococcal disease notifications (serogroup C)

Notified cases of confirmed group C invasive meningococcal disease, Victoria, 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Notified cases of confirmed group C invasive meningococcal disease, by age group, Victoria, 1997-2006



Meningococcal disease is an invasive bacterial infection with several distinct serogroups, of which serogroup C is associated with the highest morbidity and mortality in Victoria. The usual clinical manifestations are septicaemia or meningitis.

The notification rate of serogroup C disease began to rise in Victoria in 1999–2000, and an upward trend continued until the introduction of the National Meningococcal Vaccination Campaign on 1 January 2003. All persons aged 1–19 years were eligible for free vaccine under this program, with those aged 1–5 years and 15–19 years targeted first.

Since the implementation of the program, the number of notified cases has fallen dramatically, from 88 in 2003 to only three (all aged 20 years and over) in 2006. The fall in notified cases outside the target population may reflect the effect of herd immunity, with decreased carriage of the bacterium.

For more information

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Australian Childhood Immunisation Register (ACIR)

Australian immunisation providers have contributed data to the Australian Childhood Immunisation Register (ACIR) since 1996. The ACIR is a national database containing data on immunisation given to children under seven years of age who are living in Australia, administered by the Health Insurance Commission (HIC). Details of vaccinations given to children are forwarded to the HIC by recognised providers, for inclusion on the register. For the purposes of the registry, a cohort of children is defined by date of birth in three-month groups, the first cohort being born between 1 January and 31 March 1996.

Australian standard vaccination schedules are defined for children born between specified calendar dates. For children born on or after 1 January 2005, for example, 11 diseases are covered by the routine childhood vaccination schedule: hepatitis B, diphtheria, *Haemophilus influenzae* type b (Hib) disease, measles, mumps, pertussis, polio, rubella, tetanus, pneumococcal disease and meningococcal C. Additions to the standard vaccination schedule result in different cohorts of children being administered different standard vaccination schedules. Meningococcal C vaccine was added to the national immunisation program for children at 12 months of age born after 1 January 2002, and a new childhood pneumococcal vaccination program commenced on 1 January 2005. This program provides free pneumococcal conjugate vaccine (Prevenar) at two, four and six months of age for all children born on or after 1 January 2005, and includes a catch-up component during 2005 for all children born between 1 January 2003 and 31 December 2004.

The vaccination status of each cohort is assessed at the three key milestones of 12 months, 24 months and six years of age. Coverage is measured three months after the last cut-off date for the cohort for completion of each milestone, to allow for delayed notification to the ACIR by immunisation providers. The 12-month milestone measures vaccinations due at six months of age, and includes only vaccinations administered before the child turns 12 months old. Similarly, the 24-month milestone includes vaccinations due at 12 months of age and is administered before the second birthday. The six-year milestone includes vaccinations due at four years of age and administered before the sixth birthday. The calculation is based on the vaccination schedule for the cohort. The cohort includes only children enrolled with Medicare. It is assumed that notification of receipt of a later vaccine dose implies receipt of earlier doses, even if no earlier vaccination is recorded (third dose assumption).

Several limitations exist regarding data available from the ACIR which must be considered when it is used to estimate vaccination coverage, including under-reporting, the fact that records are held only for children up to seven years of age and that coverage is calculated only for children registered with Medicare (Hull et al., 1999; Yohannes et al., 2004). However, it is estimated that by the age of 12 months, over 98 per cent of Australian children were registered with Medicare (Hull et al., 2002; Lister et al., 1999; O'Brien et al., 1998).

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Immunisations of children aged 24–27 months

Vaccination coverage of children aged 24 to 27 months, by department region, Victoria, 2006

Region	Number of children in age group	Per cent DTP	Per cent OVP	Per cent Hib	Per cent Hep B	Per cent MMR	Per cent fully immunised
Barwon-South Western	4,219	96.5	96.4	95.5	97.2	95.9	94.8
Grampians	2,490	96.8	96.7	95.7	97.1	95.7	94.8
Loddon Mallee	3,646	96.0	96.0	94.6	96.9	95.0	93.7
Hume	3,175	97.0	97.0	96.4	97.4	96.5	95.5
Gippsland	2,649	97.0	97.0	96.7	97.3	96.6	95.6
North and West Metropolitan	19,893	96.0	95.9	94.5	96.7	94.9	93.2
Eastern Metropolitan	11,522	95.4	95.3	94.0	95.8	94.3	92.9
Southern Metroplitan	15,385	95.7	95.6	94.1	96.1	94.5	92.9
Rural	16,179	96.6	96.6	95.7	97.2	95.9	94.8
Metro	46,800	95.7	95.7	94.2	96.3	94.6	93.0
Victoria	62,979	96.0	95.9	94.6	96.5	95.0	93.5

Notes: Coverage = (number of children vaccinated/ number of children in age group on register) x 100. Only vaccines administered before 24 months of age are included in the coverage calculation. These figures may not reflect actual coverage due to under-reporting. DTP = diphtheria, tetanus and pertussis vaccination. Polio = oral polio vaccination. Hib = *Haemophilus influenzae* type b vaccination. Hep B = hepatitis B vaccination. MMR = measles, mumps and rubella vaccination.

A child is defined as 'fully vaccinated' at 24 to under 27 months if they have received the third dose of diphtheria, tetanus and pertussis (DTP) vaccine, the third dose of oral poliomyelitis (OPV) vaccine, the third dose of *Haemophilus influenzae* type b (Hib vaccine), the second or third dose of hepatitis B (Hep B) vaccine, and one dose of measles, mumps and rubella vaccine (MMR1).

There were 62,979 children in the age group 24–27 months in Victoria in 2006 recorded on the ACIR, of whom 93.5 per cent were fully immunised. The proportion of children aged 24–27 months who had had all their age-appropriate vaccinations was 94.8 per cent for rural regions and 93.0 per cent for metropolitan regions. Across the regions, the proportion of children aged 24–27 months who were fully immunised ranged from 92.9 per cent in the Eastern and Southern regions to 95.6 per cent in the Gippsland region.

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Immunisations of children aged 72–75 months

Vaccination coverage of children aged 72 to 75 months, by department region, Victoria, 2006

Region	Number of children in age group	Per cent DTP	Per cent OPV	Per cent MMR	Per cent fully immunised
Barwon-South Western	4,381	89.9	89.5	90.2	88.9
Grampians	2,679	90.7	90.2	90.6	89.8
Loddon Mallee	4,077	88.8	88.2	88.8	87.7
Hume	3,536	89.1	88.5	89.7	87.9
Gippsland	2,976	90.5	89.9	90.5	89.3
North and West Metropolitan	19,208	88.8	88.6	88.9	87.8
Eastern Metropolitan	11,817	89.7	89.2	89.4	88.3
Southern Metroplitan	15,213	87.8	87.3	87.8	86.5
Rural	17,649	89.7	89.2	89.9	88.6
Metro	46,238	88.7	88.3	88.7	87.5
Victoria	63,887	89.0	88.6	89.0	87.8

Notes: Coverage = (number of children vaccinated/ number of children in age group on register) x 100. Only vaccines administered before 72 months of age are included in the coverage calculation. These figures may not reflect actual coverage due to under-reporting. DTP = diphtheria, tetanus and pertussis vaccination. OPV = oral polio vaccination. MMR = measles, mumps and rubella vaccination.

A child is defined as 'fully vaccinated' at age 72–75 months if they have received the fourth dose of diphtheria, tetanus and pertussis (DPT) vaccine, the fourth dose of polio vaccine (OPV), and the second dose of measles, mumps and rubella vaccine (MMR).

There were 63,887 children aged 72-75 months in Victoria in 2006 recorded on the ACIR, of whom 87.8 per cent were fully immunised. The proportion of children aged 72–75 months who had had all their age-appropriate vaccinations was 88.6 per cent for rural regions and 87.5 per cent for metropolitan regions. Across the regions, the proportion of children aged 72-75 months who were fully immunised ranged from 86.5 per cent in the Southern Metropolitan region to 89.8 per cent in the Grampians region.

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Influenza vaccination

Influenza vaccination coverage and valid usage, persons aged 65 years or over, Victoria and Australia, 2004

Measure	Victoria	Australia
Number		
Target population	663,600	2,604,800
Vaccinated	*541,200*	*2,061,500*
With program vaccine	*505,800*	*1,890,800*
Per cent		
Coverage	81.6	79.1
Valid usage	76.2	72.6
As a proportion of coverage	*93.4*	*91.7*

Source: Australian Institute of Health and Welfare, 2005, *2004 Adult vaccination survey: summary results*, AIHW Catalogue no. PHE 56, Canberra.

Influenza is a disease that may give rise to complications such as pneumonia and pleurisy. Individuals aged 65 years or over are at high risk from influenza and its complications, with the great majority of deaths from these conditions occurring in the 65 and over age group. In Australia in 2002, there were 56 deaths where influenza was the underlying cause, and 45 were for people aged 65 years or over (AIHW National Mortality Database).

Influenza vaccination is a population-level health intervention which aims to reduce deaths and hospitalisations due to the disease. The Australian Standard Vaccination Schedule (NHMRC 2002) recommends yearly influenza vaccination for older Australians. The Australian Government established the National Influenza Vaccine Program for Older Australians in 1999, providing free influenza vaccine to all Australians aged 65 and over (individuals may need to pay for the consultation). Each state government was funded to purchase vaccines for administration to all Australian residents aged 65 years or over in 2004.

National monitoring of influenza vaccination of people aged 65 years or over began only recently. For the purposes of evaluating the program, 'coverage' refers to the proportion of the target population vaccinated, and 'valid usage' is the proportion of the target population vaccinated with funded vaccine.

The results of the 2004 adult vaccination survey indicate that coverage in Victoria was 81.6 per cent, compared with a national average of 79.1 per cent. Valid usage of influenza vaccine was 72.6 per cent for Australia and 76.2 per cent for Victoria. In 2004 in Victoria, 93.4 per cent of older people who were vaccinated participated in the program.

Reference

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For more information

AIHW (Australian Institute of Health and Welfare) 2005, *2004 Adult Vaccination Survey: Summary Results*, AIHW Catalogue no. PHE 56, Canberra.

AIHW (Australian Institute of Health and Welfare) website: www.aihw.gov.au/publications/index.cfm/title/10109

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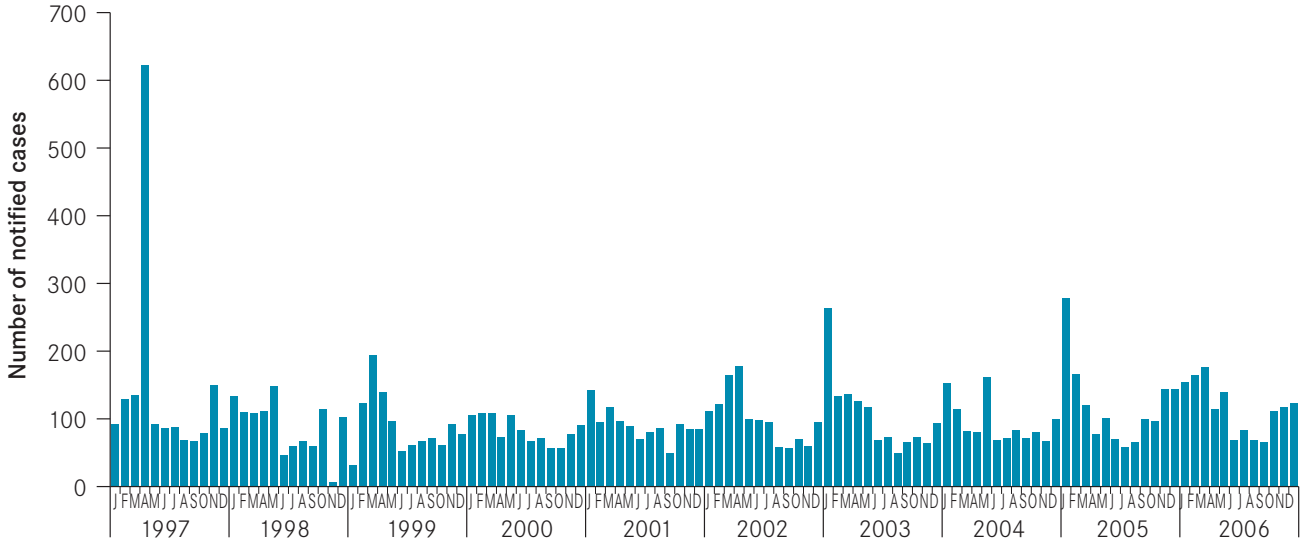
Email immunisation@dhs.vic.gov.au

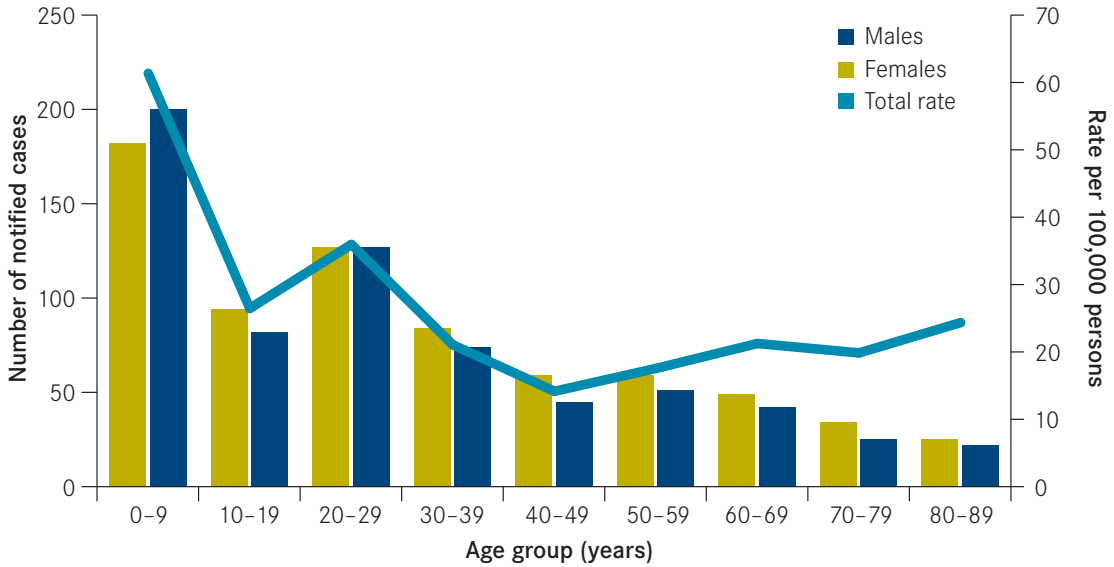
Salmonellosis notifications

Salmonellosis notification, by year and month notified, Victoria, 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Salmonellosis notifications, by age groups and sex, Victoria, 2006



Salmonellosis commonly presents as an acute gastroenteritis with fever, headache, diarrhoea, abdominal pain, nausea and vomiting. Dehydration may occur, especially among infants and the elderly. Infection may also present as septicaemia, and occasionally may be localised in other body tissues (for example, endocarditis, pneumonia, septic arthritis, cholecystitis and abscesses). Symptoms usually last from three to five days.

Approximately 1,000 cases of salmonellosis are notified in Victoria each year. The majority of cases are sporadic, although outbreaks are not uncommon. Five point source outbreaks of salmonellosis were investigated in 2006. Salmonellosis is relatively seasonal, with most cases occurring in the late summer and early autumn months. As with most gastrointestinal diseases, rates of disease are highest in the 0–9 year age group.

For more information

Victorian Government Health Information, *Infectious Diseases Epidemiology and Surveillance*:
www.health.vic.gov.au/ideas/surveillance/

Contact

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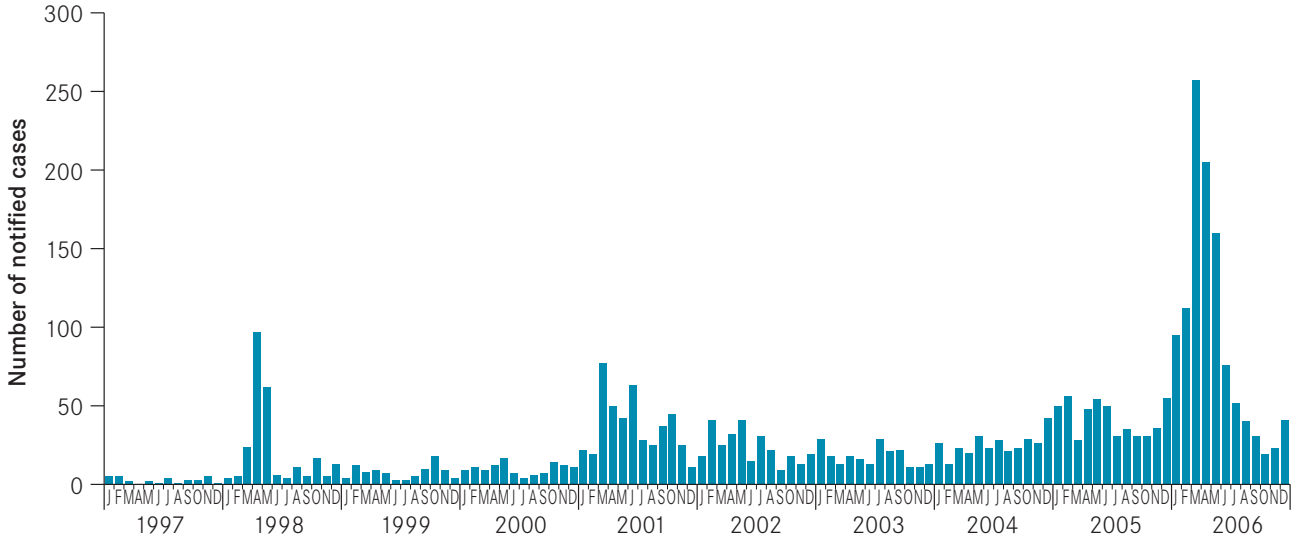
Email infectious.diseases@dhs.vic.gov.au

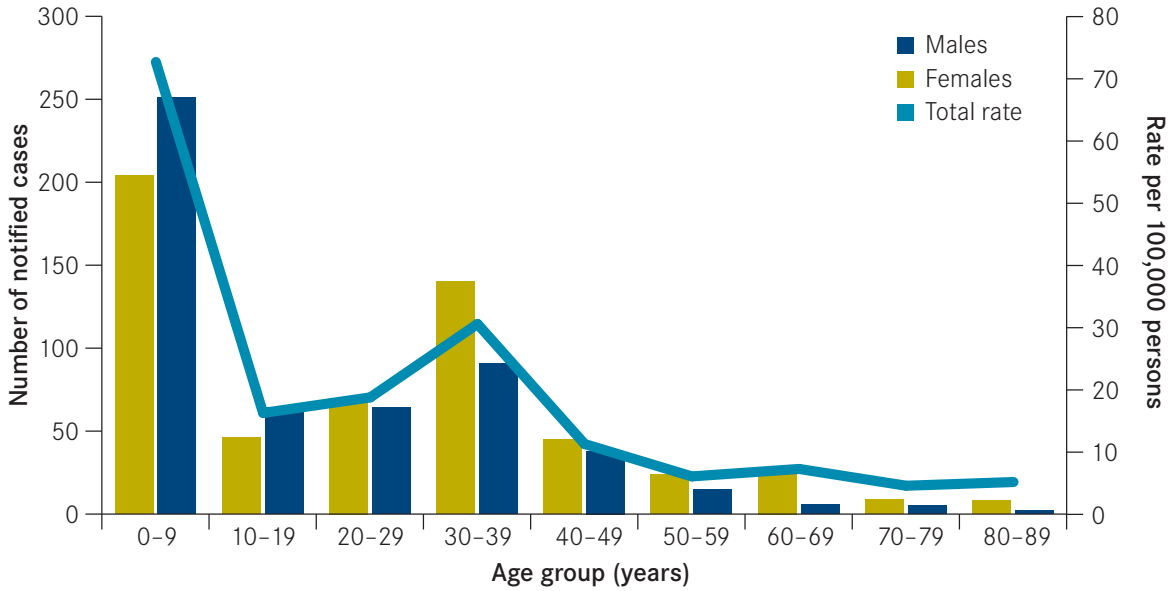
Cryptosporidiosis notifications

Cryptosporidiosis notifications, by year and month notified, Victoria, 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Cryptosporidiosis notifications, by age groups and sex, Victoria, 2006



Cryptosporidiosis is a parasitic infection that commonly presents as gastroenteritis, but may less frequently involve the lungs (bronchitis or pneumonia), gall bladder (cholecystitis) or pancreas (pancreatitis). Enteric symptoms usually include watery diarrhoea associated with cramping abdominal pain, bloating, vomiting and fever. The disease is usually mild and self-limiting, but may be life-threatening in those with impaired immunity. Symptoms usually last from four to 21 days. Transmission occurs by the faecal–oral route (person-to-person and animal-to-person) and via ingestion of contaminated foods and water. Young children, the families of infected persons, men who have sex with men, travellers, health care workers and people in close contact with farm animals comprise most reported cases. Multiple outbreaks associated with public swimming pools and spas have been reported in Australia and worldwide.

Notified cases of cryptosporidiosis rose dramatically in the first half of 2006, much of which was attributed to outbreaks associated with swimming pools. There were 1,111 cases of cryptosporidiosis notified in 2006, compared to 505 in 2005. The highest proportion of cases was in the 0–9 years age group, although there was a secondary peak in those aged 30–39 years.

For more information

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Food-borne and water-borne illness notifications

Food-borne and water-borne illness notifications, Victoria, 1997–2006

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number of notifications	204	427	425	340	394	376	476	905	449	1,615
Total number of outbreaks	72	59	116	74	68	223	150	263	202	565
Food-borne or suspected food-borne outbreaks	NA	NA	NA	NA	21	26	18	20	27	20

Note: NA = not available

Food-borne and water-borne diseases are thought to be the most common of all acute illnesses, and may be caused by a variety of bacteria, viruses and parasites, as well as non-infective agents. Symptoms vary with the causative agent and range from slight abdominal pain and nausea to retching, vomiting, abdominal cramps, fever and diarrhoea. Severity depends on host and agent characteristics and the infectious dose. Hospitalisation and death may occur due to acute dehydration, metabolic acidosis and subsequent organ failure. The duration of illness varies from hours (24–48 hours in viral and staphylococcal infections) to days and even weeks in salmonellosis and campylobacteriosis. Medical practitioners and laboratories are required to notify two or more related cases of suspected food or water-borne illness within 24 hours of diagnosis.

Compared to previous years, the number of notified cases of specific organisms/agents (not reported elsewhere) associated with gastrointestinal illnesses potentially linked to food or water and the total number of gastrointestinal illness outbreaks reported rose sharply in 2006. Much of this rise was attributable to an increase in outbreaks with Norovirus or suspected viral aetiologies, particularly in aged care facilities and hospitals. However, the number of food-borne or suspected food-borne outbreaks identified remained stable.

For more information

Victorian Government Health Information, *Infectious Diseases Epidemiology and Surveillance*:
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Contact

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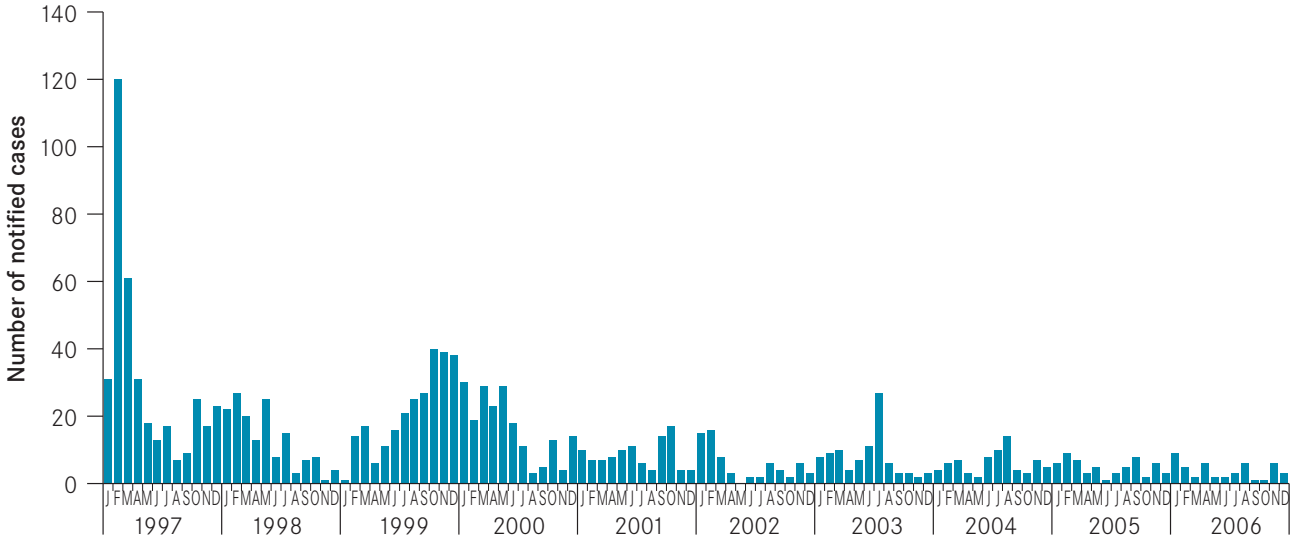
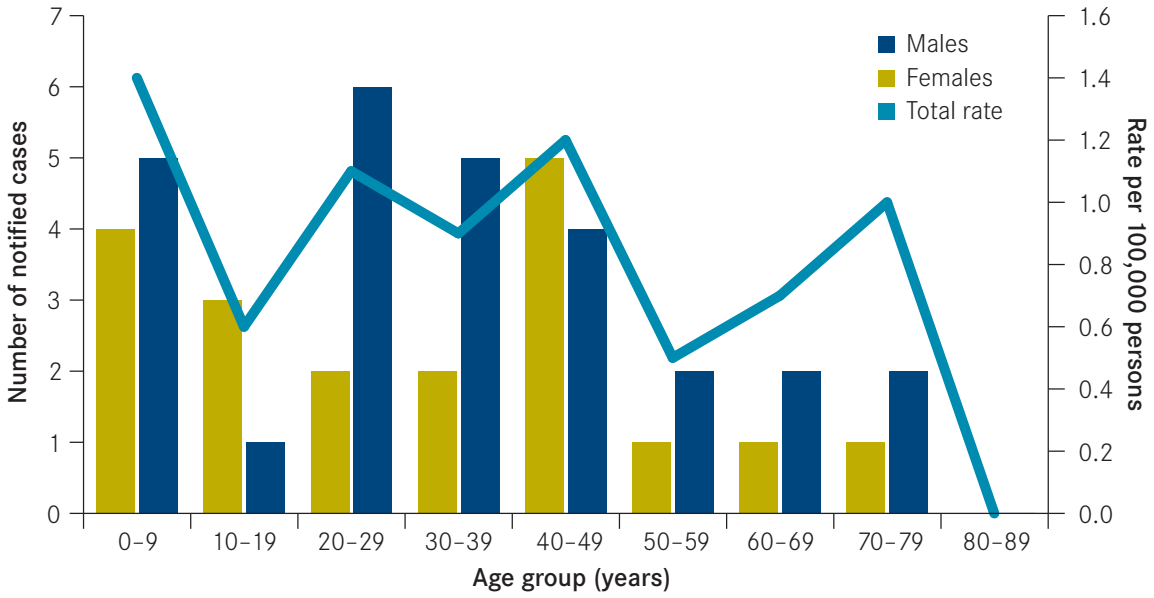
Hepatitis A notifications

Hepatitis A notifications, by year and month notified, Victoria 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Hepatitis A notifications, by age group and sex, Victoria, 2006



Illness due to hepatitis A typically presents as acute fever, malaise, anorexia, nausea and abdominal discomfort, followed a few days later by dark urine and jaundice. Symptoms usually last several weeks. There are approximately 70–200 cases per year in Victoria. Notifications have declined since the late 1990s. Infection is most common in travellers to countries where the disease is endemic, in injecting drug users, children in childcare, and men who have sex with men. Secondary cases among household contacts of cases are also not uncommon. In developed countries, common source outbreaks due to contaminated food are rare. The decline in cases may be due in part to the uptake of hepatitis A vaccine, which is recommended for travellers to endemic areas and those in high-risk groups such as child care workers, men who have sex with men and injecting drug users.

A large number of cases occurred between mid-1999 and mid-2000 because of an outbreak among injecting drug users. The dramatic peak in Victorian cases between February and March 1997 was associated with the New South Wales Wallis Lakes oysters outbreak, and an area of increased incidence in the north-west of the state. However, since then there has been a general decline in the annual number of notified hepatitis A cases. In 2006, the notification rate was highest among children aged 0–9 years.

For more information

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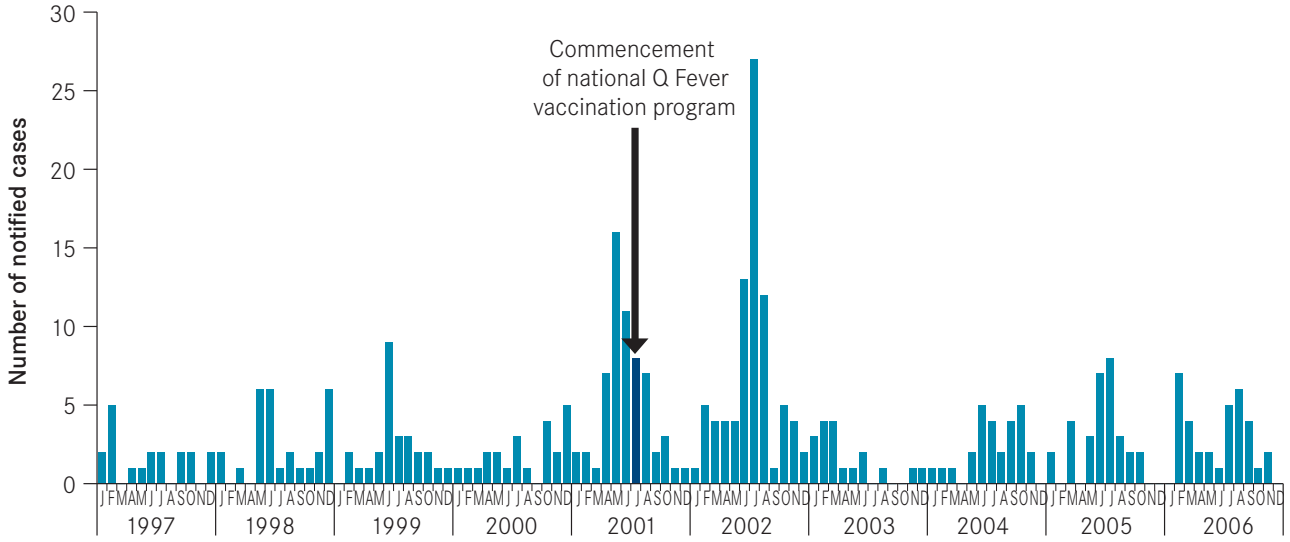
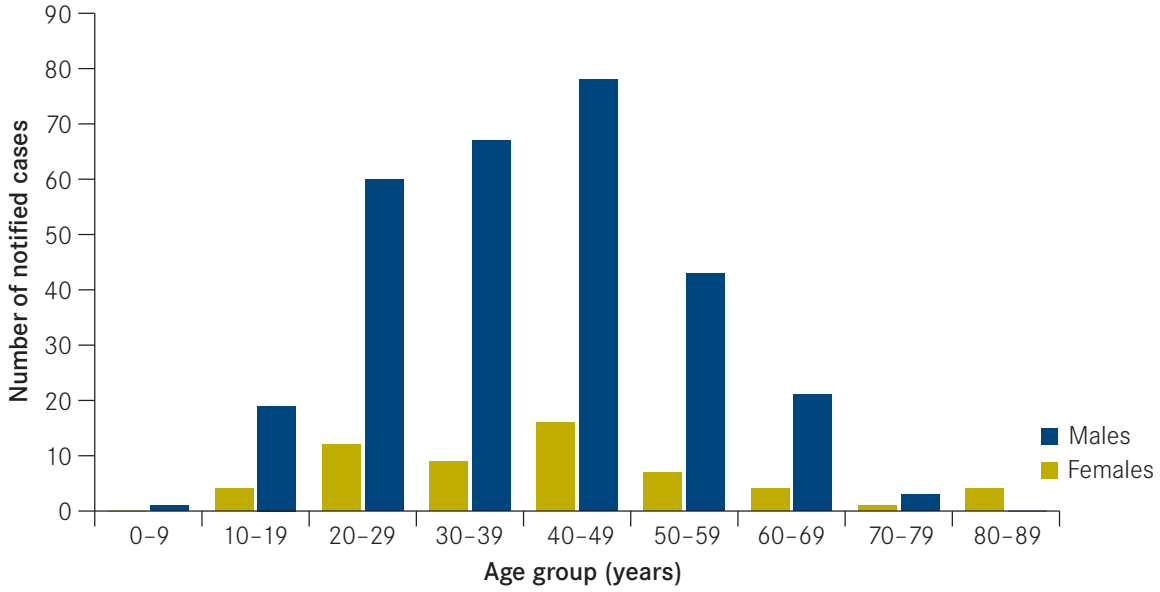
Q fever notifications

Notified cases of confirmed and probable Q fever, Victoria, 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Notified cases of confirmed and probable Q fever, by age and sex, Victoria 1997-2006



Q fever, caused by *Coxiella burnettii*, is an acute febrile disease acquired through contact with cattle, sheep and goats. For many years, Victoria has conducted a Q fever vaccination program in conjunction with abattoir owners. Staff from the Department of Human Services (Public Health) supply the service delivery component and expertise to the program, and employers cover the cost of the vaccine. The national Q fever vaccination program was implemented on 1 July 2001, when vaccine was supplied free to a wider group of at-risk workers, and many more immunisation providers were trained in the administration of the program. This program ceased on 30 June 2006, although vaccine may still be purchased privately.

Thirty-four cases were notified in 2006, compared with 31 in 2005 and 27 in 2004. Two outbreaks were identified in 2006, both associated with abattoirs in regional Victoria.

For more information

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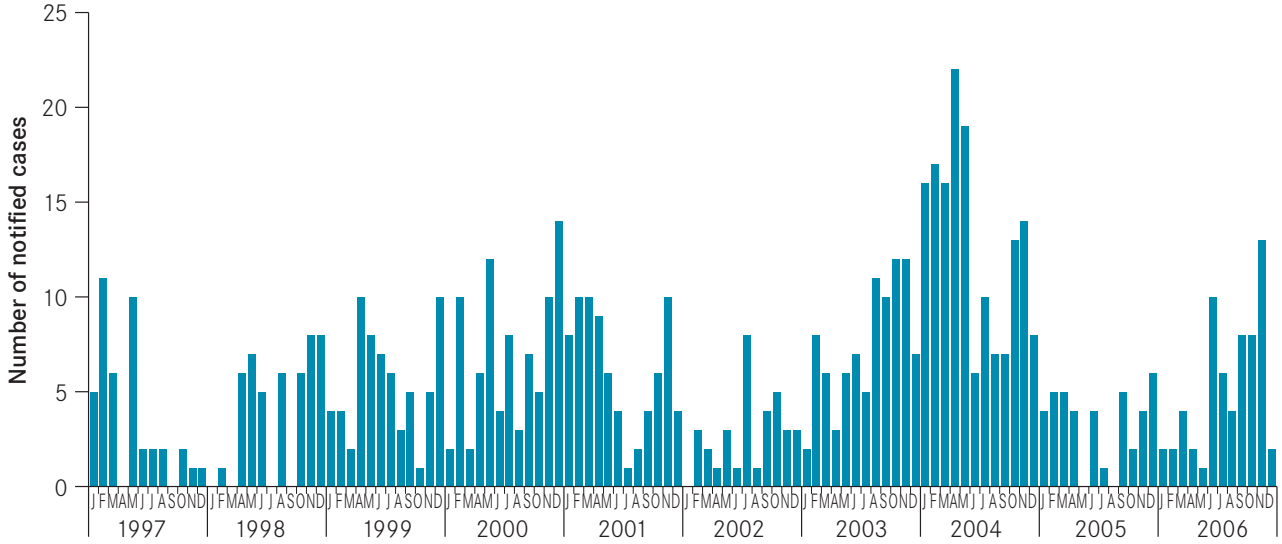
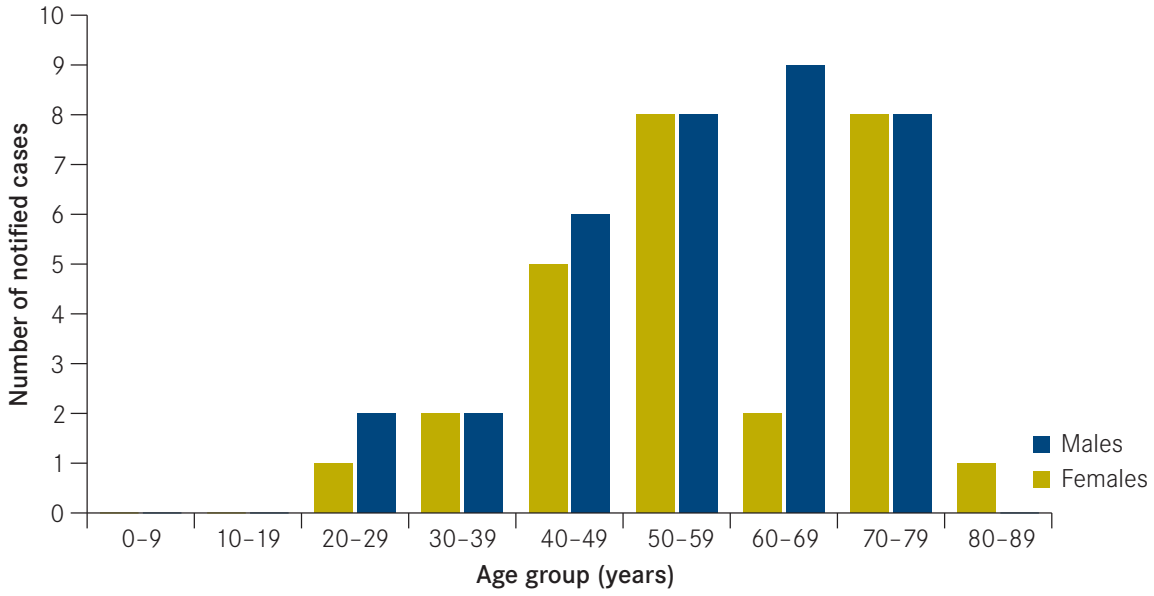
Psittacosis notifications

Notified cases of confirmed and probable psittacosis, Victoria, 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Notified cases of confirmed and probable psittacosis, by age and sex, Victoria, 2006



Psittacosis, caused by *Chlamydia psittaci*, is a zoonosis acquired by contact with infected birds, usually psittacine birds, but also poultry. The number of notified cases of psittocosis in Victoria in 2006 was 62, compared to 40 in 2005 and 155 in 2004. The most recently identified outbreaks occurred in 2004, with 26 cases associated with a poultry processing plant in rural Victoria and four cases with a game processing plant.

The majority of notified cases were among people aged 40 years and over, and were most predominant for males.

For more information

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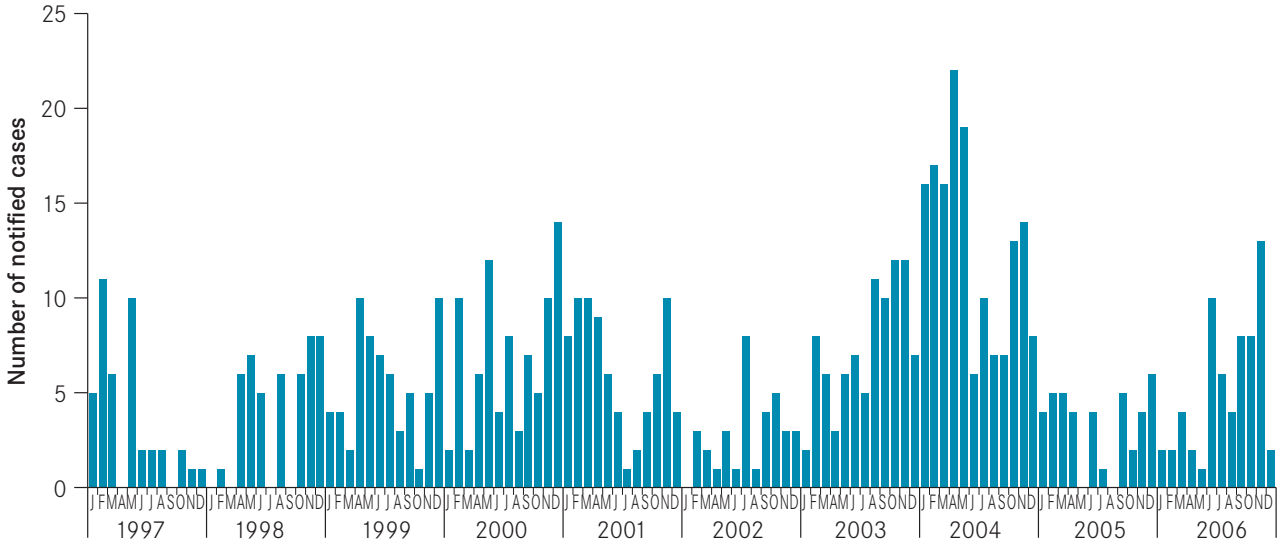
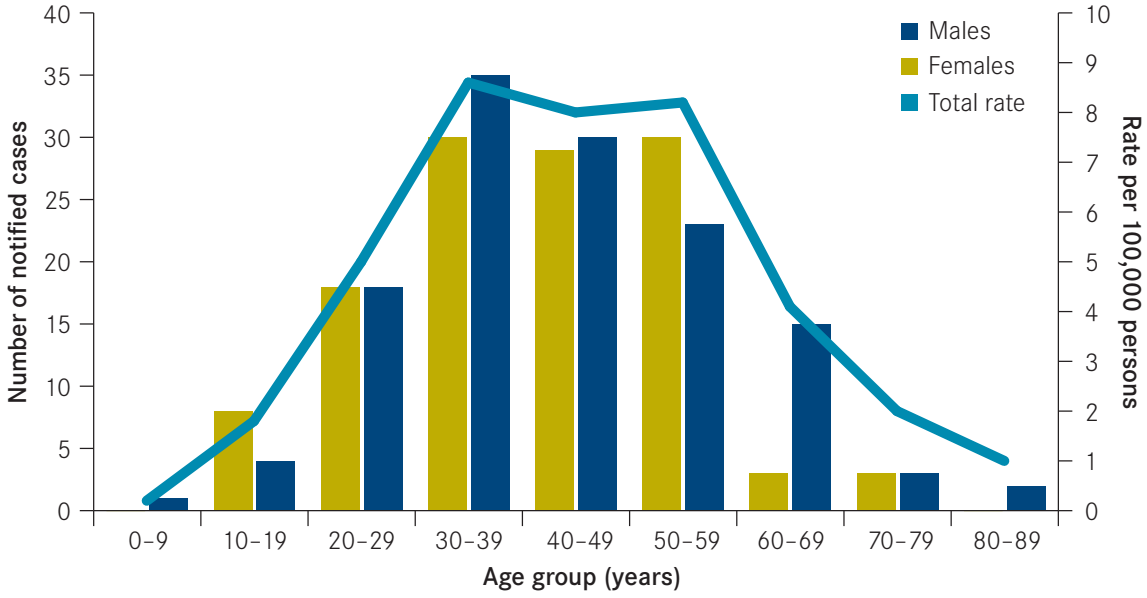
Arbovirus-alphavirus notifications

Ross River and Barmah Forest virus disease notifications, by year and month notified, Victoria, 1997-2006



Note: Data are presented for month (and year) of notification. In some instances this may differ from month of occurrence.

Ross River and Barmah Forest disease notifications, by age groups and sex, Victoria, 2006



Arboviruses are spread by the bites of arthropods, particularly mosquitoes, and are divided into alphaviruses and flaviviruses. Ross River virus (RRV) and Barmah Forest virus are the two infective alphaviruses of greatest public health importance in Victoria. Both viruses cause similar disease in humans, with features that include fever, arthritis, arthralgia and rash. The rash can occur up to two weeks before or after other symptoms. It is variable in distribution, character and duration, and may be associated with buccal and palatal enanthems. Rheumatic symptoms are present in most patients except for the few who present with rash alone: these consist of arthritis or arthralgia primarily affecting the wrist, knee, ankle and small joints of the extremities. There is a high subclinical rate of infection (up to 60 per cent), but a low disease rate in children. Recovery usually occurs within several weeks, but lethargy, arthralgia and myalgia can persist for over six months.

RRV disease is the commonest and most widespread arboviral disease in Australia. Sometimes thousands of clinical cases occur in epidemics, which occur chiefly from January to May. Epidemics usually follow heavy rains or occur after high tides that inundate salt marshes or coastal wetlands, although sporadic cases also occur in mainland and coastal regions of Australia.

An increased number of Ross River virus disease cases were notified to the Department of Human Services in 2006 compared to the years 2002 to 2005, but this was similar to the years 1999 and 2000. The largest epidemic year in the last ten years was 1997. Generally consistent with previous years, the number of notified Ross River virus disease cases in 2006 was approximately ten times the number of notified Barmah Forest virus disease cases. Also consistent with previous years, the 30–39 years and 40–49 years age groups comprised the highest number of notified Ross River virus disease cases.

For more information

Victorian Government Health Information, *Infectious Diseases Epidemiology and Surveillance*:
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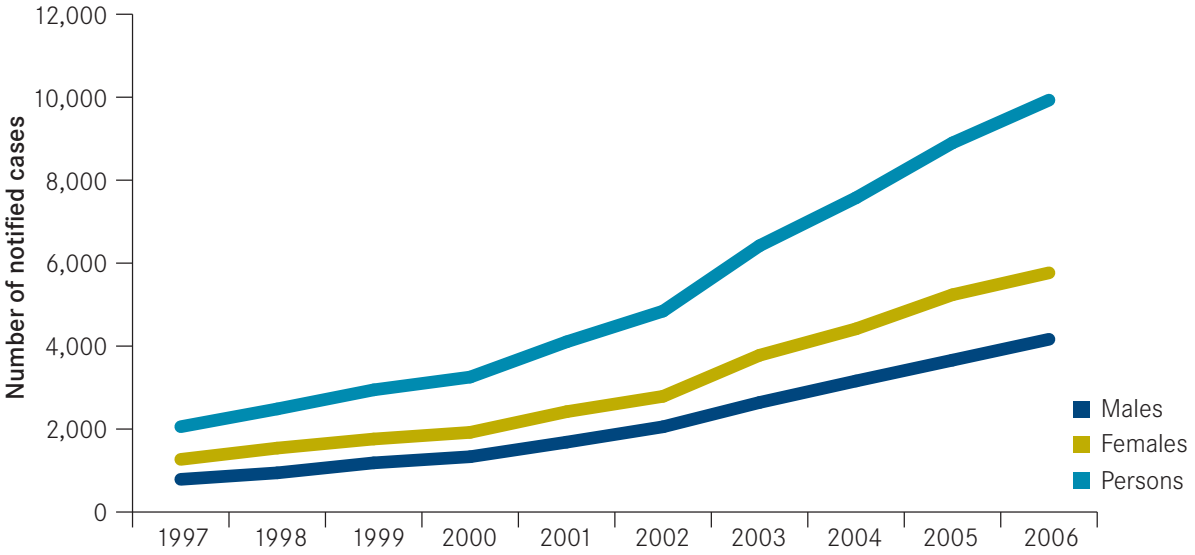
Chlamydia notifications

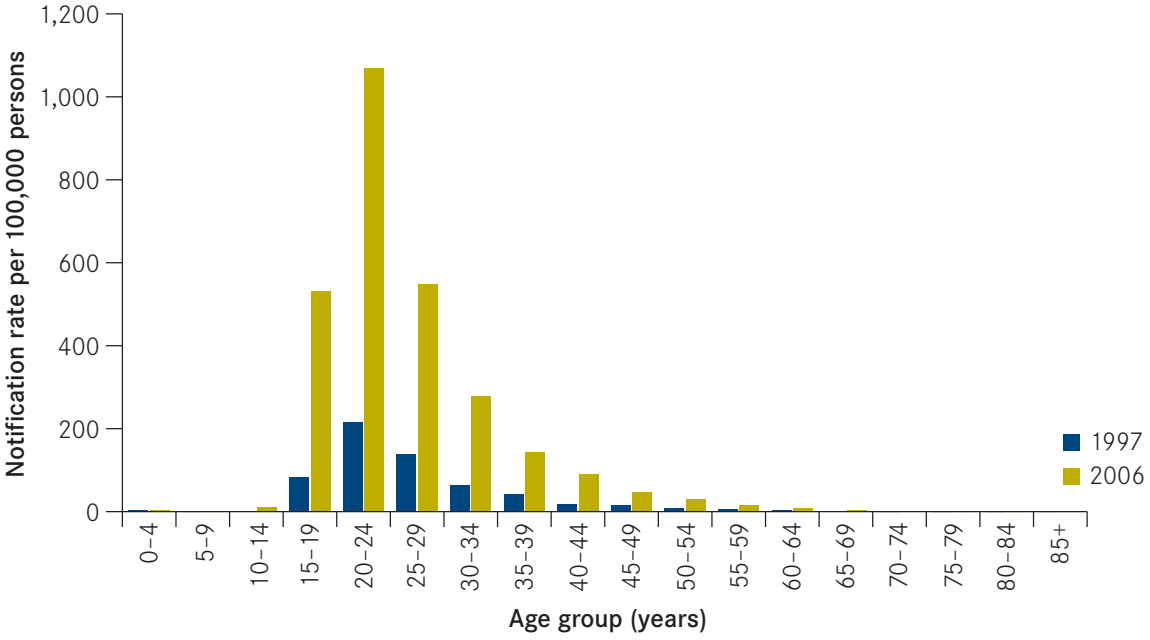
Chlamydia notifications, by sex, Victoria, 1997-2006



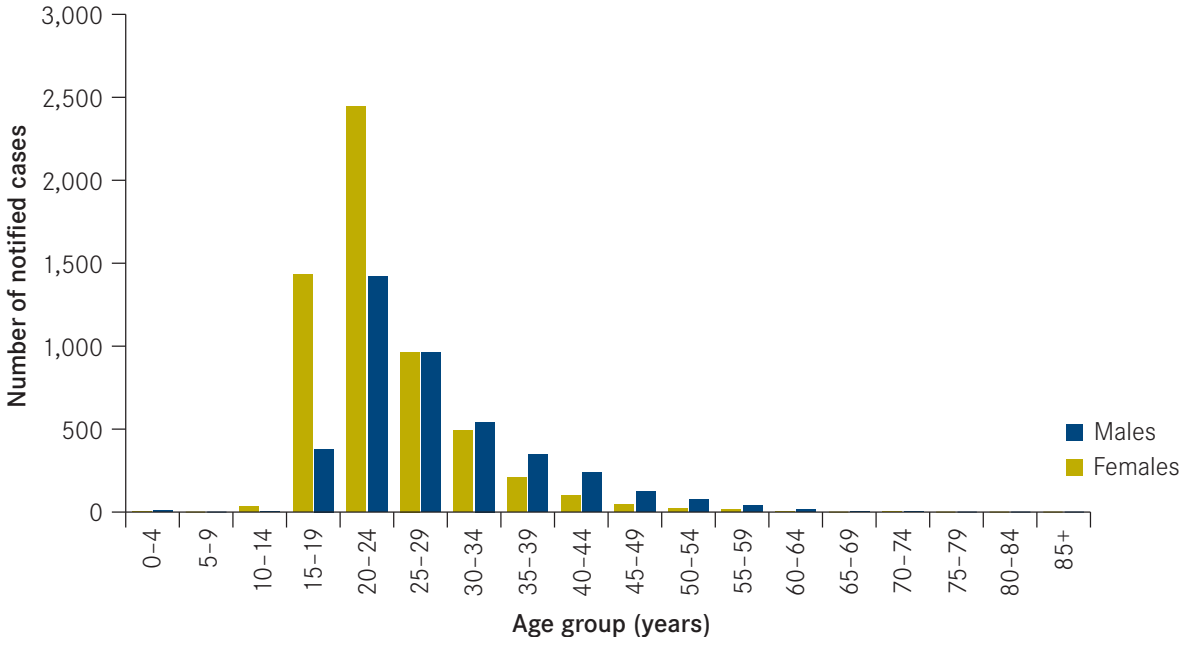
Notifications	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Persons	2,057	2,485	2,945	3,235	4,103	4,844	6,420	7,575	8,899	9,930
Females	1,269	1,541	1,760	1,920	2,419	2,789	3,779	4,416	5,238	5,766
Males	788	944	1,185	1,333	1,684	2,055	2,641	3,159	3,661	4,164

Note: Notifications for persons includes cases that were not identified by sex, and hence may be greater than the sum of male and female notifications.

Chlamydia notification rate per 100,000 persons, by age group, Victoria, 1997 and 2006



Chlamydia notifications, by sex, Victoria, 2006



Chlamydia is a sexually transmissible infection (caused by the organism *Chlyamydia trachomatis*) which became a notifiable disease in 1990. Chlamydial infections are predominantly asymptomatic, and clinical presentation varies with sex and age. Chlamydia can cause urethritis, cervicitis and pelvic inflammatory disease (PID). The long-term consequences of these conditions include tubal infertility, ectopic pregnancy and chronic pelvic pain. Maternal cervical infection with *C. trachomatis* can cause conjunctivitis and pneumonia in infants who are born vaginally to an infected mother.

For surveillance purposes, chlamydia is defined as the demonstrated presence of *C. trachomatis* from a clinical specimen (genital, rectal or urine) by culture, antigen detection methods or a nucleic acid test. Diagnosing practitioners and laboratories in Victoria must notify the Department of Human Services of any newly detected cases.

The incidence of chlamydial infection is difficult to quantify, because up to 70 per cent of sexually active women and 25 per cent of sexually active men with chlamydial infection are asymptomatic. This means that there may be a large number of undiagnosed, untreated individuals who are capable of transmitting the disease.

Since *C. trachomatis* infection first became notifiable, it has been the most commonly notified bacterial sexually transmissible infection. In 2006, there were 10,012 notified cases, an 11.8 per cent increase on the total of 8,955 for 2005. Of these, 4,167 were in males (41.6 per cent) and 5,765 in females (57.6 per cent). The median age for males was 26 years (range ten days to 73 years) and 22 years for females (range 12 days to 71 years). Notification rates were highest for those aged 20–24 years. The number of notified cases in 2006 has increased almost fivefold since 1997, from 2,062. The increase in notifications over the period may be due to one or more of the following: improvements in the notification system, increased numbers of tests being conducted, increased use of more sensitive assays, or a true increase in the incidence of *C. trachomatis*.

Transmission of *C. trachomatis* occurs primarily by sexual contact. The surveillance data support the promotion of a safe-sex message and the importance of early detection and treatment. It also further highlights the importance of effective partner notification practices.

For more information

Victorian Government Health Information, *Infectious Diseases Epidemiology and Surveillance*:
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Contact

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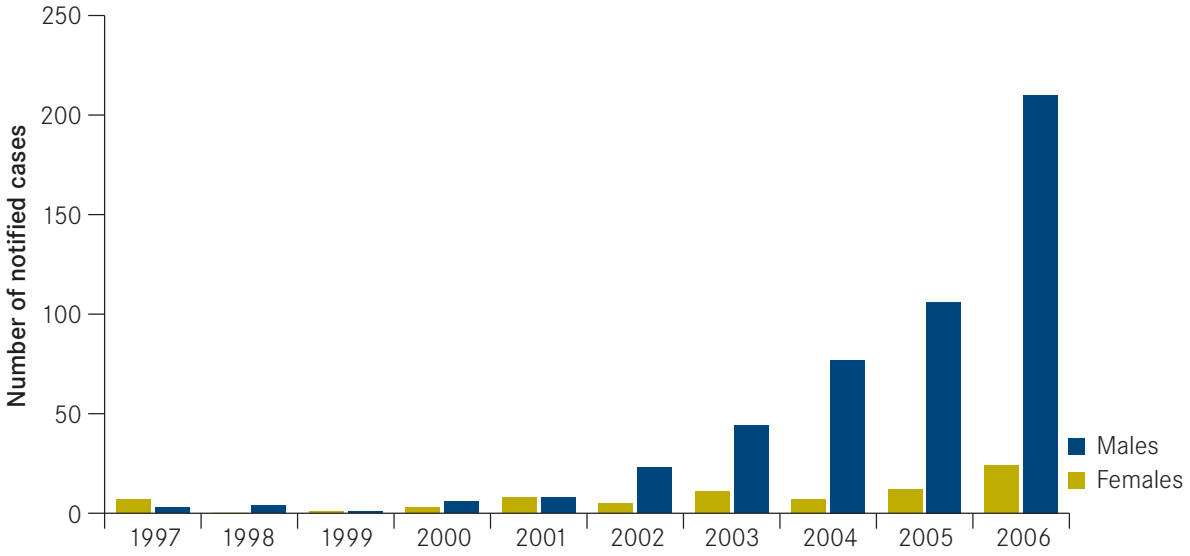
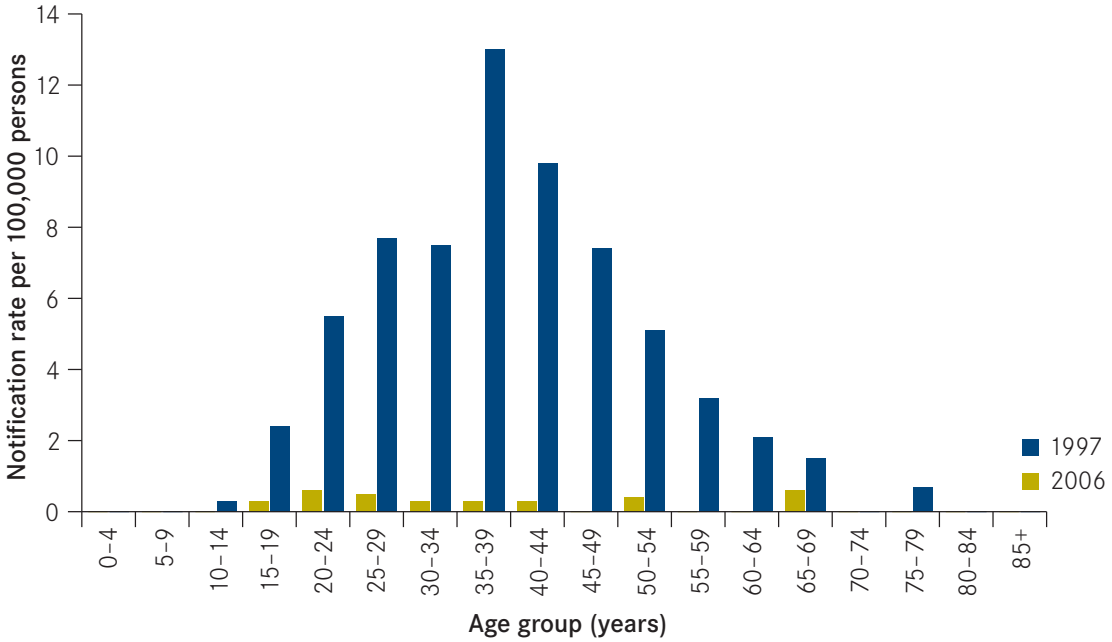
Infectious syphilis notifications

Infectious syphilis notifications, by sex, Victoria, 1997-2006

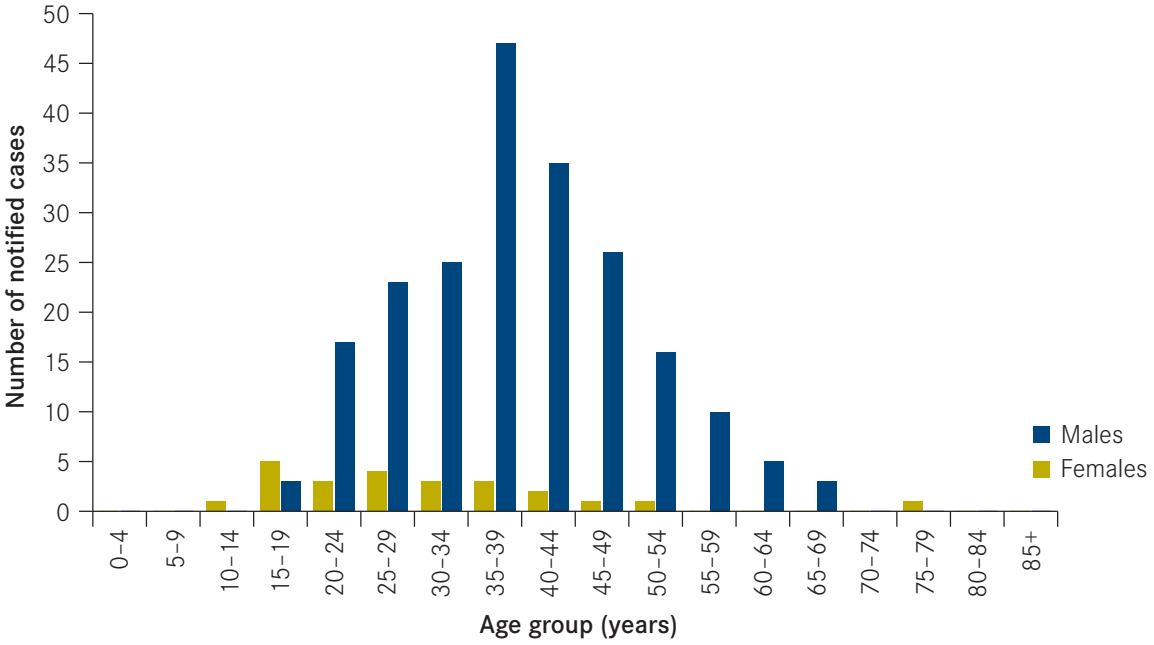


Notifications	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Females	3	0	1	3	8	5	11	7	12	24
Males	7	4	1	6	8	24	44	77	105	210
Persons	10	4	2	9	16	29	55	84	117	234

Infectious syphilis notification rate per 100,000 person, by age group, Victoria 1997 and 2006



Infectious syphilis notifications, by sex, Victoira, 2006



Infectious syphilis is a serious sexually transmissible infection caused by the organism *Treponema pallidum* and is characterised by distinct stages of effects over a period of years. Infection causes a primary lesion (chancre), which appears approximately three weeks after exposure. The chancre may not be noticed by the infected individual. A generalised rash and lymphadenopathy can follow. The disease remains highly infectious at this stage. Cardiovascular or neurosyphilis may develop many years later, causing mental or physical disability or premature death. If untreated, pregnant women can pass the infection to their foetuses (congenital syphilis) resulting in birth defects, including blindness.

Many notified cases of infectious syphilis, particularly among those in older age groups, are likely to represent old, treated infections. Public health staff follow up all cases to ascertain the likely date of infection, thereby ensuring that reported disease rates reflect only new infections. For surveillance purposes, infectious syphilis is defined as primary, secondary or early latent syphilis.

There were 591 notifications of syphilis in 2006. Of these, 234 were classified as infectious, a 179 per cent increase on the 84 notifications received in 2004. The median age of infectious syphilis cases notified in 2006 was 38 years (range 13–75 years) and 89.7 per cent were in males. Symptomatic infection was the most common reason for testing reported by clinicians.

Increasing notifications of infectious syphilis may indicate a resurgence of the disease in Victoria. Safe-sex practices, early case identification and treatment and contact tracing are the most effective methods for controlling syphilis.

For more information

Victorian Government Health Information, *Infectious Diseases Epidemiology and Surveillance*:
www.health.vic.gov.au/ideas/surveillance/

Contact

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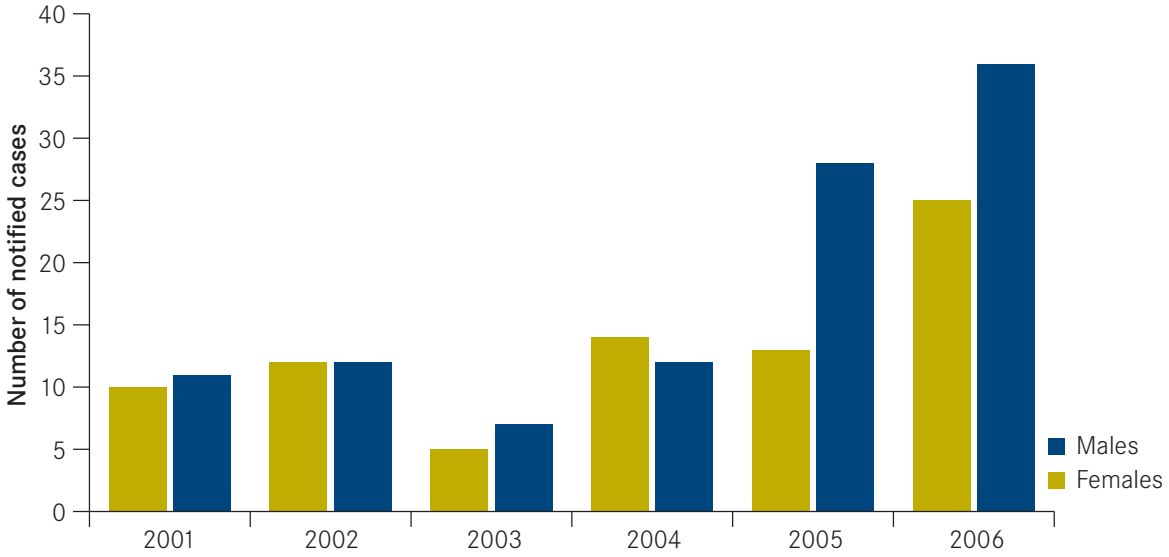
Mycobacterium ulcerans notifications

Notifications for mycobacterium ulcerans, by sex, Victoria 2001-2006



In Australia, *Mycobacterium ulcerans* was first diagnosed in the Bairnsdale area of East Gippsland, where an outbreak of 120 cases occurred in the 1940s and became known as 'Bairnsdale ulcer'. It was also found in far north Queensland (Daintree region), but is most common in West Africa, where thousands of cases have been recorded. All countries along the Gulf of Guinea are affected. There it is known as 'Buruli ulcer'.

The bacterium is thought to live in the environment and is believed to require particular conditions of soil and water to exist. The one consistent environmental association with the disease is stagnant, recently dammed or slow-running water. Infection is associated with the proximity of still water, muddy water, mangroves, swamps, recycled irrigation or soil.

The mode of transmission is uncertain, but persons with cuts, wounds, splinters or even a needle prick on the skin are at increased risk of becoming infected. Researchers have concluded that *M. ulcerans* cannot by itself penetrate the skin.

Since the bacterium was originally diagnosed in the Bairnsdale area of East Gippsland in the 1940s, new cases have recently been identified, after not being seen for several years. Cases have also been reported in the Mornington Peninsula area, from Western Port and Phillip Island (largest outbreak was in 1992–1994), and from the Bellarine Peninsula.

In 2006, there were 61 notifications for *M. ulcerans*, nearly half of which were thought to be acquired on the Bellarine Peninsula. This represents a significant increase on the average of 21 cases notified annually between 2001 and 2004, although notification of *M. ulcerans* infection only became mandatory in Victoria in 2004. Accordingly, an increase in notifications after 2004 may in part be attributed to the changed reporting requirements.

For more information

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Health and the environment

This section presents indicators relating to the environment that have the potential to influence health. These include indicators of air quality, cooling tower water samples testing positive for Legionella, legionellosis notifications, water quality, fluoridation and days with high ultraviolet radiation (UVR) index.

Health and the environment

In this chapter

- air quality (ozone)
- air quality (particles as PM_{10})
- air quality (particles as $PM_{2.5}$)
- air quality (visibility reducing particles)
- smoke-free households with dependant children
- legionellosis notifications
- *Legionella pneumophilia* cases
- legionellosis cases associated with outbreaks
- cooling tower water samples tested positive for *Legionella*
- cooling tower water samples in higher ranges for heterotrophic colony count (HCC)
- unintentional carbon monoxide poisoning hospital admissions
- localities compliant with *Escherichia Coli* water quality standards
- fluoridation
- hot days above 35 degrees Celsius
- fire weather risk
- daily ultra violet radiation (UVR) levels
- SunSmart programs

Summary

In the early 1980s, it was common for the ozone objectives not to be met in Melbourne. Significant improvement has occurred since then. In recent years the frequency with which the objectives are not met is approximately only one day every two years. In 2005 four-hour ozone air quality index was classified as 'good' or 'very good' on 98 per cent of days.

Melbourne typically meets the national goal for air quality, measured in terms of particles as PM_{10} and $PM_{2.5}$. In recent years (for example, 2003), Melbourne has also been adversely affected by drought related impacts (particles from dust storms and bushfires). Data from 2006 will also show a bushfire impact. For the majority of stations within Melbourne, PM_{10} is typically 'good' or 'very good' for 90 per cent of days during the year. In 2005, Box Hill was influenced by dust from construction work adjacent to the monitoring station. In 2005 levels were 'good' or 'very good' for 90 per cent of days during the year for particles as $PM_{2.5}$.

The long-term trend for visibility in the Melbourne region indicates that during the last 20 years, visibility problems have become less frequent. Over the last fifteen years, however, there was no overall reduction in the number of days exceeding the air quality objective. In 2005, for the majority of stations within Melbourne, visibility is typically 'good' or 'very good' for 90 per cent of days.

Estimates from the *Victorian population health survey* indicate that, among households with depandant children, the proportion of current smoker respondent households that were reported to be smoke-free has increased, from 66.9 per cent in 2003 to 79.1 per cent in 2006.

Notifications for *Legionellosis* have been relatively steady since 1999, with a large outbreak of more than 100 cases in April and May 2001 being associated with the Melbourne Aquarium. In 2006, there were 69 notifications of suspected or probable *Legionellosis* reported to the department. Outbreaks of legionellosis (defined as two or more cases with a common exposure) are one of the indicators used to gauge the success of the interventions component of the Government's Legionella Reform Strategy. The number of legionellosis cases associated with outbreaks has varied from a minimum of 0 cases in 2001 to a maximum of 132 cases in 2000.

Notified cases attributed to *Legionella pneumophilia* have fallen from a high of 239 in 2000, to 70 in 2004 and 51 in 2006.

The percentages of cooling tower water samples taken by the department that have tested positive for *Legionella* has declined from 9.5 in 2000, to 5.6 in 2004, and 2.8 in 2006.

The percentages of cooling tower water samples taken by department that failed to meet or exceeded the prescribed standards for heterotrophic colony counts has decreased since 2000.

Between 1999 and 2006 there were 90 hospital admissions in Victoria due to unintentional carbon monoxide (CO) poisoning. Admissions for unintentional poisonings represented 10.2 per cent of total CO poisonings (all intents) admissions during this period.

The water quality standard for *Escherichia coli* (*E. coli*) states that 98 per cent of samples collected over any 12-month period should contain no *E. coli* per 100mL of drinking water. For the 2005–06 reporting period, only 471 out of 493 water sampling localities (95.54 per cent) met the *E. coli* standard.

Prior to 2004 approximately 74 per cent of the Victorian population had a fluoridated drinking water supply, with most of these people living in metropolitan Melbourne. In 2007, the percentage has increased to 77 per cent.

Annual average temperatures have generally been increasing in Australia since the 1950s. In Melbourne, the frequency of hot nights (20°C and over) has increased substantially more than the frequency of hot days (35°C and over).

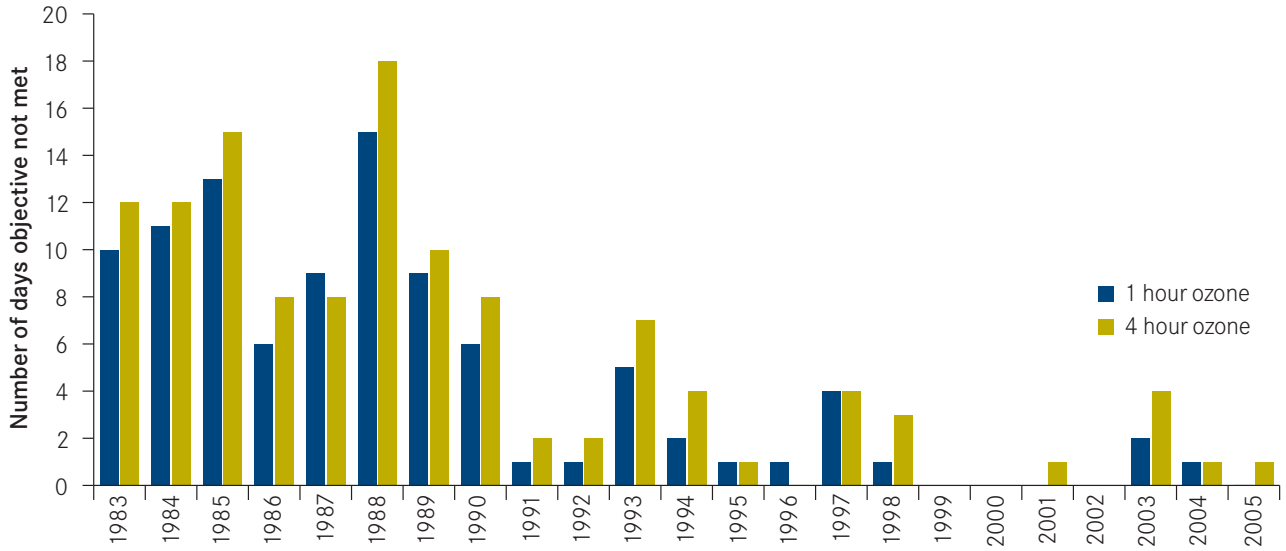
The Forest Fire Danger Index (FFDI) is derived from analysis of factors such as drought, air temperature, wind speed, and relative humidity, and used to quantify fire weather risk. The annual cummulative FFDI is used to measure the relative strength of fire weather risk during a given fire season. Long-term records of annual cumulative FFDI levels reveal a positive trend for each of 5 weather stations (Melbourne Airport, Mildura, Sale, Bendigo, and Mt Gambier), indicating that bushfire risk is tending to increase over time.

The UV Index is an indication of the maximum daily level of ultraviolet radiation (UVR) received at ground level. In Victoria, a UV Alert is issued by the Bureau of Meteorology when the UV Index is forecast to reach or exceed 3 (moderate and above), a level that can damage your skin and lead to skin cancer. In 2006, the number of UV index days that reached or exceeded 3 was 248.

In 2005, 84 per cent of Victorian primary schools and 65 per cent of Victorian early childhood services (excluding playgroups) were participating in the SunSmart Schools Program.

Air quality (ozone)

Number of days not meeting the ozone objective in Melbourne (worst station), 1983–2005



	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
1-hour ozone	10	11	13	6	9	15	9	6	1	1	5	2
4-hour ozone	12	12	15	8	8	18	10	8	2	2	7	4

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1-hour ozone	1	1	4	1	0	0	0	0	2	1	0
4-hour ozone	1	0	4	3	0	0	1	0	4	1	1

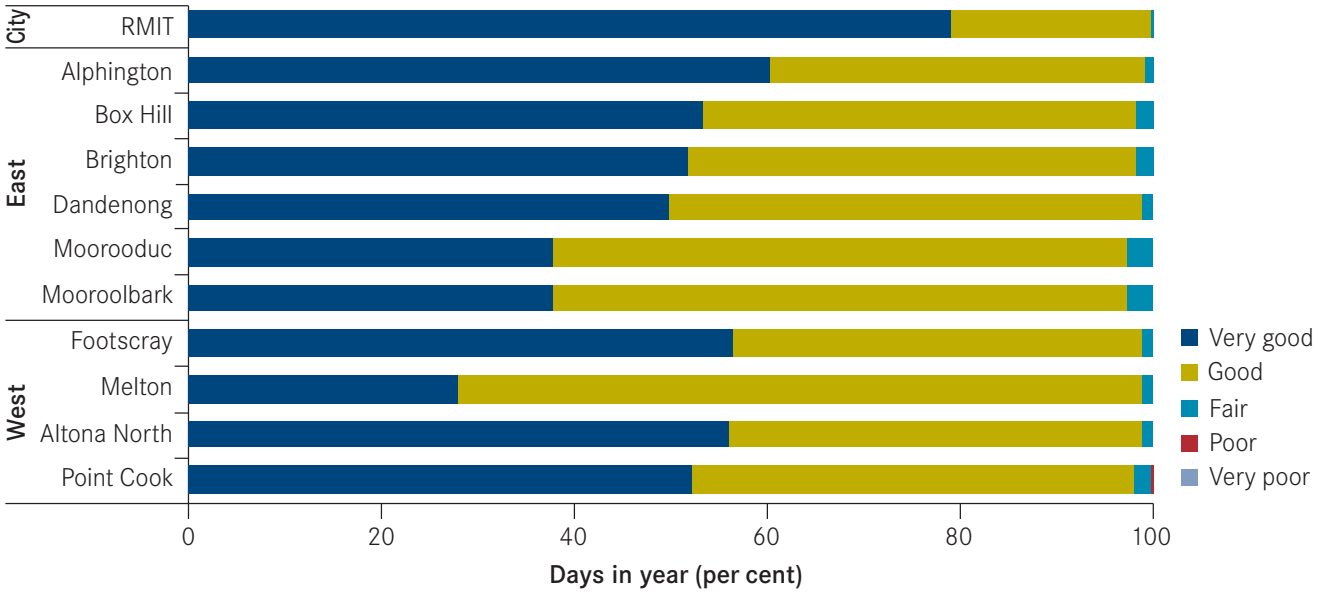
Ozone is a naturally occurring gas that is common in the lower atmosphere. Ozone is also a pollutant, being the main ingredient in summer smog. Exposure to high levels of ozone can result in increases in asthma attacks and hospitalisations for heart and lung conditions. In the lower atmosphere (the air we breathe), ozone is found naturally in low concentrations. Higher concentrations of ozone are formed when chemical reactions between certain pollutants (nitrogen dioxide and hydrocarbons) take place in the presence of sunlight. Ozone is only a problem between late spring and early autumn, when there is enough warmth and sunlight for the reactions to occur. Note that ozone in the air we breathe should be distinguished from ozone in the stratosphere (the ozone layer), which has the beneficial effect of absorbing harmful radiation.

The current national objectives for ozone are 0.10 parts per million for a one-hour average and 0.08 parts per million for a four-hour average. The goal is to have no more than one day a year (by 2008) where the objectives are not met (as measured at each monitoring site).

In Melbourne, in the early 1980s, the ozone objectives were frequently not met. Significant improvement has occurred since then. In recent years we typically only see a day not meeting the objectives approximately once every two years. This is mainly due to progressive improvements in vehicle emission standards.

Exceptional ozone events may occur if bushfire smoke is blown towards the city; several such events occurred in 2003, however, most ozone events are a result of pollution generated in the urban area. A similar bushfire effect will be observed in monitoring data from 2006.

Air quality index for four-hour ozone in Melbourne, 2005



The annual distribution of the four-hour ozone air quality index varies by location. Days of 'very good', 'good' and 'fair' air quality meet the air quality objective, while 'poor' and 'very poor' days exceed the objective. Ozone levels are typically classified as 'good' to 'very good' on over 98 per cent of days at each of the monitoring sites in Melbourne.

For more information

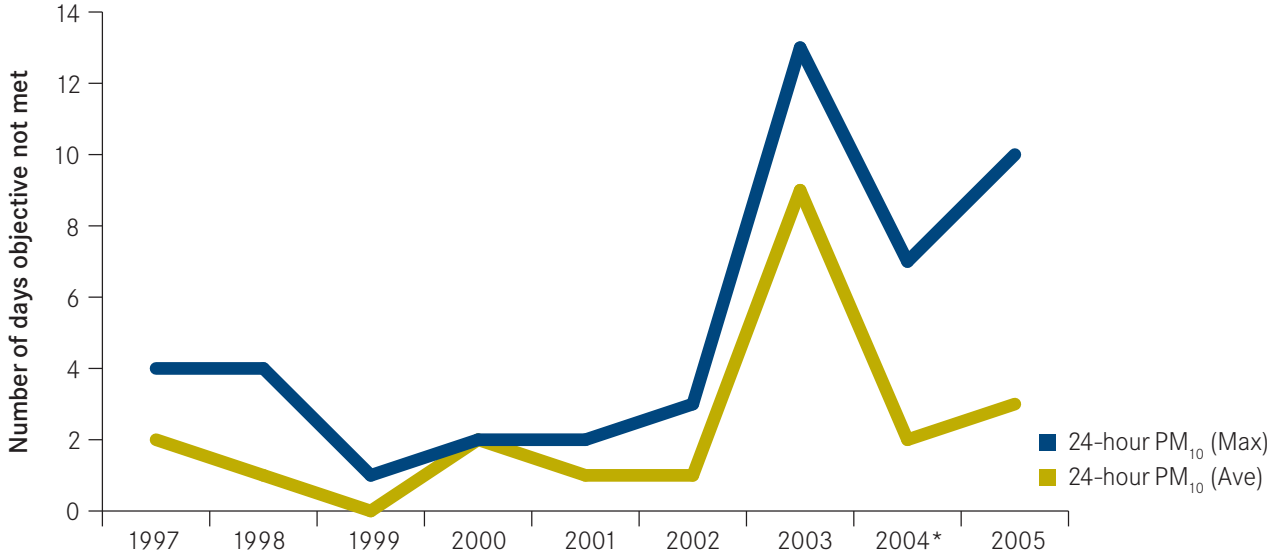
Environment Protection Authority (EPA), 2003, *Victoria's air quality–2005*, EPA Publication 1044:
www.epa.vic.gov.au/Air/Monitoring/monitoring_reports.asp

Contact

Environment Protection Authority
Manager, Air Quality Studies
EPA Victoria
Phone (03) **8458 2381**

Air quality (particles as PM_{10})

Maximum and average number if days not meeting particles (PM_{10}) objective in Melbourne, 1997–2005

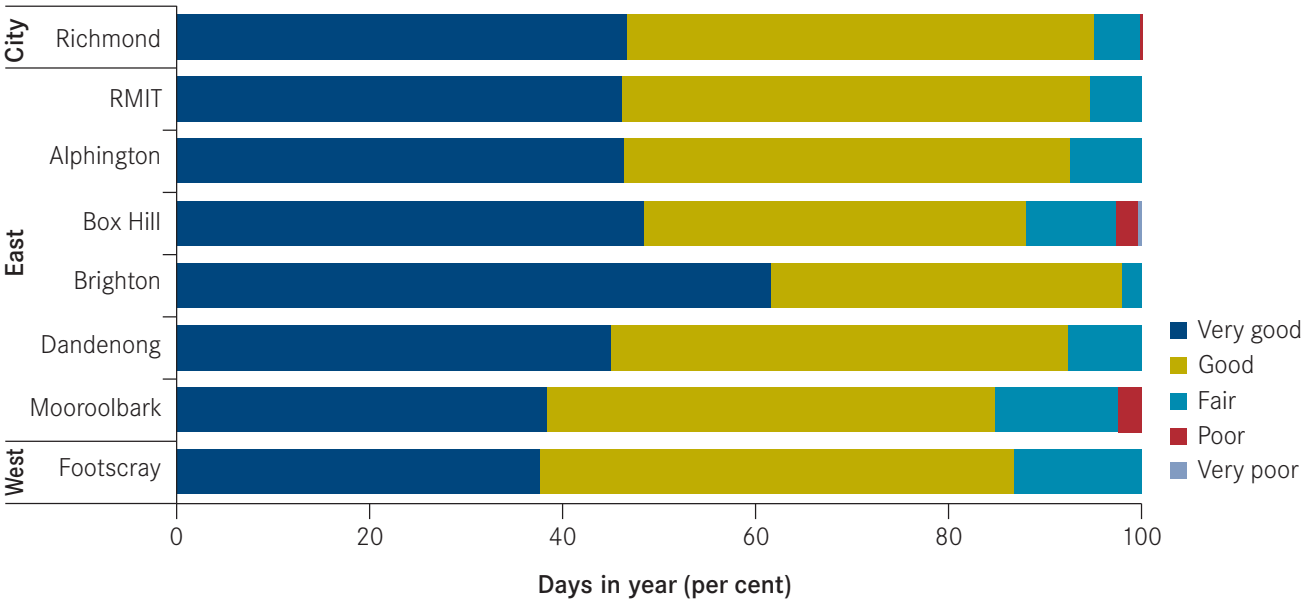


Note: Excludes data from Box Hill.

Particles smaller than 10 micrometre (PM_{10}) (less than one-tenth the width of human hair) can exacerbate existing respiratory and cardiovascular disease, which can lead to increases in hospitalisations and premature mortality. The national objective for PM_{10} is a one-day average of 50g/m^3. The goal is to have no more than five days a year (by 2008) where the objective is not met (as measured at each monitoring site).

The major sources of particles in an urban environment are motor vehicles (particularly diesel powered), industry and wood combustion for heating. Days where the objective is not met are highly dependent on weather conditions. In recent years (for example, 2003), Melbourne has also been adversely impacted by drought-related impacts (particles from dust storms and bushfires). Data from 2006 will also show a bushfire impact. In years without dust or bushfires issues, Melbourne typically meets the national goal for particles as PM_{10}.

Air quality index for PM_{10} in Melbourne, 2005



The annual distribution of daily PM_{10} during 2005 in terms of EPA's Air Quality Index varies by location. Days of 'very good', 'good' and 'fair' air quality meet the air quality objective, while 'poor' and 'very poor' days exceed the objective. For the majority of stations within Melbourne, PM_{10} is typically 'good to very good' for 90 per cent of days during the year. In 2005, Box Hill was influenced by dust from construction work adjacent to the monitoring station.

For more information

Environment Protection Authority (EPA), 2003, *Victoria's air quality–2005*, EPA Publication 1044: www.epa.vic.gov.au/Air/Monitoring/monitoring_reports.asp

Contact

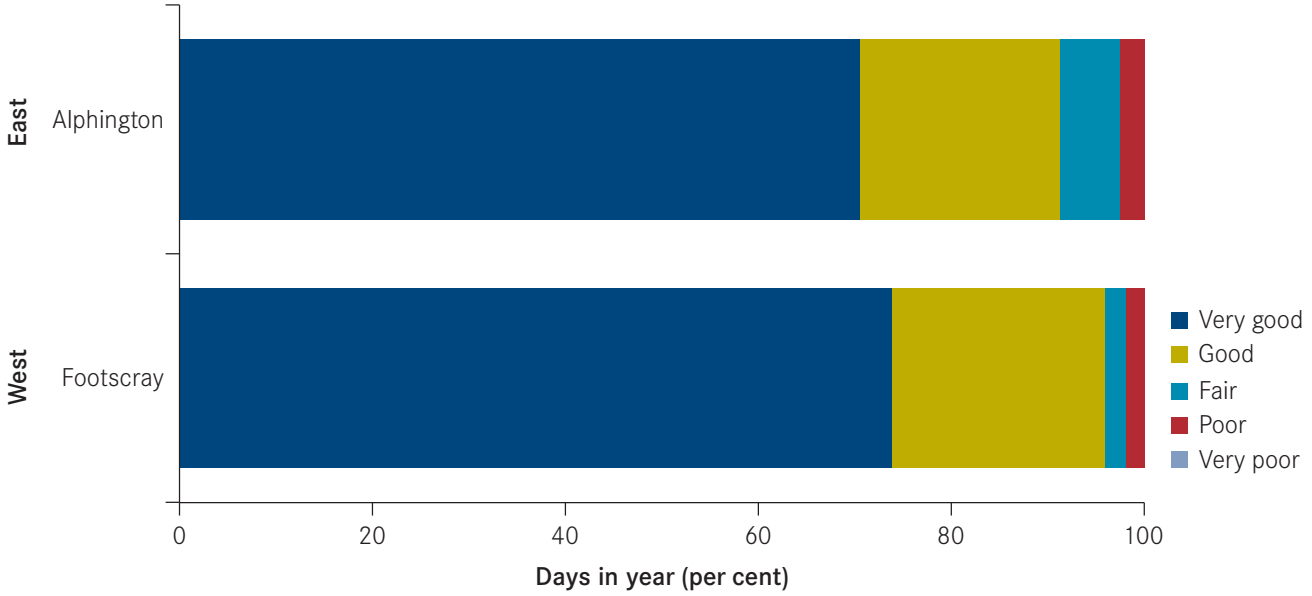
Environment Protection Authority
Manager, Air Quality Studies
EPA Victoria
Phone (03) **8458 2381**

Air quality (particles as $PM_{2.5}$)

Fine particles, measured as particles smaller than 2.5 micrometre ($PM_{2.5}$) can penetrate deeply into the lungs and exacerbate existing respiratory and cardiovascular disease, which can lead to increases in hospitalisations and premature mortality. The National Environmental Protection Measures (NEPM) specifies advisory reporting standards for $PM_{2.5}$, with a daily (25µg/m^3) and annual (8µg/m^3) objective. EPA is monitoring $PM_{2.5}$ to collect data that will enable a review of the NEPM (this review commenced in 2005).

Fine particle problems are mainly a concern in Victoria during autumn and winter, when the use of domestic solid fuel heaters without emission-reducing technology (for example, old wood heaters) and open fires contribute significantly to elevated particle levels. Peak summer particle levels are dependant on weather conditions and events such as bushfires and dust storms. The major source of fine particles in an urban environment is motor vehicles.

Air quality index for $PM_{2.5}$ in Melbourne, 2005



The annual distribution of daily $PM_{2.5}$ during 2005 in terms of EPA's Air Quality Index (the particles as $PM_{2.5}$ are measured on a one day in three cycle) varies by location. Days of 'very good', 'good' and 'fair' air quality meet the air quality objective, while 'poor' and 'very poor' days exceed the objective. $PM_{2.5}$ levels are typically 'good to very good' for 90 per cent of days during the year, similar to that of visibility.

For more information

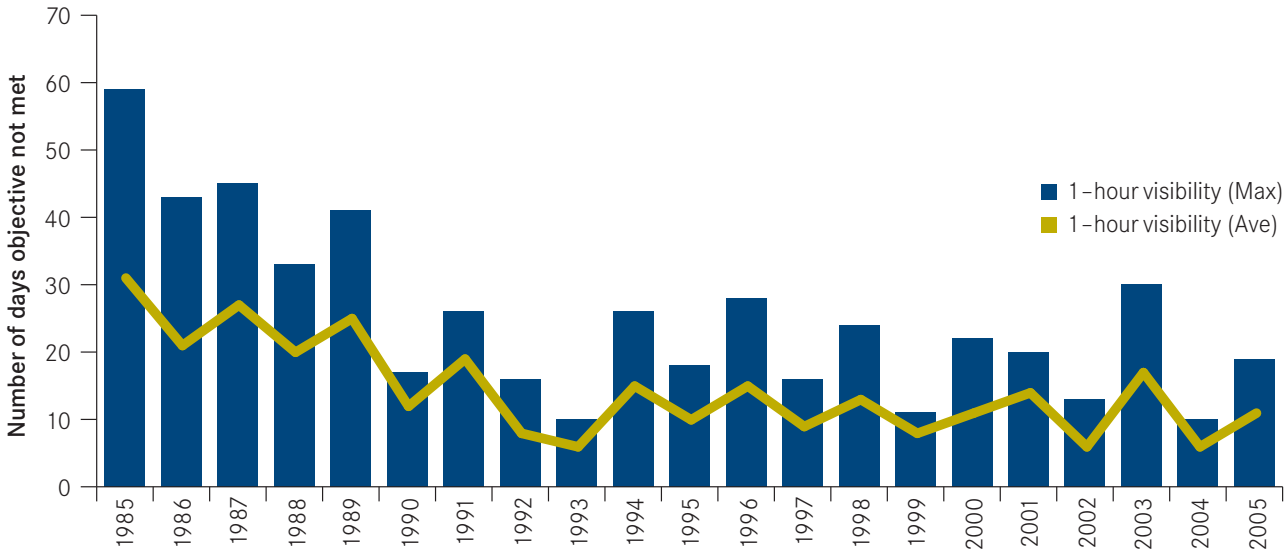
Environment Protection Authority (EPA), 2003, *Victoria's air quality–2005*, EPA Publication 1044:
www.epa.vic.gov.au/Air/Monitoring/monitoring_reports.asp

Contact

Environment Protection Authority
Manager, Air Quality Studies
EPA Victoria
Phone (03) **8458 2381**

Air quality (visibility reducing particles)

Number of days visibility objective not met in Melbourne, 1985–2005



	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1-hour visibility (Max)	59	43	45	33	41	17	26	16	10	26	18
1-hour visibility (Ave)	31	21	27	20	25	12	19	8	6	15	10

	1996	1997	1998	1999	2000	2002	2001	2003	2004	2005
1-hour visibility (Max)	28	16	24	11	22	20	13	30	10	19
1-hour visibility (Ave)	15	9	13	8	11	14	6	17	6	11

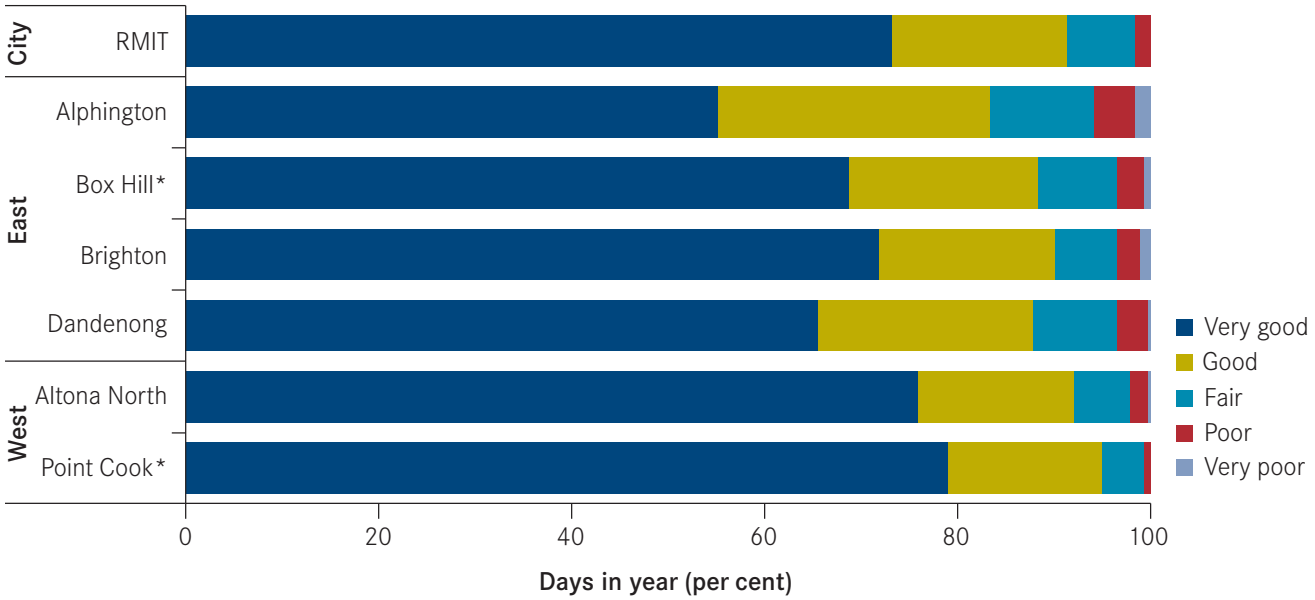
Visibility reducing particles are particles that reduce visual distance and aesthetic enjoyment. The reduction in visibility is typically associated with particles less than 2.5 micrometre ($PM_{2.5}$). These particles can penetrate deeply into the lungs. The Environment Protection Authority (EPA) has a state objective of maintaining a one-hour visibility level of at least 20 kilometres. The goal is to have no more than three days a year (by 2008) where the objective is not met (as measured at each monitoring site).

Visibility problems are mainly a concern in Victoria during autumn and winter, when the use of domestic solid fuel heaters without emission-reducing technology (for example, old wood heaters) and open fires contribute significantly to elevated particle levels.

The long-term trend for visibility in the Melbourne region indicates that during the last 20 years, visibility problems have become less frequent. Improvements are a direct consequence of controls placed on industry, motor vehicles and backyard burning, and the efforts of the community in response to EPA education and communication programs. Over the last fifteen years, however, there was no overall reduction in the number of days exceeding the air quality objective.

Days where the objective is not met are highly dependent on weather conditions and events such as bushfires. Drought-related impacts (dust storms and bushfires) during the summer of 2003, for example, contributed to a marked increase in the number of poor visibility days. Data from 2006 will also show a bushfire impact.

Air quality index for daily visibility in Melbourne, 2005



Note: * Annual data capture below 75 per cent.

The annual distribution of daily minimum visibility during 2005 in terms of EPA's Air Quality Index varies by location. Days of 'very good', 'good' and 'fair' air quality meet the air quality objective, while 'poor' and 'very poor' days exceed the objective. For the majority of stations within Melbourne, visibility is typically 'good to very good' for 90 per cent of days during the year.

For more information

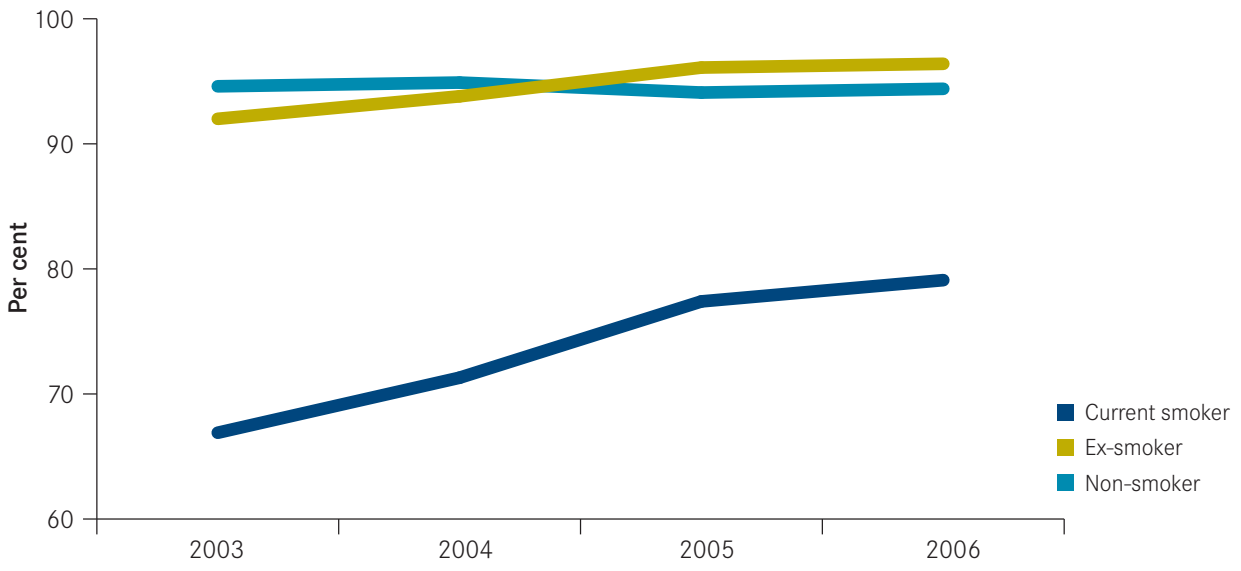
Environment Protection Authority (EPA), 2003, *Victoria's air quality–2005*, EPA Publication 1044: www.epa.vic.gov.au/Air/Monitoring/monitoring_reports.asp

Contact

Environment Protection Authority
Manager, Air Quality Studies
EPA Victoria
Phone (03) **8458 2381**

Smoke-free households with dependant children

Smoking status and maintenance of smoke-free households with dependant children, Victoria 2003–2006



Prevalence of maintaining a smoke-free household where there are dependant children, by respondent's smoking status

Year	Current Smoker		Ex-smoker		Non-smoker	
	Per cent	SE (%)	Per cent	SE (%)	Per cent	SE (%)
2003	66.9		92.0		94.6	
2004	71.3		93.8		94.9	
2005	77.4		96.1		94.1	
2006	79.1		96.4		94.4	

Source: Department of Human Services, *Victorian population health survey*, 2003–2006.

Tobacco smoke is a significant environmental contaminant of indoor air. Exposure to environmental tobacco smoke is associated with increased health risks. Children who live in households with smokers have an increased risk of respiratory disease and are more likely to experience the symptoms of asthma (ADHAC, 1998; Cook & Strachan, 1999). Household exposure to tobacco smoke is also an independent risk factor for sudden infant death syndrome (Blair et al, 1996).

Respondents to the *Victorian population health survey 2006* were categorised according to their smoking status (current smoker, ex-smoker and non-smoker) whether their households were smoke-free, and by household type. Among households with depandant children the proportion of current smoker respondent households that were reported to be smoke-free has increased, from 66.9 per cent in 2003 to 79.1 per cent, in 2006. However, this percentage remains significantly lower than that for households with depandant children where the respondent was classified as an ex-smoker or a non-smoker. In 2006, 96.4 per cent of ex-smoker respondent households and 94.4 per cent of non-smoker respondent households were reported to be smoke-free.

References

Australian Department of Health and Aged Care (ADHAC). 1998. *National drug strategic framework 1998-99 to 2002-03*, Canberra.

Blair PS, Fleming PJ, Bensley D, Smith I, Bacon D, Taylor E, Berry J, Golding J & Tripp J 1996, 'Smoking and the sudden infant death syndrome: results from 1993–95 case-control study for confidential inquiry into stillbirths and deaths in infancy', *British Medical Journal*, Volume 313, pp. 195–8.

Cook, DG., Strachan, D.P., 1999, 'Health effects of passive smoking – 10: summary of parental smoking on the respiratory health of children and implications for research', *Thorax*, Volume 54, pp. 537-66.

For more information

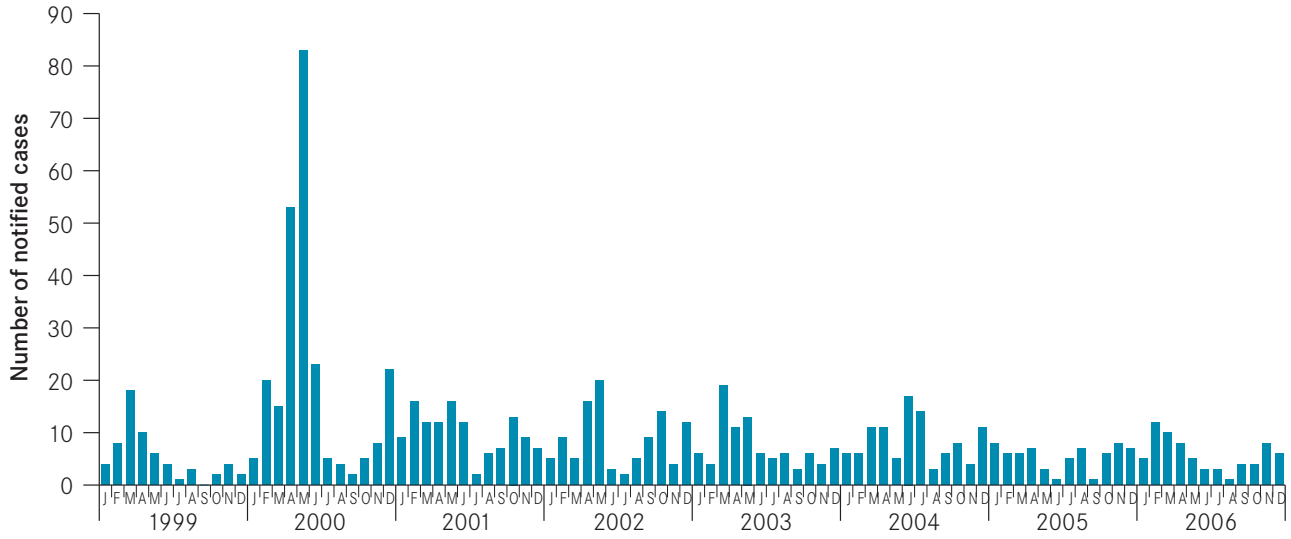
Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, Melbourne: www.health.vic.gov.au/healthstatus

Contact

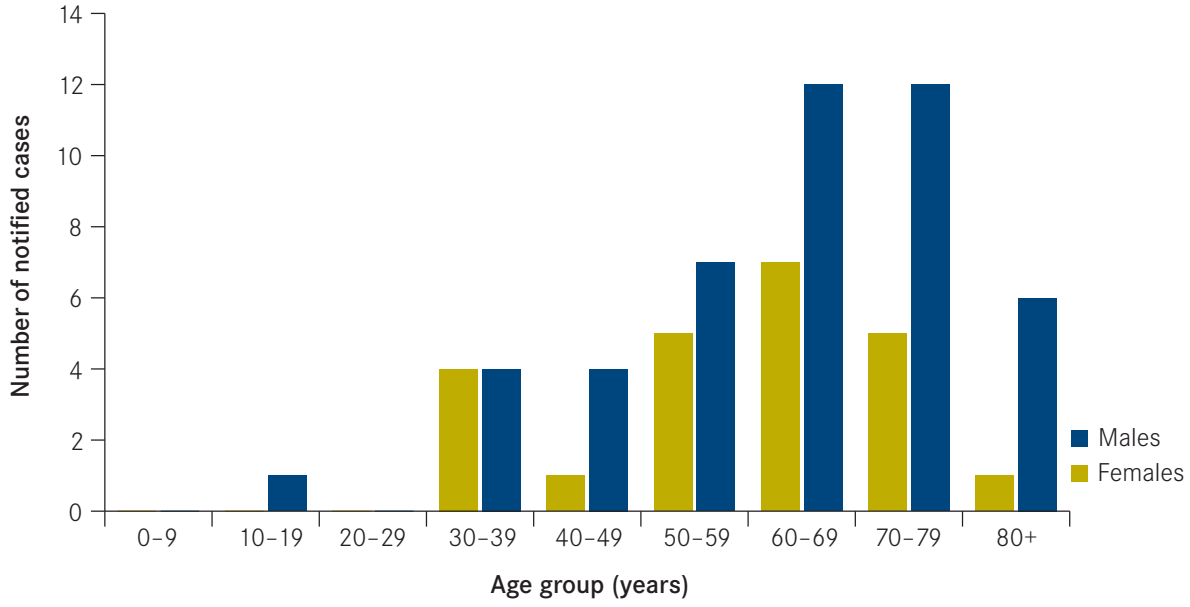
Loretta Vaughan
Health Intelligence Unit, Office of the Chief Health Officer
Public Health Branch, Department of Human Services
Phone (03) **9096 5286**
Email Loretta.Vaughan@dhs.vic.gov.au

Legionellosis notifications

Notified cases of comfirmed and probable legionellosis, Victoria, 1999–2006



Notified cases of comfirmed and probable legionellosis, by age and sex, Victoria, 2006



Legionellosis is an acute bacterial disease caused by one of several species of Legionella bacteria. *L. pneumophilia* is the most common species affecting humans, with the usual clinical manifestation being pneumonia.

Notifications have been relatively steady since 1999, with a large outbreak of more than 100 cases in April and May 2001 being associated with the Melbourne Aquarium. In 2006 there were 69 notifications of suspected or probable *Legionellosis*.

The age and sex breakdown of notified cases of confirmed and probable *Legionellosis* reflects the usual pattern of increasing incidence from young adulthood, with males being affected more commonly than females.

For more information

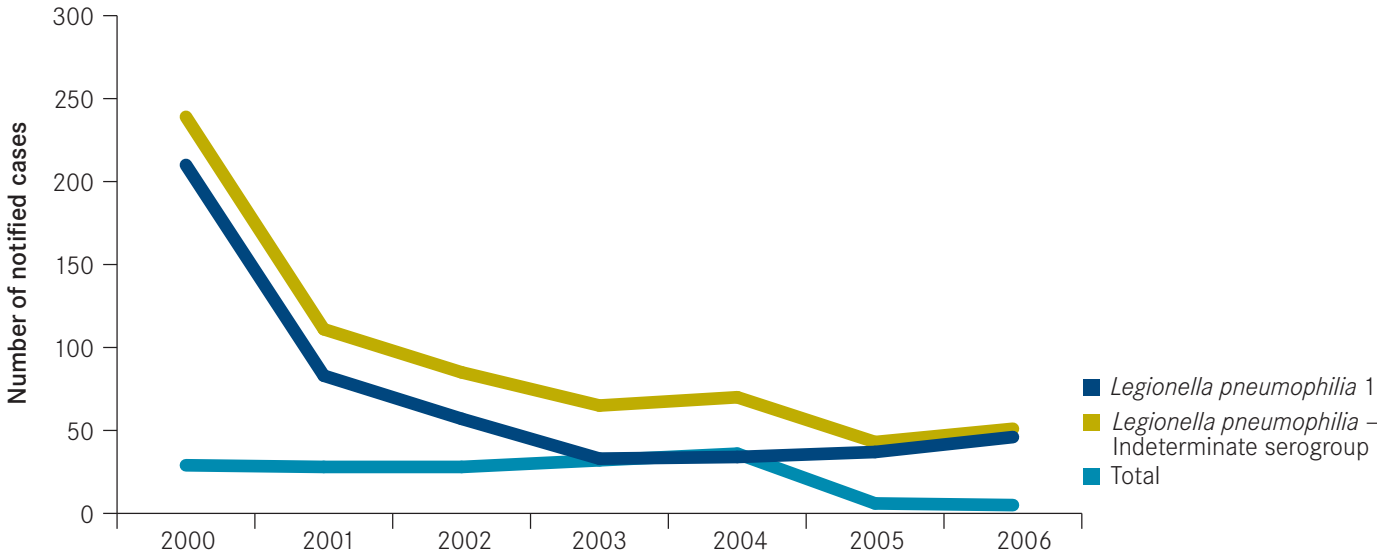
Victorian Government Health Information, *Infectious Diseases Epidemiology and Surveillance*:
www.health.vic.gov.au/ideas/surveillance/

Contact

Communicable Disease Control Unit
Public Health Branch, Department of Human Services
Phone **1300 651 160**
Fax **1300 651 170**
Email infectious.diseases@dhs.vic.gov.au

Legionella pneumophilia cases

Cases of legionellosis attributed to *Legionella pneumophilia*, Victoria, 2000–2006



		2000	2001	2002	2003	2004	2005	2006
Cases of legionellosis attributed to *Legionella pneumophilia*	*L. pneumophilia* 1	210	83	57	33	34	37	46
	L. pneumophilia – indeterminate serogroup	29	28	28	32	36	6	5
	***L. pneumophilia* – total**	**239**	**111**	**85**	**65**	**70**	**43**	**51**

Note: Number of cases of legionellosis attributed to *L. pneumophilia* and notified to Department of Human Services under the Health (Infectious Diseases) Regulations 2001. The figures include both confirmed and probable diagnoses. Separate figures are shown for *L. pneumophilia* serogroup 1, *L. pneumophilia* indeterminate serogroups, and total *L. pneumophilia* notifications. The figures for 2000 include 125 cases of legionellosis associated with the Melbourne Aquarium outbreak. The above figures do not include other species of Legionella, such as *L. longbeachae*, which have not been associated with outbreaks of legionellosis in Australia.

Source: Notifications of Infectious Diseases, Department of Human Services, *Victorian Summary Report* (prepared for general release).

Legionellosis is a potentially fatal respiratory disease caused by bacteria belonging to the genus Legionella. It particularly affects the elderly, those with chronic ailments and the immunocompromised.

Cases of legionellosis attributed to *L. pneumophilia* are health outcome indicators which are one of the measures used to gauge the success of the Government's Legionella Reform Strategy. The strategy has been progressively implemented since 1 March 2001.

Until recently, each phase of the strategy's implementation has seen a marked reduction in the number of cases of legionellosis attributed to *L. pneumophilia* in Victoria. Notified cases attributed to *L. pneumophilia* have fallen from a high of 239 in 2000, to 111 in 2001, 85 in 2002, 65 in 2003 and a slight increase to 70 in 2004, 43 in 2005 and 51 in 2006. While the trend was generally downward since the new legislation was introduced, some fluctuations are expected.

For more information

Department of Human Service, Notifications of Infectious Diseases, *Victorian Summary Report*:
www.health.vic.gov.au/ideas/surveillance

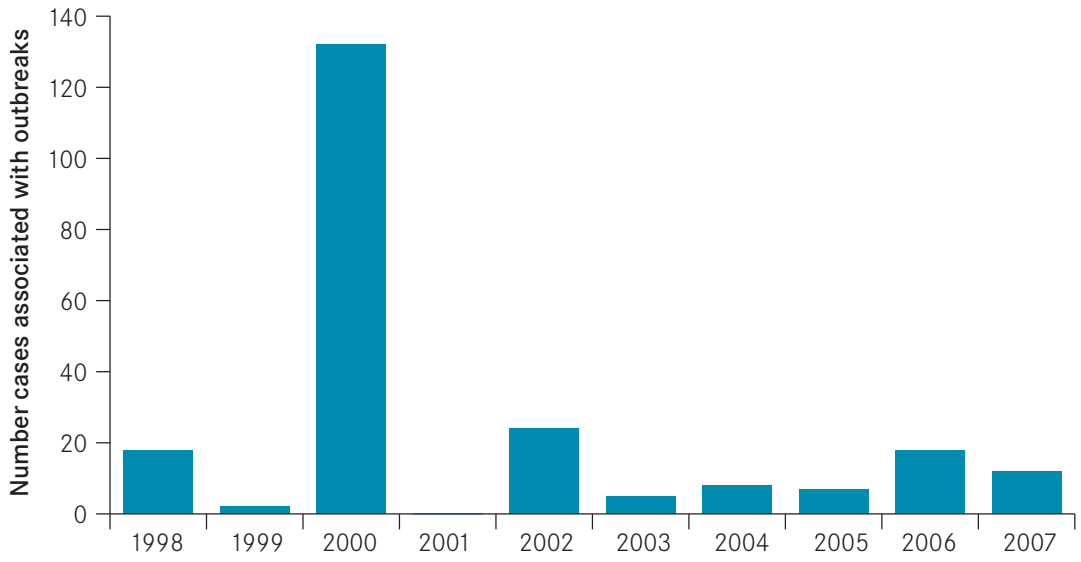
Victorian Government Health Information, Environmental Health, *Legionella*:
www.health.vic.gov.au/environment/legionella

Contact

Environmental Health Unit
Public Health, Department of Human Services
Phone **1300 761 874**

Legionellosis cases associated with outbreaks

Legionellosis cases associated with outbreaks, Victoria, 1998–2007



Source: Department of Human Services, Communicable Diseases Control, *Notifiable Infectious Diseases Surveillance (NIDS) Report*, April 2008.

A legionellosis outbreak is generally suspected where two cases have a common exposure (i.e., they are linked to within 100 metres of the same geographical location in their incubation periods and their dates of illness onset are within 14 days of each other).

As a guide, two confirmed or 'probable cases based on PCR (polymerase chain reaction)' are considered to have a common exposure if:

- the date of illness onset for one case is within 14 days (before or after) of the date of illness onset of the other; and
- both cases have been exposed to the same source during their incubation periods; and
- both cases are of the same Legionella species (i.e. *pneumophila, micdadei* or *longbeachae*).

However, due to the lack of reliability of serology, cases based on serology may be considered to be linked to the same geographical location with cases of a different species if there are more than two cases involved and after discussion with Manager General Surveillance. (Legionella Protocol, Communicable Diseases Control, Department of Human Services, July 2004).

Outbreaks of legionellosis are one of the indicators used to gauge the success of the interventions component of the Government's Legionella Reform Strategy. The strategy has been progressively implemented since 1 March, 2001.

The data reveals that, over the period shown, the number of legionellosis cases associated with outbreaks has varied from a minimum of 0 cases in 2001, to a maximum of 132 cases in 2000. All outbreaks during this period were attributed to *Legionella pneumophila* Serogroup 1.

For more information

Department of Human Services, Notifications of Infectious Diseases, www.health.vic.gov.au/ideas/notifying

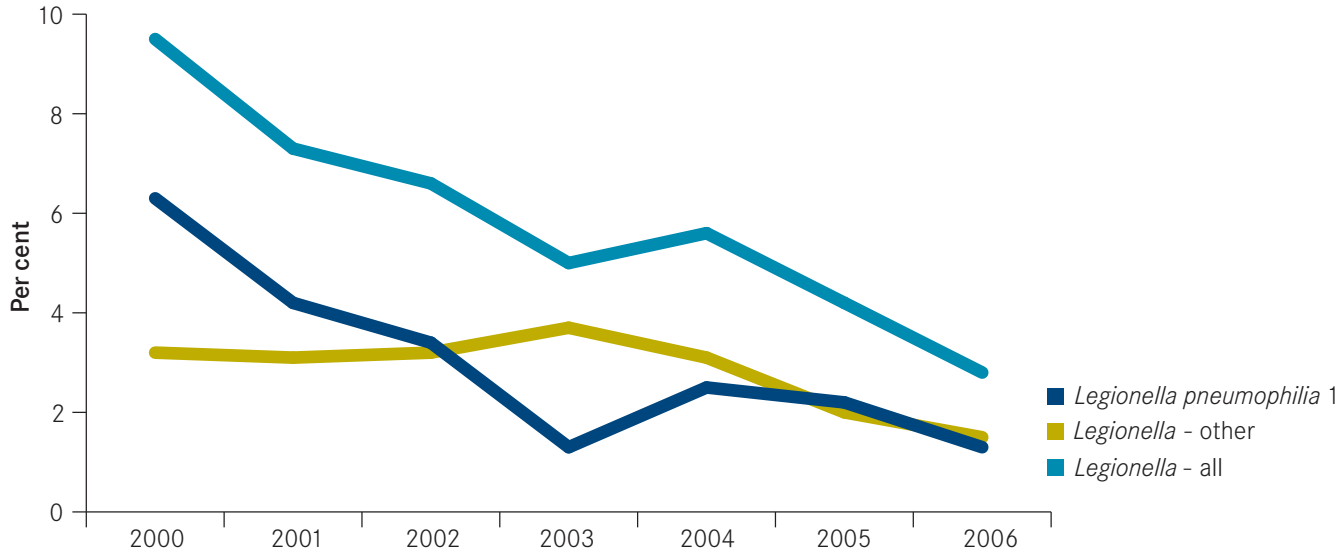
Victorian Government Health Information, Environmental Health, Legionella, www.health.vic.gov.au/environment/legionella

Contact

Stuart Adcock
Environmental Health Unit, Public Health Branch, Department of Human Services
Phone (03) **9096 5028**
Email Stuart.Adcock@dhs.vic.gov.au

Cooling tower water samples tested positive for *Legionella*

Cooling tower water samples taken by the department that tested positive for *Legionella*, Victoria, 2000-2006



		2000	2001	2002	2003	2004	2005	2006
Percentages of cooling tower water samples that tested positive for Legionella:	*L. pneumophilia* 1	6.3	4.2	3.4	1.3	2.5	2.2	1.3
	Legionella – other types and serogroups	3.2	3.1	3.2	3.7	3.1	2.0	1.5
	***Legionella* – all positive results**	**9.5**	**7.3**	**6.6**	**5.0**	**5.6**	**4.2**	**2.8**

Note: Percentages refer to cooling tower water samples taken by Department of Human Services that, on testing according to Australia Standard AS3896, were shown to be positive for *Legionella*. The threshold limit of detection by this method is 10 *Legionella*/mL. Separate figures are shown for pneumophilia serogroup 1, *Legionella* other types and serogroups, and *Legionella* all positive results. During the above period, the number of samples taken by Department of Human Services p.a. varied within the range of 430 (year 2000) to 1,243 (2006). During the same period, the average number of cooling towers sampled p.a. varied within the range of 5 per cent (2000) to 19 per cent (2004) of towers.

Source: Data pre 1 April 2001–Microbiological Diagnostic Unit, Department of Microbiology and Immunology, University of Melbourne. Data since 1 April 2001–Victorian Government Health Information website, Environmental Health, *Legionella* www.health.vic.gov.au/environment/legionella

The percentages of cooling tower water samples taken by Department of Human Services that tested positive for *Legionella*, are exposure-based indicators which are measures used to gauge the success of the Government's Legionella Reform Strategy. The strategy has been progressively implemented since 1 March 2001.

Under the strategy, Department of Human Services undertakes targeted sampling of the recirculating water of cooling tower systems throughout Victoria. The sampling may occur as part of a routine visit by Department of Human Services staff to a site with a cooling tower system; as part of an investigation into a case of *legionellosis*; or when investigating a complaint concerning the operation of a cooling tower system.

Until recently, each phase of the strategy's implementation has seen a marked reduction in the number of Department of Human Services cooling tower water samples that, on testing, were shown to be positive for *Legionella*. The percentages of *Legionella* positive samples were 9.5 in 2000, 7.3 in 2001, 6.6 in 2002, 5.0 in 2003, a slight increase to 5.6 in 2004, 4.2 in 2005 and 2.8 in 2006. While the trend has been generally downward since the new legislation was introduced, some fluctuations are expected in the trend.

For more information

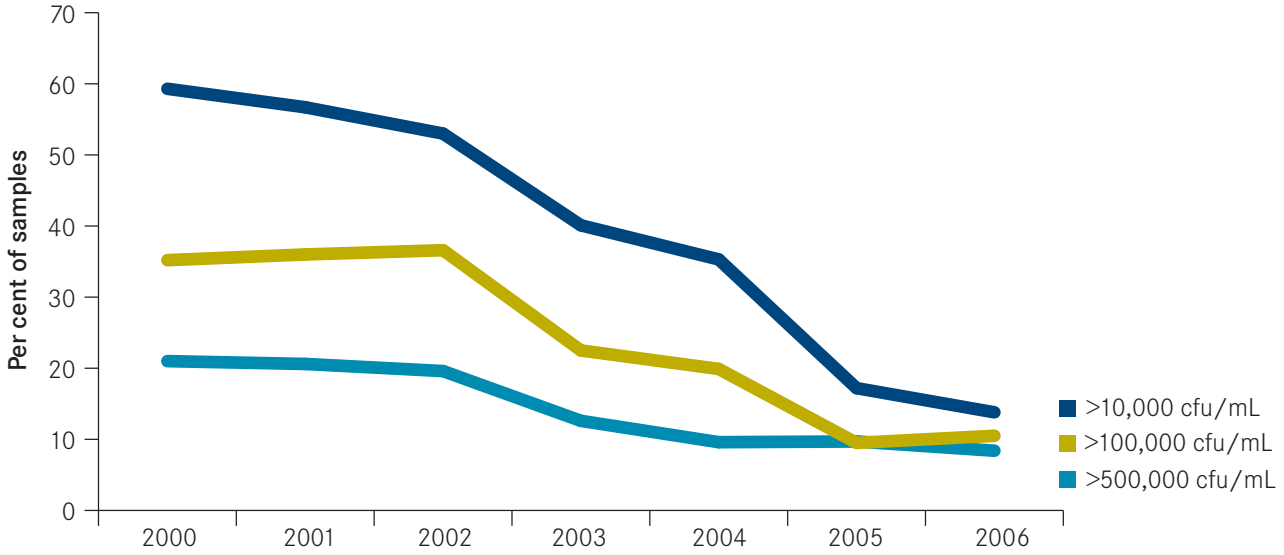
Victorian Government Health Information website, Environmental Health, *Legionella*
www.health.vic.gov.au/environment/legionella.

Contact

Environmental Health Unit
Public Health, Department of Human Services
Phone **1300 761 874**

Cooling tower water samples in higher ranges for Heterotrophic Colony Count (HCC)

Cooling tower water samples taken by the department, by range of heterotrophic colony count (HCC), Victoria, 2000–2006



		2000	2001	2002	2003	2004	2005	2006
Percentages of cooling tower	>10,000 cfu/mL	59.3	56.7	53.0	40.1	35.3	17.2	13.8
water samples in different ranges	>100,000 cfu/mL	35.2	36.0	36.6	22.5	19.9	9.5	10.5
for HCC:	>500,000 cfu/mL	21.0	20.6	19.6	12.6	9.6	9.7	8.4

Note: Percentages refer to cooling tower water samples taken by Department of Human Services that, on testing according to Australian Standard *AS4276.3.1* were found to have Heterotrophic Colony Counts (HCC):

1. exceeding 10,000 colony forming units per millilitre (cfu/mL), that is, more than 10 per cent of the current maximum level specified in the Health (Legionella) Regulations 2001.
2. exceeding 100,000 cfu/mL, that is, in excess of the current maximum level of 100,000 cfu/mL specified in the current *Health (Legionella) Regulations 2001*.
3. exceeding 500,000 cfu/mL, that is, in excess of the previous maximum level of 500,000 cfu/mL specified under the since replaced *Health (Infectious Diseases) Regulations 1990*.

During the above period, the number of samples taken by Department of Human Services per annum varied within the range of 430 (year 2000) to 1,243 (2006). During the same period, the average number of cooling towers sampled per annum varied within the range of five per cent (2000) to 19 per cent (2004) of towers.

Source: Data pre 1 April 2001–Microbiological Diagnostic Unit, Department of Microbiology and Immunology, University of Melbourne. Data since 1 April 2001–Victorian Government Health Information website, Environmental Health, *Legionella*: www.health.vic.gov.au/environment/legionella

The percentages of cooling tower water samples taken by Department of Human Services that failed to meet or exceeded the prescribed standards for HCC are exposure-based indicators which are measures used to gauge the success of the Government's *Legionella Reform Strategy*. The strategy has been progressively implemented since 1 March, 2001.

Under the strategy, the Department of Human Services undertakes targeted sampling to ascertain the HCC of the water of cooling tower systems throughout Victoria. HCC is a useful indicator both of the efficacy of biocidal treatment of cooling tower water, and the general cleanliness of cooling tower systems.

Until recently, each phase of the strategy's implementation has seen marked positive improvements in the percentages of Department of Human Services cooling tower water samples that, on testing, were shown to surpass or fail to comply with prescribed standards for HCC. While the trend since the new legislation was introduced has been consistently positive, some fluctuations can be expected in the figures in the future.

For more information

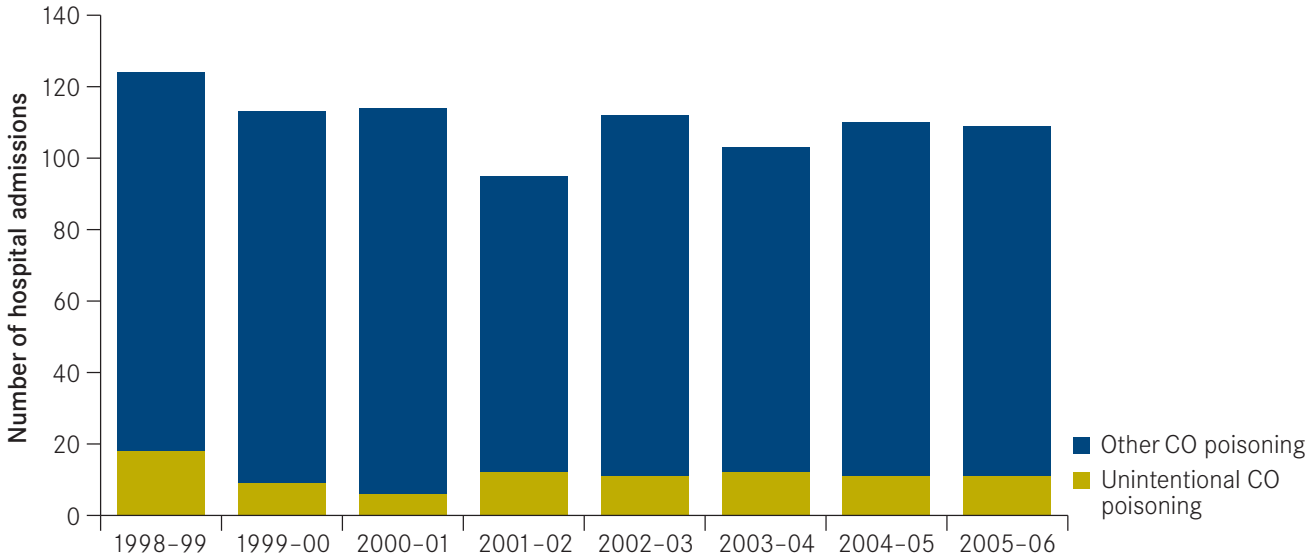
Victorian Government Health Information website, Environmental Health, *Legionella*
www.health.vic.gov.au/environment/legionella.

Contact

Environmental Health Unit
Public Health, Department of Human Services
Phone **1300 761 874**

Unintentional carbon monoxide poisoning hospital admissions

Unintentional carbon monoxide poisoning hospital admissions, Victoria, 1999-2006



Note: CO = carbon monoxide.

Unintentional CO poisoning hospital admissions

	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Unintentional CO poisonings	18	9	6	12	11	12	11	11
Other CO poisonings	106	104	108	83	101	91	99	98
Total CO poisonings	124	113	114	95	112	103	110	109
Per cent of CO poisoning admissions recorded as unintentional	14.5	8.0	5.3	12.6	9.8	11.7	10.0	10.1

Source: Department of Human Services, Victorian Admitted Episodes Dataset (VAED), 1998–99 to 2006–07, based on analysis undertaken by the Victorian Injury Surveillance Unit.

Carbon monoxide (CO) is an invisible and non-irritating poisonous gas that has no odour or taste and can cause serious illness or death. It binds to the haemoglobin rendering the red blood cells unable to carry oxygen. The brain and the heart are most susceptible to toxicity because they depend most heavily on oxygen to function. High levels of CO exposure have been associated with cardiovascular effects, neurobehavioural effects, developmental effects in utero, and death. The early symptoms of CO poisoning are frequently misdiagnosed as flu or viral illness.

CO is produced whenever organic fuels are burned, including oil, gas, kerosene, wood, coal charcoal and petrol. Household items and appliances that burn these types of fuels are usually safe when they are in good condition, serviced on a regular basis and used properly (i.e. as per the manufacturer's instructions). However, if an appliance is faulty, has a blocked flue, or is used incorrectly, or in an inadequately ventilated space, it could produce levels of CO that are potentially dangerous to life and health.

Between 1999-2006, 90 episodes of care due to unintentional CO poisonings were recorded in the Victorian Admitted Episodes Database (VAED). Unintentional poisonings represented a relatively small percentage (10.2 per cent) of total CO poisonings (all intents) during this time interval.

For more information:

Energy Safe Victoria (ESV): www.esv.vic.gov.au
Phone **1800 069 588**

Contact

Victorian Injury Surveillance Unit (VISU)
Monash University Accident and Research Centre (MUARC)
Phone (03) **9905 1908**
Fax (03) **9905 1809**
Email visu.enquire@muarc.monash.edu.au

Localities compliant with *Escherichia coli (E.coli)* water quality standards

Escherichia coli (*E. coli*) is a bacterium that can occur in water supplies as a result of faecal contamination from human, animal or vegetative sources. Detecting *E. coli* in treated drinking water supplies can also indicate that the disinfection process is inadequate or has failed.

The water quality standard for *E.coli* states that 98 per cent of samples collected over any 12-month period should contain no *E.coli* per 100mL of drinking water.

Under the *Safe Drinking Water Act 2003*, water authorities collect and report on this indicator to the Environmental Health Unit of the department. All drinking water sampling localities are monitored weekly for the presence of *E. coli*.

For the 2004–05 reporting period, 451 out of 473 water sampling localities (95.35 per cent) met the state's water quality standard for *E. coli*.

For the 2005–06 reporting period, 471 out of 493 water sampling localities (95.54 per cent) met the *E. coli* standard. Water localities that did not comply with the standard in either reporting period were Clunes, Sea Lake, Corryong (High level), Corryong (low level), Tawonga, Tawonga Ranch Road, Mount Baw Baw and Mount Buller (low level).

For more information

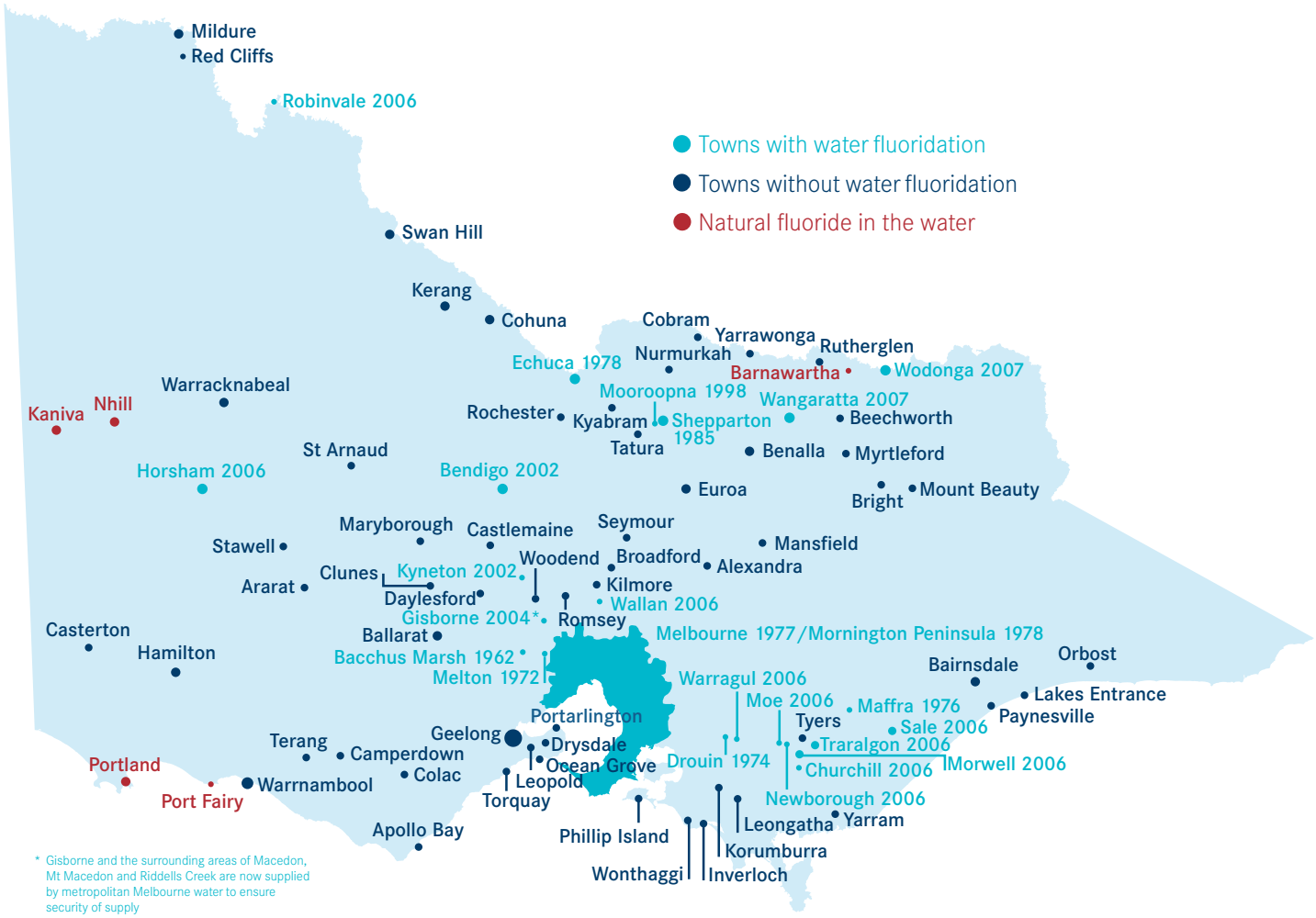
Environmental Health website: www.health.vic.gov.au/environment/water/drinking.htm

Contact

Drinking Water Regulatory Section
Environmental Health Unit
Public Health, Department of Human Services
Phone **1300 761 874**

Water fluoridation

Water fluoridation in Victoria, and dates of introduction



Water fluoridation is the adjustment of the natural level of fluoride in drinking water to around 1 part per million (1 mg/L), the optimal level that helps to protect teeth against decay. In late 2007 the National Health and Medical Research Council (NHMRC) published *A systematic review of the efficacy and safety of fluoridation*. This review stated that fluoridation of drinking water remains the most effective and socially equitable way of providing everyone with the decay-preventing benefits of fluoride.

School dental service data show that children living in fluoridated parts of Victoria have considerably less tooth decay than those living in non-fluoridated areas.

In 2004–05, across Victoria there were almost 5,000 children under the age of 10, including 250 two-year-olds, who required general anaesthetic for treatment of their dental decay. In non-fluoridated areas of Victoria, three times as many people per capita required a general anaesthetic in hospital for treatment of decay than in fluoridated areas.

Following community engagement programs over the past three years, the towns of Sale, Morwell, Moe, Traralgon, Warragul, Robinvale and Horsham were all fluoridated in 2006. Wangaratta and Wodonga were fluoridated in 2007.

Prior to 2004 approximately 74 per cent of the Victorian population had a fluoridated drinking water supply, with most of these people living in metropolitan Melbourne. In 2007, the percentage has increased to 77 per cent. The map shows the fluoridation status of Victorian towns and cities.

For more information

Environmental Health Unit: www.health.vic.gov.au/environment/water/fluoridation.htm

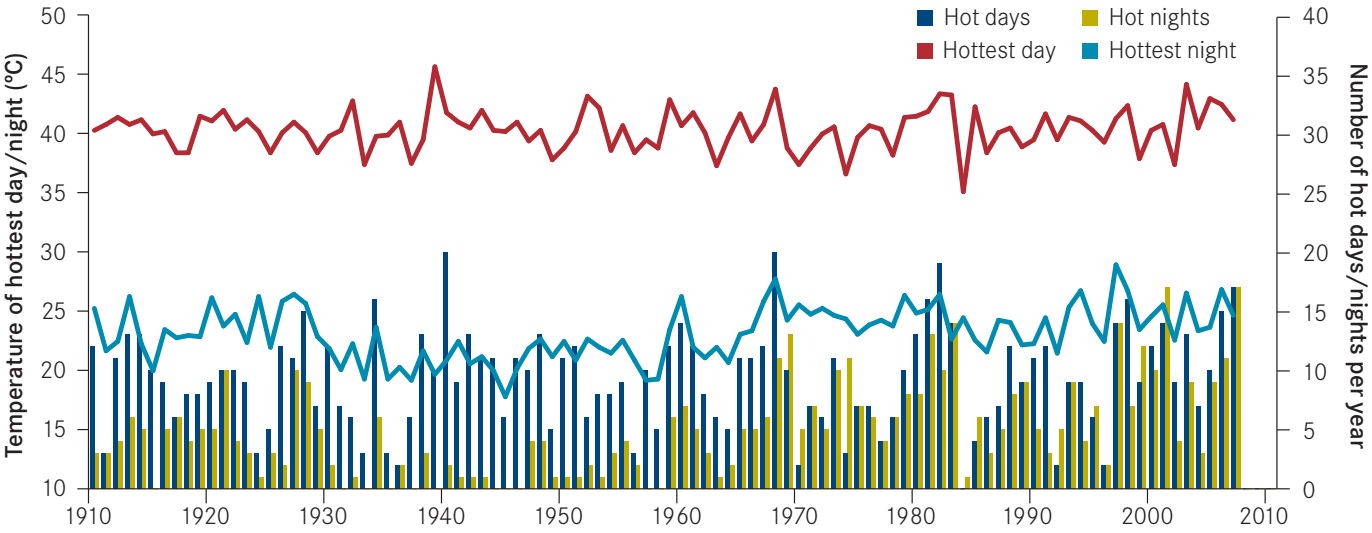
National Health and Medical Research Council (NHMRC), 2007, *A systematic review of the efficacy and safety of fluoridation*, Canberra: Australian Government.

Contact

Water fluoridation information line
Environmental Health Unit
Public Health, Department of Human Services
Phone **1800 651 723**

Hot days above 35 degrees

Hot days and nights, Melbourne, 1910–2007



Note: 'Hot days' are defined as days with maximum daily temperature of 35°C and above. 'Hot nights' are defined as days with a minimum overnight temperature of 20°C and above.

Source: Bureau of Meteorology, Measured from Melbourne weather station 86071: ftp://ftp.bom.gov.au/anon/home/ncc/www/change/HQdailyT/

Annual average temperatures have been generally increasing in Australia since the 1950s. These changes have also seen an increase in the frequency and duration of hot weather events, and a decrease in extreme cold events. The frequency of hot nights (20°C and over) has increased substantially more than the frequency of hot days (35°C and over). The hottest year on record for Victoria was recorded in 2007, which was approximately 1°C warmer than the long-term average. In Melbourne, the hottest day of 2007 was recorded during a prolonged hot weather event on New Year's Eve.

Hot weather can produce a range of adverse health events in populations, from relatively minor complaints such as cramps or exacerbation of existing chronic conditions, such as cardiovascular or pulmonary disease, to potentially fatal heat-related illnesses such as heat stroke. Groups in the community who are most at risk of developing heat-related illnesses include the elderly, very young children, people with chronic health conditions and people who are socially isolated.

Population responses to hot weather vary from place to place, based on factors such as acclimatization, the proportion of the population with specific risk factors, topography and degree of urbanisation. Climate change is expected to increase the frequency and magnitude of hot weather events in Victoria. With an ageing population, vulnerability to hot weather events is also expected to increase.

For more information

Collins, D., Della-Marta, P., Plummer, N. and Trewin, B., 2000, Trends in annual frequencies of extreme temperature events in Australia, *Australian Meteorological Magazine*, 49, 277–92.

Department of Human Services, *Climate change and health: An exploration of challenges for public health in Victoria*: www.health.vic.gov.au/environment/climate

Contact

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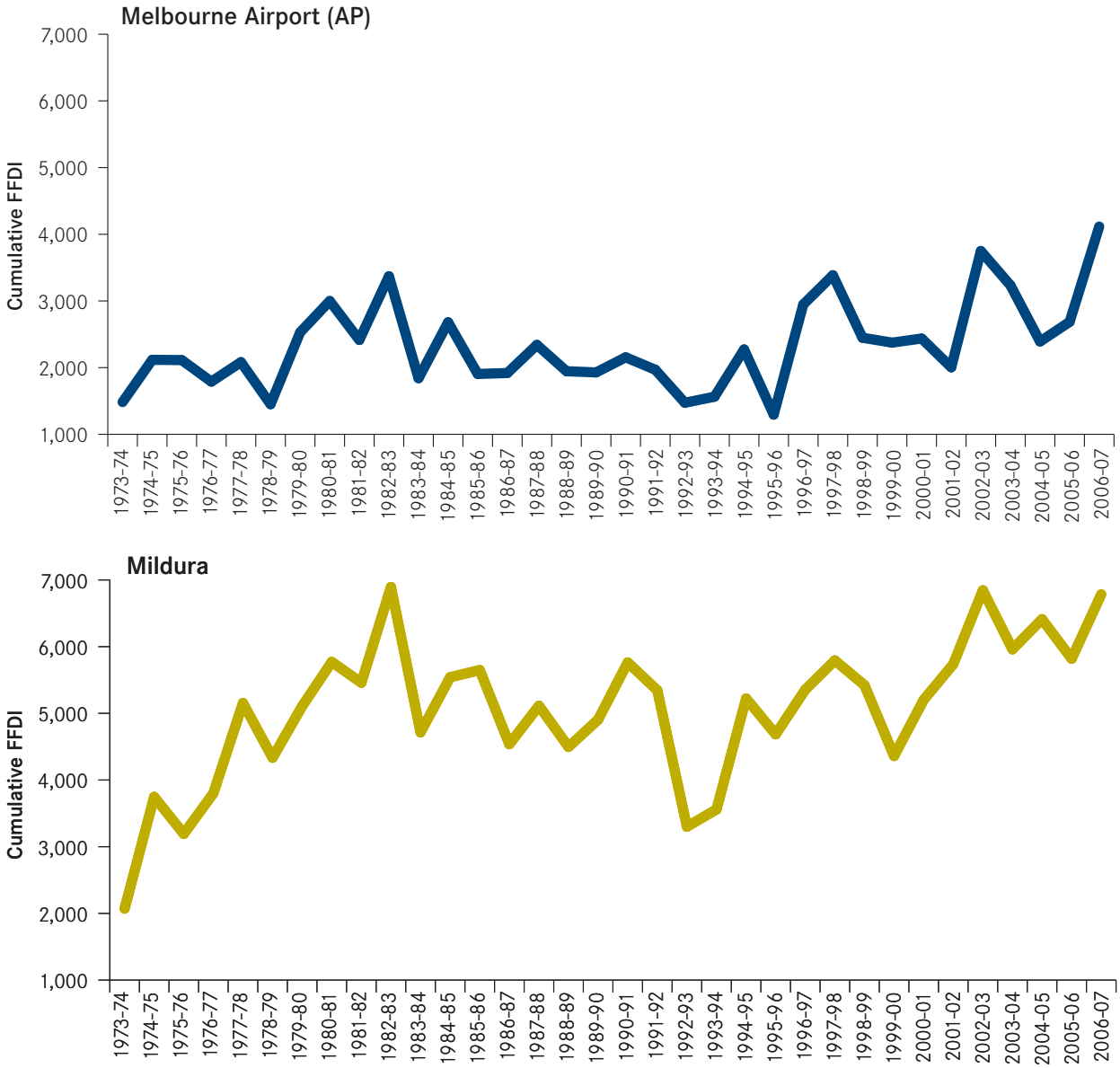
Fire weather risk

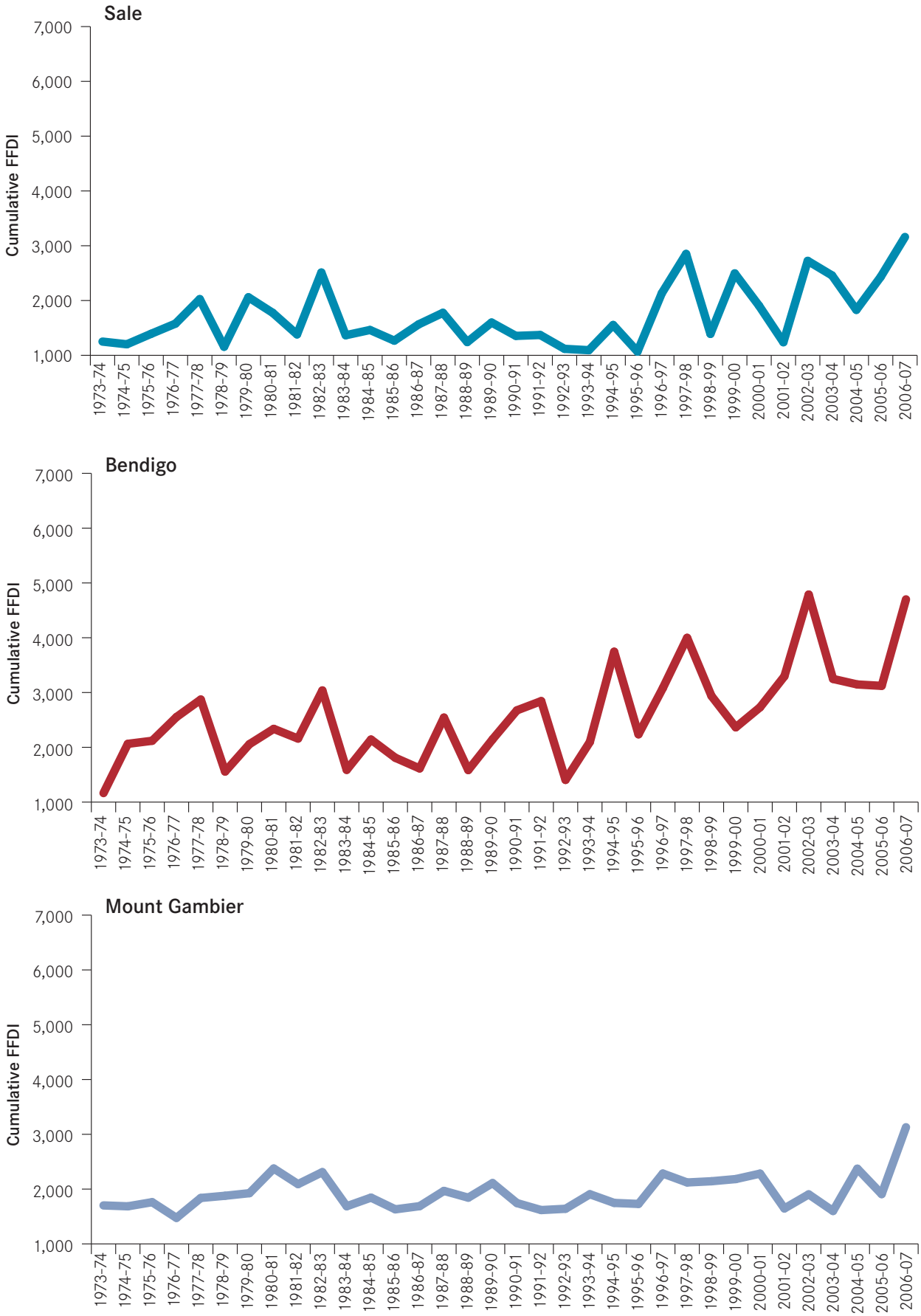
As climate change becomes a reality, one of the projected impacts is an increase in dangerous fire weather days. Overall, bushfire seasons are expected to be more extreme, with the possibility of more frequent and/or intense bushfires. This has major implications for the health of Victorians. Bushfires can cause death, injury, heat-related illness, contamination of drinking water, food safety risks (associated with disrupted power supply), stress and exhaustion. Furthermore, bushfire smoke contains fine particles and gases that can be breathed deep into the lungs. Children, the elderly, smokers and people with pre-existing illnesses such as heart or lung conditions (including asthma) are sensitive to the effects of breathing in fine particles.

The Forest Fire Danger Index (FFDI) is one of two primary indices used to quantify fire weather risk. An FFDI reading is derived from analysis of a combination of factors, including: drought, air temperature, wind speed, and relative humidity. To measure the relative strength of a given fire season, the annual cumulative FFDI is used. This represents a summation of the daily FFDI values over an entire year, defined from July through to June as this better encompasses a continuous fire season in southeast Australia than the calendar year.

Long-term records of annual cumulative FFDI reveal a positive trend for each of the 5 weather stations, indicating that bushfire risk is tending to increase over time. This trend is especially evident over the past 10 or so years.

Cumulative forest fire danger index (FFDI) at selected weather stations, 1974–2007





Source: Lucas, C, Hennessy, K, Mills, G, and Bathols, J. (2007) *Bushfire Weather in Southeast Australia: Recent Trends and Projected Climate Change Impacts*. Bushfire Cooperative Research Centre. Melbourne.

For more information

Lucas, C., Hennessy, K., Mills, G., Bathols, J., 2007, *Bushfire weather in southeast Australia: recent trends and projected climate change impacts*, Consultancy report prepared for The Climate Institute of Australia, Melbourne: Bushfire Cooperative Research Centre.

Contact

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Bushfire Cooperative Research Centre, Bureau of Meteorology
Phone (03) **9669 4783**
Fax (03) **9669 4660**
Email c.lucas@bom.gov.au

Daily ultraviolet radiation (UVR) levels

Australia has the highest incidence of skin cancer in the world, partly due to our geographical location and also our outdoor lifestyle. Over 1,500 Australians die from skin cancer each year and more than 380,000 Australians are treated for non-melanoma skin cancers each year. Skin cancer costs the health system around $300 million annually, the highest costs of all cancers. Skin cancer is still the most common type of cancer in young people and there is evidence to suggest that continuous exposure to the sun early in life as a child or teenager can significantly increase the risk of melanoma later in life. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) measures the levels of solar ultraviolet radiation (UVR) in Melbourne by recording the levels of solar UVR on a horizontal surface every 10 minutes during daylight hours.

In 1995 the joint recommendation of the World Health Organization (WHO), the World Meteorological Organization, the United Nations Environment Programme, and the International Commission on Non-Ionizing Radiation Protection was to standardise the reporting of UVR levels to the public. From this meeting they developed the UV Index, which is a number relating to how much solar UVR reaches the ground, based on the potential for skin injury. As the numbers are standardised, a UV Index of 8 in Melbourne is equivalent, for example, to a UV Index of 8 in Brisbane or Perth or London. The UV Index may be either a prediction or a measurement. Where continuous measurements are available, a 5-10 minute average is used to display the UV radiation levels during the day. One UV Index unit represents 25 mWm-2 of UV radiation.

In 2002 the UV Index categories were revised to improve its use as an educational tool to promote sun protection. The highest UV levels occur daily between 10am and 2pm (11 to 3 during daylight saving time). When the UV level reaches 3 or higher a combination of five sun protection measures (sun protective clothing that covers your arms and legs as well as your body, broad-brimmed hat, wrap-around sunglasses, SPF30+ broad spectrum sunscreen and shade) may be required for personal protection.

UV Index values are related to the UVR exposure categories as follows:

Relationship between UV Index and UV exposure category

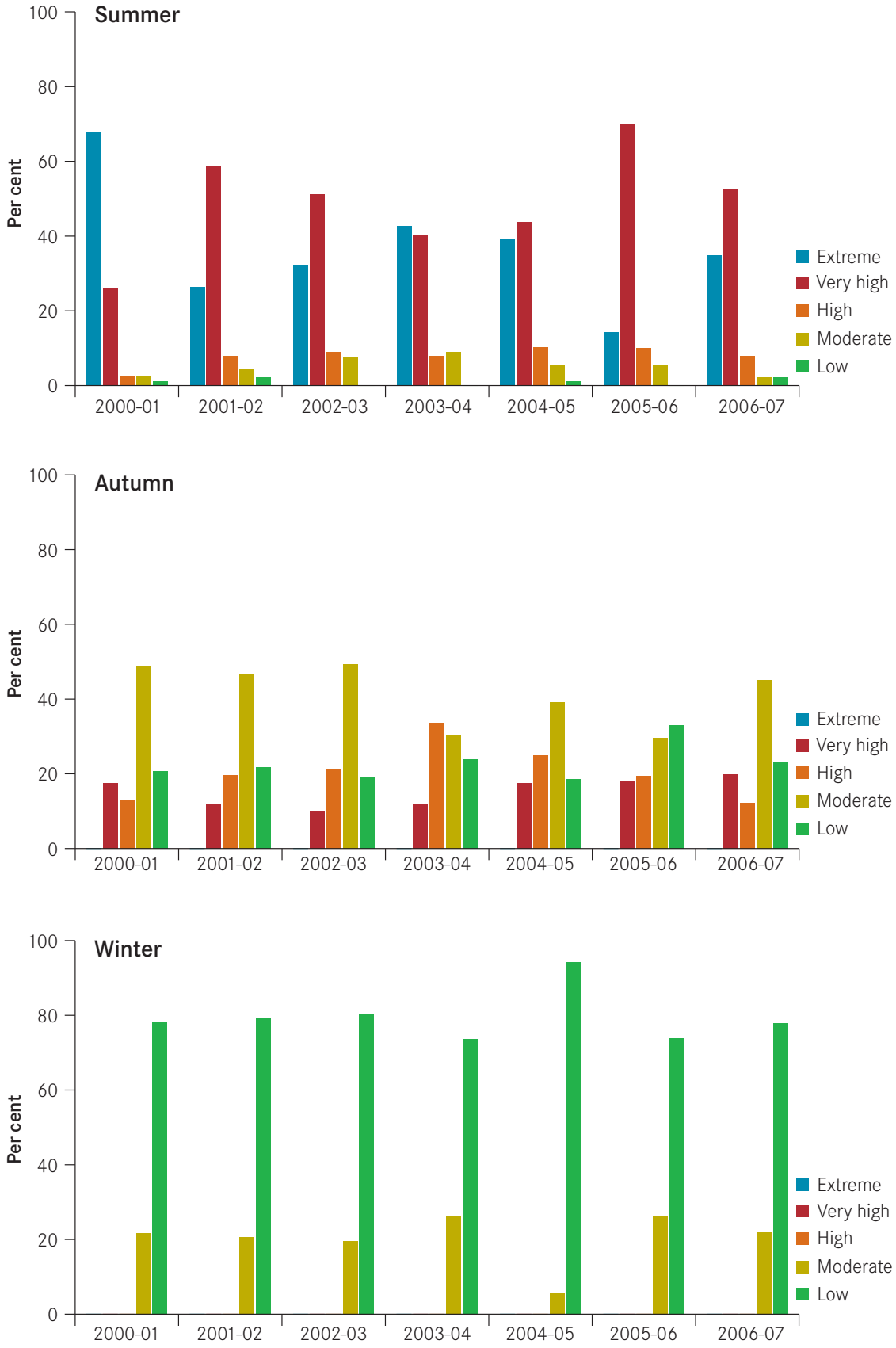
UV index	Exposure category	Interpretation
2 or below	Low	You can safely stay outdoors with minimal protection.
3 to 5	Moderate	Wear sun protective clothing, a hat, sunscreen, sunglasses and seek shady areas.
6 to 7	High	As above.
8 to 10	Very high	As above.
11+	Extreme	As above.

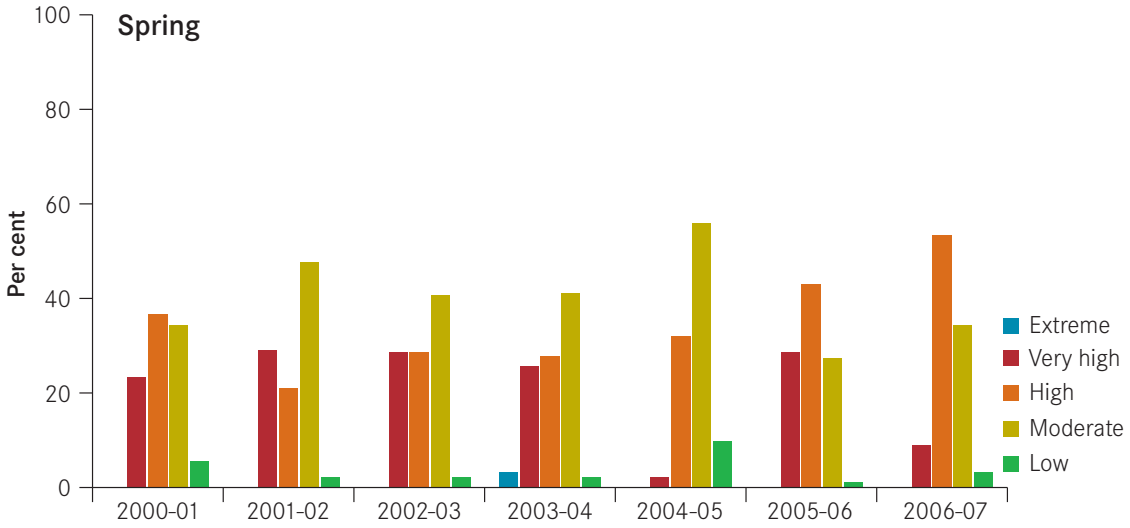
Note: The exposure categories are based on the response of fair-skinned people to UVR.

Source: World Health Organization, 2002, *Global Solar UV Index–A practical guide*; Geneva: WHO.

The distribution of UV index levels varies by location and by season. A UV Alert is issued by the Bureau of Meteorology when the UV Index is forecast to reach or exceed 3, a level that can damage your skin and lead to skin cancer. In 2007 in Melbourne there were 271 days when the reported value of the UV Index exceeded a UV level of 3 (moderate and above) and 89 days when the UV Index was below 3 – indicating that, under normal circumstances, no protective measures were needed. Historical data indicate that this threshold UV Index value is exceeded, on average, in Melbourne in all seasons except winter. Occasionally during winter on a sunny day the UV Index may exceed 3.

Distribution of reported UV Index days, by season, Melbourne, Victoria, 2000/01–2006/07





Source: Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), reported daily solar UV radiation level data for Melbourne, December 1 2000 to November 30 2007.

For more information

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) website provides realtime and historical UV Index data: www.arpansa.gov.au/uvindex

Lucas, R., McMichael, T., Smith, W., Armstrong, B. 2006, *Solar ultraviolet radiation: Global burden of disease from solar ultraviolet radiation*, Environmental Burden of Disease Series no 13, Geneva: Public Health and the Environment, World Health Organization.

Samanek, A.J., Croager, E.J., Gies, P., Milne, E., Prince, R., McMichael, A.J., Lucas, R.M., Slevin, T., 2006, 'Estimates of beneficial and harmful sun exposure times during the year for major Australian population centres', *Medical Journal of Australia*, Volume 184 No 7, pp. 338–341.

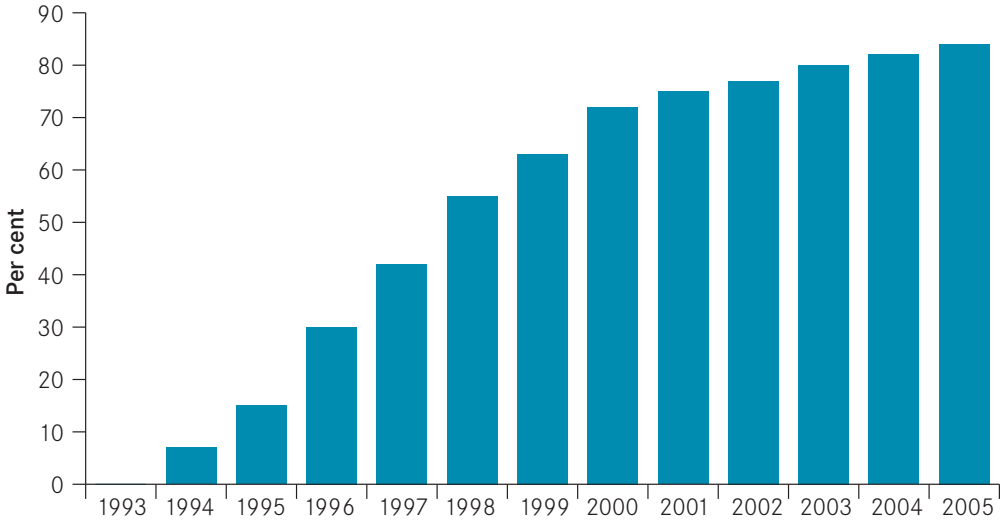
World Health Organization, 2002, *Global Solar UV Index–A practical guide*, A joint recommendation of the World Health Organization, World Meteorological Organization, United Nations Environment Programme, and the International Commission on Non-Ionizing Radiation Protection, Geneva: World Health Organization.

Contact

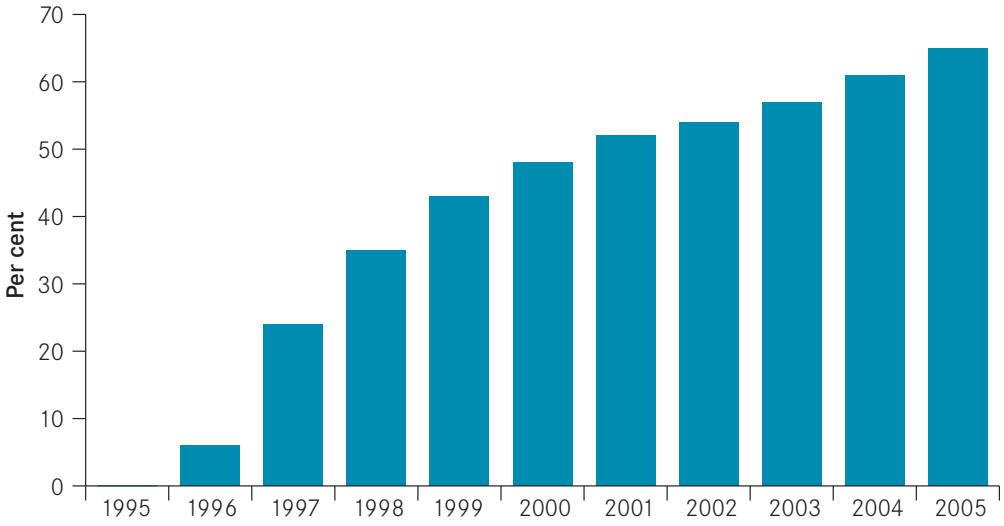
Environmental Health Unit
Public Health, Department of Human Services
Phone **1300 761 874**

SunSmart programs

Primary schools registered as SunSmart in Victoria, 1993–2005



Early Childhood Services registered as SunSmart in Victoria, 1995–2005



Note: These graphs represent approximate numbers. The overall number of early childhood services is very fluid with some services closing and many more opening over the last 10 years. The number of primary schools has also fluctuated. The percentages are calculated based on the current total number of services.

In 1980, a strong message about sun protection was delivered to Victorians with the launch of the then Anti-Cancer Council of Victoria's Slip! Slop! Slap! campaign. A broader SunSmart Program began in 1988.

Research showed that over a decade after SunSmart was launched, awareness of the need to avoid exposure to ultraviolet radiation or engage in sun protection behaviour has increased. The proportion of Victorians who reported that they liked to get a suntan decreased markedly from 61 per cent in 1988 to 35 per cent in 1998. The percentage agreeing that 'friends think a suntan is a good idea' dropped from 69 per cent in 1988 to 36 per cent in 1998. Similarly, those agreeing that 'it is easier to enjoy summer once you get a tan' fell from 62 per cent to 29 per cent over the period and those agreeing that 'I feel more healthy with a suntan' fell from 51 per cent to 20 per cent.

Findings also showed a consistent increase from 1988 to 2001 in the proportion of people who reported seeking shade, using a hat and sunscreen, covering up and choosing not to go out in the sun between 11am and 3pm on summer weekends. There was a 50 per cent reduction in people getting sunburnt in the decade from 1988–99.

SunSmart Schools and Early Childhood Programs

The SunSmart Schools Program was launched in 1994. During that year 151 schools developed a comprehensive sun protection policy approved by The Cancer Council Victoria and joined the SunSmart Schools Program.

SunSmart criteria include:

- availability and use of shade
- following sun protection measures
- providing information for children, staff and families
- staff role modelling sun protective behaviours.

In 2005 there were 1,625 SunSmart schools in Victoria, representing 84 per cent of all Victorian primary schools.

The SunSmart Schools and Early Childhood Program started in 1996. There was a steady increase in the number of participating early childhood centres and preschools over the last decade. In 2003, SunSmart Family Day Care schemes commenced and then SunSmart Playgroups in 2005.

In 2005 there were 1,650 early childhood services participating (preschools, childcare centres, family day care and playgroups). This represents approximately 65 per cent of all early childhood services in Victoria (not including playgroups).

For more information

SunSmart website: www.sunsmart.com.au/

Contact

Environmental Health Unit
Public Health, Department of Human Services
Phone **1300 761 874**

Population subgroups

This chapter describes the health of selected population subgroups such as mothers and children, Indigenous people, socioeconomically disadvantaged people, people living in rural and regional areas, prisoners, people from non English speaking backgrounds, and refugees.

Mothers and children

In this chapter

Summary

In 2004, the annual crude birth rate among the female resident population aged 15–44 years was 58.6 per 1,000 females.

Of the 66,640 births in Victoria in 2005, 599 were stillborn and 247 infants died within the first month of life (846 perinatal deaths). The perinatal mortality rate was 12.7 per 1,000 births in 2005, compared with 12.8 per 1,000 births in 2000.

In Victoria in 2005, there were 65,249 confinements. The maternal mortality rate was 10.5 per 100,000 confinements in 2005, compared with 16.0 per 100,000 confinements in 2004.

The average age of women giving birth in 2004 was 31 years, with the proportion aged 35 years and over having risen to 22.4 per cent, an almost 30 per cent increase since 1998. Maternal age varies by region of residence, with metropolitan regions continuing to have a smaller proportion of younger mothers than rural regions.

The proportion of forceps births has declined, with a corresponding increase in both elective and emergency caesarean births and vacuum extractions. In 2004, 29.5 per cent were caesarean births, compared to 28.7 per cent in the previous year.

The proportion of pre-term births has remained stable, at between 7.5 and 7.8 per cent, since 1998. The proportion of pregnancies that continued to 42 weeks and beyond also stabilised at 1.2 per cent, which is approximately one-quarter of the rate in 1990.

The proportion of low (under 2,500 grams) and very low birth weight (under 1,500 grams) babies has remained relatively stable since 1998. In 2004, the proportion of low birth weight and very low birth weight babies was 6.8 per cent and 1.5 per cent respectively.

In 2005 2,209 babies were born with a birth defect at or after 20 weeks gestation. Another 331 terminations of pregnancy before 10 weeks gestation for a birth defect were identified. This gave an overall birth defect prevalence rate of 38 per 1,000 births, or 3.8 per cent.

In 2005 190 deaths occurred in children aged from 29 days to 14 years. The leading cause of death was birth-related conditions.

The number of deaths from sudden infant death syndrome (SIDS) has declined sharply since 1990. In 2005, there were 16 deaths due to SIDS.

There were 28 post-neonatal infant and child deaths in 2005. The number of deaths resulting from motor vehicle accidents halved from 24 deaths in 2003 to 12 deaths in 2005, although drowning deaths doubled from three in 2003 to six in 2005.

In 2006, 57.9 per cent of infants were fully breastfed to three months and 26.6 per cent of infants were fully breastfed for the first six months of their lives.

In 2006, more than one in five Victorian infants (22.1 per cent) had been exposed to maternal tobacco smoke at some stage *in utero*. This proportion was similar across rural (23.2 per cent) and metropolitan areas (21.8 per cent).

The majority of Victorian children aged four to 12 years do not have any significant social and emotional problems, although 5.7 per cent of children have 'borderline' scores, and a further 5.3 per cent have 'of concern' scores, on the Strengths and Difficulties Questionnaire. Similarly, very few Victorian children from birth to 12 years of age had a main carer who was at high risk of psychological distress (2.9 per cent).

There were 18,618 injury hospital admissions in children aged zero to 18 years in 2002–03. The admission rate was higher in males than in females, particularly in the two older age groups, 10–14 years and 15–18 years.

Since 1998–99, rates of children who were the subject of child abuse and neglect substantiations in Victoria have remained relatively constant, with slight movements either up or down each year. In 2005–06, 6.7 per 1,000 children aged 0–16 years were the subject of substantiations.

Introduction

Mothers' and children's health are important indicators of the overall health and wellbeing of a community. In Australia it is recognised that childhood, particularly early childhood, is an important period, which lays the foundations for future health and wellbeing (AIHW, 2005).

This chapter provides an overview of the health of Victoria's mothers, babies and children. It includes data from the Perinatal Data Collection Unit, the Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) and the Birth Defects Register.

This chapter also includes data from the *2006 Victorian Child Health and Wellbeing Survey* (VCHWS), a computer-assisted telephone interview survey, carried out with 5,000 parents or carers of children under the age of 13 years in Victoria. Households were selected at random, screened for eligibility and invited to participate in the survey. Interviews covered a broad range of topics, including health in pregnancy, asthma and child nutrition. Question sequencing depended on the child's age and health status. Survey data were weighted to reflect the probability of selection of the household, the child within the household, and the age, sex and geographic distribution of Victoria's child population. Results from the *2006 Victorian child health and wellbeing survey* were first reported in *The state of Victoria's children report 2006* (Department of Human Services, 2006). The survey will be repeated approximately every three years.

References

Australian Institute of Health and Welfare 2005 (AIHW), *A picture of Australia's children*, AIHW Catalogue no PHE 58, Canberra: AIHW.

Department of Human Services, 2007, 2006 *Victorian Child Health and Wellbeing Survey Technical Report*, Melbourne: Victorian Government, www.office-for-children.vic.gov.au/statewide-outcomes/report_2006

Births

Total births in Victoria, 2003–2004

Year	Total births (live and still)	Estimated female resident population, 15–44 years	Crude birth rate per 1,000 females, 15–44 years
2003	63,450	1,079,577	58.8
2004	63,503	1,083,077	58.6

Note: Total births exclude late terminations of pregnancy (20 weeks or later) for reasons other than birth defects.

Source: Department of Human Services, 2005, *Births in Victoria 2003–04*, Victorian Perinatal Data Collection Unit.

Trends in births in Victoria, 2000–2004

	2000	2001	2002	2003	2004
Total births	**62,555**	**62,105**	**63,074**	**63,450**	**63,503**
Live births	62,148	61,688	62,681	63,018	63,082
Confinements	61,562	61,064	61,964	62,305	62,348
Births per 1,000 females aged 15–44 years	59.4	58.4	58.6	58.8	58.6

Note: Figures may differ slightly from those presented in previous Department of Human Services' reports, due to updating of data in the files. All births to mothers aged under 15 years are included in the 15–19 year age group, and all births to mothers aged 45 years and over were included in the 40–44 year age group.

Source: Department of Human Services, 2005, *Births in Victoria 2003–04*, Victorian Perinatal Data Collection Unit.

In the mid-1980s the annual Victorian crude birth rate was approximately 62.8 per 1,000 female resident population aged 15–44 years. The annual birth rate has declined since 1985, but remained stable since 2001. In 2004, it was 58.6 per 1,000 females aged 15–44 years.

For more information

Department of Human Services (Perinatal Data Collection Unit, Public Health), *Births in Victoria 2003–04*, 2005, Melbourne, Victoria: Victorian Government Department of Human Services, www.health.vic.gov.au/perinatal

Contact

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Email Mary-Ann.Davey@dhs.vic.gov.au

Perinatal mortality

Perinatal deaths and crude perinatal mortality rate, Victoria, 2000–05

	2000	2001	2002	2003	2004	2005
Livebirths	62,148	61,705	62,688	63,028	63,082	66,041
Stillbirths	408	444	445	521	610	599
Neonatal deaths	182	204	227	237	207	247
Perinatal deaths	590	648	672	758	817	846
Crude rate per 1,000 births						
Perinatal deaths	9.4	10.4	10.4	11.9	12.8	12.7

Note: Perinatal death rates were calculated using total births (live births and stillbirths) as the denominator.

Source: The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne.

Perinatal mortality includes stillbirths and neonatal deaths. A stillbirth is defined as the birth of an infant of at least 20 weeks gestation or, if gestation is unknown, weighing at least 400 grams, which shows no signs of life after birth. A neonatal death is defined as a death of a live-born infant within 28 days of birth, of at least 20 weeks gestation or, if gestation is unknown, weighing at least 400 grams.

Perinatal mortality rates are important measures of the health of mothers and babies, and also of general health and wellbeing in the community. They are also indicators of the quality of antenatal care, the effectiveness of obstetric services and the quality of infant care in the hospital and community. Causes of perinatal mortality include pre-term birth, fetal growth restriction, congenital malformations, specific perinatal complications, antepartum haemorrhage and maternal conditions.

Of the 66,640 births in Victorian in 2005, 599 were stillborn and 247 infants died within the first month of life. The crude perinatal mortality rate was 12.7 per 1,000 births, compared with 12.8 per 1,000 births for 2004.

For more information

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne: www.health.vic.gov.au/perinatal

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Maternal mortality

Maternal death is defined as the death of a woman while pregnant, or within 42 days of the birth or termination of the pregnancy, irrespective of the cause of death. Maternal deaths are classified into three groups:

- **Direct** maternal deaths, where the death is considered to be due to a complication of the pregnancy itself (for example, haemorrhage from placenta praevia).
- **Indirect** maternal deaths where the death is considered to be due to a pre-existing condition aggravated by the physiological or pathological changes of pregnancy (for example, deterioration in pre-existing heart disease or diabetes). Deaths consequent on psychiatric disease are usually categorised as indirect, except for puerperal psychosis.
- **Incidental** deaths, where death is considered unrelated to pregnancy (for example, motor vehicle incident).

The maternal mortality ratio is defined as follows:

$$\text{Maternal mortality ratio} = \frac{\textit{number of direct and indirect maternal deaths}}{\textit{Total number of confinements}} \times 100{,}000$$

The number of confinements is defined as the number of pregnancies of 20 weeks gestation or more resulting in live birth or stillbirth (regardless or plurality).

In Victoria in 2005, there were 65,249 confinements. Seven maternal deaths occurred (three direct, four indirect and zero incidental) in 2005, compared with 13 deaths in 2004. The maternal mortality ratio (direct and indirect deaths) was 10.5 per 100,000 confinements, compared with 16.0 per 100,000 confinements for 2004.

For more information

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne: www.health.vic.gov.au/perinatal

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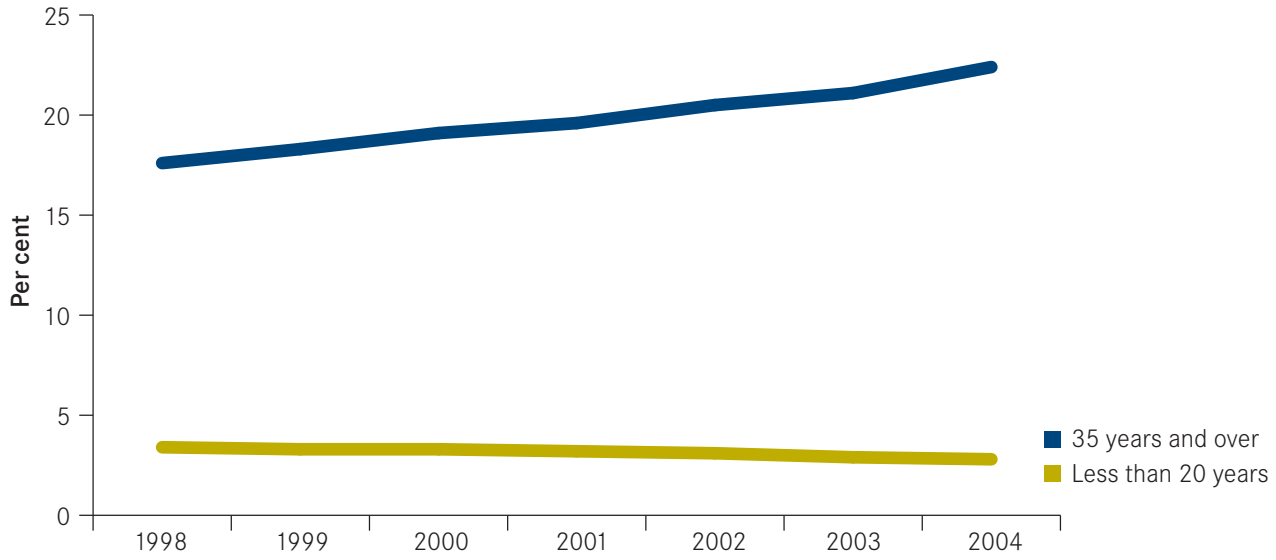
Maternal age

Trends in maternal age groups, less than 20 years and 35 years and over, all confinements, Victoria, 1998–2004



Maternal age group (years)	1998	1999	2000	2001	2002	2003	2004
Less than 20 years	3.4	3.3	3.3	3.2	3.1	2.9	2.8
35 years and over	17.6	18.3	19.1	19.6	20.5	21.1	22.4

The average age of women giving birth was 31 years in 2004, with the proportion aged 35 years and over having risen to 22.4 per cent, almost a 30 per cent increase since 1998. The average age of women having their first baby rose from 25.4 years in 1985 to 29.4 years in 2004.

The overall proportion of births to women younger than 20 years declined slightly from 3.1 per cent in 2002 to 2.8 per cent in 2004. However, this proportion varies considerably with Department of Human Services region of residence, ranging from approximately six per cent in some rural areas to 1.3 per cent in the Eastern Metropolitan Region.

For more information

Department of Human Services (Perinatal Data Collection Unit, Public Health), *Births in Victoria 2003–04*, 2005, Melbourne, Victoria: Victorian Government Department of Human Services, www.health.vic.gov.au/perinatal

Contact

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Maternal age by region

Maternal age, all confinements, by department region of residence, pooled data, Victoria, 2003–2004

	Maternal age group (years)							
	<20		20–24		25–29		30–34	
Region	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Barwon–South Western	300	3.7	1,148	14.3	2,315	28.8	2,854	35.5
Grampians	240	5.1	680	14.5	1,390	29.7	1,536	32.8
Loddon Mallee	385	5.6	1,143	16.4	2,010	28.9	2,250	32.4
Hume	276	4.6	1,024	16.8	1,795	29.5	2,012	33.0
Gippsland	309	5.8	985	18.5	1,584	29.8	1,626	30.6
North and West Metropolitan	935	2.4	4,422	11.2	10,520	26.7	14,805	37.6
Eastern Metropolitan	290	1.3	1,425	6.4	5,025	22.6	9,698	43.7
Southern Metropolitan	673	2.3	3,191	10.8	7,288	24.7	11,351	38.5
Other	147	5.8	425	17.0	723	28.9	784	31.3

	Maternal age group (years)				
	35–39		40+		Total
Region	**Number**	**Per cent**	**Number**	**Per cent**	
Barwon–South Western	1,193	14.9	222	2.8	8,032
Grampians	685	14.6	156	3.3	4,687
Loddon Mallee	980	14.1	185	2.6	6,953
Hume	833	13.7	151	2.5	6,091
Gippsland	679	12.8	131	2.4	5,314
North and West Metropolitan	7,264	18.5	1,423	3.6	39,369
Eastern Metropolitan	4,841	21.8	920	4.2	22,199
Southern Metropolitan	5,836	19.8	1,165	3.9	29,504
Other	356	14.2	65	2.6	2,500

Note: The 'other' category refers to women who live in a postcode outside Victoria, but who gave birth at a Victorian hospital. The total excludes four cases where maternal age or region of residence was unknown.

Source: Department of Human Services, 2005, *Births in Victoria 2003–04*, Victorian Perinatal Data Collection Unit.

Pooled data for 2003–04 show that the maternal age distribution varies across the residential regions in Victoria, with metropolitan regions continuing to have a smaller proportion of younger mothers than rural regions.

The proportion of women who gave birth at 35 years and over was 26 per cent in the Eastern Metropolitan Region, compared to 17.7 per cent in the Barwon–South Western Region (the highest proportion of mothers giving birth at 35 years and over in the rural regions). Conversely, the number of mothers aged younger than 20 years in the Eastern Metropolitan Region was only 1.3 per cent compared to 3.7 per cent in Barwon-South Western Region (the smallest proportion of mothers giving birth aged younger than 20 years in the rural regions).

For more information

Department of Human Services (Perinatal Data Collection Unit, Public Health), *Births in Victoria 2003–04*, 2005, Melbourne, Victoria: Victorian Government Department of Human Services, www.health.vic.gov.au/perinatal

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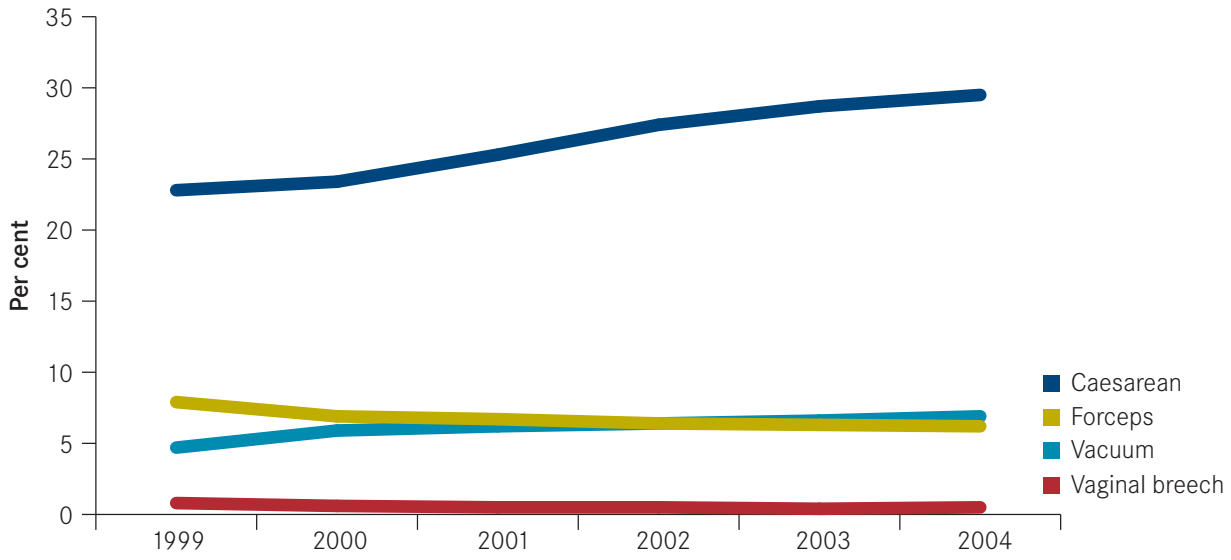
Type of birth

Type of birth, Victoria, 2001–2004

	2001		2002		2003		2004	
Type of birth	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Spontaneous cephalic	37,439	61.3	36,790	59.4	36152	58.0	35462	56.9
Forceps	4,080	6.7	3,960	6.4	3921	6.3	3868	6.2
Vacuum	3,796	6.2	3,937	6.4	4096	6.6	4315	6.9
Vaginal breech	326	0.5	295	0.5	274	0.4	286	0.5
Total caesarean	15,423	25.3	16,972	27.4	17861	28.7	18415	29.5
- elective	*7,916*	*13.0*	*8,710*	*14.1*	*9165*	*14.7*	*9592*	*15.4*
- emergency	*7,507*	*12.3*	*8,262*	*13.3*	*8696*	*14.0*	*8823*	*14.1*
Total	**61,064**	**100.0**	**61,954**	**100.0**	**62304**	**100.0**	**62346**	**100.0**

Note: Elective = planned with or without labour. The total excludes eight cases with unknown/other type of birth.

Type of birth (other than spontaneous cephalic), all confinements, 1999–2004



Type of birth	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Caesarean	22.8	23.4	25.3	27.4	28.7	29.5
Forceps	7.9	6.9	6.7	6.4	6.3	6.2
Vacuum	4.7	5.9	6.2	6.4	6.6	6.9
Vaginal breech	0.8	0.6	0.5	0.5	0.4	0.5

Note: Includes all births of babies at 20 or more weeks gestation (or weighing at least 400 grams), but excludes late terminations of pregnancy (20 weeks or later) for reasons other than birth defects.

Source: Department of Human Services, 2005, *Births in Victoria 2003–04*, Victorian Perinatal Data Collection Unit.

The proportion of forceps births has declined over the period, with a corresponding increase in both elective and emergency caesarean births and vacuum extractions. In 2004 9.5 per cent of all births were caesarean births, compared to 28.7 per cent in the previous year.

For more information

Department of Human Services (Perinatal Data Collection Unit, Public Health), *Births in Victoria 2003–04*, 2005, Melbourne, Victoria: Victorian Government Department of Human Services, www.health.vic.gov.au/perinatal

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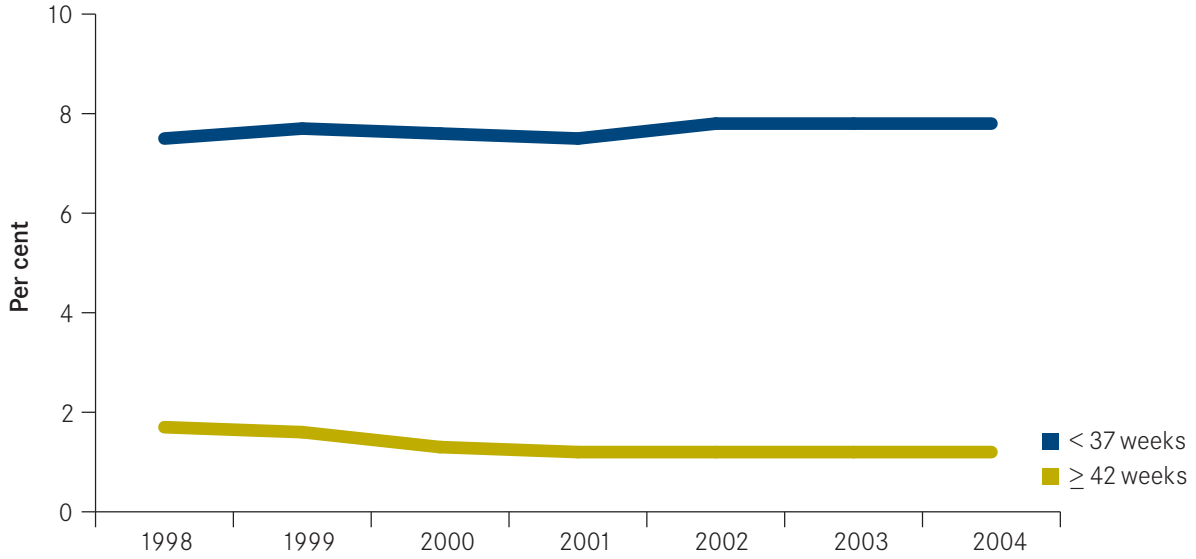
Pre-term and post-term births

Pre-term births (<37 weeks) and post-term births (≥ 42 weeks), Victoria, 1998–2004



Gestation	1998	1999	2000	2001	2002	2003	2004
< 37 weeks	7.5	7.7	7.6	7.5	7.8	7.8	7.8
≥ 42 weeks	1.7	1.6	1.3	1.2	1.2	1.2	1.2

Note: Includes all births of babies at 20 or more weeks gestation (or weighing at least 400 grams) but exclude late terminations of pregnancy (20 weeks or later) for reasons other than birth defects. The resulting data presented here differs slightly from those presented in reports by the National Perinatal Statistics Unit, which include these cases.

Source: Department of Human Services, 2005, *Births in Victoria 2003–04*, Victorian Perinatal Data Collection Unit.

The proportion of pre-term births has remained stable, at between 7.5 per cent and 7.8 per cent, since 1998. The proportion of pregnancies that continued to 42 weeks and beyond has also stabilised (1.2 per cent), and is approximately one-quarter of the rate in 1990.

For more information

Department of Human Services (Perinatal Data Collection Unit, Public Health), *Births in Victoria 2003–04*, 2005, Melbourne, Victoria: Victorian Government Department of Human Services, www.health.vic.gov.au/perinatal

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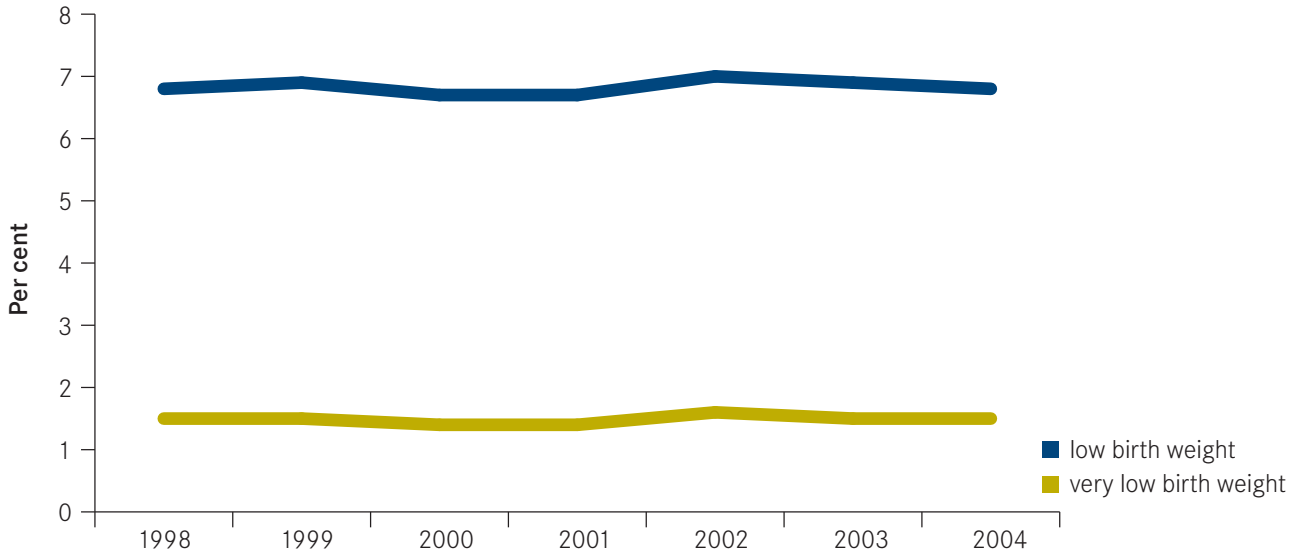
Low birth weight and very low birth weight births

Low birth weight (<2,500 grams) and very low birth weight (<1,500 grams) for all births, Victoria, 1998–2004



Birthweight	1998	1999	2000	2001	2002	2003	2004
Low (< 2,500 grams)	6.8	6.9	6.7	6.7	7.0	6.9	6.8
Very low (<1,500 grams)	1.5	1.5	1.4	1.4	1.6	1.5	1.5

Note: Includes all births of babies at 20 or more weeks gestation (or weighing at least 400 grams), but excludes late terminations of pregnancy (20 weeks or later) for reasons other than birth defects. As a result, the data presented here differs slightly from those presented in reports by the National Perinatal Statistics Unit, which include these cases.

Source: Department of Human Services, 2005, *Births in Victoria 2003–04*, Victorian Perinatal Data Collection Unit.

The proportion of low birth weight (less than 2,500 grams) and very low birth weight babies (less than 1,500 grams) remained relatively stable since 1998. In 2004 the proportion of low birth weight and very low birth weight babies was 6.8 per cent and 1.5 per cent respectively.

For more information

Department of Human Services (Perinatal Data Collection Unit, Public Health), *Births in Victoria 2003–04*, 2005, Melbourne, Victoria: Victorian Government Department of Human Services, www.health.vic.gov.au/perinatal

Contact

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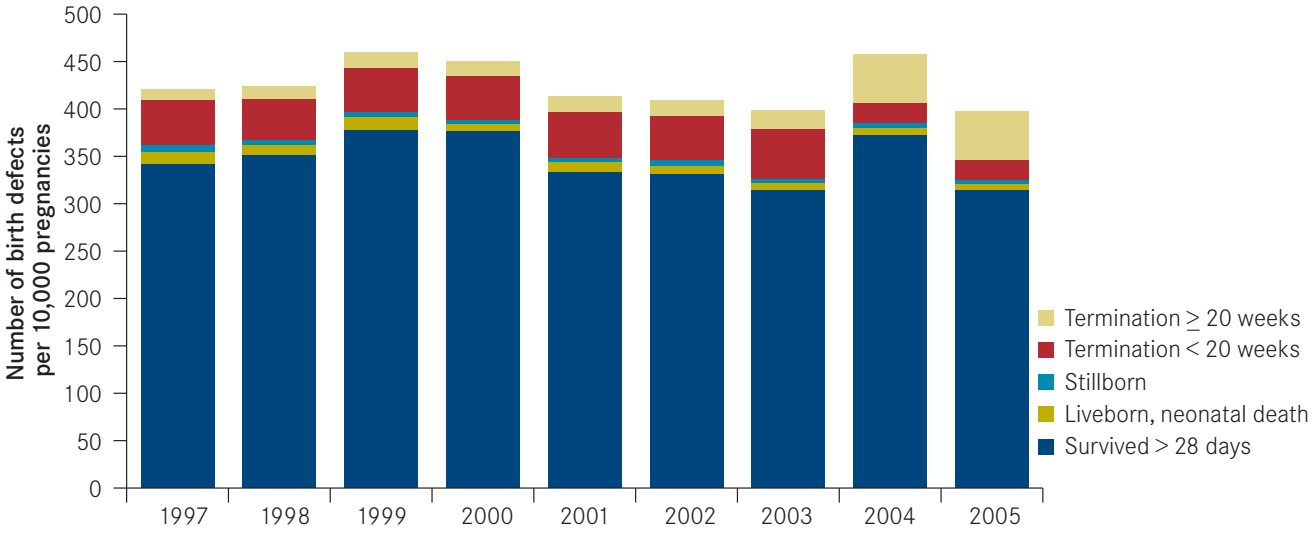
Prevalence and outcome of birth defects

Prevalence of birth defects by outcome, Victoria, 1997–2003



There were 2,209 babies born with a birth defect at or after 20 weeks gestation in Victoria in 2005. Another 331 were identified as terminations of pregnancy before 20 weeks gestation for a birth defect. This gives an overall birth defect prevalence rate of 38 per 1,000 births, or 3.8 per cent.

An additional 343 notifications of conditions occurred (for example, undescended testes 37 weeks or later, and vesicoureteric reflux), which are collected by the Victorian Birth Defects Register, but are not routinely reported. If these conditions are included in the total number of babies born with a birth defect, the overall birth defect prevalence rate for 2005 was 43 per 1,000 births, or 4.3 per cent

The live birth prevalence rate for birth defects in 2005 was 30 per 1,000 live births, or 3.0 per cent. Of babies born at 20 weeks or later with a birth defect, 116 (5.3 per cent) were stillborn and 88 (4.0 per cent) were neonatal deaths, giving a perinatal mortality rate of 92 per 1,000 births for infants with birth defects. If terminations of pregnancy at 20 weeks or later are excluded from these figures, the perinatal mortality rate declines to 32 per 1,000 births with infants with birth defects.

Approximately 13.0 per cent of all pregnancies with a birth defect were terminated before 20 weeks gestation, and another 3.9 per cent were terminated at 20 weeks or more.

For more information

Riley, M, Halliday, J, *Birth Defects in Victoria 2003–04*, Victorian Perinatal Data Collection Unit, Victorian Government Department of Human Services, Melbourne, 2006: www.health.vic.gov.au/perinatal/vbdr

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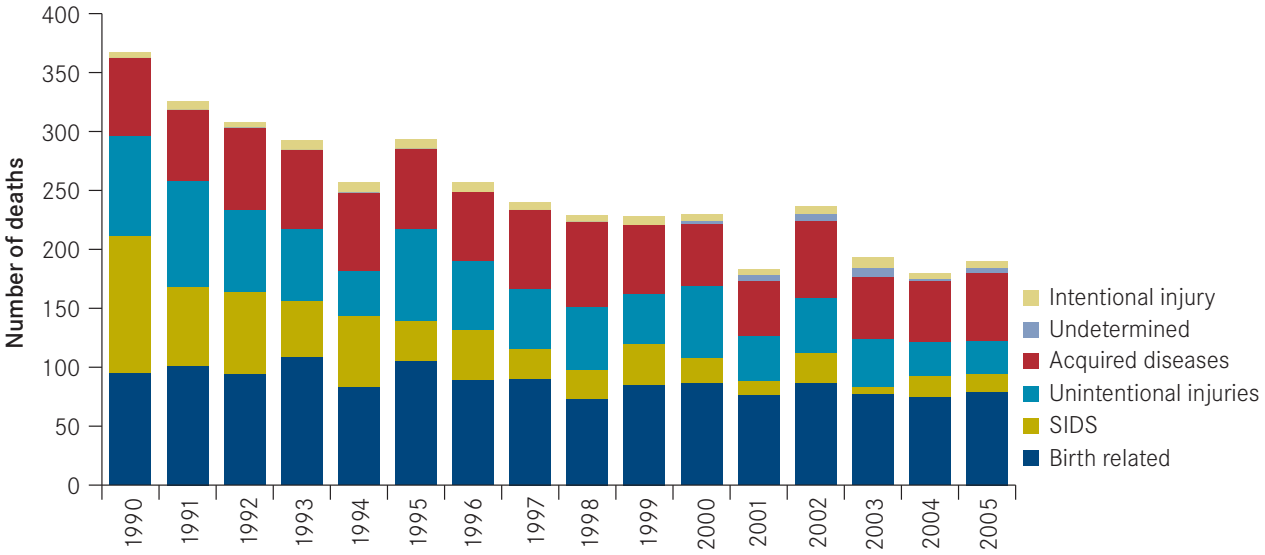
Post neonatal infant and child deaths

Major causes of post-neonatal infant and child deaths, Victoria, 1990–2005



Causes of death	1990	1991	1992	1993	1994	1995	1996	1997
Birth related	95	101	94	108	83	105	89	90
SIDS	116	67	70	48	60	34	42	25
Unintentional injuries	85	90	69	61	39	78	59	51
Acquired disease	66	60	70	67	66	68	58	67
Undetermined	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Intentional injury	5	8	5	9	9	8	9	7
Total	**367**	**326**	**308**	**293**	**257**	**293**	**257**	**240**

Causes of death	1998	1999	2000	2001	2002	2003	2004	2005
Birth related	73	85	86	76	86	77	74	79
SIDS	24	34	22	12	26	6	18	15
Unintentional injuries	54	43	61	38	46	41	29	28
Acquired disease	72	58	52	47	66	52	52	58
Undetermined	n/a	n/a	3	5	6	8	2	4
Intentional injury	6	8	6	5	6	9	5	6
Total	**229**	**228**	**230**	**183**	**236**	**193**	**180**	**190**

Note: In reports prior to 1999 where a cause of death was not identified or had been classified as unascertained it was included in Acquired disease, under subcategory 'other acquired'. Since 1999 these deaths were classified under the category 'Undetermined'.

Source: The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne.

In 2005, 190 deaths occurred in children aged from 29 days to 14 years. Overall, the leading cause of death for post-neonatal infants and children in Victoria in 2005 was birth-related conditions, particularly birth defects.

For more information

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne: www.health.vic.gov.au/perinatal

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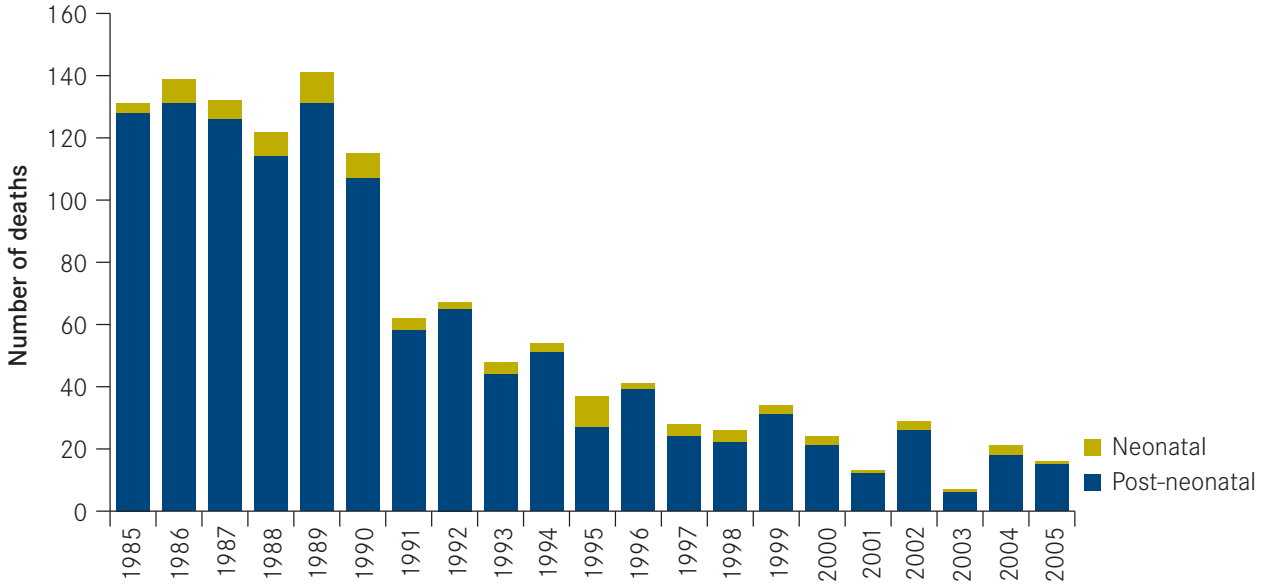
Sudden infant death syndrome

Sudden Infant Death Syndrome (SIDS) deaths, infants, Victoria, 1985–2005



SIDS deaths	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Post-neonatal	128	131	126	114	131	107	58	65	44	51	27
Neonatal	3	8	6	8	10	8	4	2	4	3	10
Total	**131**	**139**	**132**	**122**	**141**	**115**	**62**	**67**	**48**	**54**	**37**

SIDS deaths	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Post-neonatal	39	24	22	31	21	12	26	6	18	15
Neonatal	2	4	4	3	3	1	3	1	3	1
Total	**41**	**28**	**26**	**34**	**24**	**13**	**29**	**7**	**21**	**16**

Source: The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne.

Sudden infant death syndrome (SIDS) is defined as the unexpected death of an infant under one year of age, with onset of the fatal episode apparently occurring during sleep, which remains unexplained after a thorough investigation, including performance of a complete autopsy and review of the circumstances of the death and the clinical history. SIDS is a sub-group within the category of Sudden Unexpected Death in Infancy (SUDI). SUDI can include other sudden deaths in infants where the cause is unknown, unspecified or ill-defined. It can also include suffocation while sleeping and other explained causes of death in infants, such as child abuse/homicide, infection, metabolic disorders and genetic disorders.

The number of deaths from SIDS has declined sharply since 1990, associated with extensive public education campaigns carried out by the Sudden Infant Death Research Foundation (now SIDS and kids). In 2005 in Victoria 16 deaths were due to SIDS.

For more information

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne: www.health.vic.gov.au/perinatal

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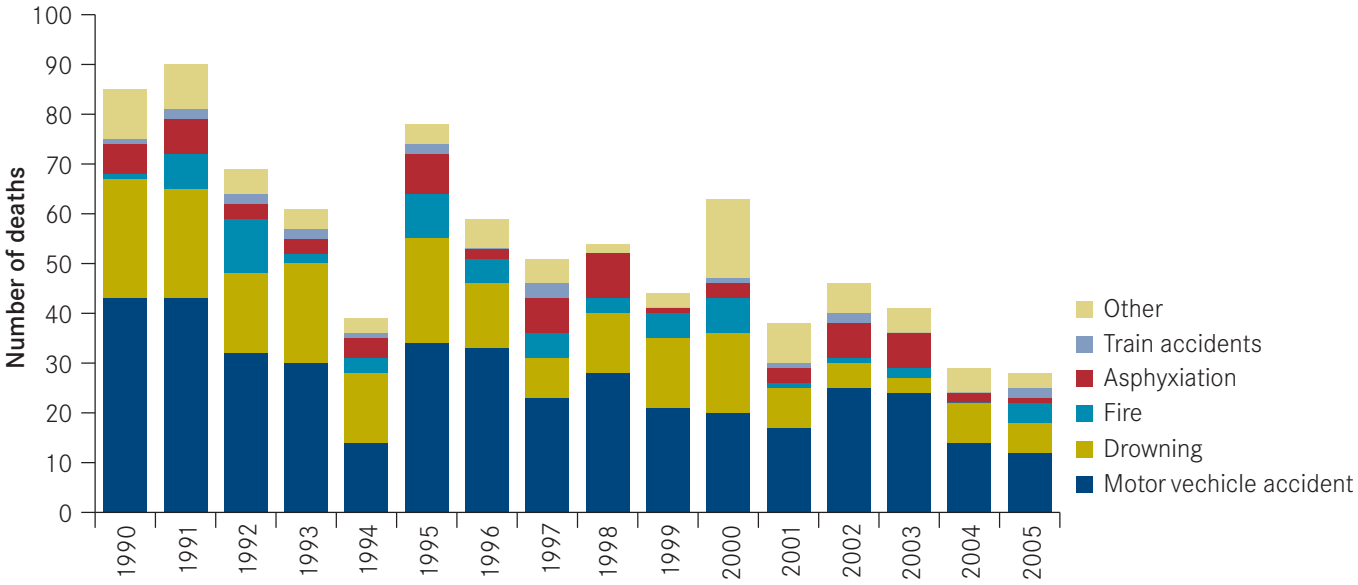
Unintentional injury deaths

Unintentional injury deaths, postneonatal infants and children, Victoria, 1990–2005



	Number of deaths							
Causes of death	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
Motor vehicle accidents	43	43	32	30	14	34	33	23
Drowning	24	22	16	20	14	21	13	8
Fire	1	7	11	2	3	9	5	5
Asphyxiation	6	7	3	3	4	8	2	7
Train accidents	1	2	2	2	1	2	0	3
Other	10	9	5	4	3	4	6	5
Total	**85**	**90**	**69**	**61**	**39**	**78**	**59**	**51**

	Number of deaths							
Causes of death	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Motor vehicle accidents	28	21	20	17	25	24	14	12
Drowning	12	14	16	8	5	3	8	6
Fire	3	5	7	1	1	2	0	4
Asphyxiation	9	1	3	3	7	7	2	1
Train accidents	0	0	1	1	2	0	0	2
Other	2	3	16	8	6	5	5	3
Total	**54**	**44**	**63**	**38**	**46**	**41**	**29**	**28**

Source: The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne.

There were 28 post-neonatal infant and child deaths due to unintentional injury in 2005. Unintentional injury categories include deaths attributed to motor vehicle accidents, drownings, fires, accidental asphyxial deaths and train accidents, as well as other unintentional injuries.

For more information

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne: www.health.vic.gov.au/perinatal

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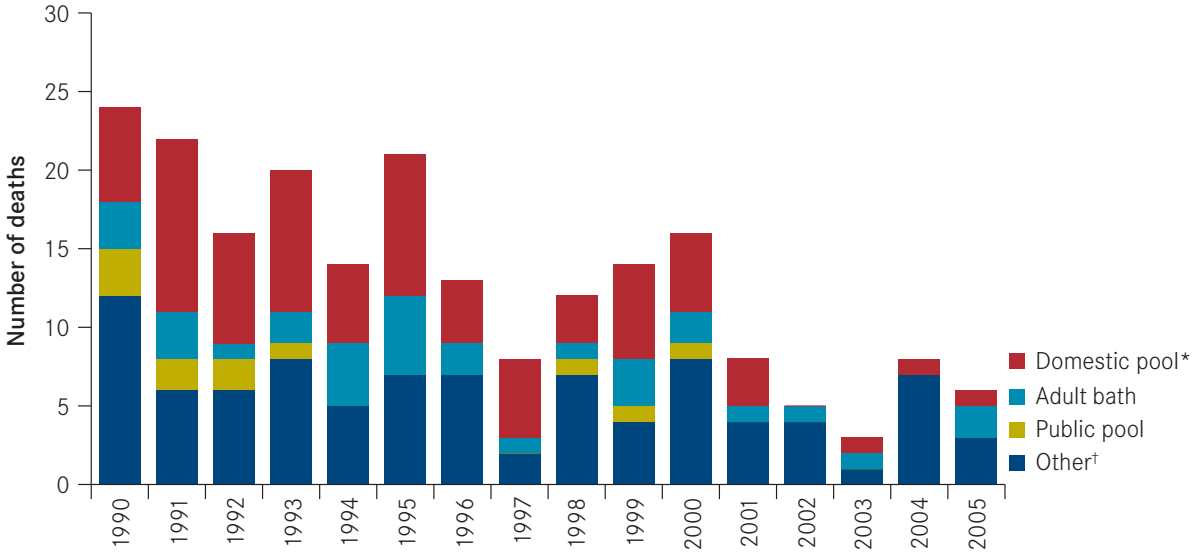
Drowning deaths

Drowning fatalities, post-neonatal infants and children, Victoria, 1990–2005



	Number of deaths							
Causes of death	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
Domestic pool*	6	11	7	9	5	9	4	5
Adult bath	3	3	1	2	4	5	2	1
Public pool	3	2	2	1	0	0	0	0
Other†	12	6	6	8	5	7	7	2
Total	**24**	**22**	**16**	**20**	**14**	**21**	**13**	**8**

	Number of deaths							
Causes of death	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Domestic pool*	3	6	5	3	0	1	1	1
Adult bath	1	3	2	1	1	1	0	2
Public pool	1	1	1	0	0	0	0	0
Other†	7	4	8	4	4	1	7	3
Total	**12**	**14**	**16**	**8**	**5**	**3**	**8**	**6**

Note: * Domestic pool includes spa, wading pool. † Other includes sea, river, dam, irrigation channel, reservoir, storm drain, creek, lake.

Source: The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne.

Six children aged 29 days to 14 years died as a result of drowning in 2005 in Victoria, compared to eight in the previous year.

For more information

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, January 2007, *Annual Report for the Year 2005, incorporating the 44th Survey of Perinatal Deaths in Victoria*, Melbourne: www.health.vic.gov.au/perinatal

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Breastfeeding

Infants exclusively and fully breastfed to three and six months, Victoria, 2006

		Duration					
		To 3 months			To 6 months		
		Per cent	SE (%)	95% CI	Per cent	SE (%)	95% CI
Exclusively	Metropolitan	47.0	2.9	41.2–52.8	14.6	2.3	10.0-19.2
	Rural	52.4	3.4	45.8–59.1	17.2	2.8	11.8-22.7
	Victoria	**48.3**	**2.4**	**43.6–53.0**	**15.3**	**1.9**	**11.5-19.0**
Fully	Metropolitan	55.7	2.9	50.0–61.4	27.8	3.0	22.0-33.7
	Rural	65.2	3.2	59.0–71.4	22.9	3.1	16.9-29.0
	Victoria	**57.9**	**2.3**	**53.4–62.5**	**26.6**	**2.4**	**22.0-31.3**

Note: SE = standard error, CI = confidence interval.

Source: Department of Human Services, 2007, *2006 Victorian Child Health and Wellbeing Survey*.

The composition of breast milk is of unique benefit to the baby. It is a high-quality food and contains many components that protect and nurture the baby's immature systems. Exclusive breastfeeding provides infants with protection against infection and some chronic diseases and leads to improved cognitive development (NHMRC, 2003). Research also shows that breastfed babies are less likely to suffer from eczema, food allergy and respiratory illness. Breastfed babies are also less prone to infections (such as middle ear infection) and are less likely than formula-fed babies to be hospitalised (NHMRC, 2003). Three months of full or even partial breastfeeding will bestow these benefits on the infant. Research evidence also suggests that children who were breastfed as babies have a lower prevalence of obesity than non-breastfed babies.

The Australian National Health and Medical Research Council recommends that infants are exclusively breastfed for the first six months of life (NHMRC, 2003). This means that the infant receives only breast milk (plus medication or vitamins as required). Fully breastfed infants are defined as those who receive breast milk as their main source of nourishment. The definition includes infants who are exclusively breastfed (as defined above) and those who are predominantly breastfed (receiving breast milk and other fluids, for example, water, but no infant formula or solids). Breastfeeding complemented with appropriate foods from six months is recommended, and continued breastfeeding, while receiving appropriate complementary foods, is recommended up to at least 12 months of age.

In Victoria in 2006, 57.9 per cent of infants were fully breastfed at three months, and 26.6 per cent of infants were fully breastfed at six months. The proportion of infants who were exclusively and fully breastfed at three months was higher in rural areas compared to metropolitan areas; however, these differences were not statistically significant.

For more information

National Health and Medical Research Council (NHMRC), 2003, *Dietary guidelines for children and adolescents in Australia incorporating the infant feeding guidelines for health workers*, Canberra: Australian Government.

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Smoking in pregnancy

Infants exposed to tobacco smoke *in utero*, Victoria, 2006

	Percent	SE (%)
Metropolitian	21.8	2.2
Rural	23.2	2.6
Victoria	**22.1**	**1.8**

Note: SE = standard error. The proportion of infants exposed to tobaccos smoke *in utero* includes any infants with mothers who reported using any number of cigarettes during pregnancy.

Source: Department of Human Services, 2007, *2006 Victorian Child Health and Wellbeing Survey*.

Smoking during pregnancy is harmful for both the mother and her infant. Prenatal exposure to tobacco smoke is associated with low birth weight, intrauterine growth restriction, prematurity, birth defects, perinatal mortality and sudden infant death syndrome (AIHW, 2005, Chomitz et al., 1995, McCormick, 1985, McDermott et al., 2002).

The Victorian data are based on the retrospective self-reports of smoking during pregnancy by recent mothers who participated in the *2006 Victorian Child Health and Wellbeing Survey* (Department of Human Services, 2006). The data includes infants whose mothers reported smoking cigarettes at any stage during pregnancy.

More than one in five Victorian infants (22.1 per cent) were exposed to maternal tobacco smoke at some stage *in utero*. In 2006 the proportion of infants exposed to tobacco smoke *in utero* was similar across rural (23.2 per cent) and metropolitan areas (21.8 per cent).

Infants were most likely to have been exposed to tobacco smoke while the mother was still unaware of her pregnancy, and 21.9 per cent (95% CI: 18.5–25.4) of infants had mothers who reported smoking pre-pregnancy recognition, in comparison to 12.1 per cent (9.4–14.8 per cent) of infants whose mothers reported smoking when first aware of the pregnancy. By the end of the pregnancy, slightly fewer than one in ten (9.3 per cent, 95% CI: 6.8–11.7 per cent) infants had a mother who reported smoking cigarettes (Department of Human Services, 2007).

For more information

Department of Human Services, 2007, *2006 Victorian Child Health and Wellbeing Survey Technical Report*, Victoria: www.dhs.vic.gov.au/statewideoutcomes

Chomitz, VR, Cheung, LW, Lieberman, E, 1995, 'The role of lifestyle in preventing low birth weight', *Future of Children*, Volume 5, pp. 121–38.

Australian Institute of Health and Welfare (AIHW), 2005, *A picture of Australia's children*, AIHW Catalogue no PHE 58, Canberra: AIHW.

McCormick, M, 1985, 'The contribution of low birth weight to infant mortality and childhood morbidity', *New England Journal of Medicine*, Volume 312, pp. 82–90.

McDermott, L, Russell, A, Dobson, A, 2002, 'Cigarette smoking in Australian women in Australia 2002', *Commonwealth Department of Health and Ageing National Tobacco Strategy 1999 to 2002*, Canberra.

Department of Human Services, 2006, *The state of Victoria's children report 2006*, State of Victoria, Melbourne: www.office-for-children.vic.gov.au/statewide-outcomes/report_2006

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Child and parent social and emotional wellbeing

Children with social and emotional problems, Victoria, 2006

	Strengths and Difficulties Questionnaire score range							
	Normal		Borderline		Of concern		Unknown	
	Per cent	SE (%)	Per cent	SE (%)	Per cent	SE (%)	Per cent	SE (%)
Metropolitan	84.2	1.0	5.7	0.6	4.2	0.5	5.9	0.7
Rural	83.4	1.0	5.9	0.6	8.1	0.7	2.7	0.4
Victoria	**83.9**	**0.8**	**5.7**	**0.5**	**5.3**	**0.4**	**5.0**	**0.5**

Note: SE = standard error.

Source: Department of Human Services, 2007, *2006 Victorian Child Health and Wellbeing Survey*, Victoria.

Most children and young people experience good mental health with positive psychosocial development. However, mental health problems impact negatively on the lives of some children and young people. Children and young people experiencing mental health problems report having poorer quality of life and lower self-esteem; these children may also perform less well at school. The poorer psychological health of children and young people may also impede their ability to maintain relationships, and may have an adverse impact on the lives of parents and families (Sawyer et al., 2000).

While the majority of Victorian children (aged 4–12 years) do not have any significant social and emotional problems, 5.7 per cent of children obtained 'borderline' scores and a further 5.3 per cent obtained scores that were rated as 'of concern' on the *Strengths and Difficulties Questionnaire* (Goodman, 2001). The *Strengths and Difficulties Questionnaire* (SDQ) is a short screening questionnaire that assesses a child's emotional symptoms, conduct problems, hyperactive behaviour, peer relationships and pro-social behaviour.

SDQ scores for children living in rural and metropolitan areas were similar, except for children who were classified as 'of concern' or 'unknown'. There were 8.1 per cent of children living in rural areas of Victoria classified as 'of concern', compared to only 4.2 per cent of children living in metropolitan areas.

Parents at risk of psychological distress, Victoria, 2006

	Per cent	SE (%)
Victoria	**2.9**	**0.3**
Metropolitan	2.9	0.4
Rural	2.9	0.4

Note: SE = standard error.

Source: Department of Human Services, 2007, *2006 Victorian Child Health and Wellbeing Survey*, Victoria.

Mental illness affects not only the individual who is directly affected, but also those who are close to them. When a parent is affected by a mental illness, it may have serious implications for immediate family members, especially the children.

Overall, a very small minority (2.9 per cent) of Victorian children (aged from birth to twelve years of age) had a main carer at high risk of psychological distress. No variations in risk of psychological distress were observed between parents living in rural and metropolitan areas of Victoria.

For more information

Goodman, R, 2001, 'Psychometric properties of the strengths and difficulties questionnaire', *Journal of the American Academy of Child and Adolescent Psychiatry,* Volume 40, pp.1337–45.

Sawyer, M, Arney, F, Aghurst, P, Graetz, B, Kosky, R, Nurcombe, B, Patton, G, Prior, M, Raphael, B, Rey, J, Whaites, L, Zubrick, S, 2000, *The Mental Health of Young People in Australia*, Canberra: Mental Health and Special Programs Branch, Commonwealth Department of Health and Aged Care.

Further information on the *Strengths and Difficulties Questionnaire* can be obtained from www.sdqinfo.com

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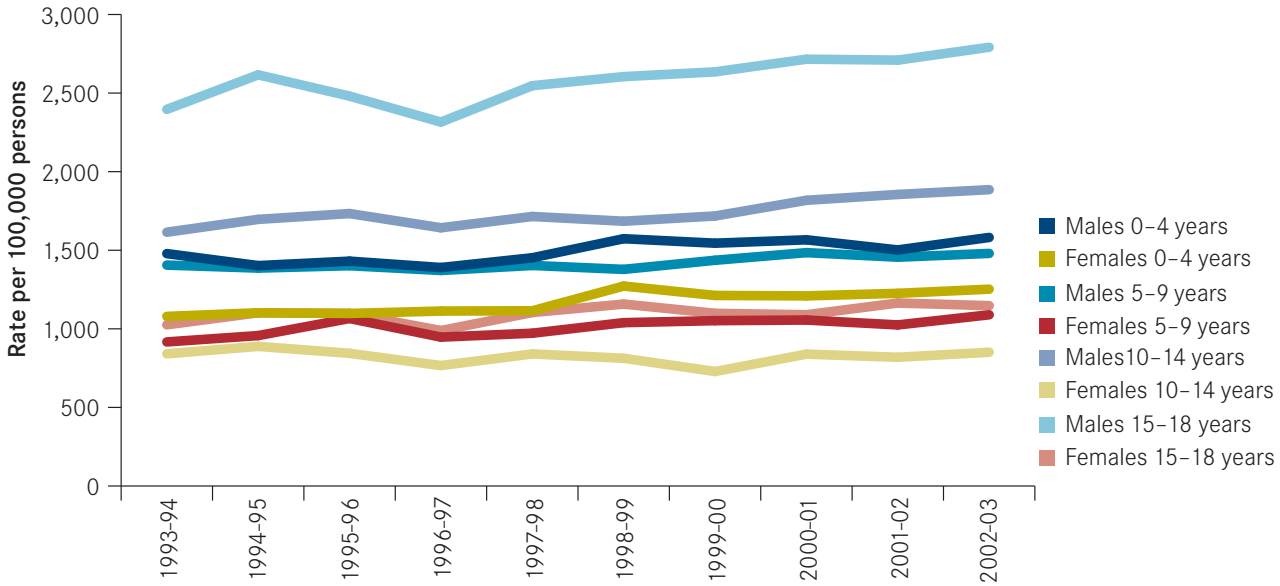
Injury hospitalisations in children

Children and young people's injury-related hospital admission rates, by age group and sex, Victoria, 1993–94 to 2002–03



Age group (years)	Sex	Rate per 100,000 population									
		1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03
0–4	Males	1,478.6	1,402.3	1,430.7	1,390.1	1,452.2	1,573.4	1,544.9	1,566.4	1,502.0	1,581.5
	Females	1,079.0	1,102.2	1,098.0	1,113.0	1,114.9	1,272.1	1,212.3	1,209.6	1,225.8	1,252.4
5–9	Males	1,405.5	1,386.4	1,401.6	1,371.3	1,403.2	1,378.3	1,436.2	1,484.8	1,455.7	1,479.8
	Females	916.7	957.0	1,065.7	947.2	972.1	1,039.3	1,052.0	1,056.0	1,024.8	1,089.3
10–14	Males	1,614.8	1,696.5	1,733.4	1,643.0	1,714.8	1,684.7	1,718.0	1,817.8	1,855.0	1,885.4
	Females	841.2	888.3	844.2	766.3	840.3	812.7	728.3	839.0	819.0	851.1
15–18	Males	2,396.4	2,616.1	2,480.6	2,315.4	2,547.1	2,604.7	2,635.0	2,715.6	2,709.7	2,791.6
	Females	1,025.6	1,102.2	1,098.0	989.1	1,103.8	1,157.4	1,098.7	1,089.5	1,164.2	1,147.4

Note: Excludes medical injury and late effects.

Source: Department of Human Services, Victorian Admitted Episode Dataset, 1993–94 to 2002–03.

There were 18,618 injury hospital admissions of 0–18 year olds in 2002–03. Of the 18,618 injury hospital admissions, 17,328 (93.1 per cent) were for unintentional injuries. The admission rate was higher in males than in females, particularly in the two older age groups (10–14 years and 15–18 years). In 2002–03 the injury admission rate among 10–14 and 15–18 year old males was 1,885.4 and 2,791.6 per 100,000 respectively.

Falls accounted for 40 per cent of all injury hospital admissions, followed by transport-related injuries (15 per cent), hitting, striking and crushing injuries (12 per cent), cutting or piercing (five per cent), poisoning (five per cent) and other (23 per cent). Falls are the top cause of injury hospital admissions for all age groups.

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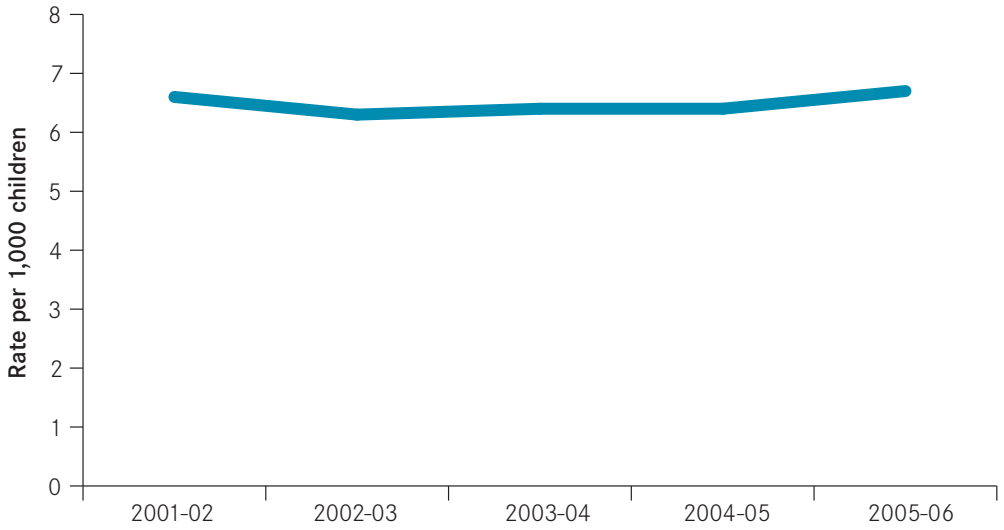
Child abuse and neglect

Children aged 0–16 years who were subjects of substantiations



In Australia child protection is the responsibility of state and territory departments in the community services sector. Children who come into contact with these departments for protective reasons include those:

- who are suspected of being, have been or are being abused, neglected or otherwise harmed
- whose parents cannot or are unable to provide adequate care or protection.

A child protection notification is assessed by the Victorian Department of Human Services to determine whether it requires an investigation; whether it should be dealt with by other means, such as referral to other organisations or to family support services; or whether no further protective action is necessary or possible. After an investigation is finalised, a notification is classified as 'substantiated' or 'not substantiated'. A notification is substantiated where it is concluded after investigation that the child has been, is being or is likely to be abused, neglected or otherwise harmed. All jurisdictions substantiate situations where children have experienced significant harm from abuse and neglect through the actions of parents. Some jurisdictions also substantiate on the basis of the occurrence of an incident of abuse or neglect, independent of whether the child was harmed, and others substantiate on the basis of the child being at risk of harm occurring (AIHW, 2007).

Since 1998–99 the rates of children who were the subject of substantiations in Victoria have remained relatively constant, with slight movements up or down each year. Increases within Victoria could be due to several factors, including a greater community willingness to report cases of suspected abuse, changes to systems of data collection and changes to policy and practice within jurisdictions.

In 2005–06, 6.7 per 1,000 children aged 0–16 years were the subject of child abuse and neglect substantiations. This rate remained relatively constant since 2001–02.

For more information

Australian Institute of Health and Welfare (AIHW) 2007. *Child protection Australia 2005–06*. Child welfare series no.40. Catalogue no CWS 28. Canberra: AIHW.

Aboriginal and Torres Strait Islanders

In this chapter

Summary

The estimated resident Aboriginal population of Victoria was 30,140 persons. The Aboriginal population in Victoria represented 0.6 per cent of the total Victorian population at the 2006 census and 6.6 per cent of the total Australian Aboriginal population. Within the Victorian Aboriginal population, considerably more Victorians are of Aboriginal descent than of Torres Strait Islander or both Aboriginal and Torres Strait Islander descent.

Compared with the non-Aboriginal population, there was a greater proportion of younger people (0-24 years), a similar proportion of middle-aged people (25-40 years) and a smaller proportion of older people in the Aboriginal population in Victoria.

Just under half the Aboriginal population in Victoria were resident in metropolitan areas, with the northern and western metropolitan areas home to 25 per cent of the total Aboriginal population. The life expectancy at birth of Aboriginal Victorians was approximately 17 years below that of all Victorians in 2001.

Aboriginal Victorians were at a greater disadvantage, compared to the non-Aboriginal population, for many socioeconomic factors that influence health, including household income and education.

The median age of persons in Aboriginal households was considerably lower than that of persons in non-Aboriginal households, as were median individual and household weekly incomes. Median housing loan repayments were approximately 10 per cent lower, while median weekly rent was almost 20 per cent lower in Aboriginal households, compared with non-Aboriginal households.

A significantly smaller proportion of the Aboriginal population aged 18 years and over were attending university or other tertiary institutions, had a bachelor degree or above, or had completed Year 12.

In 2004, almost 75 per cent of live-born babies to Aboriginal mothers in Victoria had a birth weight in the range 2,500–3,999 grams. The mean birth weight was 3,110 grams (compared with 3,376 grams for the live-born babies of all mothers). Sixteen per cent of live-born babies to Aboriginal mothers fell within the low birth weight (< 2,500 grams) range, compared with 6.3 per cent of live-born babies to all Victorian mothers.

The higher rate of perinatal deaths of Aboriginal babies appears in both Victorian and national data. In Victoria, because the numbers involved are small and can fluctuate from year to year, no trend can be reliably determined.

Cases in which child abuse or neglect is found to have occurred are known as substantiations, and can lead to an application for a care and protection order before a court. The rate of substantiation increased almost 40 per cent among Aboriginal children over the five year period 2005–06, while the rates among Victorian children as a whole showed no change.

Age-adjusted hospitalisation rates among Aboriginal people were higher than those for non-Aboriginal people for a range of health problems and disease conditions in 2005–06, even though it is likely that Aboriginal status is under-reported in the Victorian hospital data collection.

Ambulatory care sensitive conditions (ACSCs) are those diseases and health conditions for which it is thought to be possible to avoid the need for hospital admission if preventive care and early disease management are provided, usually in an outpatient or primary care setting. The ACSCs admission rate ratios (95% CI) for Aboriginal males and females were 3.72 (3.51–3.94) and 5.70 (5.41–6.01) respectively, significantly above their non-Aboriginal counterparts.

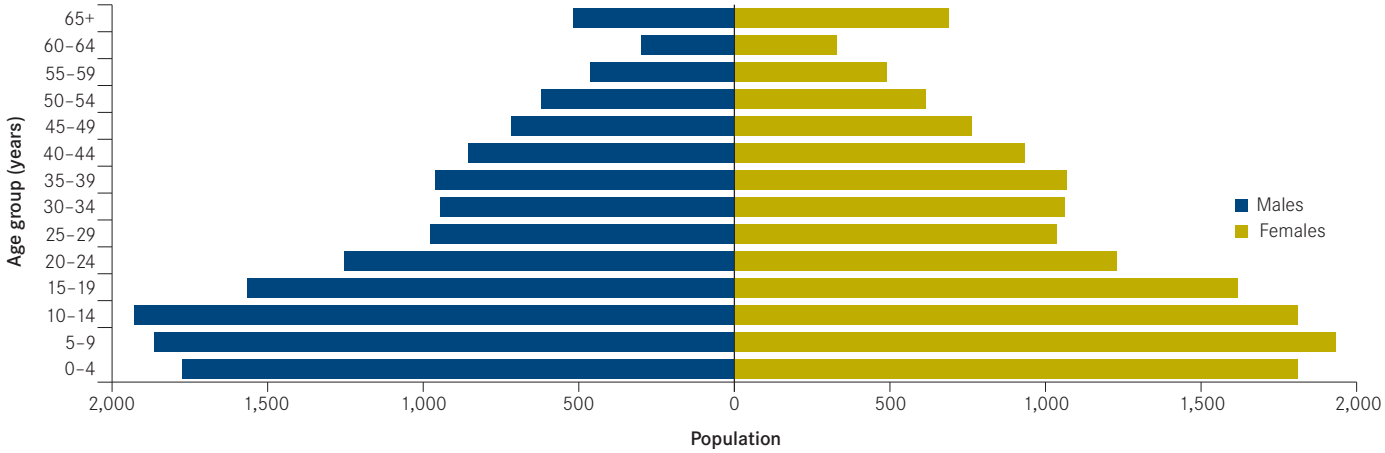
Total expenditure on health services for all Australian Aboriginal and Torres Strait Islander people in 2001–02 was $1,788.6 million, or $3,901 per Aboriginal person, compared to total health expenditure of $3,308 per non-Aboriginal person.

Among Aboriginal people in Victoria, more than one quarter (28.2 per cent) reported their health as fair or poor in 2002.

Among Aboriginal males aged 15 years and over, almost half (48.1 per cent) were current smokers. More than half of Aboriginal females aged 15 years and over were current smokers (55.1 per cent).

Aboriginal population pyramid

Aboriginal population pyramid, Victoria 2006



Note: An important change for the 2006 Census was the switch to 'place of usual residence' (where a person usually lives) as the primary basis for releasing census data. This replaced data based on 'place of enumeration' as the primary method of release. Place of enumeration was the location where someone was counted on census night, 8 August 2006. This count gave a snapshot in any given area. Although the census is timed to capture the typical situation, holiday areas such as the Gold Coast and snowfields may show a large enumeration count compared to the usual residence count.

Source: Australian Bureau of Statistics, *2006 Census of Population and Housing*, Catalogue no 2068.0–2006 Census Tables.

The estimate of the resident Aboriginal population of Victoria was 30,140, or 0.6 per cent of the total Victorian population, at the 2006 census. Nationally, the Aboriginal population was 455,028, or 2.3 per cent of the total Australian population. Victoria has 6.6 per cent of the total Aboriginal population. The shape of the population pyramid reflects the younger age structure of the Aboriginal population compared with the non-Aboriginal population. The proportion of the Aboriginal population aged under 15 years was 37 per cent, compared with 19 per cent for non-Aboriginal persons. Persons aged 65 years and over comprised four per cent of the Aboriginal population and 14 per cent of the non-Aboriginal population. These differences reflect the higher rates of fertility and higher rates of mortality at younger ages among Aboriginal persons.

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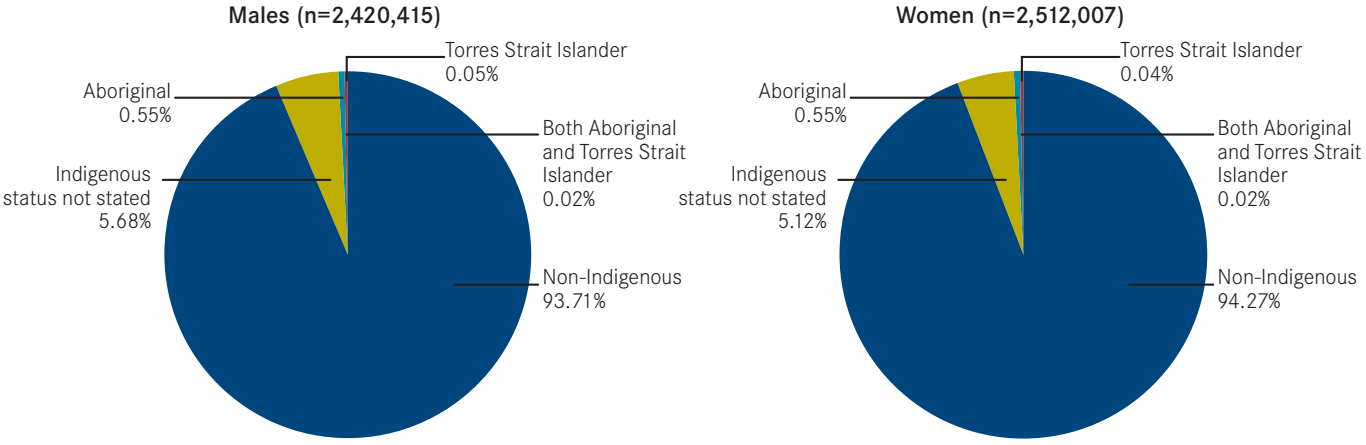
Aboriginal status

Aboriginal status, by sex, Victoria, 2006



Note: (a) Applicable to persons who are of both Aboriginal and Torres Strait Islander origin.
(b) The Census Indigenous Enumeration Strategy was developed to provide an overall enumeration strategy with sufficient flexibility to account for the unique cultural aspects of Aboriginal society that may have affected enumeration. This was done to achieve the most accurate count of Aboriginal peoples in both nominated discrete communities and elsewhere.

Source: ABS, *2006 Census of Population and Housing*, Catalogue no 2002.0–2006 Community Profile Series.

Considerably more Victorians were of Aboriginal descent than of Torres Strait Islanders or both Aboriginal and Torres Strait Islander descent. However, over five per cent of the population did not indicate their ancestry. Overall, Aboriginal people (including Torres Strait Islanders) accounted for 0.6 per cent of the Victorian population, a substantially smaller proportion of the population compared to most other states and the Northern Territory.

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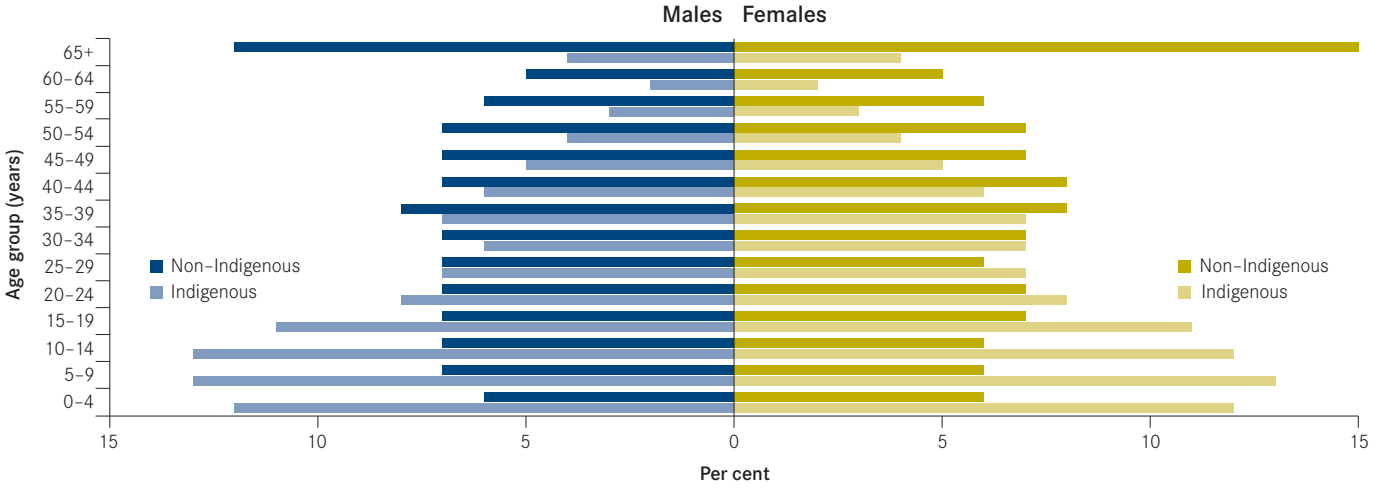
Aboriginal and non-Aboriginal populations

Aboriginal and non-Aboriginal populations, Victoria 2006



Source: Australian Bureau of Statistics, *2006 Census of Population and Housing*, Catalogue no. 2068.0–2006 Census Tables.

The figure highlights the contrast in the population pyramids for Aboriginal and non-Aboriginal Victorians. There was a greater proportion of younger people (0–24 years), a similar proportion of middle-aged people (25–40 years) and a smaller proportion of older people in the Aboriginal, compared to the non-Aboriginal, population in Victoria.

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Geographical distribution of Aboriginal population

Place of usual residence of Aboriginal people, by sex and Department of Human Services region, Victoria 2006

Department of Human Services region	Males	Females	Persons
Barwon-South West	1,359	1,398	2,757
Eastern Metropolitan	1,302	1,299	2,601
Gippsland	1,497	1,534	3,031
Grampians	876	901	1,777
Hume	1,762	1,930	3,692
Loddon Mallee	2,157	2,422	4,579
North and West Metropolitan	3,675	3,714	7,389
Southern Metropolitan	2,095	2,156	4,251
Unincorporated Victoria	33	12	45
Total	**14,756**	**15,366**	**30,122**

Source: Australian Bureau of Statistics, *2006 Census of Population and Housing*.

Just under half the Aboriginal population in Victoria were resident in the metropolitan areas of Melbourne, with the north and west metropolitan areas home to 25 per cent of the total Aboriginal population. In rural Victoria the Loddon-Mallee Region (15 per cent) had the highest proportion of the Victorian Aboriginal population, while the Grampians Region had the lowest proportion (six per cent).

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Aboriginal life expectancy

Life expectancy at exact age, by sex, based on the abridged experimental Aboriginal life tables, Victoria, 1996–2001

	Life expectancy (years)	
Age group (years)	**Males**	**Females**
0	60.0	65.1
1–4	59.6	64.7
5–9	55.9	60.8
10–14	51.0	56.0
15–19	46.1	51.0
20–24	41.7	46.3
25–29	37.3	41.7
30–34	33.3	37.2
35–39	29.4	32.8
40–44	25.6	28.5
45–49	21.8	24.3
50–54	18.2	20.4
55–59	15.0	16.8
60–64	12.2	13.6
65–69	9.7	11.0
70–74	7.5	8.6
75–79	5.7	6.5
80–84	4.4	4.8
85 +	3.3	3.5

Note: Expectation of life at birth for all Victorians in 2001 was 77.5 years for males and 82.7 years for females, based on the 1999–2001 life table.

Source: Australian Bureau of Statistics (ABS), 2006, *Deaths Australia*. Catalogue no 3302.0.

The life expectancy at birth of Aboriginal Victorians was approximately 17 years below that of all Victorians in 2001. However, more recent estimates indicate that this gap may be smaller. The 'Burden of Disease and Injury in Aboriginal and Torres Strait Islander peoples 2003' report estimated life expectancy at birth in Aboriginal Australians for the period 1996 to 2001 at 64 years for males and 69 years for females, a gap of 12.5 and 13.5 years compared with the life expectancy of the total Australian population (Vos et al, 2007). These life expectancy figures are higher than those reported by the ABS for the same period. Scientific debate exists about the validity of either set of estimates, which can only be resolved when new and better data and methods become available. The burden of disease report also estimated health-adjusted life expectancy (HALE) for Aboriginal males was 56 years in 2003 (compared with 71 years for males in the total population), and for Aboriginal females was 60 years (compared with 75 years for females in the total population), a gap of approximately 15 years for both sexes, compared with the total population.

Further Information

Australian Bureau of Statistics (ABS), 2006, *Deaths Australia*. Catalogue no 3302.0, Canberra: ABS.

Vos T, Barker B, Stanley L, Lopez, AD, 2007, *The Burden of Disease and Injury in Aboriginal and Torres Strait Islander peoples 2003*. Brisbane: School of Population Health, University of Queensland.

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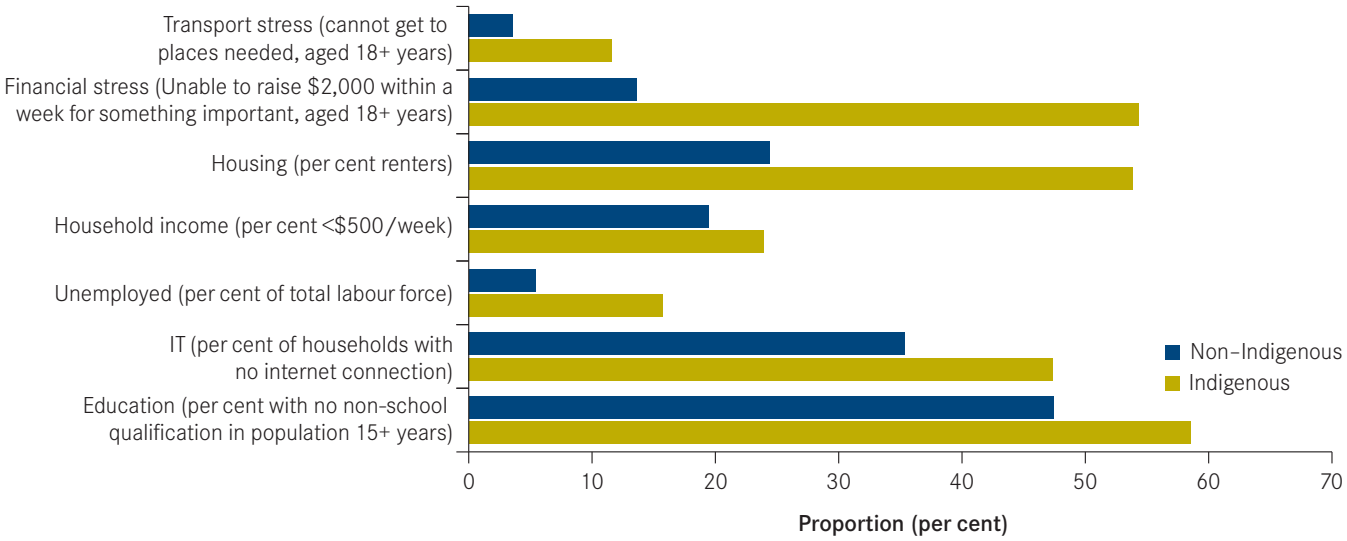
Socioeconomic factors by Aboriginal status

Selected socioeconomic factors, by Aboriginal status, Victoria 2005–06



Source: Australian Bureau of Statistics, 2005, Census Tables, Catalogue no 2068.0, 2006; ABS, AIHW, *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples* (ABS Catalogue No. 4704.0, AIHW Catalogue No IHW14).

For many socioeconomic factors that influence health, Aboriginal Victorians were at a greater disadvantage compared to the non-Aboriginal population. The most notable were financial and transport stress, housing tenure and unemployment.

For more information

Australian Bureau of Statistics (ABS), Australian Institute of Health and Welfare, 2005, *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples* ABS Catalogue no 4704.0, AIHW Catalogue no. IHW14, Canberra: Commonwealth of Australia.

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Household characteristics by Aboriginal status

Selected medians and averages by Aboriginal status, Victoria 2006

	Aboriginal persons/ households with Aboriginal persons[(a)]	Non-Aboriginal persons[(b)]/ other households	Total
Median age of persons[1] (years)	21	37	37
Median individual income ($ per week)[2]	332	457	456
Median household income ($ per week)[3]	763	1,023	1,022
Median housing loan repayment ($ per month)[4]	1,127	1,257	1,252
Median rent ($ per week)[5]	150	185	185
Average number of persons per bedroom[6]	1.2	1.1	1.1
Average household size[7]	3.0	2.6	2.6

Note: (a) A household with Aboriginal persons is any household that had at least one person of any age as a resident at the time of the census who identified as being of Aboriginal and/or Torres Strait Islander origin.
(b) Includes persons who did not state their Aboriginal status.
1. Excludes overseas visitors.
2. Applicable to persons aged 15 years and over.
3. Applicable to occupied private dwellings. Excludes households where at least one member aged 15 years and over did not state an income, and households where at least one member aged 15 years and over was temporarily absent on census night. Excludes 'visitors only' and 'other not classifiable' households.
4. Applicable to occupied private dwellings being purchased, and includes dwellings being purchased under a rent/buy scheme. Excludes 'visitors only' and 'Other not classifiable' households.
5. Applicable to occupied private dwellings being rented. Excludes 'visitors only' and 'other not classifiable' households.
6. Applicable to occupied private dwellings. Excludes 'visitors only' and 'other not classifiable' households.
7. Applicable to number of persons usually resident in occupied private dwellings. Includes partners, children, and cotenants (in group households) who were temporarily absent on census night. A maximum of three temporary absentees could be counted in each household. Excludes 'visitors only' and 'other not classifiable' households.

Source: Australian Bureau of Statistics, *2006 Census–Community Profile Series*, Catalogue no 2002.0, Canberra: ABS.

Based on 2006 Census data, the median age of persons in Aboriginal households was considerably lower than that of persons in non-Aboriginal households, as was median individual or household weekly income. Median housing loan repayments were approximately 10 per cent lower, while median weekly rent was almost 20 per cent lower. The average household size and number of persons per bedroom were slightly higher in Aboriginal compared to non-Aboriginal households.

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Educational characteristics by Aboriginal status

Educational characteristics, persons aged 18 years or over, by Aboriginal status, Victoria, 2002[a]

	Indigenous		Non-Indigenous	
Education	**Per cent**	**RSE (%)**	**Per cent**	**RSE (%)**
Attending post-school institution:				
University or other tertiary institution	4.0	24.6	7.2	10.1 e
Other post-school institution[b]	6.9	16.0	5.8	9.8
Educational attainment:				
Bachelor degree or above	6.7	23.8	17.0	6.3 e
Certificate or diploma	33.9	7.1	30.1	4.5
Total with non-school qualification[c]	**41.4**	**6.4**	**48.0**	**2.3 e**
Did not have a non-school qualification:				
Completed Year 12	7.1	17.6	16.2	6.1 e
Completed Year 10 or Year 11	23.7	9.6	17.7	4.4 e
Completed Year 9 or below[d]	27.8	7.1	18.1	4.3 e
Total with no non-school qualification[c]	**58.6**	**4.6**	**52.0**	**2.1 e**

Note: RSE = relative standard error (obtained by expressing the standard error as a percentage of the estimate to which it refers). Data have not been age-standardised. The content of this table is restricted to those items that are comparable between the NATSISS and the GSS.

(a) Includes TAFE, technical college, business college, industry skills centre.
(b) Total may include persons for whom some specific information could not be determined.
(c) Includes persons who never attended school.
(d) Based on national quantile boundaries from the 2002 General Social Survey.
(e) Indicates the difference between Indigenous and non-Indigenous data is statistically significant.

Source: Australian Bureau of Statistics, 2004, *National Aboriginal and Torres Strait Islander Social Survey 2002*, Catalogue no 4714.2.55.001, Canberra: ABS.

The educational characteristics of the Victorian population by Aboriginal status were significantly different. A significantly smaller proportion of the Aboriginal population aged 18 years and over were attending university or other tertiary institutions, had a bachelor's degree or above, or had completed Year 12.

For more information

Australian Bureau of Statistics, 2004, *National Aboriginal and Torres Strait Islander social survey 2002*, Catalogue no 4714.2.55.001, Canberra: ABS.

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Birth weight

Live births in Victorian mothers, by birth weight and Aboriginal status, 2004

	Aboriginal Victorians		All Victorians	
Birth weight (grams)	**Number**	**Per cent**	**Number**	**Per cent**
Less than 1,500	13	3.0	655	1.1
1,500–2,499	57	13.2	3344	5.3
2,500–2,999	101	23.3	9,547	15.1
3,000–3,499	135	31.2	22,250	35.3
3,500–3,999	87	20.1	19,497	30.9
4,000–4,499	NA	NA	6,554	10.4
4,500 and over	NA	NA	1,233	2.0
Not stated	–	–	2	0.0
Total	**NA**	**100.0**	**63,082**	**100.0**
Less than 2,500	*70*	*16.2*	*3,999*	*6.3*

	Aboriginal Victorians	All Victorians
Mean birth weight (grams)	3,110	3,376

Note: NA = data are not published to maintain confidentiality of small numbers.

Source: Laws, P, Grayson, N, Sullivan, E, 2006, *Australia's mothers and babies 2004*, Perinatal statistics series no.18. AIHW Catalogue no, PER 34, Sydney: AIHW National Perinatal Statistics Unit.

In 2004 almost 75 per cent of live-born babies to Aboriginal mothers in Victoria had a birth weight in the range of 2,500–3,999 grams. The mean birth weight was 3,110 grams. Sixteen per cent of live-born babies to Aboriginal mothers fell within the low birth weight range. This proportion was considerably higher than the proportion of live-born babies to all Victorian mothers who had a birth weight of less than 2,500 grams (6.3 per cent). The mean birth weight of live-born babies of all mothers was 3,376 grams.

For more information:

Laws, P, Grayson, N, Sullivan, E, 2006, *Australia's mothers and babies 2004*, Perinatal statistics series no.18. AIHW Catalogue no, PER 34, Sydney: AIHW National Perinatal Statistics Unit.

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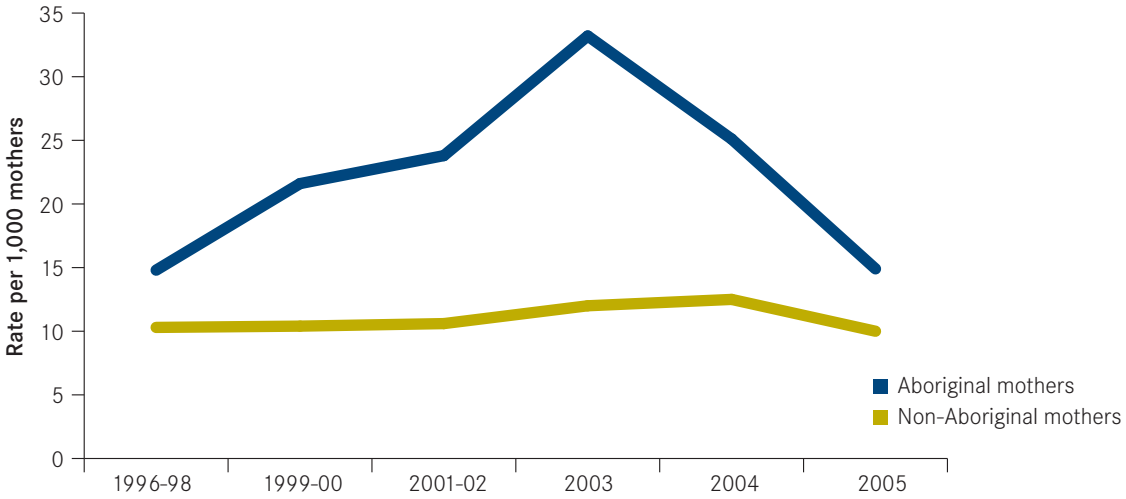
Perinatal mortality

Perinatal mortality rate, by Aboriginal status, Victoria, 1996–2005



	Mortality rates per 1,000 births					
	1996–98	**1999–2000**	**2001–02**	**2003**	**2004**	**2005**
Aboriginal mothers	14.8	21.6	23.8	33.2	25.1	14.9
Non-Aboriginal mothers	10.3	10.4	10.6	12.0	12.5	10.0

Source: Department of Human Services, *Aboriginal Services Plan Key Indicators 2005–06*.

Perinatal mortality includes stillbirths (foetal deaths of more than 20 weeks gestation or 400 grams) and neonatal deaths (deaths of live born infants within 28 days of birth). Stillbirths and neonatal deaths are not presented separately because of the small numbers involved. Perinatal mortality rates are important measures of the health of mothers and babies, and also of the general health and wellbeing in the community. They are also indicators of the quality of antenatal care, the effectiveness of obstetric services and the quality of infant care in the hospital and the community.

Recent analysis using an area-based measure of socioeconomic position shows that children from the most disadvantaged areas are twice as likely to die as those from the least disadvantaged areas. Causes of perinatal mortality include pre-term birth, fetal growth restriction, congenital malformations, perinatal complications, antepartum haemorrhage and maternal conditions.

Particular risk factors for babies of Aboriginal mothers include underutilisation of antenatal services, younger mothers (under 20 years), lack of empowerment leading to low self-esteem and stress, and socioeconomic factors affecting Aboriginal women and families. Perinatal and neonatal mortality rates for babies born to Aboriginal mothers are twice as high as those for mothers who are non-Aboriginal. The higher rate of perinatal deaths of Aboriginal babies appears in both Victorian and national data. In Victoria such small numbers are involved that they can fluctuate from year to year and no trend can be reliably determined.

For more information:

Department of Human Services, *Aboriginal Services Plan Key Indicators 2005–06*.

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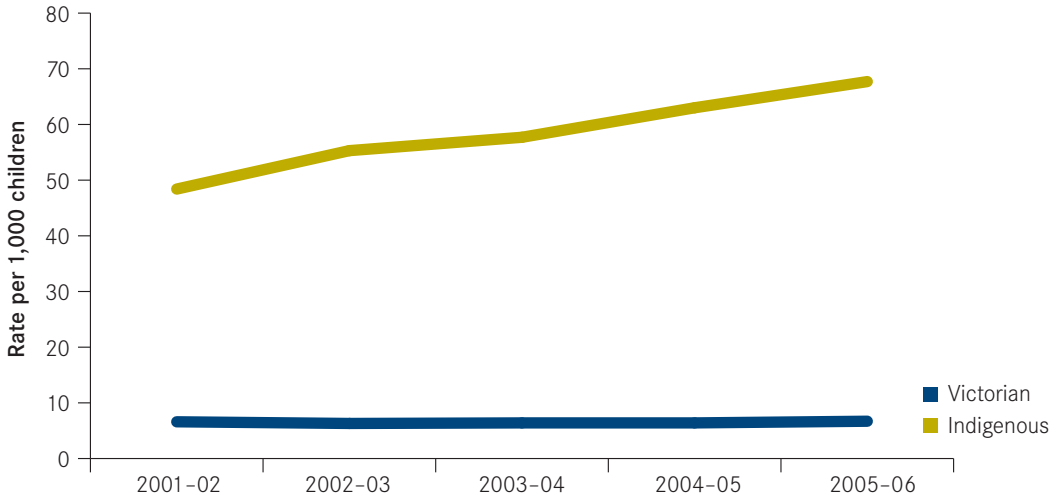
Child abuse

Child abuse or neglect substantiations rates, children aged 0–16 years, Victoria, 2001–02 to 2005–06



	2001-02	2002-03	2003-04	2004-05	2005-06
Victorians	6.6	6.3	6.4	6.4	6.7
Indigenous	48.4	55.3	57.7	63.0	67.7

Note: The data include only those cases of abuse and neglect that have come to the attention of child protection authorities.

Source: Australian Institute of Health and Welfare (AIHW), 2007, *Child protection Australia 2005–06*, Child welfare series no. 40. Catalogue no. CWS 28. Canberra: AIHW.

Abuse and neglect can have serious adverse consequences for young people. In the short–term, they are at risk of physical injuries or emotional trauma and disruptions to learning and development processes. in the long–term young people who have been subject to abuse are at increased risk of depression and self–injury. Child abuse and neglect is associated with a number of risk factors including poor parental mental health, economic stress and social disadvantage, family disruption and substance abuse.

In Australia, child protection is the responsibility of community services departments in each state and territory. Following reports of child abuse or neglect (known as notifications), the relevant department launches an investigation. Cases in which abuse or neglect is found to have occurred are known as substantiations, and can lead to an application for a care and protection order before a court.

The rate of substantiation increased almost 40 per cent among Aboriginal children over the five-year period reported above, while the rates among Victorian children as a whole showed relatively no change.

For more information

Australian Institute of Health and Welfare (AIHW), 2007, *Child protection Australia 2005–06*, Child welfare series no 40, Catalogue no CWS 28, Canberra: AIHW.

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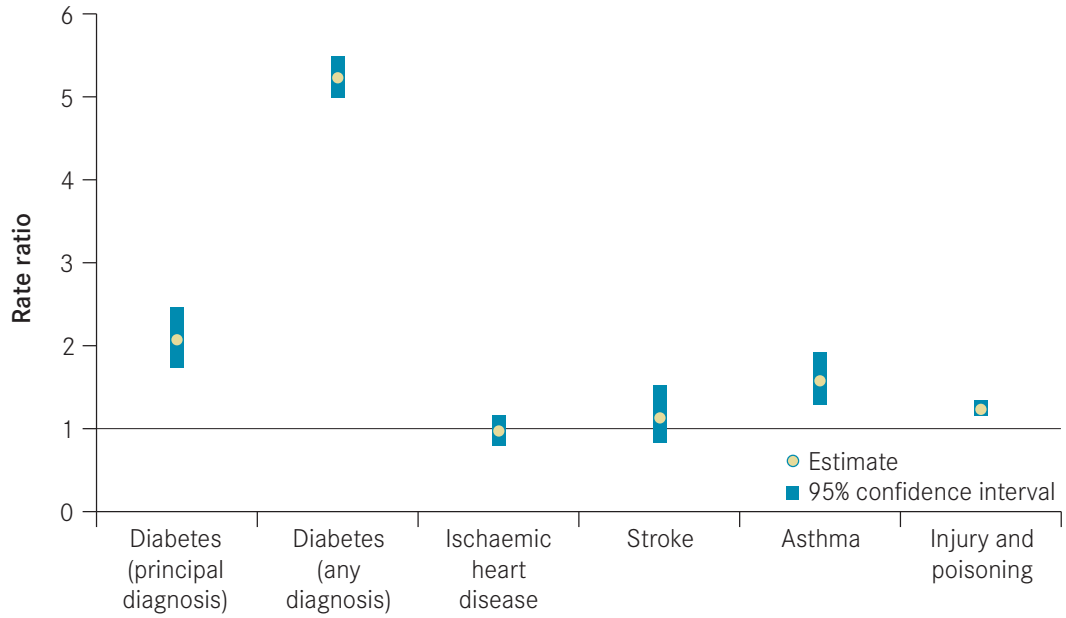
Hospital admissions for selected health priorities

Hospitalisation rates for Aboriginal persons, selected national health priority areas conditions (non-Aboriginal = 1), Victoria, 2005–06



Note: CI = confidence interval.

Source: Department of Human Services, Victorian Admitted Episodes Dataset, 2005–06.

While Aboriginal status is likely to be under-reported in the Victorian hospital data collection, in 2005–06 age-adjusted hospitalisation rates among Aboriginal people were higher than those for non-Aboriginal people for a range of health problems and disease conditions. The admission rate ratio for a primary diagnosis of diabetes mellitus among Aboriginal people was 2.07 (95% CI: 1.74–2.45), significantly above that for non-Aboriginal people. The admission rate ratio for any diagnosis of diabetes was 5.26 (95% CI: 5.02–5.51) for Aboriginal people. For ischaemic heart disease, the admission rate ratio was 0.96 (95% CI: 0.80–1.14), while that for stroke was 1.13 (0.84–1.51). The admission rate ratios for asthma and injury and poisoning were also significantly above those for non-Aboriginal individuals, at 1.58 (95% CI: 1.29–1.92) and 1.24 (1.16–1.33) respectively.

The Victorian Government's social policy action plan, *A Fairer Victoria*, aims to act in partnership with Aboriginal communities to break the cycle of disadvantage that leads to low rates of school achievement and high rates of unemployment, imprisonment and illness.

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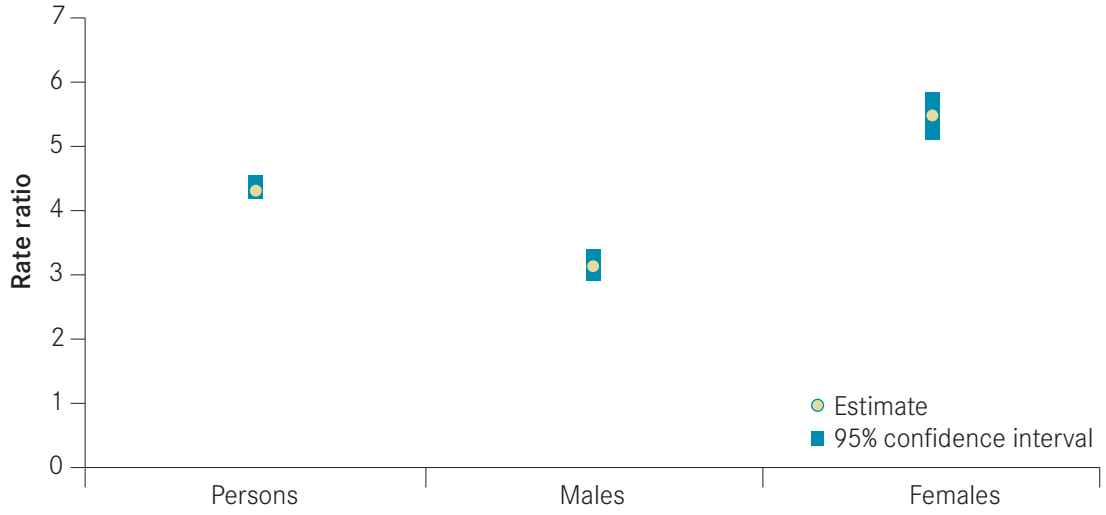
Ambulatory care sensitive conditions admissions

Total ACSCs rate ratios for Aboriginal persons (non–Aboriginal=1), by sex, Victoria 2005–06



Total ACSCs rate ratios, by Aboriginal status and sex, Victoria 2005–06

		Number of admissions	Standardised rate per 1,000 admissions	95% CI	Average bed days	Total bed days
Aboriginal	Females	1,446	225.9	214.5–237.8	3.0	4,303
	Males	1,133	144.4	136.2–153.0	3.5	3,918
	Persons	**2,579**	**185.6**	**178.6–192.9**	**3.2**	**8,221**
Non-Aboriginal	Females	106,914	39.6	39.4–39.9	4.9	519,723
	Males	106,175	38.8	38.6–39.1	4.9	516,008
	Persons	**213,089**	**39.2**	**39.1–39.4**	**4.9**	**1,035,731**

Note: CI = confidence interval.

Source: Department of Human Services, Victorian Admitted Episodes Dataset, 2005–06.

Ambulatory care sensitive conditions (ACSCs) are those for which hospitalisation is thought to be avoidable if preventive care and early disease management are applied, usually in an ambulatory setting.

The ACSCs admission rate ratios for Aboriginal males and females were 3.72 (3.51–3.94) and 5.70 (5.41–6.01) respectively, significantly above their non-Aboriginal counterparts. The admission rates for total ACSCs for Aboriginal people in Victoria in 2005–06 was 185.6 per 1,000 persons, compared with 39.2 per 1,000 for non-Aboriginal people. Total ACSCs admissions for Aboriginal persons accounted for 8,221 bed days, with an average length of stay of 3.2 bed days.

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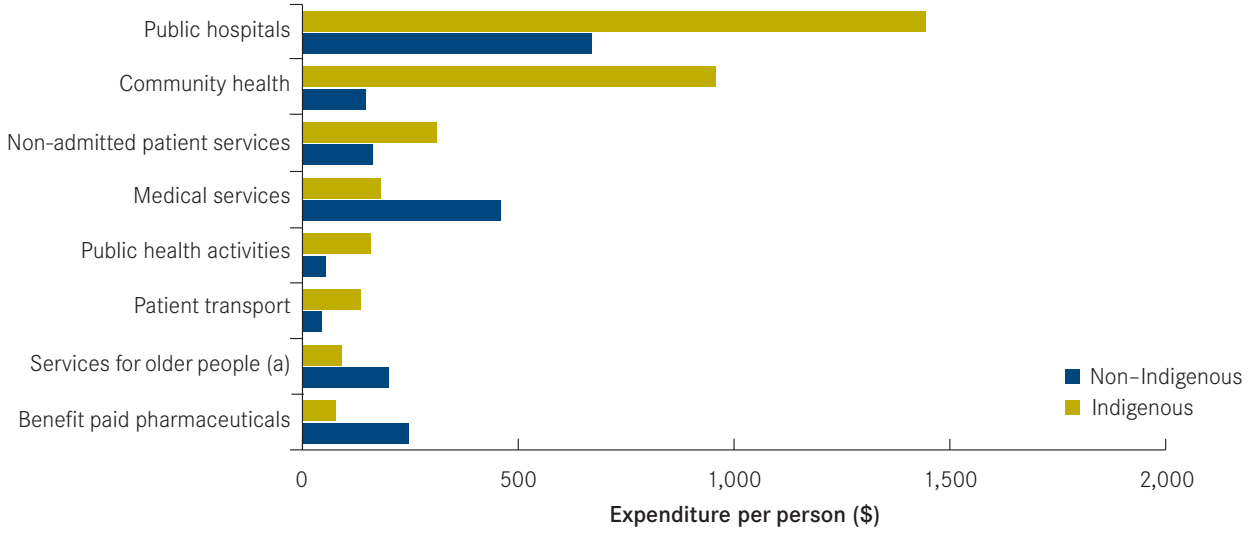
Per capita health expenditure

Total health expenditure per person by program, Aboriginal and non-Aboriginal Australians, 2001–02



Note: (a) services for older people includes high-level residential aged care.

Source: Department of Health and Ageing, *Health and ageing factbook 2006*.

Total expenditure on health services for all Australian Aboriginal (and Torres Strait Islander) people in 2001–02 was $1,788.6 million, or $3,901 per Aboriginal person, compared to total health expenditure of $3,308 per non-Aboriginal person. However, this extra spending on Aboriginal health is only marginal, given the poorer health status of Aboriginal Australians and the higher cost of delivering services in remote areas (where 26 per cent of the Aboriginal population live).

Aboriginal people were low users of mainstream medical and benefit paid pharmaceutical services covered by the Medicare Benefits Schedule (MBS) and the Pharmaceutical Benefits Scheme (PBS). For every dollar expended on non-Aboriginal people under the MBS, 39 cents were spent on Aboriginal people, while for every dollar expended on non-Aboriginal people under the PBS, 33 cents were spent on Aboriginal Australians.

Aboriginal Australians were also low users of private hospitals, private dental and other professional services, and services for older people (including high-level residential aged care). Aboriginal Australians have a greater reliance on publicly provided health services, particularly public hospitals (inpatient and outpatient care), community health services, including Aboriginal Community Controlled Health Services (ACCHSs) and patient transport.

For more information:

Department of Health and Ageing (DHA), 2006, *Health and ageing factbook 2006*. Canberra: Commonwealth of Australia.

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Self–assessed health and disability status

Self-assessed health and disability status in Aboriginal persons aged 15 years and over, Victoria 2002

Health and disability status	Per cent	RSE (%)
Self-assessed health status:		
Excellent	13.9	10.9
Very good	28.0	7.3
Good	29.9	7.0
Fair/poor	28.2	7.4
Disability status:		
Has a disability or long-term health condition		
Has profound core activity restriction	*3.5*	*22.7*
Has severe core activity restriction	*6.5*	*17.1*
Disability/restriction not defined	*34.3*	*5.9*
Total with a disability or long-term health condition	**44.3**	**4.8**
Has no disability or long-term health condition	55.7	3.8

Note: RSE = relative standard error (or the standard error expressed as a percentage of the estimate to which it refers). Proportions reported are age-standardised.

Source: Australian Bureau of Statistics, *National Aboriginal and Torres Strait Islander social survey 2002*, Catalogue no. 4714.2.55.001.

Self-assessed health status provides an indicator of overall health, based on an individual's perception of their own health. The measure depends on an individual's awareness and expectation of their health, and may be influenced by access to health services and health information (Cunningham et al., 1997).

Of Aboriginal people in Victoria, 28.2 per cent reported their health as fair or poor in 2002. Almost 45 per cent of Aboriginal people aged 15 years and over reported a disability or long-term health condition.

For more information

Australian Bureau of Statistics (ABS), *National Aboriginal and Torres Strait Islander social survey 2002*, Catalogue no 4714.2.55.001, Canberra: ABS.

Cunningham, J, Sibthorpe, B, Anderson, I, 1997, *Self-assessed health status, Indigenous Australians*, 1994, Occasional paper no. 4707.0, Canberra: Australian Bureau of Statistics.

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Risk behaviours

Risk behaviours/characteristics in persons aged 15 years and over, Victoria 2002

Risk behaviour/characteristics	Per cent	RSE (%)
Smoker status		
Current daily smoker	51.8	4.8
Occasional smoker	2.2	36.7
Ex-smoker	20.1	10.4
Never smoked	26.0	8.0
Alcohol consumption level in previous 12 months[(a)]		
Low risk	47.9	5.0
Risky	11.5	12.2
High risk	5.4	18.2
Did not consume alcohol in previous 12 months	24.8	8.1
Type of substances used in previous 12 months[(b)(c)]		
Used substances in previous 12 months		
Analgesics and sedatives for non-medical use[(d)]	*8.5*	*16.4*
Amphetamines or speed	*9.2*	*14.5*
Marijuana, hashish or cannabis resin	*21.9*	*9.0*
Kava	*1.5*	*38.5*
Total used substances in previous 12 months[(e)]	***29.0***	***7.4***
Has used substances, but not in previous 12 months	18.6	9.2
Has never used substances	43.6	4.9

Notes: RSE = relative standard error (obtained by expressing the standard error as a percentage of the estimate to which it refers).

(a) Average daily consumption of alcohol is derived from reported consumption in the seven days prior to interview. The alcohol consumption risk levels are defined separately for males and females. For males the risk levels for consumption per day are: less than 50 mL (low risk); 50–75 mL (medium risk); and more than 75 mL (high risk). For females, the risk levels for consumption per day are: less than 25 mL (low risk); 25–50 mL (medium risk); and more than 50 mL (high risk). Risk levels are based on regular consumption levels of alcohol.

(b) Respondents may have indicated more than one response category.

(c) Data for substances used in the previous 12 months are available only for persons in non-remote areas. Respondents may indicate more than one response category in respect of type of substances used. Analgesics and sedatives for non-medical use include painkillers, tranquilisers and sleeping pills. Total substances used include heroin, cocaine, hallucinogens, designer drugs, petrol and other inhalants.

(d) Includes painkillers, tranquilisers and sleeping pills.

(e) Includes heroin, cocaine, hallucinogens, designer drugs, petrol and other inhalants.

Source: Australian Bureau of Statistics, *National Aboriginal and Torres Strait Islander social survey 2002*, Catalogue no. 4714.2.55.001.

Smoking is the main cause, or a significant cause, of many diseases, including cancer and cardiovascular disease, and is one of the leading causes of death. Of the Aboriginal people in Victoria, 51.8 per cent were current smokers in 2002. Among Aboriginal males aged 15 years and over, almost half (48.1 per cent) were current smokers. More than half of Aboriginal females aged 15 years and over were current smokers (55.1 per cent).

Excessive alcohol consumption over time increases the risk of chronic ill health and premature death (NHMRC, 2001). Individuals who consume alcohol can be classified as having a health risk level (low, risky or high) based on their estimated average daily consumption of alcohol during the previous week. Almost three–quarters (72.7 per cent) of the Aboriginal population either drank no alcohol in the previous 12 months (24.8 per cent) or drank at a level that posed

no risk to health (47.9 per cent). More than one in ten (11.5 per cent) Aboriginal persons drank alcohol at levels that are risky in the sense that the risk of harm exceeds possible benefits. A further 5.4 per cent of Aboriginal persons consumed alcohol at high risk levels, where substantial risk of serious harm exists.

Almost 30 per cent of Aboriginal people had used one or more substances in the previous 12 months. More than 20 per cent had used marijuana, hashish or cannabis resin in this period, and 8.5 per cent had used analgesics or sedatives in non-medical ways or speed and amphetamines (9.2 per cent).

For more information

National Health and Medical Research Council, 2001, *Australian alcohol guidelines: health risks and benefits*, Canberra: NHMRC.

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Risk behaviour and chronic disease

Aboriginal persons aged 35 years and over: proportion of people with condition who reported a risk behaviour, Australia, 2004–05

	Current daily smoker Per cent	Overweight/ obese (a) Per cent	Sedentary/low level exercise (b) Per cent	All persons aged 35 years and over with condition '000
Diabetes (c)	33.7	83.4	83.6	24.8
Cardiovascular disease	43.7	76.5	86.0	42.6
Kidney disease	37.0	68.8	90.5	5.2
Total proportion of Aboriginal persons aged 35 years and over with risk behaviour	**47.4**	**68.2**	**81.6**	**131.8**
	Per cent	**Per cent**	**Per cent**	**'000**
Total persons aged 35 years and over with none of the above three conditions	**51.1**	**62.7**	**79.2**	**76.9**

Note: (a). Proportions calculated excluding persons for whom BMI was not known.
(b). Non-remote areas only.
(c). Includes high sugar levels.

Source: ABS, *Selected chronic conditions among Aboriginal and Torres Strait Islander Peoples*, Australian social trends 2007.

Diabetes, cardiovascular disease and kidney disease are conditions which develop over the course of a lifetime. In most cases, these conditions can be prevented or at least delayed by modifying common risk factors, which include obesity, smoking and low levels of physical activity. Also, after the diagnosis of a chronic condition individuals may modify their risk behaviour, for example, by increasing their exercise level or by giving up smoking. As with many chronic diseases, the causes are complex and can be interrelated. For example, smoking and physical inactivity can significantly increase the risk of chronic kidney disease. Physical inactivity can also indirectly increase the risk of kidney disease by influencing the development of Type 2 diabetes. In 2004–05, 47 per cent of Aboriginal people aged 35 years and over were current daily smokers and 68 per cent were overweight or obese. Almost 82 per cent reported sedentary/low level of exercise.

For more information

Australian Bureau of Statistics (ABS), *Selected chronic conditions among Aboriginal and Torres Strait Islander peoples*, Australian social trends 2007, Canberra: ABS.

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Rural/regional populations

In this chapter

Summary

In 2006 approximately 73 per cent of the state's population lived in metropolitan areas, and 27 per cent lived in rural/regional areas. More than 91.6 per cent of Victoria is classified as highly accessible and 7.3 per cent is classified as accessible, based on the Accessibility/Remoteness Index of Australia (ARIA). Nonetheless, there is some variability within departmental regions with respect to the degree of remoteness of populations from services.

The concept of preventable or avoidable hospitalisation has been developed as an indicator of access to and outcomes of primary care. Hospital admission rate ratios for total ambulatory care sensitive conditions (ACSCs) varied significantly by degree of remoteness, as measured by ARIA. In Victoria admission rate ratios (Victoria=1) for total ACSCs were 1.26 (95% CI: 1.23–1.29) in moderately accessible areas (ARIA 3.51–5.80); 1.20 (1.19–1.22) in accessible areas (ARIA 1.84–3.51); and 0.98 (0.97–0.98) in highly accessible areas (ARIA 0–1.84).

Admission rate ratios for the top ten ACSCs in areas categorised as lower in accessibility were mostly higher than for areas with higher accessibility. The highest ACSC admission rate ratio was 1.59 (95% CI: 1.46–1.72) for dental conditions (highly accessible = 1), indicating that hospital admissions for dental conditions were approximately 60 per cent higher in moderately accessible areas, compared with those in highly accessible areas of the Victoria.

Degree of remoteness has been identified as a factor leading to differential rates of hospitalisation for selected health priority areas. In Victoria in 2005–06 the admission rate for diabetes (any diagnosis) was 21 per cent higher in areas that were moderately accessible, compared to highly accessible areas; however, osteoporosis admission rates were 33 per cent lower.

Accessibility/Remoteness Index of Australia

The Accessibility/Remoteness Index of Australia (ARIA) uses a geographical approach to defining remoteness, based on road distance measurements from 11,340 populated localities in Australia to the nearest of a number of categories of service centres, which are based on population size. ARIA provides a comparable index of remoteness that is precise and stable over time, covering the whole of Australia. It deals with remoteness in terms of access as a separate dimension of areas, apart from other variables such as socio-economic status, rurality and population size.

ARIA measures remoteness in terms of access via the road network from population localities to categories of service centre. It describes the distance that people have to travel to obtain services, including health care services. Populated localities are the places where people come from, and service centres are where they go to. Four categories of service centre exist (population localities with a population greater than 5,000 persons):

Categories of service centres

Service centre category	Urban centre population
A	250,000 persons or more
B	48,000–249,999 persons
C	18,000–47,999 persons
D	5,000–17,999 persons

The continuous score for a populated locality is obtained by adding four distance measurements (one for each level of service centre) and standardising to a ratio of the mean for that category. It has values ranging from 0 to 12.

One of the advantages of ARIA is its flexibility. It can be aggregated to a range of spatial units (for example, from a local government area to a region) and used as a continuum or as a classification. Five ARIA categories exist across Australia:

1. **Highly accessible** (ARIA score 0–1.84): relatively unrestricted accessibility to a wide range of goods, services and opportunities for social interaction.
2. **Accessible** (ARIA score 1.84–3.51): some restrictions to accessibility of some goods, services and opportunities for social interaction.
3. **Moderately accessible** (ARIA score 3.51–5.80): significantly restricted accessibility to goods, services and opportunities for social interaction.
4. **Remote** (ARIA score 5.80–9.08): very restricted accessibility to goods, services and opportunities for social interaction.
5. **Very remote** (ARIA score 9.08–12.0): locationally disadvantaged, very little accessibility to goods, services and opportunities for social interaction.

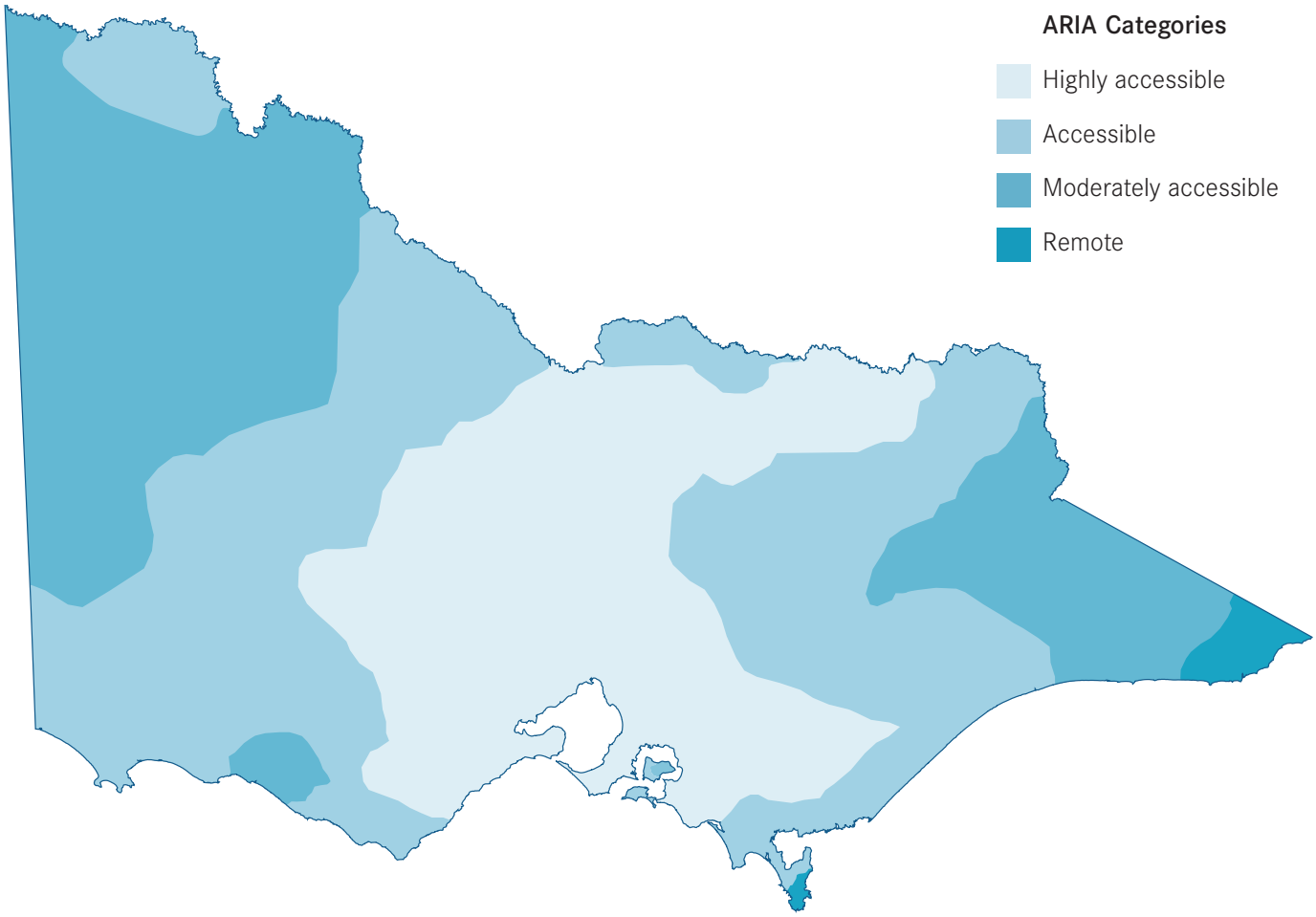
Aggregation at the local government area (LGA) level (based on the median ARIA value for the LGAs in a region) reduces the number of ARIA categories in Victoria to the three (highly accessible, accessible and moderately accessible), which are used in the analyses reported in this chapter.

For more information:

Department of Health and Aged Care and National Key Centre for Social Applications of Geographical Information Systems (GISCA), 1999, *Measuring remoteness: Accessibility/Remoteness Index of Australia (ARIA)*, Occasional papers, New series no 6, Canberra.

Accessibility/remoteness within Victoria

Accessibility/remoteness, by local government area and region



ARIA classifications by Department of Human Services region, Victoria, June 2001

Region	ARIA Category range	ARIA score range Low	High
Barwon-South Western	Accessible to highly accessible	1.3	2.2
Grampians	Accessible to highly accessible	1.7	2.9
Loddon Mallee	Moderately accessible to highly accessible	1.5	2.8
Hume	Moderately accessible to highly accessible	1.2	2.5
Gippsland	Moderately accessible to highly accessible	1.5	3.4
Rural/regional Victoria	*Moderately accessible to highly accessible*	*1.4*	*2.7*
North and West Metropolitan region	Highly accessible	0.0	1.1
Eastern Metropolitan region	Highly accessible	0.0	0.5
Southern Metropolitan region	Highly accessible	0.0	0.5
Metropolitan Melbourne	*Highly accessible*	*0.0*	*0.4*
Victoria	**Moderately accessible to highly accessible**	**0.0**	**6.6**

Note: ARIA = Accessibility/Remoteness Index of Australia. ARIA is derived from the road distance of 11,340 populated localities in 201 towns of specified size ('service centres') across Australia. For each locality, distances are converted to a continuous measure from 0 (high accessibility) to 12 (high remoteness) and grouped into five categories: highly accessible, accessible, moderately accessible, remote and very remote. The ARIA index does not provide specific information about the accessibility of health services. Average ARIA scores are derived from local government area ARIA scores.

Source: National Key Centre for Social Applications of Geographic Information Systems (GISCA), 2001.

According to ARIA, more than 91.6 per cent of Victoria is classified as highly accessible, 7.3 per cent is classified as accessible and 1.2 per cent is classified as moderately accessible. Nonetheless, there is some variability within regions in terms of the degree of remoteness, and the applicable accessibility category, based on ARIA. In interpreting ARIA it is important to note that it is a geographically–based index that focuses on access to all services, not just health care services. Using road distance to quantify the accessibility of health–related services may be simplistic to the extent that time travelled, terrain and the availability of public transport are all factors that may impinge on ease of access.

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Area, population and proximity to Melbourne

Area, population and proximity to Melbourne, by Department of Human Services region

Region	Estimated resident population 2006[a] Number	Per cent	Average distance to Melbourne (km)	Average travel time to Melbourne (minutes)	Area (km²)
Barwon-South Western	355,297	7	202.5	121.4	29,635
Grampians	214,638	4	213.4	127.9	47,980
Loddon Mallee	304,511	6	242.6	145.1	59,149
Hume	261,067	5	230.2	132.3	40,427
Gippsland	247,720	5	171.5	104.0	41,538
Rural/regional Victoria	*1,383,233*	*27*	*216.1*	*128.3*	*218,730*
North and West Metropolitan	1,525,119	30	N/A	N/A	2,980
Eastern Metropolitan	998,908	19	51.1	38.0	2,966
Southern Metropolitan	1,220,955	24	51.5	33.8	2,888
Metropolitan Melbourne	*3,744,982*	*73*	*48.2*	*32.9*	*8,834*
Victoria	**5,128,310[a]**		**136.4**	**81.5**	**227,564**

Note: (a) Includes 95 persons resident in unincorporated areas. Distance to Melbourne reflects the distance by road from the geographic centre of the region to the Melbourne GPO by the shortest practical route. The travel time in minutes represents the travel time from the geographic centre of the region to the Melbourne GPO at the maximum legal speed under ideal conditions (that is, without interference from stop signs, red lights, or heavy traffic, and under good conditions), via the quickest practical route. Although this travel time is unlikely to be achieved, it provides an indication of relative travel times between two places.

Source: MapInfo Drivetime; Australian Bureau of Statistics, Estimated resident population.

Approximately 73 per cent of the state's population lived in metropolitan areas in 2003. The remaining 27 per cent lived in rural and regional areas.

Among the rural health regions in Victoria, the average distance to Melbourne is greatest for people living in Loddon Mallee Region, which is also the largest region in terms of area. Locations in Gippsland Region have the shortest average distance to Melbourne, whereas Barwon–South Western Region is the smallest of the rural regions in terms of area.

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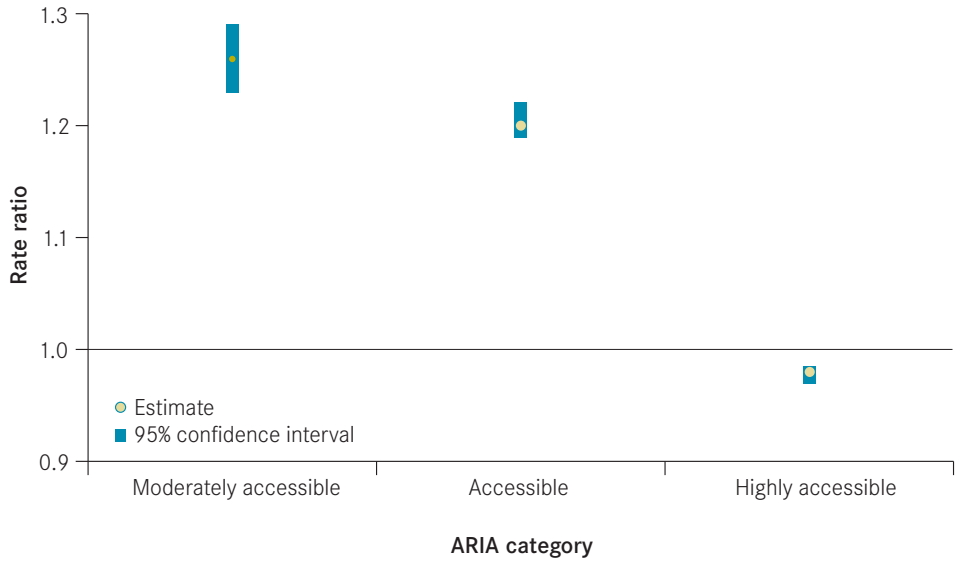
Ambulatory care sensitive conditions

Total ACSCs admission rate ratios, by ARIA score category (Victoria=1), Victoria, 2005–06



ARIA score category	Rate ratio	95% CI
Moderately accessible	1.26	1.23–1.29
Accessible	1.20	1.19–1.22
Highly accessible	0.98	0.97–0.98

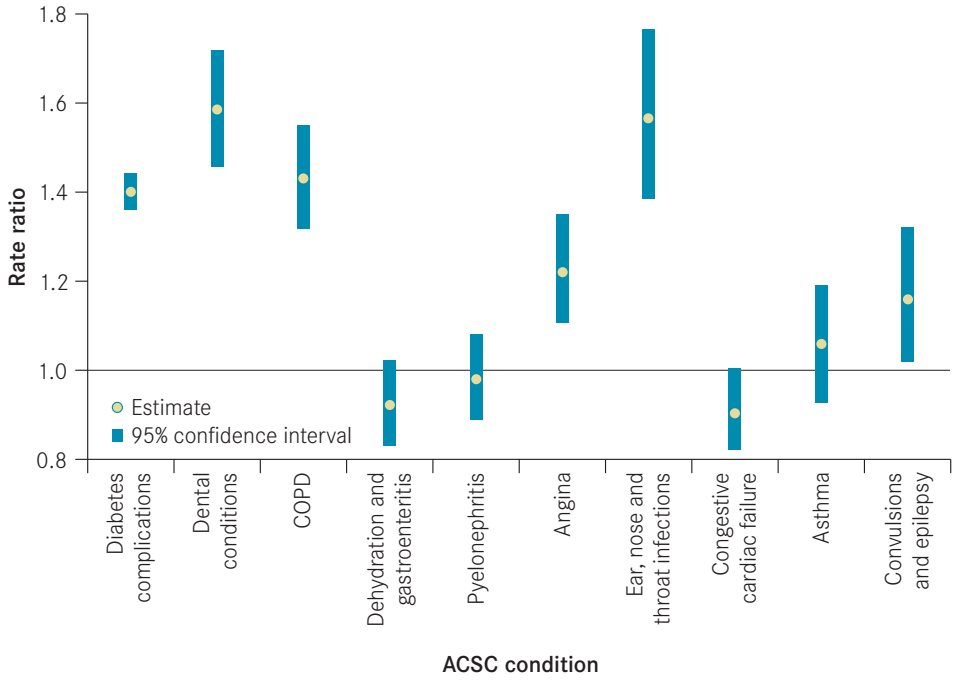
Note: CI = confidence interval. Reference ARIA category is highly accessible (ARIA score (0.00–1.84).

Source: Department of Human Services, Victorian Admitted Episodes Dataset, 2005–06.

Ambulatory care sensitive conditions (ACSCs) are those for which good outpatient care, or ambulatory care, can potentially prevent the need for hospitalisation, or for which early intervention can prevent complications or more severe disease (see Appendix, Table 2 for a full list of ACSCs). The concept of preventable or avoidable hospitalisation has been developed as an indicator of access to and outcomes of primary care. Better access to primary health care prevents unnecessary hospitalisations and improves the health status of the population.

Analyses from the *Victorian ambulatory care sensitive conditions study* identified significant differentials and inequalities in access to the primary health care system in Victoria. Admission rate ratios for total ACSCs varied significantly by degree of remoteness, as measured by ARIA. In Victoria admission rate ratios (Victoria=1) for total ACSCs were 1.26 (95% CI: 1.23–1.29) in moderately accessible areas (ARIA 3.51–5.80), 1.20 (1.19–1.22) in accessible areas (ARIA 1.84–3.51), and 0.98 (0.97–0.98) in highly accessible areas (ARIA 0–1.84).

Top ten ACSCs admission rate ratios, ARIA 1 (moderately accessible areas), (highly accessible = 1), Victoria, 2005–06



	ACSC condition	Rate Ratio	95% CI
1	Diabetes complications	1.40	1.36–1.44
2	Dental conditions	1.59	1.46–1.72
3	Chronic obstructive pulmonary disease	1.43	1.32–1.55
4	Dehydration and gastroenteritis	0.92	0.83–1.02
5	Pyelonephritis	0.98	0.89–1.08
6	Angina	1.22	1.11–1.35
7	Ear, nose and throat infections	1.57	1.39–1.77
8	Congestive cardiac failure	0.90	0.82–1.00
9	Asthma	1.06	0.93–1.19
10	Convulsions and epilepsy	1.16	1.02–1.32

Notes: CI = confidence interval. Reference ARIA category is highly accessible (ARIA score (0.00–1.84).

Source: Department of Human Services, Victorian Admitted Episodes Dataset, 2005–06.

The top ten ambulatory care sensitive conditions (ACSCs) in Victoria vary significantly by degree of remoteness as measured by ARIA. Admission rate ratios for the top ten ACSCs in areas categorised as lower in accessibility were mostly higher than for areas with higher accessibility. The highest admission rate ratio was 1.59 (95% CI: 1.46-1.72) for dental conditions (highly accessible=1), indicating that hospital admissions for dental conditions were approximately 60 per cent higher in moderately accessible areas, compared with those in highly accessible areas of the Victoria. Analyses of hospital admissions for individual ACSCs have identified gaps in the delivery of primary health care services in rural and regional Victoria. In this way, they offer opportunities to improve planning of specific public health and health services interventions to reduce access barriers, improve the adequacy of primary care and reduce demand on the hospital system in Victoria.

For more information

Department of Human Services (Rural and Regional Health and Aged Care Services Division), 2002, the *Victorian ambulatory care sensitive conditions study: opportunities for targeting public health and health services interventions*, Melbourne: www.health.vic.gov.au/healthstatus/acsc/targetinterventions.htm

Department of Human Services, Health Status website: www.health.vic.gov.au/healthstatus

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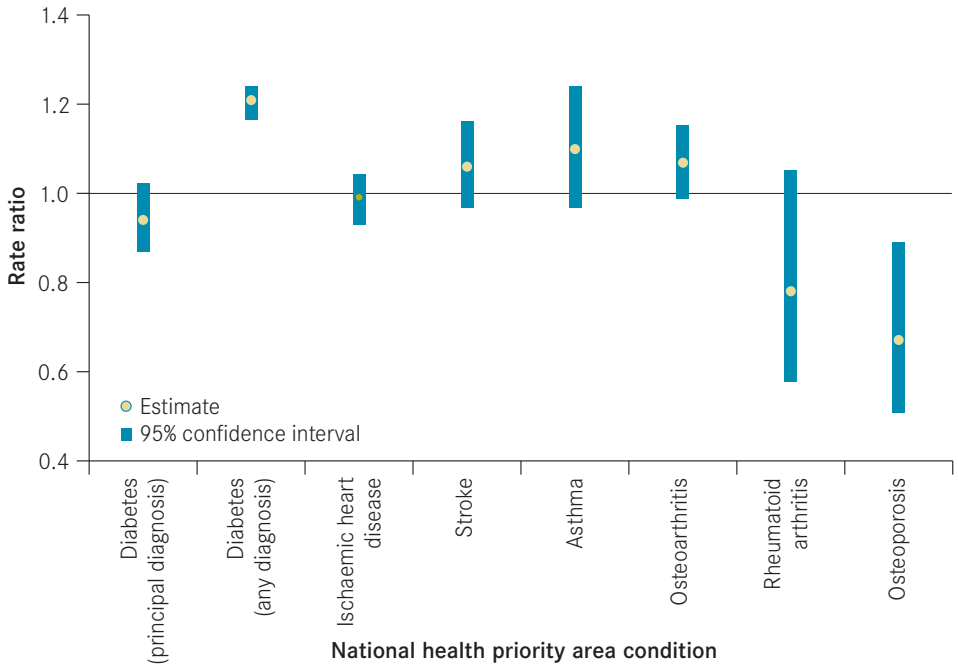
Selected health priority area conditions by ARIA

Selected health priority area conditions admission rate ratios, by ARIA 1 (moderately accessible), (highly accessible = 1), Victoria, 2005–06



National health priority area condition	Rate ratio	95% CI
Diabetes (principal diagnosis)	0.94	0.87–1.02
Diabetes (any diagnosis)	1.21	1.17–1.24
Ischaemic heart disease	0.99	0.93–1.04
Stroke	1.06	0.97–1.16
Asthma	1.10	0.97–1.24
Osteoarthritis	1.07	0.99–1.15
Rheumatoid arthritis	0.78	0.58–1.05
Osteoporosis	0.67	0.51–0.89

Notes: CI = confidence interval. Reference ARIA category is highly accessible (ARIA score (0.00–1.84).

Source: Department of Human Services, Victorian Admitted Episodes Dataset, 2005–06.

Degree of remoteness was identified as a factor leading to differential rates of hospitalisations for selected health priority areas (NHPAs) in Australia. Those living in remote areas, for example, were hospitalised for diabetes at over twice the rate of their counterparts in metropolitan areas (AIHW, 1998). Hospitalisation rates may be affected by several factors in remote areas, including a greater propensity to admit to hospital due to the lack of alternative care options.

Degree of remoteness was also associated with higher admission rates for diabetes (any diagnosis). In moderately accessible areas, admission rates for diabetes (any diagnosis) was 21 per cent higher; however, osteoporosis admission rates were 33 per cent lower in moderately accessible areas, compared to highly accessible areas.

For further information

Australian Institute of Health and Welfare (AIHW), 1998, *Health in rural and remote Australia*, AIHW Cat no PHE 6. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) website, www.aihw.gov.au/nhpa/index.cfm

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Socioeconomically disadvantaged populations

In this chapter

- introduction
- life expectancy at birth
- self-rated health status
- ambulatory care sensitive conditions
- selected national health priority areas
- lifestyle factors (smoking, diet, alcohol, physical activity, body weight)

Summary

Socioeconomic disadvantage is typically associated with low income, high unemployment and low levels of education. The Index of Relative Socio-Economic Disadvantage (IRSED) is widely used to categorise geographical areas based on their social and economic characteristics. It measures the average disadvantage of all people who live in a geographic area. Quintiles of relative socio-economic disadvantage were identified using IRSED scores for local government areas (LGAs), such that each quintile contained approximately 20 per cent of the Victorian population. Quintile 1 (Q1) represents the fifth of the population living in the most relatively disadvantaged LGA areas and quintile 5 (Q5) represents the fifth of the population residing in the least relatively disadvantages LGA areas.

Between 1996 and 2006 life expectancy at birth for males born in the least disadvantaged population quintile improved from 78.0 to 81.4 years, while for males born in the most disadvantaged population quintile, it rose from 74.6 to 78.9 years. The gap in male life expectancy at birth between the most and least advantaged population quintiles decreased from 3.3 to 2.5 years. Over the same period, the gap in female life expectancy at birth between the most and least advantaged population quintiles decreased from 2.2 to 1.6 years.

The concept of preventable or avoidable hospitalisation has been developed as an indicator of access to and outcomes of primary care. Ambulatory care sensitive conditions (ACSCs) are those for which any need for hospital care may be able to be avoided by providing timely and effective care in the community. Admission rates for total ACSCs varied from 50.2 per 1,000 persons (95% CI: 49.8–50.6) for individuals living in areas in the most disadvantaged quintile (Q1) to 34.6 per 1,000 persons (34.3–35.0) for individuals in the least disadvantaged quintile (Q5).

Admission rate ratios for individuals in the most disadvantaged quintile were significantly higher in 2005–06, than the Victorian averages for eight of the top ten ACSCs admissions (diabetes complications, COPD, pyelonephritis, congestive heart failure, asthma, angina, cellulitis and iron deficiency anaemia).

The admission rates for diabetes on first diagnosis (principal) ranged from 4.6 per 1,000 persons (95% CI: 4.6–4.9) in Q1 to 2.9 per 1,000 persons (2.8–3.0) in Q5.

The admission rates for ischaemic heart disease (IHD) varied between 8.1 per 1,000 persons (95% CI: 8.0–8.3) in Q1 and 5.8 per 1,000 persons (5.7–6.0) in Q5.

The admission rates for stroke ranged from 2.9 per 1,000 persons (95% CI: 2.8–3.0) in Q1 to 2.3 per 1,000 persons (2.2 2.4) in Q5.

Admission rates in 2005 06 for asthma varied from 2.1 per 1,000 persons (95% CI:2.0 2.2) in Q1 to 1.4 per 1,000 persons (1.3–1.5) in Q5 .

Introduction

Over the last century significant achievements were made in public health in Victoria, including reductions in premature mortality from most diseases.[1] However, the evidence on socioeconomic status (SES) and health in Australia, taken as a whole, is unequivocal: those who occupy positions at lower levels of the socioeconomic hierarchy fare significantly worse in terms of their health. Specifically, persons variously classified as 'low' SES have higher mortality rates for most major causes of death, their morbidity profile indicates that they experience more ill-health (both physiological and psychosocial), and their use of health care services suggests that they are less likely to act to prevent disease or detect it at an asymptomatic stage. Moreover, socioeconomic differences in health are evident for both females and males at every stage of the life-course (birth, infancy, childhood and adolescence, and adulthood), and the relationship exists irrespective of how SES and health are measured.[2]

Multilevel actions to reduce health inequalities should include changes to macro-level social and economic policies, improving living and working conditions, strengthening communities for health, improving behavioural risk factors, empowering individuals and strengthening their social networks, and improving responses from the healthcare system and associated treatment services. Australia has yet to develop a coordinated and integrated approach to addressing health disparities; however, previously successful public health interventions addressing other health issues are good starting points.[3] Tackling socioeconomic health inequalities represents one of Australia's most challenging public health issues. Research demonstrates that the role of physicians and other health professionals, as advocates for change in the delivery of health services, public health policy and other community-wide initiatives, is extremely important in reducing mortality and improving health outcomes.

Arguments for and against the relative merits of one or another socioeconomic indicator have been proposed. Such studies typically seek to identify the 'independent impact' of a particular socioeconomic determinant on health, while adjusting for one or more additional indicators. The purpose, then, was to find the most important socioeconomic indicator. While such an approach may have merits in its own right, it nevertheless overlooks the complex socioeconomic pathways through which health inequalities are produced. Some part of the effect of each socioeconomic indicator on health is either explained by or mediated through other socioeconomic indicators. Instead of being interchangeable, socioeconomic indicators are partially independent and partially interdependent determinants of health. Educational attainment is usually acquired by early adulthood. The specific nature of education is knowledge and other non-material resources that are likely to promote healthy lifestyles. Education also provides formal qualifications that contribute to the socioeconomic status of destination through occupation and income. Occupation-based social class relates people to social structure. Occupational social class positions indicate status and power, and reflect material conditions related to paid work. Individual and household incomes derive primarily from paid employment. Income provides individuals and families necessary material resources and determines their purchasing power. Thus income contributes to resources needed in maintaining good health. Education is typically acquired first over the life course. Education contributes to occupational class position, and through this, to income. The effect of education on income is assumed to be mediated mainly through occupation.[4]

The Index of Relative Socio-Economic Disadvantage (IRSED) developed by the Australian Bureau of Statistics using 2001 population and housing census data, is used to categorise geographical areas based on their social and economic characteristics (ABS, 2003, 2004). Socioeconomic disadvantage is typically associated with low income,

1. Piers, LS, Carson, NJ, Brown, K, Ansari, Z, 2007, 'Avoidable mortality in Victoria between 1979 and 2001', *Australian and New Zealand Journal of Public Health,* Volume 31, pp. 5–12.
2. Turrell, G, Oldenburg, B, McGuffog, I, Dent, R, 1999, *Socioeconomic determinants of health: towards a national research program and a policy and intervention agenda*, Queensland University of Technology, School of Public Health, AusInfo, Canberra.
3. Oldenburg, B, McGuffog, I, Turrell, G, 2000, 'Socioeconomic determinants of health in Australia: policy responses and intervention options,' *Medical Journal of Australia,* Volume 172, pp. 489–492.
4. Lahelma, E, Martikainen, P, Laaksonen, M, Aittomäki, A, 2004, 'Pathways between socioeconomic determinants of health', *Journal of Epidemiology and Community Health*, Volume 58, pp. 327–332.

high unemployment and low levels of education. The IRSED is derived from multiple area-based indicators (see Adhikari (2006) for a full list of variables and corresponding weights used for IRSED) of socio-economic relative disadvantage including:

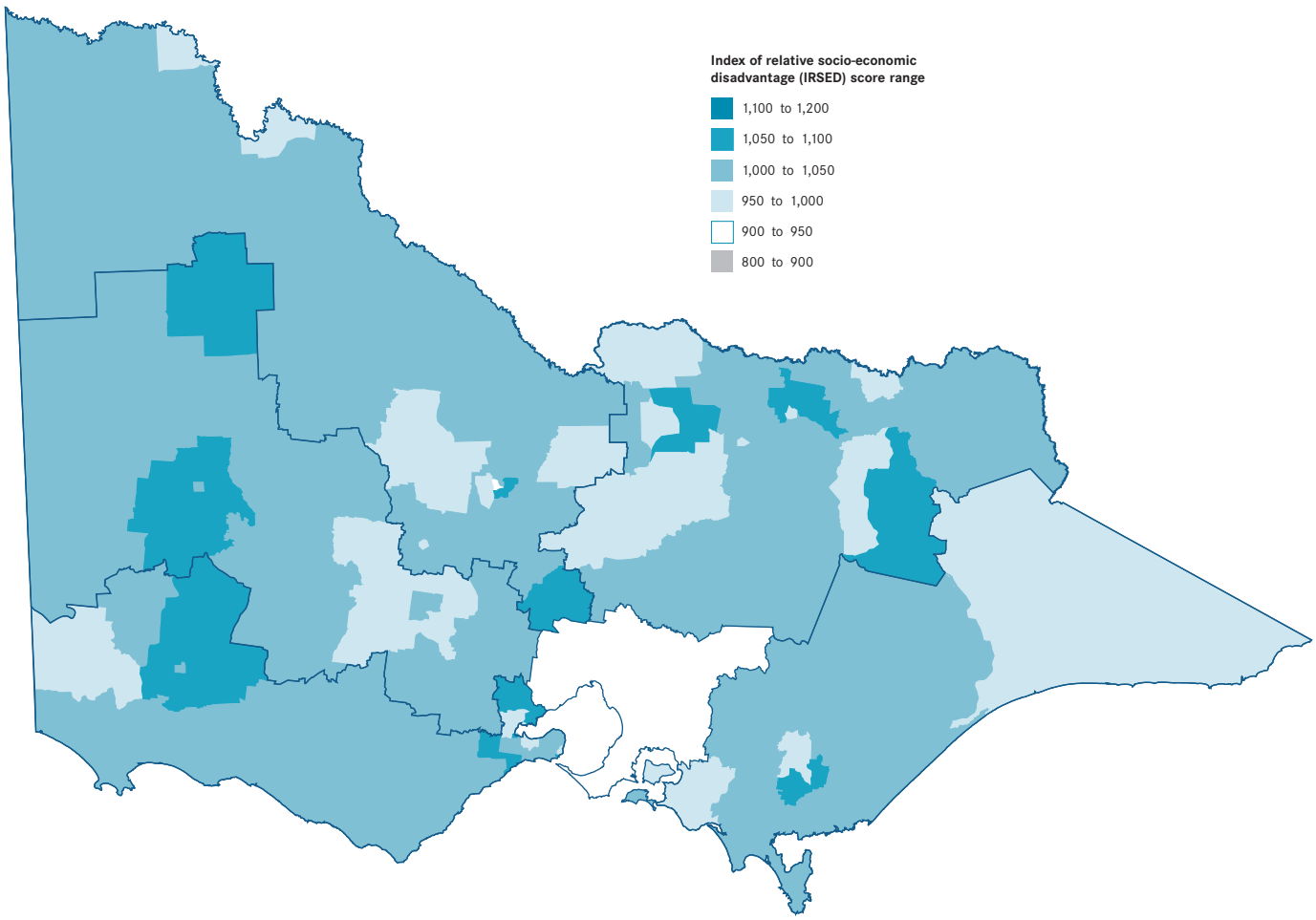
- percentage of persons aged 15 years and over with no qualifications
- percentage of families with income less than $15,000
- percentage of families with offspring having parental income less than $15,000
- percentage of females (in the labour force) unemployed
- percentage of males (in the labour force) unemployed
- percentage of employed females classified as 'labourer and related workers'.

The IRSED is compiled initially at the collector's district (CD) level – a census data collection unit that, in urban areas, is broadly equivalent to a small group of suburban blocks – and aggregated into larger geographic areas. The reference score for Australia is set to 1,000.

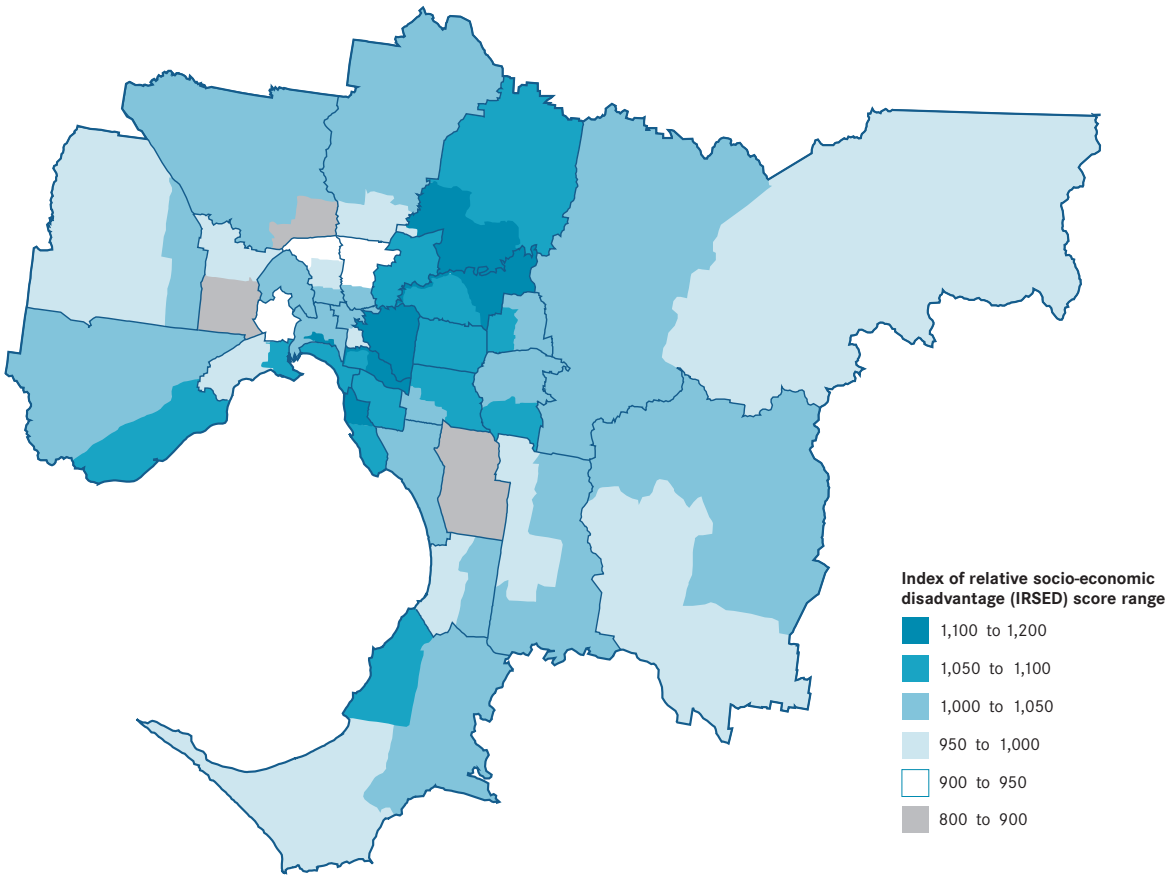
It is important to note that IRSED refers to the average disadvantage of all people who live in a geographic area and cannot be assumed to apply to all individuals living in the area. Because the index only summarises variables that indicate disadvantage, a lower score (less than 1,000) indicates that the population in an area includes many low income families, individuals with little training and working in unskilled occupations and. may be considered as disadvantaged relative to other areas. A higher score (more than 1,000) implies that an area has fewer families with low incomes, fewer individuals with little or no training and fewer individuals working in unskilled occupations. Areas with higher index scores may be considered as less disadvantaged relative to other areas.

Index of relative socio-economic disadvantage score, Victoria 2001

(a) Rural and regional Victoria



(b) Metropolitan Melbourne area



This report uses IRSED scores for local government areas (LGAs), which are constructed by computing weighted average scores (based on population census counts) across all CDs within an LGA. In aggregate, LGAs cover the whole of Australia without gaps and overlaps. For the analyses in this report, LGAs were grouped into quintiles so that each contained approximately 20 per cent of the Victorian population. Quintile 1 (Q1) represents the fifth of the population living in the most relatively disadvantaged LGA areas and quintile 5 (Q5) represents the fifth of the population residing in the least relatively disadvantaged LGA areas. These two quintiles are sometimes referred to as 'end–quintiles'.

For more information:

Adhikari, P, 2006, Socio–economic indexes for areas: introduction, use and future directions, Research paper, Catalogue no 1351.0.055.015, Canberra: Australian Bureau of Statistics.

Australian Bureau of Statistics (ABS), 2003, *Socio-economic indexes for areas Australia 2001*, Catalogue no 2039.0, Canberra: ABS.

Australian Bureau of Statistics, 2004, *Census of population and housing: Socio-economic indexes for area's (SEIFA), Australia 2001*, Technical Paper, Catalogue no. 2039.0.55.001, Canberra: ABS.

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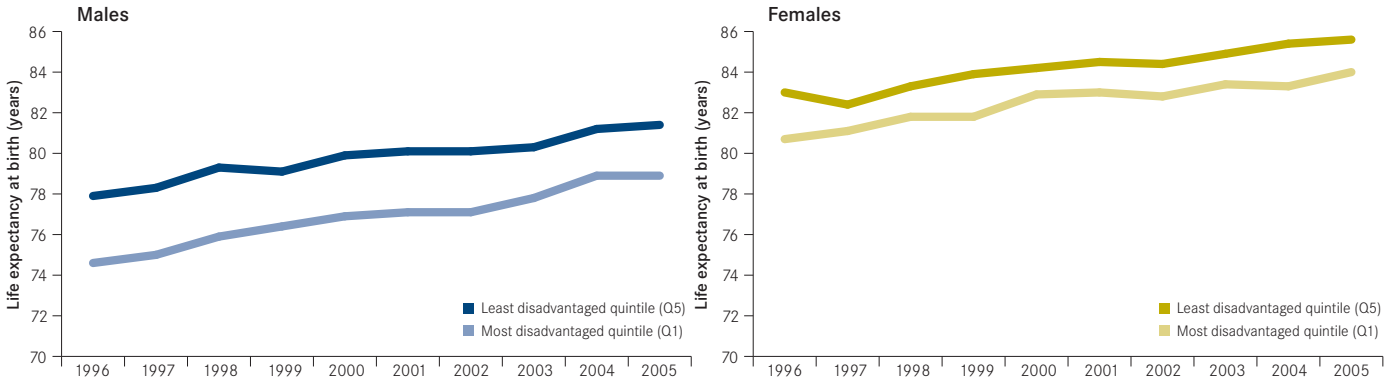
Life expectancy at birth: most and least disadvantaged quintiles

Life expectancy at birth for IRSED end-quintiles, by sex, Victoria, 1996–2005



Note: IRSED end-quintiles are used to compare the most and least relatively disadvantaged quintiles of the population one-fifth of the Victorian population based on the IRSED scores calculated at the LGA level from 2001 census data. The Index of Relative Socio-Economic Disadvantage (IRSED) compiled in census year 1996 is used for years 1996 to 2000 inclusive, while the IRSED compiled in census year 2001 is used after 2000 to divide the Victorian population into five equal-sized population groupings for comparison on this and other heath status indicators.

Source: Australian Bureau of Statistics, Mortality data; Australian Bureau of Statistics, Estimated resident population data.

Over the 10-year period 1996 to 2005, the life expectancy at birth for males born in the least disadvantaged population quintile improved from 78.0 to 81.4, while for males born in the most disadvantaged population quintile, it rose from 74.6 to 78.9. The gap in male life expectancy at birth between the most and least advantaged population quintiles decreased from 3.3 to 2.5 years. Over the same period, the life expectancy at birth for females born in the least disadvantaged population quintile has improved from 83.0 years to 85.6 years, while for females born in the most disadvantaged population quintile it rose from 80.7 years to 84.0 years. The gap in female life expectancy at birth between the most and least advantaged population quintiles decreased from 2.2 to 1.6 years.

For further information

Life expectancy in Victoria: www.health.vic.gov.au/healthstatus/le.htm

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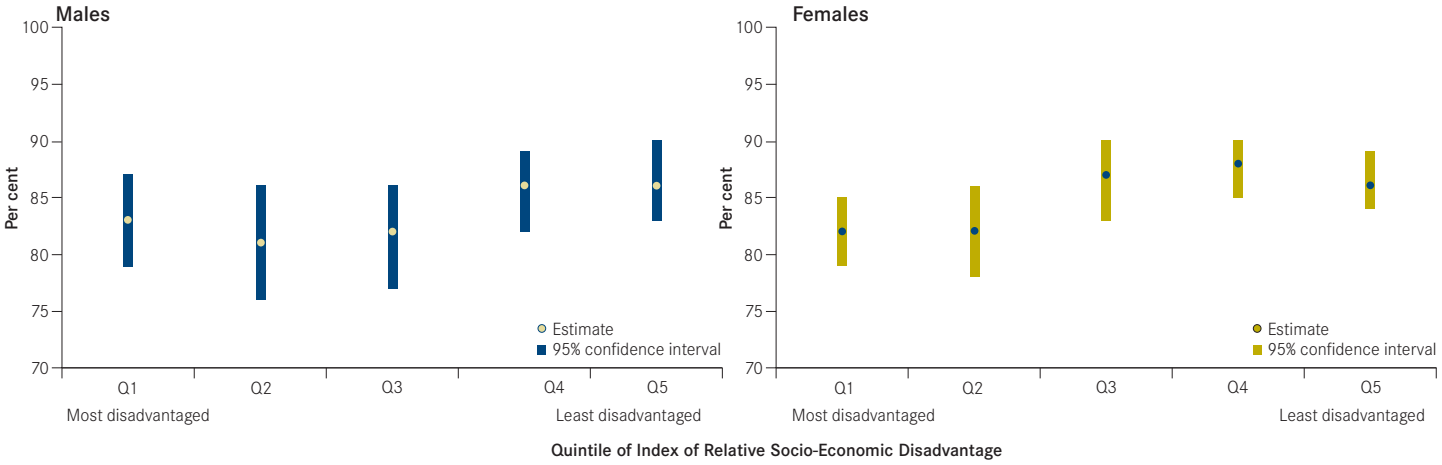
Self-rated health status by IRSED

Prevalence of self-reported excellent/very good/good health, by IRSED quintile and sex, Victoria, 2006



Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

The proportion of males who reported that their health status was excellent, very good or good in 2006 was similar for those living in areas that were most disadvantaged compared to the least disadvantaged areas, based on IRSED (83 per cent versus 86 per cent). The proportion of females who assessed their health status as excellent, very good or good varied from 82 per cent among those living in the most disadvantaged to 86 per cent among those living in the least disadvantaged areas.

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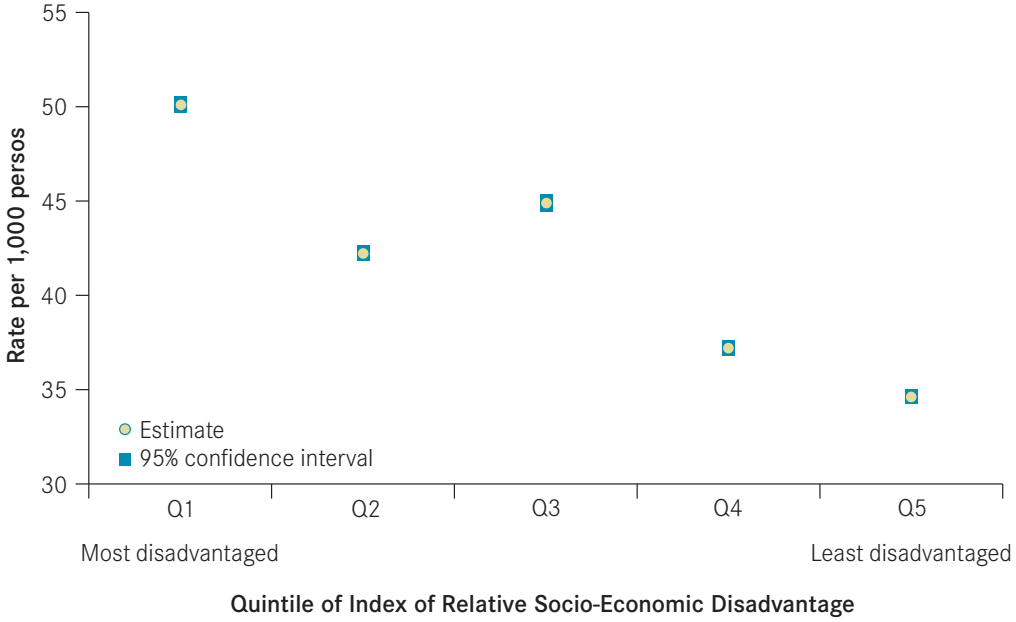
Ambulatory care sensitive conditions

Total ACSCs rate, by IRSED quintile, Victoria, 2005–06

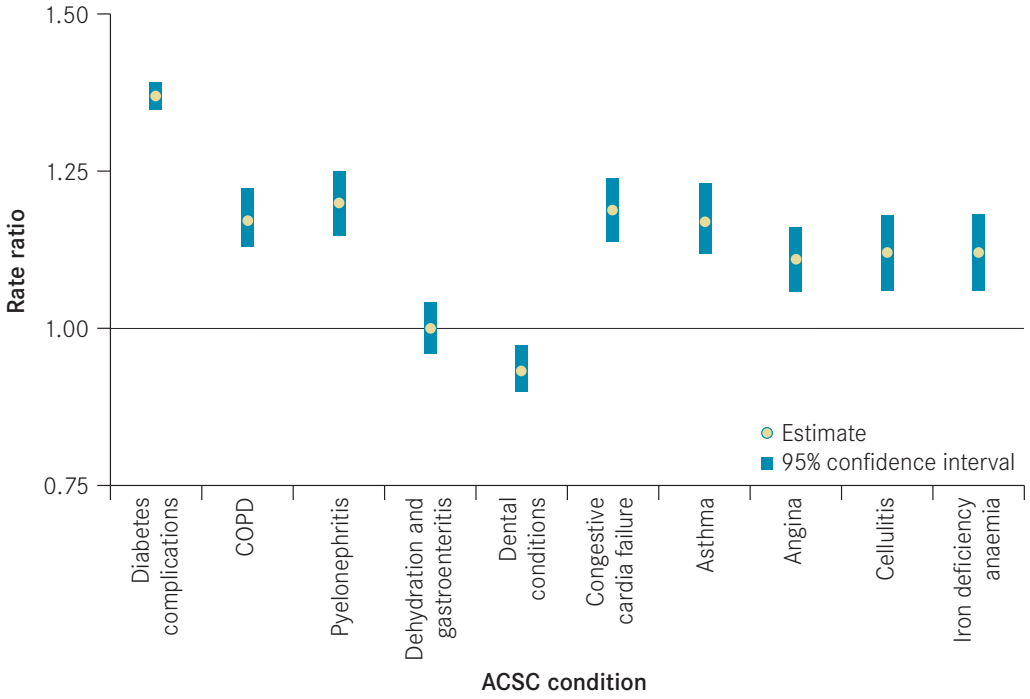


Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Admitted Episode Dataset*, 2005–06.

Admission rates for total ambulatory care sensitive conditions (ACSCs) varied from 50.2 per 1,000 persons (95% CI: 49.8–50.6) for individuals living in areas in the most disadvantaged areas (Q1) to 34.6 per 1,000 persons (34.3–35.0) for individuals in areas in the least disadvantaged areas (Q5). Admission rates for total ACSCs for individuals in the second quintile of IRSED were 42.2 per 1,000 persons (95% CI: 41.8–42.5).

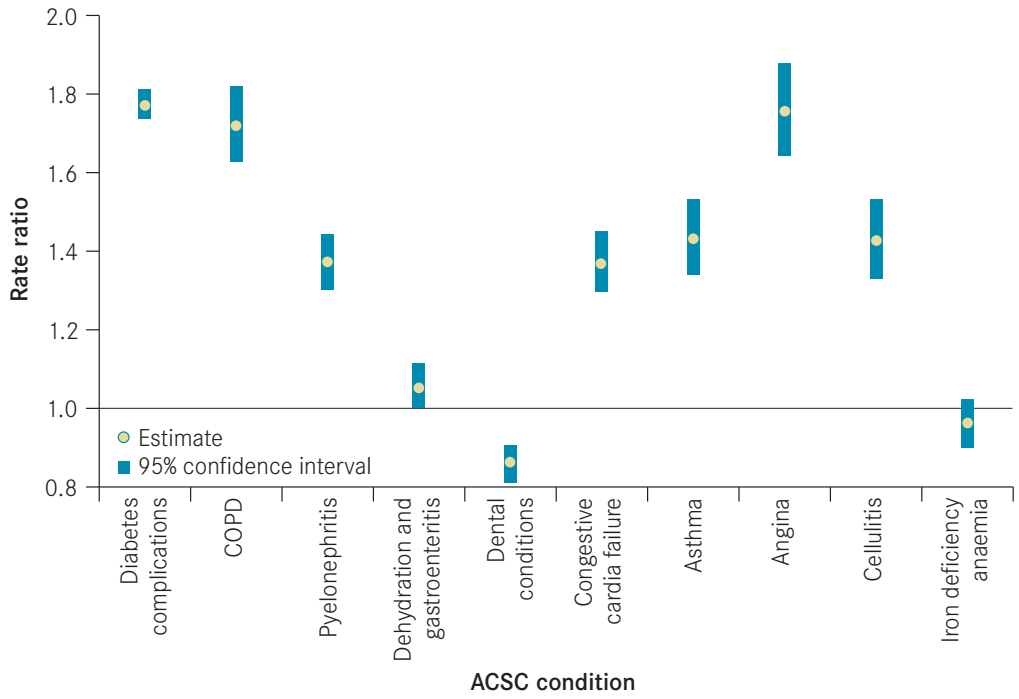
Admission rate ratios for top ten ACSCs in most disadvantaged quintile (Q1) (Victoria = 1), Victoria, 2005-2006



Source: Department of Human Services, *Victorian Admitted Episode Dataset*, 2005–06.

The admission rate ratios for individuals in the most disadvantaged quintile were significantly higher in 2005–06 than the Victorian averages for eight of the top ten ACSCs admissions (diabetes complications, COPD, pyelonephritis, congestive heart failure, asthma, angina, cellulitis and iron deficiency anaemia).

Admission rate ratios for top ten ACSCs for most disadvantaged quintile (Q1) (least disadvantaged quintile (Q5) = 1), Victoria, 2005–06



Note: IRSED end–quintiles are used to compare outcomes for the most (Q1) and least (Q5) relatively disadvantaged one–fifth of the Victorian population based on the IRSED scores calculated at the LGA level from 2001 census data.

Source: *Victorian Admitted Episode Dataset 2005–06*, Department of Human Services, Victoria.

The admission rate ratios for the top ten ACSCs in individuals in areas with the lowest and the highest quintiles of IRSED indicates significant differences by socioeconomic status for most of the top ten ACSCs in 2005–06. Differences in admission rate ratios by socioeconomic status exist for a range of chronic (diabetes complications, chronic obstructive pulmonary disease, congestive cardiac failure, asthma and angina) and acute conditions (pyelonephritis and cellulitis).

For further information

Victorian ambulatory care sensitive conditions study: www.health.vic.gov.au/healthstatus/acsc

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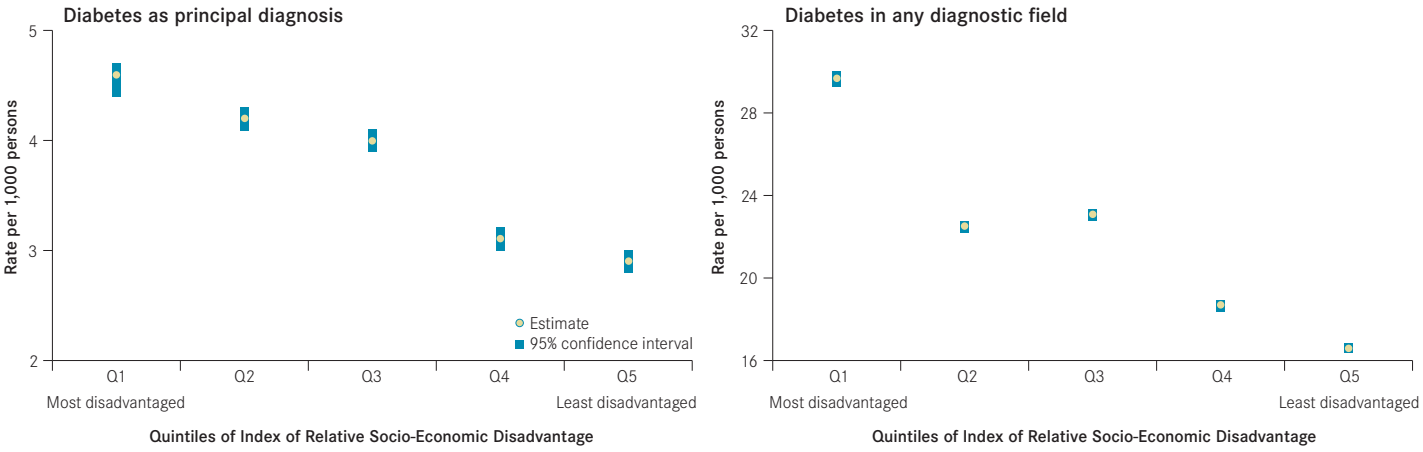
Selected health priority area conditions by IRSED

Diabetes admission rates, by IRSED quintile, Victoria, 2005–06

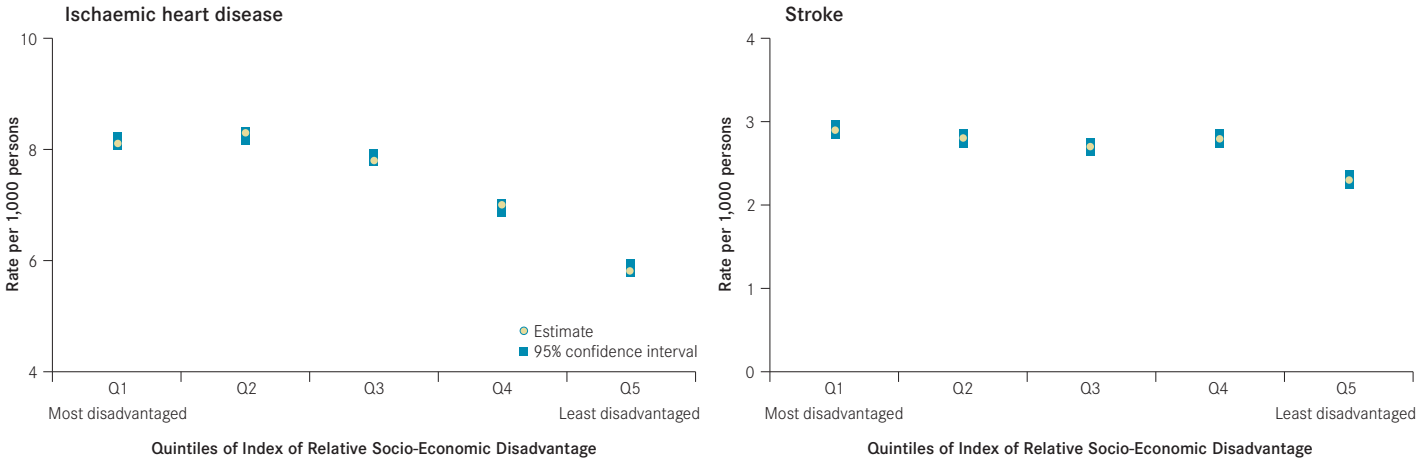


Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Admitted Episode Dataset*, 2005–06.

Hospital admission rate for diabetes on first (principal) diagnosis varied from 4.6 per 1,000 persons (95% CI: 4.6–4.9) in Q1 (most disadvantaged) to 2.9 per 1,000 persons (2.8–3.0) in Q5 (least disadvantaged). This reflects a 59 per cent higher admission rate in Q1 compared with Q5 for principal diagnosis of diabetes. A similar pattern was observed for primary diagnosis (coded 'P') of diabetes admissions in any of the 40 diagnostic fields.

Cardiovascular disease conditions by IRSED quintile, Victoria, 2005–06

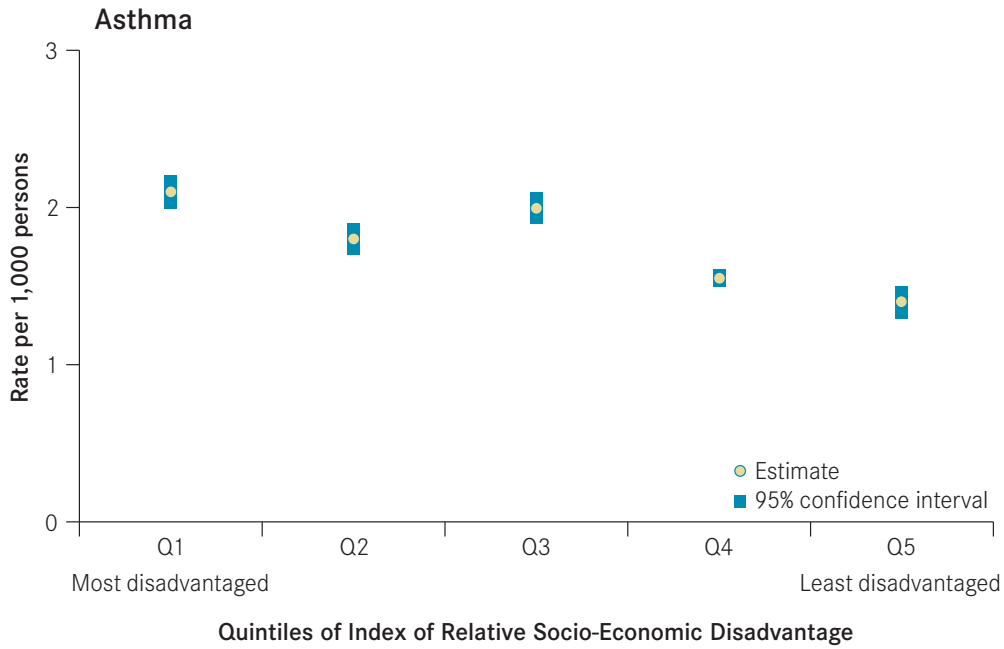


Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Admitted Episode Dataset*, 2005–06.

Hospital admission rates for ischaemic heart disease (IHD) varied from 8.1 per 1,000 persons (95% CI: 8.0–8.3) in IRSED Q1 (most disadvantaged) to 5.8 per 1,000 persons (5.7–6.0) in Q5 (least disadvantaged). This represents a 40 per cent higher admission rate in Q1 compared with Q5. Hospital admission rates for stroke varied from 2.9 per 1,000 persons (95% CI: 2.8–3.0) in Q1 with 2.3 per 1,000 persons (2.2–2.4) in Q5. This reflects a 25 per cent higher admission rate for stroke in Q1 compared with Q5. IHD showed a strong decreasing trend between Q2 and Q5, while no difference was evident between Q1 and Q2. For stroke, the admission rates for Q1-Q4 were significantly higher than Q5.

Asthma admission rates, by IRSED quintile, Victoria, 2005–06



Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Admitted Episode Dataset*, 2005–06.

Hospital admission rates in 2005–06 for asthma varied from 2.1 per 1,000 persons (95% CI: 2.0–2.2) in Q1 to 1.4 per 1,000 persons (1.3–1.5) in Q5. This represents a 49 per cent higher admission rate for Q1 (most disadvantaged) compared with Q5 (least disadvantaged) in 2005–06.

For more information

The National Health Priority Areas (NHPA) initiative. www.health.vic.gov.au/nhpa/asth.htm

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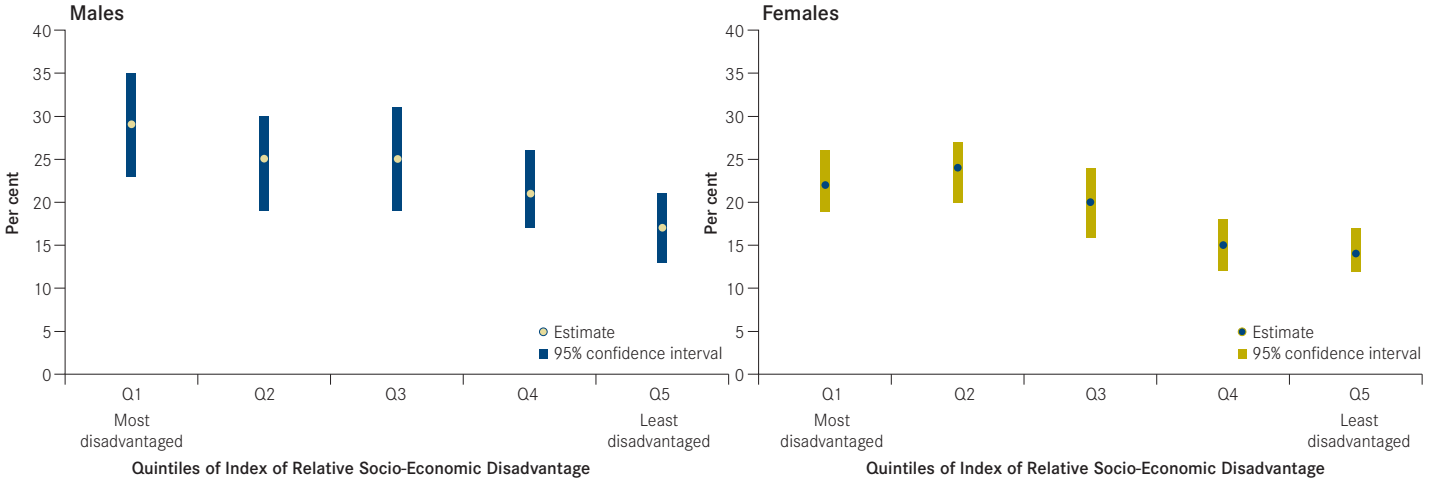
Lifestyle factors by IRSED

Smoking status

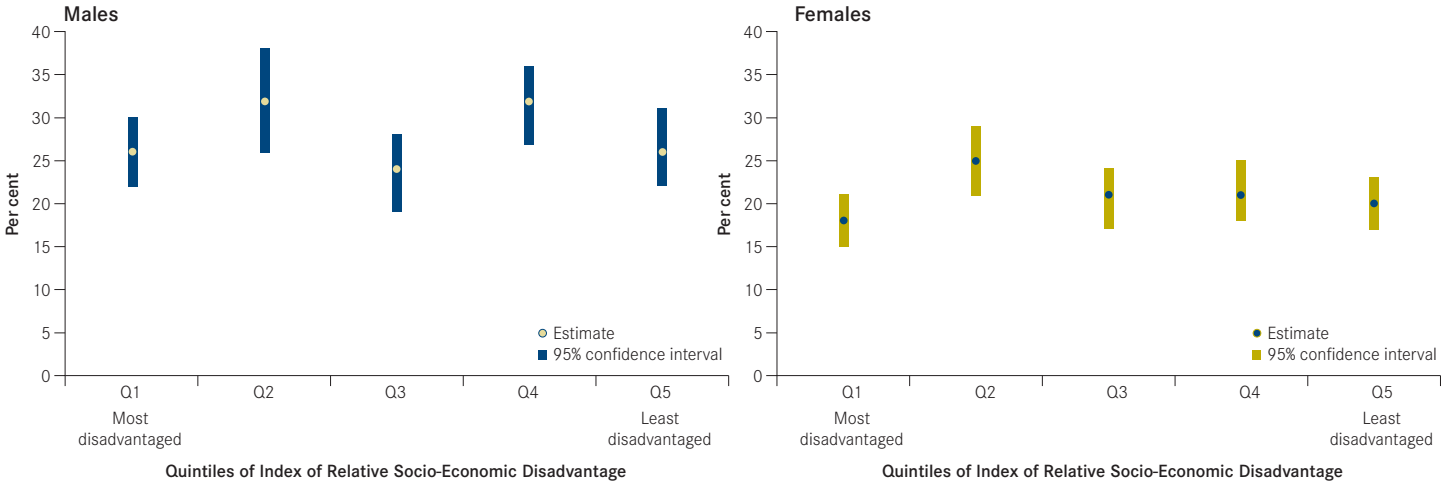
Current smokers, persons aged 18 years or over, by IRSED quintile and sex, Victoria, 2006



Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

Ex-smokers, persons aged 18 years or over, by IRSED quintile and sex, Victoria, 2006



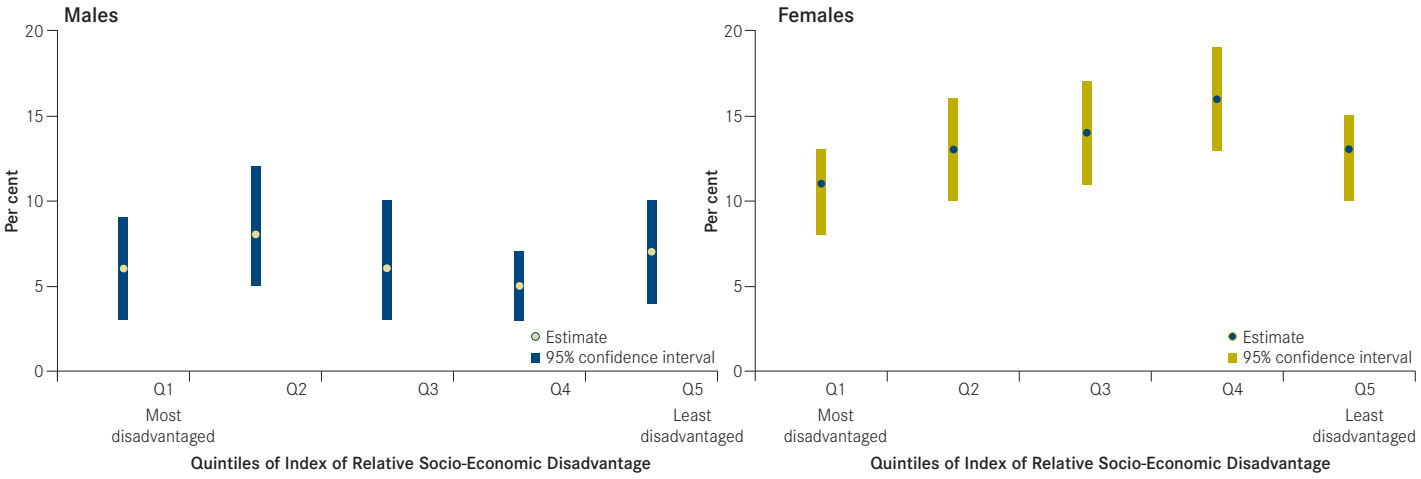
Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

Current smoking includes 'daily' and 'occasional' smoking. In 2006, 17 per cent (95% CI: 13–21 per cent) of males living in the least disadvantaged areas were current smokers, compared with 29 per cent (23–35 per cent) of those living in the most disadvantaged areas. A significantly smaller proportion of females residing in the least disadvantaged areas were current smokers, compared with those living the most disadvantaged areas (14 per cent and 22 per cent respectively). The proportion of ex-smokers was similar across quintiles.

Vegetable and fruit consumption

Recommended daily vegetable consumption, persons aged 18 years or over, by IRSED quintile and sex, Victoria, 2006

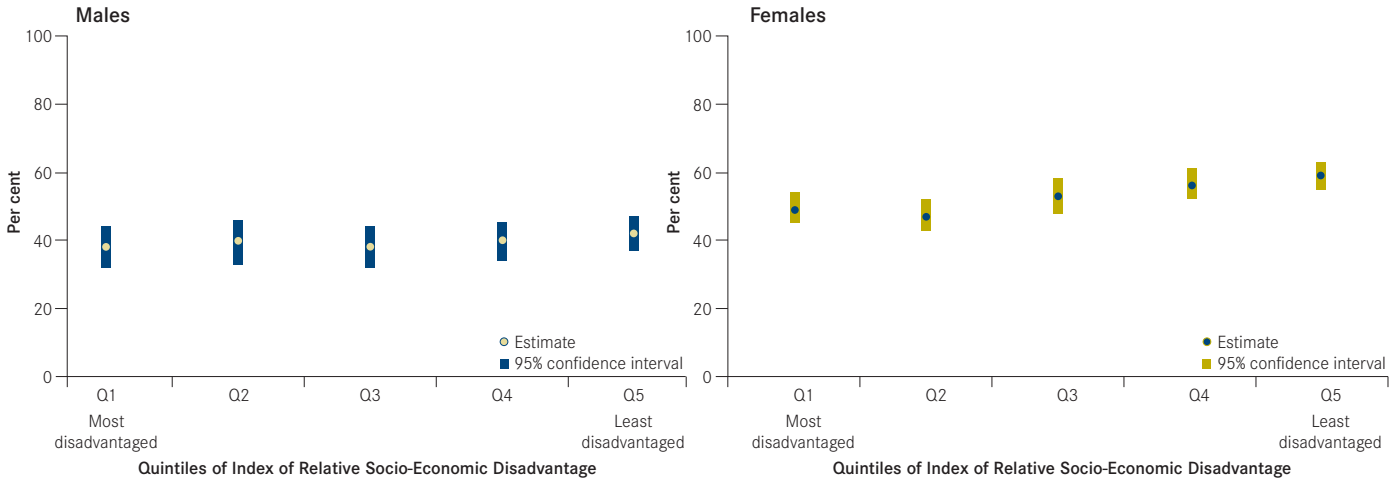


Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

Current Australian guidelines recommend a daily vegetable intake of five serves for persons aged 19 years and over. For males and females aged 12–18 years of age, the recommended daily intake of vegetables is three serves. The proportions of males who reported consuming five or more serves (three or more for those aged 18) of vegetables per day in 2006 was less than 10 per cent in all quintiles and was similar across population quintiles of relative socio-economic disadvantage. The proportions of females who reported a daily intake of five or more serves of vegetables (three or more for those aged 18 years) were also similar among individuals living in areas with different levels of relative socio-economic disadvantage, but tended to be higher than in males. Approximately five per cent of Victorians reported they consumed no serves of vegetables each day.

Recommended daily serves of fruit, persons aged 18 years or over, by IRSED quintile and sex, Victoria, 2006



Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

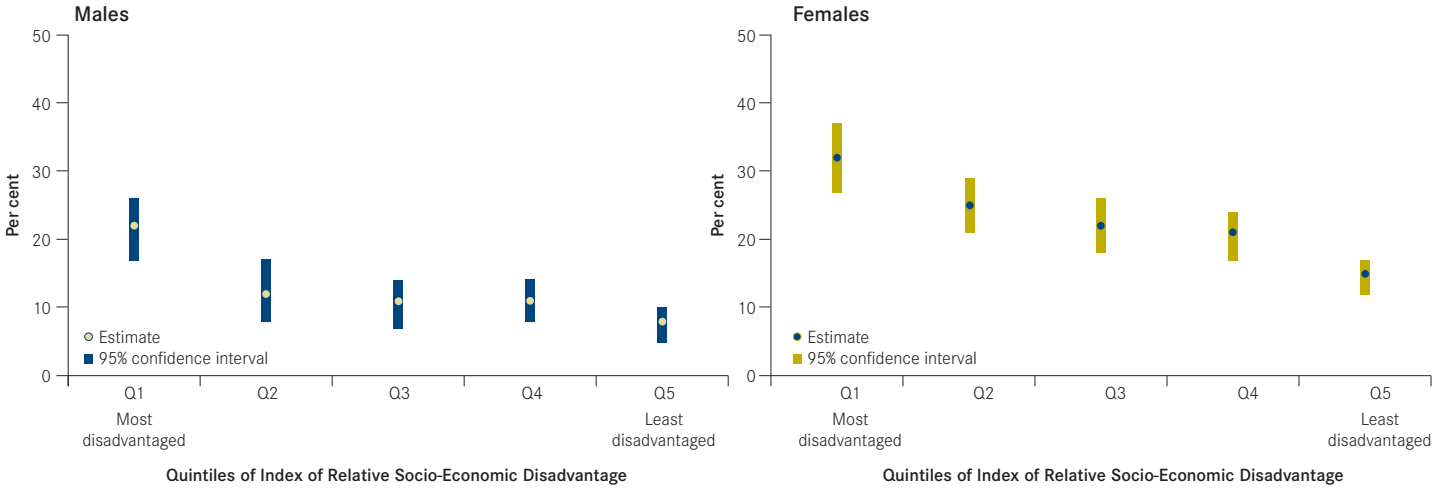
The recommended daily intake of fruit is three serves for males and females aged 12–18 years of age, and two serves for males and females aged 19 years and over.

The proportion of males who reported consuming at least two serves (three or more for those aged under 19 years) of fruit per day in 2006, was similar across quintiles of IRSED. Approximately 38 per cent (95% CI: 32–44 per cent) of males living in areas of lower relative socioeconomic disadvantage usually consumed the recommended quantity of fruit each day, compared with 42 per cent (37–47 per cent) of those living in areas of higher socio-economic disadvantage. The proportion of females who reported a daily intake of two or more serves of fruit (three or more for those aged under 19 years) was significantly greater among those residing in areas with higher IRSED scores (least disadvantaged) relative to those living in more disadvantaged areas. Approximately 49 per cent (95% CI: 45–54 per cent) of females living in the most socio-economically disadvantaged areas consumed the minimum number of daily serves of fruit, compared with 59 (55–63) per cent of those living in least disadvantaged areas.

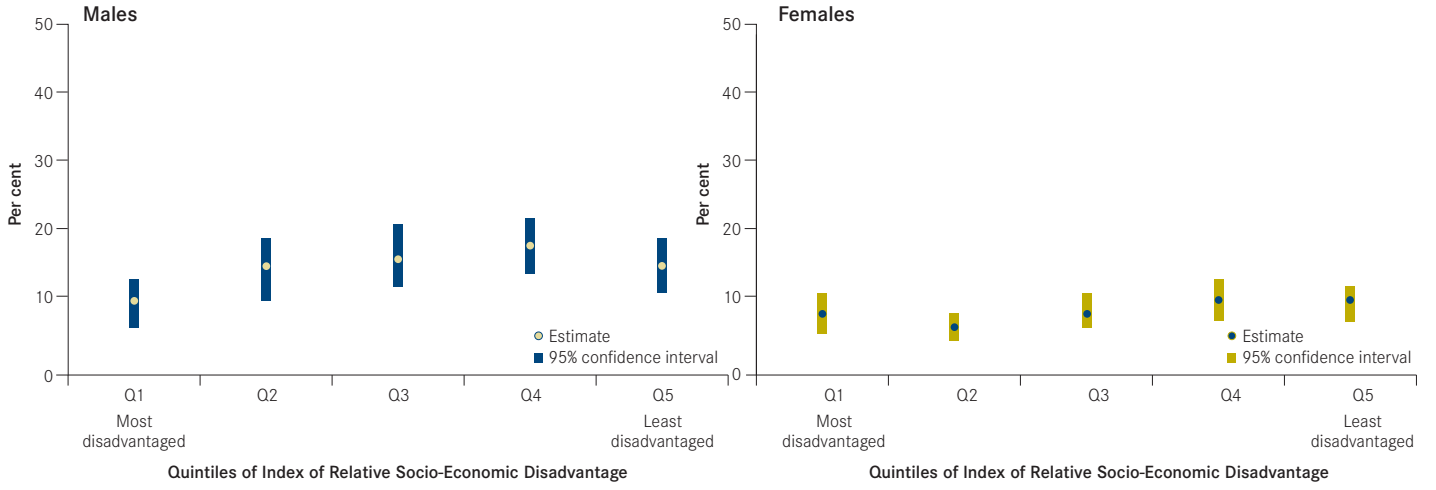
Alcohol consumption

Alcohol consumption at levels above the threshold for short term alcohol harm – at least weekly(a)/ monthly(b)/yearly(c), persons aged 18 years and over, by IRSED quintile and sex, Victoria, 2006

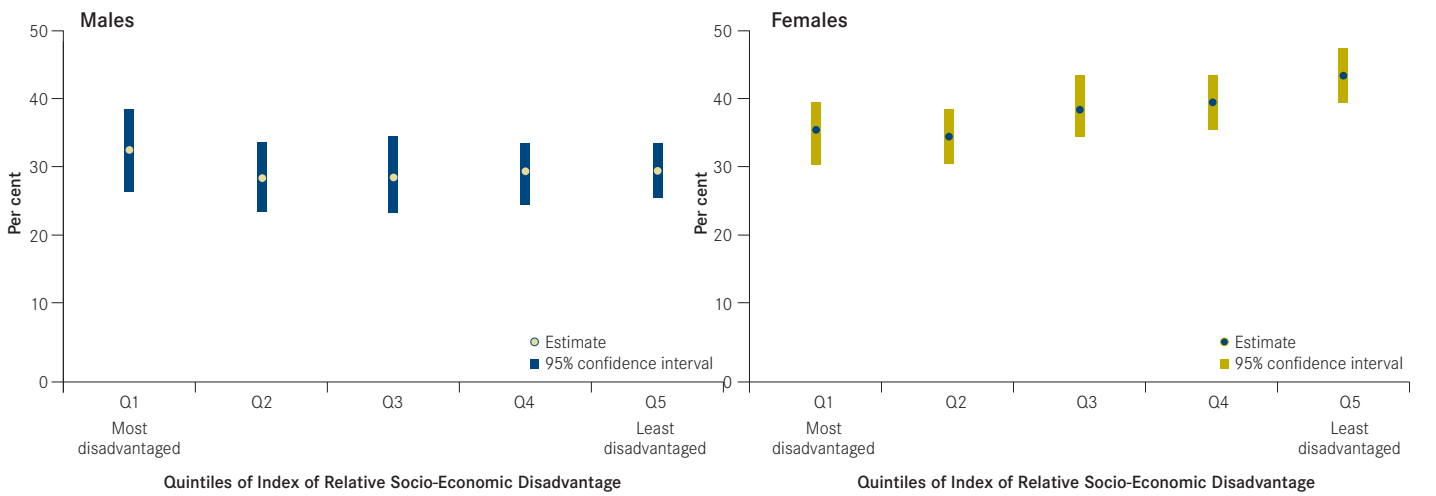
(a) weekly



(b) monthly



(c) yearly



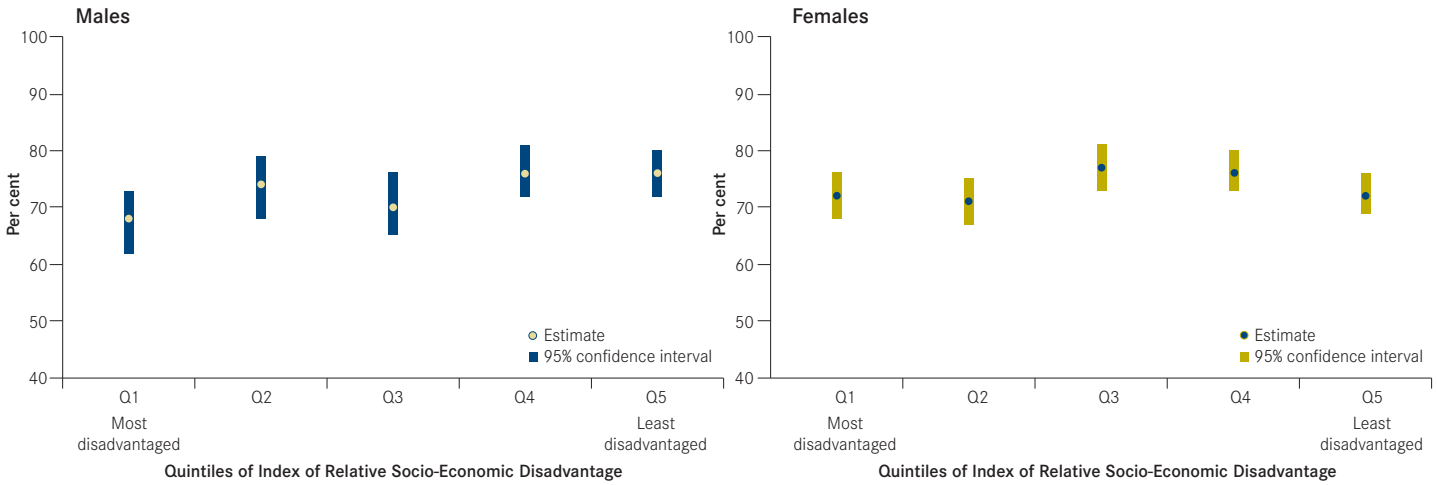
Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

The self-reported alcohol consumption patterns of males and females in Victoria in 2006, by population quintile of IRSED, are reported in the figures above. The proportion of males (12–18 per cent) and females (4–8 per cent) who consumed alcohol at levels above the threshold for short term alcohol harm at least weekly was similar between IRSED quintiles. However, a greater proportion of males compared to females did so. The proportion of males (11–19 per cent) and females (7–11 per cent) who consumed alcohol at levels above the threshold for short-term alcohol harm at least monthly was similar between IRSED quintiles. Again, a greater proportion of males compared to females did so. The proportion of males (21–31 per cent) and females (18–26 per cent) who consumed alcohol at levels above the threshold for short term alcohol harm at least yearly was similar between IRSED quintiles. However, the proportion of males and females who did so was similar.

Physical activity

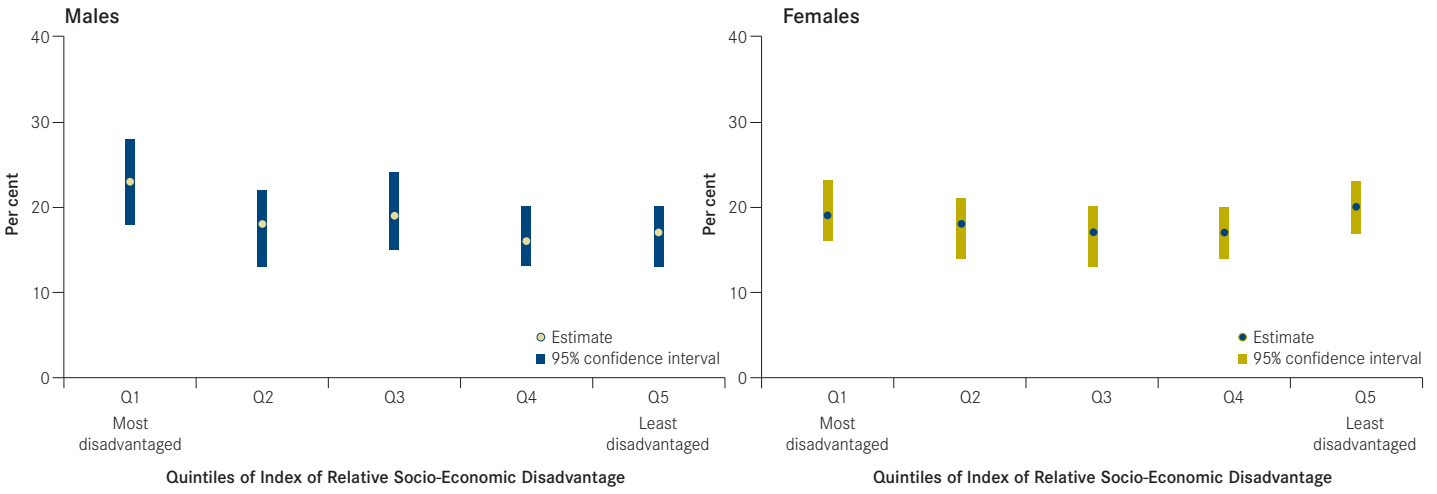
Sufficient physical activity, persons aged 18 years or over, by IRSED quintile and sex, Victoria, 2006



Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

Insufficient physical activity, persons aged 18 years or over, by IRSED quintile and sex, Victoria, 2006



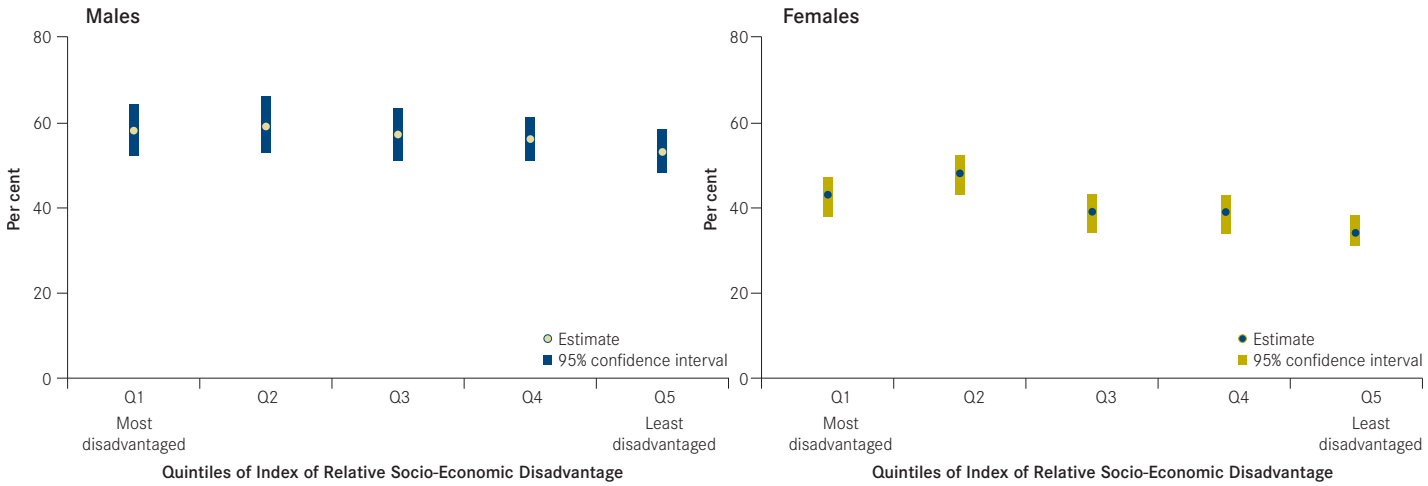
Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

The proportion of the population, across IRSED quintiles, that reported either sufficient or insufficient physical activity, in both males and females, was similar in 2006.

Overweight/obesity

Overweight/obesity, persons aged 18 years or over, by IRSED quintile and sex, Victoria, 2006



Note: CI = confidence interval.

Source: Department of Human Services, *Victorian Population Health Survey*, 2006.

The proportion of the population, across IRSED quintiles, that reported being either overweight or obese, in both males and females, was similar in 2006.

For more information

Department of Human Services, Health Intelligence Unit, Public Health, *Victorian population health survey 2006*, www.health.vic.gov.au/healthstatus

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Prisoners

In this chapter

- demographic profile
- chronic disease
- communicable disease
- mental health
- hospitalisation
- risk factors

Summary

There were 4,183 adult (aged 18 years and over) prisoners in Victorian prisons at 30 June 2007, comprising 15.4 per cent of all prisoners in Australia. The majority of prisoners were male (93.9 per cent), with only 257 female prisoners in Victorian prisons at 30 June 2007. The population was relatively young, with one-third (32.5 per cent) of prisoners aged under 30 years.

Estimates derived from the *Victorian prisoner health study 2002* (Department of Justice, 2003) showed that the prevalence of self-reported chronic conditions were generally higher in the prison population than in the wider community. Overall, 29 per cent of prisoners in the study reported having been diagnosed with asthma by a doctor, and half (50 per cent) reported having been diagnosed with at least one cardiovascular condition.

Research shows that the prison population is at increased risk of communicable disease, especially from blood-borne viruses. Estimates derived from serological testing undertaken in Victorian prisons in 2002 suggest that approximately half of all prisoners were seropositive for hepatitis A virus antibodies, one-third were seropositive for hepatitis B core antibodies and 58 per cent were seropositive for hepatitis C.

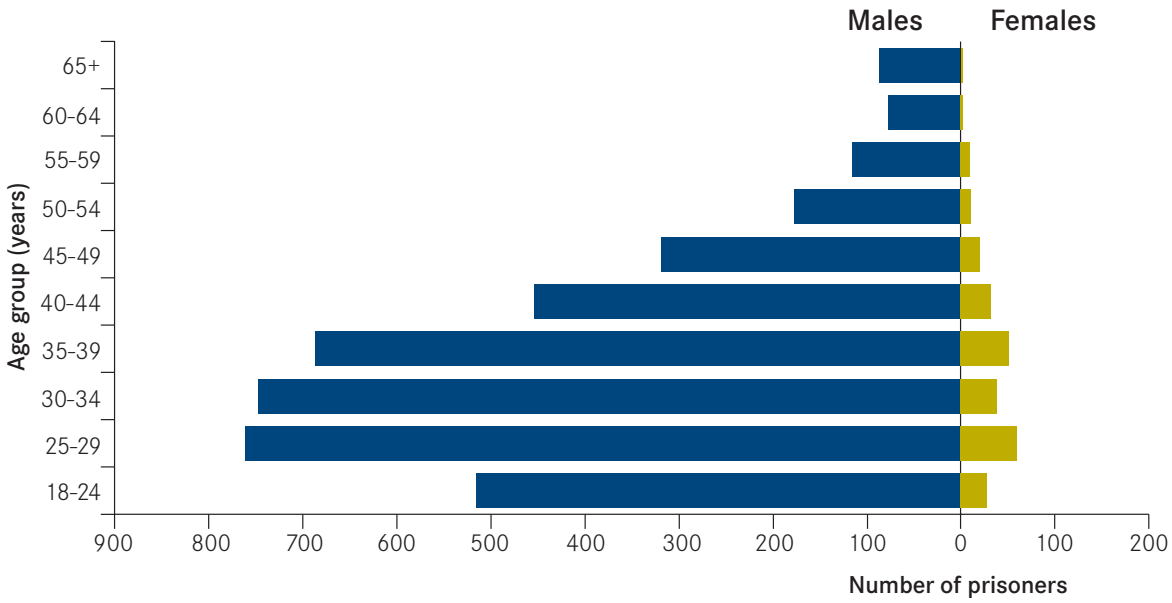
Estimates from the *Victorian prisoner health study 2002* also showed that 28 per cent of prisoners surveyed had ever been told they have a mental health disorder by a health professional. The most common mental health disorder reported by prisoners was depression, with one in five (21 per cent) reporting having ever been diagnosed with the condition. This was followed by schizophrenia (five per cent) and bipolar disorder (four per cent).

There were 608 separations for prisoners from Victorian hospitals in 2005–06. The average length of stay in hospital was 3.01 days, and the leading causes for hospital separations were injury and poisoning, accounting for 18.6 per cent of all separations for prisoners in 2005–06, followed by digestive system diseases (18.1 per cent) and less well-defined conditions (16.0 per cent).

Results of the *Victorian prisoner health study 2002* showed the prevalence of health risk behaviours as high among prisoners in comparison to the wider population. In line with similar studies undertaken in other jurisdictions, prisoners had high levels (41 per cent) of harmful or hazardous use of alcohol, more than three-quarters (69 per cent) had ever injected illicit substances, they were unlikely to use sun protection when out in the sun, approximately half (52 per cent) usually added salt to their food and one in five (20 per cent) did not purposefully engage in any exercise in the four weeks prior to survey.

Demographic profile of the prison population

Prison population, by sex and age group, Victoria, 30 June 2007



Note: Prison population information has been derived from the 30 June 2007 National Prison Census. It includes all full-time prisoners, which incorporates both sentenced and unsentenced prisoners.

Source: Department of Justice, 2008, *Statistical Profile of the Victorian Prison System 2002–03 to 2006–07*, Department of Justice, Melbourne.

There were 4,183 adult (aged 18 years and over) prisoners in Victorian prisons at 30 June 2007, comprising 15.4 per cent of all prisoners in Australia. The Victorian prison population has increased by more than 18.2 per cent in the last six years, or by more than 600 prisoners from 30 June 2002. The majority of prisoners in 2007 were sentenced (80.7 per cent), with approximately one in five (19.3 per cent) prisoners unsentenced.

The prison population is predominantly male (93.9 per cent), with only 257 female prisoners in Victorian prisons at 30 June 2007. Although the population is relatively young, with approximately one-third (32.5 per cent) of prisoners aged under 30 years, the population is also ageing. Between 2002 and 2007, the mean age of prisoners increased by almost two years, up from 34.8 years to 36.4 years.

Similar to other jurisdictions, Aboriginal peoples are over-represented in Victorian prisons. At 30 June 2007, Aboriginal peoples comprised 5.7 per cent of the prison population, compared to less than one per cent of the wider community. The number of Aboriginal prisoners identifying as Aboriginal also increased over the last six years, up from 160 in 2002 to 238 in 2007. Increases in prisoner numbers should be interpreted with caution, however, as they may reflect a greater propensity for Aboriginal persons to self-identify, or merely reflect changes in the way information is collected over time.

For more information

Australian Bureau of Statistics (ABS), 2007, *2006 Census Community Profile Series: Victoria, Indigenous Profile*, Canberra: ABS.

Australian Bureau of Statistics, 2007, *Prisoners in Australia, 30 June 2007*, Catalogue no 4517.0, Canberra: ABS.

Department of Justice, 2007, *Statistical Profile of the Victorian Prison System 2001–02 to 2005–06*, Melbourne: Department of Justice.

Department of Justice, 2008, *Statistical Profile of the Victorian Prison System 2002–03 to 2006–07*, Melbourne: Department of Justice.

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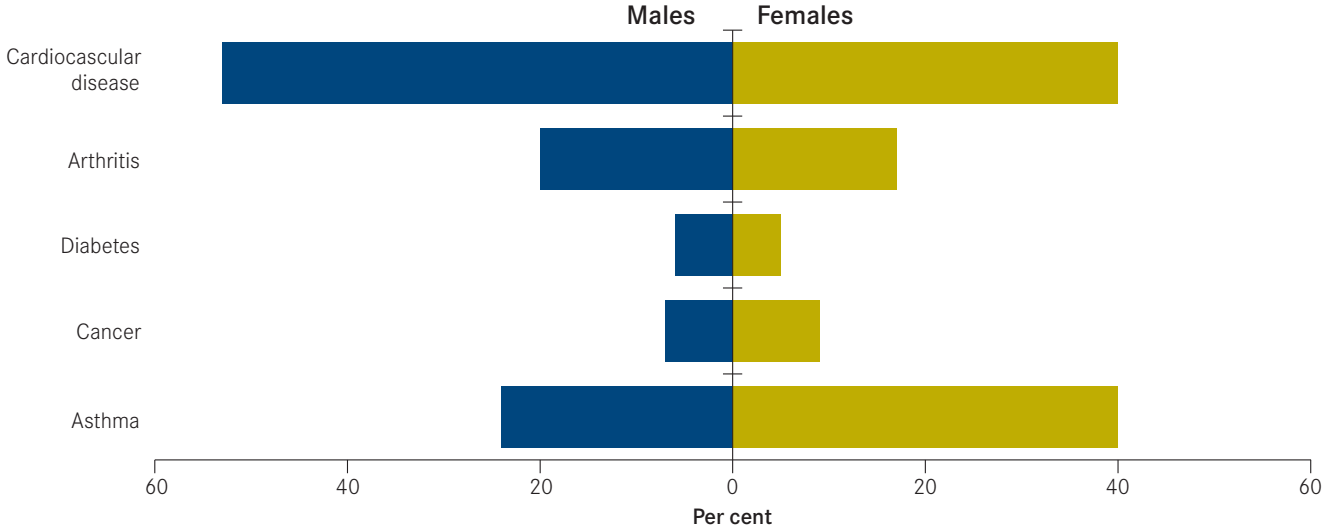
Chronic disease

Prevalence of selected chronic conditions among prison inmates, by sex, Victoria 2002



Note: Prevalence is based on self-reported responses by prisoners to questions in the *Victorian Prison Health Study in 2002*. Prisoners were asked whether they had ever been diagnosed by a doctor with any of a series of conditions. Cardiovascular conditions include angina, heart murmur, hypertension, palpitations.

Source: Department of Justice, 2003, *Victorian Prisoner Health Study*, Department of Justice, Melbourne.

The *Victorian prisoner health study 2002* (Department of Justice, 2003) asked prisoners whether they had ever been diagnosed by a doctor with any of a range of conditions. The results showed that the prevalence of self-reported chronic conditions among prisoners in the study was generally higher than prevalence in the wider community.

Overall, 29 per cent of prisoners in the study reported having been diagnosed with asthma by a doctor–higher than similar estimates for the Victorian population. Self-reported asthma prevalence was especially high among female prisoners (40 per cent).

The prevalence of self-reported cardiovascular conditions was also very high, with half (50 per cent) of all prisoners in the study reporting having been diagnosed by a doctor with at least one cardiovascular condition.

For more information

Australian Bureau of Statistics (ABS), 2002, *National Health Survey 2001–Companion Data*, Victoria, Catalogue no 4364.0, Canberra: Australian Bureau of Statistics.

Department of Justice, 2003, *Victorian Prisoner Health Study*, Melbourne: Department of Justice.

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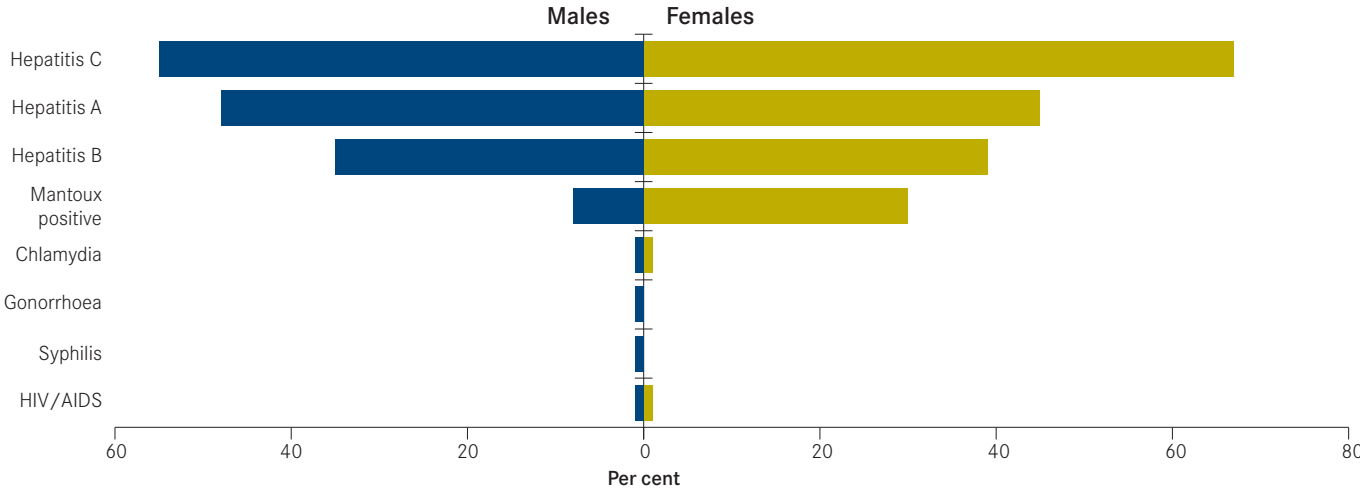
Communicable disease

Prevalence of exposure to selected communicable diseases among prisoners, by sex, Victoria 2002



Note: Prevalence is based on the results of serological testing and a self-reported survey during the *Victorian prison health study* in 2002. The prevalance of hepatitis C is based on HCV antibody testing undertaken during a study by the Burnett Institute and the Blood Borne Viruses Consortium in 2002

Source: Department of Justice 2003, *Victorian prisoner health study*, Department of Justice, Melbourne; Department of Justice 2004, *Hepatitis C virus among inmates in Victorian correctional facilities*, Department of Justice, Melbourne.

Prison populations have been shown to be at increased risk of communicable disease, especially from blood-borne viruses. Serological testing was undertaken and a self-report survey questionnaire administered as part of the *Victorian prisoner health study 2002* (Department of Justice, 2003) to screen prisoners for a range of communicable conditions. Serological testing of prisoners for hepatitis C (HCV) antibodies was also undertaken in a study by the Burnett Institute and the Blood Borne Viruses Consortium in 2002.

Approximately half of all prisoners screened in these studies tested seropositive for hepatitis A virus (HAV) antibodies, one-third were seropositive for hepatitis B core antibodies and 58 per cent were seropositive for HCV. These rates are high in comparison to estimates for the wider community, but are in line with studies of prison populations elsewhere in Australia, and largely reflect the greater level of risky behaviour for blood-borne virus transmission among prisoners.

Prisoners were also screened for latent tuberculosis (TB) infection using the Mantoux test for mycobacterium. Although TB is not a highly infectious disease and transmission of the infection usually requires close, frequent or prolonged exposure to a source, positive Mantoux skin test results were obtained from 30 per cent of females and eight per cent of males–higher rates than for the wider community.

Very few cases of sexually transmitted infection and HIV/AIDS were detected in the *Victorian prisoner health study 2002*, similar to results from a study of prisoners in NSW in 2001.

For more information

Butler, T, Milner, L, 2003, *The 2001 inmate health survey*, Sydney: NSW Corrections Health Service.

Butler, T, Boonwaat, L, Hailstone, S, Falconer, T, Lems, P, Ginley, T, Read, V, Smith, N, Levy, M, Dore, G, Kaldor, J, 2007, 'The 2004 Australian prison entrants' blood-borne virus and risk behaviour survey', *Australian New Zealand Journal of Public Health*, Volume 31(1), pp. 44–50.

Department of Justice, 2003, *Victorian prisoner health study 2002*, Melbourne: Department of Justice.

Department of Justice, 2004, *Hepatitis C virus among inmates in Victorian correctional facilities*, Department of Justice: Melbourne.

Levy, M, Butler, T, Zhou, J, 2007, 'Prevalence of Mantoux positivity and annual risk of infection for tuberculosis in New South Wales prisoners, 1996 and 2001', *NSW Public Health Bulletin*, Volume 18(7–8), pp. 119–24.

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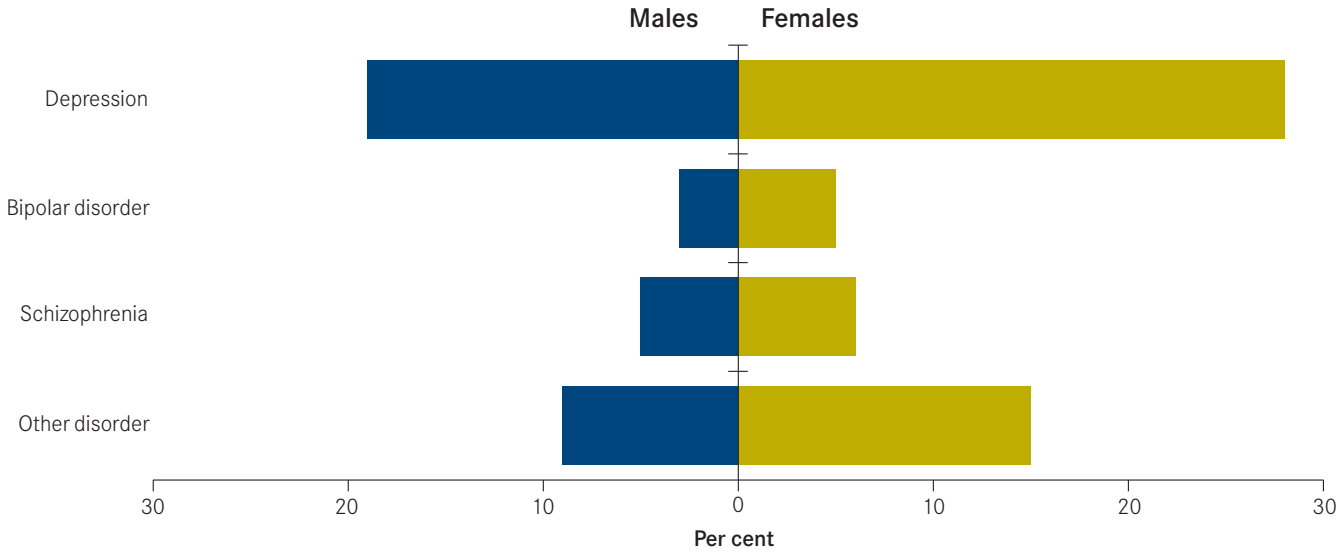
Mental health

Prevalence of self-reported mental health disorders among prisoners, by sex, Victoria 2002



Note: Prevalence is based on self-report of a previous diagnosed disorder by prisoners during the *Victorian prison health study in 2002*.

Source: Department of Justice, 2003, *Victorian prisoner health study*, Department of Justice, Melbourne.

The prevalence of mental health disorder in the prison population is higher than prevalence in the wider community. Estimates from the *Victorian prisoner health study 2002* (Department of Justice, 2003) show that 28 per cent of prisoners surveyed had ever been told they have a mental health disorder by a health professional. Approximately half (51.4 per cent) reported having ever been assessed, or having received treatment, for an emotional or mental health disorder, and 40 per cent of all prisoners reported having received support, counselling or treatment from a psychiatrist or counsellor. Approximately 15 per cent of prisoners were receiving medication for a condition when the study was undertaken, and a similar percentage (15 per cent) reported having ever been admitted to a psychiatric ward or unit.

The most common mental health disorder reported by prisoners was depression, with one in five (21 per cent) reporting having ever been diagnosed with the condition. This was followed by schizophrenia (five per cent) and bipolar disorder (four per cent).

Prisoners were also asked if they had ever thought about committing suicide. Just under half (46 per cent) of the prisoners in the study reported having thought about suicide in the past, and approximately 60 per cent of this group (or approximately one in three prisoners) had attempted suicide at some point. When asked how often they thought about suicide, approximately 10 per cent of all prisoners in the study reported thinking about it on a daily basis over the previous 12 months.

For more information

Department of Justice, 2003, *Victorian prisoner health study*, Melbourne: Department of Justice.

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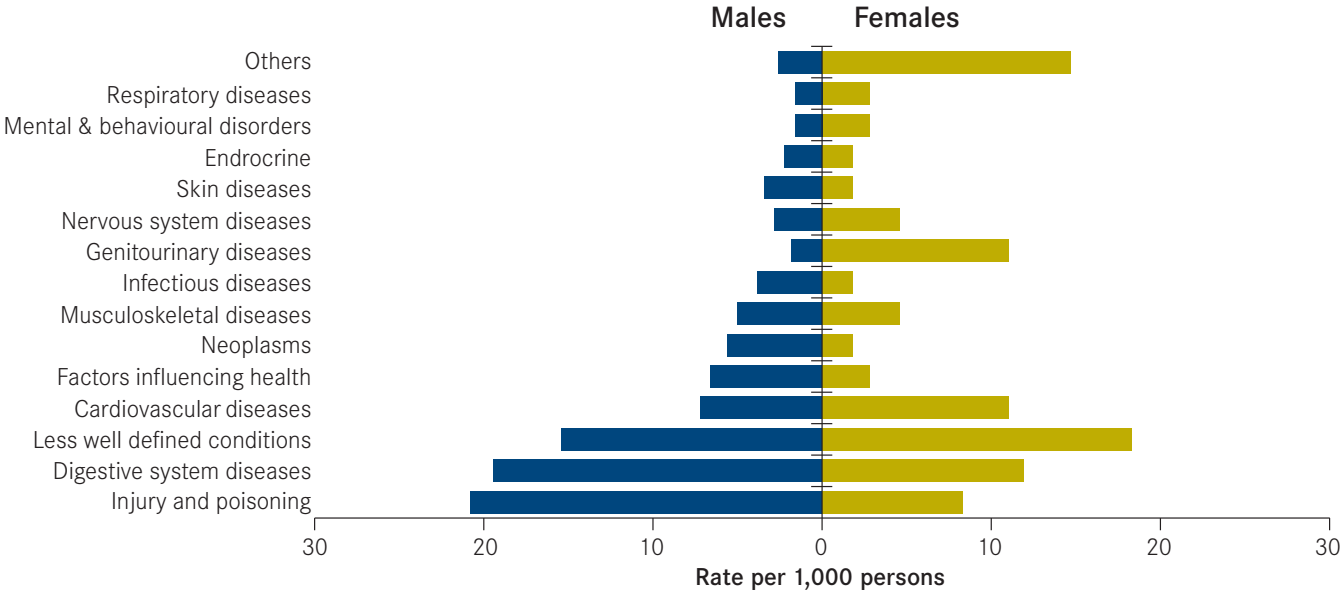
Hospitalisation

Hospital separations for prisoners, by ICD-10-AM chapter principal (first) diagnosis and sex, Victoria, 2005-06



Note: Conditions have been defined by ICD-10-AM chapter codes and are based on principal (first) diagnosis. Separations include prisoners discharged from Victorian hospitals during 2005–06.

Source: Department of Human Services, *Victorian Admitted Episodes Dataset 2005–06*.

There were 608 separations for prisoners from Victorian hospitals in 2005–06. The average length of stay in hospital was 3.01 days and the leading causes for hospital separation were injury and poisoning, accounting for 18.6 per cent of all separations for prisoners in 2005–06, followed by digestive system diseases (18.1 per cent) and less well-defined conditions (16.0 per cent).

A greater proportion of males (20.8 per cent) than females (8.3 per cent) were hospitalised for injury and poisoning. Similarly, a greater proportion of males (19.4 per cent) than females (11.9 per cent) were hospitalised for digestive system diseases. However, a greater proportion of females (18.3 per cent) than males (15.4 per cent) were hospitalised for less well-defined conditions.

Estimates derived from the *Victorian prisoner health study 2002,* Department of Justice, 2003 indicate that over a 12-month period, one-quarter (25 per cent) of all prisoners could be expected to be hospitalised at least once, with half (50 per cent) staying in hospital for more than three days.

For more information

Department of Justice, 2003, *Victorian prisoner health study*, Melbourne: Department of Justice.

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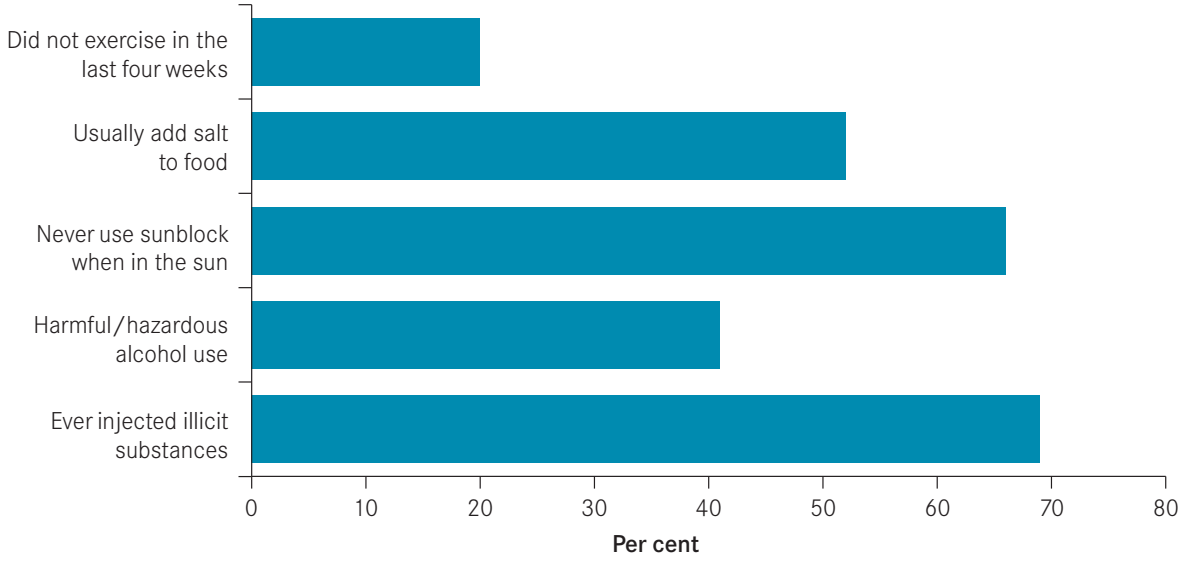
Risk factors

Prevalence of health risk behaviours among prisoners, Victoria, 2002



Note: Prevalence has been derived from several questions asked across various health dimensions in the *Victorian prison health study* in 2002.

Source: Department of Justice 2003, *Victorian prisoner health study 2002*, Department of Justice, Melbourne. Department of Justice 2004, *Hepatitis C virus among inmates in Victorian correctional facilities*, Department of Justice, Melbourne.

Health risk behaviours influence the health status of individuals and contribute significantly to the burden of disease, yet they are largely modifiable, providing scope for health gain in a population. Studies of prison populations around Australia show the prevalence of health risk behaviours to be high among prisoners in comparison to the wider population, and estimates from the *Victorian prisoner health study 2002* (Department of Justice, 2003) are in line with results from these studies.

An inadequate diet was estimated to account for approximately 3.3 per cent of the burden of disease in Victoria in 2001. The Dietary guidelines for Australian adults recommends eating at least two serves of fruit and five serves of vegetables a day. The *Victorian prisoner health study 2002* estimates show that prisoners reported eating fruit and vegetables approximately three to six times a week, but approximately half (52 per cent) usually added salt to their food.

A diet high in sodium has been shown to increase the risk of high blood pressure and related cardiovascular conditions. In 2002, almost one in five (17 per cent) prisoners in the survey had been diagnosed by a doctor with high blood pressure.

The *National Physical activity guidelines for adults* recommends at least 30 minutes of moderate intensity activity (for example, brisk walking, swimming, cycling, or dancing) on most, and preferably all days, for adults. Physical inactivity is an important health issue, accounting for an estimated 4.1 per cent of the burden of disease and injury in Victoria in 2001. Estimates from the *Victorian prisoner health study 2002* show that one in five (20 per cent) prisoners surveyed did not purposefully engage in any exercise in the four weeks prior to survey, citing injury and a lack of motivation as the main reasons for their inactivity.

Australia has one of the highest rates of melanoma in the world, and unprotected exposure to solar ultraviolet radiation (UVR) is a modifiable risk factor for skin cancer, cataracts and other eye disorders. Exposure to solar UVR can be minimised by combining a range of sun protective behaviours, including wearing a hat, applying sunscreen and wearing sunglasses or other protective clothing. Prisoners surveyed in the *Victorian prisoner health study 2002* were asked a series of questions about protecting their skin from the sun and their responses indicate that the majority of prisoners were unlikely to use protective measures when out in the sun. For instance, although 78 per cent of prisoners said they had access to sunblock, approximately two-thirds (66 per cent) reported never using sunblock when out in the sun.

The *Victorian prisoner health study* also included questions about risky alcohol consumption. The results indicate 41 per cent of prisoners consumed alcohol at hazardous or harmful levels in the twelve months prior to imprisonment.

Injecting drug use is a risk factor for HIV/AIDS, hepatitis C, suicide and accidental death by overdose and was estimated to account for approximately 1.5 per cent of the burden of disease in Victoria in 2001. The link between illicit drug use and incarceration is well established, with two-thirds of prisoners in Victoria reporting alcohol and illicit substance use directly related to their imprisonment. A study of prisoners undertaken by the Burnett Institute and the Blood Borne Viruses Consortium in 2002 found that 69 per cent of Victorian prisoners had ever injected illicit drugs and that three-quarters of these prisoners had injected in the week prior to imprisonment.

For more information

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Victorians from non-English speaking backgrounds

In this chapter

Summary

Ethnicity is a multi-dimensional concept that refers to the shared identity or similarity of a group of people on the basis of one or more factors, including a common geographic origin, a common language, and a cultural tradition, involving family and social customs.

The proportion of the Victorian population that were born overseas was stable at approximately 25 per cent in 1996 and 2001, but fell to approximately 22 per cent in 2006.

Between 1996 and 2001 the proportion of the Victorian population born in the UK or Europe fell, and the proportion born in Asia rose.

Between 1996 and 2006 the proportion of skilled settlers among immigrants grew steadily, from 14.4 per cent to 47.0 per cent, while the proportion of family settlers fell from 53.2 per cent to 28.5 per cent, as did the proportion of humanitarian settler arrivals (19.6 per cent to 10.6 per cent).

Based on the 2006 census data, almost four per cent of the Victorian population reported that they spoke English either not well, or not at all.

Recent mortality data for Victoria from 2005 also shows that Australian-born residents, together with residents born in the UK, Ireland and Poland, had a significantly higher mortality rate than the rate for all Victorians. Victorian residents born in China and Greece had significantly lower mortality rates than the overall Victorian rate.

Although immigrants come from diverse regions of the world, almost all demonstrate good, if not better, health on arrival, and for some years following arrival, compared to the Australian-born population. This better health is reflected in longer life expectancy, lower death and hospitalisation rates, and a lower prevalence of some lifestyle-related risk factors. This phenomenon is explained by the 'healthy migrant effect', with health requirements and eligibility criteria ensuring that generally only those in good health migrate to Australia.[1]

1. Australian Institute of Health and Welfare, Singh, M, de Looper, M, 2002. *Australian health inequalities: 1 birthplace.* Bulletin no. 2. AIHW Cat. No. AUS 27. Canberra: AIHW.

Introduction

The consideration of ethnicity as a multidimensional concept, based on several distinguishing characteristics, and using a self-perception approach, allows for a practical and useful classification that is attuned to generally accepted notions of what constitutes ethnicity and cultural identity (Australian Bureau of Statistics, 2005). For the purposes of the Australian Standard Classification of Cultural and Ethnic Groups (ASCCEG) it is sufficient, and not controversial, to say that the term 'ethnicity' refers to the shared identity or similarity of a group of people on the basis of one or more factors, enunciated in a report entitled *The Measurement of Ethnicity in the Australian Census of Population and Housing, Report to the Australian Statistician by the 1986 Population Census Ethnicity Committee* (Catalogue no. 2172.0). This report was prepared under the Chairmanship of the late Professor WD Borrie, CBE, and is referred to as the Borrie Report.

The Ethnicity Committee considered that the most enlightening attempt to define an ethnic group is that contained in a United Kingdom Law Lords statement reported in *Patterns of Prejudice*, Vol. 17, No. 2, 1983. They noted that the key factor is that the group regards itself, and is regarded by others, as a distinct community by virtue of certain characteristics–not all of which must be present in the case of each ethnic group. The distinguishing characteristics involved may include:

- a long shared history, the memory of which is kept alive
- a cultural tradition, including family and social customs, sometimes religiously based
- a common geographic origin
- a common language (but not necessarily limited to that group)
- a common literature (written or oral)
- a common religion
- being a minority (often with a sense of being oppressed)
- being racially conspicuous.

Since the publication of the Borrie Report the multicultural nature of Australian society has further developed, resulting in a more sophisticated and enlightened approach to cultural diversity. Nevertheless, the approach to the definition of ethnicity in the Borrie Report is still relevant, and serves the purposes of ASCCEG well.

For more information

Australian Bureau of Statistics (ABS), 2005, *Australian standard classification of cultural and ethnic groups (ASCCEG)*, 2nd edition, Catalogue no 1249.0, Canberra: ABS.

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Population composition, growth and migration

Population composition growth and migration, Victoria 1996–2006

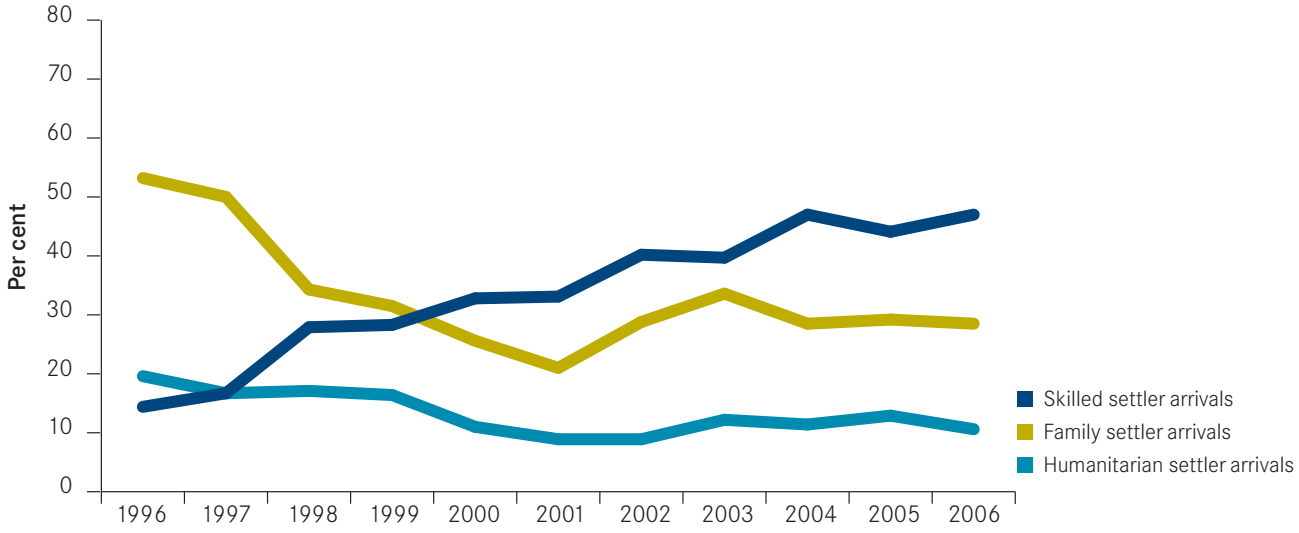
	Units	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Composition												
Total population	'000	4,560	4,597	4,638	4,686	4,741	4,805	4,857	4,911	4,963	r5,023	5,092
Male population	'000	2,253	2,268	2,287	2,309	2,336	2,366	2,394	2,422	2,449	r2,480	2,515
Female population	'000	2,308	2,329	2,351	2,377	2,406	2,438	2,464	2,489	2,514	2,543	2,577
Indigenous population[(a)]	'000	25.2	25.8	26.3	26.9	27.4	27.8	28.4	29.1	29.7	30.3	31.0
Born overseas[(b)(c)]	per cent	25.1	n/a	n/a	n/a	n/a	24.6	n/a	n/a	n/a	n/a	nya
Born in the United Kingdom[(c)]	per cent	r5.5	n/a	n/a	n/a	n/a	4.7	n/a	n/a	n/a	n/a	nya
Born in Europe[(c)]	per cent	15.2	n/a	n/a	n/a	n/a	13.7	n/a	n/a	n/a	n/a	nya
Born in Asia[(c)]	per cent	5.8	n/a	n/a	n/a	n/a	6.3	n/a	n/a	n/a	n/a	nya
Ppoulation growth												
Total population growth	'000	42.8	37.0	40.6	48.6	54.9	63.4	52.5	54.2	51.5	r60.2	68.5
Births[(e)]	'000	61.3	61.2	60.1	59.4	59.7	58.7	60.5	60.5	61.9	r62.7	64.1
Deaths[(e)]	'000	32.8	32.6	32.4	32.3	32.0	32.3	32.6	33.1	33.1	r32.4	32.2
Natural increase[(e)]	'000	28.5	28.7	27.7	27.1	27.7	26.4	27.9	27.4	28.8	r30.3	31.9
Net overseas migration	'000	25.7	21.1	19.3	24.7	27.0	35.3	20.3	26.8	25.0	32.3	38.6
Net interstate migration	'000	-12.8	-6.2	-0.3	2.5	5.2	5.2	4.4	–	-2.3	-2.4	-1.9
Population growth rate	per cent	0.95	0.81	0.88	1.05	1.17	1.34	1.09	1.12	1.05	1.20	1.36
Net interstate migration rate	per cent	-0.28	-0.14	-0.01	0.05	0.11	0.11	0.09	–	-0.05	-0.05	-0.04
Migration												
Total settler arrivals[(f)]	'000	22.3	18.3	16.2	17.3	19.3	24.2	21.4	23.1	28.0	30.6	32.3

Notes: (a) Based on 2001 Census data. From 2002 figures are low series population projections.
(b) Includes country of birth not stated.
(c) State and territory data only available in census years.
(d) Data for 1996 are based on the 1996 Census and data for 1997 onwards are based on the 2001 Census. All data are based on 2006 Australian Standard Geographical Classification (ASGC) boundaries.
(e) Data are based on year of occurrence up to 2005. Data for 2006 are based on year of registration.
(f) Total settler arrivals includes special eligibility and non-program migration in addition to family, skilled and humanitarian migration.
n/a = not available
nya = not yet available
– = nil or rounded to zero
r = figures or series revised since previous publication

Source: Australian Bureau of Statistics (ABS), 2007, *Australian Social Trends Data Cube*, Catalogue no 4102.0.

The total Victorian population grew steadily, from approximately 4.5 million in 1996 to approximately five million in 2006. The proportion of the population born overseas was stable at approximately 25 per cent in 1996 and 2001. However, the proportion of those born in the UK or Europe fell, and the proportion of those born in Asia rose between 1996 and 2001.

Type of settler arrivals, Victoria, 1996–2006



Source: Australian Bureau of Statistics, Catalogue no 4102.0, *Australian Social Trends*, Data Cube, 2007.

Total settler arrivals grew steadily from approximately 22,000 in 1996 to 32,000 in 2006. During this period the proportion of skilled settlers grew steadily from 14.4 per cent in 1996 to 47.0 per cent in 2006, while the proportion of family settlers fell from 53.2 per cent to 28.5 per cent, as did the proportion of humanitarian settler arrivals (19.6 per cent in 1996 to 10.6 per cent in 2006).

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Country of birth

Country of birth (region), by age group, Victoria, 2006

	Age group (years)									
	0–4	**5–14**	**15–24**	**25–44**	**45–54**	**55–64**	**65–74**	**75–84**	**85 +**	**Total**
Oceania and Antarctica										
Australia	279,984	568,707	517,492	969,512	426,814	302,846	180,795	137,393	50,927	3,434,470
Other[a]	1,238	7,584	9,782	35,349	14,492	7,515	3,044	1,363	489	80,856
Total	**281,222**	**576,291**	**527,274**	**1,004,861**	**441,306**	**310,361**	**183,839**	**138,756**	**51,416**	**3,515,326**
North-West Europe	2,001	7,001	8,639	65,429	51,659	67,001	43,735	29,543	9,987	284,995
Southern and Eastern Europe	334	3,047	9,476	43,915	51,165	69,009	65,140	38,834	8,396	289,316
North Africa and the Middle East	1,217	5,273	8,383	27,547	12,457	9,283	5,043	2,791	590	72,584
South-East Asia	1,341	6,812	27,716	71,888	32,915	15,183	6,293	3,168	765	166,081
North-East Asia	842	3,964	24,568	33,651	14,324	6,434	4,559	2,461	725	91,528
Southern and Central Asia	1,418	5,662	16,267	43,779	14,634	9,182	4,746	2,818	811	99,317
Americas	791	2,614	4,446	16,506	7,113	5,643	1,964	804	336	40,217
Sub-Saharan Africa	557	3,703	6,157	17,733	7,966	4,917	2,399	1,186	347	44,965
Other[b]	54	98	357	1,054	622	504	355	229	71	3,344
Country of birth not stated	16,162	29,986	40,613	92,865	45,355	36,970	27,454	24,916	10,427	324,748
Overseas born (per cent)[c]	3	6	16	23	28	35	39	33	39	22
Total	**305,939**	**644,451**	**673,896**	**1,419,228**	**679,516**	**534,487**	**345,527**	**245,506**	**83,871**	**4,932,421**

Note: (a) Includes 'Australian External Territories'.
(b) Includes 'inadequately described', 'at sea, and 'not elsewhere classified'.
(c) Excludes those who did not state country of birth.

Source: Australian Bureau of Statistics, 2006 *Census Tables*, Catalogue no. 2068.0.

Overall, 22 per cent of the Victorian population in 2006 as born overseas. The proportion of those residents of Victoria born overseas rose progressively with increasing age, from three per cent in the 0–4 year age-group to a peak of 39 per cent in 65–74 years age group, excluding those residents of Victoria who did not state their country of birth.

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Language spoken

Language spoken at home[a], by proficiency in spoken English, Victoria, 2006

Language(s) spoken	Spoke English only	Spoke other language and spoke English			Not stated[b]	Total
		Very well or well	Not well or not at all	Total		
Spoke English only	3,668,284	n/a	n/a	n/a	n/a	3,668,284
Spoke other language:						
Arabic	n/a	45,670	9,440	55,110	820	55,930
Australian Indigenous Languages	n/a	875	240	1,115	24	1,139
Chinese languages:						
Cantonese	n/a	49,673	16,607	66,280	575	66,855
Mandarin	n/a	49,742	14,071	63,813	564	64,377
Other[c]	n/a	9,671	3,669	13,340	178	13,518
Total	*n/a*	*109,086*	*34,347*	*143,433*	*1,317*	*144,750*
Croatian	n/a	18,802	3,852	22,654	307	22,961
Dutch	n/a	9,123	292	9,415	143	9,558
Filipino (excludes Tagalog)[d]	n/a	10,102	408	10,510	148	10,658
French	n/a	11,185	497	11,682	184	11,866
German	n/a	18,742	597	19,339	267	19,606
Greek	n/a	93,929	22,610	116,539	1,336	117,875
Hindi	n/a	17,213	752	17,965	216	18,181
Hungarian	n/a	6,832	981	7,813	102	7,915
Indonesian	n/a	9,554	771	10,325	123	10,448
Iranic languages:						
Persian (excluding Dari)	n/a	3,940	800	4,740	64	4,804
Dari	n/a	3,124	1,332	4,456	105	4,561
Other[e]	n/a	1,507	552	2,059	48	2,107
Total	*n/a*	*8,571*	*2,684*	*11,255*	*217*	*11,472*
Italian	n/a	108,728	22,646	131,374	1,952	133,326
Japanese	n/a	5,245	1,219	6,464	72	6,536
Khmer	n/a	6,230	3,609	9,839	145	9,984
Korean	n/a	3,929	1,945	5,874	102	5,976
Macedonian	n/a	24,563	5,794	30,357	414	30,771
Maltese	n/a	16,964	1,829	18,793	230	19,023
Polish	n/a	15,185	2,342	17,527	259	17,786
Portuguese	n/a	3,501	635	4,136	68	4,204
Russian	n/a	10,923	3,204	14,127	210	14,337
Samoan	n/a	5,061	447	5,508	107	5,615
Serbian	n/a	13,120	3,484	16,604	264	16,868
Sinhalese	n/a	15,614	1,027	16,641	280	16,921
Spanish	n/a	20,719	3,447	24,166	336	24,502
Tagalog (excludes Filipino)[d]	n/a	10,722	387	11,109	173	11,282

Language(s) spoken	Spoke English only	Spoke other language and spoke English			Not stated[b]	Total
		Very well or well	Not well or not at all	Total		
Tamil	n/a	10,233	735	10,968	129	11,097
Turkish	n/a	22,806	6,551	29,357	390	29,747
Vietnamese	n/a	45,814	25,517	71,331	831	72,162
Other[f]	n/a	107,935	20,842	128,777	6,165	134,942
Total	*n/a*	*806,976*	*183,131*	*990,107*	*17,331*	*1,007,438*
Language spoken at home not stated	n/a	13,123	3,630	16,753	239,948	256,701
Total	**3,668,284**	**820,099**	**186,761**	**1,006,860**	**257,279**	**4,932,423**

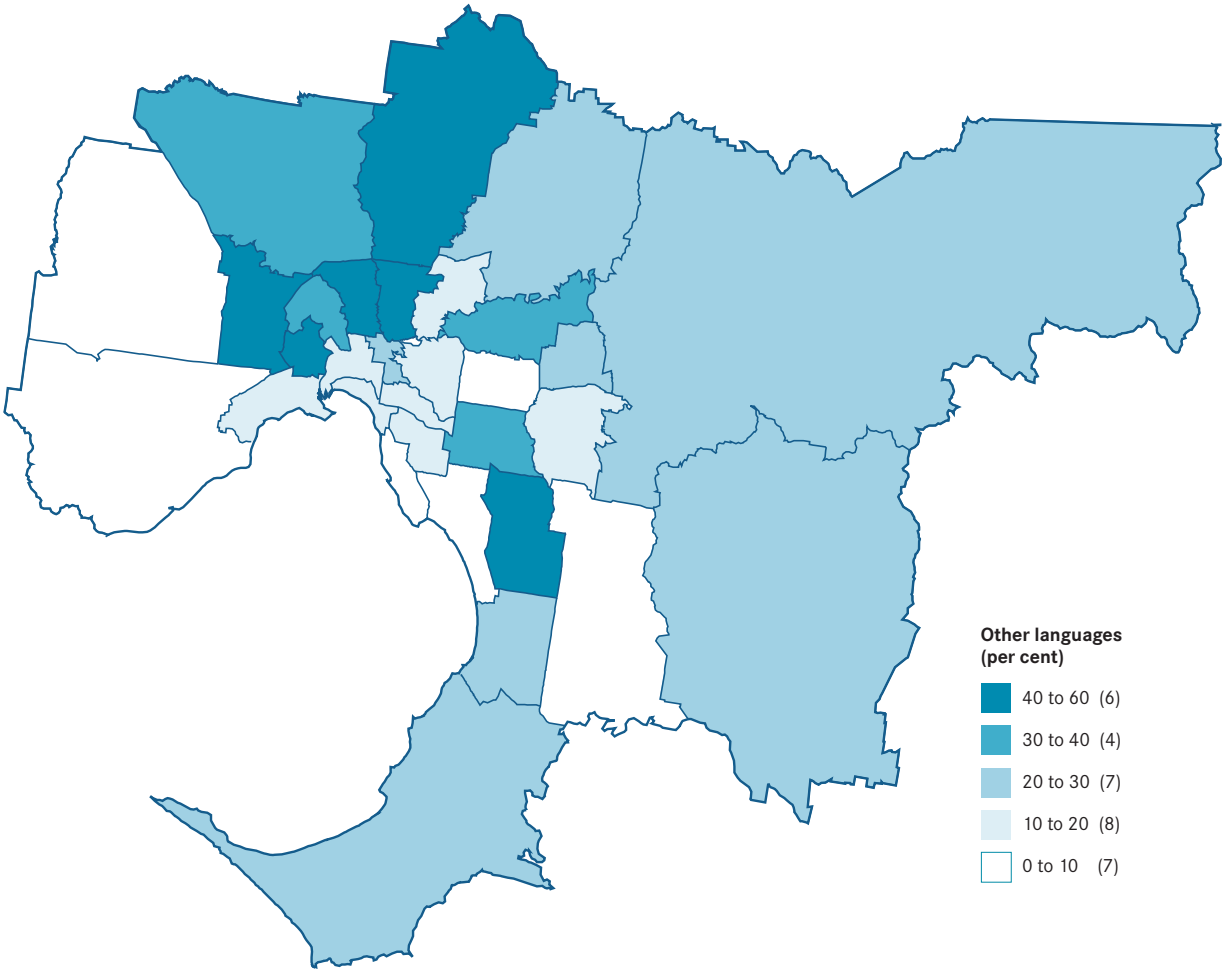
Notes: n/a = not applicable

(a) This list of languages consists of the most common 'language spoken at home' responses reported in the 2001 census.
(b) Includes the categories 'proficiency in English not stated' and 'language and proficiency in English not stated'.
(c) Comprises 'Chinese nfd', Hakka, Hokkien, Teochew, Wu and 'Chinese nec'.
(d) In 2006 'Tagalog' and 'Filipino' were identified individually; in 2001 they were classed as one language.
(e) Comprises 'Iranic nfd', Kurdish, Pashto, Balochi and 'Iranic nec'.
(f) Comprises languages not identified individually, Inadequately described and non-verbal, so described.

Source: Australian Bureau of Statistics, *2006 Census Tables*, Catalogue no 2068.0.

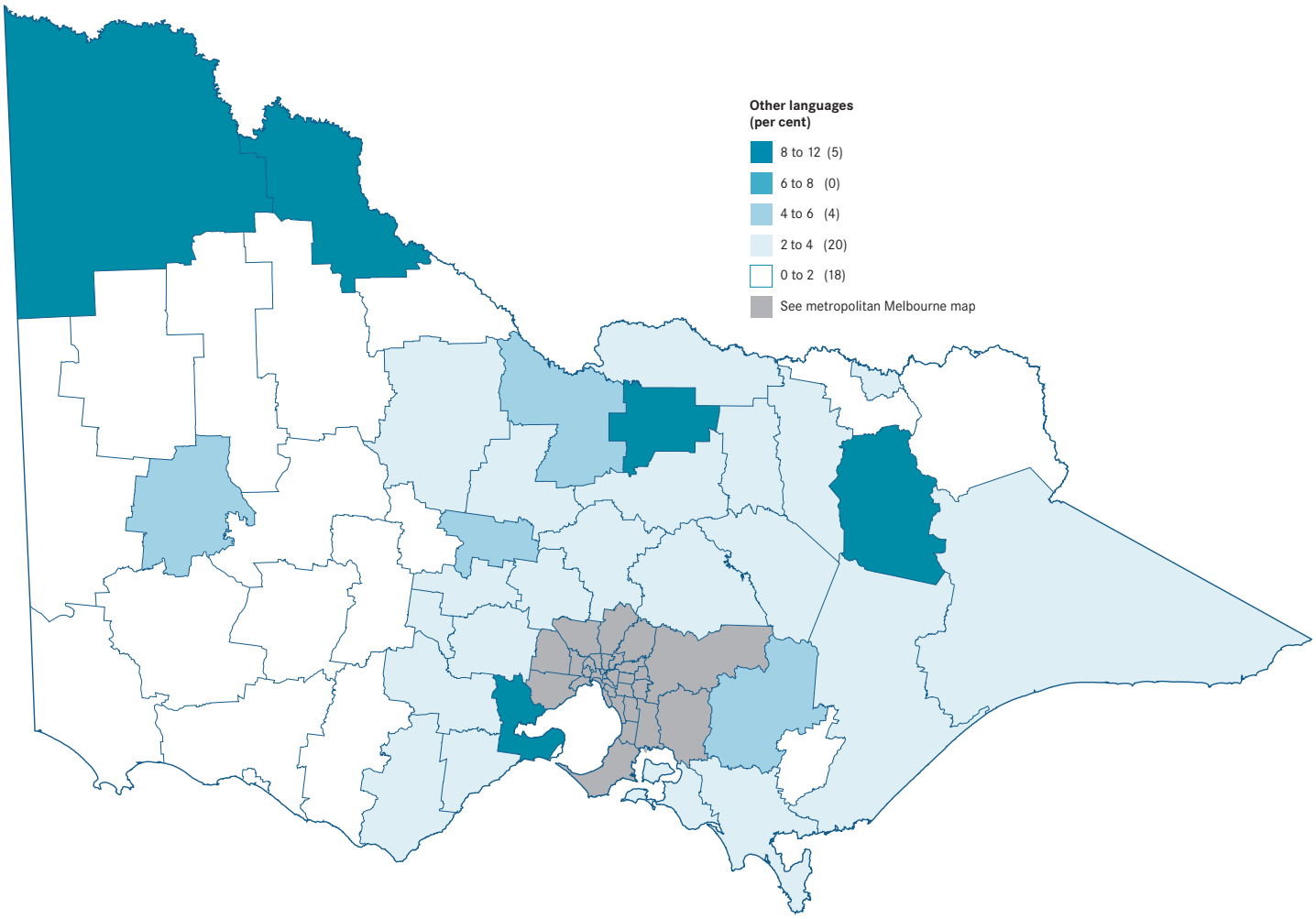
Victorians speak several different languages. However, based on the 2006 census data, almost four per cent of the Victorian population reported that they spoke English not well or not at all. Another five per cent did not indicate their proficiency in English. However, almost 17 per cent of the Victorian population who spoke a language other than English at home spoke good or very good English.

Persons who spoke a language other than English as a percentage of LGA population, metropolitan Melbourne LGAs, 2001



Source: Victorian Office of Multicultural Affairs, Department for Victorian Communities, 2003, 2001 Census Statistics nos 1–4 (first reprint), *Victoria: Melbourne and Regional Victoria Local Government Areas, Birthplace, Language, Religion and Ancestry–Distribution Maps*.

Persons who spoke a language other than English as a percentage of LGA population, regional Victoria, 2001



Source: Victorian Office of Multicultural Affairs, Department for Victorian Communities, 2003, 2001 Census Statistics nos 1–4 (first reprint), *Victoria: Melbourne and Regional Victoria Local Government Areas, Birthplace, Language, Religion and Ancestry–Distribution Maps*.

For more information:

Victorian Multicultural Commission (VMC), 2007, *Population Diversity in Local Councils in Victoria: 2006 Census*, Melbourne: VMC.

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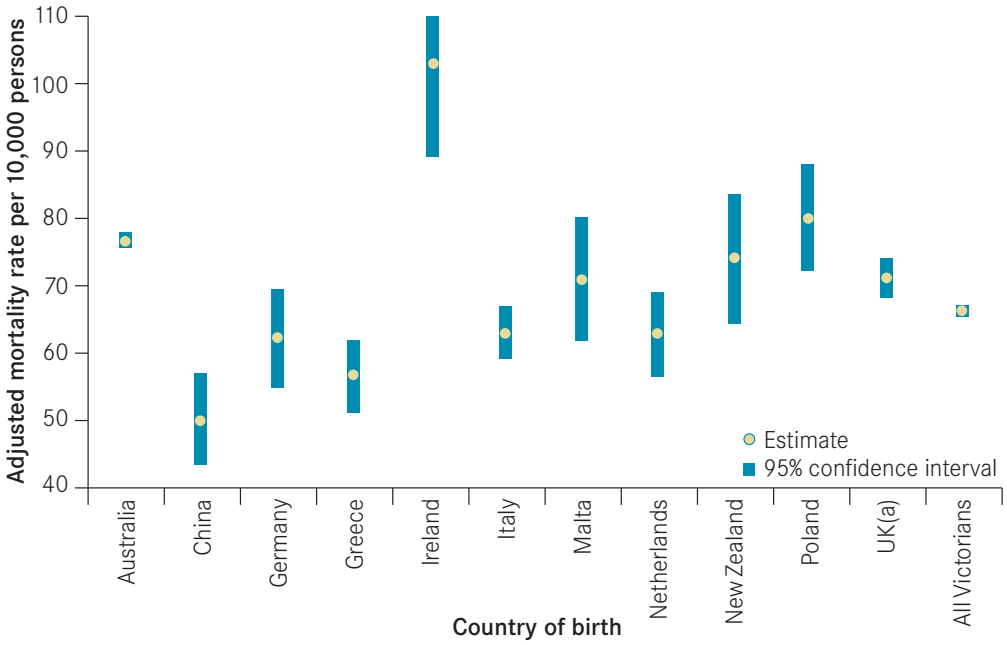
Mortality

Mortality rates, by country of birth, Victoria 2005



Mortality rate ratios, by country of birth (Victoria = 1), Victoria, 2005

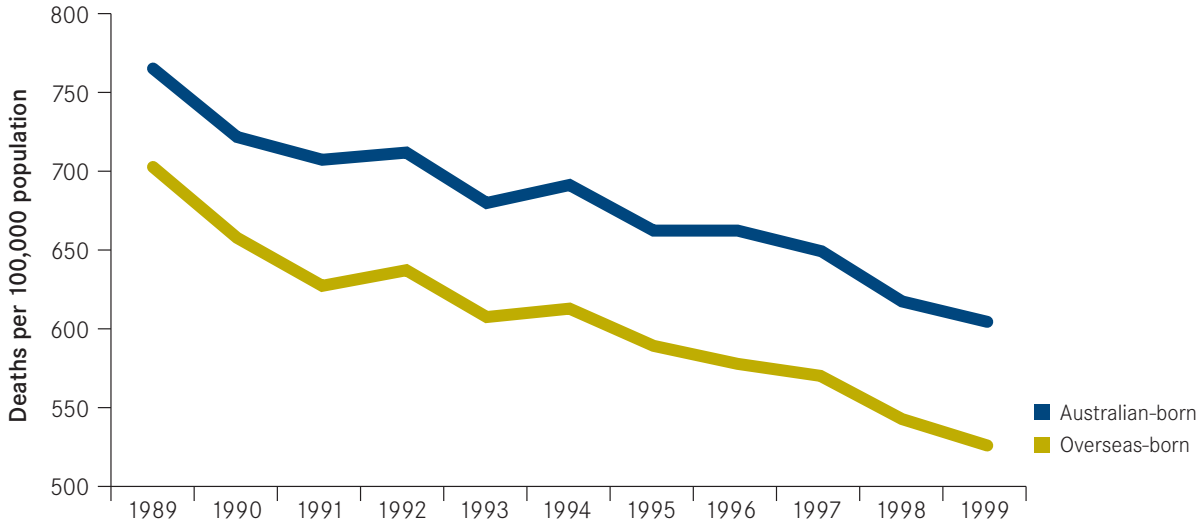
Country of birth	Rate ratio	95% CI
Australia	1.16	1.14–1.18
China	0.76	0.66–0.87
Germany	0.94	0.85–1.04
Greece	0.85	0.79–0.92
Ireland	1.36	1.18–1.57
Italy	0.95	0.90–1.00
Malta	1.07	0.95–1.21
Netherlands	0.95	0.86–1.05
New Zealand	1.12	0.99–1.27
Poland	1.21	1.11–1.32
UK[a]	1.07	1.30–1.12
All Victorians	**1.00**	**0.98–1.02**

Notes: CI = confidence interval. (a) The United Kingdom comprises 'United Kingdom nfd [not further defined]', Channel Islands, England, Isle of Man, Northern Ireland, Scotland and Wales. Rates are adjusted to Victorian 2006 census population; ratios are compiled from rates age-standardised to the Victorian 2006 census population.

Source: Australian Bureau of Statistics, 2005 mortality data; Australian Bureau of Statistics, *2006 Census of Population and Housing*, Catalogue no 2068.0–2006 Census Tables: country of birth of person by age.

Recent mortality data for Victoria, from 2005, shows that Australian-born residents, together with residents born in the UK, Ireland and Poland, had a significantly higher mortality rate than the rate for all Victorians. However, Victorian residents born in China and Greece had significantly lower mortality rates than the overall Victorian rate.

Standardised mortality rates among Australian and overseas-born persons, Australia, 1989–99



Source: Singh, M, de Looper, M, 2002, *Australian health inequalities: 1 birthplace*, Bulletin no. 2, AIHW Catalogue no. AUS 27. Canberra: AIHW.

Overseas-born persons experienced death rates 10–15 per cent lower than for Australian-born persons throughout the 1990s. Rates fell by over 20 per cent for both groups over the 10-year period. By 1999 the death rate among overseas-born persons had fallen to 524 per 100,000 persons, compared with 603 per 100,000 among Australian-born persons (de Looper and Bhatia, 2001).

For ease of comparison and to facilitate analysis across different data collections, more recent analyses have classified birthplace into several large country groupings–Australia, United Kingdom & Ireland, Other Europe, Asia and Other. Mortality data for the period 1997–99 indicate that migrants born in Asia had the lowest standardised mortality ratios (SMRs) for deaths from all causes, compared with other birthplace groups, with rates 28 per cent less than Australian-born males and 20 per cent less than Australian-born females. The three other birthplace groups also had SMRs significantly lower than Australian-born persons. Persons born in the United Kingdom and Ireland had rates closest to those of Australian-born persons (SMR of 0.89 for males and 0.94 for females–rates 11 per cent and six per cent less than the Australian rates) (AIHW: Singh and de Looper, 2002).

Standardised mortality ratios, by cause of death, birthplace and sex, Australia, 1997–99

	Males				Females			
Cause of death (ICD-10)	**UK & Ireland**	**Other Europe**	**Asia**	**Other**	**UK & Ireland**	**Other Europe**	**Asia**	**Other**
Cancers	0.95*	0.88*	0.69*	0.85*	1.05*	0.86*	0.79*	0.95
Colorectal	0.84*	0.76*	0.54*	0.77*	0.81*	0.77*	0.64*	0.73*
Lung	1.17*	1.02	0.79*	0.87*	1.43*	0.68*	0.78*	1.07
Breast	n/a	n/a	n/a	n/a	1.12*	0.85*	0.72*	1.06
Prostate	0.82*	0.64*	0.45*	0.76*	n/a	n/a	n/a	n/a
Diabetes mellitus	0.84*	1.28*	1.36*	0.92	0.80*	1.64*	1.67*	1.28*
Cardiovascular	0.87*	0.85*	0.75*	0.86*	0.88*	0.83*	0.81*	0.90*
Coronary heart disease	0.89*	0.86*	0.75*	0.86*	0.89*	0.84*	0.76*	0.91*
Stroke	0.83*	0.83*	0.81*	0.87*	0.88*	0.78*	0.92*	0.91
Respiratory	0.93*	0.62*	0.60*	0.75*	1.08*	0.53*	0.59*	0.84*
Digestive	0.87*	0.85*	0.74*	0.69*	1.02	0.75*	0.71*	0.80*
Injury and poisoning	0.91*	0.80*	0.56*	1.05	0.85*	0.91	0.77*	1.03
Motor vehicle	0.86	0.69*	0.61*	1.02	0.92	1.01	0.86	0.93
Suicide	0.91	0.77*	0.41*	1.02	0.79*	0.99	0.70*	1.09
All causes	**0.89***	**0.83***	**0.72***	**0.86***	**0.94***	**0.82***	**0.80***	**0.90***

Note: * Significantly different from 1.00 (Australian-born) at the five per cent level.

Source: Australian Institute of Health and Welfare (AIHW): Singh, M, de Looper, M, 2002, *Australian health inequalities: 1 birthplace*, Bulletin no 2. AIHW Catalogue no AUS 27, Canberra: AIHW.

Standardised mortality ratios for all causes of death among adults aged 25–64 years, by birthplace and sex, Australia, 1985–87 and 1997–99

	Males		Females	
Birthplace	**1985–87**	**1997–99**	**1985–87**	**1997–99**
Australia	1.00	1.00	1.00	1.00
UK and Ireland	0.86	0.80	0.91	0.84
Other Europe	0.79	0.79	0.73	0.73
Asia	0.61	0.63	0.67	0.69
Other	0.90	0.87	0.89	0.93

Note: Ratios compiled from rates age-standardised to the Australian population at 30 June 1988.

Source: Australian Institute of Health and Welfare (AIHW): Singh, M, de Looper, M, 2002, *Australian health inequalities: 1 birthplace*, Bulletin no 2. AIHW Catalogue no AUS 27, Canberra: AIHW.

Mathers (1994) examined 1985–87 mortality data for persons aged 25–64 years and found significant inequalities between Australian-born and overseas-born persons. A comparison of these data with data from 1997–99 show that these inequalities continued and that, for persons born in the United Kingdom and Ireland, they increased (AIHW: Singh and de Looper, 2002).

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Hospitalisation

Standardised hospitalisation ratios, by principal diagnosis, birthplace and sex, persons aged 15 years and over, Australia,1999–00

	Males				Females			
ICD-10-AM chapter principal (first) diagnosis	**UK & Ireland**	**Other Europe**	**Asia**	**Other**	**UK & Ireland**	**Other Europe**	**Asia**	**Other**
Infectious and parasitic	0.75*	0.70*	0.89*	0.89*	0.79*	0.68*	0.81*	0.90*
Tuberculosis	0.77	1.37	9.39*	2.96*	1.04	2.17*	17.89*	5.39*
Cancers	0.70*	0.72*	0.53*	0.77*	0.80*	0.77*	0.67*	0.85*
Lung	1.02	1.01	0.71*	0.90	1.29*	0.69*	0.62*	0.79*
Melanoma	0.42*	0.26*	0.06*	0.61*	0.50*	0.25*	0.15*	0.53*
Breast	n/a	n/a	n/a	n/a	0.98	0.81*	0.70*	0.97
Prostate	0.68*	0.61*	0.44*	0.80*	n/a	n/a	n/a	n/a
Cervix	n/a	n/a	n/a	n/a	0.85*	0.83*	1.42*	1.62*
Diabetes mellitus	0.69*	0.77*	0.60*	0.74*	0.58*	0.87*	0.66*	0.64*
Mental and behavioural	0.66*	0.60*	0.36*	0.61*	0.79*	0.74*	0.33*	0.70*
Cardiovascular	0.78*	0.86*	0.75*	0.87*	0.82*	0.94*	0.76*	0.88*
Coronary heart disease	0.79*	0.82*	0.82*	0.90*	0.82*	0.88*	0.79*	0.94*
Stroke	0.71*	0.88*	0.81*	0.79*	0.78*	0.88*	0.95	0.93
Respiratory	0.77*	0.74*	0.62*	0.78*	0.81*	0.62*	0.57*	0.77*
Asthma	0.65*	0.38*	0.58*	0.87*	0.68*	0.42*	0.66*	0.92
Digestive	0.78*	0.78*	0.68*	0.79*	0.82*	0.80*	0.66*	0.80*
Injury and poisoning	0.73*	0.64*	0.45*	0.79*	0.83*	0.73*	0.56*	0.81*
All diagnoses	**0.73***	**0.83***	**0.73***	**0.81***	**0.77***	**0.82***	**0.75***	**0.87***

Note: * Significantly different from 1.00 (Australian-born) at the five per cent level.

Source: Australian Institute of Health and Welfare (AIHW): Singh, M, de Looper, M, 2002, *Australian health inequalities: 1 birthplace*, Bulletin no 2. AIHW Catalogue no AUS 27, Canberra: AIHW.

The pattern for hospitalisation was similar to that for mortality, with generally lower hospitalisation rates among overseas-born populations, reflecting results of previous analyses (Mathers, 1994; d'Espaignet and Stevenson, 1992). In 1999–00, males born in the United Kingdom and Ireland or in Asia had hospitalisation rates 27 per cent lower than for Australian-born males. Females born in Asia had rates 25 per cent lower than for Australian-born females. The rate for females born in other countries was closest to that for Australia-born females, but this rate was still 13 per cent less than the Australian-born rate. Persons born in Asia had significantly lower hospitalisation rates for several principal diagnoses, including all cancers, and more specifically, melanoma, prostate and breast cancer, as well as mental disorders, respiratory conditions, injury and poisoning (Singh and de Looper, 2002).

A comparison of hospitalisation data for 1995–96 with data for 1999–00 shows little change over time. In 1995–96, the standardised hospitalisation ratio (SHR), (Australian–born = 1), was 0.71 for Asian-born males and 0.77 for females. In 1999–00 the corresponding figures were 0.73 for males and 0.75 for females. The greatest change was among males born in 'other' countries (SHR of 0.86 in 1995–96 and 0.81 in 1999–00), and among females born in the United Kingdom and Ireland (SHR of 0.82 in 1995–96 and 0.77 in 1999–00) (Singh and de Looper, 2002).

Persons born overseas generally enjoy better health than did Australia-born persons, if gauged by measures such as mortality and hospitalisation rates and the prevalence of lifestyle-related health risk factors. These inequalities are largely explained by the 'healthy migrant effect', which ensures that, for the most part, only those migrants in good

health migrate to Australia. Inequalities in health status by birthplace, and changes in health advantage among migrants after arrival in Australia, offer some insight into the effect of lifestyle-related health risk factors on health outcomes. They might also guide health professionals in targeting education, screening and other health interventions (Singh and de Looper, 2002).

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Refugees

In this chapter

Summary

In the period 2000–05 an estimated 19,000–24,000 people of refugee background settled in Victoria, including humanitarian entrants, asylum seekers and migrants of refugee background. They were born (predominantly) in 15 refugee-source countries. Over the five-year period 1 January 2000 to 1 January 2005 14,756 people in Victoria were processed through the Humanitarian Program. In 2006–07 in Victoria 3,629 humanitarian entrants were settled. There were almost equal numbers for females and male entrants in all age groups. Over half of all entrants were children and young people aged under 20 years.

When compared with Australia-born, rate ratios of total hospital admissions were lower for 67 per cent (10 of 15) of the refugee-source countries.

When compared with Australia-born averages, emergency admission rate ratios were similar for 40 per cent (six of 15) or lower for 33 per cent (five of 15) of the refugee-source countries.

Rate ratios for length of stay (that is, hospital bed days) were lower than the Australia-born average for 93 per cent (14 of 15) of the refugee-source countries. One country reported no clear patterns over the six-year period.

The concept of preventable or avoidable hospitalisation has been developed as an indicator of access to and outcomes of primary care. Preventable hospitalisations are admissions for ambulatory care sensitive conditions (ACSCs) such as asthma, diabetes, and hypertension that can often be managed with timely and effective treatment in an outpatient setting, thereby preventing the need for hospital admission. Total ACSCs admission rate ratios were lower than the Australia-born average for 40 per cent (six of 15) of the refugee-source countries. Equally, 40 per cent of the refugee-source countries reported similar total ACSCs admission rate ratios when compared with the Australia-born.

Lower rate ratios of admission due to mental/behavioural disorders were found for 93 per cent (14 of 15) of the refugee-source countries, when compared with Australia-born averages. No refugee-source country recorded a pattern of higher mental/behavioural disorders admission rate ratios.

Introduction

Permanent entry to Australia can occur through the Migration Program (for skilled and family migrants) or the Humanitarian Program (for refugees and others in humanitarian need). When people arrive from refugee source countries through either program, they may be described as having a 'refugee-like background'. However, the settlement data below only presents information about those people who came through the Humanitarian Program. The program comprises two components: offshore resettlement for people in humanitarian need overseas and onshore protection for those people already in Australia claiming its protection.

In the period 2000–05 an estimated 19,000–24,000 people of refugee background settled in Victoria, including:

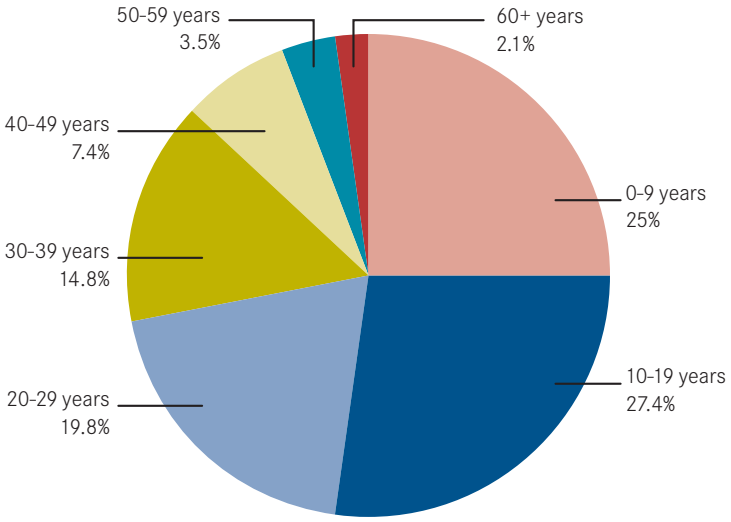
- humanitarian entrants (both refugee category and special humanitarian visas)
- asylum seekers (including people on temporary protection visas)
- migrants of a refugee background (including migrant family stream and skilled migrants).

Of the 14,756 people in Victoria who were processed through the Humanitarian Program over the five-year period 1 January 2000–1 January 2005:

- more than 51 per cent were under 25 years old
- the largest under-25 years grouping was in the 5–11 years category
- males slightly outnumbered females in all age groups, except in the 65 years and over age group.

Humanitarian Program entrants to Victoria

Humanitarian Program entrants, by age group, Victoria, 2006–07



Humanitarian Program entrants, by age group and sex, Victoria, 2006–07

Age group (years)	Males	Females
0–9	442	467
10–19	461	535
20–29	338	382
30–39	298	239
40–49	154	115
50–59	63	63
60+	41	34
Total	**1,797**	**1,835**

Source: Department of Human Services, *Refugee health and wellbeing action plan 2005–2008 progress report*, October 2007.

In 2006–07 a total of 3,629 entrants came to Victoria under the Humanitarian Program. Of these entrants, 2,004 people came under the Special Humanitarian Program (sponsored by a 'proposer'), and 1,494 under the refugee category. A further 131 people applied for protection onshore, with the largest numbers coming from Sri Lanka, China and Iraq. The largest group of new arrivals in 2006–07 came from Burma, with 1,019 entrants accounting for 28 per cent of all arrivals. Sudanese entrants were the second largest group, with 866 people, accounting for 24 per cent of new arrivals. In 2006–07 significant numbers of people settled in Victoria from Afghanistan, (537 entrants) and Iraq (492 entrants). Most of the Middle Eastern entrants were sponsored through the Special Humanitarian Program. Smaller numbers of people came from Ethiopia, Liberia, Iran, Sri Lanka, the Democratic Republic of Congo and Sierra Leone.

In 2006–07 almost equal numbers of female and male entrants in all age groups settled in Victoria. However, over half of all entrants were children and young people aged under 20 years. Only two per cent of entrants were aged over 60 years.

The top four countries contributing to Victoria's total number of Humanitarian Program entrants between 1 July 2004 and 30 June 2007 were Burma, Sudan, Afghanistan and Iraq. While the total number of entrants from Sudan was the greatest over the three-year period, numbers of entrants from Burma were higher in 2006–07 than from Sudan, reflecting a changing pattern for Victoria.

Migration category: humanitarian stream arrivals to Victoria, by nationality, 2004-05

	2004–05			2003–04	
Nationality	**Number of entrants**	**Rank by number of entrants**	**Per cent**	**Number of entrants**	**Per cent**
Sudanese	2,294	1	60.1	1,724	54
Iraqi	453	2	11.9	446	14
Liberian	218	3	5.7	0	0
Ethiopian	163	4	4.3	209	6.5
Burmese	163	5	4.3	22	0.7
Afghan	160	6	4.2	293	9.2
Iranian	108	7	2.8	110	3.4
Burundi	67	8	1.8	0	0.0
Serbian	54	9	1.4	106	3.3
Somali	35	10	0.9	93	2.9
Other	103	11	2.6	190	6.0
Total	**3,818**		**100**	**3,193**	**100**

Source: Department of Human Services (Policy Projects Branch), *Refugee health and wellbeing action plan–current and future initiatives 2005–2008*, 2005.

Between 1 July 2004 and 30 June 2005 a total of 3,818 humanitarian entrants settled in Victoria. This was an increase of 625 people from the 2003–04 total of 3,193 entrants. People of a Sudanese background comprised more than 60 per cent of the entire Humanitarian Program intake, while new arrivals from West African countries, including people from Liberia and Burundi, formed entirely new communities. Special Humanitarian Program (SHP) entrants comprised approximately 70 per cent of the total Humanitarian Program intake.

Humanitarian entrant settlement,10 top local government areas, Victoria, 2006–07

In 2006–07 the largest number of entrants again settled initially in the City of Greater Dandenong, accounting for 31 per cent of total entrants. However, numbers settling in Wyndham and Hume were greater than numbers settling in Brimbank for the first time, attracting 14.5 per cent and 13.2 per cent of total entrants respectively. Numbers of new arrivals also proportionally increased in other local government areas such as Maribyrnong, Maroondah and Hobson's Bay, with fewer people settling in Darebin compared to in 2005–06. Numbers of entrants settling in Greater Shepparton were again high, with four per cent of all arrivals, most of whom were sponsored through the Special Humanitarian Program. However, this data captures only the immediate arrival of people from a refugee background to local government areas and does not reflect the voluntary relocation of humanitarian entrants post-arrival, which increased markedly during 2006–07.

Common health concerns of people from a refugee background

The health problems relate to the deprivation associated with the refugee experience and the fact that refugees have often originated from some of the poorest countries in the world. These include:

- poor mental health, for example, anxiety, depression and post-traumatic stress disorder
- poor dental health, which may be a result of poor nutrition, lack of fluoridated water, poor dental hygiene, limited dental care and, in some cases, torture
- nutritional deficiencies
- infectious and communicable diseases
- chronic diseases (often not diagnosed or inadequately managed).

Experiences affecting refugee health

The table below summarises some of the experiences people of a refugee background might encounter that can affect their health status and wellbeing.

Experiences affecting refugee health

Experiences in countries of origin	Experiences in the settlement environment
Forced displacement	Absence of family members, home and community
Violence and human rights abuses	Lack of social and family support
Loss of and separation from family members, often in violent circumstances	Guilt about family members remaining in difficult circumstances overseas; limited access to cultural and religious institutions and cultural communities
Deprivation of cultural and religious institutions and practices	Stress associated with learning a new language, adjusting to a and new culture and dealing with the practical tasks of establishing a life in a new country
Periods of extreme poverty	Unemployment and underemployment (associated with a range of factors including English language proficiency and non-recognition of qualifications)
Lack of access to health care	Poverty
Constraints on access to education, employment, family and community support and adequate income	Insecure housing; lack of understanding and, in some cases, discriminatory and xenophobic behaviour in the wider community
Prolonged uncertainty about the future	People of a refugee background with limited access to financial and social support (who may also live on a temporary or bridging visa and face an uncertain future in Australia), experience other difficulties in terms of re-establishing their lives

Source: Department of Human Services, *Refugee health and wellbeing action plan–current and future initiatives 2005–2008*, 2005.

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For more information

Asylum Seeker Resource Centre: www.asrc.org.au

Department of Human Services multicultural and refugee website: www.dhs.vic.gov.au/multicultural

Integrated Humanitarian Settlement Strategy, community profiles, settlement data and planning information: www.immi.gov.au

Refugee health assessment MBS items: www.health.gov.au

Refugee Health Research Centre, La Trobe University: www.latrobe.edu.au/rhrc/

Victorian Foundation for Survivors of Torture: www.foundationhouse.org.au

Victorian Multicultural Commission: www.multicultural.vic.gov.au

Victorian refugee health assessment form: www.gpdv.com.au

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Hospitalisation

Hospital admissions reflect the amount of a disease condition a group experiences and the resources they can call upon to address their health problems. A person from a small, isolated or fragmented community may experience treatment different from someone with the same condition who belongs to a community that has supportive family networks and health care professionals who understand their language and culture. Hospitalisation may occur more quickly in the first scenario, but take longer or be avoided altogether in the second.

Comparison of hospital data between Australian-born residents of Victoria and residents born in refugee-source countries

Following the analysis of a six-year (1 July 1998 to 30 June 2004) statewide hospital discharge dataset to investigate whether inequalities in hospital use and health outcomes exist among people born in eight refugee source countries, compared with the Australian-born population in Victoria, it was concluded that people born in refugee-source countries had statistically significantly ($P<0.05$) higher rates of total hospital admissions and emergency admissions, and lower rates of surgical admissions, total days in hospital and admissions due to mental and behavioural disorders. Rates for discharge at own risk and admission due to infectious/parasitic diseases were similar between the two populations. The findings indicated that the Refugee and Humanitarian Program did not place a burden on the Australian hospital system (Correa-Velez et al., 2007a).

Comparison of age-standardised hospital admission rates between people born in refugee-source countries and Australian-born residents, Victoria, 2003–04

	Born in a refugee-source country		Born in Australia	
Outcome	Rate per 1,000 persons	(95% CI)	Rate per 1,000 persons	(95% CI)
Total hospital admissions	495.2	(484.7–505.9)	444.8	(442.0–447.6)
Emergency admissions	113.2	(108.2–118.4)	100.9	(99.6–102.2)
Surgical admissions	96.7	(92.4–101.3)	114.3	(112.9–115.7)
Total days in hospital	1,102.7	(1,085.9–1,119.8)	1,493.2	(1,488.0–1,498.4)
Discharge at own risk	1.7	(1.1–2.4)	1.1	(0.9–1.2)
Hospital deaths	4.1	(3.1–5.5)	4.4	(4.1–4.7)
Admissions due to infectious/parasitic diseases	22.4	(20.3–24.6)	20.3	(19.7–20.9)
Admissions due to mental/behavioural disorders	24.0	(21.9–26.4)	34.2	(33.5–35.0)

Note: CI = confidence interval.

Source: Correa-Velez, I, Sundararajan, V, Brown, K, Gifford, SM, 2007, 'Hospital utilisation among people born in refugee-source countries: an analysis of hospital admissions, Victoria, 1998–2004', *Medical Journal of Australia,* Volume 186, pp. 577–580.

Expanded analysis of hospital admission rates of Victorian residents born in refugee-source countries and Australian-born residents

An expanded analysis of hospital admissions between 1998–99 and 2003–04 of individuals from 15 source countries with a history of immigration to Victoria under the refugee and humanitarian program over the last 35 years was also carried out (Correa-Velez et al., 2007b). A list of these countries, referred to as 'refugee-source countries', is shown in the table below. While for some countries the majority of arrivals in Australia entered under the humanitarian category (for example, Afghanistan, Iraq, Sudan, Bosnia-Herzegovina), other countries, such as Chile and Croatia, had a more varied combination of arrival categories. Nevertheless, the refugee stream contributed significantly to the overall migration of these specific communities into Australia.

Refugee-source countries included in the expanded analysis

Refugee-source countries	
Afghanistan	Ethiopia
Bosnia-Herzegovina	Former Yugoslavia
Burma (Myanmar)	nfd(a)
Cambodia	Iran
Chile	Iraq
Croatia	Somalia
El Salvador	Sudan
Eritrea	Vietnam

Note: (a) The lack of statistical rigour and the inconsistent classification of country of birth for the countries from former Yugoslavia in both the Australian Bureau of Statistics census and the DIMIA Settlement Database resulted in a significant proportion of respondents identifying themselves in the category of 'former Yugoslavia, not further defined'.

The key findings that emerged from this expanded study, which included these 15 refugee-source countries, were as follows:

Total hospital admissions

- Similar to the Australia-born population, total hospital admission rates increased for 93 per cent (14 of 15) of the refugee-source countries over the six-year period.
- When compared with Australia-born, rate ratios for total hospital admissions were lower for 67 per cent (10 of 15) of the refugee-source countries. Two countries reported higher rate ratios, one country reported either higher or similar rate ratios and two others recorded no clear patterns of total hospital admissions rate ratios.

Admission type

- Rates of elective hospital admission increased over the six-year period for Australia-born and for 87 per cent (13 of 15) of the refugee-source countries.
- Elective admission rate ratios were lower than the Australia-born average for 60 per cent (nine of 15) of the refugee-source countries. Two (13 per cent) countries reported higher elective admission rate ratios when compared with the Australia-born.
- Rates of emergency admission increased over time for Australia-born and for 87 per cent (13 of 15) of the refugee-source countries.
- When compared with Australia-born averages, emergency admission rate ratios were similar for 40 per cent (six of 15) or lower for 33 per cent (five of 15) of the refugee-source countries.
- Rates of obstetric admission decreased over time for Australia-born and three (20 per cent) refugee-source countries. Rates increased for 60 per cent (nine of 15) of the refugee-source countries.
- Obstetric admission rate ratios were higher than the Australia-born average for 60 per cent (nine of 15) and similar for 27 per cent (four of 15) of the refugee-source countries.

Length of stay

- Rates of length of stay showed an increasing trend over the six-year period for the Australia-born and for 87 per cent (13 of 15) of the refugee-source countries.
- Rate ratios of length of stay (that is, hospital bed days) were lower than the Australia-born average for 93 per cent (14 of 15) of the refugee-source countries. One country reported no clear patterns over the six-year period.

Ambulatory Care Sensitive Conditions (ACSCs)

- Rates of total ACSCs admission showed an increasing trend over time for the Australia-born and for 93 per cent (14 of 15) of the refugee-source countries.
- Total ACSCs admission rate ratios were lower than the Australia-born average for 40 per cent (six of 15) of the refugee-source countries. Equally, 40 per cent of the refugee-source countries reported similar total ACSCs admission rate ratios when compared with the Australia-born.
- Rates of acute ACSCs admission increased over the six-year period for the Australia-born and for 93 per cent (14 of 15) of the refugee-source countries.
- Compared with Australia-born, acute ACSCs admission rate ratios were lower for 53 per cent (eight of 15) and similar for 33 per cent (five of 15) of the refugee-source countries.
- Rates of chronic ACSCs admission showed and increasing trend over time for the Australia-born and for all refugee-source countries.
- Chronic ACSCs admission rate ratios were similar to the Australia-born average for 53 per cent (eight of 15) of the refugee-source countries. Three countries (20 per cent) recorded lower rate ratios, three (20 per cent) reported either lower or similar rate ratios, and one country showed no clear patterns over the six-year period.
- Rates of vaccine-preventable ACSCs admission decreased over time for the Australia-born and for 53 per cent (eight of 15) of the refugee-source countries. Rates showed an increasing trend for six (40 per cent) of the refugee-source countries.
- Vaccine-preventable ACSCs admission rate ratios were similar to Australia-born averages for 60 per cent (nine of 15) of the refugee-source. Two countries (13 per cent) recorded lower rate ratios, and only one refugee-source country (seven per cent) showed a higher pattern of vaccine-preventable ACSCs admission rate ratios.

The findings of this study support the need to challenge common assumptions relating to the use of health services among people born in refugee-source countries. Relative to the Australian-born population, this sub-population under-used hospital services in Victoria. However, whether low levels of use reflect reduced levels of need or unrecognised barriers to hospital utilisation is not clear. Anecdotal evidence from service providers indicates that significant barriers exist to accessing acute health care services among people from refugee backgrounds. One way to examine whether people born in refugee-source countries face difficulties in accessing hospital services would be to assess utilisation rates by the length of time since their arrival in Australia. Recent arrivals may have less knowledge about the availability of hospital services than those who had been longer in the country. Unfortunately, this information was not available in the hospital discharge dataset used in the study. Further research, in particular, using a longitudinal design with the inclusion of length of residence, is needed to investigate the potential barriers people from refugee backgrounds face in both acute and ambulatory health care settings.

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Correa-Velez, I, Sundararajan, V, Brown, K, Gifford, SM, 2007b, 'Hospital Utilisation and Outcomes Amongst Victorian Residents Born in Refugee-Source Countries', An analysis of hospital admissions between 1998–99 and 2003–04 from the *Victorian Admitted Episodes Dataset*, Victorian Department of Human Services.

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Longitudinal Survey of Immigrants to Australia

Results from the Longitudinal Survey of Immigrants to Australia (LSIA) carried out by the Australian Bureau of Immigration, Multicultural and Population Research show that principal applicants in the Humanitarian Program were the least likely to rate their health as 'very good' (37 per cent), compared with more than 60 per cent of those in the Business/Employer Nomination Scheme (ENS), 'concessional family' and 'independent' categories. Nearly five per cent of the principal humanitarian applicants reported that their health was 'poor' or 'very poor', compared with less than one per cent among the other immigration categories. Long-term medical conditions were most prevalent among principal applicants in the humanitarian category (14 per cent), followed by those in the Preferential Family (seven per cent), concessional family (three per cent), business/ENS (two per cent) and independent (1.4 per cent) categories. In relation to health care use, the LSIA found that humanitarian arrivals 'were more likely to visit a health care provider within the first six months of arrival', and had greater number of visits to this providers than immigrants in other visa categories.

Reference

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Appendix

Explanatory notes on data sources and methods used

Victorian Population Health Survey (VPHS) 2006

The VPHS 2006 was administered by computer assisted telephone interview (CATI) to a representative sample (n=7,500) of persons aged 18 years or over residing in private dwellings in Victoria. Department of Human Services staff supervised the fieldwork, which was outsourced to a market research agency. All data were self-reported and stored directly in the CATI system. Random digit dialling was used to generate the sample of telephone numbers, and all residential households with landlines were considered in scope for the survey. The survey sample was stratified by department region. This type of survey delivery excludes various population groups, such as the homeless or itinerant, those persons in hospitals or institutions, the frail and aged and persons with disabilities which preclude them from participating in an interview.

Letters were mailed to all households where the randomly selected telephone number matched a listing in an electronic directory of Victorian household telephone numbers. Approximately 13,200 primary approach letters were mailed, an approach known to contribute to an increase in response rates. The letter informed the households that the department was conducting the Victorian Population Health Survey to collect information about health, lifestyle and wellbeing in the community, and outlined the importance of the survey. Interviews were conducted in six languages other than English, and a participation rate of 62 per cent was achieved. Survey data were weighted to reflect the probability of selection of the respondent in each household and the age, sex and geographic distribution of the population.

Burden of disease

Disability-adjusted life years (DALY)

The Victorian burden of disease study is based largely on the methods developed for the global burden of disease (GBD) study (Murray and Lopez, 1996). The method allows the quantification of all states of ill-health into a universal indicator, the disability adjusted life year (DALY). The DALY is a health gap measure that combines both time lost due to premature mortality and non-fatal conditions. The DALY extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of 'healthy' life lost by virtue of being in states other than good health. DALYs for a disease or health condition are calculated as the sum of the years of life lost due to premature mortality (YLL) in the population, and the equivalent 'healthy' years lost due to disability (YLD) for incident cases of the health condition.

$$DALY = YLL + YLD$$

Years of life lost (YLL)

YLLs are the mortality component of DALYs. To define the standard, the highest life expectancy observed for any nation (that is, the 82.5 years life expectancy of women in Japan) was chosen. The standard expectations are, therefore, based on a model life table: the Coale and Demeny model life table, which is broken down into four regional models: north, south, east and west. West level 26 was chosen, which has a life expectancy at birth for females of 82.5 years. The male–female 'biological' difference in survival potential was chosen as 2.5 years. There is no male schedule with a life expectancy of 80 years, therefore the standard life expectancy at birth for males of 80 years was based on the female schedule for Coale and Demeny model life table West level 25 (Mathers et a., 2001). This life table differs from the Australian cohort life expectancy (which takes into account declining mortality trends) created by Mathers and colleagues for the Australian National Burden of Disease Study (Mathers et al, 1999) and the 1996 Victorian Burden of Disease Study (DHS, 1999a, b).

The interpolated life expectancy for each age category and sex was estimated from the observed mean age at death, in the age interval and the life expectancy figures at the exact ages defining the age interval. The mean life expectancy in each age interval was then discounted at three per cent using the formula:

$$YLL = \frac{1}{0.03}\left(1-e^{-0.03L}\right)$$

where L is the life expectancy. YLL conversion figures were calculated for each age group and sex, and then multiplied by the observed deaths to derive the YLLs by cause, age and sex.

Years lost due to disability (YLD)

Years lost due to disability are the disability component of DALYs. The basic formula for calculating YLD is:

$$YLD = I \times DW \times L$$

where I is the number of incident cases in the reference period, DW is the disability weight (in the range zero to one) and L is the average duration of disability (measured in years). With discounting at a rate of three per cent, the formula becomes:

$$YLD = \frac{I \times DW \times (1-e^{-0.03L})}{0.03}$$

Consistent and meaningful YLD estimates depend on a clear definition of the condition under consideration, in terms of case or episode and severity level or disease stage. It is then necessary to ensure that the disability weight and the population incidence or prevalence data relate to the same case definition. The most difficult step in estimating YLD for most diseases is matching existing population data to the disease stage or severity categories for which weights of different severity are available. Errors in this matching can result in a substantial error in the YLD estimate.

Life expectancy at birth for Victorian local government areas, 2001–2005

To determine life expectancy at birth for local government areas (LGAs), registered Australian Bureau of Statistics (ABS) mortality and mid-year estimated resident population (ERP) data 2001–05 were used. Deaths of persons with place of usual residence in Victoria were included, and deaths with unidentified place of usual residence or missing age were excluded from the analysis.

Life tables combine mortality rates of a population at different ages into a single model, and project life expectancy assuming that current death rates will continue into the future. The UK Office of National Satatistics abridged life table (Toson & Baker, 2003; Eayres & Williams, 2004) was used to calculate life expectancy at birth for each LGA for the period 2001–2005 by sex. Age at death was grouped into age groups of 0, 1–4 and 5–9 years, and continued in five-year intervals to age 85 years and over. The life tables were computed in MS Excel spreadsheets.

Ambulatory care sensitive conditions (ACSCs)

Hospital separation data were obtained from the Victorian Admitted Episodes Dataset (VAED). The VAED is a minimum dataset containing data on all admitted patient activity (submitted by all public and private acute hospitals) including acute facilities in rehabilitation, extended care institutions and day procedure centres. Clinical data are stored as International Classification of Disease Version 10, Australian Modification (ICD-10-AM) codes in diagnosis and procedure fields in the VAED. The VAED records were selected on the basis of diagnosis fields, with some exclusions based on procedure fields. Ambulatory care sensitive conditions (ACSCs) identified using ICD-10-AM codes in the diagnosis fields of the VAED are indicated in Table 1.

Population figures by gender and five-year age groups were obtained using the ERP figures produced by the ABS. The population data were used for calculating admission rates and 95 per cent confidence intervals (CI).

To analyse individual ACSCs admissions to hospital, admission rates for defined geographic areas must be calculated. The boundaries of the geographic areas in Victoria (which make up local government areas under the Australian Standard Geographic Classification) have changed significantly over the past decade. There are currently 200 statistical local areas, which make up 79 local government areas. These boundaries were collapsed into 32 primary care partnership (PCP) catchment areas, with the population in 2003 ranging from a minimum of 31,025 (Grampians Pyrenees PCP) to a maximum of 421,486 (Outer East PCP). Information from the VAED at the hospital admission level was used to assign each patient's place of usual residence to one of the 32 PCPs. Comparisons across the PCPs were made for the period 1999–2000 and 2003–04, while comparisons across the eleven years from 1993–94 to 2003–04 were made at the department region level.

Admission rates were age and sex standardised (direct method) using the 2001 Victorian population as the reference. The 95 per cent CI for the standardised rates were based on the Poisson distribution.

Health outcomes

National health priority conditions

The National Health Priority Areas (NHPA) initiative is a collaborative effort endorsed by the Australian and all state and territory governments. The NHPA initiative seeks to focus the attention of the health sector on diseases or conditions that have a major impact on the health of Australians, and offer potential for significant health gain. The NHPA initiative spans the continuum of care, from prevention and early detection, through to treatment, rehabilitation and continuing care, palliative care and research. There are seven national health priority areas:

1. Cardiovascular health and stroke
2. Diabetes Mellitus
3. Asthma
4. Arthritis and musculoskeletal conditions
5. Cancer control
6. Mental health (with a focus on depression)
7. Injury prevention and control

In addition, the initiative focuses on common health risk factors and health inequalities as reflected by NHPA diseases and conditions.

The ICD–9–CM and ICD–10–AM codes used to define these national health priority areas for extracting public and private hospital data from the VAED are summarised in table 2.

Victorian cancer registry data

Incident cases of all cancers and the leading five cancers (bowel, breast, prostate, lung and melanoma) were obtained from the Victorian Cancer Registry, Cancer Epidemiology Centre at The Cancer Council Victoria. The Victorian Cancer Registry has been a population-based registry since 1982. The registry was enabled by the *Cancer Act 1982*, which made it mandatory for all hospitals and pathology laboratories to notify the cancer registry of the presence of cancer in patients or human tissues.

All malignant neoplasms are registered, as are in situ carcinoma of breast, and cervix and melanoma. Basal and squamous cell carcinomas of the skin are not registered, except for those occurring in genital and perianal skin, and the vermilion border of lip.

Non-melanocytic skin cancers are not registered by the Victorian Cancer Registry (or most other registries), because many are treated in doctors' surgeries using destructive techniques that preclude histological confirmation. Further, they vastly outnumber all other forms of cancer.

Incidence rates were calculated using the estimated resident population for Victoria for 2001, and expressed as diagnoses or per 100,000 persons per year. The crude rate is defined as the number of new cases (or deaths) divided by the whole population at risk in the specified time period, and is expressed as an annual rate per 100,000 persons. Rates are adjusted to enable comparisons between populations having different age structures. The Victorian age standardised rates (ASR) in this publication were based on the 2001 Victorian population. These rates are calculated using the direct method by summation of the weighted age-specific rates.

Details of the ICD-10-AM diagnosis codes were used in the analyses are provided in table 1.

Injury and poisoning

Injury is defined as 'tissue damage resulting from either the acute transfer to individuals of the five forms of physical energy (kinetic or mechanical, thermal, chemical, electrical or radiation) or from the sudden interruption of normal energy patterns to maintain life patterns' (Waller, 1985).

An injury indicator is defined as a summary measure which denotes or reflects, directly or indirectly, variations in trends in injuries, or injury related or injury control-related phenomena (Cryer 2003).

In selecting injury indicators the definitions and validation tool developed by the International Collaborative Effort on Injury Statistics Indicators Group (Cryer et al., 2005) and the Injury Prevention Research Unit, University of Otago, New Zealand (Cryer et al., 2004) were utilised, with some adjustments. The extensive technical review of the injury indicators included in the Injury Prevention and Control National Health Priority Areas (NHPA) Program also informed the approach (Harrison and Steenkamp, 2002).

The operational definition of an injury death is a case where the underlying cause of death is an External Cause in the specified range in Chapter XX of the International Classification of Diseases (ICD). The operational definition of serious injury is described in terms of the pathologies in the 'Injury and Poisoning' chapter (Chapter XIX) of the ICD-Australian Modifications, except for those coded under 'sequelae' (that is, late effects).

The New Zealand group excluded medical injuries (complications of surgical and medical care) from the operational definition of serious injury, along with pathologies resulting from chronic exposure over time and the consequences of injury; that is, the injury event is counted, but not subsequent episodes of treatment and care (Cryer et al., 2004). We included medical injuries in the figures showing all-injury trends in frequency and rates for injury deaths and hospital admissions, but excluded medical injury cases from all further analyses as this cause of injury is widely considered to be outside the domain of traditional injury prevention and control. Only first admissions were included and, because we focused on measuring serious injury incidence, we excluded episodes of inpatient care related to the late consequences (sequelae) of injury.

Source data

Deaths

The source of indicators based on mortality data is the Death Unit Record File (DURF) provided to the Victorian Injury Surveillance Unit (VISU) by the Australian Bureau of Statistics (ABS). The ABS codes the data provided by the Victorian Registrar of Births, Deaths and Marriages utilising information on the cause of death supplied by medical practitioners certifying a death, or coroners to whom a death is reported (Harrison and Steenkamp, 2002). From 1979 to the end of 1996, deaths were coded according to the ninth revision of the International Classification of Diseases (ICD-9). From 1 January 1997, death registrations were coded according to ICD-10. Deaths are analysed by year of death.

Hospital admissions

The source of indicators based on morbidity data is the Victorian hospital admissions data extracted from the Victorian Admitted Episodes Dataset (VAED) compiled by the Department of Human Services. We identified cases of injury as those that had a primary diagnosis of injury or poisoning, and then in terms of the presence of the relevant external cause codes. Only first admissions were included, and deaths and transfers (subsequent to first admission) within and between hospitals were excluded to avoid double counting. Episodes of inpatient care related to the late effects (sequelae) of injury were also excluded.

The VAED has contained near-complete records for admissions from public and private acute hospitals from 1994–05, and is assessed from that year to be sufficiently complete and valid to support monitoring of trends (Harrison and Steenkamp, 2002). Up to the end of June 1998, hospital data were coded to a clinical modification of ICD-9 (ICD-9-CM). From 1 July 1998 Victoria coded data according to ICD-10-AM (Australian modifications), and then to upgraded versions in 2000, 2002 and 2004. The shift from ICD-9 to ICD-10 created some problems with monitoring trends for some causes of injury, because the range of codes in ICD-10 is not necessarily equivalent to the range in ICD-9. Table 3 provides a summary of the ICD–9 and ICD–10–AM codes used to define the injury indicators reported.

Indicator validation tool

The tool is a work in progress and currently consists of six validation criteria. The comments included in this section detail the extent to which the indicators included in this chapter satisfy each criterion.

i) Case definition– the indicator should reflect the occurrence of injury satisfying some case definition of anatomical or physical damage, based on diagnosis, defect or pathology rather than use of services.

The case definition we used for an injury death was not based on anatomical or physical damage (because ICD diagnosis data items are only available in ABS DURF from January 1997), but is specified solely in terms of the presence of one of the range of ICD external causes of injury codes as the underlying cause of death. By contrast, the case definition we used for an injury hospital admission was based on ICD diagnosis data items.

ii) Serious injury– the indicator should be based on events that are associated with significant risk of impairment, functional limitation, disability or death, decreased quality of life, or increased cost (that is, serious injury).

We used duration of stay in hospital as the indicator of case severity and defined serious injury in terms of hospital admission, as admitted cases are at least moderately severe. In general, 'same-day' admissions–those discharged on the day of admission other than those ending in transfer to another hospital–were omitted because this group of admissions is particularly subject to variation over time and between hospitals. If case selection was based on a specific injury diagnosis (for example, forearm and wrist fracture), rather than an external cause, then 'same-day' admissions were included.

By contrast, the New Zealand research group (Cryer et al.) used a threat-to-life severity scale when defining a serious injury and only included hospitalisations with an International Classification of Diseases-based Injury Severity Score (ICISS) of less than or equal to 0.941 (that is, a probability of death at admission of at least 5.9 per cent). This represented around 15 per cent of New Zealand injury hospital discharges.

While recognising that the NZ approach produces very stable and reliable indicators of serious injury, we assessed that it was too restrictive. The threshold we adopted represents around 70 per cent of Victorian injury hospital admissions.

iii) Case ascertainment– the probability of a case being ascertained should be independent of social, economic, and demographic factors as well as service supply and access factors (that is, measure, with minimal bias, the occurrence of injury rather than the use of services).

The ABS-DURF supposedly includes all registered deaths, although the completeness of death registration in Victoria and the completeness of the ABS mortality file have not been evaluated (Harrison and Steenkamp, 2002). Serious injury normally results in hospital admission in Victoria, so that the Victorian Admitted Episodes Dataset (VAED) offers potential to measure the incidence of serious injury. Ascertainment of overall hospital admissions for Victorian private and public hospitals is very high on the VAED from 1994–05 onwards, although ascertainment of injury cases on the VAED was not studied separately (Harrison and Steenkamp, 2002).

In their review of the NHPA injury indicators and data sources, Harrison and Steenkamp (2002) identify the potential for biased ascertainment of cases relevant to an indicator from both death and hospital data sources. This was due mainly to underlying variations in data collection, coding and processing. Wherever possible we followed the technically revised specifications–designed to improve the performance of indicators sourced from mortality and hospital data for the purpose of monitoring injury rates–recommended by these authors.

iv) Representativeness– the indicator should be derived from data that are inclusive or representative of the target population that the indicator aims to reflect (that is, measure the occurrence of events relating to all subpopulations equally well).

There are no systematic exclusions of sub-populations from either of the data sources used. Alternative data sources for motor vehicle traffic injury and injury due to assault indicators rely on police reports that may not represent injury incidence in all sub-populations equally well due to reporting biases.

v) Data availability– data should be derived from existing systems wherever possible, or it should be practical to develop new systems.

Data were derived from well-established injury surveillance data systems, which allow monitoring of trends.

vi) *Indicator specification– the indicator should be fully specific to allow calculation to be consistent at any place and at any time.*

The specification for reporting on each indicator is summarised in the relevant section of this chapter under the figures. Full specifications are available from the Victorian Injury Surveillance Unit (VISU).

Data analysis methods

Age-adjusted rates were calculated using the direct standardisation method and the Victorian population at 30 June 2001 as the standard.

Trends were determined using a log-linear regression model of the rate data assuming a Poisson distribution of injuries. The statistics relating to the trend curves, slope and intercept, estimated annual percentage change, estimated overall change, 95 per cent confidence intervals around these estimated changes and the p-value, were calculated using the regression model in SAS 9.1.3. A trend was considered to be statistically significant if the p-value of the slope of the regression model was less than 0.05.

Communicable diseases

Surveillance for communicable diseases occurs under the authority of the Health (Infectious Diseases) Regulations 2001. These regulations require medical practitioners and pathology laboratories to notify the Department of Human Services when they diagnose certain communicable diseases.

Notifiable diseases are classified in the regulations under four categories: Groups A, B, C and D. Group A diseases require an immediate public health response, and all notifications are followed up to confirm the diagnosis, identify risk factors and sources of infection and to prevent the further transmission of disease. Responses to Group B diseases are defined by disease-specific protocols. Some diseases have enhanced surveillance procedures, while responses to others may only occur if a cluster, outbreak or other unusual event is detected. Information may be collected from the patient, the notifying doctor or both. Enhanced surveillance systems implemented in Victoria are reported in the relevant sections.

Group C diseases are sexually transmissible infections (excluding HIV/AIDS). Because complete identifiers are not required for these diseases, further information regarding the notification is obtained only from the notifying doctor. Group D diseases are HIV and AIDS, for which contact tracers follow up all notifications.

Analyses in this report were based on notification date, that is, the date on which the notification was received at the Communicable Diseases Section of the Department of Human Services. For some analyses of seasonal trends, notifications were reported by month of onset. Onset date may, however, not be the actual onset date of illness, because this may be uncertain or not recorded for many diseases. In those circumstances, onset date was calculated using the earliest date entered into the system. Population notification rates were calculated using the 2001 mid-year estimated resident population (ERP) obtained from the ABS.

Notifications were counted in the Victorian dataset if the postcode of residence of the diagnosing doctor was in Victoria. Given that postcodes of residence of the case and doctor do not necessarily reflect the place of acquisition of infection, regional rates should be interpreted with caution. This is particularly important in small areas where the actual numbers reported may be too small for rates to be meaningful.

The department had nine health regions in Victoria in the reporting period, four in metropolitan Melbourne and five in regional areas. Each region comprises LGAs, and notifications are geocoded to LGAs by postcode and then allocated to a region. The denominators for regional rates were the 2001 mid-year ERP population from the ABS for the combined LGAs.

Changes occurred in the number of notifications reported in previous annual reports for some diseases, due to the ongoing maintenance and update of notification datasets as new information became available, or as errors were detected through data cleaning processes. In addition, the Communicable Diseases Network Australia, in collaboration with states and territories, revised the surveillance case definitions for nationally notifiable diseases in Australia, therefore, some changes in total notifications may reflect a more sensitive or specific case definition.

Avoidable mortality

The analysis is based on mortality and population data for 1997–2003 supplied by the ABS for Victoria using ICD-10 coding. Mortality rates in LGAs in Victoria between 1997 and 2003 were age-standardised using the direct method, with Victoria's 2001 population as the reference. The statistical software package Stata (Version 9, College Station, Texas, USA) was used for all analyses.

The list of causes of avoidable mortality (AM) is presented in Table 4. Tobias and Jackson initially compiled this list and defined it using only ICD-9 codes (Tobias and Jackson, 2001). The appropriate groupings of ICD-10 codes were subsequently developed by the New South Wales Department of Health in The health of the people of New South Wales, 2002. We reviewed these codes to ensure that the codes in each category of disease and injury are mutually exclusive. All other causes of mortality under 75 years were assumed to be 'unavoidable mortality' (UM) for the purposes of this analysis.

Comparisons of total AM rates were made between the sexes over time (1997–2003) for Victoria as a whole. For the period between 1997 and 2003 comparisons of total AM and UM by sex were made between metropolitan and rural LGAs, between LGAs grouped into quintiles based on their Index of Relative Socio-economic Disadvantage (IRSED) score, and between LGAs grouped by categories of remoteness, based on their Accessibility/Remoteness Index of Australia (ARIA) score.

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Table 1: Ambulatory care sensitive conditions and International Classification of Disease version 10–Australian Modification (ICD-10-AM) codes used

Category	ICD-10 codes	Notes (ICD-10)
Influenza and pneumonia	J10 J11 J13 J14 J153 J154 J157 J159 J168 J181 J188	In any diagnosis field, excludes cases with secondary diagnosis of D57, and people under two months
Other vaccine preventable	A35 A36 A37 A80 B05 B06 B161 B169 B180 B181 B26 G000 M014	In any diagnosis field
Asthma	J45 J46	Principal diagnosis only
Congestive heart failure	I50 I110 J81	Principal diagnosis only, exclude cases with procedure codes according to attached list
Diabetes complications	E101 E102 E103 E104 E105 E106 E107 E108 E110 E111 E112 E113 E114 E115 E116 E117 E118 E130 E131 E132 E133 E134 E135 E136 E137 E138 E140 E141 E142 E143 E144 E145 E146 E147 E148	In any diagnosis field
Chronic obstructive pulmonary disease	J20 J41 J42 J43 J44 J47	Principal diagnosis only, J20 only with diag2 of J41 J42 J43 J47 J44
Angina	I20 I240 I248 I249	Principal diagnosis only, exclude cases with procedure codes in block 1 to 1819
Iron deficiency anaemia	D501 D508 D509	Principal diagnosis only
Hypertension	I10 I119	Principal diagnosis only, exclude cases with procedure codes according to attached list
Nutritional deficiencies	E40 E41 E42 E43 E550 E643	Principal diagnosis only
Dehydration and gastroenteritis	E86 K522 K528 K529	Principal diagnosis only
Pyelonephritis	N390 N10 N12 N11 N136	Principal diagnosis only
Perforated/bleeding ulcer	K250 K251 K252 K254 K255 K256 K260 K261 K262 K264 K265 K266 K270 K271 K272 K274 K275 K276 K280 K281 K282 K284 K285 K286	Principal diagnosis only
Cellulitis	L03 L04 L08 L980 L88 L983	Principal diagnosis only, exclude cases with procedure codes in block 1 to 1819, OR if procedure is 30216-02 30676-00 30223-02 30064-00 34527-01 34527-00 90661-00 and this is the only listed procedure
Pelvic inflammatory disease	N70 N73 N74	Principal diagnosis only
Ear, nose and throat infections	H66 H67 J02 J03 J06 J312	Principal diagnosis only
Dental conditions	K02 K03 K04 K05 K06 K08 K098 K099 K12 K13	Principal diagnosis only
Convulsions and epilepsy	O15 G40 G41 R56	Principal diagnosis only
Gangrene	R02	In any diagnosis field

Procedure codes to use for exclusions for congestive heart failure and hypertension:

33172-00	35304-00	35305-00	35310-02	35310-00	38281-11
38281-07	38278-01	38278-00	38281-02	38281-01	38281-00
38256-00	38278-03	38284-00	38284-02	38521-09	38270-01
38456-19	38456-15	38456-12	38456-11	38456-10	38456-07
38456-01	38470-00	38475-00	38480-02	38480-01	38480-00
38488-06	38488-04	38489-04	38488-02	38489-03	38487-00
38489-02	38488-00	38489-00	38490-00	38493-00	38497-04
38497-03	38497-02	38497-01	38497-00	38500-00	38503-00
38505-00	38521-04	38606-00	38612-00	38615-00	38653-00
38700-02	38700-00	38739-00	38742-02	38742-00	38745-00
38751-02	38751-00	38757-02	38757-01	38757-00	90204-00
90205-00	90219-00	90224-00			

Table 2: National Health Priority Areas Conditions and International Classification of Diseases (ICD) codes used

National health priority areas	ICD-9 codes (1993–94 to 2000–01)	ICD-10–AM codes (2001–02 to 2005–06)
Heart, stroke and vascular health	Diagnosis codes 390.0–459.9 • Ischaemic heart disease 410.0–414.9 • Stroke 430.0–438.9 • Peripheral vascular disease 441.0–444.9	Diagnosis codes G45, G46, 100–199 • Ischaemic heart disease I20–I25 • Stroke G45, G46 and I60–I69 • Peripheral vascular disease I71–I74
Diabetes mellitus	Diagnosis codes 250.0–250.9	Diagnosis codes E09–E14
Asthma	Diagnosis codes 493.0–493.9	Diagnosis codes J45–J46
Arthritis and musculoskeletal conditions	Diagnosis codes • Osteoarthritis 715.0–715.9 • Rheumatoid arthritis 714.0–714.2, 714.31–714.33, 714.4–714.9 • Osteoporosis 733.0	Diagnosis codes • Osteoarthritis M15–M19 • Rheumatoid arthritis M05–M06 • Osteoporosis M80–M82
Cancer	NA	Diagnosis codes C00–D48
Injuries and poisoning[1]	NA	Diagnosis codes S00–T98
Mental health	NA	Diagnosis codes F00–F99

1. See table 3 for a separate summary of the ICD codes used for the individual injury indicators reported.

Table 3: Summary of Injury Indicators and International Classification of Diseases (ICD) codes used

Injury Indicator	ICD-9 / ICD-10 codes	Notes
Injury and poisoning (all causes[2]): deaths	An ICD–9 cause of death code in the range 800–928, 930–958, 960–968, 970–978 or 990–998, or an ICD–10 cause of death code in the range V00–Y84.	Excludes deaths, transfers and records without injury as a primary diagnosis. Deaths resulting from medical causes (adverse events and medical misadventure) were then excluded (an ICD–9 external cause code in the range 870–879 or an ICD–10 code in the range Y40–Y84).
Injury and poisoning (all causes[1]): hospital admissions	An ICD–9 primary injury or poisoning diagnosis codes in the range 800–904, 910–999 or an ICD–10 primary injury or poisoning diagnosis code in the range S00–T89.	Deaths and transfers within and between hospitals were excluded. Admissions resulting from medical causes (an ICD–9 cause code in the range 870–879 or an ICD–10 cause code in the range Y40–Y84) and same-day records were excluded.
Unintentional injury and poisoning (all causes[1]): deaths	Deaths with an ICD–9 cause of death code in the range 800–928, 930–950 or an ICD–10 code in the range V00–X59.	
Unintentional injury and poisoning (all causes[1]): hospital admissions	An ICD–9 injury or poisoning diagnosis code in the range 800–904, 910–999 or an ICD–10 diagnosis code in the range S00–T89 where the cause of injury was unintentional.	Deaths and transfers within and between hospitals were excluded. Same-day records were excluded.
Intentional self-harm: deaths	Deaths with an ICD–9 cause of death code in the range 950–959 or an ICD–10 cause of death code in the range X60–X84	
Intentional self-harm: hospital admissions	An ICD–9 injury or poisoning diagnosis code in the range 800–904, 910–999 or an ICD–10 diagnosis code in the range S00–T89 if the cause of injury was intentional self-harm.	Excludes deaths, transfers and records without injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded were excluded. Same-day records were excluded.
Assaultive injury: deaths	Deaths with an ICD–9 cause of death code in the range 960–969 or an ICD–10 code in the range X85–Y09	
Assaultive injury: hospital admissions	An ICD–9 injury or poisoning diagnosis code in the range 800–904, 910–999 or an ICD–10 diagnosis code in the range S00-T89 if the cause of injury was assaultive.	Excludes deaths, transfers and records without injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded. Same-day records were excluded.
Unintentional motor vehicle traffic injury: deaths	An ICD–9 cause of death code in the range 810–819 (.0-.3, .7) or an ICD–10 cause of death code in the range V02-V04 (.1–.9), V09.2, V20–V28 (.3-.9), or V29 (.4-.9), V40-V49 (.4-.9).	All motor vehicle traffic includes car occupants, motorcyclists and pedestrians injured in motor vehicle incidents. Codes include only motor vehicle traffic deaths of car occupants, motorcyclists and pedestrians.
Unintentional motor vehicle traffic injury: hospital admissions	An ICD–9 first external cause code in the range 810–819 (.0 –.3,.7) or an ICD–10 first external cause code in the range V02-V04 (.1,.9), V09.2, V20-V28 (.3 –.9), or V29 (.4 –.9), V40-V49 (.4 –.9).	All motor vehicle traffic includes car occupants, motorcyclists and pedestrians injured in motor vehicle incidents. Codes include only motor vehicle traffic deaths of car occupants, motorcyclists and pedestrians. Deaths and transfers within and between hospitals were excluded. Same-day records were also excluded.

2. All causes excludes deaths, transfers and records without injury as a primary diagnosis.

Table 3: Summary of Injury Indicators and International Classification of Diseases (ICD) codes used (continued)

Injury Indicator	ICD-9 / ICD-10 codes	Notes
Poisoning (all intents)	An ICD-9 first external cause diagnosis code in the range 850-858, 950-959, 962-962.9, 980-982.9 or an ICD-10 first external cause code in the range X40-X49, X60-X69, X85-X90, Y10-Y19.	All intents poisoning excludes deaths, transfers and records missing injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded. Same-day records were also excluded.
Poisoning in 0-4 year olds	An ICD-9 first external cause diagnosis code in the range 850-858, 950-959, 962-962.9, 980-982.9 or an ICD-10 first external diagnosis cause code in the range X40-X49, X60-X69, X85-X90, Y10-Y19 if the person was aged between 0-4 years.	All intents poisoning excludes deaths, transfers and records missing injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded. Same-day records were also excluded.
Unintentional injury-related forearm and wrist fracture	An ICD-9 injury diagnosis code in the range 813-814 or an ICD-10 diagnosis code in the range S52.0-S52.9, S62.0-S62.1 if the injury was unintentional.	All forearm and wrist fractures excludes deaths, transfers and records missing injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded.
Unintentional hip fracture among persons aged 65-74 years	An ICD-9 injury diagnosis code in the range 820-820.9 or an ICD-10 injury diagnosis code in the range S72.0-S72.2 if the cause of injury was unintentional and the person was aged between 65-74 years.	All hip fractures excludes deaths, transfers and records missing injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded.
Unintentional hip fracture in persons aged 75 years and over	An ICD-9 injury diagnosis code in the range 820-820.9 or an ICD-10 injury diagnosis code in the range S72.0-S72.2 if the cause of injury was unintentional and the person aged 75 years and over.	All hip fractures excludes deaths, transfers and records missing injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded.
Unintentional glass cutting and piercing injury	An ICD-10 first external-cause diagnosis code of W25. There is no equivalent code in ICD-9.	Glass related injuries excludes deaths, transfers and records missing injury as a primary diagnosis. Deaths and transfers within and between hospitals were excluded. Same-day records were excluded.

Table 4: Avoidable mortality conditions and International Classification of Diseases version 10–Australian Modification (ICD-10-AM) codes used

Potentially avoidable condition	ICD-10 codes	Conditions involved
Enteritis and other diarrhoeal diseases	A00–A09	Diarrhoeal diseases
Tuberculosis	A15–A19, B90	Tuberculosis
Immunisation-preventable diseases	A33, A35–A37, A80, B05–B06, P35.0, A49.2, G00.0	Diphtheria, whooping cough, tetanus, polio, Hib, measles, rubella
HIV/AIDS	B20–B24	HIV/AIDS
Hepatitis and liver cancer	B15–B19, C22.0, C22.1, C22.9	Hepatitis A, B, C, D, E, primary liver cancer
Sexually transmitted diseases (STDs)	A50–A64, N34.1, N70.0, N70.9, N71.0, N71.1, N72, N73.0–N73.5, N73.8, N75.0, N75.1, N76.0, N76.2, N76.4, N76.6, N76.8, N77.0, N77.1, N77.8, O00, R59.1	Syphilis, gonorrhoea and other STDs, ectopic pregnancy
Skin cancers	C00, C43–C44	Lip, melanoma, other skin cancer
Colorectal cancer	C18–C21	Colorectal cancer
Oral cancers	C02–C06, C09–C10, C12–C14, C32	Malignant neoplasm mouth, pharynx, larynx
Lung cancers	C33–C34	Malignant neoplasm, trachea, bronchus, lung
Breast cancer	C50	Breast cancer
Nutrition	D50–53, E40–E46, E50–E56, E63–E64	Nutritional deficits including anaemia
Alcohol related conditions	F10, I42.6, K29.2, K70	Psychosis, alcoholism, cardiac, gastric or liver damage due to alcohol
Chronic obstructive respiratory diseases	J40–J44	Chronic bronchitis and emphysema
Ischaemic heart disease	I20–I22, I24, I25.1–I25.9	Ischaemic heart disease
Stroke	I61, I62.0, I63.0–I63.5, I63.8–I63.9, I64–I66, I67.8	Intracerebral haemorrhage or occlusion
Neural tube defects	Q00–Q07	Congenital anomalies of brain and spinal cord
Low birth weight babies	P05–P07, P22, P27	Prematurity, low birth weight, respiratory disease from prematurity
Sudden infant death syndrome (SIDS)	R95	SIDS

Table 4: Avoidable mortality conditions and International Classification of Disease version 10–Australian Modification (ICD-10-AM) codes used (continued)

Potentially avoidable condition	ICD-10 codes	Conditions involved
Road traffic injury	V01.1, V02.1, V03.1, V04.1, V05.1, V06.1, V09.2, V09.3, V10.4, V10.5, V10.9, V11.4, V11.5, V11.9, V12.4, V12.5, V12.9, V13.4, V13.5, V13.9, V14.4, V14.5, V14.9, V15.4, V15.5, V15.9, V16.4, V16.5, V16.9, V17.4, V17.5, V17.9, V18.4, V18.5, V18.9, V19.4, V19.5, V19.6, V19.9, V20.4, V20.5, V20.9, V21.4, V21.5, V21.9, V22.4, V22.5, V22.9, V23.4, V23.5, V23.9, V24.4, V24.5, V24.9, V25.4, V25.5, V25.9, V26.4, V26.5, V26.9, V27.4, V27.5, V27.9, V28.4, V28.5, V28.9, V29.4, V29.5, V29.6, V29.9, V30.5, V30.6, V30.7, V30.9, V31.5, V31.6, V31.7, V31.9, V32.5, V32.6, V32.7, V32.9, V33.5, V33.6, V33.7, V33.9, V34.5, V34.6, V34.7, V34.9, V35.5, V35.6, V35.7, V35.9, V36.5, V36.6, V36.7, V36.9, V37.5, V37.6, V37.7, V37.9, V38.5, V38.6, V38.7, V38.9, V39.4, V39.5, V39.6, V39.9, V40.5, V40.6, V40.7, V40.9, V41.5, V41.6, V41.7, V41.9, V42.5, V42.6, V42.7, V42.9, V43.5, V43.6, V43.7, V43.9, V44.5, V44.6, V44.7, V44.9, V45.5, V45.6, V45.7, V45.9, V46.5, V46.6, V46.7, V46.9, V47.5, V47.6, V47.7, V47.9, V48.5, V48.6, V48.7, V48.9, V49.4, V49.5, V49.6, V49.9, V50.5, V50.6, V50.7, V50.9, V51.5, V51.6, V51.7, V51.9, V52.5, V52.6, V52.7, V52.9, V53.5, V53.6, V53.7, V53.9, V54.5, V54.6, V54.7, V54.9, V55.5, V55.6, V55.7, V55.9, V56.5, V56.6, V56.7, V56.9, V57.5, V57.6, V57.7, V57.9, V58.5, V58.6, V58.7, V58.9, V59.4, V59.5, V59.6, V59.9, V60.5, V60.6, V60.7, V60.9, V61.5, V61.6, V61.7, V61.9, V62.5, V62.6, V62.7, V62.9, V63.5, V63.6, V63.7, V63.9, V64.5, V64.6, V64.7, V64.9, V65.5, V65.6, V65.7, V65.9, V66.5, V66.6, V66.7, V66.9, V67.5, V67.6, V67.7, V67.9, V68.5, V68.6, V68.7, V68.9, V69.4, V69.5, V69.6, V69.9, V70.5, V70.6, V70.7, V70.9, V71.5, V71.6, V71.7, V71.9, V72.5, V72.6, V72.7, V72.9, V73.5, V73.6, V73.7, V73.9, V74.5, V74.6, V74.7, V74.9, V75.5, V75.6, V75.7, V75.9, V76.5, V76.6, V76.7, V76.9, V77.5, V77.6, V77.7, V77.9, V78.5, V78.6, V78.7, V78.9, V79.4, V79.5, V79.6, V79.9, V80.0, V80.1, V80.2, V80.3, V80.4, V80.5, V80.6, V80.7, V80.8, V80.9, V81.1, V82.1, V82.9, V83.0, V83.1, V83.2, V83.3, V84.0, V84.1, V84.2, V84.3, V85.0, V85.1, V85.2, V85.3, V86.0, V86.1, V86.2, V86.3, V87.0, V87.1, V87.2, V87.3, V87.4, V87.5, V87.6, V87.7, V87.8, V 87.9, V89.2, V89.3	Road traffic injury
Poisoning	X40–X49	Poisoning
Swimming pool injury	W16, W67, W68	Swimming pool falls and drowning
Sport injury	W01.30, W02, W03.30, W09, W21, X50	Falls from playground equipment, sport injury
Fire	X00–X09	Burns and scalds
Drowning	W65, W69, W70, W73, W74, Y21	Drowning
Suicide	X60–X84,Y87.0, Y10–Y34	Suicide

Table 4: Avoidable mortality conditions and International Classification of Disease version 10–Australian Modification (ICD-10-AM) codes used (continued)

Potentially avoidable condition	ICD-10 codes	Conditions involved
Other infections	A23–A26, A28.0, A28.2–A28.9, A30, A31, A32.9, A38, A39, A46, B50–B54, G00, G01, J02.0, P23, P35.1–P35.9, P36–P39	Brucellosis plus other zoonoses, streptococcus, malaria, meningitis, congenital
Cervical cancer	C53	Cervical cancer
Thyroid disease	E03.2, E03.8, E03.9, E04–E05, E89.0	Goitre, thyrotoxicosis, hypothyroidism
Newborn screening conditions	E03.1, E25, E70.0, E70.1, E74.2	Congenital hypothyroidism, CAH, PKU, galactosaemia
Diabetes	E10–E14	Diabetes
Epilepsy	G40–G41	Epilepsy
Ear infections	H65–H70	Otitis media and mastoiditis
Rheumatic fever/heart disease	I00–I09	Acute rheumatic fever, heart disease
Hypertensive disease	I10–I15, I67.4	Hypertensive disease
Respiratory infections	J00, J01.1–J01.2, J01.8–J01.9, J02–J06, J10, J11.0, J12–J15, J16.8, J17.0–J17.2, J17.8, J18.0, J18.8, J20–J22	Respiratory infections including pneumonia and influenza
Asthma	J45–J46	Asthma
Peptic ulcer	K25–K28	Gastric and duodenal ulcers
Pregnancy complications	O01–O08, O10–O99	Complications of pregnancy
Musculoskeletal infections	L01–L08, L98.0, M00, M01.1–M01.3, M01.5–M01.8, M02.1, M02.3, M03.2, M35.2, M46.2, M86, M87.1–M87.9, M89.6, M90.0–M90.2	Skin, bone and joint infections
Stomach cancer	C16	Stomach cancer
Cancer of uterus	C54, C55	Cancer of uterus
Cancer of testis	C62	Cancer of testis
Eye cancer	C69	Eye cancer
Thyroid cancer	C73	Thyroid cancer
Hodgkin's disease	C81	Hodgkin's disease
Leukaemia	C91.0–C91.3, C91.7, C91.9	Lymphoid leukaemias
Benign cancers	D10–D36	Benign and in situ cancers
Appendicitis	K35–K38	Appendicitis
Intestinal obstruction and hernia	K40–K46, K56	Intestinal obstruction and hernia
Gallbladder disease	K80–K83, K91.5	Gallbladder disease
Acute renal failure	N17	Acute renal failure
Congenital anomalies	Q10–Q23.3, Q23.8–Q23.9, Q24–Q28, Q35–Q84	Congenital cardiac, digestive, genito-urinary, musculoskeletal anomalies
Birth trauma and asphyxia	P10–P15, P20–P21, P50, P51, P95	Birth trauma and asphyxia
Other perinatal conditions	P08, P22, P22.1, P25, P26, P28, P52–P96	Respiratory disease, haemolytic disease, jaundice, etc
Iatrogenic conditions	Y60–Y84	Complications of treatment

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