Department of Health

health

Your health:

The Chief Health Officer's report 2010

State Government Victoria

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Foreword

This is the third publication in a series of biennial reports that provide a comprehensive picture of the health and wellbeing of Victorians. It has been developed to meet the requirements of Section 21(c) of the *Public Health and Wellbeing Act 2008* and covers the period to December 2009.

Over all, the report shows that Victorians generally enjoy good health compared with other Australians; however, it also reveals health issues and differentials in health outcome between areas and population groups.

This edition expands on *Your health 2005* and *2007*, with a refreshed structure, incorporating new health themes and indicators that draw on information from a wide range of sources. As in the previous edition, there is information on the general health status of Victorians (for example, life expectancy and mortality) and the determinants of health (for example, smoking and physical activity). This information will help inform policy and planning about areas of need, progress with existing initiatives and emerging issues in Victoria.

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

Dr John Carnie
Director, Health Protection
Chief Health Officer

Contents

Executive Summary

This report has been prepared to meet the requirements of Section 21(c) of the *Public Health and Wellbeing Act 2008*. It is the third report in the Your health series from the Chief Health Officer and covers the two-year period to December 2009. It has been structured using the *National health performance framework 2009* and provides an overview of the health of Victorians in relation to their health status and the determinants of health.

This section presents selected findings from the report. For more information on a particular topic, please refer to the relevant chapter of the report.

Health Status

- The majority of adult Victorians rate their health favourably (81.5 per cent rate their health as good/very good/excellent) and feel valued by society, with more than half experiencing low levels of psychological distress.
- The incidence of cancer has increased over the last two decades, and in 2006 there were 25,419 new cases of cancer in Victoria. At least one in three Victorians will develop a cancer by the age of 75 years.
- Survey data shows that about one in five (21.8 per cent) adults aged 65 years and over and about one in ten (9.6 per cent) adults aged 55–64 years have been told by a doctor that they have heart disease.
- Survey data also shows that the prevalence of type 2 diabetes is higher in adult males (5.8 per cent) than females (3.8 per cent).
- Survey data shows that 8.2 per cent of adult Victorians, aged 65 years and over, have had a stroke. Stroke can result in substantial activity limitation and is an important contributor to the disease burden for older Victorians.
- In 2007–08, there were 3,431 hospital admissions for persons aged 75 years and over with unintentional injury-related hip fracture. Females accounted for more than three quarters (76 per cent) of these admissions.
- Male and female life expectancy at birth has progressively increased for Victoria over time, from 78.1 years in 1979 to 84.3 years in 2006 for females and from 71.0 years in 1979 to 80.0 years in 2006 for males.
- The difference in life expectancy at birth between males and females in Victoria has progressively decreased from 7.2 years in 1979 to 4.4 years in 2006.
- The Victorian perinatal mortality rate has remained relatively steady in recent years at about 10 deaths per 1,000 live births.
- Between 1997–2001 and 2001–2005 there was a steady decline in the avoidable mortality rate for Victoria.
- Chronic diseases such as ischaemic heart disease, lung cancer and colorectal cancer were among the top four causes of avoidable mortality for both males and females for the period 2001–2005. However, suicide was third for males and breast cancer was the top cause for females during this five-year period.

- There was an overall decline in the rates for all of the top 10 causes of avoidable mortality, with the exception of poisoning, for both males and females, and suicide for females.
- Survival rates for most cancers improved over the 15 years between 1990 and 2004 and this is largely attributed to improved treatment regimes, and in the case of breast and cervical cancer, improvements in survival are also due to the successful contribution of screening programs to early detection of disease.

Determinants of Health

- Lifestyle behaviours such as smoking, poor diet and low levels of physical activity contribute significantly to the burden of disease in Victoria, yet they are largely modifiable, providing considerable scope for future health gain.
- Survey data show favourable results for many of these behaviours. Smoking levels, for instance, have decreased significantly over time.
- More than half of all adult Victorians (61.0 per cent of males and 59.7 per cent of females) performed a minimum of 30 minutes of moderate-intensity physical activity on at least five days each week.
- The majority of Victorian males (82.2 per cent) and females (73.2 per cent) are at low risk of long-term harm from alcohol consumption.
- More than half (54.8 per cent) of Victorian males and 41.9 per cent of females consume insufficient serves of fruit and vegetables, and do not meet the national dietary guidelines.
- Survey data show that 5.1 per cent of males and 5.4 per cent of females are sedentary (do no physical activity).
- Survey data also show that males are more likely to have their blood cholesterol checked over a two-year period than females; however, females are more likely than males to have their blood pressure checked.
- Survey results show that 31.9 per cent of Victorians aged 18 years and over were overweight and 16.7 per cent were obese in 2008.
- In 2008, there were an estimated 5.3 million persons usually resident in Victoria. Just under half (49.5 per cent) were males and 50.5 per cent were females. Children (aged 0–14 years) comprised 18.8 per cent of the population and 13.5 per cent were aged 65 years and over.
- Survey results show that more than a quarter of homes in Victoria were rented, about one in five (19.2 per cent) households had a gross annual income less than or equal to $30,000 and 4.6 per cent of the labour force was unemployed in 2008.
- In the early 1980s, it was common for ozone objectives not to be met in Melbourne, however, substantial improvement has occurred since then.
- Melbourne typically meets the national goal for air quality, measured in terms of airborne particles as PM_{10}, but may be affected by drought-related impacts such as particles from dust storms and smoke from bushfires.
- The quality of drinking water supplies in Victoria is generally very good, with 99.2 per cent of supplies complying with the E. coli water quality standard in 2007–08.

Introduction

This is the third report in the *Your health* series, covering the two-year period to December 2009, as required under Section 21(c) of the *Public Health and Wellbeing Act 2008*. The report provides an overview of the health and wellbeing of Victorians, as well as the determinants of health in Victoria. It is structured differently from previous *Your health* reports to reflect the National Health Performance Framework, which incorporates indicators across a wide range of health dimensions.

National Health Performance Framework

The National Health Performance Framework was originally developed by the National Health Performance Committee (NHPC) as a structure to guide the understanding and evaluation of the health system (NHPC 2001). The framework was reviewed by the NHPC in 2007–08 and the revised framework was agreed by the National Health Information Standards and Statistics Committee (NHISSC) and noted by health ministers in September 2009. The revised framework forms the basis for the structure of the body of this report. It was selected as an appropriate structure because it provides a comprehensive overview of health for reporting purposes.

The 2009 framework encompasses domains for health status and the determinants of health, as well as a third domain that focuses on health system interventions that influence health status and the determinants of health, both for individuals and at the population level (AIHW 2008). This report focuses on the domains of health status and the determinants of health only.

Health status

This domain covers the four dimensions of health status that bring together a range of indicators that summarise the impact of disease and injury on Victorians. The indicators provide an overall measure of population health, which are either wholly or partially attributable to health service intervention:

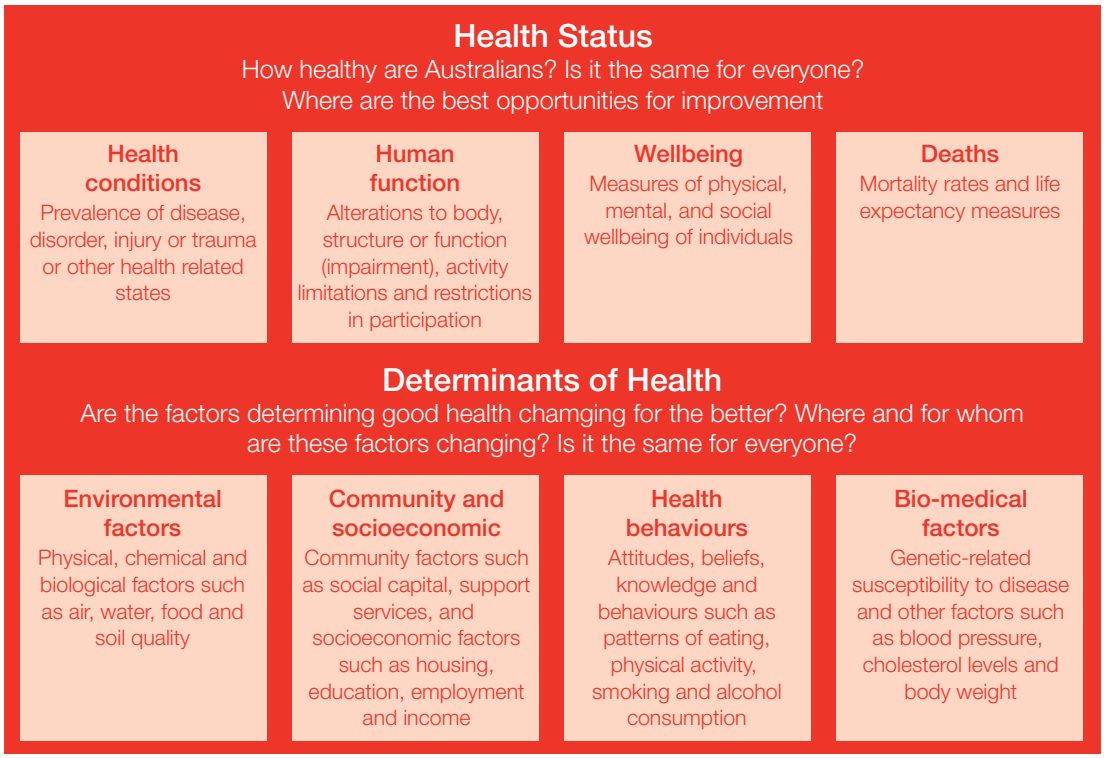
1. **Wellbeing**: Includes measures of physical, mental and social wellbeing.
2. **Health conditions**: Measured through the prevalence of disease, disorder, injury or trauma or other health-related state.
3. **Human function**: Measures alterations to body, structure or function (impairment), activity limitations and restrictions in participation.
4. **Deaths**: Includes mortality rates and life expectancy measures.

Determinants of health

The determinants of health impact on health at the individual or population level. They are key to the prevention of disease and injury and help explain and predict trends and inequalities in health. They can be environmental, socioeconomic, behavioural or bio-medical, and can act more directly to cause disease (such as tobacco smoking) or be further back in the causal chain and act via a number of intermediary causes (such as socioeconomic status). This domain organises indicators under four dimensions:

1. **Health behaviours:** Includes attitudes, beliefs, knowledge and behaviours such as patterns of eating, physical activity, smoking and alcohol consumption.
2. **Bio-medical factors:** Incorporates genetic-related susceptibility to disease and other factors such as blood pressure, cholesterol levels and body weight.
3. **Community and socioeconomic:** Measures community factors such as social capital, support services and socioeconomic factors such as housing, education, employment and income.
4. **Environmental factors:** Include physical, chemical and biological factors, such as air, water, food and soil quality.

The 'Health Status' and 'Determinants of Health' domains of the National Health Performance Framework 2009



Data Considerations

The data presented have been obtained from a variety of sources, including published sources and administrative data bases. Each data source has been cited in the report and the technical notes in the appendices describe the statistical methods used in analysis and interpretation.

Where the required data for the reporting period are not yet available, are not considered reliable, or were not collected, the most recent and reliable information available has been presented. In some instances, the information provided is for a calendar year (for example, 2008) or for a financial year (for example, 2007–08) or for a specific period (for example, 2006–07 to 2007–08, which covers two financial years). In many instances, the information provided falls outside the reporting period and this is clearly noted in each instance.

Most of the information provided is specific to the Victorian resident population; however, there are specific sections that include information relevant to other jurisdictions. Once again, this is noted in each instance.

Improving Health and Wellbeing: The Role of Public Health

The information in this report is a valuable overview of the health issues that Victoria faces. It is an ideal starting point on which to build policy and government investment for improving the health of the Victorian population. This report provides a strong basis for a concerted public health effort to reduce health inequalities and further improve the health status of Victorians, by tackling the

enormous burden of, and the steady increase in, preventable disease. Our intention has been to ensure that policy at all levels – in government, public and private institutions, workplaces and the community – takes proper account of recent evidence suggesting a wider responsibility for creating healthy societies.

During the past 100 years, public health interventions have been responsible for achieving some of the most significant population health gains. Improved water quality to prevent water- borne disease, water fluoridation to improve oral health, tobacco reform and education to reduce the tobacco-related disease burden, immunisation to protect against infectious disease, the introduction of seat belts to prevent road accident trauma and lead-free petrol legislation are all examples of demonstrably successful public health interventions. Public health also includes surveillance, control and containment of many infectious diseases that have potentially devastating population health effects. These interventions range across policy, legislation, regulation, population and community level programs and social marketing.

The emergence of 'lifestyle diseases'

At the beginning of the 20th century, most diseases in Australia were a result of infections related to poor hygiene, sanitation and environmental health (such as pneumonia, tuberculosis and infective diarrhoea), which generally reduced life expectancy to around 40–45 years. While the application of advances in medical and scientific knowledge in addition to public and environmental health efforts have seen vast increases in life expectancy, different diseases are now on the rise – the so-called 'lifestyle diseases'.

Since the 1940s, in developed countries in particular, diseases associated with 'lifestyle choices' have become increasingly prevalent. Lifestyle diseases are also on the rise in many developing nations, as societies become increasingly industrialised and technologically advanced. Lifestyle diseases are commonly described as chronic or long-term diseases. Many of the most prevalent chronic diseases are preventable and arise from sedentary lifestyles, dietary factors, alcohol and tobacco consumption. Type 2 diabetes and certain types of cancer are the result of these lifestyle factors. A common risk factor for the main lifestyle diseases is obesity, which continues to increase in prevalence. There is also a growing body of scientific thought which suggests that mental health disorders are also linked to lifestyle and reflect factors such as social isolation.

There are multiple reasons for the shift in the disease burden over the last century. These reasons include changes in diet and food availability. Cheap food, including most convenience food, is often energy dense and lacking in nutritional components such as dietary fibre. People have also become more sedentary due to workplace changes, technological advancement, growth of sedentary recreation options (such as screen-based gaming), poor urban planning and car dependence. A general increase in the stress of modern living, social disconnection and the emergence of more options for illicit substance use are likely to be major influences on mental health.

The broad determinants of health and wellbeing

Recent research has confirmed the strong relationship between the environments that individuals and populations live in (which include the built, social, natural and workplace environments) and chronic illness. The World Health Organization (Wilkinson & Marmot 2003) has documented the environmental factors that impact on health and these include:

- the levels of stress in people's lives
- the start in life that babies and infants are given, including prenatal care
- how well people are connected to families and communities
- the nature and security of the work people do
- unemployment
- individuals and populations' susceptibility to addictive behaviours
- access to nutritious food
- the availability of suitable transport
- the impact of climate change

By implication, there is a causal link between behaviour and the environment in which people live. Worldwide, this recognition of the impact of the broader environmental factors on health is linked to a concept (and many practical examples) that is generally referred to as a '*Health in All Policies*' approach. The aim of this approach is to promote policy development in areas that are traditionally not thought of as influencing health so that policies developed in these areas have a positive impact on these broader determinants on health. The information in this report will assist the partnerships in government that are needed to deal with these challenges.

Addressing so-called lifestyle diseases is important because not only do they affect quality of life and longevity but ill health negatively impacts on emotional, psychological, relationship and financial health. The additional related effects of ill health include decreased workplace productivity and spiralling healthcare costs which are particularly an issue in the context of an ageing population.

The public health challenges in Victoria

The public health challenges for Victoria at this time, while similar to those that face Australia and many other nations, will require solutions that reflect Victoria's geographic, economic and social characteristics. In terms of lifestyle disease, tackling the increasing prevalence of obesity, reducing smoking rates and unhealthy levels of alcohol consumption and improving the mental health status of Victorians will all require innovative, comprehensive public health interventions. To this end, a program of data collection, evaluation and research is needed to ensure that cost-effective interventions are developed to tackle lifestyle-related disease.

The department will continue to enhance its health protection role by developing its disease surveillance and containment capability and planning to deal with the public health consequences of climate change such as heat waves. Food safety is a public health matter that requires ongoing vigilance as new food technologies emerge and business pressures increase. The full implications of climate change and the ageing of the Victorian population

remain unknown at this stage. A major challenge, therefore, will be to ensure Victoria has a program of research to monitor changing conditions and their impact on the health of the population.

For all public health interventions, a major challenge for Victoria is the unequal distribution of health. There are large discrepancies across the state and population groups in relation to measures such as life expectancy, infant mortality, teenage births, obesity and mental illness. Those who are less financially well off, who have less secure housing, and who experience insecure working conditions or unemployment are much more likely to have poor health or be at greater risk. Indigenous Victorians, those from culturally and linguistically diverse backgrounds and rural Victorians in particular, have the poorest health of all Victorians.

The capacity of the public health workforce is a key factor in Victoria's ability to maintain a public health response to prevention. As the workforce, including the clinical health workforce, begins to be affected by the first of the so-called 'baby boomer' generation reaching retirement age, there is a need to have a strategy in place to ensure that the prevention effort is strengthened. Such a workforce strategy will need to ensure that the public health workforce is skilled at all levels – policy makers, planners, program managers and those on the ground – so that a planned and strategic prevention effort occurs.

References

Australian Institute of Health and Welfare (AIHW) 2008, *Australia's health 2008*, cat. no. AUS 99, AIHW, Canberra.

National Health Performance Committee (NHPC) 2001, *National health performance framework report*, Queensland Health, Brisbane.

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

Health status

The health status of the population in Victoria is determined by a range of social and community factors as well as individual behaviours, and may be wholly or partially influenced by health services. This domain acknowledges the influence of these factors with measures of the prevalence of disease and the impact of disability, as well as measures of mortality and mental and social wellbeing. They provide insights into the level of health in the population, whether there are disparities in health and where opportunities for future improvement may exist.

Most of the measures, or indicators, under this domain are well established, derived from ongoing data sources that will allow for tracking progress over time, with acceptable levels of data quality. Collectively, they summarise the impact of mortality and morbidity on the overall health of the population. The indicators are organised under four dimensions, each measuring a different aspect of health status:

Wellbeing: Measures of physical, mental and social wellbeing

- Self-reported health
- Psychological distress
- Child abuse and neglect
- Feeling valued by society

Health conditions: The prevalence of disease, disorder, injury or trauma or other health-related state

- Cancer incidence
- Breast cancer incidence
- Lung cancer incidence
- Prevalence of heart disease
- Prevalence of diabetes
- Oral health status (children)
- Injury and poisoning hospital admissions

Human function: Alterations to body structure or function (impairment), activity limitations and restrictions in participation

- Birth defects
- Low birth weight
- Prevalence of stroke
- Unintentional hip fracture admissions (persons aged 75 years and over)

Deaths: Mortality rates and life expectancy

- Life expectancy at birth
- Health Adjusted Life Expectancy (HALE)
- Perinatal mortality
- Avoidable mortality
- Annual change in avoidable mortality rates
- Intentional self-harm mortality (suicide)
- Cancer survival

Wellbeing

Wellbeing includes measures of physical, mental and social wellbeing. The broad scope of this dimension captures elements of the quality of life of individuals in the population, as well as the impact of disability and disease. The indicators of wellbeing presented in this section of the report include:

- **Self-reported health:** The proportion of adults aged 18 years and over with excellent, very good, good, fair or poor health by age group.
- **Psychological distress:** The proportion of adults aged 18 years and over experiencing low, moderate, high and very high levels of distress, as measured using the Kessler 10 psychological distress scale, by sex and age group.
- **Child abuse and neglect:** The number of children aged 0–16 years, who were the subject of child abuse and neglect substantiations, per 1,000 population.
- **Feeling valued by society:** The proportion of adults aged 18 years and over who feel/do not feel valued by society.

Self-reported health

Description

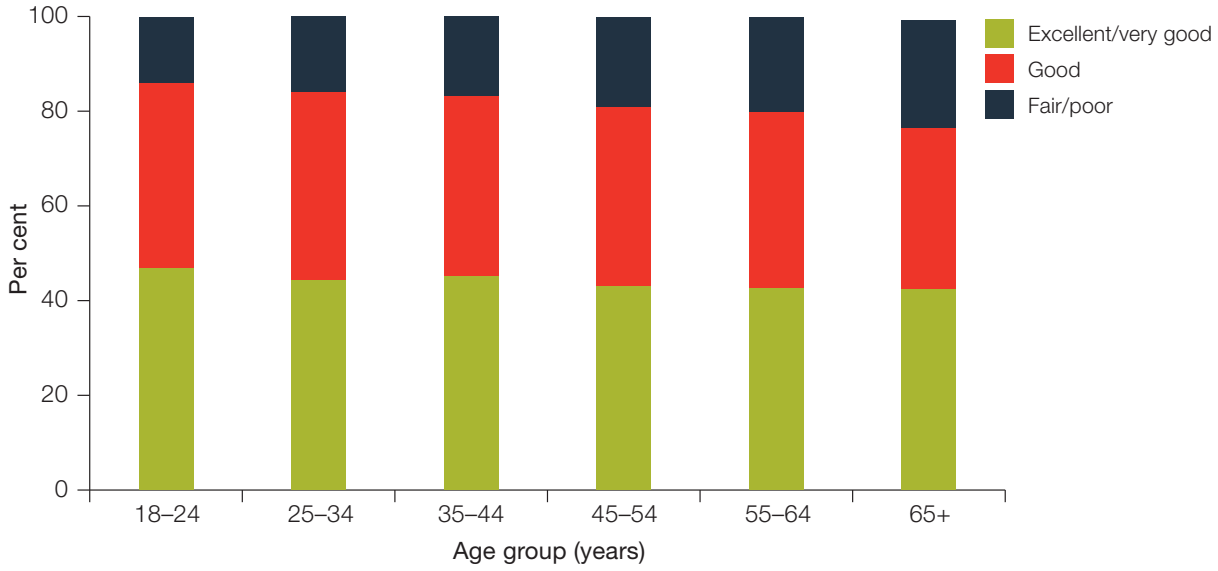
The proportion of adults aged 18 years and over with excellent, very good, good, fair or poor health by age group.

Self-reported 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 & Benyami 1997, Miilunpalo et al. 1997, Burstrom & Fredlund 2001).

Self-reported health status by year, Victoria, 2001–2008

	2001	2002	2003	2004	2005	2006	2007	2008
Excellent/very good/good								
%	81.9	82.5	84.6	83.1	82.2	84.3	83.6	81.5
LL 95% CI	80.7	81.3	83.5	81.9	81.0	83.2	82.4	80.8
UL 95% CI	83.0	83.7	85.7	84.2	83.4	85.4	84.7	82.1
Fair/poor								
%	18.1	17.5	15.4	16.8	17.6	15.5	16.2	18.3
LL 95% CI	17.0	16.3	14.3	15.7	16.5	14.4	15.1	17.7
UL 95% CI	19.3	18.7	16.5	18.0	18.9	16.6	17.4	19.0

Self-reported health status by age group, Victoria, 2008



LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval

Note that figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses

Data are age-standardised to the 2006 Victorian population

Source: Victorian population health survey 2001–2008

The percentage of Victorian adults reporting their health as either excellent, very good or good did not vary significantly over time and ranged between 81.5 and 84.6 per cent during the period 2001 to 2008.

In 2008, 81.5 per cent (95% CI: 80.8–82.1) of adults reported their health as either excellent, very good or good, compared with 83.6 per cent (95% CI: 82.4–84.7) in 2007.

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Burstrom, B & Fredlund, P 2001, 'Self-rated health: is it as good a predictor of subsequent mortality among adults in lower as well as in higher social classes?', *Journal of Epidemiology and Community Health*, vol. 55, pp. 836–40.

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

Miilunpalo, S, Vuori, I and 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*, vol. 50, no. 5, pp. 517–28.

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

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Psychological distress

Description

The proportion of adults aged 18 years and over experiencing low, moderate, high and very high levels of distress, as measured using the Kessler 10 psychological distress scale, by sex and age group.

Good mental health is fundamental to the wellbeing of individuals, their families and the wider community. Findings from the *2004–05 National health survey* (ABS 2006) showed that anxiety-related problems and mood (affective) problems were the most commonly reported mental health and behavioural problems. These problems were self-reported by four per cent of Australian males and six per cent of Australian females (ABS 2006). Psychological distress has a major effect on people's ability to work, study and manage their everyday activities.

The *Victorian population health survey 2008* included the Kessler 10 scale (K10), a tool 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 focus of the K10 is to measure psychological distress. It does not include questions to identify psychosis, as this is difficult using a brief questionnaire. The K10 instrument may be appropriate to estimate the needs of a population for community mental health services, however, as people with psychosis generally do get depressed (Andrews & Slade 2001).

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 is experiencing psychological distress. A maximum score of 50 indicates severe psychological distress and lower scores indicate lower levels of distress.

Kessler 10 scores by category, sex and age group (years), Victoria, 2008

	Low (<16)			Moderate (16–21)			High (22–29)			Very high (30–50)		
Age group (years)	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
Males												
18-24	**55.1**	50.3	59.8	**32.5**	28.1	37.2	**9.2**	6.7	12.5	**1.7***	0.9	3.3
25-34	**60.1**	56.1	64.1	**24.5**	21.1	28.2	**8.2**	6.3	10.6	**3.5**	2.3	5.1
35-44	**67.0**	64.2	69.8	**20.7**	18.4	23.2	**6.8**	5.5	8.4	**2.2**	1.5	3.3
45-54	**68.7**	66.0	71.2	**19.0**	17.0	21.3	**7.1**	5.8	8.6	**2.3**	1.6	3.4
55-64	**70.2**	67.6	72.6	**16.5**	14.6	18.7	**6.7**	5.6	8.1	**3.1**	2.2	4.2
65+	**69.8**	67.7	71.9	**17.3**	15.6	19.1	**5.9**	4.9	7.2	**1.7**	1.2	2.4
Females												
18-24	**48.6**	44.1	53.0	**32.9**	28.9	37.3	**12.7**	10.2	15.7	**5.1**	3.4	7.4
25-34	**56.8**	53.9	59.6	**27.1**	24.6	29.8	**10.1**	8.5	12.0	**3.1**	2.3	4.2
35-44	**62.2**	60.2	64.2	**24.0**	22.2	25.8	**8.7**	7.6	10.0	**3.1**	2.5	3.9
45-54	**60.9**	58.6	63.1	**21.6**	19.8	23.6	**10.0**	8.7	11.5	**5.1**	4.2	6.3
55-64	**64.8**	62.7	66.9	**20.1**	18.3	21.9	**7.5**	6.4	8.7	**4.1**	3.3	5.0
65+	**63.5**	61.6	65.4	**19.8**	18.3	21.4	**7.1**	6.2	8.3	**2.9**	2.3	3.7

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Note that figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Data are crude estimates, they have not been age-standardised.

*Estimate has a relative standard error of between 25 and 50 per cent and should be interpreted with caution.

Source: Victorian population health survey 2008.

Among those aged 18 years and over, depending on their age group, between 2.9 and 5.1 per cent of females and between 1.7 and 3.5 per cent of males had very high levels of psychological distress, with K10 scores of 30 and over in 2008.

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). Depending on their age group, between 7.1 and 12.7 per cent of females and between 5.9 and 9.2 per cent of males had scores in the upper range of the middle-risk category. Again, depending on their age group, between 19.8 and 32.9 per cent of females and between 16.5 and 32.5 per cent of males had scores in the lower range of the middle-risk category.

Depending on their age group and sex, between half and almost three quarters of the population (from 48.6 to 70.2 per cent) 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 with males.

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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*, vol. 32, pp. 959–76.

World Health Organization (WHO) 1992, *The ICD-10 classification of mental and behavioural disorders criteria for research*, WHO, Geneva.

Concepts

Mental disorder: According to the ICD-10 (International Classification of Disease - 10th revision) classification of mental and behavioural disorders, a disorder implies 'the existence of a clinically recognisable set of symptoms or behaviour associated, in most cases, with distress and with interference with personal function' (WHO 1992 p. 5). Most diagnoses require criteria relating to severity and duration to be met.

Mental health problem: Problems with mental health, such as worry or sadness, regardless of whether or not they meet criteria for mental disorders.

Prevalence: The number of people with a disease at a specific point in time.

Provenance

The Kessler 10 score is regularly reported by the Australian Bureau of Statistics.

For more information

Australian Bureau of Statistics, Use of the Kessler Psychological Distress Scale in ABS health surveys: http://www.abs.gov.au/ausstats/abs@.nsf/mf/4817.0.55.001

Australian Mental Health Outcomes and Classification Network (AMHOCN) 2005, Kessler -10 training manual, AMHOCN, Parramatta:
http://amhocn.org/static/files/assets/2c63fca6/Kessler_10_Manual.pdf

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

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Child abuse and neglect

Description

The number of children aged 0–16 years, who were the subject of child abuse and neglect substantiations, per 1,000 population.

In Australia, child protection is the responsibility of state and territory departments in the community services sector. In Victoria, a child protection notification is assessed by the 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. Children who come into contact with the Department of Human Services in Victoria for protective reasons include those: (a) who are suspected of being, have been or are being abused, neglected or otherwise harmed; and (b) whose parents cannot or are unable to provide adequate care or protection.

Rates for children aged 0–16 years who were the subject of a substantiation of a notification received during the relevant year, by state and territory, 1998–99 to 2007–08 (per 1,000 children)[a]

Year	NSW	Vic	Qld	WA	SA	Tas[b]	ACT	NT
1998–99	4.4	6.3	5.1	2.5	5.2	1.1	5.2	n.a.[c]
1999–00	3.9	6.3	5.6	2.3	5.0	0.7	2.5	6.2
2000–01	4.4	6.6	7.3	2.4	5.0	0.9	2.7	5.8
2001–02	4.8	6.6	8.3	2.4	5.3	1.4	2.7	5.8
2002–03	7.5[d]	6.3	10.1	1.9[e]	5.8	1.8	3.6	5.7
2003–04	n.a.[f]	6.4	14.0	2.0	5.9	3.0	6.7	8.7
2004–05	6.1	6.4	14.1	2.3	5.5	5.8	12	7.9
2005–06	8.4	6.7	10.9	2.0	4.5	5.9	12	8.1
2006–07	9.0	5.9[g]	9.2[h]	2.4	5.3	7.2	7.8[i]	9.3
2007–08	8.6	5.5	7.5	2.9	5.5	8.3	7.4	11.9

(a) Rates are based on populations as at December 2007.

(b) The increase in the rate of children who were the subject of a substantiation in Tasmania is considered to be due in part to increased application of the Tasmanian Risk Framework as well as greater adherence to the definition of 'substantiation' published by the AIHW. It should also be noted that data relating to Tasmanian substantiations for 2005–06 and 2006–07 should be interpreted carefully due to the high proportion of investigations in process by 31 August 2007.

(c) Data for 1998–99 were not available from the Northern Territory.

(d) The data for 2002–03 and previous years should not be compared. New South Wales implemented a modification to the data system to support legislation and practice changes during 2002–03 which would make any comparison inaccurate.

(e) The decline in the number of notifications in Western Australia for 2002–03 is associated with organisational and practice changes.

(f) New South Wales was able to provide limited data for 2003–04 due to the introduction of a new client information system.

(g) Due to new service and data reporting arrangements, the Victorian child protection data for 2006–07 onwards may not be fully comparable with previous years' data.

(h) 2006–07 data for Queensland has been updated in 2008. These data may be different from the interim data published in Child Protection Australia 2006–07.

(i) The decrease in the number of substantiated investigations reflects a requirement of staff to substantiate emotional abuse or neglect only if there was, or is likely to be, significant harm and there was no one with parental responsibility willing and able to protect the child/young person. Recording an outcome of an appraisal as not substantiated does not exclude ongoing work with the child or young person.

A finalised investigation is classified as 'substantiated' where there is reasonable cause to believe that the child has been, is being or is likely to be abused or neglected or otherwise harmed. Substantiation does not necessarily require sufficient evidence for a successful prosecution and does not imply that treatment or case management was, or is to be, provided.

Source: Australian Institute of Health and Welfare 2009.

Due to new service and data reporting arrangements, the Victorian child protection data for 2006–07 onwards is not fully comparable with previous data. However, trends in rates for children who were the subjects of one or more substantiations or notifications received during a given year have generally increased for most jurisdictions, with the exception of Western Australia and South Australia, where rates have remained relatively stable.

Reference

Australian Institute of Health and Welfare (AIHW) 2009, *Child protection Australia 2007–08*, child welfare series number 45, cat. no. CWS 33, AIHW, Canberra.

Concepts

Substantiated: A finalised investigation is classified as 'substantiated' where there is reasonable cause to believe that a child has been, is being, or is likely to be abused or neglected or otherwise harmed. Substantiation does not necessarily require sufficient evidence for a successful prosecution and does not imply that treatment or case management was, or is to be provided.

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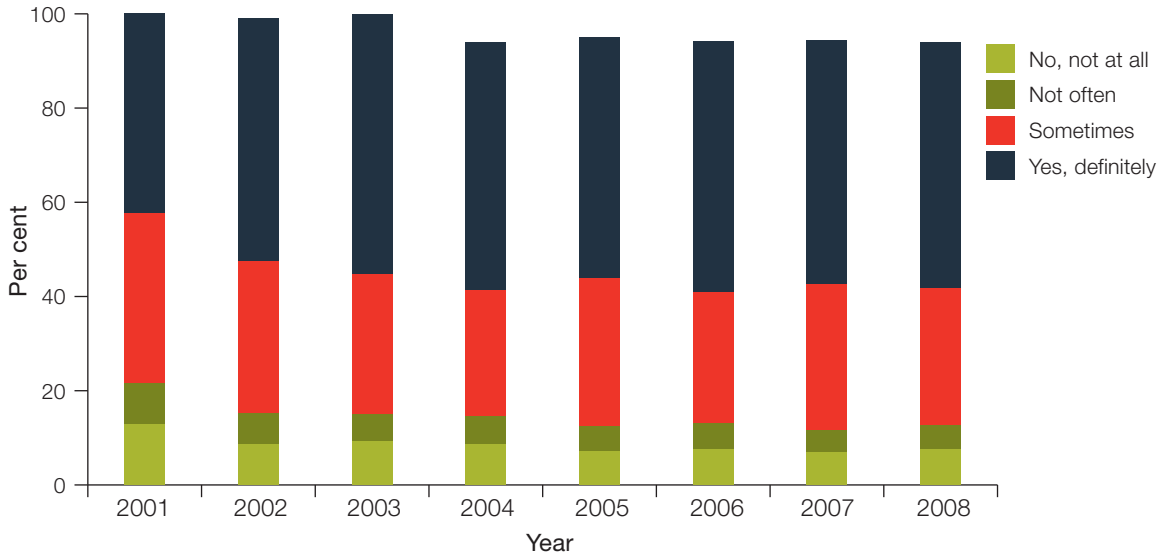
Feeling valued by society

Description

The proportion of adults aged 18 years and over who feel/do not feel valued by society.

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, and reaching 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 (Wilkinson & Marmot 2003).

Proportion of adults aged 18 years and over who felt/did not feel valued by society, Victoria, 2001–2008



Data are age-standardised to the 2006 Victorian population.

Ordinary least squares regression was used to test for trends over time.

Source: Victorian population health surveys 2001–2008.

The *Victorian population health survey 2008* included questions about social inclusion and whether people felt valued by society. Survey estimates indicate that although most adults aged 18 years and over felt valued, 7.6 per cent did not feel valued by society.

Reference

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

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

Wilkinson, R & Marmot, M 2003, Social determinants of health: the solid facts, 2nd edition, World Health Organization, Geneva: http://www.euro.who.int/document/E81384.PDF

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Health conditions

This dimension includes the prevalence of disease, disorder, injury or trauma or other health- related states. Information about the prevalence, incidence of disease and injury can be used as baseline measures against which the progress and effectiveness of health strategies and other initiatives may be gauged. The indicators for this dimension include:

- **Cancer incidence:** The number of new cancers in a defined population over a specified time period, expressed as a rate per 100,000 persons.
- **Breast cancer incidence:** The number of new cases of breast cancer in the female population over a specified time period, expressed as a rate per 100,000 females.
- **Lung cancer incidence:** The number of new cases of lung cancer in the population over a specified time period, expressed as a rate per 100,000 persons.
- **Prevalence of heart disease:** The proportion of adults aged 18 years and over who have ever been diagnosed with heart disease by a doctor.
- **Prevalence of diabetes:** The proportion of adults aged 18 years and over who have ever been diagnosed with diabetes by a doctor.
- **Oral health status (children):** The proportion of children aged between six months and 12 years who have had dental symptoms or selected procedures.
- **Injury and poisoning hospital admissions:** The indicator is the number and rate of admissions to public and private hospitals in Victoria due to all causes of injury and poisoning.

Cancer incidence

Description

The number of new cancers in a defined population over a specified time period, expressed as a rate per 100,000 persons.

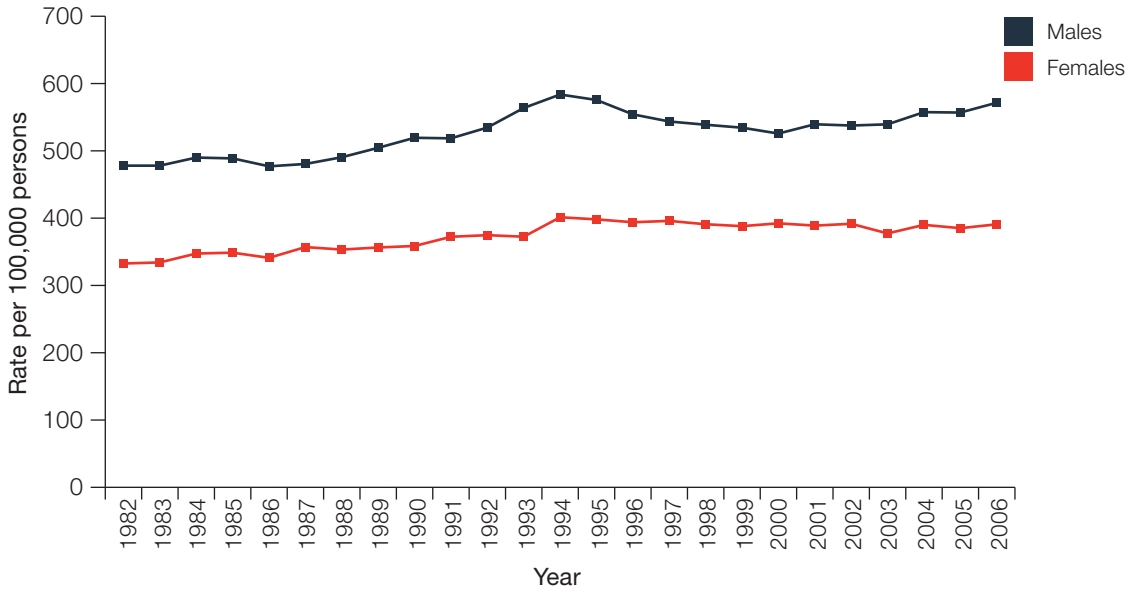
The term “cancer” refers to a group of more than 100 diseases characterised by uncontrolled growth and the spread of abnormal cells. Different types of cancers have different causes, and different rates of occurrence and survival. Therefore, different types of cancers in a community or workplace do not necessarily have the same cause.

Cancers may be caused by a variety of factors acting alone or together, usually over a period of many years. Many cancers are due to factors related to how we live. Lifestyle factors, which increase the risk for specific cancers include tobacco use, excessive alcohol consumption, poor diet (with excess calories, high in fat and low in fruits, vegetables or fibre), and exposure to ultraviolet light from the sun.

Other important risk factors include reproductive factors and sexual behaviour. For example, women who have their first child after the age of 30 have a greater chance of developing breast cancer and women who have had many sexual partners have an increased risk of developing cervical cancer. A family history of cancer may also increase the chance of developing cancer. Most geographical differences in cancer rates seem to result more from behavioural differences or differences in lifestyle than from anything in the physical surroundings.

Most types of cancer occur among people over 45 years of age. As a population ages, the occurrence of new cancer cases is expected to increase. We can expect to see more cancers in a community, neighbourhood or workplace consisting primarily of people over the age of 45 (and even more so, over the age of 60), than in a neighbourhood or workplace of diverse ages.

Cancer incidence by sex, Victoria, 1982–2006



Data are age-standardised to the 2001 Victorian population.

Source: Victorian Cancer Registry.

Cancer incidence rate and number of new cases, by sex, Victoria, 1982–2006

	Rate per 100,000 persons		Number of new cases	
Year	Males	Females	Males	Females
1982	478.0	332.6	6,699	5,986
1983	478.0	334.2	6,843	6,128
1984	490.0	347.4	7,128	6,502
1985	488.8	348.7	7,320	6,653
1986	477.0	341.0	7,329	6,632
1987	480.5	357.0	7,542	7,074
1988	490.5	353.3	7,859	7,137
1989	504.5	356.4	8,196	7,316
1990	519.4	358.6	8,656	7,508
1991	518.6	372.3	8,917	7,957
1992	534.6	374.7	9,340	8,173
1993	563.7	372.4	10,152	8,249
1994	583.7	401.3	10,723	9,041
1995	575.6	398.2	10,800	9,129
1996	554.2	393.9	10,620	9,207
1997	543.6	395.9	10,672	9,468
1998	538.8	390.9	10,799	9,560
1999	534.4	388.1	10,986	9,703
2000	525.7	392.3	11,105	10,033
2001	539.5	388.9	11,685	10,164
2002	537.6	391.6	11,993	10,427
2003	539.4	377.3	12,320	10,253
2004	557.5	390.0	13,037	10,783
2005	556.9	385.1	13,409	10,896
2006	571.5	390.8	14,152	11,267

Data are age-standardised to the 2001 Victorian population.

Source: Victorian Cancer Registry.

There were 25,419 new cases of cancer in Victoria in 2006 – 14,152 for males and 11,267 for females. The incidence rates for all cancers in 2006 were 571.5 per 100,000 males and 390.8 per 100,000 females. There was a significant linear trend, with an average annual increase in incidence of 0.7 per cent for both males and females between 1982 and 2006.

At least one in three Victorians will develop a cancer, other than non-melanocytic skin cancer, by the age of 75 years.

In 2006, more Victorians died from cancer (9,935 deaths, 29.8 per cent of all deaths) than from heart disease (7,506 deaths, 22.5 per cent of all deaths). Together, cancer and heart disease caused more than half of all deaths in Victoria (Cancer Council Victoria 2009).

Reference

The Cancer Council Victoria 2009, *Canstat: cancer in Victoria 2006*, The Cancer Council Victoria, Melbourne.

Concepts

Incidence: Refers to the number of new cases of disease that occur in a population over a specified period.

Limitations

Sometimes measurement of the incidence rate is complicated by changes in the population at risk during the period when cases are ascertained, for example, through births, deaths or migration.

It should be noted that once a person is classified as a case, he or she is no longer liable to become a new case, and therefore should not contribute further person-years at risk. Sometimes the same pathological event happens more than once to the same individual. In these circumstances, the definition of incidence is usually restricted to the first event, although sometimes (for example in the study of infectious diseases) it is more appropriate to count all episodes.

Provenance

Cancer incidence rates are reported by the Australian Institute of Health and Welfare and the World Health Organisation.

For more information

The Cancer Council Victoria, interactive reports:
http://vcrdata.cancervic.org.au:8082/ccv/

The Cancer Council Victoria 2009, *Canstat: cancer in Victoria 2006*, The Cancer Council Victoria, Melbourne: http://www.cancervic.org.au/downloads/about_our_research/canstats/more_canstats/CanStat_46.pdf

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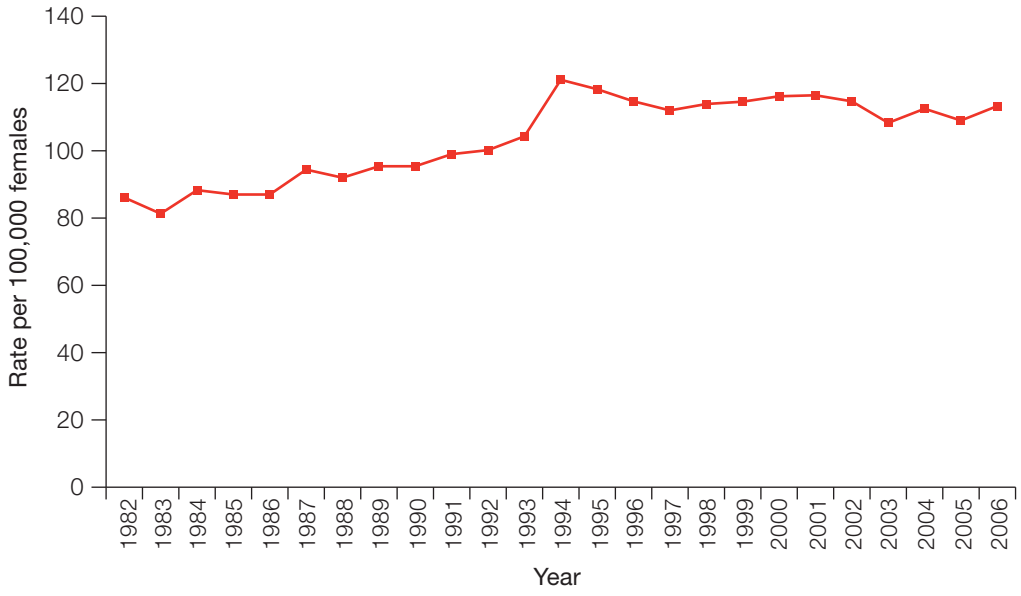
Breast cancer incidence

Description

The number of new cases of breast cancer in the female population over a specified time period, expressed as a rate per 100,000 females.

Breast cancer is the most common cancer occurring in females, and the highest cause of female cancer death in Victoria (The Cancer Council Victoria 2009). Although men can develop breast cancer, it remains relatively rare. There is an increased risk of developing female breast cancer with older age, obesity, consumption of alcohol, early onset of menstruation, later menopause, non-parity, low fertility and delayed age of having a first child, as well as having had a first degree female relative with the disease (Berkley et al. 1999, Cassens 1992, Key et al. 2002, Rose et al. 2002). Mutations in the BRCA1 and BRCA2 genes are responsible for approximately 10 per cent of all breast cancers (Morrow & Gradishar 2002). Oral contraceptive use and hormone replacement therapy (HRT) have also been shown to increase the risk of developing the disease, but the increase in risk is limited to the period of use, and after five years there appears to be no increase in risk associated with prior HRT use (Beral et al. 1997, Calle et al. 1996). Together, known risk factors explain about a third of all female breast cancers (Silva & Zurrida 2000).

Female breast cancer incidence, Victoria, 1982–2006



Data are age-standardised to the 2001 Victorian population.

Source: Victorian Cancer Registry.

In 2006, breast cancer was the third most common new cancer overall and the fourth most common cause of cancer death in Victoria. There were 3,204 new cases of female breast cancer (13 per cent of all cancers) and 671 female breast cancer deaths (seven per cent of all cancer deaths).

There was a significant linear trend of increasing incidence of 1.4 per cent annually for females between 1982 and 2006. Incidence rates have stabilised recently, after a decade of increase, largely due to mammographic detection, while mortality rates have shown a downward trend (since 1994) and survival rates have increased (The Cancer Council Victoria 2009, 2010). Improved treatment options, together with population screening for early detection of disease are believed to have contributed to this decrease in mortality and increase in survival (AIHW & NBCC 2006, English et al. 2007).

References

Australian Institute of Health and Welfare (AIHW) and National Breast Cancer Centre (NBCC) 2006, *Breast cancer in Australia: an overview, 2006*, cancer series no. 34, cat. no. CAN 29, AIHW, Canberra.

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Calle, EE, Heath, CW Jr, Miracle-McMahill, HL, Coates, RJ, Liff, JM, Franceschi, S, Talamini, R, Chantarakul, N, Koetsawang, S, Rachawat, D, Morabia, A, Schuman, L, Stewart, W, Szklo, M, Bain, C, Schofield, F, Siskind, V, Band, P & Coldman, AJ 1996, 'Breast cancer and hormonal contraceptives', *The Lancet*, vol. 347, pp. 1713–1727.

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Morrow, M & Gradishar, W 2002, 'Breast cancer – recent developments', *British Medical Journal*, vol. 324, pp. 410–414.

Rose, DP, Gilhooly, EM & Nixon, DW 2002, 'Adverse effects of obesity on breast cancer prognosis, and the biological actions of leptin (Review)', *International Journal of Oncology*, vol. 21, pp. 1285–1292.

Silva, OE & Zurrida, S 2000, *Breast cancer: a practical guide*, 2nd Edition, Elsevier Science, Amsterdam.

The Cancer Council Victoria 2009, *Canstat: cancer in Victoria 2006*, The Cancer Council Victoria, Melbourne.

The Cancer Council Victoria 2010, *Time trends by cancer, interactive report*, The Cancer Council Victoria, Melbourne, viewed online 4 May 2010: http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer

Concepts

Incidence: Refers to the number of new cases of disease that occur in a population over a specified period.

Limitations

Sometimes measurement of the incidence rate is complicated by changes in the population at risk during the period when cases are ascertained, for example, through births, deaths or migration.

It should be noted that once a person is classified as a case, he or she is no longer liable to become a new case, and therefore should not contribute further person-years at risk. Sometimes the same pathological event happens more than once to the same individual. In these circumstances, the definition of incidence is usually restricted to the first event, although sometimes (for example in the study of infectious diseases) it is more appropriate to count all episodes.

Provenance

Cancer incidence rates are reported by the Australian Institute of Health and Welfare and the World Health Organization.

For more information

The Cancer Council Victoria, interactive reports: http://vcrdata.cancervic.org.au:8082/ccv/

The Cancer Council Victoria 2009, *Canstat: cancer in Victoria 2006*, The Cancer Council Victoria, Melbourne: http://www.cancervic.org.au/downloads/about_our_research/canstats/more_canstats/CanStat_46.pdf

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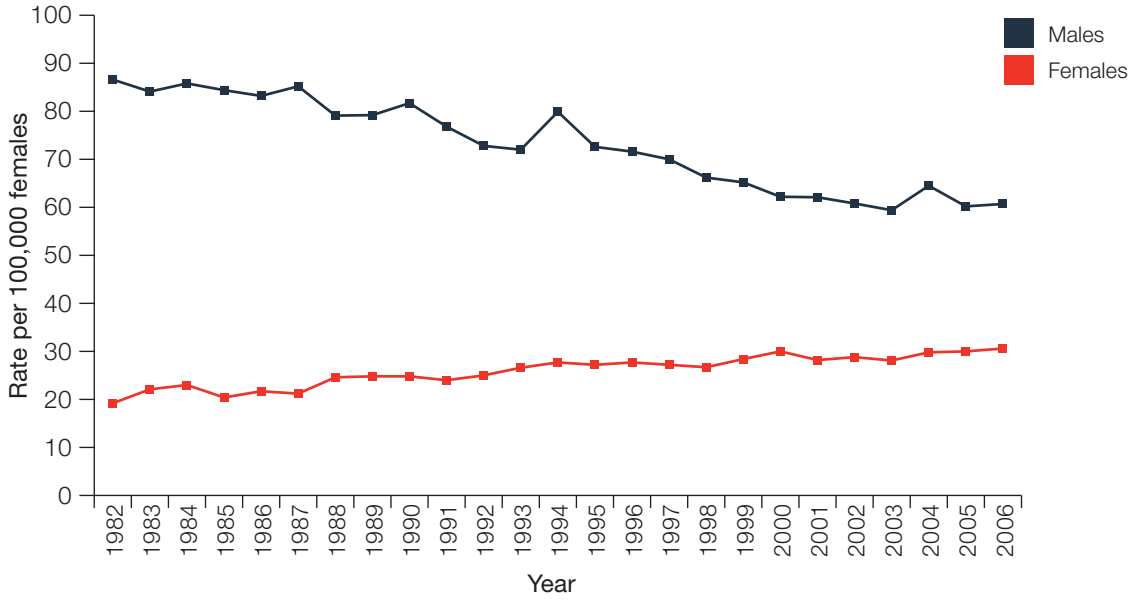
Lung cancer incidence

Description

The number of new cases of lung cancer in the population over a specified time period, expressed as a rate per 100,000 persons.

Lung cancer is an aggressive form of cancer originating in the trachea, windpipe and lung. The disease has a low cure rate and short survival time. The five-year relative survival rate for lung cancer in males was nine per cent and 14 per cent for females in Victoria in 2004 (English et al. 2007). Tobacco smoking is the major risk factor for lung cancer and the evidence suggests that more than 90 per cent of all lung cancers are attributable to smoking (AIHW 2002). Exposure to environmental tobacco smoke, asbestos, uranium, chromium, nickel and radon are also risk factors for lung cancer. The risk of developing lung cancer increases with age and males have a higher risk of developing the disease than females, which is largely a reflection of historically higher smoking rates among males (Begg et al. 2007).

Lung cancer incidence, by sex, Victoria, 1982–2006



Data are age-standardised to the 2001 Victorian population.

Source: Victorian Cancer Registry.

The lungs were the fourth most common site for new cancers (2,378 new cases) in 2006, and the leading cause of cancer death in Victoria (1,848 deaths, 19 per cent of all cancer deaths). Incidence and mortality rates declined for males and increased slightly for females between 1982 and 2006. There was a significant linear trend of decreasing incidence of -1.7 per cent annually for males, but there was a significant increasing trend of 1.7 per cent for females over this period (The Cancer Council Victoria 2010).

References

Australian Institute of Health and Welfare (AIHW) 2002, *Chronic diseases and associated risk factors in Australia 2001*, cat. no. PHE 33, AIHW, Canberra.

Begg, S, Vos, T, Barker, B, Stevenson, C, Stanley, L & Lopez, A 2007, *The burden of disease and injury in Australia 2003*, cat. no. PHE 82, AIHW, Canberra.

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The Cancer Council Victoria 2010, *Time trends by cancer*, interactive report, The Cancer Council Victoria, Melbourne, viewed online 4 May 2010: http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer

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The Cancer Council Victoria 2009, *Canstat: cancer in Victoria 2006*, The Cancer Council Victoria, Melbourne: http://www.cancervic.org.au/downloads/about_our_research/canstats/more_canstats/CanStat_46.pdf

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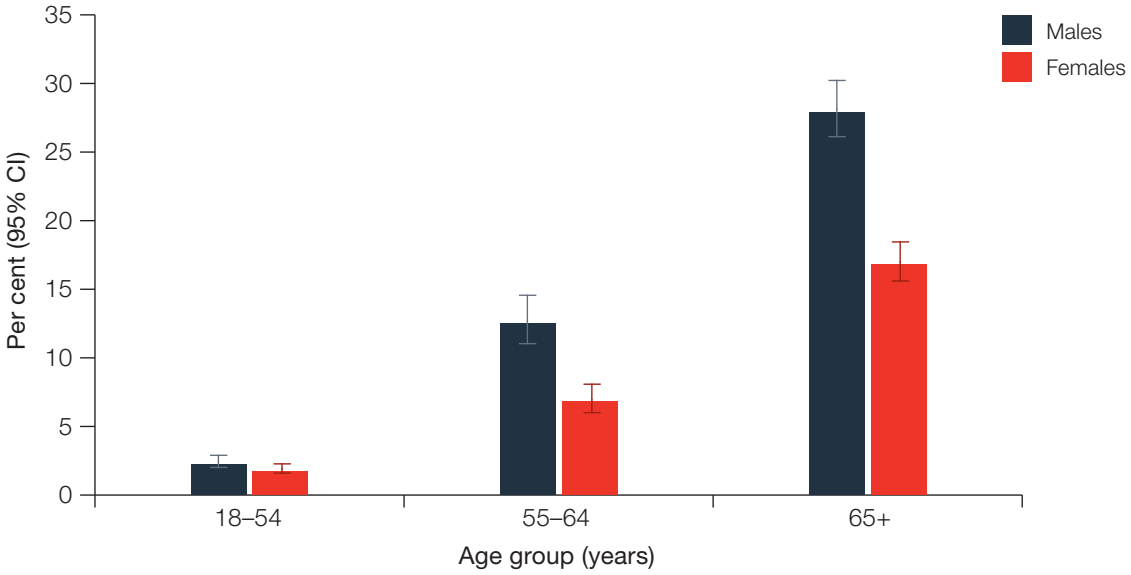
Prevalence of heart disease

Description

The proportion of adults aged 18 years and over who have ever been diagnosed with heart disease by a doctor.

Ischaemic heart disease was the largest single cause of disability-adjusted life years for both men and women in 2001, accounting for about 10.3 per cent and 8.1 per cent of the total burden in Victorian males and females respectively (DHS 2005). Prevalence increases with age and the major risk factors associated with the disease include tobacco smoking, poor diet – especially a diet high in saturated fat and salt intake, excess body weight, physical inactivity, high levels of alcohol consumption, high blood pressure and high cholesterol (AIHW 2006). The prevalence of heart disease provides insights into the level of resource required for prevention, health promotion and management of cardiovascular disease in the population.

The prevalence of heart disease, by sex and age group, Victoria, 2008



	Males			Females			Persons		
Age group	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
18–54 years	**2.2**	1.8	2.7	**1.7**	1.4	2.1	**2.0**	1.7	2.3
55–64 years	**12.5**	10.9	14.4	**6.8**	5.8	7.9	**9.6**	8.6	10.7
65 years+	**27.9**	25.9	30.0	**16.8**	15.4	18.3	**21.8**	20.6	23.0
Total	**8.3**	7.8	8.9	**5.2**	4.9	5.6	**6.7**	6.3	7.0

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age-standardised to the 2006 Victorian population.

Source: Victorian population health survey 2008.

Estimates from the *Victorian population health survey 2008* indicate that about 270,000 adults (6.7 per cent) aged 18 years and over had ever been diagnosed with heart disease by a doctor. Self-reported prevalence levels were higher for males compared with females and heart disease prevalence increased with age. Adults aged 65 years and over were more likely than adults in younger age groups to report having ever been diagnosed with heart disease.

References

Australian Bureau of Statistics (ABS) 2009, *2007–08 National health survey: summary of results Australia*, ABS, Canberra.

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

Department of Human Services (DHS) 2005, *Victorian burden of disease study: mortality and morbidity in 2001*, DHS, Melbourne.

Concepts

Prevalence: The number of people with a disease at a specific point in time.

Limitations

The heart disease prevalence rates are derived from data obtained through a self-report survey and should be interpreted with caution. They rely on respondent recall of having ever been told by a doctor that they had heart disease. There is no further clarification in the survey questionnaire as to what type of heart disease was diagnosed (for example angina, heart failure etc.).

Provenance

The Australian Bureau of Statistics, *National health survey* collects information about cardiovascular disease prevalence. Prevalence estimates for ischaemic heart disease are presented in reports profiling survey results, by age group and sex (ABS 2009).

For more information

Australian Bureau of Statistics (ABS) 2009, *2007–08 National health survey: summary of results Australia*, ABS, Canberra:
http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/48061B1C977096A6CA2575B000139E2D/$File/43640_2007-08.pdf

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National Heart Foundation:
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World Health Organisation:
http://www.who.int/topics/cardiovascular_diseases/en/

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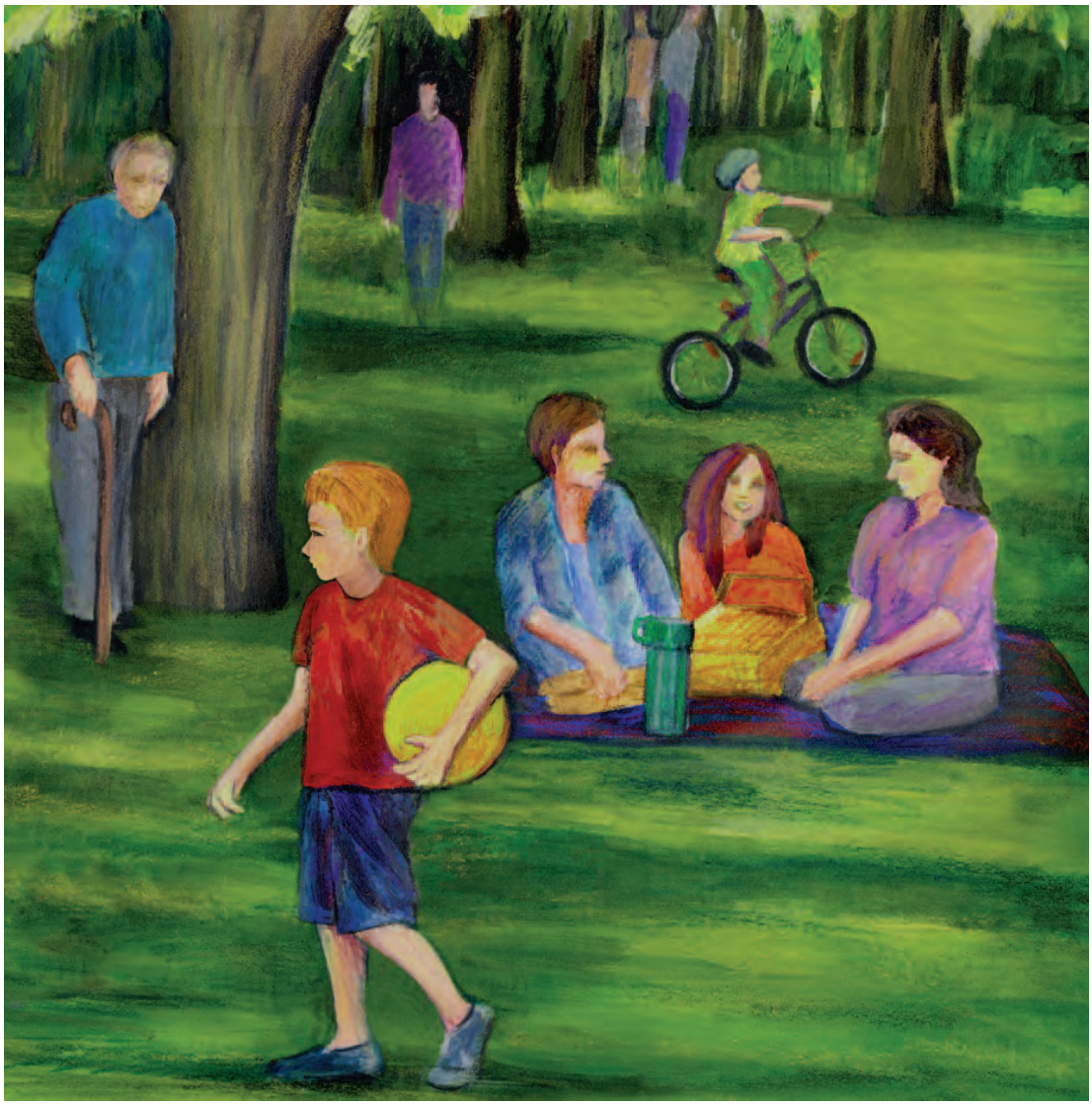


Prevalence of diabetes

Description

The proportion of adults aged 18 years and over who have ever been diagnosed with diabetes by a doctor.

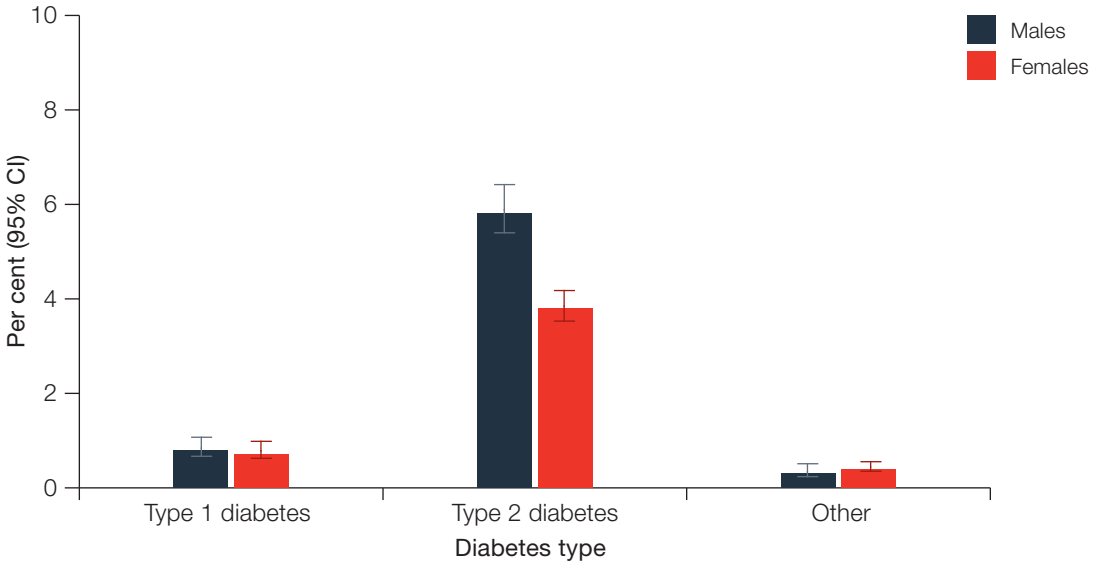
Diabetes mellitus is a common chronic condition characterised by high blood glucose (sugar) levels. The two main types of diabetes mellitus are type 1 (insulin dependent) diabetes and type 2 diabetes. Gestational diabetes is another form of the condition that affects women during pregnancy who have not been previously diagnosed with diabetes. This condition usually abates after birth, but may be a risk factor for the development of type 2 diabetes later in life.

Type 1 diabetes is an autoimmune disease in which the body's immune system destroys the insulin-producing cells of the pancreas rendering the individual unable to produce enough of the hormone insulin, which is essential for the control of glucose levels in the blood. It most commonly occurs in persons under the age of 30 years and may be referred to as juvenile-onset diabetes. People with type 1 diabetes require replacement insulin injections (usually several times a day) for life. Unlike type 2 diabetes, it is not caused by lifestyle factors. Type 1 diabetes accounts for approximately 10 to 15 per cent of diabetes mellitus and while a great deal of research is being carried out, at this stage nothing can be done to prevent or cure type 1 diabetes.

Type 2 diabetes is the most common form of diabetes, which occurs mostly in people aged 50 years and over who are overweight, or have a family history of the condition. Accounting for around 85 per cent of all cases of diabetes mellitus, it is caused by insufficient production of insulin and/or the body becoming resistant to high glucose levels in the blood. In many cases, appropriate diet and exercise can control type 2 diabetes. More severe cases require treatment with oral glucose-lowering drugs, insulin injections, or a combination of these. Left untreated, diabetes mellitus can cause kidney, eye and nerve damage, heart disease, stroke and impotence.

Recent increases in the number of people with diabetes has led to a number of claims that we are experiencing an 'epidemic' of diabetes (Colagiuri et al. 2005). There is much concern about the likely effect of this epidemic on individual and population health, and its wider social and economic impacts. Therefore, estimates of diabetes prevalence are essential for planning for the provision of services to people with the disease, as well as monitoring prevention strategies.

The prevalence of diabetes, by diabetes type and sex, Victoria, 2008



	Males			Females			Persons		
	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
Type 1 diabetes	**0.8**	0.6	1.0	**0.7**	0.6	0.9	**0.7**	0.6	0.9
Type 2 diabetes	**5.8**	5.3	6.4	**3.8**	3.5	4.1	**4.8**	4.5	5.1
Other	**0.3**	0.2	0.4	**0.4**	0.3	0.5	**0.3**	0.3	0.4
Gestational diabetes				**1.5**	1.2	1.7			
Total (excluding gestational diabetes)	**6.9**	6.4	7.5	**4.9**	4.5	5.3	**5.8**	5.5	6.2

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Note that figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Data are age-standardised to the 2006 Victorian population.

Source: Victorian population health survey 2008.

The prevalence of diabetes for persons aged 18 years and over was 5.8 per cent in 2008. Type 2 diabetes was the most commonly reported form of diabetes (4.8 per cent), followed by type 1 diabetes (0.7 per cent). Gestational diabetes (1.5 per cent) was the second most commonly reported form of diabetes for females.

Although the prevalence of type 1 diabetes was similar between males (0.8 per cent) and females (0.7 per cent), the prevalence of type 2 diabetes was higher for males (5.8 per cent), compared with females (3.8 per cent).

Reference

Colagiuri, S, Borch-Johnsen, K, Glumer, C & Vistisen, D 2005, 'There really is an epidemic of type 2 diabetes', *Diabetologia*, vol. 48, no. 8, pp. 1459–1463.

Concepts

Prevalence: The number of people with a disease at a specific point in time.

Limitations

The prevalence rates are derived from data obtained through a self-report survey and should be interpreted with caution. They rely on respondent recall of having ever been told by a doctor that they have had diabetes. The data do not include undiagnosed cases in the community.

Provenance

Diabetes prevalence is regularly reported by the Australian Bureau of Statistics and the Australian Institute of Health and Welfare.

For more information

Australian Institute of Health and Welfare (AIHW) 2008, Diabetes: *Australian facts 2008*, cat. no. CVD 40, AIHW, Canberra: http://www.aihw.gov.au/publications/index.cfm/title/10394

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

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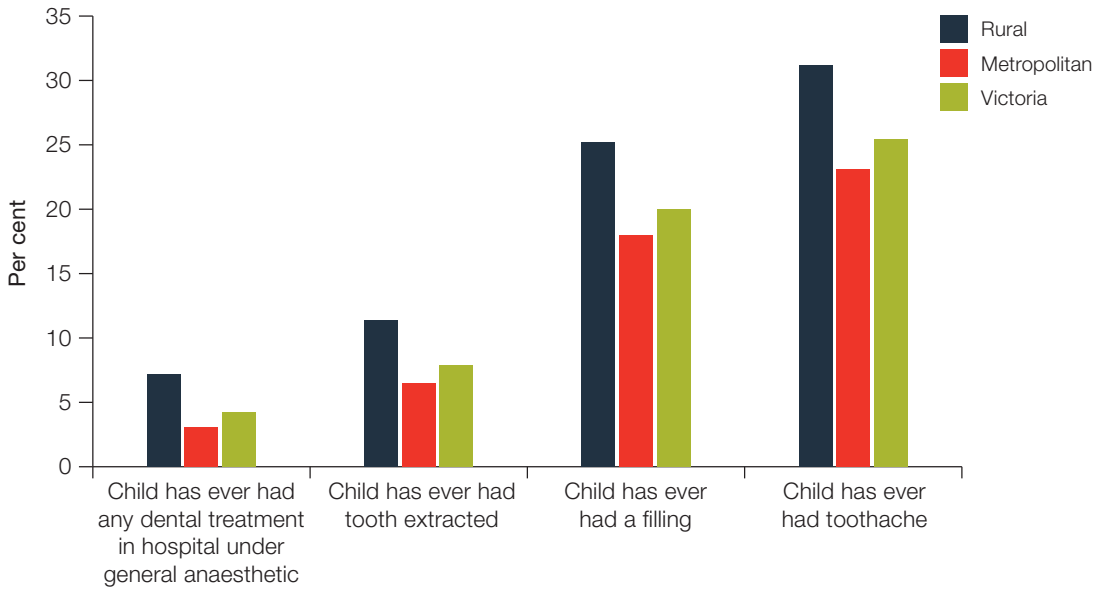
Oral health status (children)

Description

The proportion of children aged between six months and 12 years who have had dental symptoms or selected procedures.

Up-to-date information about population oral health is important because oral diseases have broad implications for the health of the public. Dental problems are ranked among the most frequently reported episodes of illness by Australians (AIHW 2000), and provision of dental care accounted for 6.6 per cent of recurrent health expenditure in 2005–06 (AIHW 2007). In the United States, the Surgeon General has characterised oral disease as a 'silent epidemic' (Surgeon General 2000). Good oral health in childhood contributes to good oral health in later life, with less decay and reduced loss of natural teeth.

Oral health status of children aged six 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 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

Source: Department of Human Services 2007.

The results of the *Victorian child health and wellbeing survey 2006* (VCHWS) showed that more than three quarters (77.1 per cent) of children aged six months to 12 years in Victoria had either excellent or very good oral health. The survey also showed that one in five (20 per cent) 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 the metropolitan area to have ever had a filling, toothache, a tooth extracted or to have ever had dental treatment in hospital under a general anaesthetic.

References

Australian Institute of Health and Welfare (AIHW) 2000, *Australia's health 2000: the seventh biennial health report of the Australian Institute of Health and Welfare*, AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2007, *Health expenditure Australia 2005–06*, health and welfare expenditure series no. 30, cat. no. HWE 37, AIHW, Canberra.

Department of Human Services (DHS) 2007, *The state of Victoria's children report 2006: every child every chance*, DHS, Melbourne.

Surgeon General 2000, *The health consequences of smoking: a report of the Surgeon General*, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, Georgia.

Concepts

Rural and metropolitan areas have been defined based on Department of Health service regions.

Limitations

'Child' refers to children aged six months to 12 years of age.

For more information

Department of Human Services (DHS) 2007, *The state of Victoria's children report 2006: every child every chance*, DHS, Melbourne:
http://www.office-for-children.vic.gov.au/statewide-outcomes/report_2006

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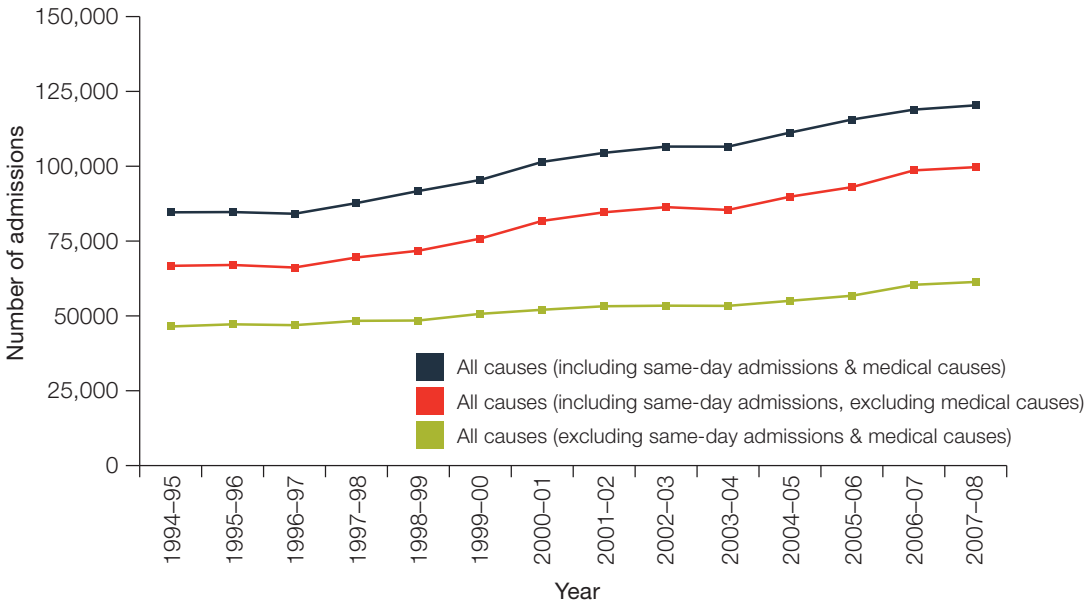
Injury and poisoning hospital admissions

Description

The indicator is the number and rate of admissions to public and private hospitals in Victoria due to all causes of injury and poisoning.

Injury indicators provide information to monitor the progress of efforts in reducing injury. All injury and poisoning hospitalisation includes injury resulting from all causes, all activities, in all locations, for all ages. The indicator provides high-level summary information where all injury and poisoning types are combined.

Number of injury and poisoning hospital admissions, Victoria, 1994–95 to 2007–08



Data include an ICD-9 primary injury or poisoning diagnosis code 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 from final analysis but are shown in figures.

Source: Victorian Admitted Episodes Datasets July 1994–June 2008.

Number of injury and poisoning hospital admissions, Victoria, 1994–95 to 2007–08

	All causes (including same-day admissions & medical causes)	All causes (including same-day admissions, excluding medical causes)	All causes (excluding same-day admissions & medical causes)
1994–95	84,603	66,726	46,462
1995–96	84,694	67,015	47,191
1996–97	84,126	66,167	46,906
1997–98	87,685	69,518	48,353
1998–99	91,718	71,770	48,460
1999–00	95,424	75,819	50,691
2000–01	101,456	81,741	52,053
2001–02	104,477	84,615	53,227
2002–03	106,566	86,340	53,419
2003–04	106,537	85,394	53,352
2004–05	111,232	89,813	55,038
2005–06	115,594	93,013	56,735
2006–07	118,913	98,616	60,394
2007–08	120,349	99,698	61,347

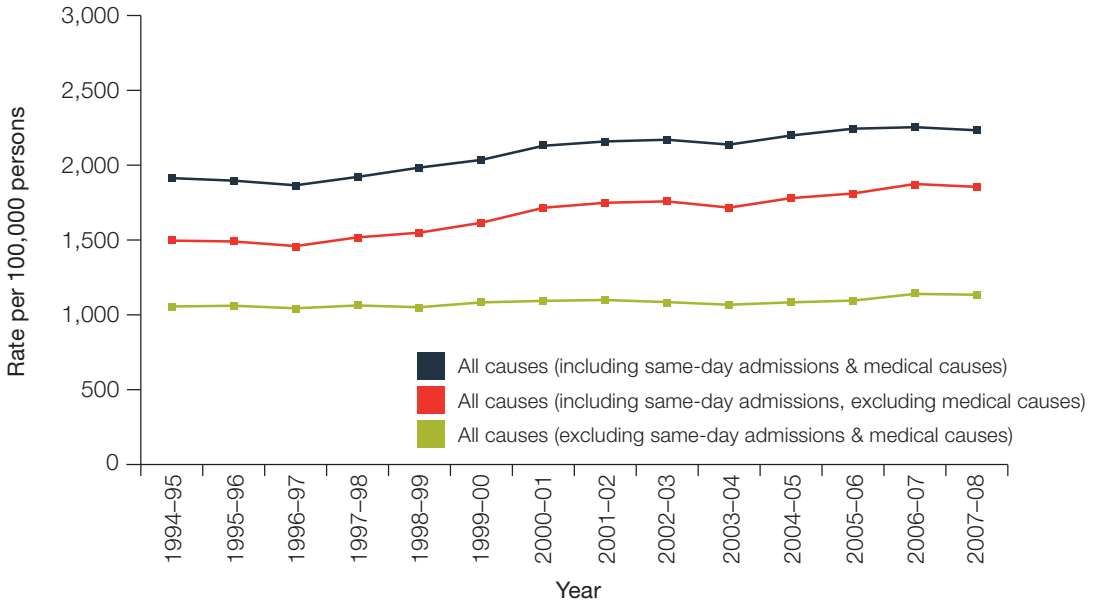
Data include an ICD-9 primary injury or poisoning diagnosis code in the range 800–904, 910–999 or an ICD-10 primary injury or poisoning diagnosis code in the range S00–T89.

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 from final analysis but are shown in figures.

Source: Victorian Admitted Episodes Datasets July 1994–June 2008.

Injury and poisoning hospital admission rates, Victoria, 1994–95 to 2007–08



Data include an ICD-9 primary injury or poisoning diagnosis code 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 from final analysis but are shown in figures.

Source: Victorian Admitted Episodes Datasets July 1994–June 2008.

Injury and poisoning hospital admission rates (per 100,000 persons), Victoria, 1994–95 to 2007–08

	All causes (including same-day admissions & medical causes)	All causes (including same-day admissions, excluding medical causes)	All causes (excluding same-day admissions & medical causes)
1994–95	1,913.4	1,496.0	1,055.9
1995–96	1,896.6	1,490.2	1,060.8
1996–97	1,865.6	1,459.6	1,043.8
1997–98	1,921.6	1,517.6	1,062.7
1998–99	1,983.8	1,549.0	1,051.0
1999–00	2,035.3	1,615.4	1,083.2
2000–01	2,129.6	1,715.2	1,093.4
2001–02	2,158.6	1,749.0	1,099.2
2002–03	2,170.0	1,758.2	1,085.0
2003–04	2,137.3	1,716.2	1,067.5
2004–05	2,198.2	1,779.8	1,083.6
2005–06	2,243.7	1,811.0	1,095.1
2006–07	2,253.9	1,874.1	1,139.9
2007–08	2,233.0	1,855.0	1,134.2

Data include an ICD-9 primary injury or poisoning diagnosis code 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 from final analysis but are shown in figures.

Source: Victorian Admitted Episodes Datasets July 1994–June 2008.

In 2007–08, 61,347 persons were admitted to Victorian hospitals due to injury and poisoning, which equates to an admission rate of 1,134 per 100,000 persons. These figures exclude 20,651 medical injury hospitalisations and a further 38,351 same-day injury hospitalisations.

Males accounted for 53 per cent (n=32,511) of all injury and poisoning hospital admissions in 2007–08. The four leading causes of injury and poisoning admissions in 2007–08 were falls (n=28,681, 48 per cent), transport (n=8,513, 14 per cent), other unintentional (n=6,318, 10 per cent) and self-harm (n=3,743, 6 per cent) admissions.

The number of injury and poisoning admissions increased significantly over the fourteen-year period from 46,462 in 1994–05 to 61,347 in 2007–08, representing an estimated average annual change of 2.1 per cent (95% CI: 1.9–2.4) and an overall increase of 34.7 per cent (95% CI: 29.2–39.6), based on the trend line.

The annual injury and poisoning admission rate increased significantly over the fourteen-year period from 1,056 per 100,000 persons in 1994–95 to 1,134 per 100,000 persons in 2007–08, representing an estimated annual change of 0.5 per cent (95% CI: 0.3–0.8) and an overall increase of 7.7 per cent (95% CI: 4.5–11.0) for the period.

References

Cryer, C, Langley, JD, Jarvis, SN, MacKenzie, SG, Stephenson, SC & Heywood, P 2005, 'Injury outcomes indicators: the development of a validation tool', *Injury Prevention*, vol. 11, pp. 53–57.

Cryer, C, Langley, J & Stephenson, S 2004, *Developing valid injury outcome indicators, a report for the New Zealand injury prevention strategy*, Injury Prevention Research Unit, Dunedin.

Harrison, JE & Steenkamp, M 2002, *Technical review and documentation of current NHPA injury indicators and data sources*, injury research and statistics series no. 14, Australian Institute of Health and Welfare, Adelaide.

Waller, JA 1985, *Injury control: a guide to the causes and prevention of trauma*, Lexington Books, Lexington, Massachusetts.

Concepts

Injury: 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).

Medical injuries: Complications of surgical and medical care or sequelae – pathologies resulting from chronic exposure over time and the consequences of injury – were excluded from the primary analysis so that the initial injury event is counted, but not subsequent episodes of treatment and care arising from the injury.

Same-day admissions: Defined as those discharged on the day of admission (other than those ending in transfer to another hospital). These were omitted from the primary analysis because this group of admissions is subject to variation over time and between hospitals.

Limitations

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 & Steenkamp 2002).

Provenance

This indicator is a Victorian adaptation of an indicator used in the Australian Institute of Health and Welfare review of National Health Priority Area injury indicators and data sources.

For more information

National Public Health Partnership (NPHP) 2005, The national injury prevention and safety promotion plan: 2004–2014, NPHP, Canberra:
http://www.nphp.gov.au/publications/sipp/nipspp.pdf

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Human Function

Human function measures alterations to body, structure or function (impairment), activity limitations and restrictions in participation. More specifically, this dimension captures information on the prevalence of disability and impairment in the population. The indicators of human function presented in this section of the report include:

- **Birth defects:** The total number of birth defects for a specific time period, expressed as a rate per 10,000 pregnancies, over the same time period.
- **Low birth weight:** The number of singleton births where the birth weight was less than 2,500 grams (low birth weight) or less than 1,500 grams (very low birth weight), expressed as a percentage of all live births.
- **Prevalence of stroke:** The proportion of adults aged 18 years and over who have ever been diagnosed by a doctor with stroke.
- **Unintentional hip fracture admissions (persons aged 75 years and over):** The number and rate (per 100,000 persons) of admissions to public and private hospitals in Victoria due to unintentional (accidental) injury-related hip fracture among persons aged 75 years and

Birth defects

Description

The total number of birth defects for a specific time period, expressed as a rate per 10,000 pregnancies, over the same time period.

A birth defect is any abnormality of prenatal origin, either present following conception or occurring before the end of pregnancy. This includes structural, functional, genetic, chromosomal and biochemical abnormalities. Birth defects are a major cause of morbidity and mortality. They can be detected at or before birth; however, some conditions may manifest later in life (AIHW 2009). Some defects are the result of teratogenic effects and may therefore be preventable, while the causes of other defects remain less clearly understood.

The monitoring of birth defects helps to inform health service planning and performance, and the impact of preventive strategies. In Victoria, birth defects are notified to the Victorian Births Defect Register, maintained by the Victorian Perinatal Data Collection Unit.

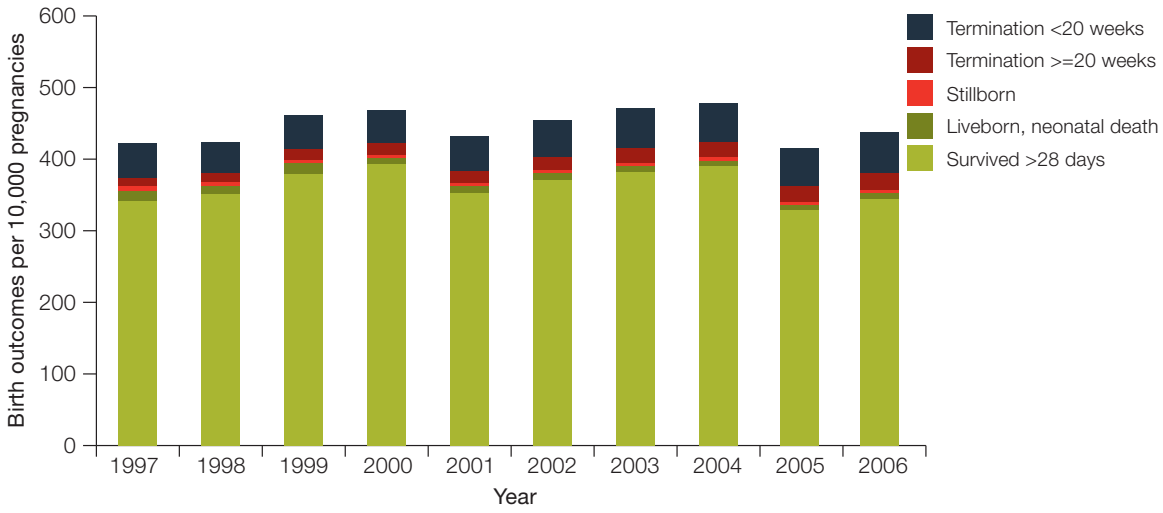
Prevalence and outcome of birth defects, Victoria, 1997–2006

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total number birth defects (including malformations before 20 wks, termination)[a]	2,641	2,647	2,904	2,945	2,700	2,875	3,002	3,052	2,751	3,014
Number Pregnancies	62,606	62,367	62,985	62,852	62,448	63,372	63,890	64,037	66,992	70,217
Birth defect rate (n/10,000 pregnancies)	421.8	424.4	461.1	468.6	432.4	453.7	469.9	476.6	410.6	429.2
Number Births	62,308	62,091	62,689	62,564	62,148	63,072	63,551	63,700	66,654	69,856
Outcome (n)										
Survived > 28 days	2,140	2,192	2,387	2,471	2,202	2,351	2,443	2,498	2,206	2,420
Liveborn, neonatal death	83	69	92	50	60	56	50	48	42	53
Stillborn	42	29	29	29	28	29	28	31	30	32
Termination>= 20 weeks	78	82	101	103	103	112	125	133	135	149
Termination< 20 weeks	298	275	295	292	307	327	356	342	338	360
Total number birth defects	**2,641**	**2,647**	**2,904**	**2,945**	**2,700**	**2,875**	**3,002**	**3,052**	**2,751**	**3,014**

The indicator includes all birth defects for live births, stillbirths and terminations of pregnancy at all gestations, irrespective of age at diagnosis.

Source: Riley & Halliday 2008.

Birth outcome per 10,000 pregnancies, Victoria 1997-2006



Source: Source: Riley & Halliday 2008.

In 2006, there were 3,014 birth defects, representing 4.3 per cent of all live births. The majority of birth defects occurred in babies who were liveborn and survived the neonatal period (n=2,420).

Prenatal screening can be used to identify some birth defects in unborn babies, resulting in pregnancy termination in some cases. In 2006 there were a total of 509 such outcomes.

Note that the frequencies for the most recent years are slightly lower than for previous years because of the lag time in reporting birth defects that may be diagnosed in early childhood, rather than at birth.

References

Australian Institute of Health and Welfare (AIHW) 2009, *Australia's health 2008*, cat. no. AUS 99, AIHW, Canberra.

Riley, M & Halliday, J 2008, *Birth defects in Victoria 2005–2006*, Victorian Perinatal Data Collection Unit, Department of Human Services, Melbourne.

Concepts

Live birth: The complete expulsion or extraction from its mother of a baby of at least 20 weeks gestation or, if gestation is unknown, weighing at least 400 grams who, after being born, breathes or shows any evidence of life such as a heartbeat.

Neonatal death: Refers to a death occurring within 28 days of live birth in an infant whose gestation was at least 20 weeks or, if gestation is unknown, weighing at least 400 grams.

Perinatal death: A stillbirth or neonatal death.

Stillbirth: The complete expulsion or extraction from its mother of a baby of at least 20 weeks gestation or, if the gestation is unknown, weighing at least 400 grams who did not, at any time after delivery, breathe or show any evidence of life such as a heartbeat.

Birth defect cases: Refers to the number of live-born or stillborn infants, or terminations at any stage of gestation, affected by at least one birth defect.

Limitations

All notifications of birth defects (excluding terminations of pregnancy before 20 weeks gestation and interstate births) are linked to the perinatal birth form to obtain an obstetric history for each case. Midwives complete this form as part of the mandatory notification system to the Victorian Perinatal Data Collection Unit for every birth in Victoria.

Over the years, the data quality of the Victorian Birth Defects Register has been assessed by validation studies. Ascertainment of all terminations is difficult. The most recent study noted further improvement in overall notification to 88 per cent.

For more information

Department of Health, Victorian Birth Defects Register (VBDR):
http://www.health.vic.gov.au/perinatal/vbdr

Moreira, C, Muggli, E & Halliday J 2007, *Report on prenatal diagnostic testing in Victoria 2007*, Victorian Perinatal Data Collection Unit, Department of Human Services and Murdoch Childrens Research Institute, Melbourne: http://www.health.vic.gov.au/__data/assets/pdf_file/0016/314206/report_diagnostictest2007.pdf

Riley, M & Halliday, J 2008, *Birth defects in Victoria 2005-2006*, Victorian Perinatal Data Collection Unit, Department of Human Services, Melbourne:
http://www.health.vic.gov.au/__data/assets/pdf_file/0006/313872/bd_05-06.pdf

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Low birth weight

Description

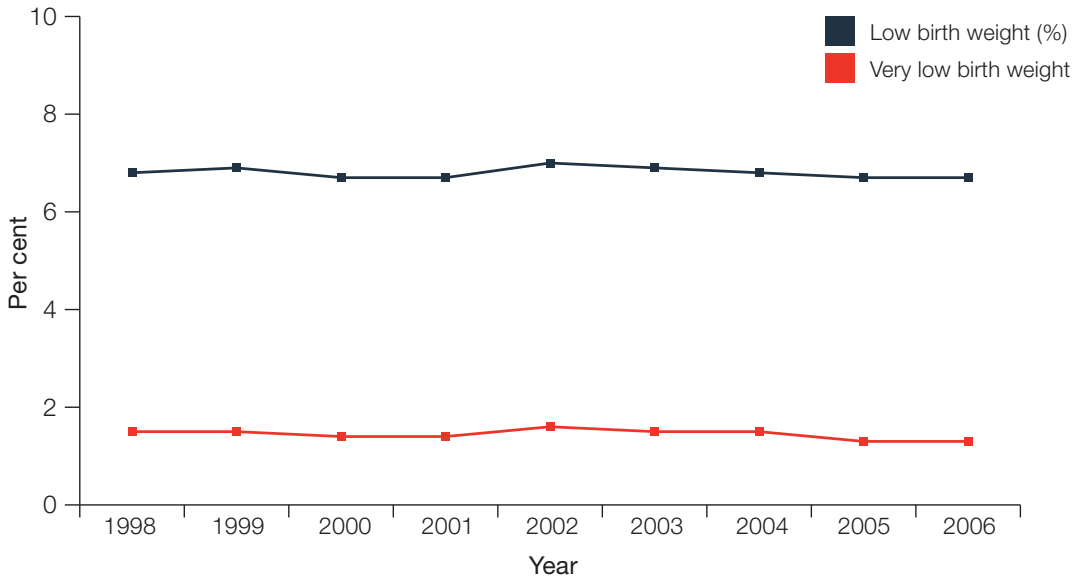
The number of singleton births where the birth weight was less than 2,500 grams (low birth weight) or less than 1,500 grams (very low birth weight), expressed as a percentage of all live births.

Low birth weight has been defined by the World Health Organization (WHO) as weight at birth of less than 2,500 grams (5.5 pounds) (WHO 1992). This is based on epidemiological observations that infants weighing less than 2,500 grams are approximately 20 times more likely to die than heavier babies. More common in developing than developed countries, a birth weight below 2,500 grams contributes to a range of poor health outcomes (Kramer 1987).

A baby's low weight at birth is either the result of preterm birth (before 37 weeks of gestation) or due to restricted foetal (intrauterine) growth. Low birth weight is closely associated with foetal and neonatal mortality and morbidity, inhibited growth and cognitive development, and chronic disease later in life. Many factors affect the duration of gestation and foetal growth, and may relate to the infant, the mother, or the physical environment. These factors play an important role in determining the birth weight and the future health of an infant.

Mothers in deprived socioeconomic conditions frequently have low birth weight infants. In those settings, low birth weight stems primarily from the mother's poor nutrition and health over a long period of time, including during pregnancy, the high prevalence of specific and non-specific infections, or from pregnancy complications, underpinned by poverty. Physically demanding work during pregnancy also contributes to poor foetal growth (United Nations Children's Fund and World Health Organization 2004).

Proportion (%) of low birth weight (<2,500 grams) and very low birth weight (<1,500 grams) births, Victoria, 1998–2006



Source: Department of Human Services 2008.

Proportion (%) of low birth weight (<2,500 grams) and very low birth weight (<1,500 grams) births, Victoria, 1998–2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Low birthweight (%)	6.8	6.9	6.7	6.7	7.0	6.9	6.8	6.7	6.7
Very low birthweight (%)	1.5	1.5	1.4	1.4	1.6	1.5	1.5	1.3	1.3

Source: Department of Human Services 2008.

The proportion of low birth weight (less than 2,500 grams) and very low birth weight (less than 1,500 grams) babies born as singletons has remained relatively stable since 1998.

References

Department of Human Services (DHS) 2008, *Births in Victoria 2005 and 2006*, Victorian Perinatal Data Collection Unit, DHS, Melbourne.

Kramer MS 1987, 'Determinants of low birthweight: methodological assessment and meta-analysis', *Bulletin of the World Health Organization*, vol. 65, no. 5, pp. 663–737.

United Nations Children's Fund and World Health Organization 2004, *Low birthweight: country, regional and global estimates*, UNICEF, New York.

World Health Organization (WHO) 1992, *International statistical classification of diseases and related health problems: 10th revision*, WHO, Geneva.

Concepts

Low birth weight: A weight of less than 2,500 grams (up to and including 2,499 grams), irrespective of gestational age. Low birth weight may be subdivided into very low birth weight (less than 1,500 grams) and extremely low birth weight (less than 1,000 grams).

Limitations

Births include all births of babies at 20 or more weeks gestation (or weighing at least 400 grams), but exclude late terminations of pregnancy (greater than or equal to 20 weeks). As a result, the data presented here will differ slightly from those presented in reports by the National Perinatal Statistics Unit which includes these cases.

Provenance

Low birth weight prevalence is reported by the Department of Reproductive Health and Research (RHR), World Health Organization.

For more information

Department of Health, *Births in Victoria*:
http://www.health.vic.gov.au/perinatal/pubs/births-vic

Department of Human Services (DHS) 2008, *Births in Victoria 2005 and 2006*, Victorian Perinatal Data Collection Unit, DHS, Melbourne: http://www.health.vic.gov.au/__data/assets/pdf_file/0006/312783/annrep0506.pdf

United Nations Children's Fund and World Health Organization 2004, *Low birthweight: country, regional and global estimates*, UNICEF, New York: http://www.who.int/reproductive-health/publications/low_birthweight/low_birthweight_estimates.pdf

World Health Organization, Department of Reproductive Health and Research (RHR):
http://apps.who.int/reproductive_indicators/countrydata.asp

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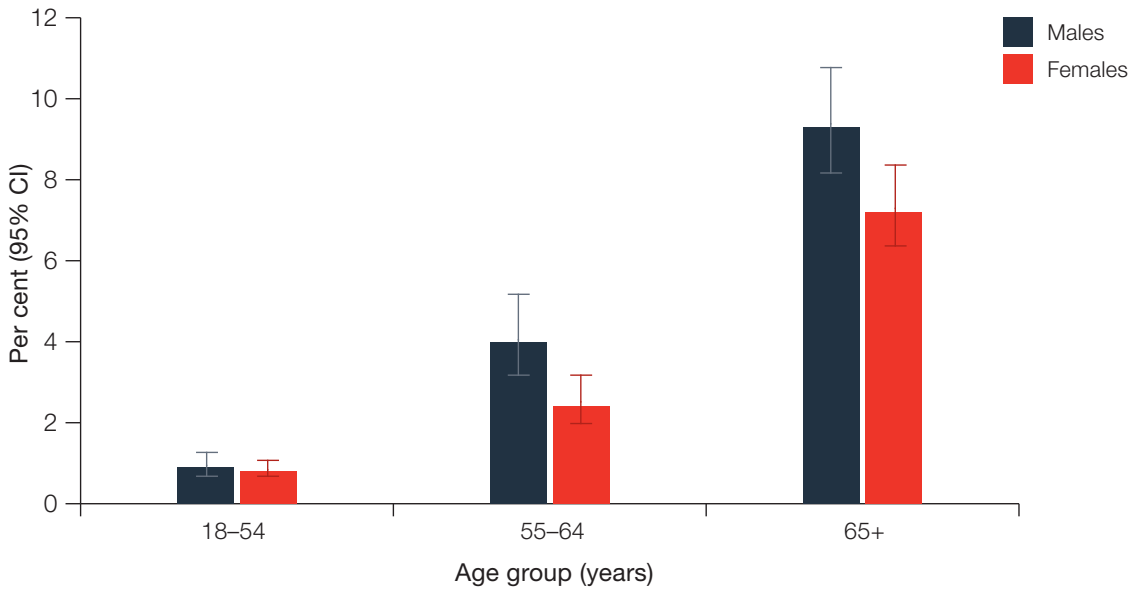
Prevalence of stroke

Description

The proportion of adults aged 18 years and over who have ever been diagnosed by a doctor with stroke.

Cerebrovascular disease, or stroke, is a major contributor to the burden of cardiovascular disease in Victoria (DHS 2005). The prevalence of stroke provides insights into the level of resource required for prevention, health promotion and management of cardiovascular disease in the population.

The prevalence of stroke, by sex and age group, Victoria, 2008



	Males			Females			Persons		
Age group	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
18-54 years	**0.9**	0.6	1.2	**0.8**	0.6	1.0	**0.8**	0.7	1.0
55-64 years	**4.0**	3.1	5.1	**2.4**	1.9	3.1	**3.2**	2.7	3.8
65 years+	**9.3**	8.1	10.7	**7.2**	6.3	8.3	**8.2**	7.4	9.0
Total	**2.8**	2.5	3.2	**2.3**	2.0	2.5	**2.5**	2.3	2.8

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age-standardised to the 2006 Victorian population.

Source: Victorian population health survey 2008.

Estimates from the *Victorian population health survey 2008* indicate that about 98,000 adults (2.5 per cent), aged 18 years and over, had ever been diagnosed by a doctor with stroke. Self-reported prevalence levels increased with age, with adults aged 65 years and over more likely than adults in younger age groups to report having ever had a stroke.

References

Australian Bureau of Statistics (ABS) 2009, *2007–08 National health survey: summary of results Australia*, cat. no. 4364.0, ABS, Canberra.

Department of Human Services (DHS) 2005, *Victorian burden of disease study: mortality and morbidity in 2001*, DHS, Melbourne.

Concepts

Prevalence: The number of people with a disease at a specific point in time.

Limitations

The stroke prevalence rates are derived from data obtained through a self-report survey and should be interpreted with caution. They rely on respondent recall of having ever been told by a doctor that they have had a cerebrovascular event or stroke.

Provenance

The Australian Bureau of Statistics *National health survey* collects information about cardiovascular disease prevalence. Prevalence estimates for cerebrovascular disease are presented in reports profiling survey results, by age group and sex (ABS 2009).

For more information

Australian Bureau of Statistics (ABS) 2009, 2007–08 *National health survey: summary of results*, Canberra: http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/48061B1C977096A6CA2575B000139E2D/$File/43640_2007-08.pdf

Department of Health and Ageing, cardiovascular disease:
http://www.health.gov.au/internet/main/publishing.nsf/Content/chronic-cardio

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

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

Stroke Foundation: http://www.strokefoundation.com.au/

World Health Organization information, stroke, cerebrovascular accident:
http://www.who.int/topics/cerebrovascular_accident/en/

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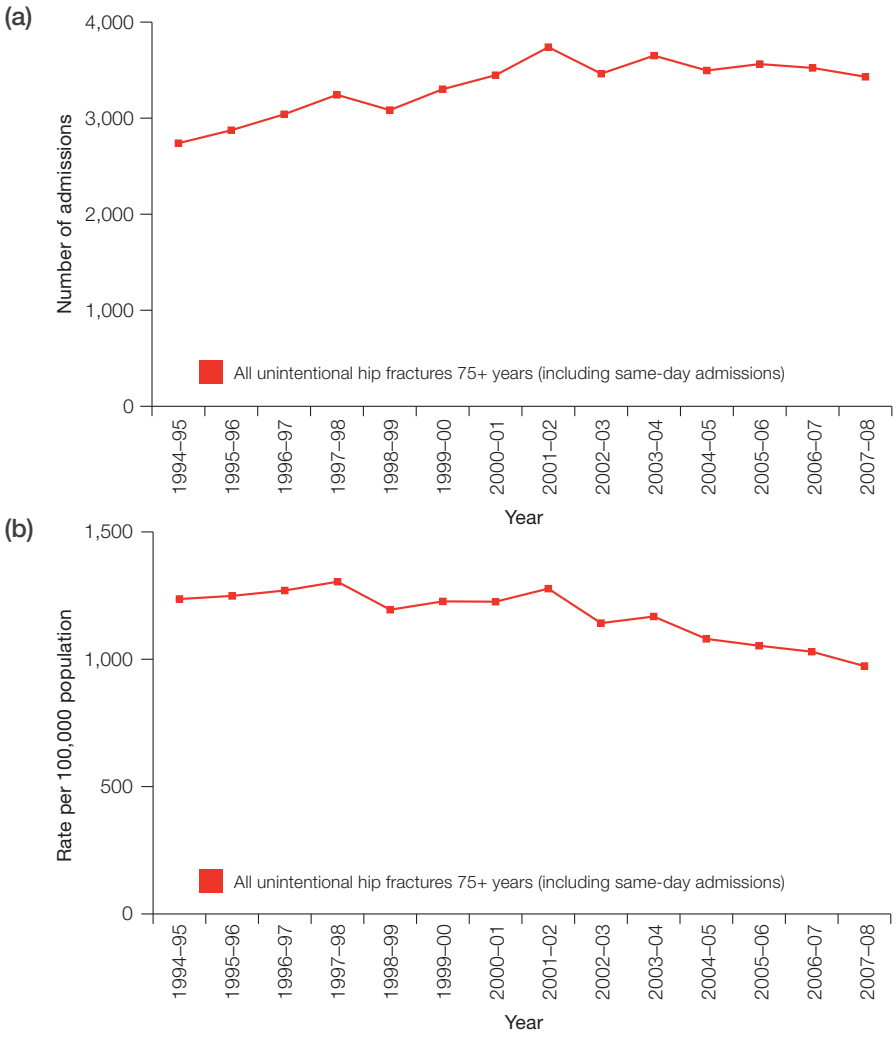
Unintentional hip fracture admissions among persons aged 75 years and over

Description

The number and rate (per 100,000 persons) of admissions to public and private hospitals in Victoria due to unintentional (accidental) injury-related hip fracture among persons aged 75 years and over.

The number of fall events resulting in hospitalisation due to injury for older persons remains high and the rate of fall-related injury incidents is particularly high for those aged 75 years and over. Women in older age groups are at greatest risk of fall-related injury. Fall incidents most commonly result in a fracture and hip fractures are particularly frequent. They represent a substantial proportion of the burden of disease and health expenditure for older persons in the population. The largest proportion of injury incidents due to falls for both males and females result in injuries to the hip and thigh.

Unintentional injury-related hip fracture: (a) hospital admissions; (b) rates, for persons aged 75 years and over, Victoria, 1994–95 to 2007–08



Unintentional injury-related hip fracture: hospital admissions (number and rate per 100,000 population), for persons aged 75 years and over, Victoria, 1994–95 to 2007–08

Period	Number	Rate per 100,000
1994-95	2,739	1,236.5
1995-96	2,874	1,248.7
1996-97	3,040	1,270.0
1997-98	3,243	1,304.4
1998-99	3,084	1,194.5
1999-00	3,301	1,227.2
2000-01	3,447	1,226.0
2001-02	3,739	1,277.3
2002-03	3,463	1,141.9
2003-04	3,651	1,167.8
2004-05	3,496	1,080.0
2005-06	3,563	1,053.2
2006-07	3,523	1,029.7
2007-08	3,431	973.3

Data includes 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 75 years and over.

Data exclude deaths, transfers and records without injury as a primary diagnosis.

Data are age-standardised to the 2006 Victorian population.

Source: Victorian Admitted Episodes Dataset July 1994–June 2008.

In 2007–08, 3,431 persons aged 75 years and over were admitted to Victorian hospitals with unintentional (accidental) injury-related hip fracture, representing an age-adjusted admission rate of 973.3 per 100,000 persons. Females accounted for 76 per cent (n=2,612) of unintentional injury-related hip fracture hospital admissions in 2007–08.

The leading cause of unintentional injury-related hip fracture for persons aged 75 years and over in 2007–08 was falls, accounting for 97 per cent of all admissions (n=3,343). Fall-related hip fractures were commonly the result of slips, trips and stumbles (33 per cent of falls, n=1,107).

The number of unintentional injury-related hip fracture admissions increased significantly over the fourteen-year period 1994–95 to 2007–08, from 2,739 to 3,431 admissions, representing an estimated annual change of 1.8 per cent (95% CI: 0.9–2.5) and an overall increase of 27.4 per cent (95% CI: 13.7–42.0), based on the trend line.

However, the age-adjusted unintentional injury-related hip fracture admission rate decreased significantly over the fourteen-year period, from 1,237 per 100,000 persons in 1994–95 to 973 in 2007–08, representing an estimated annual change of -1.8 per cent (95% CI: -2.5–-1.1) and an overall reduction of -22.5 per cent (95% CI: -30.0–-14.62).

References

Cryer, C, Langley, JD, Jarvis, SN, McKenzie, SG, Stephenson, SG & Heywood, P 2005, 'Injury outcomes indicators: the development of a validation tool', *Injury Prevention*, vol. 11, pp. 53–57.

Cryer, C, Langley, J & Stephenson, S 2004, *Developing valid injury outcome indicators: a report for the New Zealand injury prevention strategy*, Injury Prevention Research Unit, Dunedin.

Harrison, JE & Steenkamp, M 2002, *Technical review and documentation of current NHPA injury indicators and data sources*, Injury research and statistics series number 14, Australian Institute of Health and Welfare, Adelaide.

Waller, JA 1985, *Injury control: a guide to the causes and prevention of trauma*, Lexington Books, Lexington, Massachusetts.

Concepts

Hip fracture: Fracture of the femoral neck, intrascapular region, or upper epiphysis (separation) of the femur.

Unintentional injury: Injury and poisoning cases that were documented as being 'accidental'. Excludes injuries and poisonings that were suicidal, homicidal, purposefully self-inflicted, purposely inflicted by other persons, or of undetermined intent.

Injury: 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).

Limitations

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 program also informed our approach (Harrison & Steenkamp 2002).

Provenance

This indicator is a Victorian adaptation of an indicator developed in the Australian Institute of Health and Welfare review of National Health Priority Area injury indicators and data sources.

For more information

Department of Human Services (DHS) 2007, *Preventing falls in Victoria 2007–12: discussion paper*, DHS, Melbourne: http://www.health.vic.gov.au/agedcare/maintaining/falls/downloads/discussion_paper_aug2007.pdf

National Public Health Partnership (NPHP) 2004, *The national injury prevention and safety promotion plan 2004–2014*, NPHP, Canberra: http://www.nphp.gov.au/publications/sipp/nipspp.pdf

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Deaths

This dimension incorporates age and/or condition specific deaths and life expectancy measures. Mortality data are important in the measurement of disease, and consequently health, in the planning of public health care. Studying trends in mortality over time assists in understanding how the health status of the population is changing and in planning for preventative measures. Measuring and comparing mortality rates across populations also helps to highlight health differences among different groups of people. The effect of changes in mortality is often best appreciated through increases in life expectancy. The mortality-based indicators presented in this section of the report include:

- **Life expectancy at birth:** The average number of years that a newborn could expect to live, if he or she were to pass through life subject to the age-specific death rates of a given period.
- **Health-adjusted life expectancy:** The average years of equivalent 'healthy' life that a person could expect to live at various ages.
- **Perinatal mortality:** The number of stillbirths and deaths in the first four weeks of life, expressed as a rate per 1,000 live births.
- **Avoidable mortality:** There are two measures included in this indicator:
  1. The number of avoidable deaths, expressed as a rate per 100,000 persons.
  2. The top twenty causes of avoidable mortality by number of deaths and rate per 100,000 persons.
- **Annual change in avoidable mortality rates:** There are two measures included in this indicator:
  1. The average annual percentage change in the rate (per 100,000 persons) for summary measures of avoidable mortality and unavoidable mortality.
  2. The average annual percentage change in the rate (per 100,000 persons) for the top ten causes of avoidable mortality and unavoidable mortality.
- **Intentional self-harm mortality (suicide):** The number of deaths due to intentional self-harm (suicide) expressed as a rate per 100,000 persons.
- **Cancer survival:** The estimated proportion of persons with a particular cancer who have survived at least five years from their diagnosis.

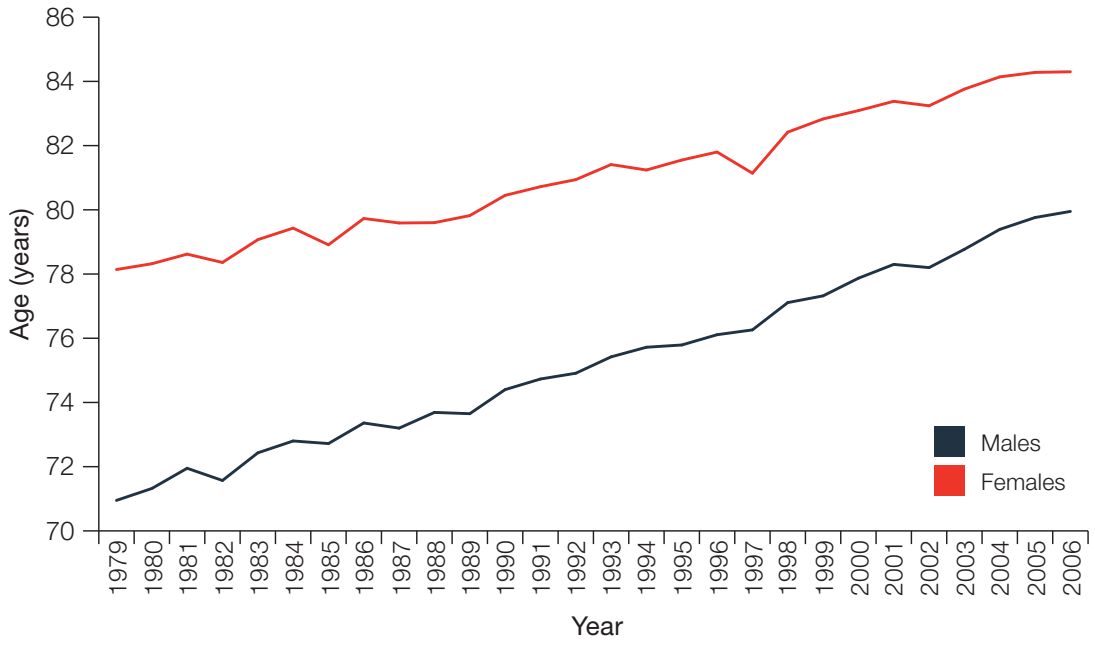
Life expectancy at birth

Description

The average number of years that a newborn could expect to live, if he or she were to pass through life subject to the age-specific death rates of a given period.

Life expectancy at birth is an indicator of mortality conditions and, by proxy, of health conditions. It is also one of the most favoured indicators of social development, and is used as one of the components of the United Nations Development Programme (UNDP) Human Development Index. This indicator reflects many social, economic and environmental influences. It is closely related to other demographic variables, particularly the population growth rate. Mortality, with fertility and migration, determines the size of human populations, their composition by age, sex and ethnicity, and their potential for future growth.

Life expectancy at birth, by sex, Victoria, 1979–2006



Source: Department of Health 2009.

Male and female life expectancy at birth has progressively increased over time, from 78.1 years in 1979 to 84.3 years in 2006 for females and from 71.0 years in 1979 to 80.0 years in 2006 for males. The difference in life expectancy at birth between males and females has progressively decreased from 7.2 years in 1979 to 4.4 years in 2006.

References

Chiang, CL 1984, *The life table and its applications*, Robert E. Krieger Publishing Company, Malabar, Florida.

Department of Human Services (DHS) 2009, *Life expectancy at birth Victoria, 1979 to 2006 by sex*, DHS, Melbourne, viewed 12 December 2009: http://www.health.vic.gov.au/healthstatus/le-02-06.htm

Provenance

This indicator is used as one of the components of the United Nations Development Programme (UNDP) Human Development Index.

For more information

Australian Bureau of Statistics (ABS) 2007, *Life tables, Victoria, 2006*, cat. no. 3302.2.55.001, ABS, Canberra: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3302.2.55.001Main+Features12006?OpenDocument

Australian Institute of Health and Welfare, Life expectancy: http://www.aihw.gov.au/mortality/life_expectancy/index.cfm

OECD Health Data 2009, Frequently requested data: http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html

World Health Organization Statistical Information System (WHOSIS): http://www.who.int/whosis/en/index.html

World Health Organization (WHO) 2008, *World health statistics 2008*, WHO, Geneva: http://www.who.int/whosis/whostat/2008/en/index.html

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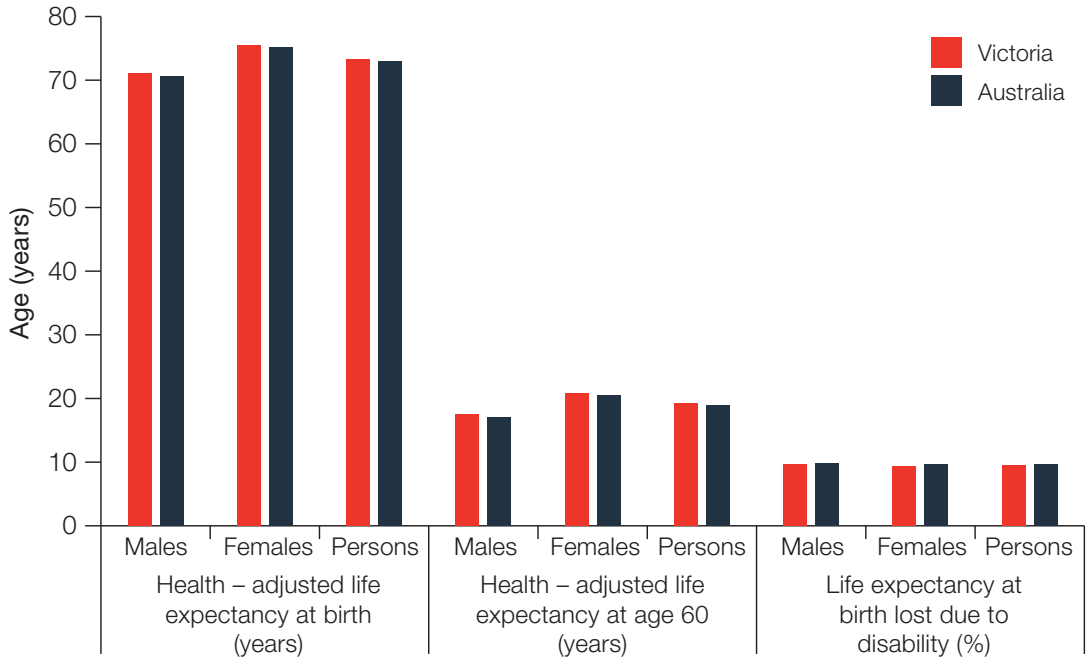
Health-adjusted life expectancy (HALE)

Description

The average years of equivalent 'healthy' life that a person could expect to live at various ages.

Health-adjusted life expectancy (HALE) is related to life expectancy, which provides an estimate of the average years of life a person can expect to live at various ages, given current risks of mortality. HALE extends this concept by reducing the estimated duration by the proportion of time spent at each age in states less than perfect health, adjusted for the relative severity of those health states. The sum of prevalent years lost due to disability (PYLD) across all causes is used to derive this 'severity-weighted' proportion for each age.

Health-adjusted life expectancy (HALE) and life expectancy at birth lost due to disability, by sex, Victoria and Australia, 2003



Source: Begg et al. 2007.

HALE at birth and 60 years of age was higher for Victorian females than males in 2003. For HALE at birth, Victoria ranked third among states and territories in Australia for both males (71.1 years) and females (75.4 years), which were also higher than the Australian estimates for males (70.6 years) and females (75.2 years). Victoria had the second lowest – behind the ACT – proportion of life expectancy at birth lost due to disability for both males (9.6 per cent) and females (9.4 per cent). This proportion was also lower than that for Australia as a whole.

Reference

Begg, S, Vos, T, Barker, B, Stevenson, C, Stanley, L & Lopez, AD 2007, *The burden of disease and injury in Australia 2003*, cat. no. PHE 82, Australian Institute of Health and Welfare, Canberra.

Concepts

Substantial resources are devoted to reducing the incidence, duration and severity of major diseases that cause morbidity but not mortality, and to reducing their impact on people's lives. It is important to capture both fatal and non-fatal health outcomes in a summary measure of average levels of population health. Healthy life expectancy (HALE) at birth combines expectation of life for different health states, adjusted for the severity distribution, making it sensitive to changes over time or differences between countries in the severity distribution of health states.

Provenance

This measure is used and reported by the World Health Organization.

For more information

Australian Institute of Health and Welfare, Healthy life expectancy:
http://www.aihw.gov.au/mortality/life_expectancy/hale.cfm

Begg, S, Vos T, Barker, B, Stevenson, C, Stanley, L & Lopez, A 2007, *The burden of disease and injury in Australia 2003*, cat. no. PHE 82, Australian Institute of Health and Welfare, Canberra:
http://www.aihw.gov.au/bod/index.cfm

Mathers, CD, Christopher, JL & Murray, JAS 2003, 'Methods for measuring healthy life expectancy' in Murray, CJL & Evans, D, eds *Health systems performance assessment: debates, methods and empiricism*, World Health Organization, Geneva, viewed 30 April 2010:
http://www.who.int/publications/2003/hspa/en/

World Health Organization, Healthy life expectancy (HALE) at birth (years):
http://www.who.int/whosis/indicators/compendium/2008/1hat/en/index.html

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Perinatal mortality

Description

The number of stillbirths and deaths in the first four weeks of life, expressed as a rate per 1,000 live births.

The perinatal mortality rate is an important health status indicator that addresses the two related issues of late foetal death and early infant death, many cases of which are considered preventable. The reliability of the neonatal mortality estimates depends on accuracy and completeness of reporting and recording of births and deaths. Underreporting and misclassification are common, especially for deaths occurring early on in life.

Perinatal deaths and adjusted perinatal mortality rate[(a)], Victoria, 2000–2006

	2000	2001	2002	2003	2004	2005	2006
Livebirths (n)	62,148	61,705	62,688	63,028	63,082	66,041	69,229
Stillbirths (n)	394	399	385	418	413	421	457
Neonatal deaths (n)	182	204	227	237	207	245	227
Perinatal deaths (n)	576	601	612	655	620	666	684
Perinatal death rate per 1,000 births	**9.2**	**9.7**	**9.8**	**10.3**	**9.8**	**10.0**	**9.8**

(a) In Victoria, terminations of pregnancy ≥20 weeks' gestation for maternal psychosocial indications (in the absence of foetal abnormality) comprise a significant proportion of perinatal deaths. This affects the interpretation of the perinatal mortality rate as a public health indicator. Therefore, adjusted perinatal mortality rates have been presented.

Source: Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2008.

There were 684 perinatal deaths in Victoria in 2006, which equates to a perinatal mortality rate (PMR) of 9.8 deaths per 1,000 live births. The stillbirth rate was 6.6 deaths per 1,000 live births, and the neonatal mortality rate was 3.3 deaths per 1,000 live births.

Reference

Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) 2008, *Annual report for the year 2006, incorporating the 45th survey of perinatal deaths in Victoria*, CCOPMM, Melbourne.

Concepts

Live birth: The birth of an infant, regardless of maturity or birth weight, which breathes or shows any other signs of life after being born.

Perinatal death: A stillbirth or neonatal death.

Stillbirth: 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.

Neonatal death: The death of a live-born infant, less than 28 days after birth, of at least 20 weeks' gestation or if gestation is unknown weighing at least 400 grams.

Limitations

There are actually two different definitions used to calculate a perinatal mortality rate. The definition shown here (sometimes referred to as Definition I) includes infant deaths of less than seven days of age and foetal deaths of 28 or more weeks gestation. The second definition used (Definition II) is more inclusive and includes infant deaths of less than 28 days of age and foetal deaths of 20 or more weeks gestation. Definition I is preferred for international and state-to-state comparisons due to differences among countries/states in completeness of reporting of foetal deaths of 20–27 weeks gestation. Definition II is more useful for monitoring perinatal mortality throughout the gestational age periods as the majority of foetal deaths occur prior to 28 weeks' gestation.

Provenance

The perinatal mortality rate is reported by the Department of Reproductive Health and Research (RHR), World Health Organization.

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Avoidable mortality

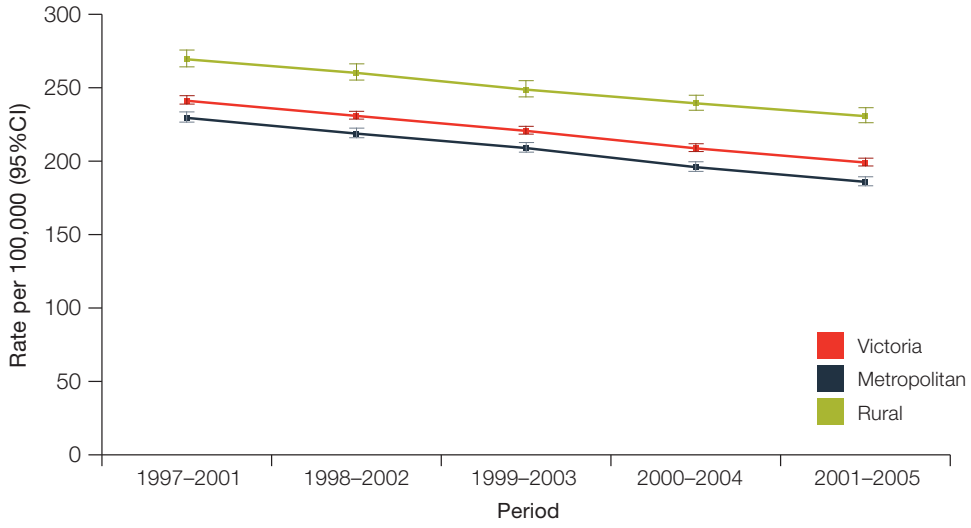
Description

There are two measures included in this indicator:

1. The number of avoidable deaths, expressed as a rate per 100,000 persons.
2. The top twenty causes of avoidable mortality by number of deaths and rate per 100,000 persons.

Avoidable mortality is a population-based method of counting untimely and unnecessary deaths from diseases for which effective public health or medical interventions, or both, are available. An excess of deaths due to preventable causes may help to identify shortcomings in the health care system that reflect a lack of availability and/or use of those interventions, thus providing the impetus for change. Avoidable mortality therefore refers to deaths classed as 'avoidable', that have the 'potential' to be avoided.

Avoidable mortality rates in males, by rurality, 1997–2001 to 2001–2005



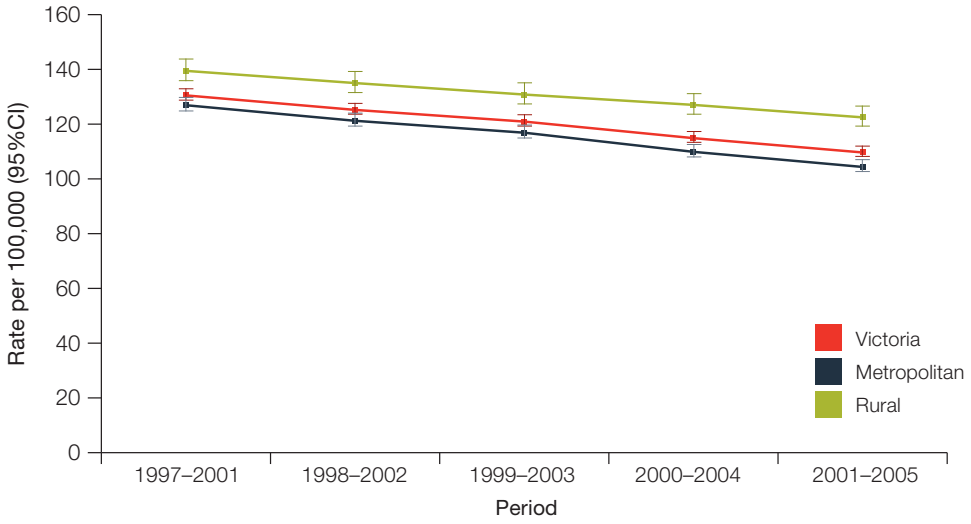
95% CI = 95 per cent confidence interval

Data are age-standardised to the 2001 Victorian population.

Data for five years has been aggregated. If the confidence intervals of two rates DO NOT overlap then the two rates are significantly different – this is a conservative method of testing.

Source: Australian Bureau of Statistics mortality and population data 1997–2006.

Avoidable mortality rates in females, by rurality, 1997–2001 to 2001–2005



95% CI = 95 per cent confidence interval

Data are age-standardised to the 2001 Victorian population.

Data for five years has been aggregated. If the confidence intervals of two rates DO NOT overlap then the two rates are significantly different – this is a conservative method of testing.

Source: Australian Bureau of Statistics mortality and population data 1997–2006.

There has been a steady decline in the avoidable mortality rate between 1997–2001 and 2001–2005, for both males and females in Victoria. However, the rates for the metropolitan area of the state were significantly lower than for rural areas, for all periods and for both sexes.

Top twenty causes of avoidable mortality, by sex, Victoria, 2001–2005

	AM Condition	Males			
		Deaths (n)	Rate per 100,000	LL95%CI	UL95%CI
1	Ischaemic Heart Disease (IHD)	5775	50.92	49.61	52.24
2	Lung cancer	3249	28.63	27.64	29.61
3	Suicide	1936	16.94	16.19	17.70
4	Colorectal cancer	1761	15.46	14.74	16.19
5	Road traffic injury	1260	10.96	10.36	11.57
6	Chronic Obstructive Pulmonary Disease	1128	10.17	9.57	10.76
7	Diabetes	1132	10.05	9.47	10.64
8	Stroke	974	8.69	8.15	9.24
9	Alcohol related conditions	746	6.42	5.96	6.88
10	Skin cancers	590	5.17	4.75	5.59
11	Stomach cancer	564	4.98	4.57	5.39
12	Poisoning	563	4.95	4.54	5.36
13	Hepatitis and liver cancer	528	4.66	4.26	5.06
14	Oral cancers	455	3.95	3.59	4.32
15	Congenital anomalies	186	1.63	1.39	1.86
16	Leukaemia	175	1.54	1.31	1.77
17	Hypertensive disease	155	1.38	1.16	1.60
18	Epilepsy	156	1.36	1.15	1.58
19	Drowning	121	1.06	0.87	1.25
20	Respiratory infections	95	0.85	0.68	1.02
	Unavoidable Mortality	**13,770**	**121**	**119**	**124**
	Total Avoidable Mortality	**22,605**	**199**	**196**	**202**
	Primary AM	**13,010**	**114**	**113**	**116**
	Secondary AM	**5,064**	**45**	**43**	**46**
	Tertiary AM	**4,523**	**40**	**39**	**41**

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are age-standardised to the 2001 Victorian population.

Data for five years has been aggregated.

If the confidence intervals of two rates DO NOT overlap then the two rates are significantly different – this is a conservative method of testing.

Source: Australian Bureau of Statistics mortality and population data 2001–2006.

Top twenty causes of avoidable mortality, by sex, Victoria, 2001–2005 (continued)

	AM Condition	Females			
		Deaths (n)	Rate per 100,000	LL95%CI	UL95%CI
1	Breast cancer	2221	18.59	17.82	19.36
2	Ischaemic Heart Disease (IHD)	1887	15.82	15.11	16.54
3	Lung cancer	1686	14.06	13.39	14.73
4	Colorectal cancer	1220	10.22	9.65	10.79
5	Chronic Obstructive Pulmonary Disease	830	6.95	6.48	7.42
6	Suicide	638	5.48	5.05	5.90
7	Stroke	598	5.03	4.63	5.43
8	Diabetes	591	4.96	4.56	5.36
9	Road traffic injury	410	3.53	3.19	3.87
10	Stomach cancer	286	2.4	2.12	2.68
11	Skin cancers	277	2.33	2.05	2.60
12	Poisoning	270	2.32	2.04	2.60
13	Cancer of uterus	219	1.83	1.59	2.07
14	Hepatitis and liver cancer	198	1.66	1.43	1.89
15	Alcohol related conditions	176	1.47	1.25	1.69
16	Cervical cancer	148	1.24	1.04	1.44
17	Asthma	115	0.97	0.79	1.15
18	Congenital anomalies	107	0.96	0.78	1.14
19	Hypertensive disease	110	0.92	0.75	1.09
20	Oral cancers	101	0.85	0.68	1.01
	Unavoidable Mortality	**8,905**	**75**	**73**	**77**
	Total Avoidable Mortality	**13,025**	**110**	**108**	**112**
	Primary AM	**6,213**	**52**	**51**	**54**
	Secondary AM	**3,517**	**30**	**29**	**31**
	Tertiary AM	**3,289**	**28**	**27**	**29**

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are age-standardised to the 2001 Victorian population.

Data for five years has been aggregated.

If the confidence intervals of two rates DO NOT overlap then the two rates are significantly different – this is a conservative method of testing.

Source: Australian Bureau of Statistics mortality and population data 2001–2006.

Chronic diseases such as ischaemic heart disease, lung cancer and colorectal cancer were among the top four causes of avoidable mortality for both males and females. However, suicide was third for males and breast cancer was the top cause for females during this five-year period. For sex-specific cancers, cervical and uterine cancers appeared in the top twenty causes for females; however, prostate cancer did not appear in the top twenty for males. The only infectious disease to appear in the top twenty causes of avoidable mortality was respiratory infections for males.

Summary avoidable mortality rates (total, primary, secondary and tertiary avoidable mortality) were significantly higher for males compared with females, as was the rate for unavoidable mortality.

Reference

Tobias, M & Jackson, G 2001, 'Avoidable mortality in New Zealand, 1981–97,' *Australian and New Zealand Journal of Public Health*, vol. 25, pp. 12–20.

Concepts

The Department of Health delivers services through its eight geographical regions. There are three metropolitan regions:

- Eastern Metropolitan region
- North & West Metropolitan region
- Southern Metropolitan region

which are referred to as the 'metropolitan area' of Victoria, and five rural regions:

- Barwon-South Western Region
- Gippsland Region
- Grampians Region
- Hume Region
- Loddon Mallee Region

which are referred to as the 'rural areas' of Victoria.

Limitations

Distinguishing between 'avoidable' and 'unavoidable' causes of death provides a useful tool to identify areas for improvement that, if acted upon, would improve the overall health of the population. The distinction is not meant to imply that every death classed as 'avoidable' could in fact have been avoided, merely that the potential to do so exists. It is important to recognise that there is no fixed distinction between avoidable and unavoidable causes of death. There are few conditions that are either entirely 'avoidable' or 'unavoidable' and advances in treatment mean that a growing number of deaths previously categorised as 'unavoidable' may in time become potentially avoidable, such as many common cancers.

For more information

DHS Regions:
http://www.dhs.vic.gov.au/our-regions

Department of Human Services (DHS) 2008, *Avoidable mortality in Victoria: trends between 1997 and 2003*, DHS, Melbourne:
http://www.health.vic.gov.au/healthstatus/downloads/avoid_mort_1997-2003.pdf

Nolte, E & McKee, M 2004, *Does healthcare save lives? Avoidable mortality revisited*, The Nuffield Trust, London:
http://www.nuffieldtrust.org.uk/ecomm/files/21404avoidablemortality2.pdf

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http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=261807

Tobias, M & Jackson, G 2001, 'Avoidable mortality in New Zealand, 1981–97,' *Australian and New Zealand Journal of Public Health*, vol. 25, pp. 12–20:
http://www.publichealth.gov.au/publications/australian-and-new-zealand-atlas-of-avoidable-mortality.html

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Annual change in avoidable mortality rates

Description

There are two measures included in this indicator:

1. The average annual percentage change in the rate (per 100,000) for summary measures of avoidable mortality and unavoidable mortality.
2. The average annual percentage change in the rate (per 100,000) for the top ten causes of avoidable mortality and unavoidable mortality.

Avoidable mortality (AM) is a simple and practical population-based method of counting untimely and unnecessary deaths from diseases for which effective public health or medical interventions, or both, are available.

An excess of deaths due to preventable causes may help to identify shortcomings in a health care system that reflects a lack of availability and/or use of those interventions, thus providing the impetus for change. Avoidable mortality therefore refers to deaths classed as 'avoidable', that have the 'potential' to be avoided.

Annual percentage change in the rate for the top ten causes and summary measures of avoidable mortality and unavoidable mortality, Victoria, 1997–2003

	Males	Females
Condition or cause	**% (95% CI)**	**% (95% CI)**
IHD	-7.0 (-5.6 to -8.4)	-7.9 (-6.7 to -9.2)
Lung cancer	-4.0 (-1.4 to -6.7)	-0.3 (-3.2 to 2.6)*
Colorectal cancer	-3.7 (-1.8 to -5.6)	-3.2 (-1.1 to -5.4)
Suicide	-3.9 (-1.2 to -6.5)	1.6 (-3.4 to 6.7)*
Breast cancer	N/A	-3.1 (-0.5 to -5.7)
Chronic obstructive respiratory diseases	-5.8 (-2.6 to -8.9)	-3.8 (-8.6 to 0.8)*
Stroke	-5.4 (-1.9 to -9.0)	-8.4 (-3.6 to -13.2)
Diabetes	-0.4 (-5.4 to 4.6)*	-4.6 (-1.9 to -7.2)
Road traffic accidents	-0.4 (-5.3 to 4.6)*	-9.8 (-0.9 to -18.8)
Poisoning	3.5 (-27.1 to 34.1)*	2.7 (-24.0 to 29.5)*
Summary measures of avoidable mortality		
Total avoidable mortality	-4.6 (-3.9 to -5.2)	-4.0 (-2.9 to -5.0)
Primary avoidable mortality	-4.6 (-3.9 to -5.4)	-3.6 (-2.2 to -4.9)
Secondary avoidable mortality	-4.6 (-3.8 to -5.3)	-4.6 (-3.5 to -5.6)
Tertiary avoidable mortality	-4.2 (-2.6 to -5.9)	-4.0 (-2.5 to -5.4)
Unavoidable mortality	-2.2 (-1.1 to -3.4)	-1.9 (-0.1 to -3.6)

* Not statistically significant

Source: Australian Bureau of Statistics mortality data 1997–2003.

There was an overall decline in the rates for all of the top ten causes of avoidable mortality (AM), with the exception of poisoning, for both males and females and suicide for females. The greatest annual decline was observed for ischaemic heart disease (IHD) (-7.0 per cent) for males and road traffic accidents (-9.8 per cent) for females.

The annual rate of change in unavoidable mortality was less than about half that of total AM, primary AM, secondary AM and tertiary AM, for both males and females.

Reference

Tobias, M & Jackson, G 2001, 'Avoidable mortality in New Zealand, 1981–97', *Australian and New Zealand Journal of Public Health*, vol. 25, pp. 12–20.

Limitations

Distinguishing between 'avoidable' and 'unavoidable' causes of death provides a useful tool to identify areas for improvement that, if acted upon, would improve the overall health of the population. The distinction is not meant to imply that every death classed as 'avoidable' could in fact have been avoided, merely that the potential to do so exists. It is important to recognise that there is no fixed distinction between avoidable and unavoidable causes of death. There are few conditions that are either entirely 'avoidable' or 'unavoidable' and advances in treatment mean that a growing number of deaths previously categorised as 'unavoidable' may in time become potentially avoidable, such as many common cancers.

For more information

Department of Human Services (DHS) 2008, *Avoidable mortality in Victoria: trends between 1997 and 2003*, DHS, Melbourne: http://www.health.vic.gov.au/healthstatus/downloads/avoid_mort_1997-2003.pdf

Nolte, E & McKee, M 2004, *Does healthcare save lives? Avoidable mortality revisited*, The Nuffield Trust, London: http://www.nuffieldtrust.org.uk/ecomm/files/21404avoidablemortality2.pdf

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Page, A, Tobias, M, Glover, J, Wright, C, Hetzel, D & Fisher, E 2006, *Australian and New Zealand atlas of avoidable mortality*, Public Health information Development Unit, University of Adelaide, Adelaide: http://www.publichealth.gov.au/publications/australian-and-new-zealand-atlas-of-avoidable-mortality.html

Tobias, M & Jackson, G 2001, 'Avoidable mortality in New Zealand, 1981–97,' *Australian and New Zealand Journal of Public Health*, vol. 25, pp. 12–20: http://www.publichealth.gov.au/publications/australian-and-new-zealand-atlas-of-avoidable-mortality.html

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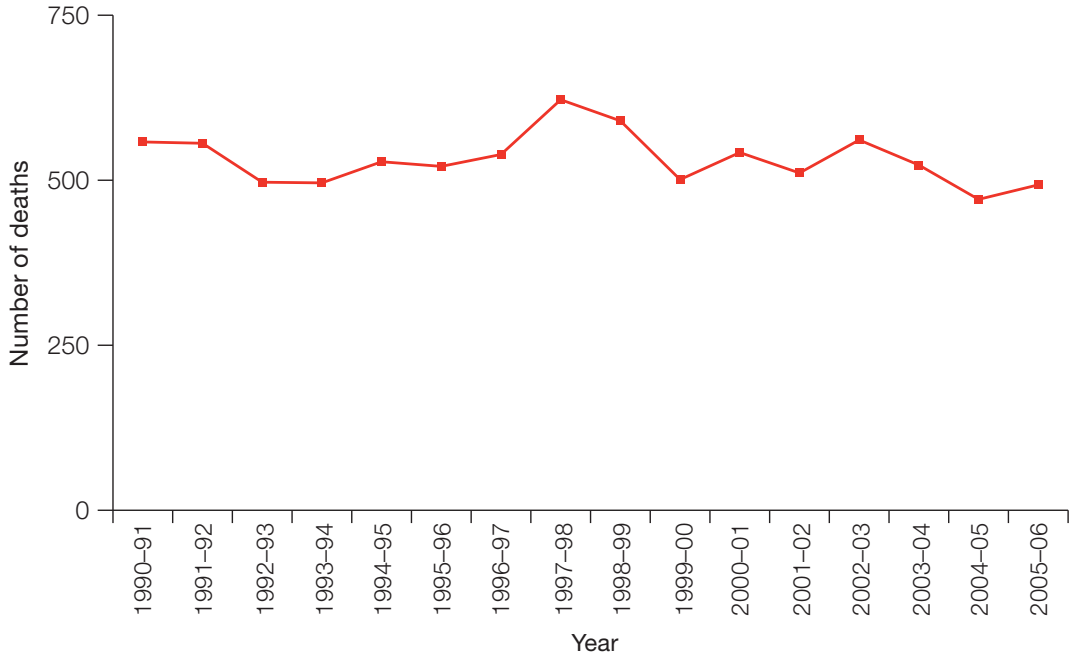
Intentional self-harm mortality (suicide)

Description

The number of deaths due to intentional self-harm (suicide) expressed as a rate per 100,000 persons.

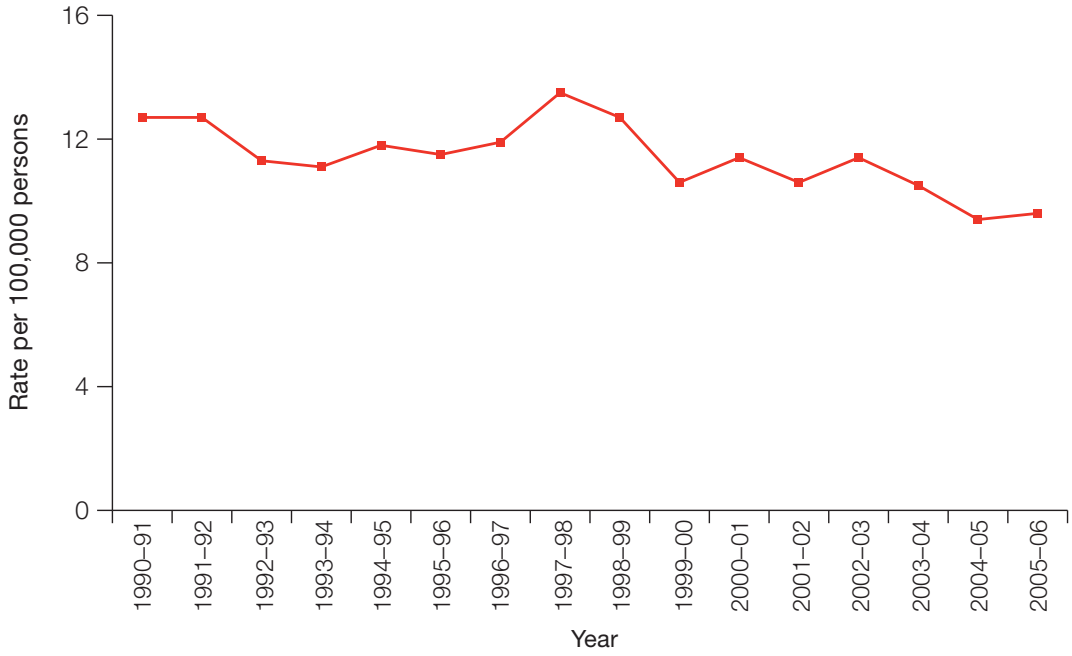
Intentional self-harm (suicide) refers to injury and poisoning cases where the injury causing death is purposefully self-inflicted. Cases of undetermined intent are excluded. There is no single cause of intentional self-harm and no simple solution to prevent it. Prevention requires the whole of government to work in partnership with the community – individuals, families, schools, community groups and non-government services (DHS 2006). The Australian Government National Suicide Prevention Strategy aims to reduce death from suicide and reduce suicidal behaviour by adopting a whole-of-community approach to suicide prevention to extend and enhance public understanding of suicide and its causes. The strategy also aims to increase the level of care and support available to people, families and communities affected by suicide or suicidal behaviour by providing better support systems (DoHA 2010).

Number of deaths from intentional self-harm (suicide), Victoria, 1990–91 to 2005–06



Data includes ICD-9 cause of death codes in the range 950–959 and ICD-10 cause of death codes in the range X60–X84.
Source: Australian Bureau of Statistics mortality data July 1990–June 2006.

Intentional self-harm mortality rate (suicide), Victoria, 1990–91 to 2005–06



Data includes ICD-9 cause of death codes in the range 950–959 and ICD-10 cause of death codes in the range X60–X84.
Source: Australian Bureau of Statistics mortality data July 1990–June 2006.

In 2005–06, there were 493 deaths in Victoria due to intentional self-harm injury and poisoning (suicide), which equates to a rate of 9.6 per 100,000 persons. Males accounted for 74 per cent (n=366) of all intentional self-harm deaths in 2005–06.

The five leading causes of intentional self-harm mortality in 2005–06 were hanging, strangulation and suffocation (51 per cent), poisoning by other gases and vapours (mostly carbon monoxide) (14 per cent), poisoning by pharmaceuticals (10 per cent), firearms (7 per cent) and jumping or lying before a moving object (6 per cent).

The number of self-harm injury and poisoning deaths in Victoria decreased over the sixteen-year period from 558 in 1990–91 to 493 in 2005–06, representing an estimated annual decline of 0.4 per cent (95% CI: -1.2 to 0.5) and an overall reduction of 5.2 per cent based on the trend line. However, this decrease in frequency was not statistically significant.

On the other hand, the self-harm injury and poisoning mortality rate decreased significantly over the sixteen-year period from 12.7 deaths per 100,000 persons in 1990–91 to 9.6 per 100,000 in 2005–06, representing an estimated annual change of -1.4 per cent (95% CI: -2.3 to -0.5) and an overall reduction of 17.9 per cent.

References

Department of Health and Ageing (DoHA) 2010, *National suicide prevention strategy*, DoHA, Canberra, viewed online 10 May 2010: http://www.health.gov.au/internet/mentalhealth/publishing.nsf/Content/national-suicide-prevention-strategy-1

Department of Human Services (DHS) 2006, *Next steps: Victoria's suicide prevention forward action plan 2006*, a public statement, DHS, Melbourne.

Concepts

The operational definition of a self-harm death is a case where the underlying cause of death is 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 in Chapter XX of the International Classification of Diseases (ICD).

For more information

Department of Health and Ageing (DoHA) 2010, *National suicide prevention strategy*, DoHA, Canberra, viewed online 10 May 2010: http://www.health.gov.au/internet/mentalhealth/publishing.nsf/Content/national-suicide-prevention-strategy-1

Department of Human Services (DHS) 2006, *Next steps: Victoria's suicide prevention forward action plan 2006*, a public statement, DHS, Melbourne: http://www.health.vic.gov.au/mentalhealth/suicide/suicide-prevention/suicide-prevention-plan2006.pdf

Department of Human Services (DHS) 2009, *Because mental health matters: Victorian mental health reform strategy 2009–2019*, DHS, Melbourne: http://www.health.vic.gov.au/mentalhealth/reformstrategy/documents/mh-matters-strategy0209.pdf

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Cancer survival

Description

The estimated proportion of persons with a particular cancer who have survived at least five years from their diagnosis.

This indicator describes the survival of Victorians affected by cancer. Cancer survival is described here in terms of survival rates that have been calculated using the 'period' method. This method uses the most recent interval survival estimate of cases diagnosed in different calendar years (cross-sectional estimate of survival). Because the period method uses only the most recent survival experience, when there is an increasing trend in survival it provides a more up-to-date measure of recent survival (English et al. 2007).

Survival rates for most cancers improved over the 15 years between 1990 and 2004 and this is largely attributed to improved treatment regimes, and in the case of breast and cervical cancer, the successful contribution of screening programs for early detection of disease.

Five-year survival (per cent), by sex and cancer site, Victoria, 2004

	Per cent		
Cancer site	Male	Female	Persons
Oral cavity	57	63	59
Salivary glands	58	82	69
Pharynx	49	47	49
Oesophagus	15	22	17
Stomach	24	27	25
Colon	63	63	63
Rectum	61	66	63
Liver	11	9	10
Gallbladder	20	17	18
Pancreas	6	4	5
Larynx	65	58	64
Lung	9	14	11
Mesothelioma	4	11	5
Connective tissue	68	69	68
Melanoma	88	93	90
Breast	-	87	-

Source: English et al. 2007.

Five-year survival (per cent), by sex and cancer site, Victoria, 2004 (continued)

Cancer site	Per cent		
	Male	Female	Persons
Cervix	-	70	-
Uterus	-	84	-
Ovary	-	41	-
Prostate	84	-	-
Testis	99	-	-
Bladder	54	45	51
Kidney	69	65	68
Renal pelvis	57	45	52
Central nervous system	22	25	23
Thyroid	85	94	92
Unknown primary	14	17	11
Non-Hodgkin lymphoma	67	64	66
Hodgkin lymphoma	82	82	82
Multiple myeloma	30	33	32
Acute lymphoblastic leukaemia	62	70	66
Chronic lymphocytic leukaemia	54	58	56
Acute myeloid leukaemia	9	18	13
Chronic myeloid leukaemia	58	54	56
All cancer	**58**	**64**	**61**

Source: English et al. 2007.

The cancer sites with the highest five-year survival rates were testis (99 per cent), thyroid (92 per cent), melanoma (90 per cent), breast (87 per cent), uterus (84 per cent), prostate (84 per cent) and Hodgkin lymphoma (82 per cent). The cancer sites with the lowest five-year survival rates were pancreas (5 per cent), mesothelioma (5 per cent), liver (10 per cent), lung (11 per cent) and cancers of unknown primary site (11 per cent).

Survival rates were generally similar between males and females; however, where significant differences occurred, females tended to have the better prognosis, with the exception of bladder cancer, for which males had a higher survival rate. The five-year survival rates were higher for females, compared with males, for the following cancers: all cancers, and cancers of the oral cavity, lung, salivary glands, thyroid, unknown primary, melanoma and acute myeloid leukaemia (English et al. 2007).

References

Brenner, H & Hakulinen, T 2007, 'Up-to-date and precise estimates of cancer patient survival: model-based period analysis', *Am J Epidemiol*, vol. 164, pp. 689-96.

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

English, DR, Giles, GG, Karavarsamis, N & Thursfield, V 2003, *Cancer survival in Victoria, relative survival for selected cancers diagnosed from 1982 to 1997 with follow-up to 1999*, The Cancer Council Victoria, Melbourne.

Concepts

Period estimates of cancer survival are less precise than cohort estimates. However, in order to provide more precise estimates, a model-based approach was used with the period analysis, which gives estimates that are both contemporary and precise (Brenner & Hakulinen 2007). The primary focus of this indicator is patient survival in the reference year (2004), which was based upon survival experience in the five-year period 2000 to 2004.

Limitations

Cancer registries have traditionally used a method called complete survival to calculate survival rates. The method entails calculating survival for patients diagnosed in a particular calendar period and then following their progress over time. This method was used in the 2003 Cancer Council report on cancer survival (English et al. 2003), which focused on patients diagnosed with cancer from 1990 to 1997 whose progress was followed until the end of 1999. The disadvantage of this method is that the estimates of survival were not up-to-date (English et al. 2007).

Provenance

Cancer statistics are reported by the Cancer Council Victoria, the Australian Bureau of Statistics, and the Australian Institute of Health and Welfare.

For more information

Cancer Council Victoria: http://www.cancervic.org.au/

English, D, Farrugia, H, Thursfield, V, Chang, P & Giles, G 2007, *Cancer survival Victoria, estimates of survival in 2004 (and comparisons with earlier periods)*, The Cancer Council Victoria, Melbourne: http://www.cancervic.org.au/about-our-research/cancer-statistics/cancer_survival_in_victoria

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Determinants of health

Determinants of health are factors that have either a positive or negative influence on health at the individual or population level. While there is general acceptance that the dimensions of health presented here influence health status and outcomes, the magnitude of these influences, and their causal pathways are not always clear. The indicators in each dimension, covered by the second domain of the National Health Performance Framework (2009), are shown below:

Health behaviours: Attitudes, beliefs, knowledge and behaviours such as patterns of eating, physical activity, smoking and alcohol consumption.

- Fruit and vegetable consumption
- Physical activity levels
- Smoking status
- Long-term risk of harm from alcohol
- Blood pressure checks
- Cholesterol checks
- Chlamydia notifications
- Breast cancer screening participation
- Bowel cancer screening participation
- Cervical cancer screening participation
- Annual dental visit
- Children fully immunised at age 60 to <63 months

Bio-medical factors: Genetic-related susceptibility to disease and other factors such as blood pressure, cholesterol levels and body weight.

- Body weight status
- Newborn screening
- Bowel cancer incidence

Community and socioeconomic factors: Community factors such as social capital, support services, and socioeconomic factors such as housing, education, employment and income.

- Population
- Socioeconomic factors
- Volunteering

Environmental factors: Physical, chemical and biological factors, such as air, water, food and soil quality.

- Air quality
- Water quality
- Cooling tower water quality *(Legionella)*
- Salmonellosis (non-typhoidal)

Health behaviours

This dimension incorporates attitudes, beliefs, knowledge and behaviours such as patterns of eating, physical activity, smoking and alcohol consumption. The indicators for this dimension include:

Fruit and vegetable consumption: The proportion of adults aged 18 years and over who meet the guidelines for daily fruit and vegetable consumption.

Physical activity levels: The proportion of adults aged 18 years and over who engage in sufficient time and sessions of physical activity to meet the national guidelines.

Smoking status: The proportion of adults aged 18 years and over who smoke daily or occasionally (current smokers), by sex, over time.

Long-term risk of harm from alcohol: The proportion of adults aged 18 years and over at long-term risk of harm from alcohol consumption.

Blood pressure checks: The proportion of adults aged 18 years and over who have had a blood pressure check in the last two years.

Cholesterol checks: The proportion of adults aged 18 years and over who have had a cholesterol check in the last two years.

Chlamydia notifications: The number of notified cases, expressed as a rate per 100,000 population, by sex and age group, over time.

Breast cancer screening participation: The proportion of women aged 50–69 years who have participated in the BreastScreen Victoria program within a two-year period, over time.

Bowel cancer screening participation: The proportion of eligible persons who have participated in the bowel cancer screening program (submitted a completed form and/or completed a FOBT kit), by sex and age.

Cervical cancer screening participation: The proportion of women aged 20–69 years who have participated in the cervical screening program over a two-year period, by age group and region of residence.

Annual dental visit: The proportion of dentate persons who reported visiting a dental professional at least once in the previous year.

Children fully immunised at age 60 to <63 months: The proportion of children, aged 60 months and over but less than 63 months, who have received all scheduled vaccinations.

Fruit and vegetable consumption

Description

The proportion of adults aged 18 years and over who meet the guidelines for daily fruit and vegetable consumption.

Fruit and vegetables contain essential vitamins, minerals, fibre, and other bioactive compounds, and a diet high in these foods is associated with lower risk for a number of chronic diseases, including certain cancers and cardiovascular disease (Liu et al. 2000, Van Duyn & Pivonka 2000, World Cancer Research Fund & American Institute for Cancer Research 2007). Because of their low energy density, fruit and vegetables are also beneficial in weight management when eaten as part of a reduced-energy diet (Rolls et al. 2004).

A recent joint World Health Organization (WHO) and Food and Agriculture Organization (FAO) report on diet, nutrition and the prevention of chronic disease (2002) sets population nutrient goals and recommends intake of a minimum of 400 grams of fruit and vegetables per day for the prevention of chronic diseases such as heart diseases, cancer, diabetes and obesity. The report states that there is convincing evidence that fruit and vegetables decrease the risk of obesity, and evidence that suggests they also decrease the risk of diabetes. Further, there is convincing evidence that fruit and vegetables lower the risk of cardiovascular disease.

A high-level international review on fruit and vegetable consumption and cancer risk, coordinated by the International Agency for Research on Cancer (IARC), concluded that eating fruit and vegetables may lower the risk of cancer, particularly cancers of the gastrointestinal tract (2003). The IARC estimates that the preventable fraction of cancer due to low fruit and vegetable intake falls into the range of 5–12 per cent and up to 20–30 per cent for upper gastrointestinal tract cancers world-wide. Assessing trends in consumption of these foods is important for tracking public health initiatives and for planning future objectives.

Proportion of adults aged 18 years and over who met the guidelines[a] for daily fruit and vegetable consumption, by age group and sex, Victoria, 2008

	Recommended daily serves of fruit and/or vegetables											
	Fruit & Vegetables			Vegetables only, not fruit[b]			Fruit only, not vegetables[c]			Neither fruit or vegetables		
Age group	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
Males												
18-24 yrs	**2.2***	1.3	3.8	**2.4***	1.2	4.4	**32.8**	28.5	37.5	**60.7**	56.0	65.3
25-34 yrs	**2.5**	1.6	4.0	**1.2***	0.7	2.2	**34.9**	31.2	38.8	**60.1**	56.1	63.9
35-44 yrs	**2.2**	1.6	3.2	**1.0***	0.6	1.9	**41.1**	38.2	44.1	**53.2**	50.2	56.2
45-54 yrs	**3.5**	2.6	4.8	**1.5**	0.9	2.3	**37.0**	34.3	39.8	**56.6**	53.8	59.4
55-64 yrs	**4.6**	3.6	5.8	**2.7**	1.9	3.7	**39.0**	36.4	41.6	**51.9**	49.2	54.5
65 yrs+	**4.3**	3.5	5.3	**3.3**	2.6	4.2	**40.9**	38.7	43.2	**47.3**	45.0	49.6
Total	**3.2**	**2.8**	**3.6**	**1.9**	**1.6**	**2.2**	**37.8**	**36.5**	**39.2**	**54.8**	**53.5**	**56.2**
Females												
18-24 yrs	**5.3**	3.6	7.7	**3.1***	1.8	5.2	**42.3**	38.0	46.8	**48.1**	43.7	52.6
25-34 yrs	**5.4**	4.2	6.9	**2.1**	1.4	3.1	**45.2**	42.3	48.1	**46.0**	43.1	48.9
35-44 yrs	**6.8**	5.8	8.0	**2.2**	1.7	3.0	**43.9**	41.9	46.1	**45.6**	43.5	47.7
45-54 yrs	**10.2**	8.9	11.6	**2.6**	2.0	3.4	**45.0**	42.8	47.3	**40.5**	38.3	42.8
55-64 yrs	**12.6**	11.2	14.0	**3.5**	2.8	4.3	**47.0**	44.8	49.1	**35.6**	33.5	37.7
65 yrs+	**9.3**	8.2	10.4	**3.2**	2.6	3.9	**48.5**	46.6	50.4	**34.9**	33.1	36.8
Total	**8.0**	**7.5**	**8.6**	**2.6**	**2.3**	**3.0**	**45.5**	**44.4**	**46.5**	**41.9**	**40.9**	**43.0**

(a) *The Dietary Guidelines for Australian Adults* (NHMRC 2003a, 2003b) recommend a minimum daily vegetable intake of four serves for persons aged 12–18 years and five serves for persons aged 19 years and over, where a serve is defined as half a cup of cooked vegetables or a cup of salad vegetables. The recommended minimum daily fruit intake is three serves for persons aged 12–18 years and two serves for persons aged 19 years and over, where a serve is defined as one medium piece or two small pieces of fruit or one cup of diced pieces.

(b) Includes those who met the guidelines for vegetables but did not meet the guidelines for fruit.

(c) Includes those who met the guidelines for fruit but did not meet the guidelines for vegetables.

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age-standardised to the 2006 Victorian population.

* Estimate has a relative standard error of between 25 and 50 per cent and should be interpreted with caution.

Source: Victorian population health survey 2008.

More than half (54.8 per cent) of males and 41.9 per cent of females who participated in the *Victorian population health survey 2008* reported consuming insufficient serves of fruit and insufficient serves of vegetables to meet the dietary guidelines. In contrast, 3.2 per cent of males and 8.0 per cent of females consumed sufficient serves of both vegetables and fruit to meet the dietary guidelines.

References

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

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Van Duyn, MA & Pivonka, E 2000, 'Overview of the health benefits of fruit and vegetable consumption for the dietetics professional: selected literature', *Journal of American Dietary Association*, vol. 100, no. 12, pp. 1511–21.

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World Health Organization (WHO) and Food and Agriculture Organization (FAO) 2002, *Diet, nutrition and the prevention of chronic diseases, report of a joint WHO/FAO expert consultation*, WHO, Geneva.

Concepts

Vegetables: Includes all leafy green vegetables (for example, spinach, lettuce, silver beet and bok choi), members of the crucifer family (for example, broccoli, cabbages and brussels sprouts), all root and tuber vegetables (for example, carrots, yams and potatoes), edible plant stems (for example, celery and asparagus), gourd vegetables (for example, pumpkin and cucumber), allium vegetables (for example onion, garlic and shallot) and corn, although this last food is usually regarded as a cereal. Some vegetables are eaten raw; others are best cooked because this makes them more palatable and digestible.

A **serve of vegetables** is half a cup of cooked vegetables or a cup of salad vegetables.

Fruit: Generally applies to the sweet, fleshy edible portion of a plant that arises from the base of the flower and surrounds the seeds; apples, oranges, plums, berries, tomatoes and avocados are examples. Most fruit is eaten raw, although in some cases cooking can offer a tasty alternative.

A **serve of fruit** is one medium piece or two small pieces of fruit, or one cup of diced pieces.

Legumes: Refers also to pulses and includes all forms of prepared beans and peas – dried, canned and cooked legumes, bean curd, tofu, and legume-flour products such as pappadams. Among the well-known edible legumes are butter beans, haricot (navy) beans, red kidney beans, soybeans, mung beans, lentils, chick peas, snow peas and various other fresh green peas and beans. Legumes are generally cooked: this improves their nutritional value and reduces the risk of toxicity that occurs with some legumes because of the presence of heat-labile toxins. Occasionally, however, they can be eaten raw; snow peas are an example. Strictly speaking, legumes are specialised forms of fruit since the pod surrounds the seeds and arises from the base of the flower, as occurs with fruit. But, because the main food material in legumes is the seed, they are generally placed in a separate category.

Limitations

The data presented are based on self-report. The results may be subject to recall bias and should be interpreted with caution.

Provenance

Vegetable and fruit consumption is reported by the Australian Bureau of Statistics and the Australian Institute of Health and Welfare.

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

National Health and Medical Research Council (NHMRC) 2003, *Dietary guidelines for Australian adults*, NHMRC, Canberra:
http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/n33.pdf

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Physical activity levels

Description

The proportion of adults aged 18 years and over who engage in sufficient time and sessions of physical activity to meet the national 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 undertaken. 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 sufficient to confer health benefits, and is the recommended threshold level for physical activity, according to National Physical Activity Guidelines for Australians (DoHA 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 indicator for measuring participation in a sufficient level of health–enhancing physical activity at a population level. Consistent with the guidelines, the 'sufficient time and sessions' definition for physical activity requires that an individual accumulate at least 150 minutes of at least moderate-intensity 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 less than ten 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.

Physical activity levels[a], by age group and sex, 2008

Age group (years)	Sedentary			Insufficient time and/or sessions			Sufficient time and sessions		
	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
Males									
19–24	**1.6***	0.8	3.0	**22.0**	17.9	26.7	**70.5**	65.4	75.0
25–34	**2.7**	1.8	4.1	**25.2**	21.9	28.8	**65.5**	61.6	69.2
35–44	**4.3**	3.2	5.6	**26.4**	23.7	29.2	**63.9**	61.0	66.8
45–54	**6.2**	5.0	7.7	**28.6**	26.1	31.2	**60.3**	57.5	63.1
55–64	**4.6**	3.7	5.7	**29.7**	27.2	32.2	**58.8**	56.1	61.4
65+	**9.4**	8.2	10.8	**31.5**	29.4	33.7	**50.1**	47.8	52.4
Total	**5.1**	**4.6**	**5.6**	**27.5**	**26.3**	**28.7**	**61.0**	**59.7**	**62.3**
Females									
19–24	**1.6***	0.7	3.5	**23.4**	19.5	27.8	**69.6**	64.9	73.8
25–34	**3.3**	2.4	4.5	**24.9**	22.5	27.5	**66.0**	63.3	68.7
35–44	**3.9**	3.1	4.8	**26.8**	25.0	28.7	**64.1**	62.0	66.1
45–54	**4.6**	3.7	5.6	**25.9**	23.9	27.9	**62.5**	60.3	64.7
55–64	**5.4**	4.5	6.5	**28.8**	26.8	30.8	**57.7**	55.5	59.8
65+	**11.7**	10.5	13.0	**33.0**	31.2	34.8	**42.1**	40.2	44.0
Total	**5.4**	**5.0**	**5.9**	**27.2**	**26.3**	**28.2**	**59.7**	**58.7**	**60.7**

(a) Based on national guidelines (DoHA 1999) and excluding adults aged less than 19 years.

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Note that figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age-standardised to the 2006 Victorian population.

* Estimate has a relative standard error of between 25 and 50 per cent and should be interpreted with caution.

Source: Victorian population health survey 2008.

The proportion of males and females who participated in sufficient physical activity to meet the national guidelines was similar for males and females across all age groups, except for those aged 65 years and over, where a higher proportion of males than females (50.1 per cent and 42.1 per cent respectively) engaged in sufficient physical activity.

Reference

Department of Health and Ageing (DoHA) 1999, *National physical activity guidelines for adults*, DoHA, Canberra.

Concepts

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).

Limitations

The data presented are based on self-report. The results may be subject to recall bias and should be interpreted with caution.

Provenance

Physical activity levels are reported by the Australian Bureau of Statistics and the Australian Institute of Health and Welfare.

For more information

Department of Health, Victorian population health survey: http://www.health.vic.gov.au/healthstatus/vphs.htm

Department of Health and Ageing (DoHA) 1999, *National physical activity guidelines for adults*, DoHA, Canberra: http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pubhlthstrateg-phys-act-guidelines

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Smoking status

Description

The proportion of adults aged 18 years and over who smoke daily or occasionally (current smokers), by sex, over time.

Tobacco use is the single largest preventable cause of illness and premature death from conditions such as cancer, cardiovascular disease and chronic obstructive pulmonary disease (DHS 2005). Estimates suggest that, of all modifiable risk factors, tobacco is associated with the greatest disease burden in Victoria. It is responsible for 90 per cent of all lung cancers, three quarters of chronic bronchitis and emphysema and one quarter of all ischaemic heart disease (MacKay & Eriksen 2002).

Smoking status[(a)], by sex, Victoria, 2001–2008

	Per cent							
	2001	2002	2003	2004	2005	2006	2007	2008
Males								
Current smoker	27.4	25.7	24.0	24.1	21.8	22.3	21.7	21.4
Ex-smoker	31.8	27.8	28.1	29.1	29.1	28.5	26.2	27.6
Non-smoker	40.8	46.2	47.5	46.7	49.0	49.1	52.0	50.7
Females								
Current smoker	20.9	22.2	20.2	19.8	19.1	18.5	18.1	16.9
Ex-smoker	23.4	20.1	19.9	22.4	20.8	20.6	20.1	20.4
Non-smoker	55.8	57.6	59.6	57.7	59.9	60.6	61.6	62.4
Persons								
Current smoker	24.1	23.9	22.1	22.0	20.5	20.4	19.9	19.1
Ex-smoker	27.2	23.5	23.4	25.3	24.6	24.3	22.9	23.8
Non-smoker	48.7	52.5	54.1	52.6	54.8	55.1	57.0	56.8

(a) A person who smoked 'daily' or 'occasionally' was categorised as a current smoker.

Note that figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Data are age-standardised to the 2006 Victorian population.

Ordinary least squares regression was used to test for trends over time.

Source: Victorian population health surveys 2001–2008.

More than one in five (21.4 per cent) males and 16.9 per cent of females, aged 18 years and over, were current smokers in 2008. There was a decrease in the proportion of males and females who were current smokers between 2001 and 2008.

References

Mackay, J & Eriksen, M 2002, *The tobacco atlas*, World Health Organization, Geneva.

Department of Human Services (DHS) 2005, *Victorian burden of disease study*, DHS, Melbourne.

Concepts

The Victorian population health survey asks respondents how they would describe their smoking status over their lifetime. They are given the option of replying 'I smoke daily', 'I smoke occasionally', 'I don't smoke now, but I used to', 'I've tried it a few times but never smoked regularly' or 'I've never smoked'. Respondents who describe themselves as daily or occasional smokers are categorised as 'current smokers' and those who describe themselves as never having smoked or never having smoked regularly, are categorised as 'non-smokers'.

Respondents who have smoked at some point in their lives, but no longer smoke are asked whether they have smoked at least 100 cigarettes or a similar amount of tobacco in their lifetime. Those who have smoked at least 100 cigarettes or their equivalent are categorised as 'ex-smokers' and those who have not are categorised as 'non-smokers'.

Limitations

The data presented are based on self-report. The results may be subject to recall bias and should be interpreted with caution.

Provenance

Smoking status is reported by the Australian Bureau of Statistics and the Australian Institute of Health and Welfare.

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

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Long-term risk of harm from alcohol

Description

The proportion of adults aged 18 years and over at long-term risk of harm from alcohol consumption.

The regular consumption of alcohol above recommended levels places people at long-term risk of chronic ill health and premature death. Regular episodes of heavy drinking may place the drinker (and others) at risk of injury or death in the short term. The long-term consequences of regular use of alcohol may include cirrhosis of the liver, cognitive impairment, heart and blood disorders, ulcers, cancers and damage to the pancreas. In the short-term, heavy drinking can result in acute alcohol-related problems, violence, risky behaviour, road trauma and injury. Significant psychosocial and economic consequences may also arise from harmful patterns of drinking, not only for the individuals concerned, but also for their families and the wider community.

Long-term risk[a] of harm from alcohol consumption in males by age group, Victoria, 2008

	Abstainer[b]			Low risk[c]			Risky			High risk		
Age group (years)	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
Males												
18-24	**10.4**	7.8	13.7	**84.1**	80.3	87.3	**2.7**	1.5	4.7	**1.4**	0.6	3.0
25-34	**11.7**	9.1	14.8	**83.2**	79.7	86.2	**2.7**	1.7	4.2	**1.4**	0.6	3.1
35-44	**10.5**	8.6	12.6	**84.5**	82.1	86.6	**2.9**	2.0	4.1	**1.2**	0.8	2.0
45-54	**11.4**	9.7	13.2	**82.9**	80.7	84.9	**3.6**	2.7	4.6	**1.5**	1.0	2.4
55-64	**10.9**	9.4	12.6	**83.5**	81.5	85.3	**3.5**	2.7	4.6	**1.2**	0.8	1.9
65+	**18.7**	17.0	20.6	**76.6**	74.7	78.5	**2.7**	2.1	3.6	**0.9**	0.5	1.5
Total	**12.6**	**11.7**	**13.5**	**82.2**	**81.1**	**83.2**	**3.0**	**2.6**	**3.4**	**1.3**	**1.0**	**1.7**

(a) Based on national guidelines (NHMRC 2001). The 2009 guidelines (NHMRC) had not been endorsed at the time of the Victorian population health survey 2008.

(b) Includes both long-term and recent abstainers (that is, those who had had a drink in the previous 12 months but reported they no longer drank).

(c) Drinkers who consumed alcohol at levels that did not expose them to risk of long-term harm were classified as low risk.

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age-standardised to the 2006 Victorian population.

Source: Victorian population health survey 2008.

Long-term risk[a] of harm from alcohol consumption in females by age group, Victoria, 2008

	Abstainer[b]			Low risk[c]			Risky			High risk		
Females												
18-24	**13.5**	10.7	17.0	**82.6**	78.9	85.8	**1.8**	0.9	3.4	**0.8**	0.3	2.1
25-34	**22.6**	20.3	25.2	**73.0**	70.4	75.6	**2.2**	1.5	3.3	**1.1**	0.6	2.2
35-44	**18.5**	16.8	20.2	**78.3**	76.5	80.1	**2.0**	1.5	2.7	**0.8**	0.5	1.3
45-54	**20.3**	18.5	22.3	**75.1**	73.1	77.1	**3.2**	2.5	4.0	**0.8**	0.5	1.2
55-64	**24.4**	22.5	26.3	**71.3**	69.2	73.2	**3.4**	2.8	4.3	**0.3**	0.2	0.5
65+	**36.5**	34.7	38.4	**60.6**	58.7	62.5	**1.7**	1.2	2.3	**0.4**	0.2	0.8
Total	**23.0**	**22.2**	**23.9**	**73.2**	**72.2**	**74.1**	**2.3**	**2.0**	**2.7**	**0.7**	**0.5**	**1.0**

(a) Based on national guidelines (NHMRC 2001). The 2009 guidelines (NHMRC) had not been endorsed at the time of the Victorian population health survey 2008.

(b) Includes both long-term and recent abstainers (that is, those who had had a drink in the previous 12 months but reported they no longer drank).

(c) Drinkers who consumed alcohol at levels that did not expose them to risk of long-term harm were classified as low risk.

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age-standardised to the 2006 Victorian population.

Source: Victorian population health survey 2008.

The majority of males (82.2 per cent) and females (73.2 per cent), aged 18 years and over, who participated in the *Victorian population health survey 2008* were at low risk of long-term harm from alcohol consumption. The proportion of persons who consumed alcohol at levels that were risky or high risk was similar across age groups. However, younger persons were more likely to be at low risk of harm than older persons. Among those aged 65 years and over, a higher proportion of males (76.6 per cent) than females (60.6 per cent) were at low risk of long-term harm.

References

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

National Health and Medical Research Council (NHMRC) 2009, *Australian guidelines to reduce health risks from drinking alcohol*, NHMRC, Canberra.

Concepts

Based on the 2001 guidelines (NHMRC 2001), long-term risk of harm due to alcohol consumption is associated with regular daily patterns of drinking alcohol, defined in terms of the amount typically consumed each week. The guidelines indicate that males are at high risk of long-term harm if they consume seven or more drinks on an average day, or more than 43 drinks per week. For females, high risk of long-term harm is associated with the consumption of five or more standard drinks on an average day, or more than 29 drinks per week. Alcohol consumption is considered risky in the long-term if males consume 5–6 drinks on an average day (29–42 per week) and if females consume more than 3–4 drinks daily (15–28 per week).

Abstainers from alcohol are those persons who reported that they did not drink, or who had had a drink in the previous 12 months, but reported that they no longer drank (recent abstainers).

Limitations

The data presented are based on self-report. The results may be subject to recall bias and should be interpreted with caution.

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

National Health and Medical Research Council (NHMRC) 2001, *Australian alcohol guidelines: health risks and benefits*, AusInfo, Canberra:
http://www.nhmrc.gov.au/publications/synopses/_files/ds9.pdf

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Blood pressure checks

Description

The proportion of adults aged 18 years and over who have had a blood pressure check in the last two years.

High blood pressure is a major risk factor for ischaemic heart disease, stroke, heart failure and kidney failure. The risk of disease increases with increasing 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.

The National Service Improvement Framework for Heart, Stroke and Vascular Diseases (NHPAC 2006) encourages strategies and supportive infrastructure to promote regular monitoring of blood pressure as part of a broader approach to risk factor assessment and management. Information about blood pressure checks can provide insights into the status of cardiovascular disease (CVD) prevention and management in Victoria.

Blood pressure checks in the last two years, by sex and age group, Victoria, 2008

	Males			Females			Persons		
Age group (years)	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
18–24	**44.8**	40.1	49.6	**63.5**	59.1	67.6	**53.9**	50.7	57.2
25–34	**59.3**	55.4	63.2	**78.9**	76.4	81.3	**69.1**	66.7	71.4
35–44	**72.6**	69.8	75.2	**79.7**	78.0	81.4	**76.2**	74.6	77.7
45–54	**84.9**	82.7	86.8	**86.9**	85.3	88.3	**85.9**	84.6	87.1
55–64	**93.6**	92.2	94.7	**92.1**	90.9	93.2	**92.8**	91.9	93.6
65–74	**95.1**	93.7	96.2	**96.5**	95.5	97.2	**95.8**	95.1	96.5
75+	**96.3**	94.3	97.6	**96.7**	95.5	97.6	**96.6**	95.5	97.4
Total	**75.6**	**74.4**	**76.8**	**83.5**	**82.6**	**84.3**	**79.5**	**78.8**	**80.3**

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age- standardised to the 2006 Victorian population.

Source: Victorian population health survey 2008.

The results of the *Victorian population health survey 2008* show that females (83.5 per cent) were more likely than their male (75.6 per cent) counterparts to report having had their blood pressure checked in the previous two years. This was largely due to a higher proportion of females aged less than 45 years of age, compared with males, who reported having had a blood pressure check. The proportion of persons who had had their blood pressure checked increased with age group, from 53.9 per cent of persons aged 18–24 years to 96.6 per cent of persons aged 75 years and over.

Reference

National Health Priority Action Council (NHPAC) 2006, *National service improvement framework for heart, stroke and vascular disease*, Department of Health and Ageing, Canberra.

Limitations

The data presented are based on self-report. The results may be subject to recall bias and should be interpreted with caution.

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

Department of Health and Ageing - cardiovascular disease:
http://www.health.gov.au/internet/main/publishing.nsf/Content/chronic-cardio

National Health Priority Action Council (NHPAC) 2006, *National service improvement framework for heart, stroke and vascular disease*, Department of Health and Ageing, Canberra:
http://www.health.gov.au/internet/main/publishing.nsf/Content/75736A237DD2E583CA2571410013E62B/$File/cardal2.pdf

National Heart Foundation: http://www.heartfoundation.org.au/Pages/default.aspx

World Health Organization: http://www.who.int/topics/cardiovascular_diseases/en/

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Cholesterol checks

Description

The proportion of adults aged 18 years and over who have had a cholesterol check in the last two years.

High blood cholesterol is a major risk factor for ischaemic heart disease and stroke and 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 amount of saturated fat in the diet.

The National Service Improvement Framework for Heart, Stroke and Vascular Diseases (NHPAC 2006) encourages strategies and supportive infrastructure to promote regular monitoring of cholesterol as part of a broader approach to risk factor assessment and management. Information about cholesterol checks can provide insights into the status of CVD prevention and management in Victoria.

Cholesterol checks in the last two years, by sex and age group, Victoria, 2008

	Males			Females			Persons		
Age group (years)	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
18–24	**14.0**	11.0	17.7	**20.2**	16.8	24.2	**17.1**	14.7	19.7
25–34	**31.5**	27.9	35.4	**32.1**	29.5	34.9	**31.8**	29.6	34.2
35–44	**53.0**	50.0	56.0	**46.5**	44.4	48.6	**49.7**	47.9	51.6
45–54	**74.8**	72.4	77.1	**68.7**	66.7	70.8	**71.8**	70.2	73.3
55–64	**85.3**	83.3	87.0	**79.4**	77.6	81.0	**82.3**	81.0	83.5
65–74	**89.3**	87.3	90.9	**85.2**	83.4	86.8	**87.1**	85.8	88.3
75+	**86.3**	83.3	88.8	**83.1**	80.7	85.2	**84.4**	82.6	86.1
Total	**57.9**	**56.7**	**59.0**	**55.2**	**54.3**	**56.2**	**56.5**	**55.7**	**57.2**

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age- standardised to the 2006 Victorian population.

Source: Victorian population health survey 2008.

The results of the *Victorian population health survey 2008* show that a higher proportion of males than females reported that they had had a blood cholesterol test in the previous two years (57.9 per cent and 55.2 per cent respectively). For both males and females, the proportions of those who had had their blood cholesterol checked increased with age group to 65–74 years.

Reference

National Health Priority Action Council (NHPAC) 2006, *National service improvement framework for heart, stroke and vascular disease*, Department of Health and Ageing, Canberra.

Limitations

The data presented are based on self-report. The results may be subject to recall bias and should be interpreted with caution.

For more information

Department of Health, *Victorian Population Health Survey*:
http://www.health.vic.gov.au/healthstatus/vphs.htm

Department of Health and Ageing - cardiovascular disease:
http://www.health.gov.au/internet/main/publishing.nsf/Content/chronic-cardio

National Health Priority Action Council (NHPAC) 2006, *National service improvement framework for heart, stroke and vascular disease*, Department of Health and Ageing, Canberra:
http://www.health.gov.au/internet/main/publishing.nsf/Content/75736A237DD2E583CA2571410013E62B/$File/cardal2.pdf

National Heart Foundation: http://www.heartfoundation.org.au/Pages/default.aspx

World Health Organization: http://www.who.int/topics/cardiovascular_diseases/en/

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Chlamydia notifications

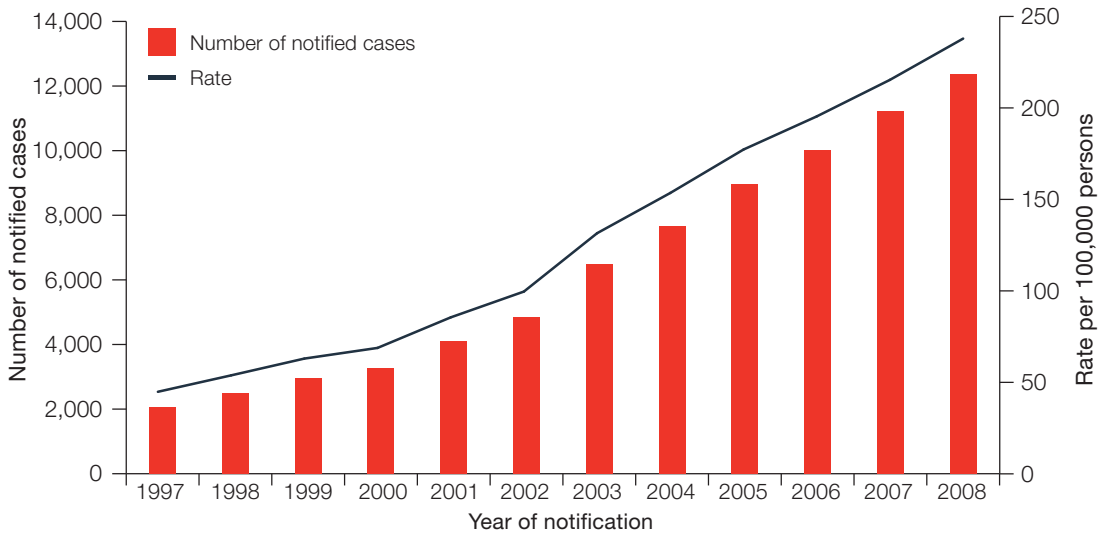
Description

The number of notified cases, expressed as a rate per 100,000 population, by sex and age group, over time.

Chlamydia is a sexually transmissible infection (caused by the organism *Chlamydia trachomatis*) that became a notifiable disease in Victoria 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.

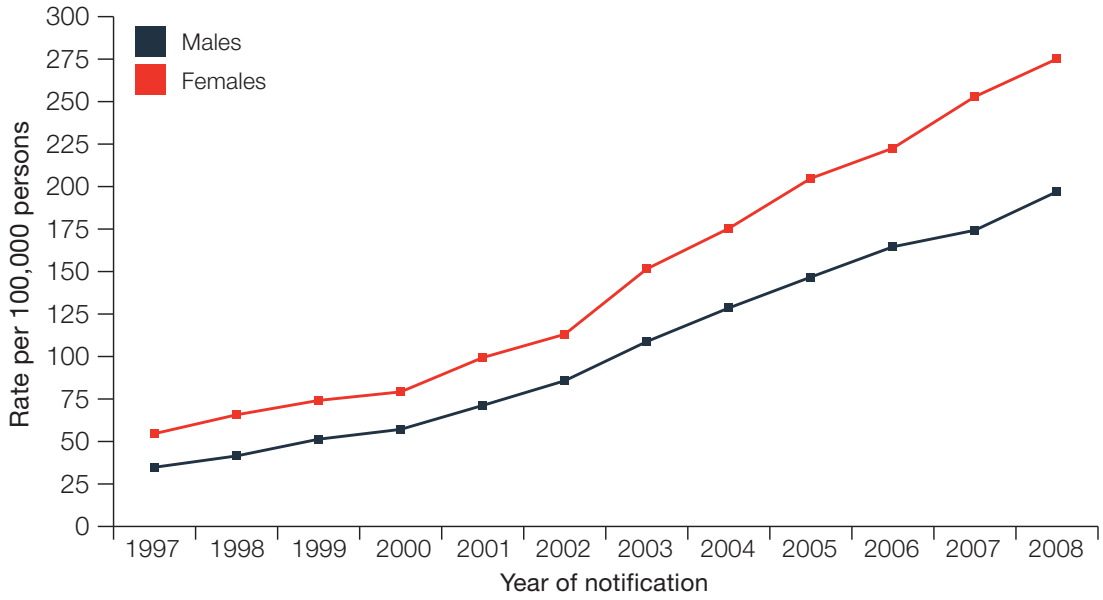
The incidence of chlamydial infection is difficult to quantify, because up to 70 per cent of sexually active women and 25 per cent of sexually active men with chlamydial infection are asymptomatic. This means that there may be a large number of undiagnosed, untreated individuals in the population who are capable of transmitting the disease.

Notified cases and notification rate for chlamydia, Victoria, 1997–2008



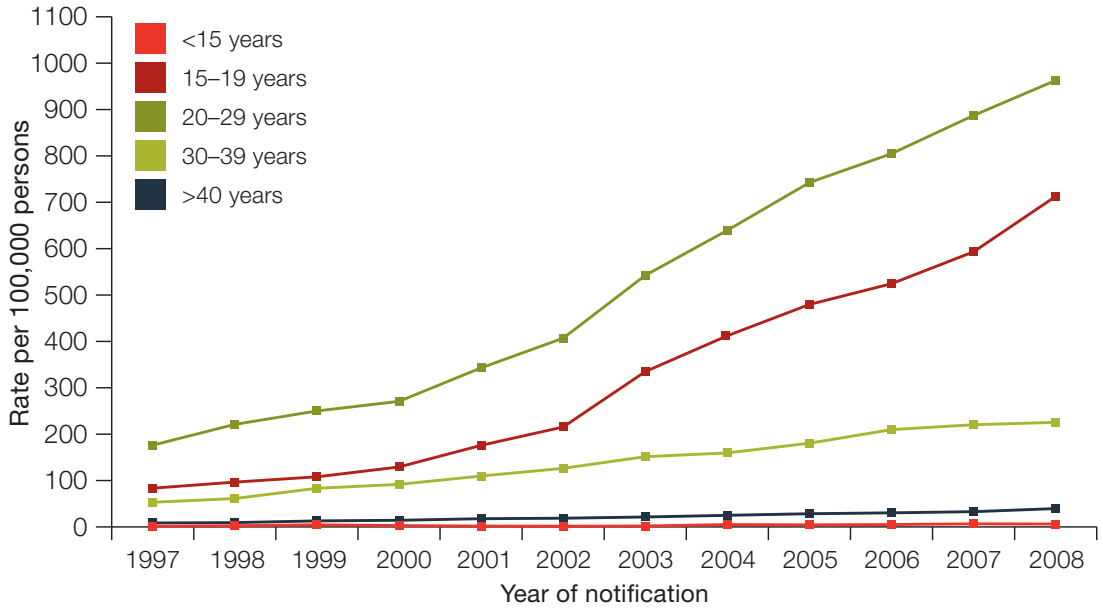
Source: Department of Health, Communicable Disease Prevention and Control.

Notification rate for chlamydia, by year and sex, Victoria, 1997–2008



Source: Department of Health, Communicable Disease Prevention and Control.

Notification rate for chlamydia, by year and age group, Victoria, 1997–2008



Source: Department of Health, Communicable Disease Prevention and Control.

Chlamydia has become the most commonly notified infectious disease since it became notifiable in 1990. In 2008, there were 12,380 notified cases, the highest annual total number notified to date. The notification rate for chlamydia increased more than five-fold from 44.9 cases per 100,000 population in 1997 to 237.9 cases per 100,000 population in 2008.

In 2008, females accounted for more than 50 per cent of all cases, which has remained relatively constant over the last 12 years. Among females, the notification rate for chlamydia increased more than five-fold from 54.6 cases per 100,000 population in 1997 to 275.1 cases per 100,000 population in 2008. Among males, the notification rate also increased more than five-fold, from 34.8 cases per 100,000 population in 1997 to 197.0 cases per 100,000 population in 2008.

Notification rates for chlamydia peaked in the 20–29 years and 15–19 years age groups in 2008, accounting for more than 85 per cent of the total cases notified.

Risk factor data collected through the surveillance system in 2008 showed that chlamydia transmission occurred primarily through heterosexual sex. Among men, the infection was mainly reported as acquired through casual sexual contact, whereas among women it was mainly reported as acquired through regular sexual contact.

References

Department of Human Services (DHS) 2005, *The blue book: guidelines for the control of infectious diseases*, DHS, Melbourne.

Heyman, DL 2004, *Control of communicable diseases manual, report of the American public health association*, American Public Health Association, Washington DC.

Limitations

The notification data underestimate the true incidence of chlamydia in Victoria because of under-detection of asymptomatic infections and under-reporting by diagnosing medical practitioners.

For more information

Communicable Diseases Intelligence: http://www.health.gov.au/cdi

Department of Human Services (DHS) 2001, *Chlamydia strategy for Victoria (2001-2004)*, DHS, Melbourne: http://www.health.vic.gov.au/ideas/diseases/chlamydia_strategy

Department of Human Services (DHS) 2005, *The blue book: guidelines for the control of infectious diseases*, DHS, Melbourne: http://www.health.vic.gov.au/ideas/bluebook

Department of Human Services (DHS) 2006, *Victorian sexually transmissible infections strategy 2006-2009*, DHS, Melbourne: http://www.health.vic.gov.au/ideas/diseases/sti_strategy

Infectious Diseases Epidemiology and Surveillance:
http://www.health.vic.gov.au/ideas/surveillance

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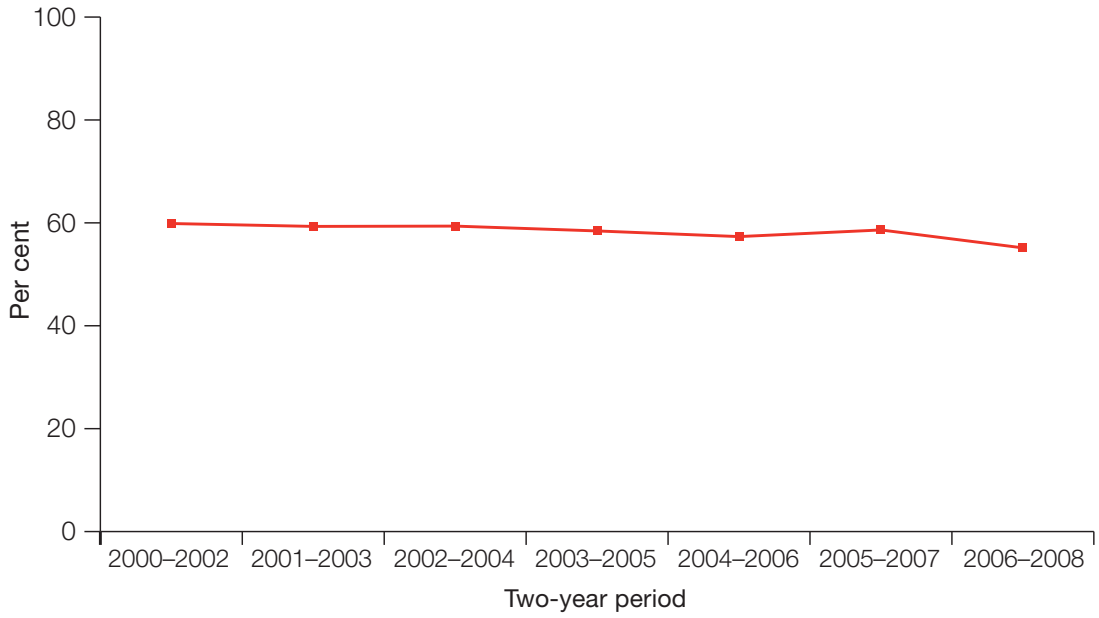
Breast cancer screening participation

Description

The proportion of women aged 50–69 years who have participated in the BreastScreen Victoria program within a two-year period, over time.

The BreastScreen Victoria Program aims to reduce deaths from breast cancer through early detection. BreastScreen Victoria is part of BreastScreen Australia, a national screening program for women without breast cancer signs or symptoms. Free screening mammograms are provided at two-yearly intervals for women aged 50–69. Breast x-ray screening has been found to be the most effective with women in this age group. Women aged 40–49 and women 70 years and over are also eligible to participate.

BreastScreen Victoria participation rates for the two-year screening cycle, 2000–2002 to 2006–2008



Source: BreastScreen Victoria.

During the two-year period 2006–2008, 55.1 per cent of women in the target age range of 50-69 years participated in the BreastScreen Victoria program. Participation was relatively steady between 2000–2002 and 2003–2005 at around 59 per cent. Participation rates have declined in recent years to just over 55 per cent, due to ageing of the population. As the population ages, the number of women in the target age group (50–69 years) has been increasing, while similar numbers of women are being screened. Therefore, in order to maintain the same participation rate over time, a greater number of women will need to be screened.

Concepts

Screening: In medicine, screening is a strategy used in a population to detect a disease in individuals without signs or symptoms of that disease.

Limitations

As these data reflect trends across the Victorian population, they may mask information about differences in participation between different groups of women. For example, data show that women of Aboriginal or and Torres Strait Islander descent and women from culturally and linguistically diverse backgrounds are under-screened.

These data do not include women who are screened outside the BreastScreen Victoria program.

Provenance

The Australian Institute of Health and Welfare report on cancer screening trends.

For more information

AIHW breast cancer screening trends:
http://www.aihw.gov.au/cancer/screening/breast/breast_screening_trends.cfm

BreastScreen Australia: http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/breastscreen-about

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

The Cancer Council Victoria - Interactive reports: http://vcrdata.cancervic.org.au:8082/ccv/

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Bowel cancer screening participation

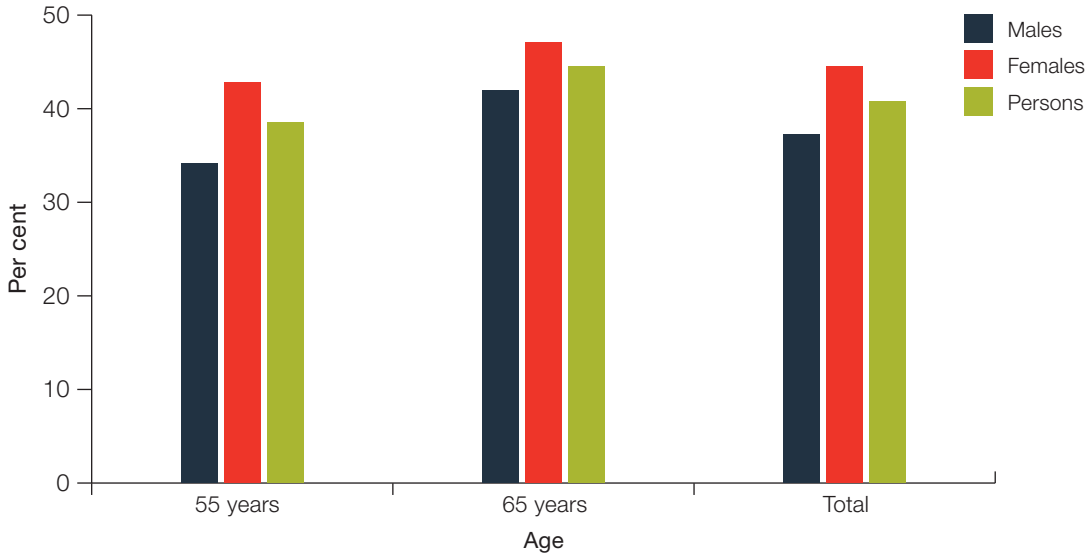
Description

The proportion of eligible persons who have participated in the bowel cancer screening program (submitted a completed form and/or completed an FOBT kit), by sex and age.

The National Bowel Cancer Screening Program (NBCSP) aims to reduce incidence and mortality from bowel cancer through screening with the faecal occult blood test (FOBT). Bowel cancer can be treated successfully if detected in the early stages when it is still localized within the bowel. It is estimated that less than 40 per cent of bowel cancers in Australia are detected early.

During Phase 1 of the NBCSP in Victoria, 230,000 Victorians aged 55 and 65 years were invited to participate in the program between January 2007 and June 2008. They were sent a faecal occult blood test (FOBT) kit in the mail to complete and send back to a pathology lab for analysis. The second phase of the NBCSP commenced in July 2008 and offered testing to people turning 50, 55 or 65 years of age between January 2008 and December 2010.

Participation rate in Phase 1 of the NBCSP, by sex and age, Victoria, 2008



NBCSP = National Bowel Cancer Screening Program

Source: Australian Institute of Health and Welfare 2008.

The overall participation rate for Phase 1 of the NBCSP was estimated to be 40.8 per cent in Victoria. There were 225,584 people, aged 55 and 65 years, who were invited to participate in Victoria (112,762 males and 112,822 females), of which 92,082 (40.8 per cent) agreed to participate.

Participation among 65 year olds (44.5 per cent) was higher than for 55 year olds (38.5 per cent). Despite having a higher bowel cancer incidence and mortality rate, the participation rate for males (37.2 per cent; 95% CI: 36.9–37.4) was lower than the rate for females (44.5 per cent; 95% CI: 44.2–44.8) (AIHW 2008).

Reference

Australian Institute of Health and Welfare (AIHW) 2008, *National bowel cancer screening program monitoring report 2008*, cancer series 44, cat. no. 40, AIHW, Canberra.

Concepts

Screening: In medicine, screening is a strategy used in a population to detect a disease in individuals without signs or symptoms of that disease.

Limitations

Information about participants and their screening outcomes is obtained from a number of sources through the screening pathway recorded in the National Bowel Cancer Screening Register. Data are collected on forms submitted by participants, GPs, pathologists, colonoscopists, and other health professionals involved in the screening pathway. Submission of these forms is not mandatory, and as such, there are time lags in reporting as well as underreporting to the register. Therefore, there is the potential for underestimation of program performance from results.

It is unlikely that this jeopardises comparisons, as the risk of underreporting is likely to be constant across populations.

Provenance

The Australian Institute of Health and Welfare report on cancer screening trends.

For more information

Australian Institute of Health and Welfare (AIHW) 2008, *National bowel cancer screening program monitoring report 2008*, cancer series 44, cat. no. 40, AIHW, Canberra: http://www.aihw.gov.au/publications/index.cfm/title/10665

Department of Health and Ageing (DoHA) 2005, *The Australian bowel cancer screening pilot program and beyond: final evaluation report October 2005*, screening monograph no 6/2005, DoHA, Canberra: http://www.health.gov.au/internet/screening/publishing.nsf/Content/2DDFA95B20302107CA2574EB007F7408/$File/final-eval.pdf

National Bowel Cancer Screening Program: http://www.cancerscreening.gov.au/

National Health and Medical Research Council (NHMRC) 2005, *Clinical practice guidelines for the prevention, early detection and management of colorectal cancer*, NHMRC, Canberra: http://www.nhmrc.gov.au/publications/synopses/cp106/cp106syn.htm

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

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Cervical cancer screening participation

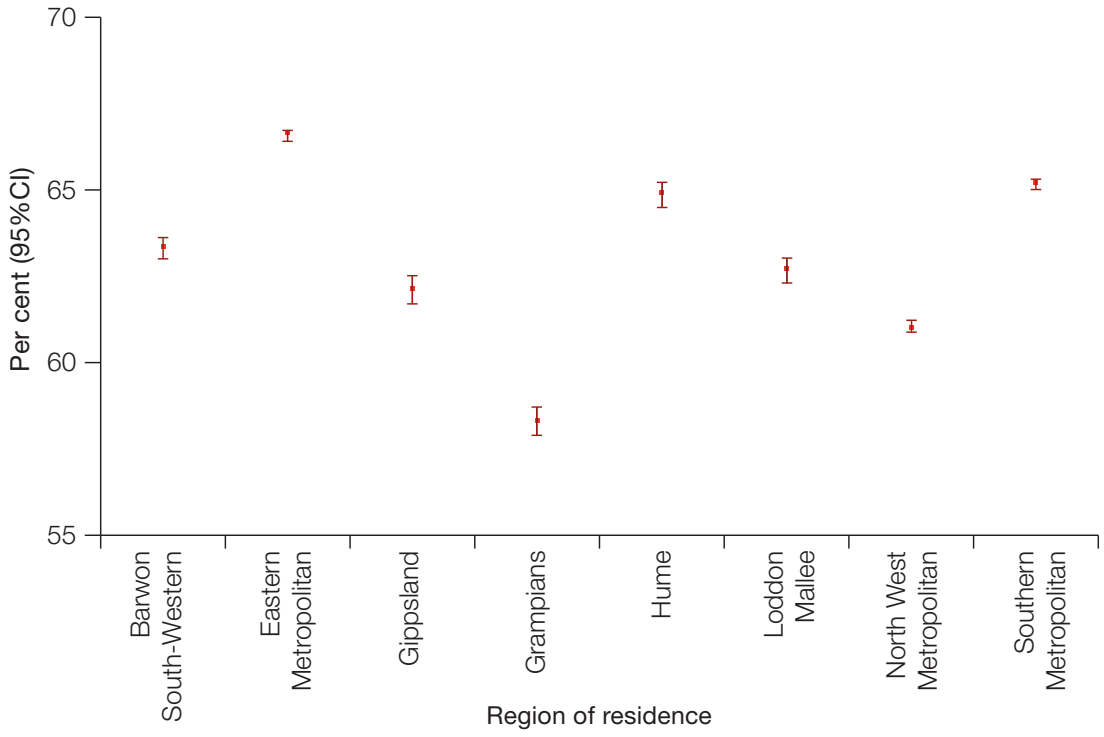
Description

The proportion of women aged 20–69 years who have participated in the cervical screening program over a two-year period, by age group and region of residence.

The National Cervical Screening Program screens for cervical cancer in women aged 20–69 years, every two years, using the Pap test (Pap smear). The aim of the program is to find cervical cancer in its early stages, or to find changes in the body that indicate the disease is likely to develop in the future. Early detection of the disease increases the chance of successful treatment.

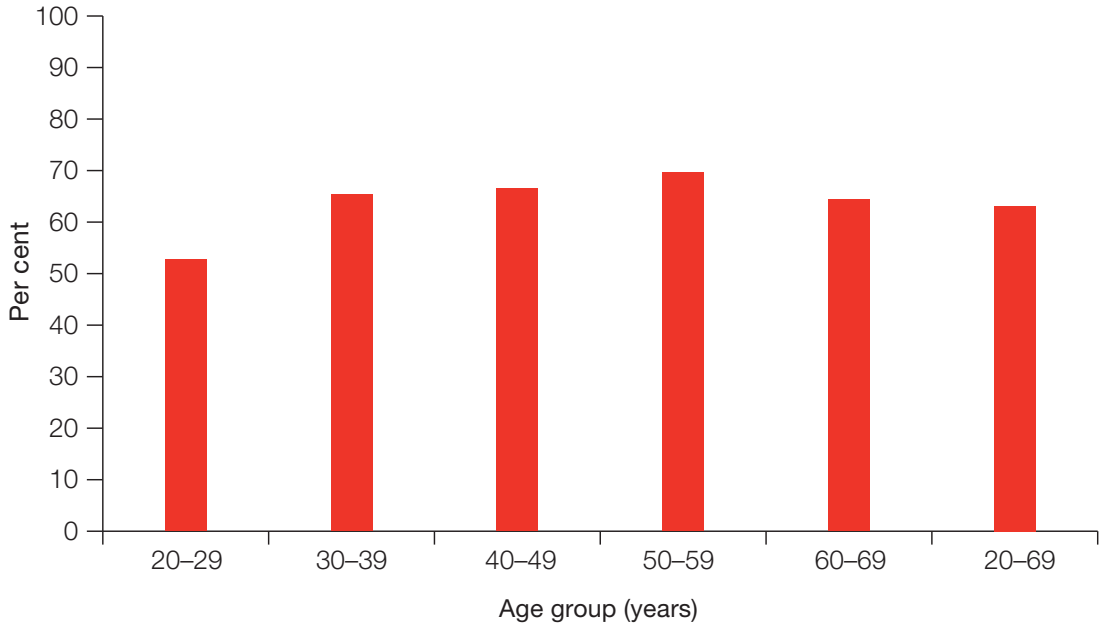
Over the last 20 years, there has been a significant decline in the incidence and mortality of cervical cancer in Victorian women. In 2006 the standard incidence rate of cervical cancer in Victoria was 4.5 per 100,000 women and the mortality rate was 1 per 100,000 women (The Cancer Council Victoria 2009).

Biennial cervical screening rates by region of residence, Victoria, 2006–2007



Source: Victoria Cancer Council Registry 2008

Biennial cervical screening participation rates by age group, Victoria, 2006–2007



Source: Victoria Cancer Council Registry 2008

In 2007, more than 858,000 Pap tests were registered by the Victorian Cervical Cytology Registry (VCCR), representing almost 557,000 women. The estimated two-year (2006–2007) participation rate for women in the target population of 20 to 69 years in Victoria was 63.1 per cent. Participation varied by age group, with women aged 50 to 59 years having the highest two-year screening rate and women aged 20 to 29 years having the lowest rate. Participation rates in Victoria also varied by region of residence, ranging from 58.3 per cent in the Grampians region to 66.6 per cent in the Eastern Metropolitan region.

The proportion of abnormal Pap test results in 2007 was 5.4 per cent, slightly less than the 6.1 per cent for the previous period. A definite high-grade abnormality was reported in 0.5 per cent of Pap tests in 2007.

Of the women who were diagnosed with cervical cancer between 2003 and 2005, the proportion of women who had some history of screening (13 per cent) was much lower than those with inadequate (54 per cent) or no screening history (33 per cent).

References

The Cancer Council Victoria 2009, *Canstat: cancer in Victoria 2006*, The Cancer Council Victoria, Melbourne.

Victorian Cervical Cytology Registry (VCCR) 2008, *Statistical report 2007*, VCCR, Melbourne.

Concepts

Screening: In medicine, screening is a strategy used in a population to detect a disease in individuals without signs or symptoms of that disease.

Limitations

There is potential for measurement error in the 'eligible' population due to uncertainty about the hysterectomy rate, which excludes women from eligibility. This is a particular consideration when looking at small area data with a relatively small female population. There is also potential for inflating the number of women screened as a result of possible imperfect matching between multiple Pap tests and the same women. It is not expected that these data limitations would reduce the ability to make comparisons across regions or over time.

The data do not identify population groups that are under-screened. Work is currently being undertaken to identify these groups and the reasons for under-screening.

Provenance

The Australian Institute of Health and Welfare report on cancer screening trends.

For more information

Cancer Screening Australia: http://www.cancerscreening.gov.au

National Cervical Screening Program: http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/cervical-about

PapScreen Victoria: http://www.papscreen.org.au

The Cancer Council Victoria - Interactive reports: http://vcrdata.cancervic.org.au:8082/ccv/

Victorian Cervical Cytology Register: http://www.vccr.org/stats.html

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Annual dental visit

Description

The proportion of dentate persons who reported visiting a dental professional at least once in the previous year.

Dental problems are ranked among the most frequently reported illness episodes by Australians (AIHW 2000), and provision of dental care accounted for 6.6 per cent of recurrent health expenditure in 2005–06 (AIHW 2007). In the United States, the Surgeon General has characterised oral disease as a 'silent epidemic' (Surgeon General 2000).

The 2004–06 National Survey of Adult Oral Health (NSAOH) took place 17 years after the first oral examination survey of Australians was conducted. Information was collected using interviews and standardised dental examinations, that were conducted on a random sample of Victorian residents aged 15 years or more (AIHW 2008).

The time since last visiting a dentist is a key indicator of access to dental care. In the NSAOH, the time since the last dental visit was assessed by asking survey respondents 'How long ago did you last see a dental professional about your teeth, dentures or gums?'

Percentage of people who visited a dental professional at least once in the last 12 months, Victoria, 2005–06

	Age groups (years)											
	15-34			35-54			55 and over			All ages		
	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
Males	**57.7**	49.8	65.2	**57.5**	52.0	62.9	**60.3**	54.8	65.7	**58.4**	54.1	62.5
Females	**61.9**	57.1	66.5	**66.9**	62.1	71.4	**53.0**	47.8	58.2	**60.9**	57.9	63.8
Persons	**59.8**	54.9	64.5	**62.3**	58.5	65.9	**56.5**	52.0	60.8	**59.7**	57.0	62.3

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Source: Australian Institute of Health and Welfare 2008.

Among Victorian residents aged 15 years and over, almost six out of 10 (59.7 per cent) had visited a dentist within the previous 12 months. This estimate was similar to the national estimate of 59.4 per cent (Slade et al. 2007). The percentage of people who had visited a dentist within the previous 12 months was similar across age groups.

References

Australian Institute of Health and Welfare (AIHW) 2000, *Australia's health 2000: The seventh biennial health report of the Australian Institute of Health and Welfare*, AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2007, *Health expenditure Australia 2005–06*, health and welfare expenditure series no. 30, cat. no. HWE 37, AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) Dental Statistics and Research Unit 2008, *The national survey of adult oral health 2004–06: Victoria*, dental statistics and research series no. 45, cat. no. DEN 181, AIHW, Canberra.

Slade, GD, Spencer, AJ & Roberts-Thomson, KF (editors) 2007, *Australia's dental generations: the national survey of adult oral health 2004–06*, dental statistics and research series no. 34, cat. no. DEN 165, Australian Institute of Health and Welfare, Canberra.

Surgeon General 2000, *The health consequences of smoking: A report of the Surgeon General*, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, Georgia.

Concepts

Prevalence: The proportion of people with a disease in a defined population.

Provenance

Dental health indicators are reported by the Australian Institute of Health and Welfare.

For more information

Australian Institute of Health and Welfare (AIHW) Dental Statistics and Research Unit 2008, *The national survey of adult oral health 2004–06: Victoria*, dental statistics and research series no. 45, cat. no. DEN 181, AIHW, Canberra: http://www.arcpoh.adelaide.edu.au/publications/report/statistics/pdf_08/Victoria%20NSAOH_final.pdf

Slade GD, Spencer AJ, Roberts-Thomson KF (editors) 2007, *Australia's dental generations: the national survey of adult oral health 2004–06*, dental statistics and research series no. 34, cat. no. DEN 165, Australian Institute of Health and Welfare, Canberra: http://www.arcpoh.adelaide.edu.au/project/distribution/nsaoh_pdf%20files/nsaoh_report.pdf

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Children fully immunised at age 60 to <63 months

Description

The proportion of children, aged 60 months and over but less than 63 months, who have received all scheduled vaccinations.

Immunisation has been repeatedly demonstrated to be one of the most effective medical interventions to prevent disease. Vaccines are a safe and effective way to give children immunity against a number of potentially serious diseases. Babies are born with a certain amount of natural protection against disease, which comes in the form of antibodies they get from their mothers. However, this natural form of protection does not last past the first year of life and young children are at risk for a number of diseases that can be serious, and even fatal. Vaccination not only protects individuals, but also others in the community, by increasing the general level of immunity and minimising the spread of infection.

Australian immunisation providers have contributed data to the Australian Childhood Immunisation Register (ACIR) since 1996. The ACIR, administered by Medicare Australia, is a national database containing data on immunisation given to children under seven years of age who are living in Australia. Details of vaccinations given to children are forwarded to the ACIR by recognised providers, for inclusion on the register.

Health professionals use the ACIR to monitor immunisation coverage levels and service delivery, and to identify regions at risk during disease outbreaks. ACIR data also:

- enable immunisation providers and parents or guardians to check on the immunisation status of an individual child, regardless of where the child was immunised;
- form the basis of an optional immunisation history statement which informs parents and guardians of their child's recorded immunisation history;
- provide information about a child's immunisation status to help determine eligibility for the Australian Government's Child Care Benefit and Maternity Immunisation Allowance family assistance payments;
- provide information for the delivery of incentive payments and feedback reports to eligible immunisation providers.

Australian standard vaccination schedules are defined for children born between specified calendar dates. For children born on or after 1 January 2005, for example, 13 diseases are covered by the routine childhood vaccination schedule: chickenpox, hepatitis B, diphtheria, *Haemophilus influenzae type b (Hib)*, measles, *meningococcal C*, mumps, pertussis, pneumococcal disease, polio, rotavirus, rubella and tetanus.

Percentage of children aged 60 to <63 months (age calculated at 31 December 2008), assessed as fully immunised, by jurisdiction, for the period 1 December 2008 to 31 March 2009

State	Number of Children	% DTP	% Polio	% HIB	% Hep B	% MMR	% Fully Immunised
ACT	1,144	91.3	90.8	0.0	0.0	90.7	90.1
NSW	22,083	89.8	89.7	0.0	0.0	89.5	89.1
VIC	16,487	92.6	92.5	0.0	0.0	92.4	92.0
QLD	13,781	88.9	88.7	0.0	0.0	88.7	88.1
SA	4,526	86.7	86.5	0.0	0.0	86.4	86.1
WA	6,759	85.2	85.1	0.0	0.0	85.1	84.3
TAS	1,539	89.5	89.3	0.0	0.0	88.6	88.4
NT	817	89.2	89.1	0.0	0.0	89.1	88.6
AUS	**67,136**	**89.6**	**89.5**	**0.0**	**0.0**	**89.4**	**88.9**

Source: Australian Childhood Immunisation Register.

The proportion of children aged between 60 and less than 63 months, who received all scheduled vaccinations in Victoria, was the highest among all jurisdictions in Australia for the period 1 December 2008 to 21 March 2009.

References

Hull, BP, Lawrence, GL, MacIntyre, CR & McIntyre, PB 2003, 'Immunisation coverage in Australia corrected for under-reporting to the Australian childhood immunisation register', *Australian and New Zealand Journal of Public Health*, vol. 27, pp. 533–38.

Hull, BP, McIntyre, PB, Heath, TC & Sayer, GP 1999, 'Measuring immunisation coverage in Australia: a review of the Australian childhood immunisation register', *Australian Family Physician*, vol. 28, pp. 55–60.

Lister, S, McIntyre, PB, Burgess, MA & O'Brien, ED 1999, 'Immunisation coverage in Australian children: a systematic review 1990–1998', *Communicable Diseases Intelligence*, vol. 23, pp. 145–70.

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Concepts

The vaccination status of each cohort is assessed at the three key milestones of 12 months, 24 months and 60 months 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, which are administered before the second birthday. The five-year milestone includes vaccinations due at four years of age, which are administered before the fifth birthday. The calculation is based on the vaccination schedule for the cohort and 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).

Limitations

A child is defined as 'fully vaccinated' at age 60 to <63 months if they have received the fourth dose of diphtheria, tetanus and pertussis (DTP) vaccine, the fourth dose of oral poliomyelitis (OPV) vaccine, and the second dose of measles, mumps and rubella vaccine (MMR1).

Only vaccines administered before 12 months of age are included in the coverage calculation.

Several limitations exist regarding data available from the ACIR which must be considered when it is used to estimate vaccination coverage, including underreporting, 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 are registered with Medicare (Hull et al. 2002, Lister et al. 1999, O'Brien et al. 1998).

Provenance

One of the key performance indicators contained in the Australian Immunisation Agreement is having at least 90 per cent of children fully immunised at five years of age.

For more information

Australian Childhood Immunisation Register: http://www.medicareaustralia.gov.au/public/services/acir/index.jsp

Department of Health and Ageing (DoHA) 2005, *Understanding childhood immunisation*, DoHA, Canberra: http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/A12E183FB21B71F1CA2575BD001C80F0/$File/ucibooklet.pdf

Department of Health and Ageing (DoHA) 2008, *Immunisation myths and realities: responding to arguments against immunisation*, 4th edition, DoHA, Canberra: http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/uci-myths-guideprov

Immunisation: http://www.health.vic.gov.au/immunisation

National Immunisation Program (NIP) Schedule: http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/nips

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Bio-medical factors

This dimension incorporates genetic-related susceptibility to disease and other risk factors such as blood pressure, cholesterol levels and body weight. The indicators for this dimension include:

Body weight status: The proportion of adults aged 18 years and over who are underweight, normal weight, overweight or obese, by sex and age group.

Newborn screening: The number of babies born in Victoria who have had a newborn screening test, over time.

Bowel cancer incidence: The number of new cases of bowel cancer in the population over a specified time period, expressed as a rate per 100,000 persons.

Body weight status

Description

The proportion of adults aged 18 years and over who are underweight, normal weight, overweight or obese, by sex and age group.

Overweight and obesity, or excess weight, are major contributors to several chronic diseases. Excess weight is a condition of abnormal and excessive fat accumulation, to the extent that the health and wellbeing of an individual 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 disease 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).

Body weight status[(a)], by age group in males, Victoria, 2008

Age group (years)	Underweight (<18.5)			Normal (18.5–24.9)			Overweight (25.0–29.9)			Obese (≥30.0)		
Males	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI	%	LL 95% CI	UL 95% CI
18–24	**2.4***	1.4	4.2	**59.7**	54.9	64.3	**23.7**	19.9	28.0	**7.3**	5.3	9.9
25–34	**1.3***	0.7	2.5	**46.7**	42.7	50.7	**37.0**	33.3	40.9	**11.6**	9.5	14.2
35–44	**0.2***	0.1	0.5	**35.8**	33.0	38.8	**42.8**	39.8	45.8	**19.3**	16.9	21.8
45–54	**0.4***	0.2	1.0	**27.5**	25.1	30.1	**44.4**	41.6	47.2	**25.0**	22.6	27.6
55–64	**0.6***	0.3	1.2	**28.6**	26.3	31.0	**46.7**	44.0	49.3	**22.4**	20.3	24.6
65+	**0.9**	0.6	1.4	**35.7**	33.5	37.9	**42.8**	40.6	45.1	**17.5**	15.9	19.4
Total	**0.9**	**0.7**	**1.2**	**38.6**	**37.3**	**40.0**	**39.9**	**38.7**	**41.2**	**17.3**	**16.4**	**18.2**

(a) Determined by calculation of body mass index (BMI).

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Note that figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age- standardised to the 2006 Victorian population.

* Estimate has a relative standard error of between 25 and 50 per cent and should be interpreted with caution.

Source: Victorian population health survey 2008.

Body weight status[a], by age group in females, Victoria, 2008

Age group (years)	Underweight (<18.5)			Normal (18.5–24.9)			Overweight (25.0–29.9)			Obese (≥30.0)		
Females												
18–24	**8.9**	6.4	12.1	**63.2**	58.8	67.3	**14.7**	12.0	18.0	**6.1**	4.5	8.3
25–34	**4.3**	3.3	5.7	**54.7**	51.8	57.5	**20.7**	18.5	23.1	**13.1**	11.3	15.0
35–44	**2.8**	2.2	3.5	**49.8**	47.7	51.9	**23.8**	22.0	25.6	**16.7**	15.1	18.3
45–54	**1.6**	1.1	2.3	**44.3**	42.1	46.6	**27.0**	25.0	29.0	**19.5**	17.8	21.3
55–64	**1.8**	1.3	2.7	**38.7**	36.6	40.9	**29.6**	27.7	31.7	**23.1**	21.3	25.0
65+	**2.5**	2.0	3.2	**38.6**	36.7	40.4	**29.7**	28.0	31.5	**18.7**	17.2	20.3
Total	**3.6**	**3.1**	**4.1**	**48.1**	**47.1**	**49.2**	**24.2**	**23.4**	**25.1**	**16.1**	**15.4**	**16.8**

(a) Determined by calculation of body mass index (BMI).

LL/UL 95% CI = Lower/Upper limit of 95 per cent confidence interval.

Note that figures may not add to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Data are crude estimates, except for the totals, which represent the estimates for Victoria and have been age- standardised to the 2006 Victorian population.

* Estimate has a relative standard error of between 25 and 50 per cent and should be interpreted with caution.

Source: Victorian population health survey 2008.

The results of the *Victorian population health survey 2008* show that a higher proportion of males were overweight (39.9 per cent), compared with females (24.2 per cent), while there was a similar proportion of obese males and females (17.3 per cent and 16.1 per cent, respectively).

Overweight and obesity were more prevalent for persons aged 45 years and over. Persons in the youngest age groups (18–24 years and 25–34 years) had the lowest proportions of overweight and obesity, but had the highest proportions of underweight body weight.

Reference

World Health Organization (WHO) 2000, *Obesity: preventing and managing the global epidemic*, WHO technical report series 894, WHO, Geneva.

Concepts

Body mass index (BMI): Calculated from reported height and weight information, using the formula weight (kg) divided by the square of height (m2). The World Health Organization (2000) classifies adult body weight status based on the following BMI scores:

Obese:	30.0 kg/m^2 or more
Overweight:	25.0 to less than 30.0 kg/m^2
Normal weight:	18.5 to less than 25.0 kg/m^2
Underweight:	Less than 18.5 kg/m^2

Limitations

The data presented are based on self-report. The results may be subject to recall bias and should be interpreted with caution.

Provenance

Body weight status is reported by the Australian Bureau of Statistics and the Australian Institute of Health and Welfare.

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

World Health Organization – BMI: http://apps.who.int/bmi/index.jsp?introPage=intro_3.html

World Health Organization (WHO) 2000, *Obesity: preventing and managing the global epidemic*, WHO technical report series 894, WHO, Geneva:
http://whqlibdoc.who.int/trs/WHO_TRS_894.pdf

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Newborn screening

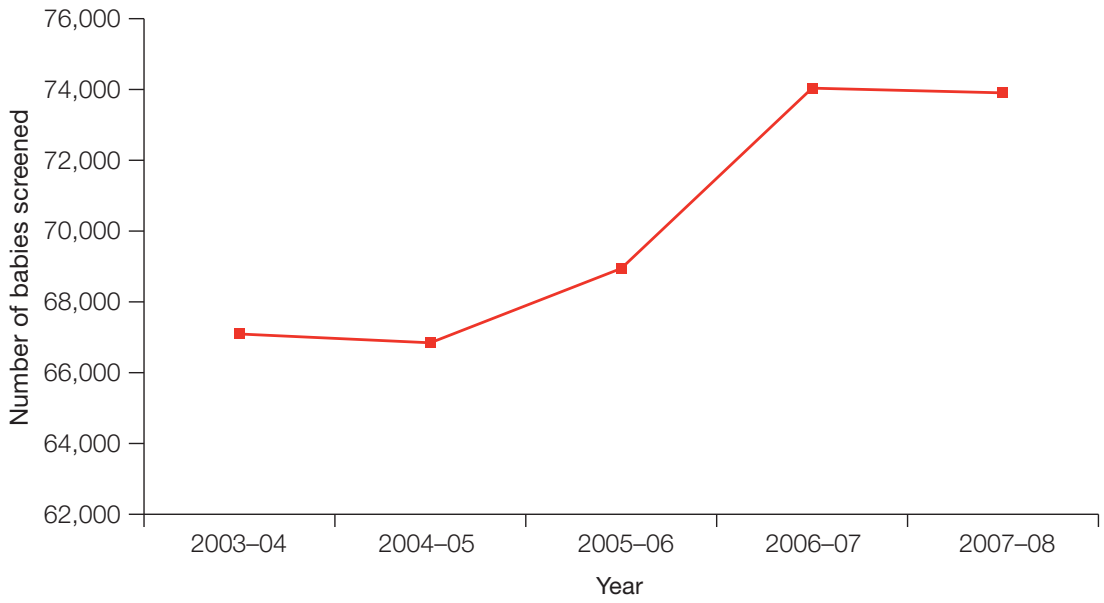
Description

The number of babies born in Victoria who have had a newborn screening test, over time.

The goal of newborn screening is the early identification of children affected by congenital and metabolic disorders for which early treatment can be provided to prevent irreversible neurological and developmental problems. Early identification of these conditions is crucial, as timely intervention can lead to a significant reduction in morbidity, mortality, and associated disabilities in affected infants.

Screening has been available in Victoria since the mid-1960s. Currently the program identifies around 25 different conditions, including phenylketonuria (PKU), cystic fibrosis (CF), congenital hypothyroidism and a number of other rare disorders that affect protein and fat metabolism. The screening test is offered free of charge to all newborns in Victoria. With approximately 73,000 births a year in Victoria, around 60 newborns will be identified as having one of the conditions screened for as part of the newborn screening program. For these babies, early treatment or management avoids unnecessary illness and, in some cases, mortality.

Number of babies screened in Victoria 2003–04 to 2007–08



Source: Victorian Clinical Genetic Services quarterly reporting data, May 2009.

In 2007–08 the number of tests conducted was 263,575. The number of tests is higher than the number of babies screened because the newborn screening test sample is used to perform several tests for a range of conditions.

Until recently, the proportion of babies in Victoria having newborn screening had not been formally assessed. A recent study, which involved record linkage of newborn screening tests (from Genetic Health Services Victoria) with birth data from the Perinatal Morbidity Statistics System (a register of all births at 20 weeks and over in Victoria), was able to estimate the proportion of babies screened. Results indicated that the uptake of newborn screening in Victoria was extremely high, with an estimated 99.4 per cent of babies being screened (Jacques et al. 2008). There were 375 births that were not matched to a newborn screening test, suggesting that these babies had not been screened.

Reference

Jacques, AM, Collins, VR, Pitt J, & Halliday, JL 2008, 'Coverage of the Victorian newborn screening programme in 2003: a retrospective population study', *Journal of Paediatrics and Child Health*, vol. 44, pp. 498–503.

Concepts

Screening: In medicine, screening is a strategy used in a population to detect a disease in individuals without signs or symptoms of that disease.

Limitations

The uptake rate/participation rate is not reported as this value may be underestimated. The 2008 study found that a number of factors may contribute to why a birth is not matched with a newborn screening test, including name changes, neonatal death, having a homebirth, living in rural Victoria, having a short length of stay after birth, and not having any other children (Jacques et al. 2008).

For more information

Victorian Clinical Genetics Services (VCGS):
http://www.vcgspathology.com.au/?docid=7f5f83ca-989c-4cdb-9c2e-992e00efe918

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Bowel cancer incidence

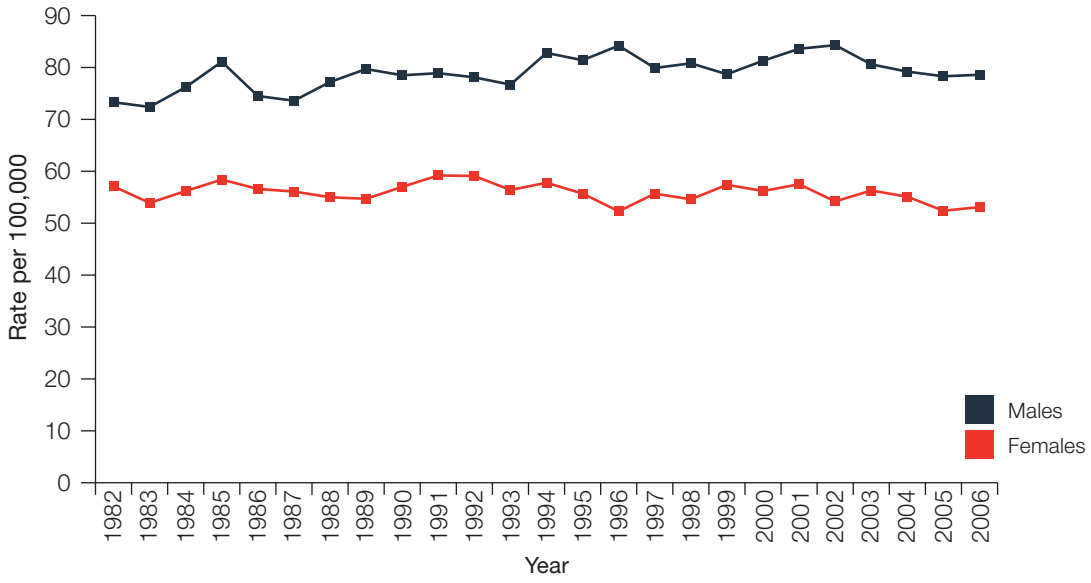
Description

The number of new cases of bowel cancer in the population over a specified time period, expressed as a rate per 100,000 persons.

Bowel cancer is cancer of the large intestine, or colon and rectum. It is also known as colorectal cancer. There is an increased risk of developing bowel cancer with increasing age and a family history of the disease (The Cancer Council Victoria 2009, Weitz et al. 2005). Poor diet – especially a diet high in fat and low in fibre - is an important risk factor, although a recent study has found a vegetarian diet may also increase the risk of developing bowel cancer (Bingham et al. 2005, Norat et al. 2005, Key et al. 2009). Other lifestyle factors linked to the development of bowel cancer include excess body weight, low levels of physical activity and high levels of alcohol consumption (AIHW 2009).

Although bowel cancer may be present for many years before symptoms manifest, the disease can be successfully treated if detected in the early stages. Currently, less than 40 per cent of bowel cancers are detected early (DoHA 2010). The National Bowel Cancer Screening Program aims to improve early detection and survival rates with two-yearly screening of persons aged 50 years and over in the population.

Bowel cancer incidence, by sex, Victoria, 1982–2006



Data are age-standardised to the 2001 Victorian population.

Source: Victorian Cancer Registry.

In 2006, bowel (colon and rectum) cancer was the second most common new cancer and the second most common cause of cancer death in Victoria. There were 3,516 new cases (14 per cent of all cancers) of bowel cancer and 1,050 bowel cancer deaths (11 per cent of all cancer deaths).

Between 1982 and 2006 there was a significant linear trend of increasing incidence of 0.3 per cent annually for males. The trend for females over this period was not significant.

References

Australian Institute of Health and Welfare (AIHW) 2009, *National bowel cancer screening program: annual monitoring report 2009*, cat. no. CAN 45, AIHW, Canberra.

Bingham SA, Norat T, Moska, A, et al. 2005, 'Is the association with fiber from foods in colorectal cancer confounded by folate intake?', *Cancer Epidemiol Biomarkers Prev*, vol. 14, pp. 1552–1556.

Department of Health and Ageing (DoHA) 2010, *National bowel cancer screening program*, viewed 4 May 2010: www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/bowel-about

Key, TJ, Appleby, PN, Spencer, EA, Travis, RC, Roddam, AW & Allen, NE 2009, 'Cancer incidence in vegetarians: results from the European prospective investigation into cancer and nutrition', *American Journal of Clinical Nutrition*, vol. 89 (suppl), 1S–7S.

Norat, T, Bingham, S, Ferrari, P, et al. 2005, 'Meat, fish, and colorectal cancer risk: the European prospective investigation into cancer and nutrition', *Journal of the National Cancer Institute*, vol. 97, pp. 906–916.

The Cancer Council Victoria 2010, *Time trends by cancer, interactive report*, The Cancer Council Victoria, Melbourne, viewed online 4 May 2010: http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer

Weitz, J, Koch, M, Debus, J, Hohler, T, Galle, PR & Buchler, MW 2005, 'Colorectal cancer', *The Lancet*, vol. 365, pp. 153-165.

Concepts

Incidence: Refers to the number of new cases of disease that occur in a population over a specified period.

Limitations

Sometimes measurement of the incidence rate is complicated by changes in the population at risk during the period when cases are ascertained, for example, through births, deaths or migration.

It should be noted that once a person is classified as a case, he or she is no longer liable to become a new case, and therefore should not contribute further person-years at risk. Sometimes the same pathological event happens more than once to the same individual. In these circumstances, the definition of incidence is usually restricted to the first event, although sometimes (for example in the study of infectious diseases) it is more appropriate to count all episodes.

Provenance

Cancer incidence rates are reported by the Australian Institute of Health and Welfare and the World Health Organization.

For more information

The Cancer Council Victoria, interactive reports: http://vcrdata.cancervic.org.au:8082/ccv/

The Cancer Council Victoria 2009, *Canstat: cancer in Victoria 2006*, The Cancer Council Victoria, Melbourne: http://www.cancervic.org.au/downloads/about_our_research/canstats/more_canstats/CanStat_46.pdf

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Community and socioeconomic factors

This dimension includes community factors such as social capital, support services and socioeconomic factors such as housing, education, employment and income. Both socioeconomic and community factors have been shown to have an impact on the health and wellbeing of individuals. The indicators for this dimension include:

Population: The estimated resident population (ERP) is the ERP at the beginning of each period added to the components of natural increase (births and deaths – on a usual residence basis) and net overseas and interstate migration.

Socioeconomic factors: Selected socioeconomic indicators for the adult population, expressed as a percentage of the adult population.

Volunteering: The proportion of adults aged 18 years and over who help out a local group as a volunteer, over time.

Population

Description

The estimated resident population (ERP) is the ERP at the beginning of each period added to the components of natural increase (births and deaths – on a usual residence basis) and net overseas and interstate migration.

The ERP is an estimate of the Victorian population that links people to a usual place of residence in Victoria. It includes all people, regardless of nationality or citizenship, who usually live in Victoria, with the exception of foreign diplomatic personnel and their families. It includes usual residents who are overseas for less than 12 months, but excludes overseas visitors who are in Australia for less than 12 months (ABS 2010).

The ERP adds value to the census population figure by providing greater accuracy and intercensal updates. It is the official measure of the population and is used for a range of key decisions such as resource and funding distribution by government.

Population composition, growth and migration, Victoria, 1998–2008

		Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	Total population	'000	4,638	4,686	4,741	4,805	r4,863	r4,923	r4,981	r5,049	r5,127	r5,221	p5,314
2	Male population	'000	2,287	2,309	2,336	2,366	r2,397	r2,429	r2,459	r2,494	r2,535	r2,585	p2,632
3	Female population	'000	2,351	2,377	2,406	2,438	r2,466	r2,495	r2,523	r2,555	r2,591	r2,636	p2,682
4	Indigenous population(a)	'000	26.3	26.9	27.4	27.8	28.4	29.1	29.7	30.3	r33.5	n.y.a.	n.y.a.
5	Born overseas(b)(c)	%	n.a.	n.a.	n.a.	24.6	n.a.	n.a.	n.a.	n.a.	n.y.a.	n.a.	n.a.
6	Born in United Kingdom(c)	%	n.a.	n.a.	n.a.	4.7	n.a.	n.a.	n.a.	n.a.	n.y.a.	n.a.	n.a.
7	Born in Europe(c)	%	n.a.	n.a.	n.a.	13.7	n.a.	n.a.	n.a.	n.a.	n.y.a.	n.a.	n.a.
8	Born in East, Central or Southern Asia(c)	%	n.a.	n.a.	n.a.	6.3	n.a.	n.a.	n.a.	n.a.	n.y.a.	n.a.	n.a.
9	Population living in capital cities(d)	%	72.1	72.1	72.2	72.3	r72.5	r72.7	r72.8	r72.9	r73.0	r73.1	p73.3
10	Population aged 0-14 years	%	20.5	20.3	20.2	20.0	r19.8	r19.6	r19.4	r19.2	r19.0	r18.8	p18.8
11	Population aged 15-64 years	%	66.8	66.8	66.9	67.0	r67.1	r67.3	r67.4	r67.5	r67.6	r67.7	p67.7
12	Population aged 65 years and over	%	12.7	12.8	12.9	13.0	r13.1	r13.1	r13.2	r13.3	r13.4	r13.5	p13.5
13	Population aged 85 years and over	%	1.3	1.4	1.4	1.5	r1.5	r1.5	r1.5	r1.6	r1.6	r1.7	p1.8
14	Median age of total population	years	35.0	35.3	35.6	35.8	r36.0	r36.2	r36.4	r36.6	r36.7	r36.8	p37.0
15	Median age of Indigenous population(a)	years	20.8	20.7	20.7	20.8	20.9	21.1	21.3	21.5	r21.3	n.y.a	n.y.a.
16	Sex ratio of population aged 0-64 years	ratio	100.7	100.5	100.4	100.3	r100.4	r100.5	r100.6	r100.7	r100.8	r101.0	p101.0
17	Sex ratio of population aged 65 years and over	ratio	76.4	76.9	77.2	77.6	r78.2	r78.6	r79.1	r79.7	r80.5	r81.2	p81.8
	Population growth												
		Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
18	Total population growth	'000	40.6	48.6	54.9	63.4	r58.4	r60.4	r58.0	r67.1	r77.9	r94.8	p92.5
19	Births(e)	'000	60.1	59.4	59.7	58.7	r60.4	r60.2	r61.4	r62.3	r63.8	r68.9	p73.1
20	Deaths(e)	'000	32.4	32.3	32.0	32.3	32.6	33.1	33.1	32.4	33.1	r34.2	p36.0
21	Natural increase(e)	'000	27.7	27.1	27.7	26.4	r27.8	r27.1	r28.3	r29.9	r30.7	r34.7	p37.2

Population composition, growth and migration, Victoria, 1998–2008 (continued)

		Population growth										
		Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
22	Net overseas migration(f)	'000	19.3	24.7	27.0	35.3	20.3	26.8	25.0	32.3	39.6	r62.5	p58.1
23	Net interstate migration	'000	-0.3	2.5	5.2	5.2	r3.6	r-0.7	r-3.1	r-3.1	r-1.8	r-2.4	p-2.7
24	Population growth rate	%	0.88	1.05	1.17	1.34	r1.21	r1.24	r1.18	r1.35	r1.54	r1.85	p1.77
25	Contribution of net overseas migration to total growth	%	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
26	Net interstate migration rate	%	-0.01	0.05	0.11	0.11	r0.08	r-0.02	r-0.06	r-0.06	r-0.04	r-0.05	p-0.05
		Migration											
		Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
27	Total settler arrivals(g)	'000	16.2	17.3	19.3	24.2	21.4	23.1	28.0	30.6	32.3	34.7	37.2
28	Skilled settler arrivals	%	27.9	28.3	32.8	33.1	40.2	39.7	47.0	44.1	47.0	45.2	46.7
29	Family settler arrivals	%	34.3	31.5	25.6	21.0	28.8	33.6	28.5	29.2	28.5	29.2	28.2
30	Humanitarian settler arrivals	%	17.1	16.4	11.0	8.9	8.9	12.2	11.4	12.9	10.6	9.5	7.5

(a) Data for 1998 to 2001 are experimental estimates of the Indigenous population, based on the 2001 census. Data for 2002 to 2005 are experimental projections of the Indigenous population (low series), based on the 2001 census. Data for 2006 are final experimental estimates of the Indigenous population, based on the 2006 census.

(b) Includes country of birth not stated.

(c) Data only available in census years.

(d) Data for 1998–2000 are based on 2006 Australian Standard Geographical Classification (ASGC) boundaries. Data for 2001–2008 are based on 2008 Australian Standard Geographical Classification (ASGC) boundaries.

(e) Data are based on year of occurrence up to 2007. Data for 2008 are based on year of registration.

(f) These estimates contain a break in time series. Estimates from 30 June 2006 use an improved methodology but are not comparable with estimates from earlier periods.

(g) Includes special eligibility and non-program migration in addition to family, skilled and humanitarian migration.

(h) . . not applicable; n.a. not available; n.y.a. not yet available; p preliminary data; r figures or series revised since previous publication.

(i) Data for indicators 1–17 are at 30 June. Data for indicators 18–30 are for the year ended 30 June.

Source: Australian Bureau of Statistics 2009.

In 2008 there were 5,313,823 persons usually resident in Victoria. Just under half (49.5 per cent) were males and 50.5 per cent were females (2,631,983 males and 2,681,840 females). Of the total population in Victoria, 0.6 per cent were Aboriginal and/or Torres Strait Islander persons.

Children aged 0–14 years made up 18.8 per cent of the Victorian population, 67.7 per cent were aged 15–64 years and 13.5 per cent were aged 65 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.

References

Australian Bureau of Statistics (ABS) 2009, *Australian social trends*, 2009, cat. no. 4102.0, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2010, *Australian demographic statistics, September 2009*, cat. no. 3101.0, ABS, Canberra.

Concepts

Usual residence: Defined as where each person lived or intends to live for six months or more from the reference date for data collection.

Limitations

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.

Provenance

Population data are reported by the Australian Bureau of Statistics.

For more information

Australian Bureau of Statistics (ABS) 2009, *Australian social trends, 2009*, cat. no. 4102.0, ABS, Canberra: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4102.0Sep%202009?OpenDocument

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Socioeconomic factors

Description

Selected socioeconomic indicators for the adult population, expressed as a percentage of the adult population.

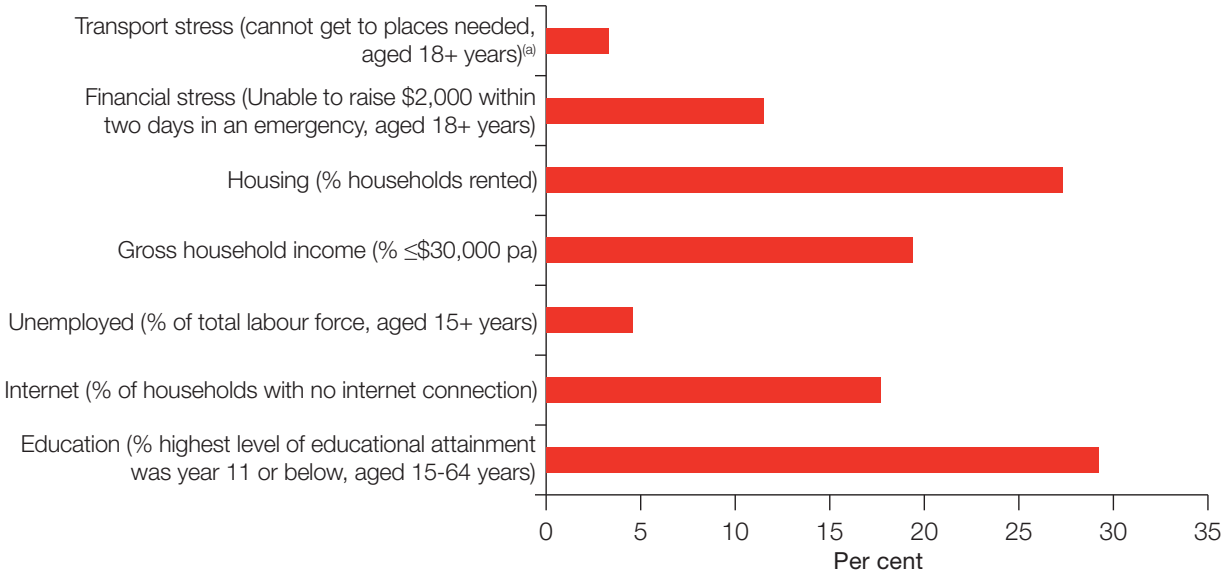
The health of individuals and populations is influenced by many factors; that is, health is multicausal. Individual health and functioning – the length and quality of a person's life – are seen as the result of the interactions between human biology, lifestyle and environmental (including social) factors, modified by health and other interventions. Socioeconomic characteristics are key determinants of health and wellbeing, and contribute to differences in health or 'health inequality' across a population (AIHW 2008, Wilkinson & Marmot 2003).

There are many factors that can contribute to inequality – age, sex, ethnicity, gender, social and economic status, disability, geographical area, and so on. Although some dimensions of inequality are unavoidable (such as age), many other inequalities occur as a result of socioeconomic differences in material resources, access to educational opportunities, safe working conditions, effective services, living conditions in childhood, racism and discrimination. Most of these factors are modifiable or amenable to intervention, and may therefore be improved upon (Hetzel et al. 2004).

Because economic and social inequalities go hand in hand, their combined impact results in limited opportunities and life chances for many who are affected by them. Those with the highest socioeconomic status are those who have the most resources, opportunities and power to make choices, whereas those with the lowest status have the least of these. This forms a 'social gradient', with overall health and wellbeing tending to improve at each step up the socioeconomic ladder. Thus, people with a higher income generally enjoy better health and longer lives than people with a lower income (Marmot et al. 1984). The wealthiest in society tend to be healthier than those in the middle, who are, in turn, healthier than the poor.

The gradient is evident whether looking at differences in current socioeconomic status or those of family of origin. The effects seem to persist throughout life, from birth through adulthood and into older age. The effect tends to entrench differences in health and wellbeing across the population. However, although it is clear that poor living and working conditions impair health and shorten lives, the pathways through which these factors act and are related are complex and not yet fully understood (AIHW 2008).

Selected socioeconomic factors, Victoria, 2008



(a) Estimate is for 2006.

Sources: Australian Bureau of Statistics 2007, 2008a, 2008b, 2009, Victorian population health survey 2008.

In addition to health information, the *Victorian population health survey* collects information about socioeconomic status (DHS 2008). The results of the 2008 survey show that 17.7 per cent of households in Victoria do not have internet access. The results also show that more than one in ten (11.5 per cent) Victorian adults aged 18 years and over are vulnerable to financial stress and almost one in five (19.4 per cent) households have a gross income less than $30,000 per annum.

The Australian Bureau of Statistics (ABS) also collects information about socioeconomic status across a range of population surveys. The results of the ABS *Labour Force Survey*, which is a component of the *Monthly Population Survey*, show that 4.6 per cent of the Victorian labour force, aged 15 years and over, were unemployed in June 2008. The education and work component of the survey, which is conducted in May each year, shows that 29.2 per cent of adults, aged 15–64 years reported their level of highest educational attainment as Year 11 or below in 2008.

The results of the ABS *Household Income and Income Distribution Survey 2007–08* show that more than a quarter (27.2 per cent) of homes in Victoria were rented and the results of the *General Social Survey 2006* show that 3.3 per cent of Victorians aged 18 years and over experienced difficulties with transport in getting to their destinations in 2006.

References

Australian Bureau of Statistics (ABS) 2007a, *General social survey: summary results, Australia, 2006*, cat. no. 4159.0, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2008a, *Education and work Australia, May 2008*, cat. no. 6227, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2008b, *Labour force, Australia, June 2008*, cat. no. 6202, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2009, *Household income and income distribution, Australia, 2007-08*, cat. no. 6523, ABS, Canberra.

Australian Institute of Health and Welfare (AIHW) 2008, *Australia's health 2008*, cat. no. AUS 99, AIHW, Canberra.

Department of Human Services (DHS) 2008, *Victorian population health survey 2007: selected findings*, DHS, Melbourne.

Hetzel, D, Page, A, Glover, J & Tennant, S 2004, *Inequality in South Australia: key determinants of wellbeing (volume 1: the evidence)*, Department of Health, South Australia, Adelaide.

Marmot, MG, Shipley, MJ & Rose, G 1984, 'Inequalities in death – specific explanations of a general pattern', *The Lancet*, vol. 1, issue 8384, pp. 1003–1006.

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

Provenance

Socioeconomic factors are reported by the Australian Institute of Health and Welfare and the Australian Bureau of Statistics.

For more information

Australian Institute of Health and Welfare (AIHW) 2008, *Australia's health 2008*, cat. no. AUS 99, AIHW, Canberra: http://www.aihw.gov.au/publications/aus/ah08/ah08.pdf

Department of Health, Victorian population health survey: http://www.health.vic.gov.au/healthstatus/vphs.htm

Hetzel, D, Page, A, Glover, J & Tennant, S 2004, *Inequality in South Australia: key determinants of wellbeing (volume 1: the evidence)*, Department of Health, South Australia, Adelaide: www.publichealth.gov.au/publications/by-subject/social-and-health- inequality/inequality-in-south-australia---key-determinants-of-wellbeing_-volume-1%3a-the-evidence.html

Wilkinson, R & Marmot, M 2003, *Social determinants of health: the solid facts*, 2nd edition, World Health Organization, Geneva: http://www.euro.who.int/document/E81384.PDF

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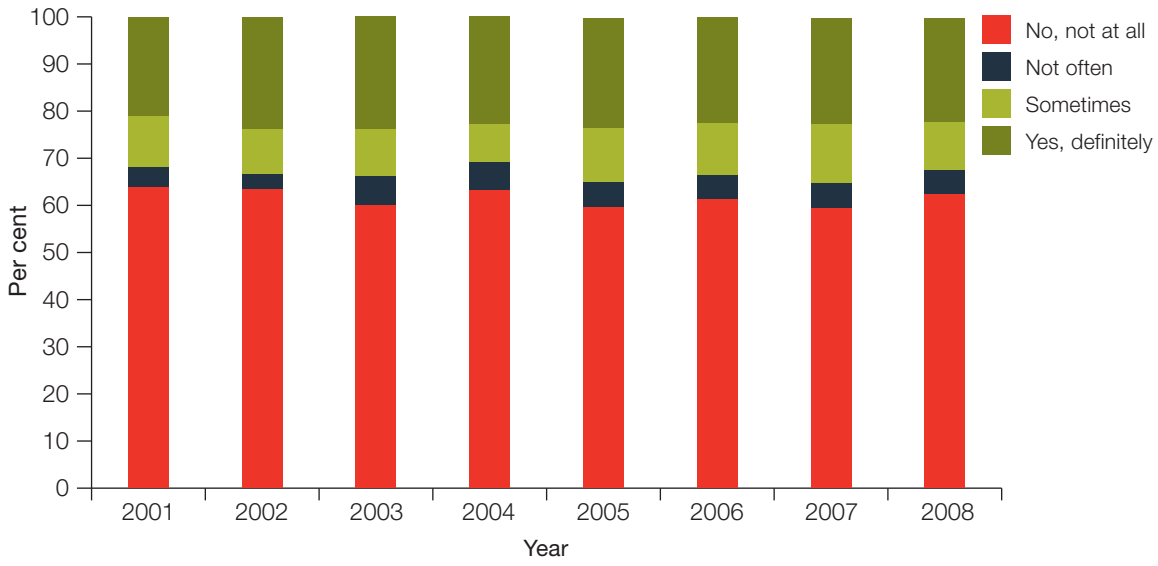
Volunteering

Description

The proportion of adults aged 18 years and over who help out a local group as a volunteer, over time.

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 influential to health as health risks such as tobacco smoking, physical inactivity, poor nutrition and high blood pressure (Wilkinson & Marmot 2003).

Proportion of adults aged 18 years and over who help out a local group as a volunteer, Victoria, 2001–2008



Data are age-standardised to the 2006 Victorian population.

Source: Victorian population health surveys 2001–2008.

The *Victorian population health survey 2008* measured the amount of voluntary effort undertaken by individuals in their local community. Almost a third (32.4 per cent) of adults aged 18 years and over reported that they 'sometimes' or 'yes, definitely' helped out a local group as a volunteer. The proportion of persons who reported volunteering to help out a local group did not change significantly between 2001 and 2008.

Reference

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

For more information

Department of Health, Victorian population health survey:
http://www.health.vic.gov.au/healthstatus/vphs.htm

Wilkinson, R & Marmot, M 2003, *Social determinants of health: the solid facts*, 2nd edition, World Health Organization, Geneva: http://www.euro.who.int/document/E81384.PDF

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Environmental factors

Environmental factors include physical, chemical and biological factors, such as air, water, food and soil quality. All of these factors influence the health of Victorians. The indicators presented in this section of the report include:

Air quality: There are two measures included in this indicator:

1. The number of days where the national standard for PM_{10} was not met in Melbourne, over time (the national standard for PM_{10} is a one-day average of 50 mg/m^3).
2. The number of days where the national standard for ozone was not met in Melbourne, over time (the national standard for ozone is to have no more than one day a year with 0.10 parts per million for a one-hour average or 0.08 parts per million for a four-hour average).

Water quality: The proportion of water sampling localities compliant with the *Escherichia coli* (E. coli) water quality standards, over time.

Cooling tower water quality (*Legionella*): The proportion of cooling tower water samples taken that test positive for *Legionella*.

Salmonellosis (non-typhoidal): The number of notified cases, expressed as a rate per 100,000 population, by age group, over time.

Air quality

Description

There are two measures included in this indicator:

1. The number of days where the national standard for PM_{10} was not met in Melbourne, over time (the national standard for PM_{10} is a one-day average of 50 mg/m^3).
2. The number of days where the national standard for ozone was not met in Melbourne, over time (the national standard for ozone is to have no more than one day a year with 0.10 parts per million for a one-hour average or 0.08 parts per million for a four-hour average).

Particles smaller than 10 micrometres (PM_{10}) (less than one-tenth the width of a human hair) can exacerbate existing respiratory and cardiovascular disease, and lead to increases in hospitalisations and premature mortality. The major sources of particulate matter in an urban environment are motor vehicles (particularly diesel powered), industry and wood combustion for heating. Days when the national standard are not met are highly dependent on weather conditions.

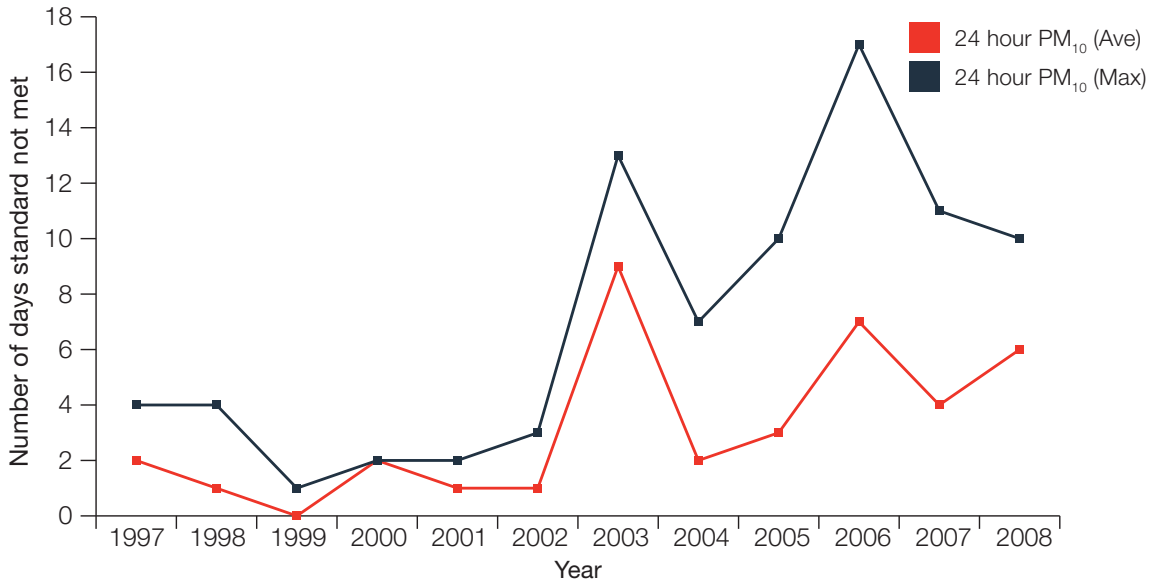
Ozone is a naturally occurring gas that is common in the lower atmosphere. Ozone is also a pollutant, as it is the main ingredient in summer smog. Exposure to high levels of ozone can result in increases in asthma attacks and hospitalisation for heart and lung conditions. In the lower atmosphere (the 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. Exceptional ozone events may occur if bushfire smoke is blown towards the city – several such events occurred in 2003 and 2006 – however, most ozone events are a result of pollution generated in the urban area.

Number of days where the PM10 standard was not met in Melbourne, by 24-hour average and maximum PM_{10} measures, 1997–2008

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
24-hour PM_{10} (Max)	4	4	1	2	2	3	13	7	10	17	11	10
24-hour PM_{10} (Ave)	2	1	0	2	1	1	9	2	3	7	4	6

Source: Environment Protection Authority Victoria.

Number of days where the PM10 standard was not met in Melbourne, by 24-hour average and maximum PM_{10} measures, 1997–2008



Source: Environment Protection Authority Victoria.

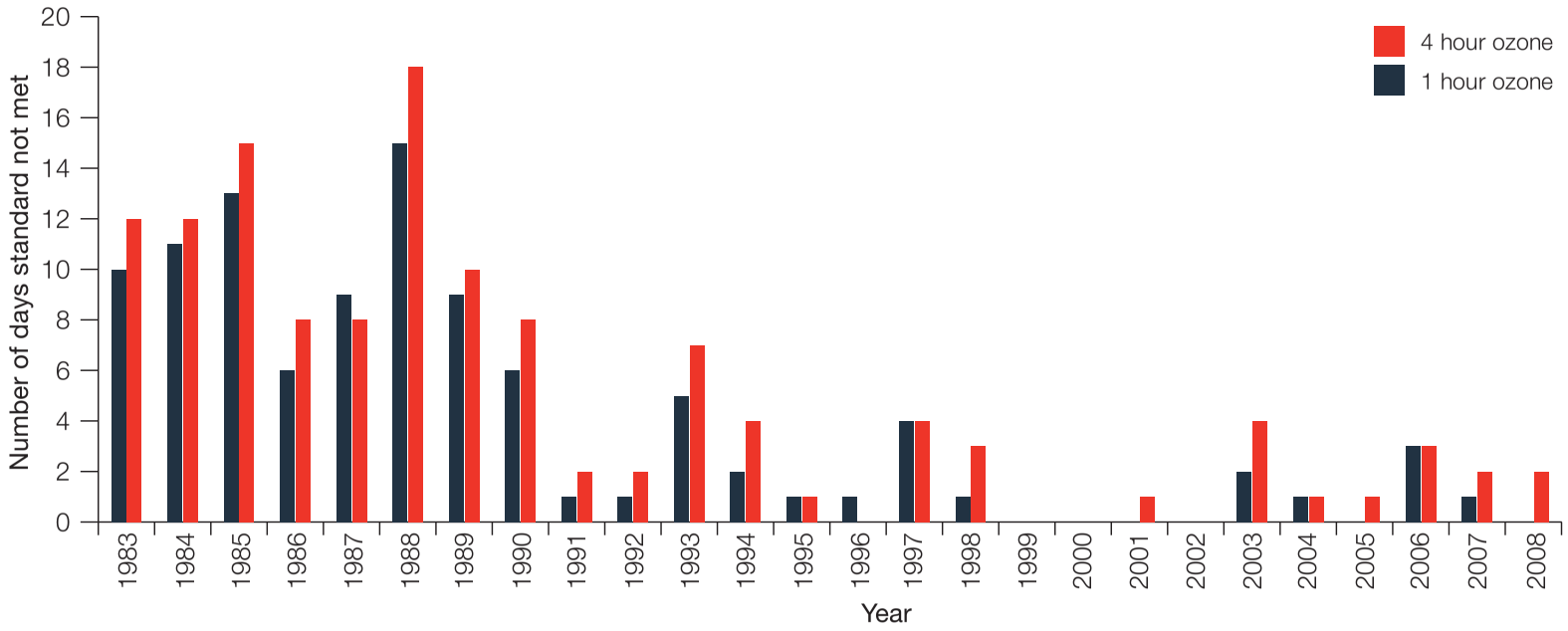
The national standard for PM_{10} is a one-day average of 50 mg/m^3. In recent years, Melbourne has been adversely impacted by drought-related impacts (particles from dust storms and bushfires). The spikes for both 2003 and 2006 can be attributed to bushfires.

The national standard for ozone is 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 standards are not met (as measured at each monitoring site).

In the early 1980s the ozone standards were frequently not met in Melbourne. Significant improvement has occurred since then. In recent years we typically see only one day every two years where the standards are not met. This is mainly due to progressive improvements in vehicle emission standards.

In 2007, at Melbourne's worst station, the one-hour ozone standard was met on all but one day and the four-hour ozone standard was met on all but two days. In 2008, at Melbourne's worst station, the one-hour ozone standard was met on all days and the four-hour ozone standard was met on all but two days.

Number of days where the ozone standard was not met in Melbourne (worst monitoring station), by one-hour and four-hour ozone measures, 1983–2008



	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1–hour ozone	10	11	13	6	9	15	9	6	1	1	5	2	1
4–hour ozone	12	12	15	8	8	18	10	8	2	2	7	4	1

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1–hour ozone	1	4	1	0	0	0	0	2	1	0	3	1	0
4–hour ozone	0	4	3	0	0	1	0	4	1	1	3	2	2

Source: Environment Protection Authority Victoria.

References

Environment Protection Authority (EPA) 2009a, *Victoria's air quality 2008, air monitoring data,* EPA, Melbourne.

Environment Protection Authority (EPA) 2009b, *Air monitoring report 2008 – compliance with the national environment protection (ambient air quality) measure*, EPA, Melbourne.

Concepts

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.

Provenance

The Environment Protection Authority measures ozone and the mass of airborne particles, including dust in the air, as part of its air monitoring program.

For more information

Environment Protection Authority Victoria: http://www.epa.vic.gov.au/

Environment Protection Authority (EPA) 2009, Victoria's air quality 2008, air monitoring data, EPA, Melbourne: http://www.epa.vic.gov.au/air/monitoring/docs/AQM-tables-2008.pdf

Environment Protection Authority (EPA) 2009, *Air monitoring report 2008 – compliance with the national environment protection (ambient air quality) measure*, EPA, Melbourne: http://www.epa.vic.gov.au/Air/Monitoring/monitoring_reports.asp

Ground-level ozone:
http://www.environment.gov.au/atmosphere/airquality/publications/ozone.html

Particulate matter:
http://www.environment.gov.au/atmosphere/airquality/publications/particles.html

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Water quality

Description

The proportion of water sampling localities compliant with the *Escherichia coli* (E. coli) water quality standards, over time.

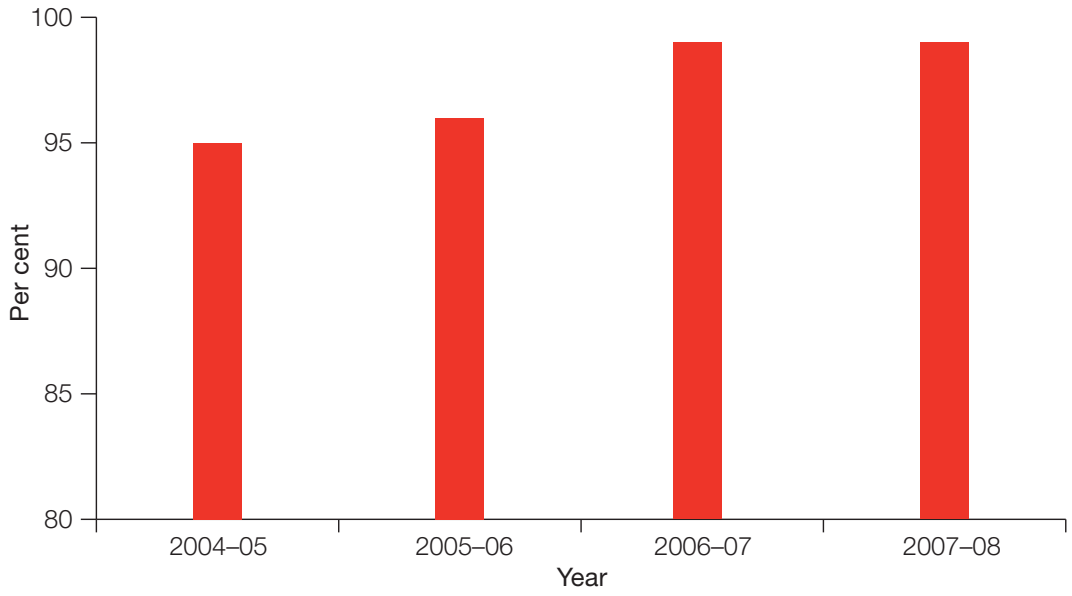
Escherichia coli (E. coli) is a bacterium that can occur in water supplies as a result of recent faecal contamination from humans or animals. Detecting E. coli in treated drinking water supplies can indicate that the water disinfection process is inadequate or has failed.

The quality of drinking water in Victoria is regulated by the *Safe Drinking Water Act 2003*. Regulations under the Act set a water quality standard for E. coli, which requires that at least 98 per cent of all drinking water samples collected over any 12-month period contain no E. coli per 100 ml of drinking water.

Under the Act, state water suppliers collect and report on this indicator on a monthly basis to the Environmental Health Unit of the Department of Health. Reporting is based on what is known as water sampling locality. A water sampling locality is defined as an area of similar water quality. This is usually based on the area receiving drinking water from a single source, or water undergoing the same treatment process.

In rural Victoria, localities usually equate to townships. In large regional centres and metropolitan Melbourne, localities are more likely to be based on the configuration for water distribution. There were 484 water sampling localities across Victoria in 2007–08.

Proportion of water sampling localities compliant with *Escherichia coli* (E. coli) water quality standards, Victoria, 2004–05 to 2007–08



Source: Department of Health, Environmental Health Unit.

During 2007–08, there were 480 localities (99.2 per cent) that complied with the E. coli water quality standard. There has been a gradual improvement in compliance over the last four years.

For more information

Environmental Health: http://www.health.vic.gov.au/environment/water/drinking.htm

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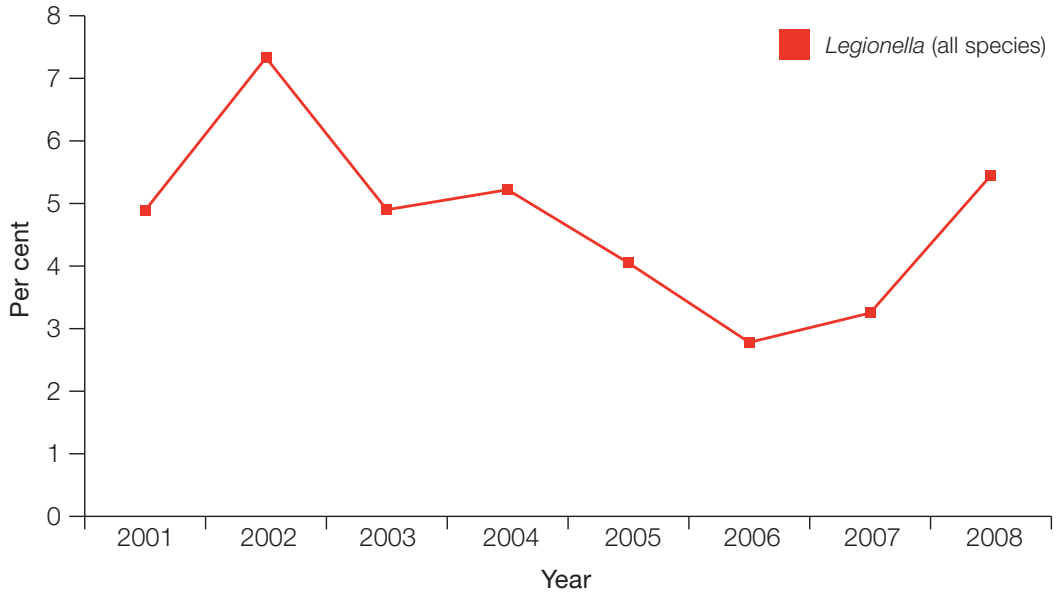
Cooling tower water quality (*Legionella*)

Description

The proportion of cooling tower water samples taken that test positive for *Legionella*.

The proportion of cooling tower water samples taken by the department that test positive for legionella is an exposure-based indicator which is used to gauge the success of the *Legionella* Reform Strategy (2000). The strategy has been progressively implemented since 1 March 2001. Under the strategy, the department 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 Health 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. *The Health (Legionella) Regulations 2001* require remedial action to be conducted to a cooling tower system if Legionellosis is detected.

Proportion of samples from cooling tower systems in which *Legionella* was detected, 2001–2008



Source: Department of Health, Cooling Tower Register Inspection Module.

Until recently, each phase of the implementation of the strategy has seen a marked reduction in the number of cooling tower water samples that, on testing, were shown to be positive for *Legionella*.

While the trend has generally been downward since the new legislation was introduced, some fluctuations do occur on an annual basis.

Reference

Department of Human Services (DHS) 2000, *Legionella reform strategy*, DHS, Melbourne.

Limitations

During the first phase of the implementation of the strategy, the samples from cooling tower systems were collected on a fairly random basis. Over the last few years, the inspection and sampling program has focussed on those cooling tower systems that have been identified as a higher potential risk.

There is no other similar data set in other jurisdictions available with which these data can be compared.

Samples of water are collected from cooling tower systems by officers in the *Legionella* team in the Environmental Health Unit of the Department of Health and sent to the Melbourne Diagnostic Unit (MDU) for testing. The test results are entered into the Cooling Tower Register Inspection Module (CTRIM).

For more information

Environmental Health – *Legionella*: www.health.vic.gov.au/environment/legionella

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Salmonellosis (non-typhoidal)

Description

The number of notified cases, expressed as a rate per 100,000 population, by age group, over time.

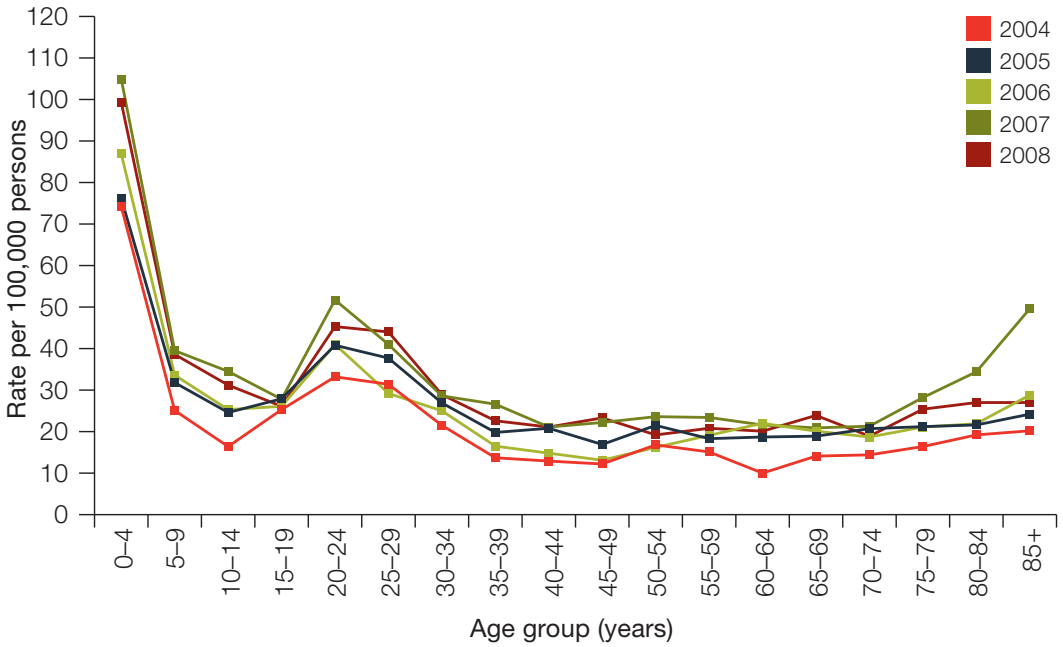
Salmonellosis is an acute bacterial disease which most commonly presents as acute gastroenteritis with a sudden onset of headache, abdominal pain, diarrhoea, nausea and vomiting. Dehydration may occur, especially among infants and the elderly. Infection may also present as septicaemia and may occasionally be localised in other body tissues resulting in endocarditis, pneumonia, septic arthritis, cholecystitis and abscesses. Deaths are uncommon, except in the very young, the very old, the debilitated and the immunosuppressed. However, morbidity and the associated costs of salmonellosis may be high.

Transmission is via the faecal-oral route and most commonly through ingestion of the organism in food derived from infected animals or food contaminated by faeces of infected animals or humans. Person-to-person and animal-to-person faecal-oral transmission also occurs.

Salmonellosis occurs as outbreaks and sporadic cases. In Victoria, the incidence and the number of outbreaks is highest in summer and early autumn, although cases and outbreaks can occur at any time throughout the year. There are over 2,000 serotypes of *Salmonella*, with Typhimurium causing the majority of infections in Victoria.

In order to prevent infection, it is important to thoroughly cook all food derived from animal sources, particularly poultry, pork, egg products and meat dishes, and to avoid recontamination from raw food after cooking.

Notification rate of laboratory confirmed salmonellosis, by age group, Victoria, 2004–2008



Source: Department of Health, Communicable Disease Prevention and Control.

Notified cases, notification rate and foodborne outbreaks of salmonellosis, Victoria, 2000–2008

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Cases	1005	1089	1208	1263	1131	1421	1390	1809	1689
Rate per 100,000 population	21.2	22.7	24.9	25.7	22.8	28.3	27.3	34.8	32.5
Foodborne Outbreaks	6	5	7	4	8	7	8	15	11

Source: Department of Health, Communicable Disease Prevention and Control.

Outbreaks of salmonellosis by food source, Victoria, 2004–2008

Food Type	2004	2005	2006	2007	2008
Eggs	2	4	3	8	6
Chicken	1	0	0	0	0
Sandwiches	1	0	0	0	0
BBQ food	0	1	0	0	1
Dips	0	1	0	0	0
Pork	0	1	2	0	1
Sprouts	0	0	1	0	0
Rockmelon	0	0	1	0	0
Pork Rolls	0	0	0	1	0
Water	0	0	0	1	0
Vitamised food	0	0	0	0	1
Unknown	4	0	1	5	2
Total	**8**	**7**	**8**	**15**	**11**

Source: Department of Health, Communicable Disease Prevention and Control.

The number of notified cases and the notification rate have increased in Victoria over the last nine years. Notification rates of salmonellosis have been consistently high in the 0–4 year age group, with secondary peaks occurring in the 20–24 and 25–29 year age groups. Outbreaks of salmonellosis have also increased in the last two years, with eggs (predominantly raw eggs in ready-to-eat foods) identified as the source for 62 per cent of the outbreaks notified between 2004–2008, where a food source was able to be identified.

References

Department of Human Services (DHS) 2005, *The blue book: guidelines for the control of infectious diseases*, DHS, Melbourne.

Heyman, DL 2004, *Control of communicable diseases manual, report of the American public health association*, American Public Health Association, Washington DC.

Limitations

Notified cases of laboratory confirmed salmonellosis under-represent the true incidence of salmonellosis in the community. This is because most cases do not present to a doctor and no faecal specimen is collected. Cases notified to the Department of Health are biased towards those that are more likely to seek medical attention and have a faecal specimen collected, which includes those with more severe symptoms, cases that have a longer duration of symptoms and cases in young children. Outbreaks which account for a large number of cases (>100 cases), such as those that occurred in 2003 and 2005, are included in the annual case numbers. Many of these cases were detected through enhanced case finding rather than through passive surveillance.

For more information

Communicable Diseases Intelligence: http://www.health.gov.au/cdi

Department of Human Services (DHS) 2005, *The blue book: guidelines for the control of infectious diseases*, DHS, Melbourne: http://www.health.vic.gov.au/ideas/bluebook

Infectious Diseases Epidemiology and Surveillance:
http://www.health.vic.gov.au/ideas/surveillance

OzFoodNet: http://www.ozfoodnet.org.au/

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Appendix

Technical Notes

Indicator selection

Indicators were selected under each dimension and domain following consideration of their level of sensitivity and specificity, the availability of relevant reporting data, and their consistency with national and/or international best practice.

The indicators presented in this report will be reviewed and modified or replaced, as appropriate, prior to the development of the next edition of *Your Health: The Chief Health Officer's report.*

Statistical terminology

Crude rates

A crude rate is an estimate of a proportion of a population that experiences a specific event over a specified period. It is calculated by dividing the number of events recorded for a given period by the number at risk of the event in the population. Crude rates have been presented wherever rates have been broken down by age group (age-specific rates).

Age-standardisation

The age-standardised, or age-adjusted rates that are presented in this report have been adjusted based on the direct method of standardisation. This method adjusts for effects of differences in the age composition of different populations (for example, between geographical areas) and allows for comparison between these populations. The direct age-standardised rates presented are based upon the weighted sum of age-specific (for example, a five-year age group) rates in the population. The weights that have been used in the calculation of rates (the standard population) are referenced in the notes to tables and graphs throughout the report.

Standard error

The standard error is a measure of the variation in an estimate, produced by sampling a population. The standard error can be used to calculate confidence intervals and relative standard errors, providing the likely range of the true value of an estimate and an indication of the reliability of an estimate.

Relative standard error (RSE)

A relative standard error (RSE) provides an indication of the reliability of an estimate. Rates with RSEs less than 25 per cent are generally regarded as 'reliable' for general use. The rates presented in tables and graphs in this report have RSEs less than 25 per cent, unless otherwise stated. Rates that have an RSE between 25 to 50 per cent have been marked with an asterisk (*) and should be interpreted with caution. For the purposes of this report, rates with RSEs over 50 per cent were not considered reliable estimates and have not been presented. A double asterisk (**) has been included in tables where the rate would otherwise appear, indicating that the relevant RSE was greater than 50 per cent.

Relative Standard Error (%) = Standard error/Point estimate × 100

Confidence intervals (95% CI)

A confidence interval is a computed interval with a given probability (for example, 95%) that the true value of an estimate, such as a rate, is contained within the interval. Therefore, the confidence interval in this case is the likely range of the true value for the rate. Throughout the report, 95 per cent (%) confidence intervals have been included in tables and graphs.

95% confidence interval = point estimate ± standard error × 1.96

Statistical significance

Statistical significance provides an indication of how likely a result is due to chance. Significant differences between rates are deemed to exist where confidence intervals for rates do not overlap.

In some sections of the report, ordinary least squares linear regression (OLSR) models were used to test statistical significance. If the 95 per cent confidence interval for the regression coefficient did not include the value 0, the trends were considered to be statistically significant. Tables and graphs depicting time trends include notes about OLSR, where relevant.

Throughout the report, the term 'significance' is used to denote statistical significance. It is not used to describe clinical significance, the relative importance of a particular finding, or the actual magnitude of difference between two estimates.

Legislation

The report of the Chief Health Officer has been developed as required under Section 21(c) of the *Public Health and Wellbeing Act 2008*, which came into effect on 1 January 2010:

21 Functions and powers of the Chief Health Officer

> *The functions and powers of the Chief Health Officer are—*
>
> *…*
>
> *(c) to publish on a biennial basis and make available in an accessible manner to members of the public a comprehensive report on public health and wellbeing in Victoria;*
>
> *…*