Department of Health

health

Your health:

The Chief Health Officer's report 2012

State Government Victoria

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Foreword

This is the fourth 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 June 2012.

Overall, the report shows that Victorians generally enjoy good health compared with other Australians; however, it also reveals health issues and differentials in the health outcomes of specific areas and population groups within the state.

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, and will assist the partnerships in government that are needed to deal with these challenges.

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 contributed time, expertise and data for this report.

Dr Rosemary Lester
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 fourth report in the Your Health series and covers the two-year period to June 2012. It has been structured using the *National health performance framework 2009* and provides an overview of the health of Victorians, in particular their health status and the factors that determine their 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 (83.6 per cent rate their health as good/very good/excellent) and feel valued by society, with almost two-thirds (64.4 per cent) reporting low levels of psychological distress.
- Aboriginal Victorians were less likely to rate their health as excellent or good, and were significantly more likely to have experienced high or very high psychological distress levels compared with their non-Aboriginal counterparts.
- The incidence of cancer has increased over the previous two decades. In 2010 there were 28,632 new cases of cancer in Victoria. The five most common cancers in Victoria, prostate, bowel, breast, lung and melanoma, account for almost 60 per cent of all new cancers.
- Survey data show that more than one in five (23.3 per cent) Victorians aged 65 years or over and more than one in ten (11.9 per cent) Victorians aged 55–64 years have been told by a doctor that they have heart disease.
- Survey data also show that the prevalence of type 2 diabetes is higher in adult males aged 18 years or over (5.6 per cent) than females (4.1 per cent).
- Survey data show that 7.8 per cent of adult Victorians, aged 65 years or over, have had a stroke.
- Dental survey data show that 12 per cent of dentate Victorian adults had inadequate natural dentition (fewer than 21 teeth), which increased with increasing age. In the past five years, in children aged 0–4 years in rural areas, admissions to hospital for dental conditions have decreased.
- In 2010–11, 68,260 Victorians were admitted to hospital as a result of injury and poisoning.
- In 2010–11, there were 3,539 hospital admissions, in people aged 75 years or over, for unintentional injury-related hip fracture. Females accounted for almost three quarters (74.0 per cent) of these admissions.
- Babies born to Aboriginal mothers in 2007 and 2008 were around twice as likely, as babies born to non-Aboriginal mothers, to have low birth weight (< 2,500 grams) (13.8 per cent and 6.5 per cent respectively), or very low birth weight (< 1,500 grams) (2.5 per cent and 1.3 per cent respectively).
- In 2007 there were 3,816 babies born with birth defects, including those identified as terminations of pregnancy before 20 weeks' gestation for a birth defect. The overall birth defect prevalence rate was 5.2 per cent.
- Male and female life expectancy at birth continues to progressively increase for Victorians over time, from 78.1 years in 1979 to 84.4 years in 2007 for females and from 71.0 years in 1979 to 80.3 years in 2007 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 4.1 years in 2007.
- The Victorian perinatal mortality rate has remained relatively steady in recent years, at about 10 deaths per 1,000 live births.

- Between the five year periods 1997–2001 and 2002–2006 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 2002–2006. However, suicide was third for males and breast cancer was the top cause for females during this five-year period.
- In 2010, 523 people died in Victoria due to intentional self-harm injury (suicide), a death rate of 9.4 per 100,000 persons.
- Overall, five-year survival for Victorians with cancer has increased from 47 per cent to 65 per cent in the period from 1986–1990 to 2006–2010. The cancers with the highest five-year survival rates were testis, thyroid, prostate, melanoma, breast and Hodgkin lymphoma.

Determinants of health

- Lifestyle behaviours, such as smoking, poor diet, alcohol misuse and low levels of physical activity contribute significantly to the burden of disease in Victoria, yet they are largely modifiable, providing considerable scope for health gain over the long term.
- Survey data show favourable trends for many of these behaviours. Tobacco use is associated with the greatest disease burden in Victoria and smoking rates have decreased significantly for both males and females over time. However, in 2008, a significantly higher proportion of Aboriginal Victorians smoked, compared with non-Aboriginal Victorians.
- More than half of all adult Victorians (61.2 per cent of males and 57.1 per cent of females) performed a minimum of 30 minutes of moderate-intensity physical activity on at least five days each week. Data from the 2008 Victorian Population Health Survey showed that there was no significant difference in the proportion of Aboriginal and non-Aboriginal Victorians who did, or did not, engage in sufficient physical activity to meet the Australian guidelines.
- Survey data show that 6.2 per cent of males and females were sedentary (did no physical activity) in 2010.
- Survey results show that 33.2 per cent of Victorians aged 18 years or over were overweight and 16.9 per cent were obese in 2010. Data from the 2008 Victorian Population Health Survey showed that there were no statistically significant differences between Aboriginal and non-Aboriginal Victorians in body weight status.
- Survey data show that approximately 3.0 per cent of males and females aged 18 years or over reported consuming alcohol at levels that were 'risky' or 'high risk'. The majority of Victorian males (81.0 per cent) and females (73.3 per cent) were at low risk of long-term harm from alcohol consumption in 2010. More than one in seven males (13.2 per cent) and 6.5 per cent of females reported consuming alcohol at least weekly, at levels that put them at short-term risk of alcohol-related harm.
- Survey data show that more than half (51.4 per cent) of Victorian males and 41.6 per cent of females reported consuming insufficient serves of fruit and vegetables according to the national dietary guidelines in 2010. In 2008, a greater proportion of Aboriginal Victorians (62.7 per cent) did not meet the recommended guidelines for fruit consumption, compared with their non-Aboriginal counterparts (51.0 per cent).
- Survey data from 2010 also show that in people aged 45 years or over, a higher proportion of males than females reported that they had had a blood cholesterol test in the previous two years (82.5 per cent and 78.3 per cent respectively). However, females (83.5 per cent) were more likely than males (77.3 per cent) to have their blood pressure checked.

- During the two-year period 2009–2010, 54.2 percent of eligible Victorian women participated in the BreastScreen Victoria Program.
- The estimated two-year (2009–2010) cervical cancer screening participation rate for women in the target population of 20–69 years was 60.7 per cent. Participation varied by age group, with women aged 50–59 years having the highest two-year screening rate and women aged 20–29 years having the lowest rate.
- The uptake of newborn screening in Victoria is extremely high. In 2011–12, 75,510 newborns were tested and 76 were identified as having one of the conditions screened for as part of the Newborn Screening Program.
- The proportion of children aged between 60 and less than 63 months who received all scheduled vaccinations in Victoria was 91.4 per cent, the highest among all jurisdictions in Australia at 31 March 2012.
- Chlamydia has been the most frequently notified infectious disease since it became notifiable in 1990. The population rate of reported cases has more than tripled among both males and females in the past decade.
- In 2010, bowel (colon and rectum) cancer was the second most common new cancer in Victorians with 3,699 cases (13.0 per cent of all cancers). Overall, 38.9 per cent of eligible Victorians participated in Phase 2 (July 2008–June 2011) of the National Bowel Cancer Screening Program.
- In 2010, there were an estimated 5.5 million people usually resident in Victoria. Just under half (49.6 per cent) were males and 50.4 per cent were females. Children (aged 0–14 years) comprised 18.3 per cent of the population and 13.7 per cent were aged 65 years or over.
- Survey results show that over a quarter of homes in Victoria were rented, about one in 10 (10.5 per cent) households had a gross annual income less than or equal to $20,000 and 5.3 per cent of the labour force was unemployed in 2011.
- In 2010, survey results showed that almost eight in 10 people reported that they could definitely get help from family or friends if needed and more than one-fifth reported that they had volunteered their time in a local community group.
- Melbourne typically meets the national goal for air quality, measured in terms of airborne particles as PM10, but may be affected by drought-related impacts such as particles from dust storms and smoke from bushfires. For 2010 and 2011, the goal of no more than five days a year above the national 24-hour objective value (average PM10 below 50µg/m3) was met.
- All Victorian weather monitoring stations operating in 2010 and 2011 met the goals for the one and four-hour ozone objectives.
- The quality of reticulated drinking water supplies in Victoria is generally very good. In 2009–10, 100 per cent of the population were supplied with drinking water that complied with the E. coli water quality standard.
- The number of detections of Legionella in cooling tower water samples, in the period 2003–2011, was consistently low. There was a steady decrease in the number of cooling towers operating in Victoria over this time.
- The number of notified cases and the notification rate of salmonellosis have increased in Victoria over the past twelve years. Outbreaks of salmonellosis have also increased in the past five years. Eggs, predominantly ready-to-eat foods containing raw eggs, have been identified as the source for 71 per cent of the outbreaks notified between 2007 and 2011.

Introduction

Keeping Victorians as well as they can be is important for individuals, families and the community. It is also crucial for a healthy, productive workforce and a strong economy.

This is the fourth report in the *Your health* series, covering the two-year period to June 2012. It has been prepared to meet the requirements of 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 to reflect the National Health Performance Framework, which incorporates indicators across a wide range of health dimensions (AIHW 2012a).

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 investments 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 diseases.

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 2009 framework encompasses the domains of 'health status' and 'determinants of health', as well as a third domain of 'health system interventions' that influence health status and determinants of health, both for individuals and at the population level (AIHW 2012b). This report focuses on the domains of health status and determinants of health only, and uses this abbreviated framework as the basis for its structure. It was selected as an appropriate structure because it provides a comprehensive overview of health for reporting purposes.[1]

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 the wellbeing of Victorians. The indicators provide an overall measure of population health, which may be 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.

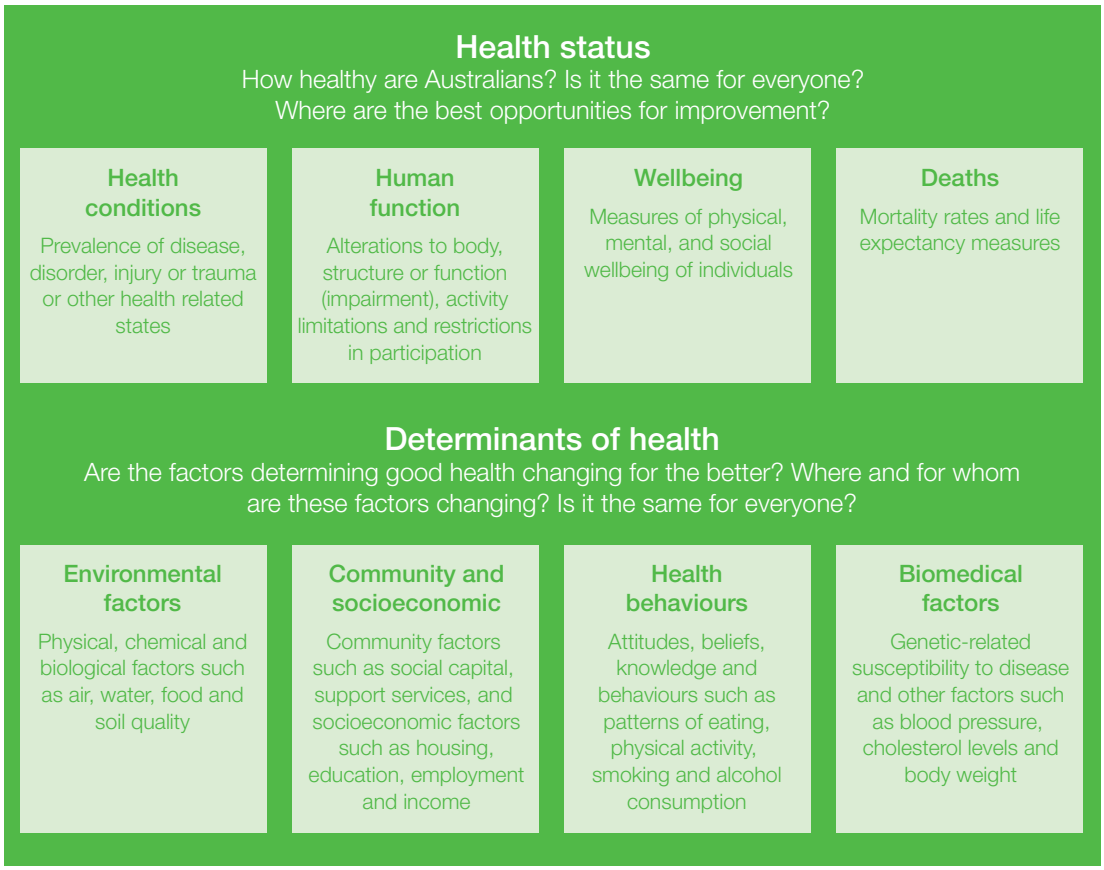
1. Recent health reform has resulted in a strengthening of activity to assess the performance of Australian health systems. The National Health Performance Authority was established in 2011 as part of the Council of Australian Governments (COAG) National Health Reform Agreement, together with the Performance and Accountability Framework (PAF), to measure health system performance. The PAF facilitates reporting across three domains relating to the equity, effectiveness and efficiency of service delivery in health care. The focus of the PAF is the measurement of health system performance at the local and organisational level, across hospitals and primary health care services. This differs from the 2009 National Health Performance Framework, which has been ultimately designed to measure the health status of the population (NHPA 2012).

Determinants of health

The determinants of health impact 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 status. They can be behavioural, biomedical, socioeconomic or environmental. Determinants of health can impact late in the causal pathway (such as tobacco smoking), or further upstream via a number of intermediaries (such as socioeconomic status and environmental factors). 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. **Biomedical 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:** Includes 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



Source: Adapted from AIHW 2012b.

Data considerations

The data presented have been obtained from a variety of sources, including published sources and administrative databases. 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. The technical notes also indicate where indicators have been improved from previous reports.

For the first time in the revised *Your Health* format, some indicators include data on the health and wellbeing of Aboriginal Victorians. These are largely sourced from the Department of Health's report *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008* supplementary report. In accordance with this report, the term Aboriginal is taken to include both Aboriginal and Torres Strait Islander people.

In all cases, the data cited is the most recent available at the time of data extraction for indicator development (up to June 2012). Where the required data for the reporting period are not yet available, 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, 2010) or for a financial year (for example, 2009–10) or for a specific period (for example, 2008–09 to 2009–10, which covers two financial years or 2009–2010 which covers a two-year period). In many cases, 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 in Victoria

Preventing illness and improving health and wellbeing is a major challenge requiring specific action and a collective effort. To achieve sustained reductions in the growth of preventable chronic diseases and to create lasting improvements in the health and wellbeing of people and communities, requires a prevention system that is coordinated, responsive, sustainable, and that complements our healthcare system.

Victorian Health Priorities Framework 2012–2022

In May 2011 the Victorian Government released the *Victorian Health Priorities Framework (VHPF) 2012–2022* (Department of Health 2012a), which provides the blueprint for planning and development priorities for the Victorian healthcare system for the coming decade. The framework provides the foundation for the Metropolitan Health Plan, the Rural and Regional Health Plan and the Health Capital and Resources Plan. These will drive the development of key actions that will deliver health services that are more responsive to community needs.

Victorian Public Health and Wellbeing Plan 2011–2015

The first *Victorian Public Health and Wellbeing Plan 2011–2015* (Department of Health 2012b) was developed as a requirement of the *Public Health and Wellbeing Act 2008*, to identify public health priorities for the state, every four years. The Plan contributes to the aims, objectives and outcomes of the VHPF by detailing approaches to achieving outcomes specified in the VHPF including approaches to improve health literacy, community engagement and development and through the identification of population groups that are vulnerable to poor health.

Part I of the plan identifies the health and wellbeing needs of the people of the state and includes an examination of data relating to health status and health determinants within the state. Part II establishes objectives and policy priorities for the promotion, protection and delivery of public health in Victoria, and identifies how partners within the state can work together to achieve these objectives based on the available evidence. Part III considers the need for monitoring and review of progress, and emphasises the importance of translation of evidence and program reporting in the achievement of public health objectives.

Underpinning the *Victorian Public Health and Wellbeing Plan 2011-2015* are three core domains of public health intervention; actions to protect health, actions to improve health and actions to strengthen preventive healthcare.

Protecting health

Protection of the health of Victorians is achieved through a reduction in incidence of disease resulting from, or associated with, communicable disease, food, water or the environment. These activities include daily surveillance of notifications of communicable disease, monitoring, detecting and investigating particular notifiable diseases and management of associated outbreaks, together with the assessment and management of the health effects of environmental hazards. Immunisation, food safety and emergency response are also important activities in this area.

Improving health

The improvement of the health of Victorians involves activities to promote healthy eating, physical activity, sexual and reproductive health, oral health and mental health. Initiatives are also directed to target alcohol and other drug use, tobacco control, skin cancer and to prevent injuries.

Recognising the importance of influencing the social, environmental, and behavioural factors that determine health, Victoria is participating in the National Partnership Agreement on Preventive Health (NPAPH), announced by the COAG on 29 November 2008. The NPAPH seeks to address the rising prevalence of lifestyle-related chronic disease by laying the foundations for healthy behaviours in the daily lives of Australians through settings such as communities, early childhood education and care environments, schools and workplaces.

This federal initiative will deliver both state-wide and targeted community level investments in chronic disease prevention. In Victoria, a comprehensive approach to chronic disease prevention will be delivered in 14 local government areas through the initiative entitled Healthy Together Victoria (Department of Health 2012c). The initiative is using local partnerships and a skilled health promotion workforce to encourage healthy eating and physical activity, and to reduce smoking and harmful alcohol use.

Strengthening preventive healthcare

A critical component of strong prevention efforts are coordinated policies and programs across government departments, levels of government, non-government organisations and the private sector. Victoria is at the forefront of reform in prevention and early detection. It has invested in a range of prevention initiatives including cancer screening and newborn screening.

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Health status

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 and 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
- Mental health
- Child abuse and neglect
- Feeling valued by society

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

- Cancer incidence
- Breast cancer incidence
- Lung cancer incidence
- Bowel cancer incidence
- Prevalence of heart disease
- Prevalence of diabetes
- Oral health status
- 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 hospital admissions (people aged 75 years or 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 (suicides)
- 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 or over with excellent, very good, good, fair or poor health, by age group.

Mental health: There are two measures included in this indicator:

1. *Psychological distress*: The proportion of adults aged 18 years or 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.
2. *Depression*: The proportion of adults who have ever been diagnosed by a doctor with depression in their lifetime, by sex and age group.

Child abuse and neglect: The number of children aged 0–17 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 or over who felt/did not feel valued by society.

Self-reported health

Description

The proportion of adults aged 18 years or 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 healthcare use and mortality, independent of other medical, behavioural or psychosocial risk factors (Burstrom & Fredlund 2001; DeSalvo et al. 2005; Idler & Benyami 1997; Miilunpalo et al. 1997).

Self-reported health status, by year, Victoria, 2001–2010

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Excellent/very good/good											
%		81.9	82.5	84.6	83.1	82.2	84.3	83.6	81.5	80.7	83.6
95% CI	LL	80.7	81.3	83.5	81.9	81.0	83.2	82.4	80.8	79.5	82.4
	UL	83.0	83.7	85.7	84.2	83.4	85.4	84.7	82.1	81.9	84.7
Fair/poor											
%		18.1	17.5	15.4	16.8	17.6	15.5	16.2	18.3	18.8	16.7
95% CI	LL	17.0	16.3	14.3	15.7	16.5	14.4	15.1	17.7	17.7	15.5
	UL	19.3	18.7	16.5	18.0	18.9	16.6	17.4	19.0	20.0	17.9

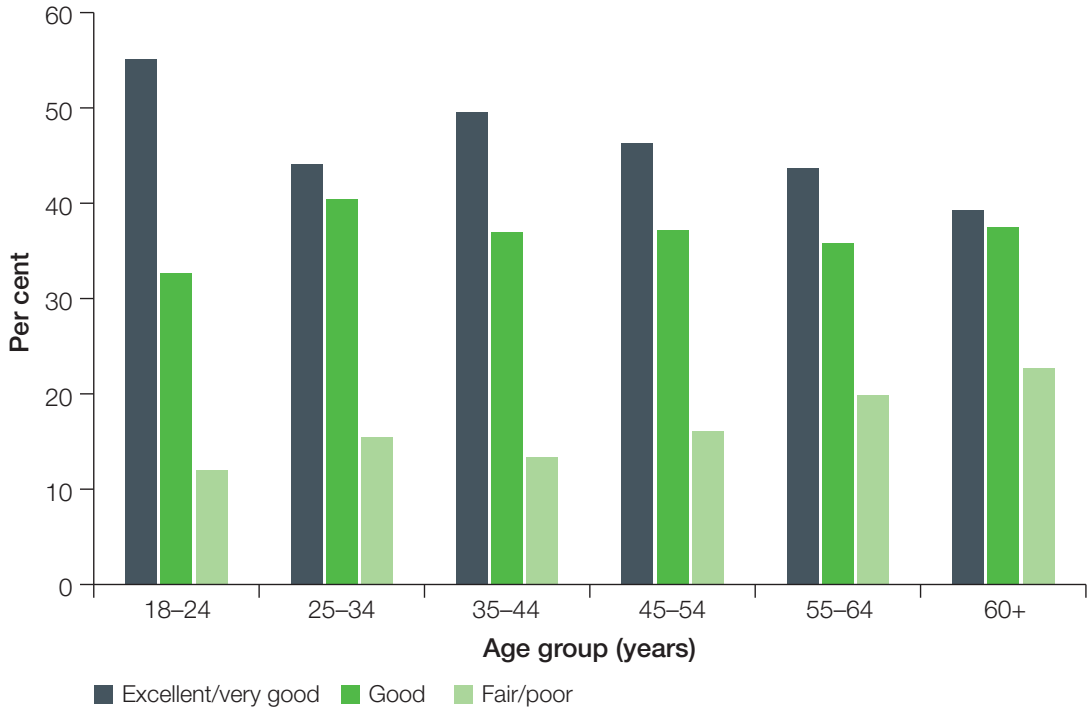
LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Note that figures may not add up 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 Surveys 2001–2010*.

Self-reported health status, by age group, Victoria, 2010



Note that figures may not add up 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 Surveys 2001–2010.

Self-reported health status by Aboriginal status, Victoria, 2008

	Aboriginal			Non-Aboriginal		
		95% CI			95% CI	
	%	LL	UL	%	LL	UL
Excellent/very good	31.3	24.6	38.8	44.0	43.2	44.9
Good	40.7	32.9	48.9	37.7	36.8	38.5
Fair/poor	27.9	21.0	36.1	18.1	17.4	18.8

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Data are age-standardised to the 2006 Victorian population.

Source: *Victorian Population Health Survey 2008 supplementary report*

In 2010, the proportion of people who reported their health as excellent, very good or good was 83.6 per cent (95% CI: 82.4–84.7). The proportion of people who reported their health as fair or poor was 16.7 per cent (95% CI: 15.5–17.9) in 2010. There were no differences in self-reported health status between males and females.

The proportion of people reporting excellent, very good or good health, and fair or poor health did not vary significantly over time between 2001 and 2010.

The 2008 Victorian Population Health Survey reported that Aboriginal Victorians were significantly more likely to rate their overall health as being fair or poor and less likely to rate their health as excellent or very good compared with non-Aboriginal Victorians (Department of Health 2011).

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Concepts

Self-reported health: Respondents were asked to summarise their perceptions of their health status by indicating whether, in general, they would say their health was excellent, very good, good, fair or poor.

Aboriginal status: In accordance with *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report* the term Aboriginal is taken to include both Aboriginal and Torres Strait Islander people.

Provenance

Self-reported health is included as an indicator in the Australian Bureau of Statistics *General Social Survey*.

For more information

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

Australian Bureau of Statistics General Social Survey:
http://www.abs.gov.au/ausstats/abs@.nsf/mf/4159.0

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Mental health

Description

There are two measures included in this indicator:

1. Psychological distress: The proportion of adults aged 18 years or 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.
2. Depression: The proportion of adults who have ever been diagnosed by a doctor with depression in their lifetime, by sex and age group.

Good mental health is fundamental to the wellbeing of individuals, their families and the wider community. Findings from the *National Survey of Mental Health and Wellbeing 2007* (ABS 2008) showed that anxiety-related problems and mood (affective) problems were the most commonly reported mental health and behavioural problems. Australia-wide, these problems were self-reported by one in five Australians aged 16–85 years (ABS 2008).

Psychological distress has a major effect on people's ability to work, study and manage their everyday activities. There is strong and consistent evidence of an association between depression and anxiety and physical illness in each of the national health priority area disease groups (Clark & Currie 2009). Depression is also associated with poorer health outcomes in those with physical diseases.

The Kessler 10 scale (K10) is a tool designed to assess non-specific psychological distress. The K10 cannot be used to determine the presence of major illnesses, but it has been validated as a simple indicator of anxiety, depression and worry at a population level (Kessler, Andrews, Colpe et al. 2002). The K10 is a set of 10 questions about psychological distress, including the level of nervousness, hopelessness, restlessness, sadness and worthlessness, experienced in the four-week period prior to the interview. 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, Victoria, 2010

Age group (years)	Low (10–15)			Moderate (16–21)			High (22–29)			Very high (30–50)		
		95% CI			95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL	%	LL	UL
Males												
18–24	60.5	50.3	69.8	29.8	21.5	39.8	9.4*	4.8	17.4	**		
25–34	68.8	61.6	75.2	20.2	15.0	26.7	7.4*	4.2	12.6	1.9*	0.7	4.9
35–44	70.3	65.2	74.9	19.2	15.4	23.7	6.9	4.6	10.3	**		
45–54	67.8	63.4	72.0	19.1	15.8	23.0	7.5	5.5	10.3	1.6*	0.8	3.2
55–64	75.3	71.0	79.2	14.2	11.2	18.0	4.1	2.6	6.2	2.9*	1.6	5.1
65+	70.7	66.7	74.4	15.1	12.4	18.4	4.6	3.1	6.9	2.6*	1.5	4.5
All males	**68.9**	**66.4**	**71.2**	**19.2**	**17.2**	**21.3**	**6.9**	**5.6**	**8.5**	**1.8**	**1.2**	**2.5**
Females												
18–24	40.5	32.3	49.2	32.1	24.4	40.8	21.1	14.6	29.4	4.4*	2.2	8.5
25–34	59.1	53.1	64.8	27.2	22.2	32.9	8.0	5.4	11.9	3.5*	1.9	6.3
35–44	62.7	58.8	66.5	22.6	19.5	26.1	7.8	5.9	10.2	3.9	2.6	5.8
45–54	62.2	58.4	65.8	22.9	19.8	26.2	7.6	5.8	10.0	3.7	2.5	5.3
55–64	65.3	61.5	68.9	21.0	18.0	24.3	6.2	4.5	8.4	4.0	2.7	5.9
65+	64.3	61.0	67.5	21.5	18.8	24.4	5.9	4.5	7.8	1.0*	0.5	1.9
All females	**59.9**	**57.9**	**61.9**	**24.0**	**22.3**	**25.8**	**9.0**	**7.8**	**10.4**	**3.4**	**2.7**	**4.2**
Persons												
18–24	50.7	44.1	57.4	30.9	25.1	37.5	15.1	10.8	20.5	2.3*	1.2	4.4
25–34	64.0	59.3	68.4	23.7	19.9	27.9	7.7	5.5	10.7	2.7*	1.6	4.5
35–44	66.4	63.3	69.5	20.9	18.4	23.7	7.4	5.8	9.3	2.6	1.7	3.8
45–54	65.0	62.1	67.8	21.0	18.7	23.5	7.6	6.2	9.3	2.6	1.9	3.7
55–64	70.3	67.4	73.0	17.7	15.4	20.1	5.2	4.0	6.6	3.4	2.4	4.8
65+	67.2	64.6	69.6	18.6	16.6	20.8	5.3	4.2	6.7	1.7	1.1	2.6
All persons	**64.4**	**62.8**	**65.9**	**21.7**	**20.4**	**23.1**	**7.9**	**7.0**	**9.0**	**2.6**	**2.1**	**3.1**

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

Data are 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.

** Estimate has a relative standard error (RSE) greater than 50 per cent and is not reported as it is unreliable for general use.

Source: *Victorian Population Health Survey 2010*

Life-time prevalence of doctor-diagnosed depression and/or anxiety, by age and sex, Victoria, 2010

Age group (years)	Males			Females			Persons		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
18–24	6.1*	2.7	13.1	25.3	18.6	33.4	15.4	11.4	20.5
25–34	15.1	10.6	21.1	28.1	23.1	33.7	21.6	18.0	25.6
35–44	14.1	10.8	18.1	29.6	26.0	33.3	21.9	19.4	24.7
45–54	16.9	13.8	20.6	27.7	24.4	31.2	22.4	20.0	24.9
55–64	14.5	11.5	18.1	29.7	26.3	33.4	22.2	19.9	24.8
65+	12.1	9.6	15.1	19.0	16.5	21.8	15.9	14.1	17.9
Total	**13.3**	**11.7**	**15.0**	**26.8**	**25.0**	**28.7**	**20.1**	**18.9**	**21.4**

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 that were age-standardised to the 2006 Victorian population.

* Estimate has a RSE between 25 and 50 per cent and should be interpreted with caution.

Source: *Victorian Population Health Survey 2010*

In 2010, the majority of Victorians aged 18 years or over (64.4 per cent) reported low levels of psychological distress in the four weeks preceding the survey. A higher proportion of males reported low levels of psychological distress (68.9 per cent) compared with their female counterparts (59.9 per cent). A further 21.7 per cent of Victorians reported moderate levels of psychological distress. High and very high levels of psychological distress were reported by 7.9 per cent and 2.6 per cent of people, respectively. A higher proportion of Victorian females (3.4 per cent) reported very high levels of psychological distress (K10 scores of 30 or more) compared with Victorian males (1.8 per cent).

The Victorian Population Health Survey asks respondents if they had ever been diagnosed with depression and/or anxiety by a doctor. In 2010, more than one in five (20.1 per cent) people had been previously diagnosed with depression and/or anxiety. Females (26.8 per cent) were twice as likely to report doctor-diagnosed depression and/or anxiety compared with their male counterparts (13.3 per cent). In those aged 65 years or over, females (19.0 per cent) but not males, were less likely to have ever been diagnosed with depression and/or anxiety compared with other ages.

The 2008 Victorian Population Health Survey reported that Aboriginal Victorians were significantly more likely to have experienced high or very high psychological distress levels (22.0 per cent, 95% CI: 16.2–29.1) compared with their non-Aboriginal counterparts (11.3 per cent, 95% CI: 10.7–11.8). Furthermore, Aboriginal Victorians (34.8 per cent, 95% CI: 27.4–43.0) were significantly more likely than non-Aboriginal Victorians (19.6 per cent, 95% CI: 19.0–20.3) to have ever been diagnosed by a doctor with depression or anxiety. Of particular note is that the proportion of Aboriginal men (34.9 per cent, 95% CI: 24.5–47.0) ever diagnosed with depression or anxiety was more than twice that of their non-Aboriginal male counterparts (14.8 per cent, 95% CI: 13.9–15.7) (Department of Health 2011).

References

Australian Bureau of Statistics (ABS) 2008, *National Survey of Mental Health and Wellbeing 2007*, cat. no. 4326.0, ABS, Canberra.

Andrews G & Slade T 2001, 'Interpreting scores on the Kessler psychological distress scale (K10)', *Australian and New Zealand Journal of Public Health*, vol. 25, no. 6, pp. 494–97.

Clarke DM & Currie KC 2009, *Depression, anxiety and their relationship with chronic diseases: a review of the epidemiology, risk and treatment evidence*, Medical Journal of Australia, vol. 190, pp. S54–60.

Department of Health 2011, *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report*, State Government of Victoria, Melbourne.

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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.

Slade T, Grove R and Burgess P 2011, 'Kessler Psychological Distress Scale: normative data from the 2007 Australian National Survey of Mental Health and Wellbeing', *Australian and New Zealand Journal of Psychiatry*, vol. 45, pp. 308–316.

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 Diseases – 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.

Psychological distress: The Kessler 10 screening scale was designed to monitor population prevalence and trends in non-specific psychological distress (Kessler et al. 2002). The K10 consists of 10 questions that have the same response categories based on the amount of time an individual reported experiencing the particular problem: all of the time, most of the time, some of the time, a little of the time and none of the time (that are scored 5 through to 1). The 10 items are summed to yield scores ranging from 10 to 50. Individuals are categorised to four levels of psychological distress, based on their score: low (< 16), moderate (16–21), high (22–29) and very high (30–50).

The K10 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 the population for community mental health services, however, as people with psychosis generally do get depressed (Andrews & Slade 2001).

Aboriginal status: In accordance with *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report* the term Aboriginal is taken to include both Aboriginal and Torres Strait Islander people.

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

Lifetime prevalence: The number of people who have had a disease or condition at some point in their life.

Provenance

The K10 screening scale is used in population health surveys internationally and throughout Australia, including by the Australian Bureau of Statistics (Slade T, Grove R & Burgess P 2011).

For more information

Australian Bureau of Statistics (ABS), 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/survey/vphs.htm

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Child abuse and neglect

Description

The number of children aged 0–17 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 Victorian Department of Human Services to determine: whether it requires an investigation; whether it should be dealt with by other means, such as referral to other organisations or to family support services; or whether no further protective action is necessary or possible. Victoria's legislative foundation is provided by the *Child Wellbeing and Safety Act 2005* (which is the framework legislation for services for all children) and the *Children, Youth and Families Act 2005*.

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 Victorian Department of Human Services 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 0–17 years who were the subject of a substantiation of a notification received during the relevant year, by state and territory, 2006–07 to 2010–11 (per 1,000 children)[a]

Year	NSW[a]	Vic	Qld	WA[bc]	SA[d]	Tas	ACT	NT	Total
2006–07	8.5	5.6	8.7	2.3	5.0	6.8	7.4	8.8	**6.9**
2007–08	8.2	5.1	7.1	2.7	5.2	7.9	7.1	11.4	**6.5**
2008–09	8.7	5.0	6.3	2.8	5.4	9.1	7.8	12.3	**6.5**
2009–10	8.0	5.2	5.7	2.9	4.2	7.4	7.0	16.6	**6.1**
2010–11	7.0	5.9	5.4	3.4	5.1	9.5	5.8	22.8	**6.1**

a. New South Wales figures are not comparable with those of other jurisdictions. New South Wales has a differential investigation response whereby an investigation can be undertaken at two levels of intensity. Only the more serious cases which receive the higher level response may lead to a recorded substantiation outcome. Following the New South Wales Keep Them Safe reforms, the 2010–11 data reflect the first full year of reporting under legislative changes to the New South Wales Children and Young Persons (Care and Protection) Act 1998, proclaimed on 24 January 2010. This includes raising the reporting threshold from 'risk of harm' to the new 'risk of significant harm'.

b. Data for 2009–10 for Western Australia are not comparable with other years due to the introduction of a new client information system in March 2010. Proxy data were provided for that year.

c. For 2010–11, Western Australia was unable to report a child's characteristics based on their first substantiation. As a result a small number of children may be double-counted in this table where they have more than one substantiation and the notifications had differing characteristics such as age or abuse type.

d. During 2009–10, South Australia implemented a new client information system and this was accompanied by policy and practice changes. Therefore data for this year are not fully comparable with previous years' data.

Notes:

1. Unborn children are included in rate calculations.
2. Children may have been the subject of more than one substantiation.

Source: AIHW 2012

Due to new service and data reporting arrangements, the Victorian child protection data for 2006–07 onwards are not fully comparable with previous data. However, since 2006–07, rates for children who were the subject of child abuse and neglect substantiations have: increased for Victoria, Western Australia, Tasmania and the Northern Territory; decreased for New South Wales, Queensland and the Australian Capital Territory; and remained relatively stable for South Australia.

Aboriginal children continue to be over-represented in the child protection system. In Victoria in 2010–11, Aboriginal children were more than nine times more likely to be the subject of a child protection substantiation than non-Aboriginal children (50.4 per 1,000 compared with 5.4 per 1,000) (AIHW 2012).

References

Australian Institute of Health and Welfare (AIHW) 2012, *Child protection Australia 2010–11*, Child welfare series number 53, cat. no. CWS 41, AIHW, Canberra.

Concepts

Substantiated: 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.

Aboriginal status: In accordance with T*he health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report* the term Aboriginal is taken to include both Aboriginal and Torres Strait Islander people.

Provenance

Child abuse notifications are reported by the Australian Institute of Health and Welfare.

For more information

Department of Education and Early Childhood Development (DEECD), State of Victoria's Children Report, DEECD, Melbourne:
http://www.education.vic.gov.au/about/research/Pages/reportdatachildren.aspx

Contact

Data, Outcomes and Evaluation Division
Department of Education and Early Childhood Development
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Melbourne, Victoria 3001

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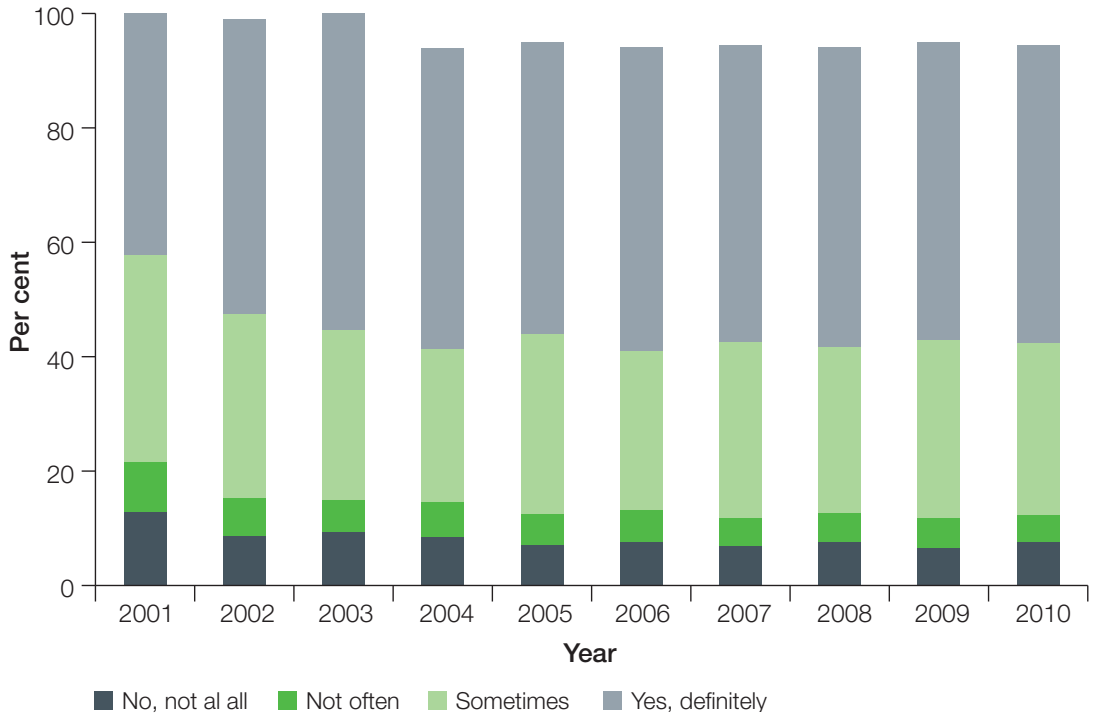
Feeling valued by society

Description

The proportion of adults aged 18 years or over who felt/did not feel valued by society.

Having a sense of social inclusion involves communication with others and the development of personal relationships and social networks. Being socially connected involves the sharing of values and beliefs between individuals who meet their own needs, 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 or over, who felt/did not feel valued by society, Victoria, 2001–2010



Note that the figures may not add up 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 linear regression was used to test for trends over time.

Source: Victorian Population Health Surveys 2001–2010.

Proportion of adults who felt valued by society, by sex and Aboriginal status, Victoria, 2008

	Aboriginal			Non-Aboriginal		
		95% CI			95% CI	
	%	LL	UL	%	LL	UL
Males						
No or not often	19.0*	11.3	30.1	12.7	11.9	13.6
Sometimes	29.5	19.4	42.2	28.3	27.1	29.6
Yes	44.4	32.8	56.6	53.4	52.0	54.8
Don't know/refused to say	7.1*	3.1	15.5	5.6	5.0	6.2
Females						
No or not often	17.6	11.0	27.1	12.1	11.4	12.8
Sometimes	26.8	19.4	35.8	30.2	29.2	31.2
Yes	50.6	41.2	59.9	51.9	50.8	53.0
Don't know/refused to say	4.9*	2.3	10.3	5.8	5.3	6.3
Persons						
No or not often	17.7	12.2	25.0	12.4	11.9	13.0
Sometimes	27.7	21.1	35.5	29.2	28.4	30.0
Yes	48.4	40.7	56.3	52.6	51.8	53.5
Don't know/refused to say	6.1*	3.4	10.7	5.7	5.3	6.1

95% CI = 95 per cent confidence interval

Data are age-standardised to the 2006 Victorian population.

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

The Victorian Population Health Survey includes questions about social inclusion and whether people felt valued by society. In 2010, survey estimates indicated that although most adults aged 18 years or over in Victoria felt valued, about one in eight people (12.2 per cent) felt that they were not, or not often, valued by society. The proportion of adults, aged 18 years or over, who felt or did not feel valued by society remained unchanged between 2004 and 2010.

The 2008 Victorian Population Health Survey reported that while there were no statistically significant differences between Aboriginal and non-Aboriginal Victorians who did or did not feel valued by society, there was a higher proportion of both Aboriginal men and women who did not feel valued by society (Department of Health 2011).

References

Department of Health 2011, *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report*, State Government of Victoria, Melbourne.

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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

Concepts

Aboriginal status: In accordance with *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report* the term Aboriginal is taken to include both Aboriginal and Torres Strait Islander people.

Provenance

The Victorian Population Health Survey includes questions on social support and community connections and participation. The makeup of questions has evolved since the first survey in 2001, but a core set of questions on social and community characteristics has been retained and is reported annually.

Feeling valued by society is also included as an indicator in the Australian Bureau of Statistics *General Social Survey*.

For more information

Australian Bureau of Statistics *General Social Survey*:
http://www.abs.gov.au/ausstats/abs@.nsf/mf/4159.0

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

Wilkinson R & Marmot M 2003, *Social determinants of health: the solid facts*, 2nd edn, 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 cancer diagnoses 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.

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.

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

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

Oral health status: There are two measures included in this indicator:

1. *Adults*: The proportion of dentate adults aged 18 years or over with inadequate natural dentition (fewer than 21 teeth).
2. *Children*: Standardised hospital admission rates (per 1,000 persons) for dental ambulatory care sensitive conditions (ACSC) for children aged 0–9 years.

Injury and poisoning hospital admissions: The number and rate of admissions (hospitalisations) to public and private hospitals in Victoria due to all causes of injury and poisoning.

Cancer incidence

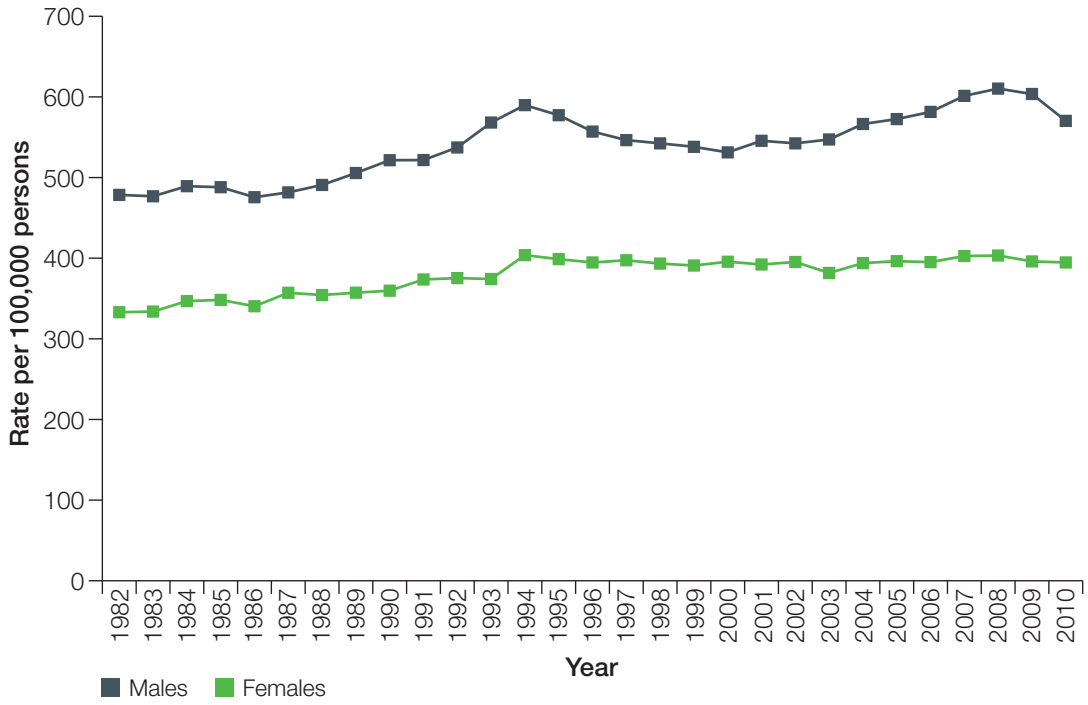
Description

The number of new cancer diagnoses 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 (AIHW 2010). Other important risk factors include occupational exposures and reproductive and hormonal factors in females. A family history of cancer may also increase the chance of developing cancer (AIHW 2010). Most types of cancer occur among people over 45 years of age.

Cancer incidence, by sex, Victoria, 1982–2010



Data are standardised to the 2001 Victorian population.

Source: Cancer Council Victoria, Victorian Cancer Registry, 19 October 2012

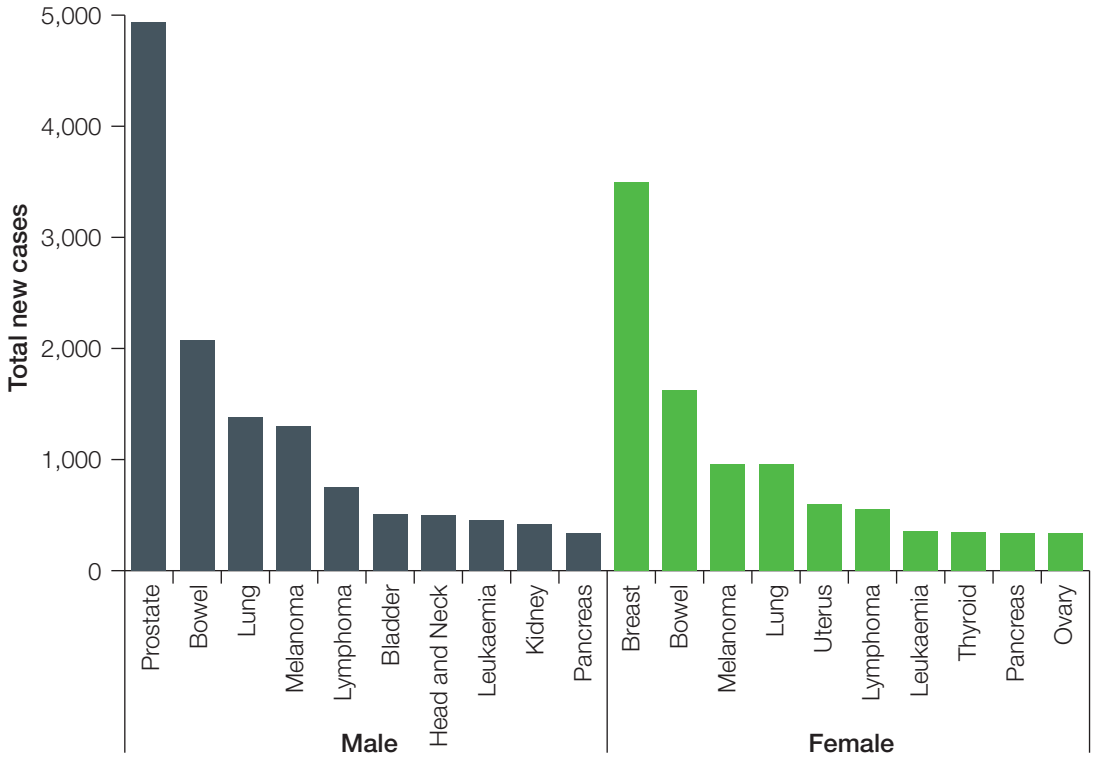
Cancer incidence rate and number of new cases, by sex, Victoria, 1982–2010

	Rate per 100,000 persons		Number of new cases	
Year	Males	Females	Males	Females
1982	478.5	333.0	6,707	5,993
1983	476.8	333.8	6,822	6,122
1984	489.3	346.8	7,115	6,490
1985	488.0	348.3	7,308	6,646
1986	475.6	340.4	7,307	6,621
1987	481.6	357.1	7,556	7,077
1988	490.8	354.3	7,860	7,156
1989	505.6	357.2	8,204	7,333
1990	521.5	359.7	8,692	7,530
1991	521.7	373.6	8,963	7,985
1992	537.3	375.3	9,377	8,187
1993	568.2	374.2	10,223	8,293
1994	589.8	403.8	10,816	9,099
1995	577.3	398.8	10,831	9,147
1996	557.0	394.7	10,672	9,225
1997	546.4	397.4	10,727	9,505
1998	542.4	393.3	10,866	9,619
1999	538.1	390.9	11,060	9,776
2000	531.2	395.6	11,219	10,119
2001	545.6	392.2	11,813	10,254
2002	542.4	395.3	12,098	10,528
2003	547.2	381.7	12,493	10,380
2004	566.4	393.9	13,238	10,896
2005	572.5	396.3	13,775	11,211
2006	581.4	395.1	14,387	11,411
2007	601.3	402.7	15,339	11,891
2008	610.3	403.3	16,025	12,177
2009	603.6	396.0	16,350	12,221
2010	570.3	394.7	15,912	12,450

Data are standardised to the 2001 Victorian population.

Source: Cancer Council Victoria, Victorian Cancer Registry, 19 October 2012

Top ten leading cancers (total new cases), by sex, Victoria, 2010



Source: Cancer Council Victoria 2011

Cancer is a leading cause of disease burden in Victoria. There were 28,632 new cases of cancer in Victoria in 2010, 15,912 in males and 12,450 in females. The age-standardised incidence rate for all cancers in 2010 was 570.3 per 100,000 males and 394.7 per 100,000 females (Cancer Council Victoria 2012).

Cancer incidence is age-dependent, with less than 1 per cent of tumours occurring before age 15 and 57 per cent in people over 65 years (Cancer Council Victoria 2011).

Breast cancer is the most common new cancer in Victorian women, with almost 3,500 diagnoses in 2010 (28 per cent of all cancers). Prostate cancer remains the most common new cancer in Victorian men, with almost 5,000 new diagnoses in 2010 (31 per cent of all cancers). The five leading cancers in Victoria, prostate, bowel, breast, lung and melanoma, account for almost 60 per cent of all new cancers and half of all cancer deaths (Cancer Council Victoria 2011).

References

Australian Institute of Health and Welfare (AIHW) & Australian Association of Cancer Registries 2010, *Cancer in Australia: an overview, 2010*, Cancer series no. 60. cat. no. CAN 56, AIHW, Canberra: AIHW.

Cancer Council Victoria 2011, *Cancer in Victoria: Statistics and Trends 2010*, Cancer Council Victoria, Melbourne.

Cancer Council Victoria 2012, *Victorian Cancer Registry interactive report – Time trends by cancer, Cancer Council Victoria*, Melbourne, viewed 19 October 2012, <http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer>

Concepts

Incidence: Refers to the rate at which new cases of disease occur in a population during a specified period.

Limitations

Sometimes measurement of incidence 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, the World Health Organization and the Victorian Cancer Registry.

For more information

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

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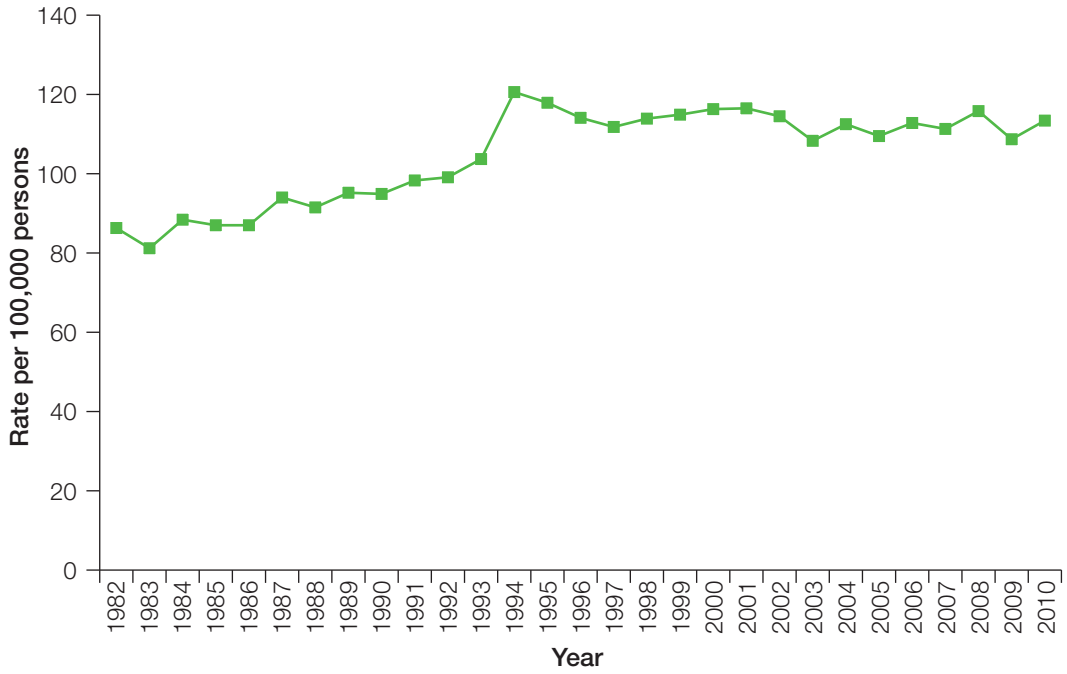
Breast cancer incidence

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 Victorian women (Cancer Council Victoria 2011). 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 (AIHW 2012). Lifetime risk of breast cancer is strongly associated with mutations in the BRCA1 and BRCA2 genes (Chen & Parmigiani 2007). Oral contraceptive use and/or hormone replacement therapy within the past 10 years have also been shown to increase the risk of developing the disease (AIHW 2012). Although men can develop breast cancer, it remains relatively rare. The main risk factors associated with breast cancer in men are genetic factors and conditions involving high levels of oestrogen (AIHW 2012).

Female breast cancer incidence, Victoria, 1982–2010



Data are age-standardised to the 2001 Victorian population.

Source: Cancer Council Victoria, Victorian Cancer Registry, 27 April 2012

In 2010, breast cancer was the third most common new cancer overall, accounting for 12.5 per cent (3,537) of new cases and 28.4 per cent of all cancers for women. It was the fourth ranking cause of cancer death (771 deaths, 7.2 per cent) (Cancer Council Victoria, 2011).

There was a significant linear trend of increasing incidence of 1.1 per cent annually for females between 1982 and 2010. 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 (Cancer Council Victoria 2011) and survival rates have shown a small, but continued improvement (Thursfield et al. 2012). 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 2012; Thursfield et al. 2012).

References

Australian Institute of Health and Welfare (AIHW) & Cancer Australia 2012. *Breast cancer in Australia: an overview*, Cancer series no. 71, cat. no. CAN 67, AIHW, Canberra.

Cancer Council Victoria 2011, *Cancer in Victoria: Statistics and Trends 2010*, Cancer Council Victoria, Melbourne.

Cancer Council Victoria 2012, *Victorian Cancer Registry interactive report – Time trends by cancer*, Cancer Council Victoria, Melbourne, viewed 27 April 2012, <http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer>

Chen S & Parmigiani G 2007, 'Meta-Analysis of BRCA1 and BRCA2 Penetrance', *Journal of Clinical Oncology*, vol. 25, no. 11, pp. 1329–1333.

Thursfield V, Farrugia H, Karahalios E, Giles G 2012, *Cancer in Survival Victoria 2012: Estimates of survival for 2006–2010 (and comparisons with earlier periods)*, Cancer Council Victoria, Melbourne.

Concepts

Incidence: Refers to the rate at which new cases of disease occur in a population during a specified period.

Limitations

Sometimes measurement of incidence 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, the World Health Organization and the Victorian Cancer Registry.

For more information

Cancer Council Victoria, Victorian Cancer Registry interactive reports:
http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer

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Lung cancer incidence

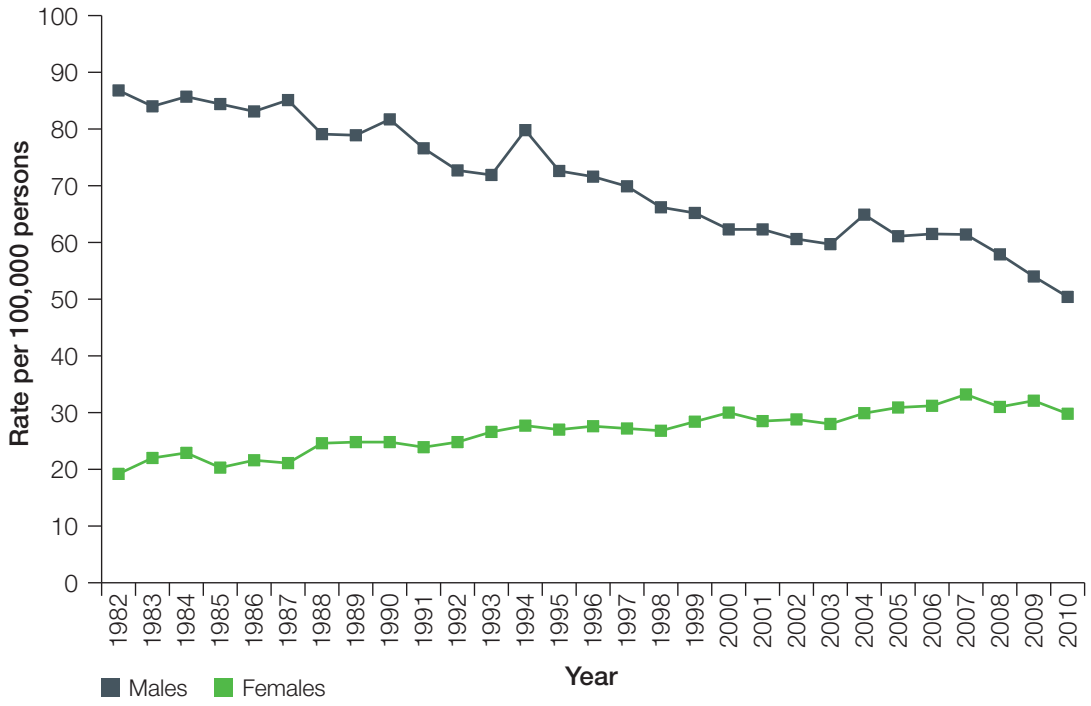
Description

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 12 per cent and 16 per cent for females in Victoria in 2010 (Thursfield et al. 2012). Overall, there has been a significant increase from 8 per cent to 14 per cent in survival over the 20-year period from 1986–1990 to 2006–2010 (Thursfield et al. 2012).

Tobacco smoking is the major risk factor for lung cancer and the evidence suggests that more than 90 per cent of lung cancers in males and 65 per cent in females are attributable to smoking (AIHW 2011). 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 (AIHW 2011).

Lung cancer incidence, by sex, Victoria, 1982–2010



Data are age-standardised to the 2001 Victorian population.

Source: Cancer Council Victoria, Victorian Cancer Registry, 27 April 2012

Lung cancer was again the fourth site of new cancer (2,340 new cases) in 2010 and remains the leading cause of cancer death (1,887 deaths, 17.7 per cent of all cancer deaths). Incidence and mortality rates continue to decline for males and mortality for females (Cancer Council Victoria 2011). As the prevalence of smoking in females peaked much later than in males (around the mid-1970s), this may explain the continued increase in the lung cancer incidence rate for females (AIHW 2011).

References

Thursfield V, Farrugia H, Karahalios E, Giles G 2012, *Cancer in Survival Victoria 2012: Estimates of survival for 2006–2010 (and comparisons with earlier periods)*, Cancer Council Victoria, Melbourne.

Australian Institute of Health and Welfare (AIHW) & Cancer Australia 2011, *Lung cancer in Australia: an overview*, Cancer series no. 64, cat. no. CAN 58, AIHW, Canberra.

Cancer Council Victoria 2011, *Cancer in Victoria: Statistics and Trends 2010*, Cancer Council Victoria, Melbourne.

Cancer Council Victoria 2012*, Victorian Cancer Registry interactive report – Time trends by cancer*, Cancer Council Victoria, Melbourne, viewed 27 April 2012, <http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer>

Concepts

Incidence: Refers to the rate at which new cases of disease occur in a population during a specified period.

Limitations

Sometimes measurement of incidence 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, the World Health Organization and the Victorian Cancer Registry.

For more information

Cancer Council Victoria, Victorian Cancer Registry interactive reports:
http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer

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Bowel cancer incidence

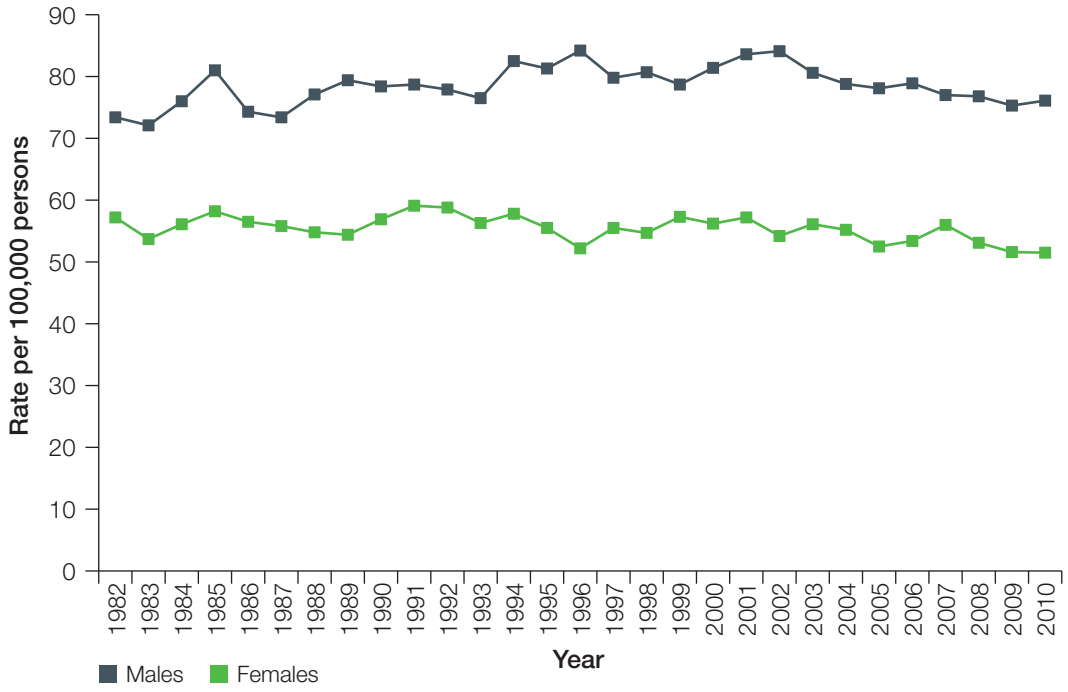
Description

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 (Weitz et al. 2005). Poor diet, especially a diet low in fibre, is an important risk factor for developing bowel cancer (WCRF/AICR 2007). Other lifestyle factors linked to the development of bowel cancer include low levels of physical activity, excess body weight, and high levels of alcohol and red meat consumption (WCRF/AICR 2007).

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 people aged 50 years or over (AIHW 2012).

Bowel cancer incidence, by sex, Victoria, 1982–2010



Data are age-standardised to the 2001 Victorian population.

Source: Cancer Council Victoria, Victorian Cancer Registry, 01 June 2012

In 2010, bowel (colon and rectum) cancer was the second most common new cancer in Victorians with 3,699 cases (13.0 per cent of all cancers). It was the second ranking site of fatal cancer (1,330 deaths, 12.5 per cent) (Cancer Council Victoria 2011).

Between 1982 and 2010, there was a significant linear trend of decreasing incidence of 0.12 per cent annually for females. The trend for males over this period was not significant.

References

Australian Institute of Health and Welfare (AIHW) 2012, *National Bowel Cancer Screening Program monitoring report: phase 2, July 2008–June 2011*, cat. no. CAN 61, AIHW, Canberra.

Cancer Council Victoria 2011, *Cancer in Victoria: Statistics and Trends 201*0, Cancer Council Victoria, Melbourne.

Cancer Council Victoria 2012, *Time trends by cancer, interactive report*, Cancer Council Victoria, Melbourne, viewed 1 June 2012, <http://vcrdata.cancervic.org.au:8082/ccv/#trends_cancer>

Department of Health and Ageing (DoHA) 2012, *National Bowel Cancer Screening Program*, viewed 7 November 2012, <www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/bowel-about>

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

World Cancer Research Fund / American Institute for Cancer Research (WCRF/AICR) 2007, *Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective*, AICR, Washington DC.

Concepts

Incidence: Refers to the rate at which new cases of disease occur in a population during a specified period.

Limitations

Sometimes measurement of incidence 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, the World Health Organization and the Victorian Cancer Registry.

For more information

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

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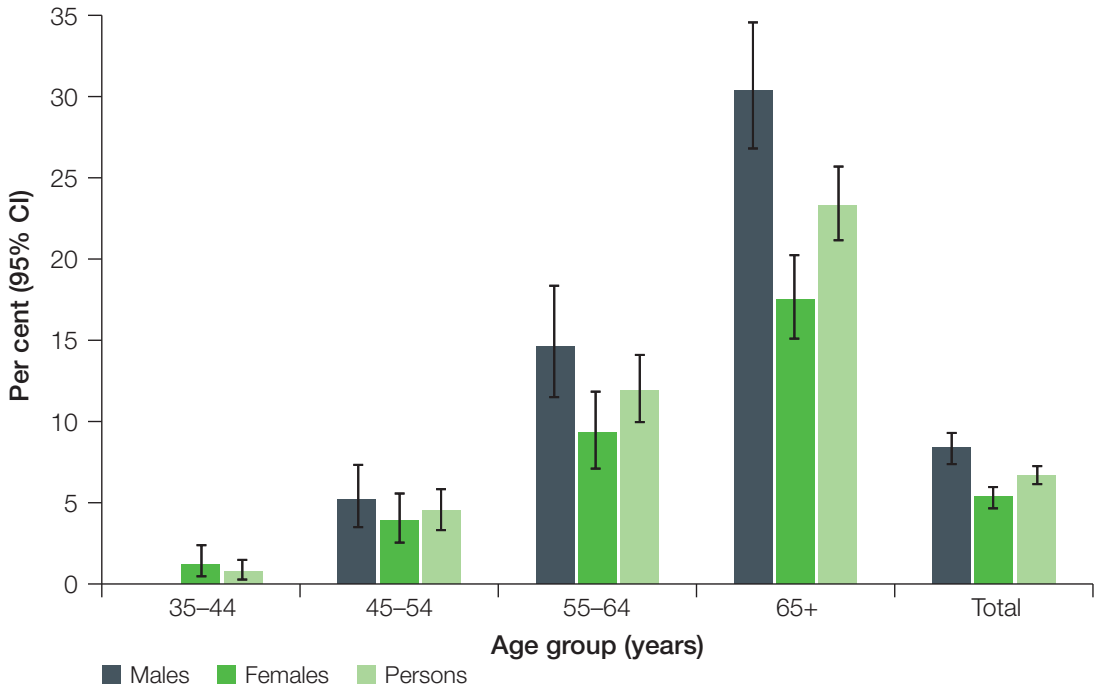
Prevalence of heart disease

Description

The proportion of adults aged 18 years or 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), excess body weight, physical inactivity, high levels of alcohol consumption, high blood pressure and high cholesterol (AIHW 2011). 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.

Prevalence of heart disease, by sex and age group, Victoria, 2010



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

Source: *Victorian Population Health Survey 2010*

Prevalence of heart disease, by sex and age group, Victoria, 2010

Age group (years)	Males			Females			Persons		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
18–34	**			**			**		
35–44	**			1.2*	0.6	2.5	0.8*	0.4	1.6
45–54	5.2	3.6	7.4	3.9	2.6	5.7	4.5	3.5	5.9
55–64	14.6	11.6	18.4	9.3	7.2	11.8	11.9	10.0	14.1
65+	30.4	26.7	34.4	17.5	15.1	20.2	23.3	21.1	25.7
Total	**8.4**	**7.5**	**9.3**	**5.4**	**4.7**	**6.0**	**6.7**	**6.2**	**7.3**

Note that the figures may not add up 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 estimate for Victoria and have been age-standardised to the 2006 Victorian population.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

** Estimate has an RSE greater than 50 per cent and is not reported as it is unreliable for general use.

Source: *Victorian Population Health Survey 2010*

Estimates from the *Victorian Population Health Survey 2010* indicate that 6.7 per cent of adults, aged 18 years or over, had ever been diagnosed by a doctor with heart disease. Self-reported prevalence was higher for males compared with females, and heart disease prevalence increased with age. Adults aged 55 years or over were more likely than adults in younger age groups to report having ever being diagnosed with heart disease.

References

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

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

Australian Institute of Health and Welfare (AIHW) 2011, *Cardiovascular disease: Australian facts 2011*, Cardiovascular disease series cat. no. CVD 53, AIHW, Canberra.

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

Concepts

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

Limitations

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

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/survey/vphs.htm

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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Prevalence of diabetes

Description

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

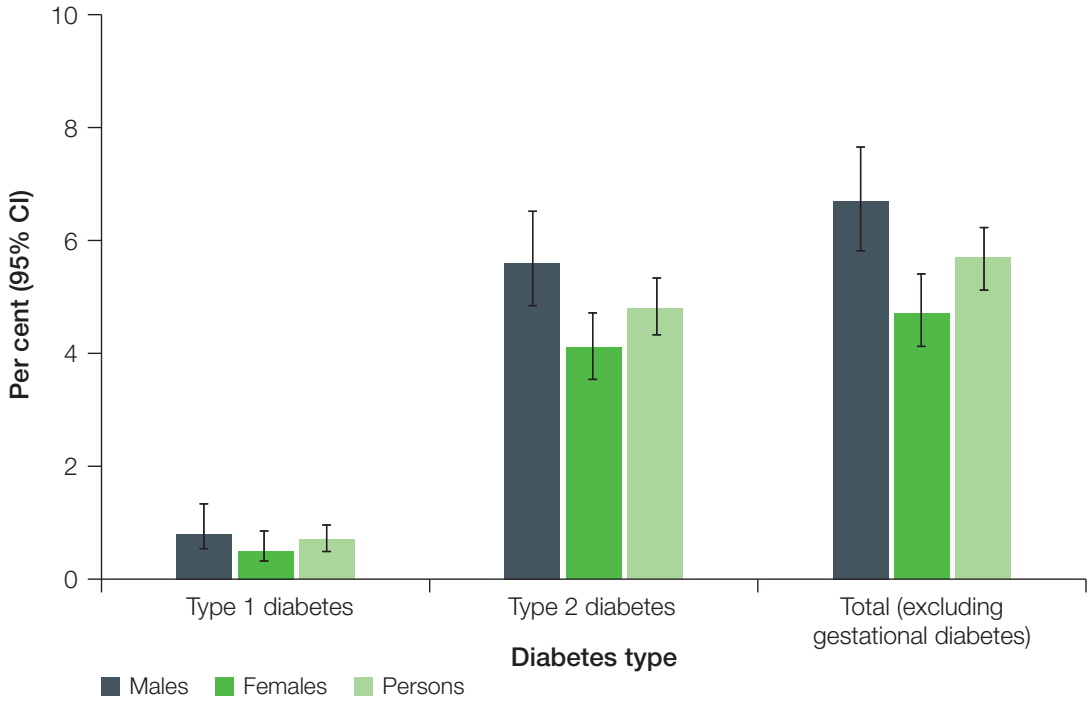
Diabetes mellitus is a common chronic condition characterised by high blood glucose (sugar) levels. The two main types of diabetes mellitus are type 1 diabetes and type 2 diabetes. Gestational diabetes is another form of the condition that affects women during pregnancy, with no prior diagnosis of diabetes. 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 people 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 or 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 insulin 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 will cause kidney, eye and nerve damage, heart disease, stroke and impotence. Public health programs in diabetes primarily focus on the prevention of type 2 diabetes.

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.

Prevalence of diabetes, by diabetes type and sex, Victoria, 2010



	Type 1 diabetes			Type 2 diabetes			Total[a]			Gestational only		
		95% CI			95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL	%	LL	UL
Males	0.8	0.5	1.3	5.6	4.8	6.5	6.7	5.8	7.7			
Females	0.5*	0.3	0.8	4.1	3.5	4.7	4.7	4.1	5.4	2.0	1.4	2.7
Persons	0.7	0.5	1.0	4.8	4.3	5.3	5.7	5.1	6.2			

a. Total excludes gestational diabetes.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

Data are age-standardised to the 2006 Victorian population.

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

Source: *Victorian Population Health Survey 2010*

The prevalence of diabetes for people aged 18 years or over was 5.7 per cent in 2010. 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 (2.0 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 (0.5 per cent), the prevalence of type 2 diabetes was higher for males (5.6 per cent), compared with females (4.1 per cent).

The distribution in the prevalence of type 2 diabetes by age in the Victorian population, along with changes in the prevalence of type 2 diabetes in Victoria between 2003–2010 are presented in the full report of the *Victorian Population Health Survey 2010* (Department of Health 2012). The prevalence of type 2 diabetes in males and females has significantly increased between 2003 and 2010.

References

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.

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

Concepts

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

Limitations

The prevalence rates are derived from survey data obtained through self-report and should be interpreted with caution. They rely on respondent recall of having ever been told by a doctor that they have 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 2011, *Diabetes prevalence in Australia: detailed estimates for 2007–08*, Diabetes series no. 17, cat. no. CVD 56, AIHW, Canberra.

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

Better Health Channel. Diabetes:
http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Diabetes_explained

World Health Organization, Diabetes Programme:
http://www.who.int/diabetes/en/

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Oral health status

Description

There are two measures included in this indicator:

1. Adults: The proportion of dentate adults aged 18 years or over with inadequate natural dentition (fewer than 21 teeth)
2. Children: Standardised hospital admission rates (per 1,000 persons) for dental ambulatory care sensitive conditions (ACSC) for children aged 0–9 years.

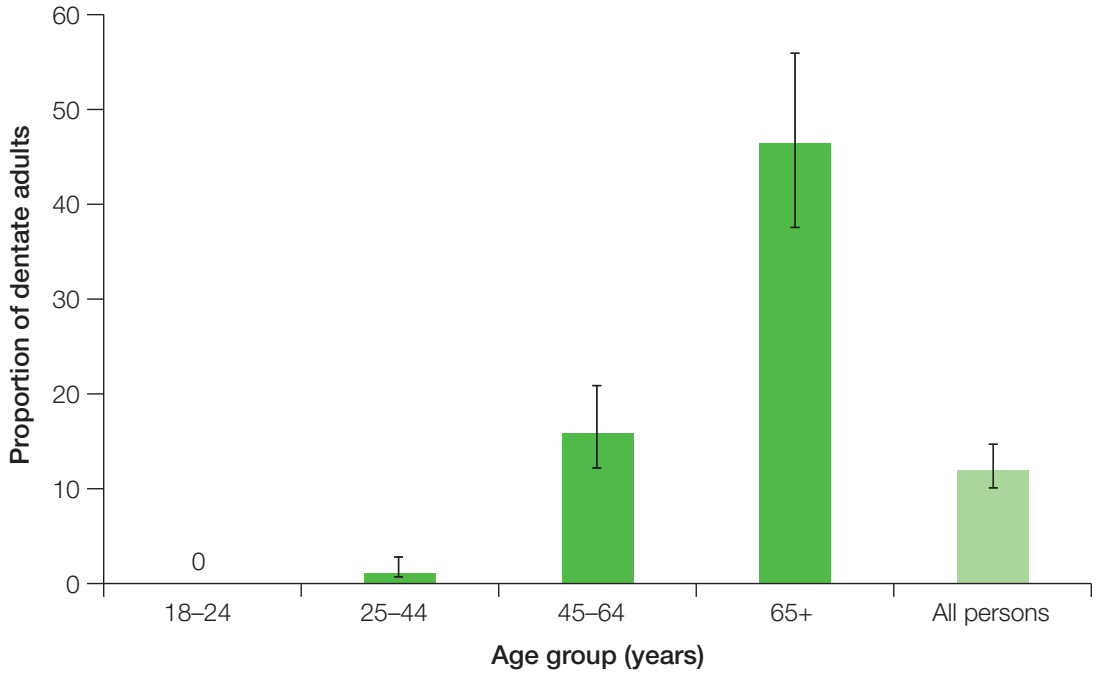
Oral health is an integral aspect of general health. Poor oral health is likely to exist when general health is poor and vice versa (AIHW 2011). Good oral health in childhood contributes to better teeth and gums in later life, with less decay and reduced loss of natural teeth. Tooth decay is the most common disease among Australians, and gum disease the fifth most common condition. About 90 per cent of all tooth loss can be attributed to these two health problems (AIHW 2011).

Adults who have approximately 21 teeth, or more, usually have satisfactory chewing function (Elias & Sheiham 1998) and diet and nutritional status (Sheiham et al. 2002), whereas people with fewer teeth are more likely to suffer impaired quality of oral health (McGrath & Bedi 2002). Having fewer than 21 teeth, defined as inadequate natural dentition, is an indicator of poor oral health (AIHW 2008). There is a greater proportion of people with poor oral health among Aboriginal people, the elderly and those who are socioeconomically disadvantaged or live in rural and remote areas (AIHW 2011). Among people on low incomes, health cardholders have poorer oral health (AIHW 2011).

Dental conditions are the most common cause of potentially preventable hospitalisation, or an ambulatory care sensitive condition (ACSC), in Victorians aged 0–19 years (VHISS 2012; Rogers & Morgan 2012). The predominant cause of dental ACSC in children is tooth decay (DHS 2007). Tooth decay is amenable to prevention through good nutrition, exposure to fluoride (such as in water and toothpastes), maintenance of adequate oral hygiene and access to regular preventively focused dental visits. The ability of families to follow these practices can be linked to their socioeconomic status.

Children are hospitalised for a dental condition, with dental treatment provided under a general anaesthetic, because the condition is considered too severe to be managed in a dental clinic, or because of behavioural problems of the child, or because of medical/physical complications. Children may also be hospitalised for dental care because it is the preferred approach for the dentist or paediatric dental specialist, and the parents, compared with a series of dental clinic visits (Jamieson & Roberts-Thomson 2006).

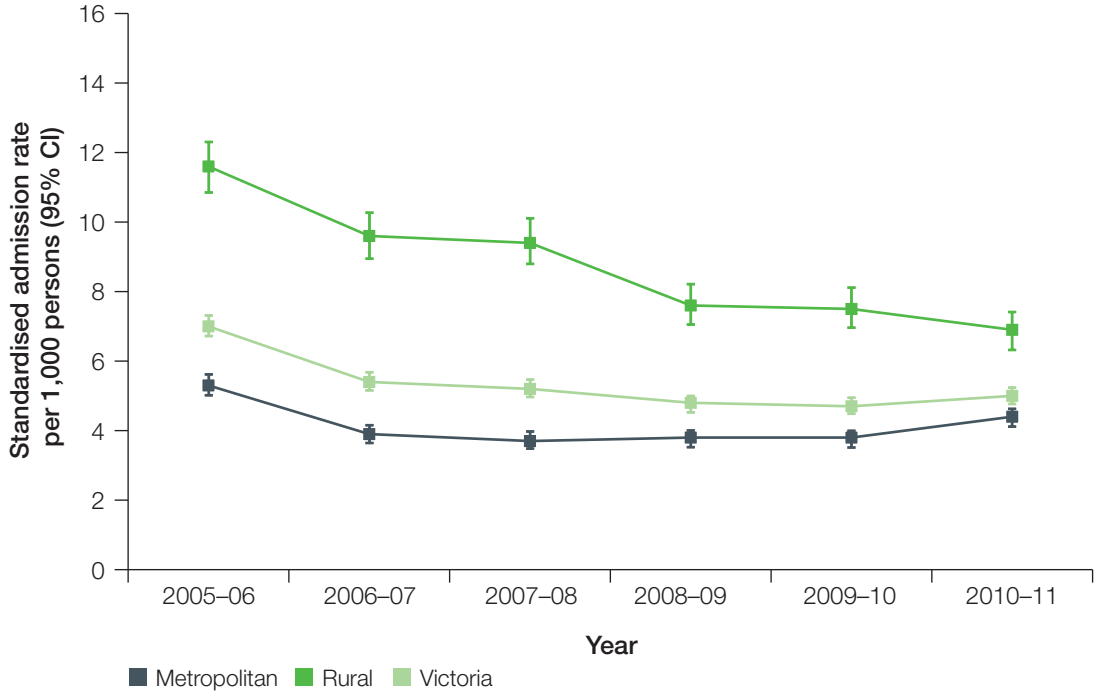
Proportion of dentate adults with inadequate dentition (fewer than 21 teeth), Victoria 2010



Error bars represent 95 per cent confidence interval.

Source: *National Dental Telephone Interview Survey 2010*, Australian Research Centre for Population Oral Health (ARCPOH), The University of Adelaide, Australia

Standardised hospital admission rates (per 1,000 persons) for dental conditions for children aged 0–4 years, Victoria 2005–06 to 2010–11



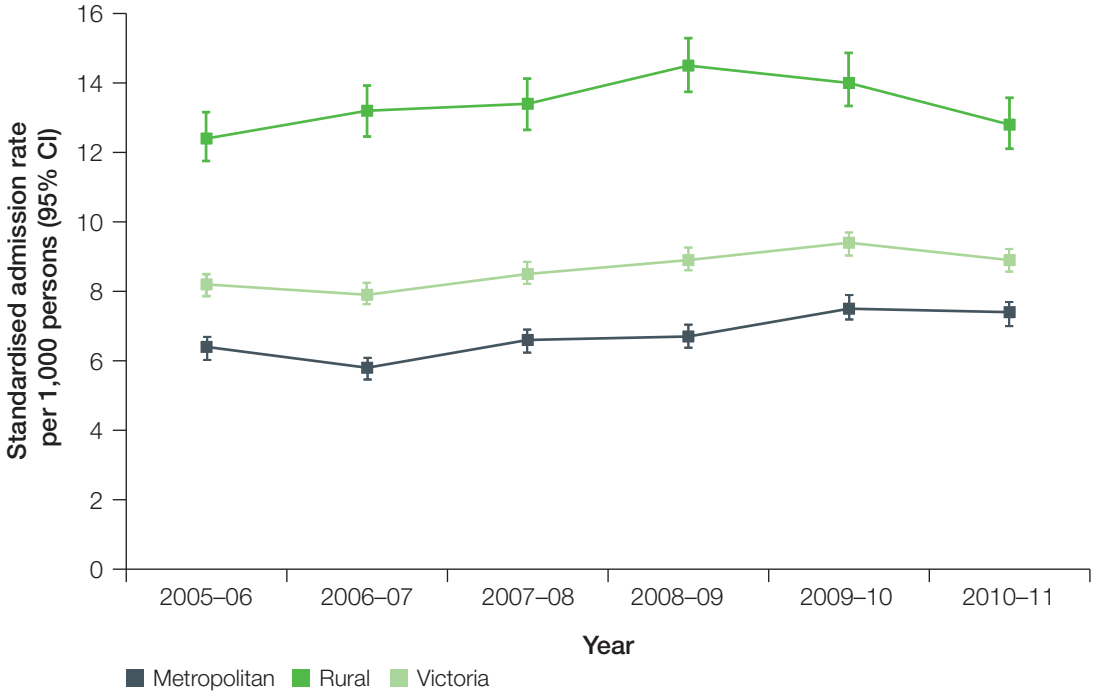
Age group (years)	Victoria			Metropolitan			Rural		
		95% CI			95% CI			95% CI	
	Rate[a]	LL	UL	Rate[a]	LL	UL	Rate[a]	LL	UL
2005–06	7.0	6.7	7.3	5.3	5.0	5.6	11.6	10.8	12.3
2006–07	5.4	5.2	5.7	3.9	3.6	4.2	9.6	8.9	10.3
2007–08	5.2	5.0	5.5	3.7	3.5	4.0	9.4	8.8	10.1
2008–09	4.8	4.5	5.0	3.8	3.5	4.0	7.6	7.0	8.2
2009–10	4.7	4.5	4.9	3.8	3.5	4.0	7.5	7.0	8.1
2010–11	5.0	4.8	5.2	4.4	4.1	4.6	6.9	6.3	7.4

a. per 1,000 population

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Source: Victorian Admitted Episodes Dataset 2005–2011

Standardised hospital admission rates (per 1,000 persons) for dental conditions for children aged 5–9 years, Victoria 2005–06 to 2010–11



Age group (years)	Victoria			Metropolitan			Rural		
		95% CI			95% CI			95% CI	
	Rate[a]	LL	UL	Rate[a]	LL	UL	Rate[a]	LL	UL
2005–06	8.2	7.9	8.5	6.4	6.0	6.7	12.4	11.7	13.1
2006–07	7.9	7.6	8.2	5.8	5.5	6.1	13.2	12.4	13.9
2007–08	8.5	8.2	8.8	6.6	6.2	6.9	13.4	12.6	14.1
2008–09	8.9	8.6	9.3	6.7	6.4	7.0	14.5	13.7	15.3
2009–10	9.4	9.0	9.7	7.5	7.2	7.9	14.0	13.3	14.8
2010–11	8.9	8.6	9.2	7.4	7.0	7.7	12.8	12.1	13.5

a. per 1,000 population

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Source: Victorian Admitted Episodes Dataset 2005–2011

The *National Dental Telephone Interview Survey 2010* found that 12 per cent of Victorian dentate adults had fewer than 21 teeth. Prevalence of inadequate natural dentition was strongly associated with age, occurring in 1.1 per cent of people aged 25–44 years but affecting approximately half (46.5 per cent) of dentate people aged 65 years or more. There were no significant differences between males and females. Inadequate dentition was associated with government health

cardholder status, with people who hold a government health card (26.8 per cent, 95% CI: 20.7–33.9 per cent) almost four times as likely as non-cardholders (7.5 per cent, 95% CI: 5.7–9.9 per cent) to have fewer than 21 teeth. This may be due, in part, to government health cardholders being older than non-cardholders.

In the period 2005–06 to 2010–11, ACSC hospital admission rates for dental conditions, in children aged 0–9 years, in rural areas of Victoria were higher than for children in metropolitan areas of Victoria. However, over this period the admission rates for dental conditions in children aged 0–4 years in rural areas have significantly decreased. This decrease is likely to be due to the extension of water fluoridation in rural areas, which commenced in Bendigo in 2002, and in other rural areas from 2006. Over the past ten years the proportion of the Victorian population receiving optimally fluoridated water has increased to 90 per cent (AIHW 2012).

There was a significant increase in the dental ACSC hospital admission rate, in children aged 5–9 years in metropolitan regions, over the period from 2005–06 to 2010–11. The increase in admissions for dental conditions in children aged 5–9 from metropolitan areas may be related to an increase in the severity of tooth decay among certain child groups and/or preferences by dentists or paediatric dental specialists to provide care under a general anaesthetic.

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Concepts

Inadequate natural dentition: In adults, inadequate natural dentition among dentate people is used as an indicator of likely impairment in oral function, nutrition and quality of life. In recent decades an adequate dentition has variously been defined as 21+ or 20+ natural teeth.

Ambulatory care sensitive conditions (ACSCs): Conditions for which hospitalisation is considered to be avoidable through prevention and early disease management, usually delivered in an ambulatory care setting. Dental ACSCs do not include hospitalisation for conditions that are not preventable, such as disorders of tooth development and the extraction of impacted teeth.

Limitations

The prevalence rates of inadequate natural dentition are derived from data obtained through a self-report survey and should be interpreted with caution. They rely on respondents reporting either the number of remaining teeth or number of missing teeth in their upper jaw and lower jaw. Responses were used to classify people as having inadequate natural dentition if they reported having fewer than 21 natural teeth.

Provenance

Data on natural dentition in adults are derived from the *National Dental Telephone Interview Survey 2009–10*.

The child oral health data presented are based on analysis of ambulatory care sensitive conditions (ACSCs) from the Victorian Admitted Episodes Dataset. Further information is available at: http://www.health.vic.gov.au/healthstatus/interactive/vhiss.htm

For more information

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Healthy Together Victoria - Action plan for oral health promotion 2013 – 2017: http://docs.health.vic.gov.au/docs/doc/Action-plan-for-oral-health-promotion-2013-2017

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Injury and poisoning hospital admissions

Description

The number and rate of admissions (hospitalisations) to public and private hospitals in Victoria due to all causes of injury and poisoning.

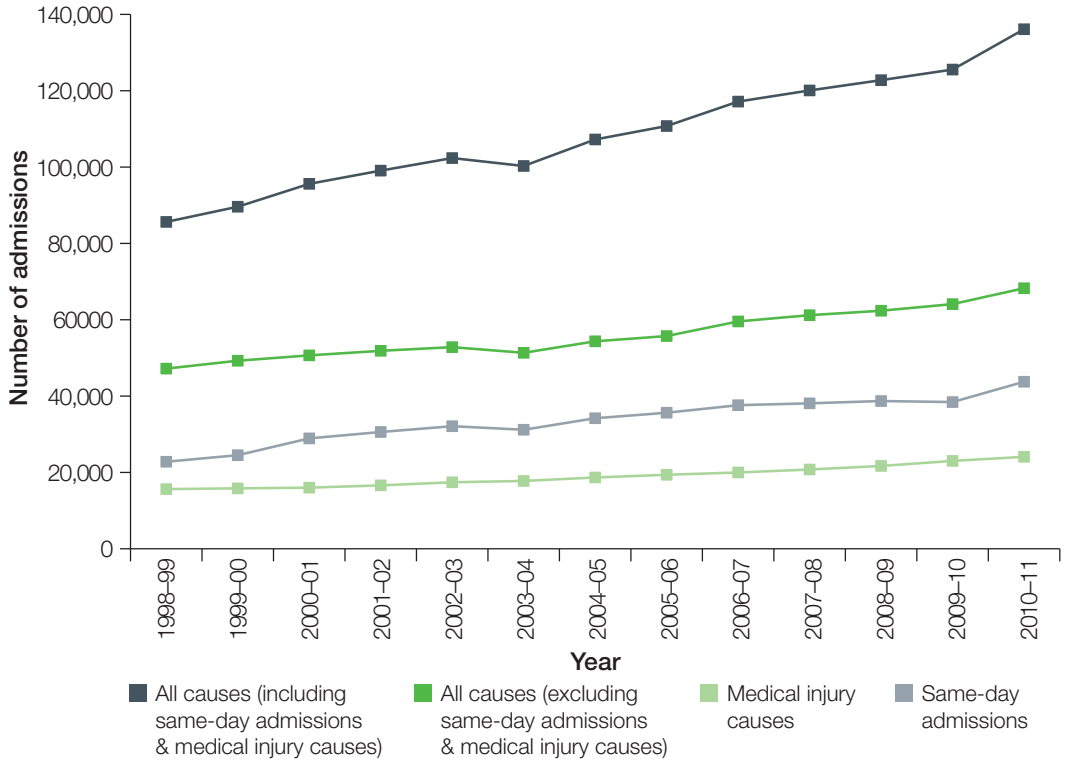
Injury has a major impact on health, causing death or resulting in serious disability or long-term conditions (AIHW 2012). As injury is largely preventable, indicators provide information to monitor the progress of efforts to reduce injury. The combined 'All injury and poisoning hospitalisations' indicator includes injury and poisoning hospitalisations from all causes, all activities, in all locations and for all ages. The indicator excludes injury and poisoning hospitalisations of non-Victorian residents, deaths and transfers within and between hospitals and readmissions.

The number of injury and poisoning hospital admissions are shown for all injury and poisoning causes, and for the categories of same day admissions and medical injuries. Analysis of trends in rates of injury and poisoning hospital admissions exclude same day admissions and medical injury causes.

Exclusion of same day admissions data from the analysis produces a more stable indicator of trend, as this data is subject to variation which reflects admission policy changes across time and between hospitals, rather than the actual experience of significant injury in a population (VISU & Clapperton 2012).

Hospital admissions due to medical injury are included within this indicator because this category is an important type of potentially preventable harm and can reflect the quality of health care provided to a population. These hospitalisations can be missed if described elsewhere, however they are described separately as the circumstances differ from other types of injury. The overall number and rate of medical injury hospitalisations can be difficult to interpret as these include a mix of causes, from those that carry little significance for medium to longer-term health (such as a short-lived drug rash) to those with a considerable contribution to morbidity.

Number of injury and poisoning hospital admissions, Victoria, 1998–99 to 2010–11



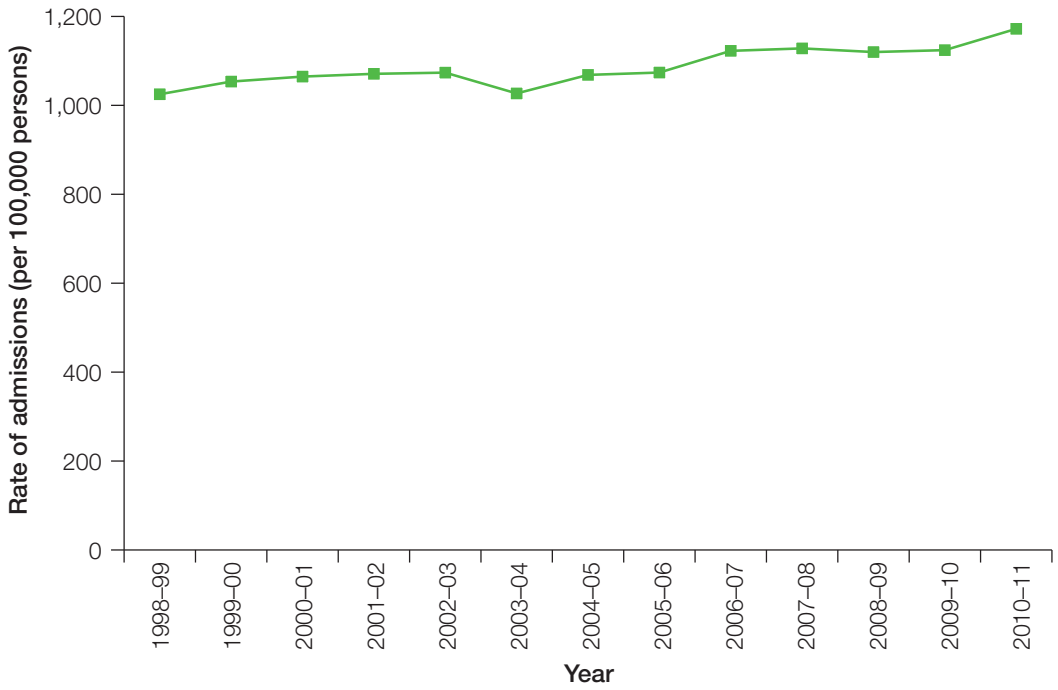
Source: Victorian Injury Surveillance Unit (VISU): Victorian Admitted Episodes Dataset (VAED) July 1998–June 2011

Number of injury and poisoning hospital admissions, Victoria, 1998–99 to 2010–11

Year of admission	All causes (including same-day admissions and medical injury causes)	All causes (excluding same-day admissions and medical injury causes)	Medical injury causes	Same-day admissions
1998–99	85,634	47,202	15,633	22,799
1999–00	89,610	49,265	15,826	24,519
2000–01	95,606	50,670	16,015	28,921
2001–02	99,071	51,865	16,612	30,594
2002–03	102,360	52,826	17,421	32,113
2003–04	100,287	51,341	17,763	31,183
2004–05	107,231	54,353	18,677	34,201
2005–06	110,754	55,728	19,388	35,638
2006–07	117,158	59,557	19,984	37,617
2007–08	120,078	61,201	20,770	38,107
2008–09	122,772	62,366	21,701	38,705
2009–10	125,552	64,099	23,016	38,437
2010–11	136,116	68,260	24,097	43,759

Source: Victorian Injury Surveillance Unit (VISU): Victorian Admitted Episodes Dataset (VAED) July 1998–June 2011

Injury and poisoning hospital admission rates for all causes (excluding same-day admissions and medical injury causes), Victoria, 1998–99 to 2010–11



Rates are age-standardised to the 2001 Victorian population.

Source: Victorian Injury Surveillance Unit (VISU): Victorian Admitted Episodes Dataset (VAED) July 1998–June 2011

Injury and poisoning hospital admission rates, Victoria, 1998–99 to 2010–11

Year of admission	All causes (including same-day admissions and medical injury causes)	All causes (excluding same-day admissions and medical injury causes)
1998–99	1,853.8	1,025.0
1999–00	1,912.4	1,053.5
2000–01	2,007.2	1,064.7
2001–02	2,046.5	1,070.9
2002–03	2,083.0	1,073.6
2003–04	2,010.2	1,026.8
2004–05	2,115.0	1,068.5
2005–06	2,144.6	1,073.8
2006–07	2,221.2	1,122.6
2007–08	2,225.4	1,128.1
2008–09	2,222.5	1,119.9
2009–10	2,222.0	1,124.2
2010–11	2,360.1	1,172.1

Rates are age-standardised to the 2001 Victorian population.

Source: Victorian Injury Surveillance Unit (VISU): Victorian Admitted Episodes Dataset (VAED) July 1998–June 2011

In 2010–11 there were a total of 2,403,540 hospital admissions in Victoria. Of these 68,260 were admissions due to injury and poisoning (excluding same-day admissions and medical injury causes), with an age-adjusted admission rate of 1,172.1 per 100,000 persons. A further 24,097 medical injury hospitalisations and 43,759 same-day injury and poisoning admissions were observed in 2010–11.

Males accounted for 52 per cent (n=35,419) of all injury and poisoning hospital admissions (excluding same-day admissions and medical injury causes) in 2010–11.

The four leading causes of injury and poisoning admissions in 2010–11 were falls (n=31,078, 46 per cent), transport (n=8,250, 12 per cent), unspecified unintentional (n=6,772, 10 per cent) and self-harm (n=3,958, 6 per cent).

The number of injury and poisoning admissions (excluding same-day admissions and medical injury causes) in Victoria has increased significantly over the 13-year period from 47,202 in 1998–99 to 68,260 in 2010–11. This represents an estimated annual change of 2.9 per cent (95% CI: 2.6–3.2) and an overall increase of 45.0 per cent (95% CI: 39.0–51.0).

The age-adjusted injury and poisoning admission rate (excluding same-day admissions and medical injury causes) increased significantly over the 13-year period from 1,025 per 100,000 persons in 1998–99 to 1,172 per 100,000 persons in 2010–11. This represents an estimated annual change of 0.9 per cent (95% CI: 0.6–1.2) and an overall increase of 12.0 per cent (95% CI: 8.0–16.0).

This increase in admissions appears to be due to a significant increase in injury and poisoning admission rates amongst adults aged 25 or over, as rates were stable in children, adolescents and young adults under 25 years of age over this period (VISU & Clapperton 2012). The cause of the increase in injury and poisoning admissions in this group is not fully understood and requires further investigation.

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Concepts

Data selection: The operational definition of a primary injury or poisoning diagnosis is an ICD-10 (International Classification of Diseases – 10th revision) code in the range S00–T89. Non-Victorian residents, deaths and transfers within and between hospitals and readmissions within 30 days were excluded.

Admissions resulting from medical injury causes are those with an ICD-10 cause code in the range Y40–Y84.

Coding allows for the designation of the cause of injury, the place of occurrence, the activity when injured, human intent (unintentional; intentional-assault, neglect, self harm; undetermined intent), the body region injured, the nature of main injury and co-occurrence of injury with other diseases and conditions that can happen by chance or because there is some association between them (co-morbidities).

This data does not include instances where an individual is treated and discharged from an emergency department (ED) within 4 hours from the time patient management commences (i.e. 'non-admissions') or cases that are defined as 'admissions' because they are treated for 4 hours or more in the ED or a short stay ward attached to the ED or depart from the ED to an inpatient bed or are transferred to another hospital campus but where there is no admission for over 24 hours.

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).

Injuries resulting from medical injury causes are defined as including: Drugs, medicaments and biological substances causing adverse effects in therapeutic use (an ICD-10 cause code in the range Y40–Y59); Misadventures to patients during surgical and medical care (Y60-Y69); Medical devices associated with misadventures in diagnostic and therapeutic use (Y70-Y82) and Surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure (Y83-Y84). They do not include complications of surgical and medical care, not elsewhere classified (T80-T89).

Same-day admissions: Defined as those discharged on the day of admission (other than those ending in transfer to another hospital).

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 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

World Health Organization International Classification of Diseases (ICD):
http://www.who.int/classifications/icd/en/
http://apps.who.int/classifications/icd10/browse/2010/en

Victorian Injury Surveillance Unit (VISU) & Clapperton A 2012, *Unintentional (accidental) hospital-treated injury Victoria 2011*, E-bulletin Edition 9, Victorian Injury Surveillance Unit (VISU), Monash Injury Research Institute, viewed 12 January 2013, <http://www.monash.edu.au/miri/research/research-areas/home-sport-and-leisure-safety/visu/e-bulletin-edition-9-hospital.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 or over who have ever been diagnosed with stroke by a doctor.

Unintentional hip fracture admissions (people aged 75 years or over): The number and rate of admissions to public and private hospitals in Victoria due to unintentional ('accidental') injury-related hip fracture among people aged 75 years or over, including same-day admissions.

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. The most common birth defects are Down syndrome, heart defects or congenital dislocated hips (DEECD 2011). Birth defects are a major cause of morbidity and mortality, representing the leading cause of death in post-neonatal infants (CCOPMM 2012a) and can be a major reason for hospitalisation or medical treatment during infancy and childhood (DEECD 2011). 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, performance and the impact of preventive strategies. In Victoria, cases of suspected or proven birth defects are notified to the Victorian Birth Defects Register, maintained by the Victorian Government Department of Health.

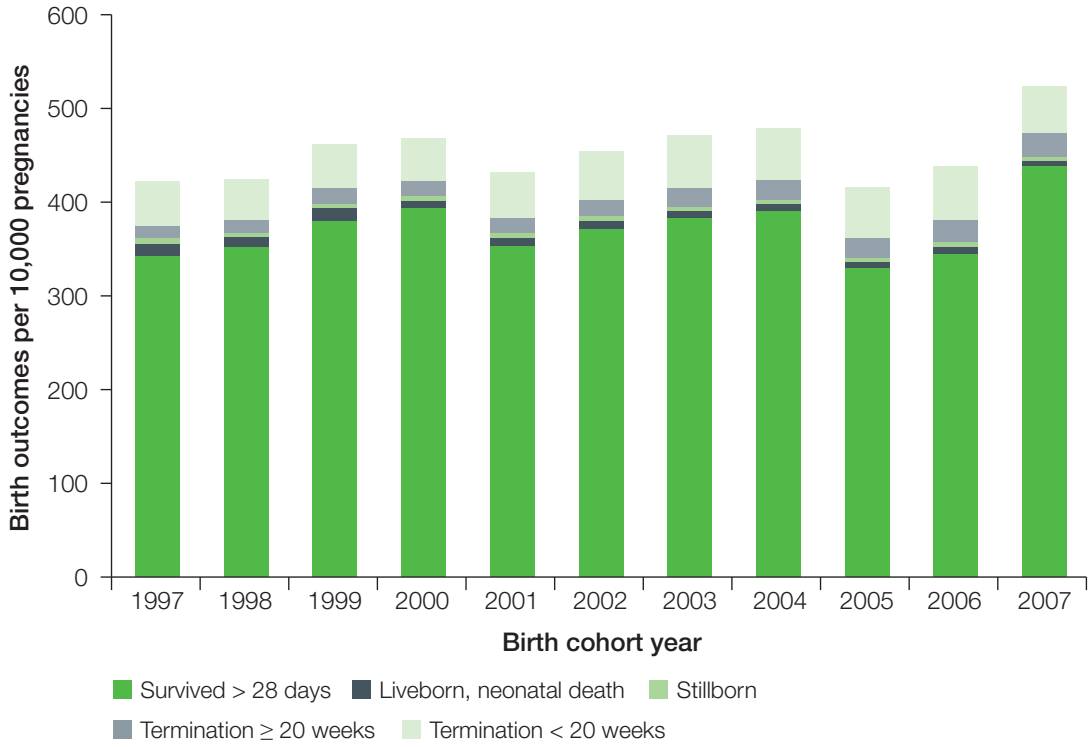
Prevalence and outcome of birth defects, Victoria, by birth cohort year, 1997–2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total number birth defects (including malformations before 20 weeks, termination)[a]	2,641	2,647	2,904	2,945	2,700	2,875	3,002	3,052	2,751	3,014	3,816
Number births (including terminations <20 weeks for a birth defect)	62,606	62,367	62,985	62,852	62,448	63,372	63,890	64,037	66,992	70,217	72,839
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	523.9
Number births	62,308	62,091	62,689	62,564	62,148	63,072	63,551	63,700	66,654	69,856	72,474
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	3,193
Liveborn, neonatal death	83	69	92	50	60	56	50	48	42	53	34
Stillborn	42	29	29	29	28	29	28	31	30	32	33
Termination ≥ 20 weeks	78	82	101	103	103	112	125	133	135	149	191
Termination < 20 weeks	298	275	295	292	307	327	356	342	338	360	365
Total number birth defects	**2,641**	**2,647**	**2,904**	**2,945**	**2,700**	**2,875**	**3,002**	**3,052**	**2,751**	**3,014**	**3,816**

a. The indicator includes all birth defects for livebirths, stillbirths and terminations of pregnancy at all gestations, irrespective of age at diagnosis, by birth cohort year.

Source: Consultative Council on Obstetric and Paediatric Mortality and Morbidity, 2012b

Birth outcome per 10,000 pregnancies, Victoria, by birth cohort year, 1997–2007



Source: Consultative Council on Obstetric and Paediatric Mortality and Morbidity, 2012b

In 2007 there were 3,816 babies born with birth defects, including those identified as terminations of pregnancy before 20 weeks' gestation for a birth defect. The majority of birth defects occurred in babies who were liveborn and survived the neonatal period (n = 3,193). This gives an overall birth defect prevalence rate of 524/10,000 or 5.2 per cent.

There were 365 pregnancies with birth defects that were terminated before 20 weeks' gestation, and another 191 pregnancies with birth defects that were terminated at 20 weeks or later. Of babies with a birth defect born at 20 weeks or later, excluding terminations, 33 were stillborn and 34 were neonatal deaths.

The number of birth defects for the most recent years may increase because of the lag time in reporting birth defects that may be diagnosed in early childhood, rather than at birth. These notifications will subsequently be attributed to the child's year of birth.

The increase in birth defects evident in 2006 and 2007 is likely to be explained by a change in the way birth defects were identified to the Victorian Birth Defects Register, known as improved case ascertainment. A more comprehensive approach was adopted affecting these birth cohort years after several Metropolitan hospitals began supplying data on cases in 2005–2006, which resulted in additional cases that would otherwise have been missed (Riley & Halliday 2008). This makes the comparison of current rates with those prior to this period more challenging and data from future years is awaited.

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Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) 2012b, *Victorian Birth Defects Register (VBDR)*, viewed 9 October 2012, <http://www.health.vic.gov.au/ccopmm/vpdc/vbdr.htm>

Department of Education and Early Childhood Development (DEECD) 2011, *State of Victoria's Children 2010*, DEECD, Melbourne.

Riley M & Halliday J 2008, *Birth defects in Victoria 2005–2006*, Victorian Perinatal Data Collection Unit, Department of Human Services, Melbourne, viewed 30 January 2013, <http://docs.health.vic.gov.au/docs/doc/Birth-defects-in-Victoria-2005-2006>

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 400g 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 400g.

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 400g 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 liveborn or stillborn infants, or terminations at any 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 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 (Riley & Halliday 2008).

Provenance

In Victoria, cases of suspected or proven birth defects are notified to the Victorian Birth Defects Register, maintained by the Victorian Government Department of Health.

For more information

Consultative Council on Obstetric and Paediatric Mortality and Morbidity, Victorian Birth Defects Register (VBDR): http://www.health.vic.gov.au/ccopmm/vpdc/vbdr.htm

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

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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.

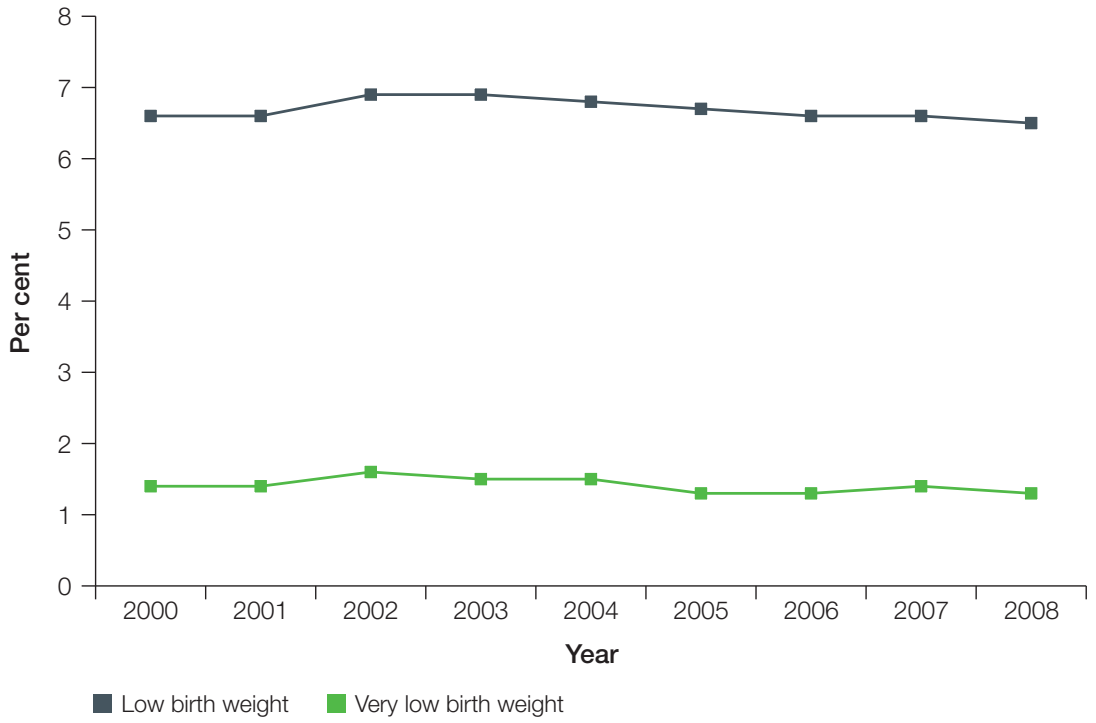
Low birth weight has been defined by the World Health Organization as weight at birth of less than 2,500 grams (5.5 pounds) (United Nations Children's Fund and World Health Organization 2004). This is based on epidemiological observations that infants weighing less than 2,500 grams are approximately 20 times more likely to die than heavier babies. The incidence of low birth weight is higher in the developing world compared to the developed world; however, the incidence is on the rise in the developed world. Low birth weight is an indicator of potential lifelong consequences to individuals, families, and communities at large.

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 a major determinant of mortality, morbidity and disability in infancy and childhood, and also has a long term impact on health outcomes in adult 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 socio-economic 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, 2000–2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Low birth weight (< 2,500 grams)	6.6	6.6	6.9	6.9	6.8	6.7	6.6	6.6	6.5
Very low birth weight (< 1,500 grams)	1.4	1.4	1.6	1.5	1.5	1.3	1.3	1.4	1.3



Source: CCOPMM 2008, CCOPMM 2011

There was little change in the proportion of babies with low birth weight and very low birth weight over the period 2000 to 2008.

Babies born to Aboriginal mothers in 2007 and 2008 were around twice as likely, as babies born to non-Aboriginal mothers, to have low birth weight (< 2,500 grams) (13.8 per cent and 6.5 per cent respectively), or very low birth weight (< 1,500 grams) (2.5 per cent and 1.3 per cent respectively) (CCOPMM 2011).

References

Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) 2008, *Births in Victoria 2005 and 2006*, Victorian Perinatal Data Collection Unit, Victorian Government Department of Human Services, Melbourne, viewed 24 October 2012, <www.health.vic.gov.au/ccopmm/index.htm>.

Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) 2011, *Births in Victoria 2007 and 2008*, Quality, Safety and Patient Experience Branch, Victorian Government Department of Health, Melbourne, viewed 24 October 2012, <www.health.vic.gov.au/ccopmm/index.htm>.

Ohlsson A & Shah P 2008, *Determinants and prevention of low birth weight: a synopsis of the evidence*, Institute of Health Economics, Alberta, Canada.

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

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).

Aboriginal status: In accordance with *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report* the term Aboriginal is taken to include both Aboriginal and Torres Strait Islander people.

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, World Health Organization.

For more information

United Nations Children's Fund and World Health Organization 2004, *Low birth weight: country, regional and global estimates*, UNICEF, New York: http://whqlibdoc.who.int/publications/2004/9280638327.pdf

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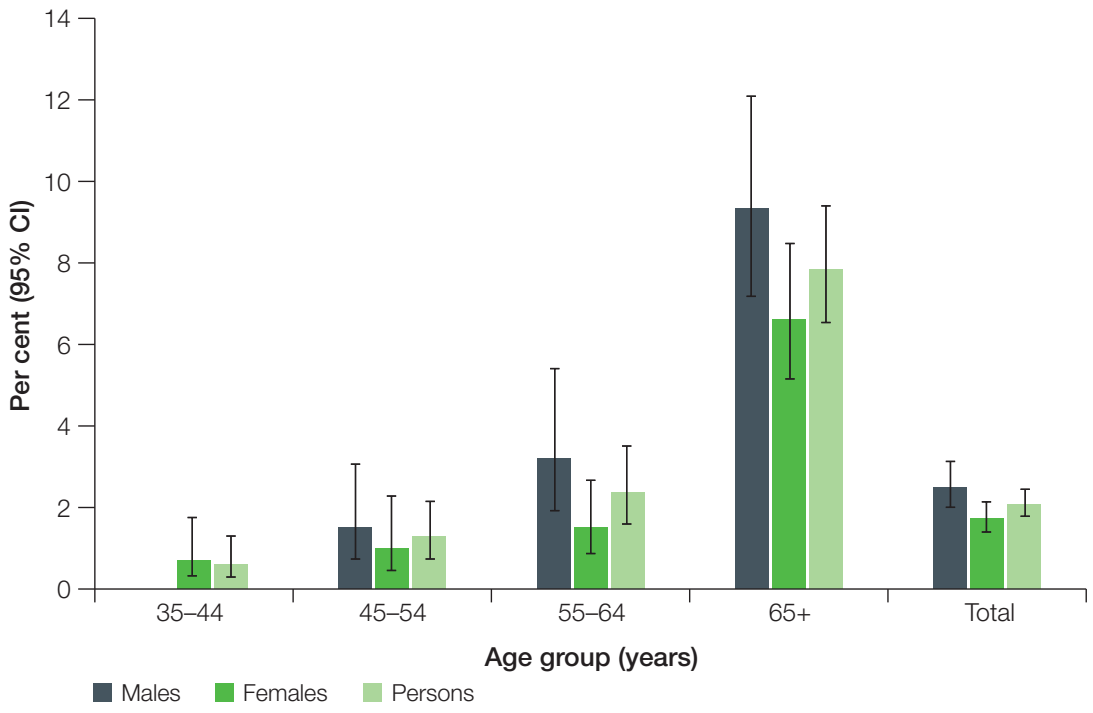
Prevalence of stroke

Description

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

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 resources required for prevention, health promotion and management of cardiovascular disease in the population.

Prevalence of stroke, by sex and age group, Victoria, 2010



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

Source: *Victorian Population Health Survey 2010*

Prevalence of stroke, by sex and age group, Victoria, 2010

Age group (years)	Males			Females			Persons		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
18–34	**			**			**		
35–44	**	0.7*	0.3	1.7	0.6*	0.3	1.3	8.9	10.3
45–54	1.5*	0.7	3.1	1.0*	0.4	2.3	1.3*	0.7	2.1
55–64	3.2*	1.9	5.4	1.5*	0.9	2.7	2.4	1.6	3.5
65+	9.3	7.2	12.1	6.6	5.1	8.5	7.8	6.5	9.4
Total	**2.5**	**2.0**	**3.1**	**1.7**	**1.4**	**2.1**	**2.1**	**1.8**	**2.4**

Note that the figures may not add up 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 estimate for Victoria and have been age-standardised to the 2006 Victorian population.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

** Estimate has an RSE greater than 50 per cent and is not reported as it is unreliable for general use.

Source: *Victorian Population Health Survey 2010*

Estimates from the *Victorian Population Health Survey 2010* indicate that 2.1 per cent of adults, aged 18 years or over, had ever been diagnosed by a doctor with stroke. The prevalence of stroke has increased with age, with adults aged 65 years or 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*, ABS, Canberra.

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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 survey data obtained through self-report 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

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

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

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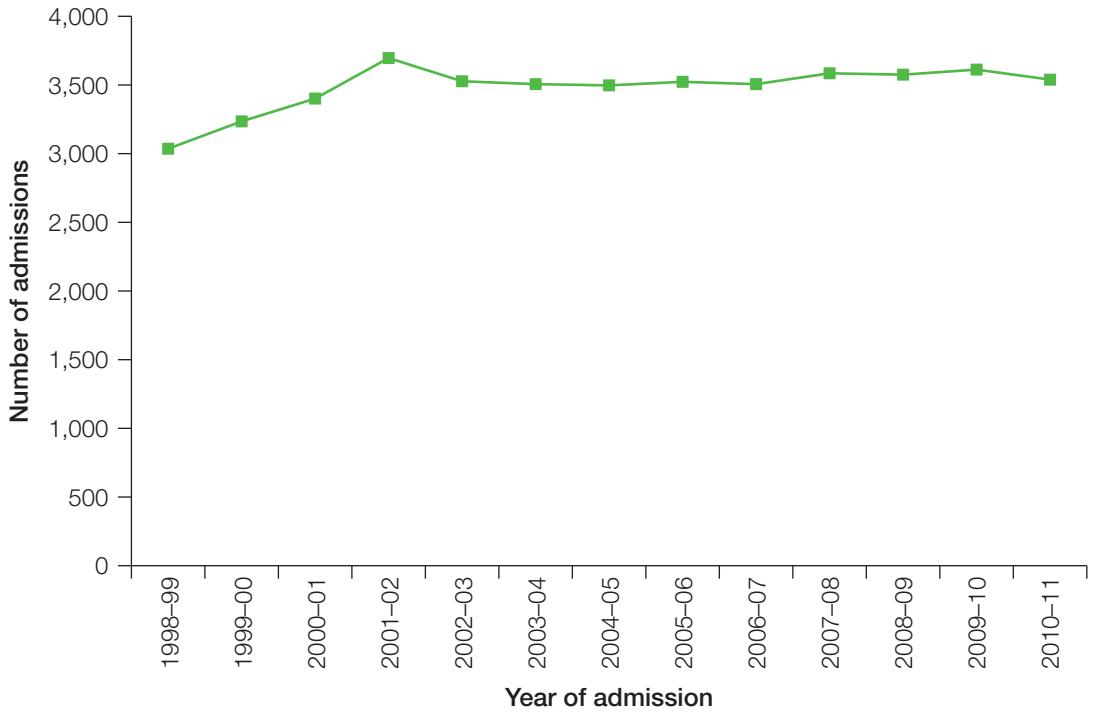
Unintentional injury-related hip fracture hospital admissions among people aged 75 years or over

Description

The number and rate of admissions to public and private hospitals in Victoria due to unintentional ('accidental') injury-related hip fracture among people aged 75 years or over, including same-day admissions.

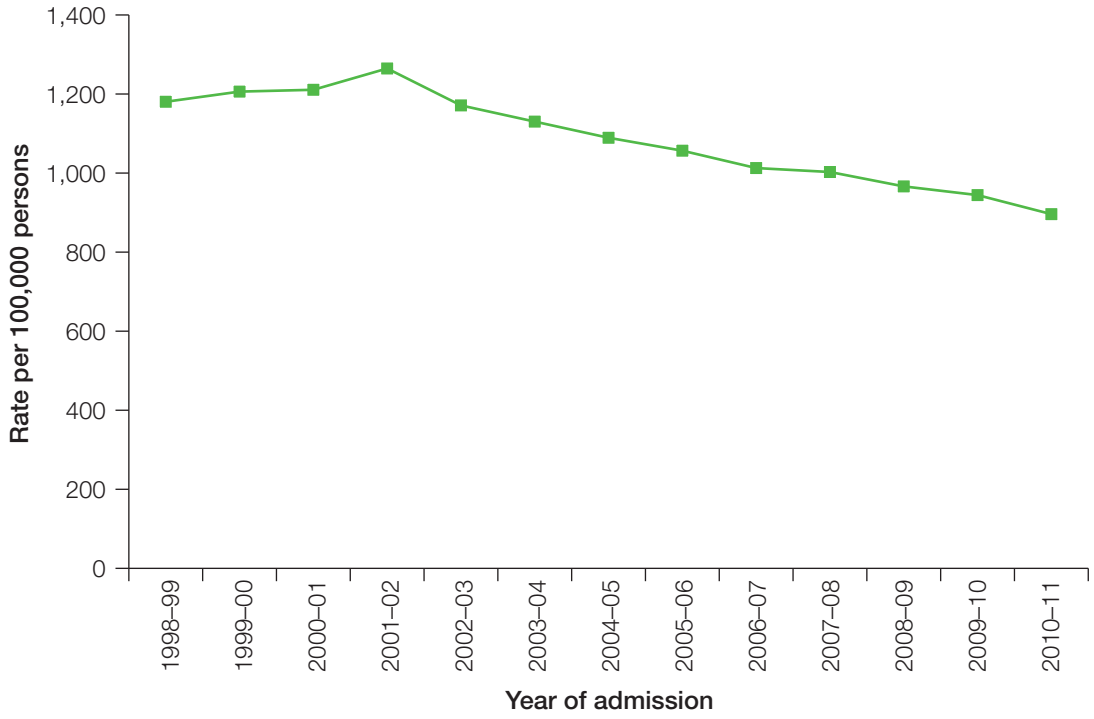
Among older people, the number of hospitalisations per year due to injuries from falls is large and is increasing as the Victorian population ages. The rate of fall-related injury hospitalisations is particularly high among people aged 75 years or over. Older women are at greater risk of hospitalisation for fall-related injury than males in the same age group but the gap narrows as age increases. Hip fractures are a relatively common fracture associated with a fall incident. They represent a substantial proportion of the burden of disease and health expenditure for older people in the population.

Number of unintentional injury-related hip fracture hospital admissions, Victoria, 1998–99 to 2010–11



Source: Victorian Injury Surveillance Unit (VISU): Victorian Admitted Episodes Dataset (VAED) July 1998–June 2011

Unintentional injury-related hip fracture hospital admission rates (including same day admissions) among people aged 75 years or over, Victoria 1998–99 to 2010–11



Rates are age-standardised to the 2001 Victorian population.

Source: Victorian Injury Surveillance Unit (VISU): Victorian Admitted Episodes Dataset (VAED) July 1998–June 2011

Frequency and rate of unintentional injury-related hip fracture hospital admissions among people aged 75 years or over, Victoria 1998–99 to 2010–11

Year of admission	Frequency	Rate per 100,000
1998–99	3,036	1,180.4
1999–00	3,235	1,206.1
2000–01	3,401	1,210.7
2001–02	3,696	1,264.6
2002–03	3,527	1,171.2
2003–04	3,506	1,130.2
2004–05	3,497	1,089.3
2005–06	3,523	1,056.6
2006–07	3,506	1,012.7
2007–08	3,585	1,002.7
2008–09	3,575	966.3
2009–10	3,612	944.3
2010–11	3,539	896.1

Rates are age-standardised to the 2001 Victorian population.

Source: Victorian Injury Surveillance Unit (VISU): Victorian Admitted Episodes Dataset (VAED) July 1998–June 2011

In 2010–11, 3,539 Victorians aged 75 years or over were admitted to hospital with unintentional ('accidental') injury-related hip fracture, an age-adjusted admission rate of 896.1 per 100,000 persons. Females accounted for 74 per cent (n=2,617) of unintentional injury-related hip fracture hospital admissions in 2010–11.

The leading cause of unintentional injury-related hip fracture in people aged 75 years or over in 2010–11 was falls, accounting for 95 per cent of all hospital admissions (n=3,353). Fall-related hip fractures were most commonly the result of same level slips, trips and stumbles (33.0 per cent of falls, n=1,100).

The frequency of unintentional injury-related hip fracture admissions increased significantly over the thirteen-year period from 3,036 in 1998–99 to 3,539 in 2010–11. This represents an estimated annual change of 0.8 per cent (95% CI: 0.3–1.4) and an overall increase of 11.0 per cent (95% CI: 4.0–20.0).

However, the age-adjusted unintentional injury-related hip fracture admission rate decreased significantly over the thirteen-year period from 1,180.4 per 100,000 persons in 1998–99 to 896.1 per 100,000 persons in 2010–11. This represents an estimated annual decrease of 2.6 per cent (95% CI: 2.1–3.1) and an overall reduction of 29.0 per cent (95% CI: 24.0–34.0).

In summary, while the number of fall-related hip fractures has increased, the rate per 100,000 population has decreased significantly over the period studied.

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

Data selection: The operational definition of an injury, if the cause of injury was unintentional and the person aged 75 years or over is identified with an ICD-10 (International Classification of Diseases – 10th revision) code in the range S72.0–S72.2. Non-Victorian residents, deaths and transfers within and between hospitals and readmissions within 30 days were excluded.

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

Unintentional injury: Injury cases that were documented as being 'accidental'. Excludes injuries that were suicidal, homicidal, purposefully self-inflicted, purposely inflicted by other people, 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

World Health Organization International Classification of Diseases (ICD):
http://www.who.int/classifications/icd/en/
http://apps.who.int/classifications/icd10/browse/2010/en

Victorian Government Health Information, Department of Health, *Falls prevention*:
http://www.health.vic.gov.au/agedcare/maintaining/falls_dev/

Australian Government Department of Health and Ageing, *Don't Fall For It – A guide to preventing falls for older people*:
http://www.health.gov.au/internet/publications/publishing.nsf/Content/dff-toc

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 preventive 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 can 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 20 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 (suicides): The number and rate (per 100,000 persons) of deaths in Victoria due to intentional self-harm (suicide).

Cancer survival: The estimated proportion of people with a particular cancer who have survived at least five years from their diagnosis.

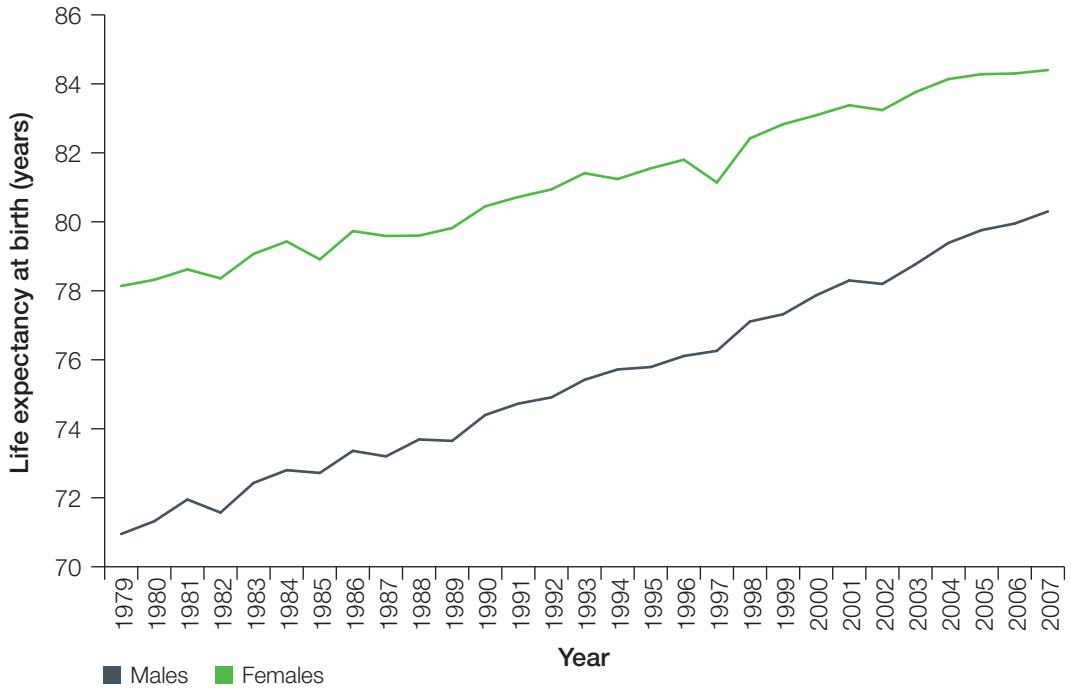
Life expectancy at birth

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's 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, 1979–2007



Source: Department of Health 2009

Male and female life expectancy at birth has progressively increased over time, from 78.1 years in 1979 to 84.4 years in 2007 for females and from 71.0 years in 1979 to 80.3 years in 2007 for males. The difference in life expectancy at birth between males and females has progressively decreased from 7.2 years in 1979 to 4.1 years in 2007.

References

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

Department of Health 2009, *Life expectancy at birth Victoria, 1979 to 2007 by sex*, Department of Health, Melbourne, viewed 16 October 2012, <http://www.health.vic.gov.au/healthstatus/admin/life-expectancy/le0307.htm>.

Provenance

This indicator is used as one of the components of the United Nations Development Programme's 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

Organisation for Economic Co-operation and Development 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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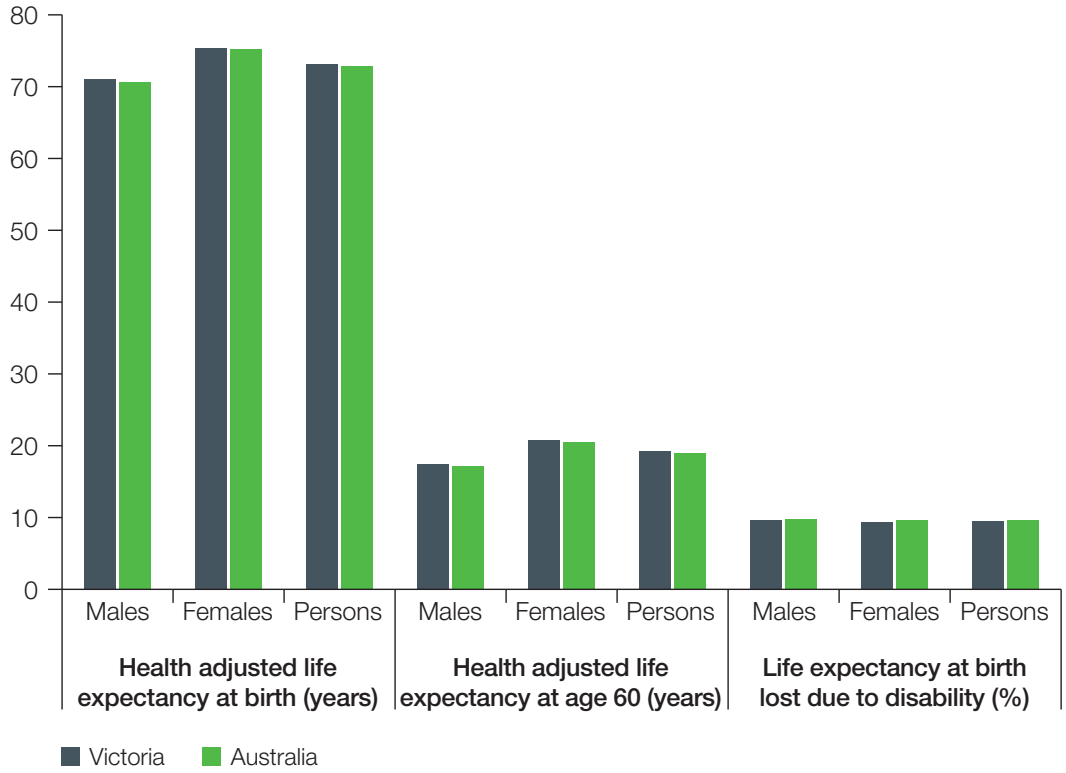
Health-adjusted life expectancy (HALE)

Description

The average years of equivalent 'healthy' life that a person can 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 of life by the proportion of time spent at each age in a state of less than perfect health, adjusted for the relative severity of those health states. The sum of prevalent years lost due to disability across all causes is used to derive this 'severity-weighted' proportion for each age.

Health-adjusted life expectancy (HALE) and proportion of 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), and 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.

References

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

Health-adjusted life expectancy 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 (PMR) is an important health status indicator that addresses the two related issues of late foetal death and early infant (neonatal) 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. Under-reporting and misclassification are common, especially for deaths occurring early on in life.

Perinatal deaths and crude and adjusted perinatal mortality rates, Victoria, 2005–2009

	2005	2006	2007	2008	2009
Number					
Live births[a]	66,041	69,229	71,780	71,843	72,474
Stillbirths	599	607	672	682	767
Neonatal deaths	247	227	241	215	226
Perinatal deaths	846	834	913	897	993
PMR per 1,000 births[b]					
Stillbirths	9.0	8.7	9.3	9.4	10.5
Neonatal deaths	3.7	3.3	3.4	3.0	3.1
Perinatal deaths	12.7	11.9	12.6	12.4	13.6
Number (adjusted for terminations of pregnancy for maternal psychosocial indications)					
Live births	66,039	69,229	71,780	71,843	72,474
Stillbirths	421	457	508	504	553
Neonatal deaths	245	227	241	215	226
Perinatal deaths	666	684	749	719	779
PMR per 1,000 births[b] (adjusted for terminations of pregnancy for maternal psychosocial indications)					
Stillbirths	6.3	6.6	7.0	7.0	7.6
Neonatal deaths	3.7	3.3	3.4	3.0	3.1
Perinatal deaths	10.0	9.8	10.4	9.9	10.7

Note: this table contains amended figures since previous reports.

a. Live births include babies born alive who died soon after, following induction of labour for congenital abnormalities and other foetal conditions.

b. Stillbirth and perinatal death rates were calculated using total births (live births and stillbirths) as the denominator. Neonatal death rates were calculated using live births as the denominator.

Source: Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2012

There were 993 perinatal deaths in Victoria in 2009, which equates to a PMR of 13.6 deaths per 1,000 total births. The stillbirth rate was 10.5 deaths per 1,000 total births, and the neonatal mortality rate was 3.1 deaths per 1,000 live births.

In Victoria, terminations of pregnancy at ≥ 20 weeks' gestation for maternal psychosocial indications (in the absence of foetal abnormality) comprise a significant proportion of perinatal deaths. A second (adjusted) PMR has been calculated excluding terminations of pregnancy for maternal psychosocial indications. The adjusted rate allows for better interpretation of the PMR as a public health indicator and for comparison with other jurisdictions. The adjusted PMR was 10.7 per 1,000 births and the adjusted stillbirth rate in 2009 was 7.6 per 1,000 total births.

Both the crude and adjusted PMR increased in 2009 compared with 2008. The increase can be explained by the increase in stillbirths related to congenital abnormalities and maternal conditions (CCOPMM 2012). The full report from the Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) should be referred to for further information.

References

Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) 2012, *Annual report for the year 2009, incorporating births in Victoria and the 48th survey of perinatal deaths in Victoria*, State Government of Victoria, Melbourne, viewed 9 October 2012, <www.health.vic.gov.au/ccopmm/index.htm>

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 400g who, after being born, breathes or shows any evidence of life such as a heartbeat.

Perinatal death: Perinatal deaths refer to stillbirths and live births with only brief survival and are grouped on the assumption that similar factors are associated with these losses. The CCOPMM defines perinatal death to include stillbirth and neonatal deaths within 28 days of birth of infants of ≥ 20 weeks' gestation or if gestation is unknown of birth weight ≥ 400 g.

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 400g who did not, at any time after delivery, breathe or show any evidence of life such as a heartbeat.

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

Limitations

There are different definitions in Australia for reporting perinatal deaths which limits the comparability of the perinatal mortality rate between different jurisdictions. In Victoria, the CCOPMM reports on all perinatal deaths, irrespective of the mother's usual place of residence, with gestation of at least 20 weeks, or where gestation is unknown, with a birth weight of at least 400g. Alternatively, the Australian Bureau of Statistics (ABS) reports on perinatal deaths according to the mother's usual place of residence, where the birth weight is at least 400g, and if birth weight is unknown, a gestational age of at least 20 weeks. As such, the PMR reported by the ABS may differ from the PMR reported by the CCOPMM.

Provenance

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

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Avoidable mortality

Description

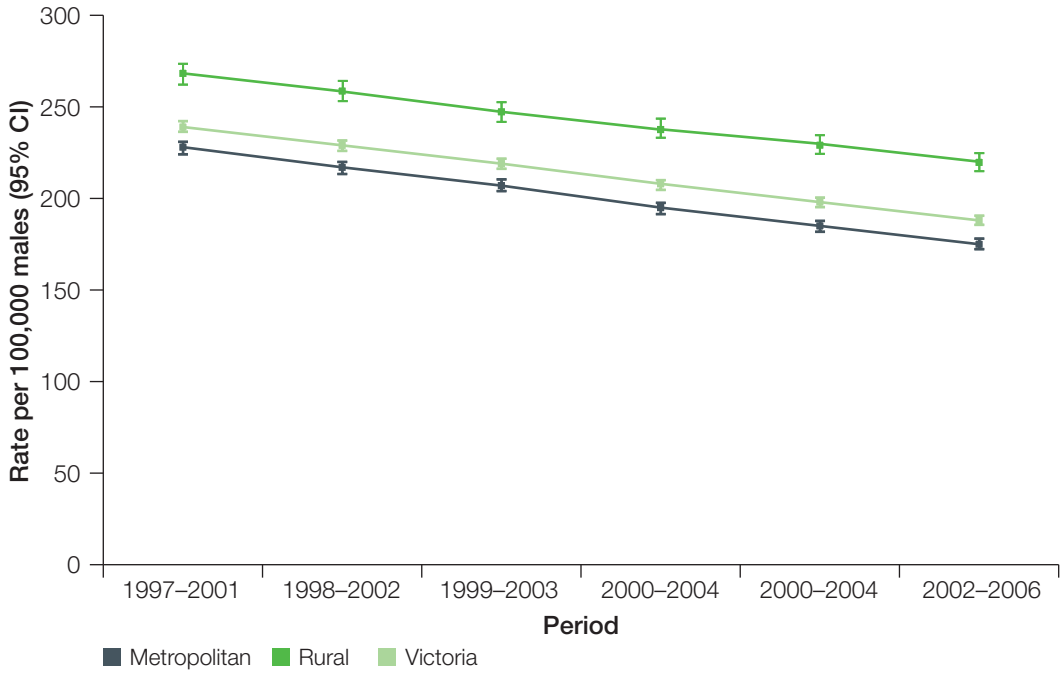
There are two measures included in this indicator:

1. The number of avoidable deaths, expressed as a rate per 100,000 persons.
2. The top 20 causes of avoidable mortality by number of deaths and rate per 100,000 persons.

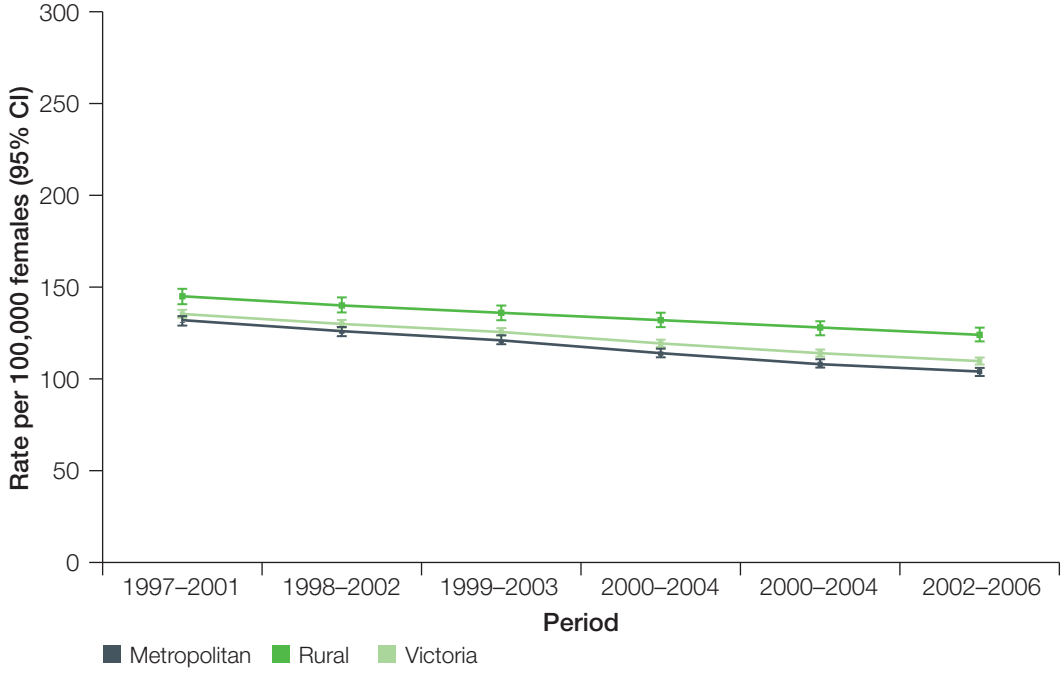
Avoidable mortality (AM) is a population-based method of counting untimely and unnecessary deaths from diseases for which effective public health or medical interventions, or both, are available. An excess of deaths due to preventable causes may help to identify shortcomings in a healthcare system that reflects a lack of availability and/or use of those interventions, therefore providing the impetus for change. Avoidable mortality therefore refers to deaths classed as 'avoidable' that have the 'potential' to be avoided (Tobias & Jackson 2001).

Avoidable mortality rates by locality, 1997–2001 to 2002–2006

Males



Females



95% CI = 95 per cent confidence interval

Data are age-standardised to the 2001 Victorian population.

Data for five years have been aggregated (for example 2002–2006) for each period.

Source: Australian Bureau of Statistics mortality and population data 1997–2007

Top twenty causes of avoidable mortality, by sex, Victoria, 2002–2006

		Males			
AM condition		Number of deaths	Standardised rate per 100,000	95% CI	
				LL	UL
1	Ischaemic heart disease	5,431	46.8	45.5	48.0
2	Lung cancer	3,169	27.3	26.4	28.3
3	Suicide	1,906	16.4	15.7	17.1
4	Colorectal cancer	1,708	14.7	14.0	15.4
5	Road traffic injury	1,200	10.3	9.8	10.9
6	Diabetes	1,116	9.6	9.0	10.2
7	Chronic obstructive pulmonary disease	1,032	8.8	8.3	9.4
8	Stroke	906	7.8	7.3	8.3
9	Alcohol-related conditions	781	6.8	6.3	7.3
10	Poisoning	609	5.2	4.8	5.6
11	Skin cancers	585	5.0	4.6	5.5
12	Hepatitis and liver cancer	565	4.9	4.5	5.3
13	Stomach cancer	551	4.7	4.4	5.1
14	Oral cancers	417	3.6	3.3	4.0
15	Congenital anomalies	179	1.5	1.3	1.8
16	Leukaemia	177	1.5	1.3	1.7
17	Epilepsy	154	1.3	1.1	1.5
18	Hypertensive disease	129	1.1	0.9	1.3
19	Drowning	108	0.9	0.8	1.1
20	Respiratory infections	97	0.8	0.7	1.0
	Unavoidable Mortality	13,909	120	118	122
	Total Avoidable Mortality	21,874	188	186	191
	Primary AM	12,617	109	107	111
	Secondary AM	4,856	42	41	43
	Tertiary AM	4,402	38	37	39

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Data are age-standardised to the 2006 Victorian population.

Data for five years have been aggregated (2002–2006) for each period.

Source: Australian Bureau of Statistics mortality and population data 2002–2007

Top twenty causes of avoidable mortality, by sex, Victoria, 2002–2006

		Females			
AM condition		Number of deaths	Standardised rate per 100,000	95% CI	
				LL	UL
1	Breast cancer	2,183	19.0	18.2	19.8
2	Lung cancer	1,721	14.9	14.2	15.6
3	Ischaemic heart disease	1,715	14.7	14.0	15.4
4	Colorectal cancer	1,142	9.8	9.3	10.4
5	Chronic obstructive pulmonary disease	774	6.7	6.2	7.1
6	Suicide	632	5.4	5.0	5.9
7	Stroke	579	4.9	4.5	5.3
8	Diabetes	573	4.9	4.5	5.3
9	Road traffic injury	399	3.4	3.1	3.8
10	Stomach cancer	297	2.6	2.3	2.9
11	Skin cancers	283	2.5	2.2	2.7
12	Poisoning	275	2.4	2.1	2.6
13	Hepatitis and liver cancer	213	1.8	1.6	2.1
14	Cancer of uterus	212	1.8	1.6	2.1
15	Alcohol-related conditions	191	1.7	1.4	1.9
16	Cervical cancer	142	1.2	1.0	1.4
17	Asthma	117	1.0	0.8	1.2
18	Congenital anomalies	109	0.9	0.8	1.1
19	Oral cancers	96	0.8	0.7	1.0
20	Hypertensive disease	97	0.8	0.7	1.0
	Unavoidable Mortality	8,967	77	76	79
	Total Avoidable Mortality	12,725	110	108	112
	Primary AM	6,100	53	51	54
	Secondary AM	3,391	29	28	30
	Tertiary AM	3,234	28	27	29

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Data are age-standardised to the 2006 Victorian population.

Data for five years have been aggregated (2002–2006) for each period.

Source: Australian Bureau of Statistics mortality and population data 2002–2007

There has been a steady decline in the avoidable mortality rate between the periods 1997–2001 and 2002–2006, for both males and females in Victoria. However, the rate for metropolitan areas of the state was significantly lower than that for rural areas, for all periods and for both sexes.

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 2002–2006. 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 diseases to appear in the top twenty causes of avoidable mortality were respiratory infections in males and hepatitis, when classified with liver cancer, in both males and females.

Summary avoidable mortality rates (total, primary, secondary and tertiary AM, as defined by Tobias & Jackson 2001) were significantly higher in males compared with females, as was the rate for unavoidable mortality.

References

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, which are referred to as the 'metropolitan area' of Victoria:

- Eastern Metropolitan Region
- North & West Metropolitan Region
- Southern Metropolitan Region

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

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

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 the distinction between avoidable and unavoidable causes of death is not fixed. 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.

Provenance

Avoidable mortality data are reported by the Australian Bureau of Statistics.

For more information

Victorian Health Information Surveillance System (VHISS):
http://www.health.vic.gov.au/healthstatus/interactive/vhiss.htm

Department of Health regions:
http://www.health.vic.gov.au/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

Nolte E & McKee M 2003, 'Measuring the health of nations: analysis of mortality amenable to health care', *British Medical Journal*, vol. 327, no. 7424, pp. 1129.

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.

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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 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.

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. Avoidable mortality therefore refers to deaths classed as 'avoidable' that have the 'potential' to be avoided.

Determination of the annual percentage change in avoidable mortality rates can assist in monitoring interventions designed to minimise these untimely and unnecessary deaths.

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

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

* Not statistically significant

Source: Australian Bureau of Statistics Mortality Datasets 1997–2003

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. The greatest annual decline was observed for ischaemic heart disease (-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, primary, secondary and tertiary avoidable mortality, for both males and females.

References

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 the distinction between avoidable and unavoidable causes of death is not fixed. 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.

Provenance

Avoidable mortality data are reported by the Australian Bureau of Statistics.

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

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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.

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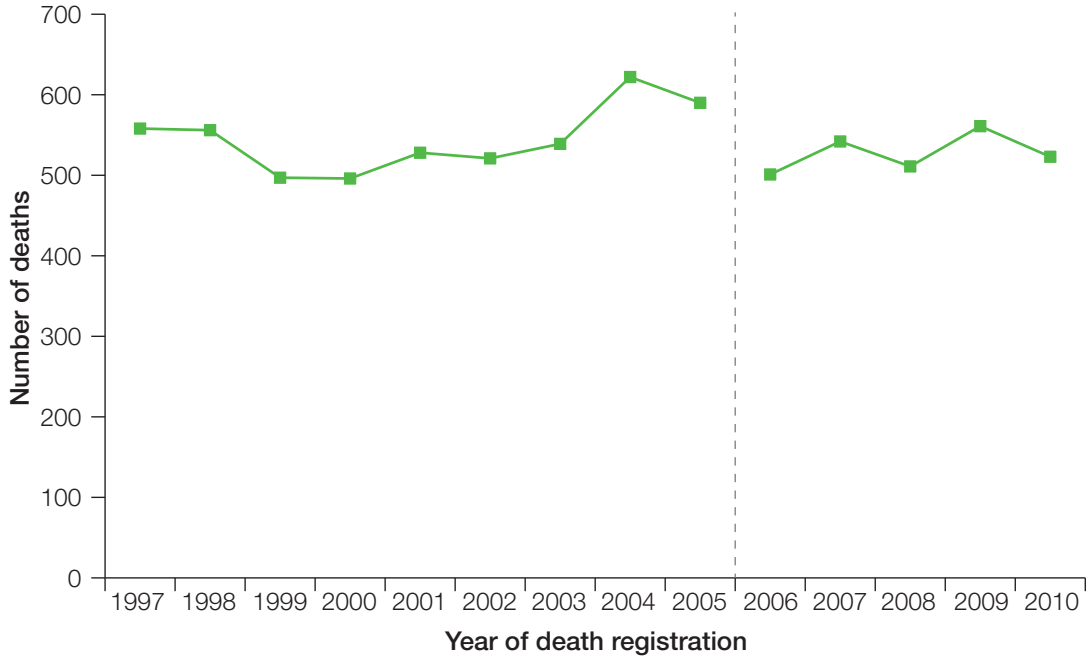
Intentional self-harm mortality (suicides)

Description

The number and rate (per 100,000 persons) of deaths in Victoria due to intentional self-harm (suicide).

Intentional self-harm mortality (suicide) refers to injury and poisoning cases where the injury causing death is purposefully self-inflicted. Cases of undetermined intent are excluded. Suicides are caused by a number of factors and there is no simple solution to prevent them. Prevention requires 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).

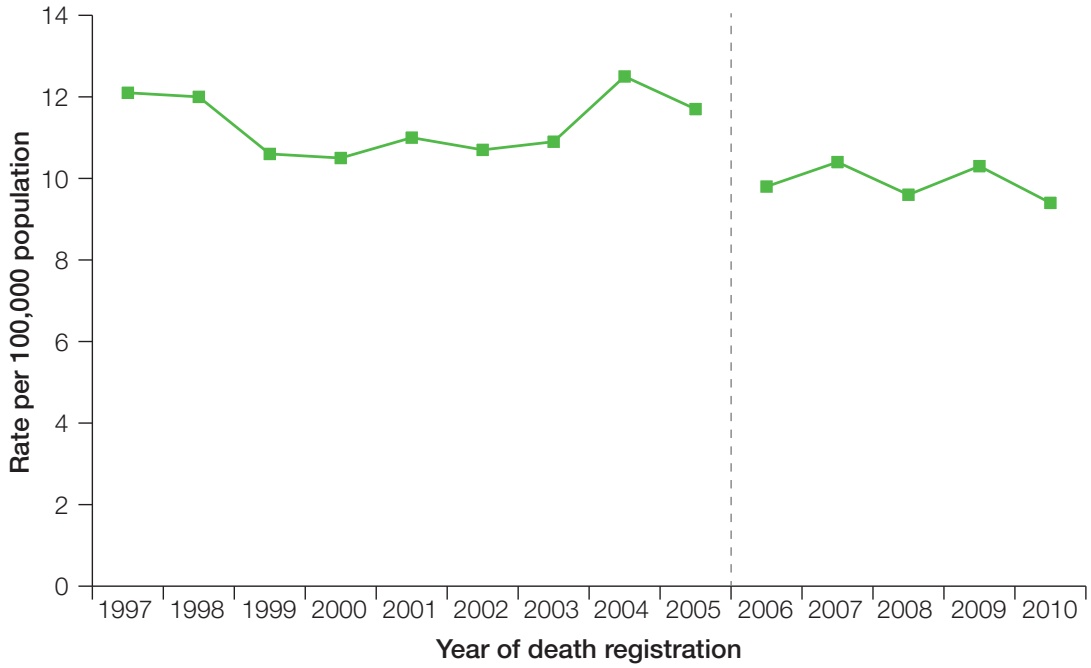
Number of deaths from intentional self-harm (suicide), Victoria 1997–2010



Break in trend line reflects changes in Australian Bureau of Statistics death registrations.

Source: Victorian Injury Surveillance Unit (VISU): (1) 1997–2005 data obtained from Australian Bureau of Statistics Death Unit Record File; (2) 2006–2010 data obtained from 3303.0 – Causes of Death, Australia, 2010, Australian Bureau of Statistics.

Intentional self-harm mortality (suicide) rate[a], Victoria 1997–2010



a. Rates are not age-adjusted due to the lack of available unit record data over the whole period.

Break in trend line reflects changes in Australian Bureau of Statistics death registrations.

Source: Victorian Injury Surveillance Unit (VISU): (1) 1997–2005 data obtained from Australian Bureau of Statistics Death Unit Record File; (2) 2006–2010 data obtained from 3303.0 – Causes of Death, Australia, 2010, Australian Bureau of Statistics.

Number and rate[a] (per 100,000 persons) of deaths due to intentional self-harm (suicide), Victoria 1997–2010

Year of death registration	Number	Rate per 100,000[a]
1997	558	12.1
1998	556	12.0
1999	497	10.6
2000	496	10.5
2001	528	11.0
2002	521	10.7
2003	539	10.9
2004	622	12.5
2005	590	11.7
2006[b]	501	9.8
2007[b]	542	10.4
2008[b]	511	9.6
2009[b]	561	10.3
2010[b]	523	9.4

a. Rates are not age-adjusted due to the lack of available unit record data over the whole period.

b. Introduction of the cause of death revisions process by the Australian Bureau of Statistics for these years.

Source: Victorian Injury Surveillance Unit (VISU): (1) 1997–2005 data obtained from Australian Bureau of Statistics Death Unit Record File; (2) 2006–2010 data obtained from 3303.0 – Causes of Death, Australia, 2010, Australian Bureau of Statistics.

In 2010, 523 people died in Victoria due to intentional self-harm injury (suicide), a death rate of 9.4 per 100,000 persons.

The trend in the frequency and rate of suicides over the period 1997–2010 cannot be estimated due to the introduction of the cause of death revisions process in 2006 by the Australian Bureau of Statistics (see 'Limitations').

References

Department of Health and Ageing (DoHA) 2010, *National suicide prevention strategy*, DoHA, Canberra, viewed 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-10 (International Classification of Diseases – 10th revision) cause of death code in the range X60–X84 in Chapter XX (External causes of morbidity and mortality) of the ICD. Data selection is based on Victoria as the usual state of residence.

Limitations

From 2006 all causes of death data onward are subject to a revisions process – once data for a reference year are 'final', they are no longer revised. Affected data described for this indicator are: 2006 (final) 2007 (final), 2008 (final), 2009 (revised), 2010 (preliminary). See Explanatory Notes 35–39 and Technical Notes, Causes of Death Revisions, 2006 and Causes of Death Revisions, 2008 and 2009:
http://www.abs.gov.au/ausstats/abs@.nsf/Products/3303.0~2010~Technical+Note~Causes+of+Death+Revisions+2006+(Technical+Note)?OpenDocument

Provenance

Cause of death data are reported by the Australian Bureau of Statistics.

For more information

World Health Organization International Classification of Diseases (ICD):
http://www.who.int/classifications/icd/en/
http://apps.who.int/classifications/icd10/browse/2010/en

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

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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

Victorian Government Health Information, Department of Health. Suicide Prevention: General Information:
http://www.health.vic.gov.au/mentalhealth/suicide/index.htm

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Cancer survival

Description

The estimated proportion of people 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 (Thursfield et al. 2012).

Five-year survival (per cent), by sex and cancer site, Victoria, 2006–2010

	Per cent		
Cancer site	All persons	Male	Female
Oral cavity	60	59	63
Salivary glands	70	62	77
Pharynx	57	57	57
Oesophagus	16	16	17
Stomach	26	26	26
Colorectal	65	65	65
Liver	14	15	12
Gallbladder	18	19	18
Pancreas	6	4	7
Larynx	63	64	63
Lung	14	12	16
Melanoma	90	87	93
Mesothelioma	6	5	9
Connective tissue	62	64	61
Breast (female)	-	-	89
Cervix	-	-	74
Uterus	-	-	84
Ovary	-	-	41
Prostate	-	91	-
Testis	-	98	-

Five-year survival (per cent), by sex and cancer site, Victoria, 2006–2010 (continued)

	Per cent		
Cancer site	All persons	Male	Female
Kidney	70	70	71
Renal pelvis	40	40	41
Bladder	49	51	43
Central nervous system	24	22	27
Thyroid	93	90	95
Unknown primary	13	14	11
Hodgkin lymphoma	88	86	90
Mature B-cell neoplasms	66	66	66
Mature T- and NK-cell neoplasm	56	54	58
Acute lymphoblastic leukaemia	71	70	73
Non-Hodgkin lymphoma	68	67	67
Lymphoid neoplasm, NOS	67	73	60
Acute myeloid leukaemia	24	23	25
Chronic myeloid leukaemia	77	79	75
All cancer	**65**	**64**	**66**

Source: Thursfield et al. 2012

Overall, five-year survival for Victorians with cancer has increased from 47 per cent to 65 per cent in the period from 1986–1990 to 2006–2010, with a significant increase from 60 per cent to 65 per cent from the 2001–2005 to 2006–2010 time periods (Thursfield et al. 2012).

Cancers with the highest five-year survival rates were testis (98 per cent), thyroid (93 per cent), prostate (91 per cent), melanoma (90 per cent), breast (89 per cent) and Hodgkin lymphoma (88 per cent). Cancers with the lowest five-year survival rates were pancreas (6 per cent), mesothelioma (6 per cent), liver (14 per cent), lung (14 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 and cancers of unknown primary site. The five-year survival rates were higher for females, compared with males, for the following cancers – all cancer, and cancers of the lung, salivary glands, thyroid, central nervous system and for melanoma (Thursfield et al. 2012).

References

Thursfield V, Farrugia H, Karahalios E, Giles G 2012, *Cancer in Survival Victoria 2012: Estimates of survival for 2006–2010 (and comparisons with earlier periods)*, Cancer Council Victoria, Melbourne.

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

Concepts

'Period' survival analysis uses only the most recent interval survival estimate of cases diagnosed in different calendar years (cross-sectional estimate of survival). This method gives estimates that are both contemporary and precise (Brenner & Hakulinen 2007).

The estimate of period five-year survival for people in 2006–2010 uses the first-year interval survival for patients diagnosed in 2010, the two-year interval survival for patients diagnosed in 2009, and so on. 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.

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:
www.cancervic.org.au/about-our-research/registrystatistics

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

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Determinants of health

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
- Risk of harm from alcohol consumption
- Blood pressure checks
- Cholesterol checks
- Chlamydia notifications
- Breast cancer screening participation
- Bowel cancer screening participation
- Cervical cancer screening participation
- Children fully immunised at age 60 to < 63 months

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

- Body weight status
- Newborn screening

Community and socioeconomic factors: Community factors relating to social capital such as support networks and community engagement, and socioeconomic factors such as housing, education, employment and income.

- Population
- Socioeconomic factors
- Social connectedness

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

- Air quality
- Quality of drinking water
- 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 or over who meet the guidelines for daily fruit and vegetable consumption.

Physical activity levels: The proportion of adults aged 18 years or 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 or over who reported current smoking, by sex, over time.

Risk of harm from alcohol consumption: There are two measures included in this indicator:

1. The proportion of adults aged 18 years or over at long-term risk of harm from alcohol consumption.
2. The proportion of adults aged 18 years or over at short-term risk of harm from alcohol consumption.

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

Cholesterol checks: The proportion of adults aged 18 years or over who have had a cholesterol check in the preceding 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 participated in the BreastScreen Victoria Program within a two-year period, over time.

Bowel cancer screening participation: The proportion of eligible people who participated in the Bowel Cancer Screening Program, by sex and age.

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

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

Fruit and vegetable consumption

Description

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

Good nutrition is vital for health and wellbeing. Fruit and vegetables contain essential vitamins, minerals, fibre, and other bioactive compounds, and a diet high in these foods helps maintain healthy body weight, protect against infections, and is associated with lower risk for a number of chronic diseases, including diabetes and cardiovascular disease (AIHW 2012a; 2012b). A high-level international review on fruit and vegetable consumption and cancer risk, coordinated by the World Cancer Research Fund and the American Institute for Cancer Research, concluded that eating fruit and vegetables may lower the risk of cancer, particularly cancers of the gastrointestinal tract (WCRF/AICR 2007).

According to the World Health Organization, low fruit and vegetable consumption is among the top ten risk factors contributing to global mortality (WHO 2011). Furthermore, it has been estimated that inadequate fruit and vegetable consumption is responsible for 2.1 per cent of the total burden of disease in Australia (Begg et al. 2007).

The 2003 Australian dietary guidelines recommend a minimum daily vegetable intake of four serves for people aged 12–18 years and five serves for people aged 19 years or over, where a serve is defined as half a cup of cooked vegetables or a cup of salad vegetables (NHMRC 2003a; 2003b). The recommended minimum daily fruit intake is three serves for people aged 12–18 years and two serves for people aged 19 years or over, where a serve is defined as one medium piece or two small pieces of fruit or one cup of diced pieces. 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 or over who met the guidelines[a] for daily fruit and vegetable consumption, by age group and sex, Victoria, 2010

Age group (years)	Met both guidelines			Met vegetable guidelines			Met fruit guidelines			Met neither guideline		
		95% CI			95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL	%	LL	UL
Males												
18–24	0.0	0.0	0.0	3.8*	1.4	9.9	43.5	33.9	53.7	51.4	41.4	61.3
25–34	3.7*	1.8	7.5	4.4*	2.3	8.5	43.5	36.3	50.9	54.9	47.5	62.1
35–44	3.8*	2.2	6.4	5.4	3.4	8.3	42.1	36.9	47.5	55.5	50.1	60.8
45–54	4.4	2.8	7.0	5.5	3.7	8.2	46.9	42.3	51.5	51.0	46.4	55.6
55–64	4.0	2.6	6.2	6.1	4.3	8.5	47.8	43.0	52.6	49.2	44.4	54.0
65+	4.3	3.0	6.0	6.5	4.9	8.8	47.4	43.2	51.6	46.8	42.6	50.9
Total	**3.5**	**2.8**	**4.5**	**5.2**	**4.3**	**6.4**	**45.1**	**42.5**	**47.6**	**51.7**	**49.2**	**54.3**
Females												
18–24	4.4*	1.9	9.7	7.3*	3.9	13.3	47.8	39.2	56.5	47.3	38.7	56.0
25–34	3.8*	2.1	6.9	4.9*	2.9	8.3	47.0	41.2	53.0	51.1	45.1	57.0
35–44	7.1	5.3	9.5	10.4	8.2	13.0	51.8	47.8	55.8	44.3	40.3	48.2
45–54	9.7	7.6	12.2	12.3	10.0	15.0	57.2	53.3	60.9	39.0	35.4	42.8
55–64	10.8	8.7	13.4	14.7	12.2	17.6	64.0	60.3	67.6	31.2	27.8	34.8
65+	8.1	6.5	10.0	11.3	9.4	13.5	61.5	58.2	64.7	33.9	30.8	37.1
Total	**7.2**	**6.3**	**8.2**	**10.0**	**8.9**	**11.1**	**54.5**	**52.4**	**56.5**	**41.6**	**39.6**	**43.6**
Persons												
18–24	2.1*	0.9	4.8	5.5*	3.2	9.3	45.6	39.0	52.3	49.4	42.8	56.1
25–34	3.8	2.3	6.0	4.7	3.1	7.1	45.3	40.6	50.0	53.0	48.2	57.7
35–44	5.4	4.2	7.1	7.9	6.3	9.8	47.0	43.7	50.3	49.8	46.5	53.1
45–54	7.1	5.7	8.8	9.0	7.4	10.8	52.1	49.1	55.1	44.9	42.0	47.9
55–64	7.5	6.1	9.1	10.5	8.9	12.3	56.0	53.0	59.1	40.1	37.1	43.1
65+	6.4	5.3	7.6	9.2	7.8	10.7	55.1	52.5	57.8	39.7	37.1	42.3
Total	**5.4**	**4.8**	**6.1**	**7.7**	**7.0**	**8.5**	**49.9**	**48.3**	**51.5**	**46.5**	**44.9**	**48.2**

a. Based on national guidelines (NHMRC 2003)

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

The four categories are not mutually exclusive.

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

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

Source: *Victorian Population Health Survey 2010*

More than half (51.7 per cent) of males and 41.6 per cent of females who participated in the *Victorian Population Health Survey 2010* reported consuming insufficient serves of fruit or vegetables to meet the dietary guidelines. In contrast, 3.5 per cent of males and 7.2 per cent of females reported consuming sufficient serves of both fruit and vegetables to meet the dietary guidelines.

The 2008 Victorian Population Health Survey reported that a greater proportion of Aboriginal Victorians (62.7 per cent, 95% CI: 55.1–69.7) did not meet the recommended guidelines for fruit consumption, compared with their non-Aboriginal counterparts (51.0 per cent, 95% CI: 50.1–51.9). There were no significant differences between Aboriginal and non-Aboriginal Victorians in the proportion who did or did not meet the guidelines for daily vegetable consumption (Department of Health 2011).

References

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

National Health and Medical Research Council (NHMRC) 2003b, *Dietary guidelines for children and adolescents in Australia*, NHMRC, Canberra.

World Cancer Research Fund & American Institute for Cancer Research (WCRF/AICR) 2007, *Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective*, AICR, Washington DC.

World Health Organization (WHO) 2011, Information sheet, *Promoting fruit and vegetable consumption around the world*, viewed 23 November 2012, <http://www.who.int/dietphysicalactivity/fruit/en/index2.htm>

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 seeds, they are generally placed in a separate category.

The revised Australian Dietary Guidelines released in 2013 recommend a minimum daily vegetable intake of 5–5.5 serves for people aged 12–18 years, 5–6 serves for people aged 19–50 years and 5–5.5 serves for people aged 51 years or over, depending on sex (NHMRC 2013). The recommended minimum daily fruit intake is 2 serves for people aged 12 or over, regardless of sex.

The data presented for this indicator represent the fruit and vegetable intake assessed against the 2003 Australian guidelines, as these were current at the time of data collection.

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/survey/vphs.htm

Australian Institute of Health and Welfare (AIHW) 2012, *Australia's food and nutrition 2012*, cat. no. PHE 163, AIHW, Canberra:
http://www.aihw.gov.au/publication-detail/?id=10737422319

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Physical activity levels

Description

The proportion of adults aged 18 years or 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.

Physical activity levels, by age group and sex, Victoria, 2010

Age group (years)	Sedentary			Insufficient time and sessions			Sufficient time and sessions		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
Males									
18–24	**			20.7	13.7	30.0	75.2	65.8	82.8
25–34	2.8*	1.2	6.4	21.9	16.5	28.6	69.7	62.5	76.0
35–44	4.7	2.9	7.6	29.2	24.6	34.2	63.7	58.4	68.6
45–54	6.0	4.2	8.5	32.0	27.9	36.5	57.6	53.0	62.1
55–64	7.9	5.7	11.0	32.8	28.5	37.5	56.4	51.6	61.1
65+	12.9	10.3	16.0	33.8	29.9	37.9	44.8	40.7	49.0
Total	**6.2**	**5.2**	**7.3**	**28.3**	**26.2**	**30.5**	**61.2**	**58.8**	**63.4**
Females									
18–24	**			37.0	28.9	45.9	59.1	50.3	67.5
25–34	2.6*	1.3	5.2	29.5	24.4	35.2	64.9	59.1	70.4
35–44	4.9	3.4	7.0	27.6	24.2	31.3	64.5	60.6	68.2
45–54	6.0	4.3	8.1	27.9	24.6	31.5	61.6	57.8	65.2
55–64	7.5	5.7	9.9	34.4	30.9	38.2	52.0	48.1	55.8
65+	13.6	11.5	16.1	38.0	34.8	41.4	39.1	35.9	42.4
Total	**6.2**	**5.5**	**7.1**	**32.1**	**30.2**	**34.1**	**57.1**	**55.1**	**59.1**
Persons									
18–24	2.5*	1.1	5.4	28.6	23.0	35.0	67.4	60.9	73.3
25–34	2.7*	1.6	4.7	25.7	21.8	30.0	67.3	62.7	71.6
35–44	4.8	3.5	6.4	28.4	25.5	31.5	64.1	60.8	67.2
45–54	6.0	4.7	7.6	29.9	27.3	32.8	59.6	56.6	62.5
55–64	7.7	6.2	9.6	33.6	30.8	36.6	54.2	51.1	57.2
65+	13.3	11.6	15.2	36.1	33.6	38.7	41.7	39.1	44.3
Total	**6.2**	**5.6**	**6.9**	**30.2**	**28.8**	**31.7**	**59.1**	**57.5**	**60.6**

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

Totals represent the estimate for Victoria and have been age-standardised to the 2006 Victorian population.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

** Estimate has an RSE greater than 50 per cent and is not reported as it is unreliable for general use.

Source: *Victorian Population Health Survey 2010*

More than half of all adult Victorians (61.2 per cent of males and 57.1 per cent of females) performed a minimum of 30 minutes of moderate-intensity physical activity on at least five days each week. The proportion of males and females who participated in sufficient physical activity to meet the national guidelines was higher in those aged 18–34 years; as compared with males aged 45–65+ years and females aged 55–65+ years.

The 2008 Victorian Population Health Survey reported that there were no significant differences between Aboriginal and non-Aboriginal Victorians in the proportion who did or did not engage in sufficient physical activity to meet the Australian guidelines (Department of Health 2011).

References

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

Department of Health 2011, *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report*, State Government of Victoria, Melbourne.

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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).

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

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/survey/vphs.htm

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Smoking status

Description

The proportion of adults aged 18 years or over who reported current smoking, by sex, over time.

Tobacco use is the single largest preventable cause of chronic illness and premature death from conditions such as cancer, cardiovascular disease and chronic obstructive pulmonary disease (AIHW 2012). Estimates suggest that, of all modifiable risk factors, tobacco is associated with the greatest disease burden in Victoria (DHS 2005). Smoking is an important risk factor for the three diseases that cause most deaths in Australia: heart disease, stroke and lung cancer. It is responsible for around 80 per cent of all lung cancer deaths (Scollo & Winstanley 2008). Smoking has also been linked to cancers of the mouth, pancreas, bladder, kidney, stomach and cervix, among others and to respiratory diseases such as chronic obstructive pulmonary disease and emphysema.

Smoking status[a], by age group and sex, Victoria, 2010

Age group (years)	Current smoker			Ex-smoker			Non-smoker		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
Males									
18–24	21.7	14.6	31.2	4.9*	2.0	11.2	73.4	63.6	81.3
25–34	23.9	18.3	30.7	24.9	19.1	31.8	51.1	43.8	58.5
35–44	22.5	18.4	27.2	27.1	22.6	32.1	50.4	45.1	55.7
45–54	16.7	13.7	20.3	32.8	28.6	37.2	50.2	45.6	54.8
55–64	16.3	13.0	20.3	40.8	36.2	45.6	42.6	37.9	47.4
65+	5.3	3.8	7.4	57.7	53.5	61.8	36.8	32.9	40.9
Total	**17.8**	**15.9**	**19.9**	**32.2**	**30.1**	**34.3**	**49.9**	**47.4**	**52.3**
Females									
18–24	21.7	15.4	29.8	8.0*	4.4	14.1	70.3	61.8	77.6
25–34	19.5	15.2	24.6	21.0	16.6	26.1	59.6	53.6	65.2
35–44	17.2	14.4	20.4	26.2	22.9	29.9	56.4	52.4	60.3
45–54	17.5	14.8	20.5	29.1	25.8	32.7	52.9	49.1	56.6
55–64	12.0	9.7	14.8	25.5	22.4	29.0	62.2	58.4	65.9
65+	6.5	5.0	8.5	25.9	23.0	28.9	66.7	63.4	69.8
Total	**15.8**	**14.3**	**17.4**	**23.1**	**21.6**	**24.7**	**60.8**	**58.8**	**62.7**
Persons									
18–24	21.7	16.7	27.8	6.4*	3.9	10.3	71.9	65.5	77.5
25–34	21.7	18.1	25.9	22.9	19.2	27.2	55.3	50.6	60.0
35–44	19.8	17.3	22.6	26.6	23.8	29.7	53.4	50.1	56.7
45–54	17.1	15.0	19.4	30.9	28.3	33.8	51.5	48.6	54.5
55–64	14.2	12.1	16.5	33.1	30.2	36.0	52.6	49.5	55.6
65+	5.9	4.8	7.3	40.2	37.6	42.8	53.3	50.6	55.9
Total	**16.8**	**15.5**	**18.1**	**27.3**	**26.0**	**28.6**	**55.7**	**54.1**	**57.3**

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

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

Totals represent the estimate for Victoria and were age-standardised to the 2006 Victorian population.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

Source: *Victorian Population Health Survey 2010*

Less than one in five (17.8 per cent) males and 15.8 per cent of females, aged 18 years or over, were current smokers in 2010. There was a decrease in the proportion of males and females who were current smokers between 2001 and 2010 (data not shown).

The 2008 Victorian Population Health Survey reported that almost one in three (30.4 per cent, 95% CI: 23.7–38.0) Aboriginal Victorians were current smokers in 2008, a significantly higher proportion than their non-Aboriginal counterparts (19.0 per cent, 95% CI: 18.3–19.8) (Department of Health 2011).

References

Australian Institute of Health and Welfare (AIHW) 2012, *Risk factors contributing to chronic disease*, cat. no. PHE 157, AIHW, Canberra.

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

Scollo MM and Winstanley MH [editors] 2008, *Tobacco in Australia: Facts and Issues*, 3rd edn, Cancer Council Victoria, Melbourne, viewed 22 November 2012, <http://www.tobaccoinaustralia.org.au>

Concepts

The Victorian Population Health Survey asked respondents how they would describe their smoking status over their lifetime. They were 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 described themselves as daily or occasional smokers were categorised as 'current smokers' and those who described themselves as never having smoked or never having smoked regularly, were categorised as 'non-smokers'.

Respondents who had smoked at some point in their lives, but no longer smoked, were asked whether they had smoked at least 100 cigarettes or a similar amount of tobacco in their lifetime. Those who had smoked at least 100 cigarettes or its equivalent were categorised as 'ex-smokers' and those who had not were 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/survey/vphs.htm

Australian Institute of Health and Welfare (AIHW) 2012, *Risk factors contributing to chronic disease*, cat. no. PHE 157, AIHW, Canberra.

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Risk of harm from alcohol consumption

Description

There are two measures included in this indicator:

1. The proportion of adults aged 18 years or over at long-term risk of harm from alcohol consumption.
2. The proportion of adults aged 18 years or over at short-term risk of harm from alcohol consumption.

Regular consumption of alcohol above recommended levels, over time, 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. 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 also arise from such patterns of drinking, not only for the individuals concerned, but also for their families and the wider community.

Based on the 2001 National Health and Medical Research Council (NHMRC) guidelines, 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 (43 or more standard drinks per week for males, 29 or more standard drinks per week for females). Short-term risk of harm due to alcohol consumption is associated with drinking levels on a single occasion (more than 6 standard drinks on a single occasion for males, more than 4 standard drinks on a single occasion for females).

Long-term risk[a] of harm from alcohol consumption, by age group and sex, Victoria, 2010

Age group (years)	Abstainer			Low risk			Risky or high risk		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
Males									
18–24	20.9	13.6	30.7	72.9	62.9	81.0	**		
25–34	12.6	8.3	18.6	84.4	78.1	89.2	2.8*	1.2	6.4
35–44	9.7	6.9	13.6	88.1	84.2	91.2	1.8*	1.0	3.1
45–54	16.8	13.5	20.6	76.7	72.5	80.5	5.1	3.5	7.4
55–64	11.4	8.7	14.8	84.4	80.6	87.6	3.6	2.2	5.9
65+	19.7	16.5	23.3	75.6	71.8	79.1	3.5	2.3	5.4
All males	**14.7**	**12.9**	**16.6**	**81.0**	**78.9**	**82.9**	**3.3**	**2.5**	**4.2**
Females									
18–24	13.6	8.6	20.9	81.1	73.2	87.0	**		
25–34	21.0	16.5	26.3	74.3	68.7	79.1	3.1*	1.6	6.0
35–44	16.1	13.4	19.3	81.0	77.6	84.0	2.2*	1.3	3.7
45–54	21.2	18.2	24.6	74.2	70.6	77.4	4.3	3.0	6.0
55–64	24.9	21.7	28.4	69.9	66.3	73.4	4.5	3.1	6.5
65+	37.8	34.6	41.1	60.0	56.6	63.2	1.7*	1.0	2.8
All females	**22.6**	**21.0**	**24.3**	**73.3**	**71.5**	**75.1**	**3.0**	**2.4**	**3.8**
Persons									
18–24	17.4	12.7	23.3	76.9	70.6	82.1	2.4*	1.1	5.1
25–34	16.8	13.5	20.6	79.4	75.3	82.9	2.9*	1.7	5.0
35–44	13.0	10.9	15.4	84.5	82.0	86.7	2.0	1.3	2.9
45–54	19.0	16.7	21.5	75.4	72.7	77.9	4.7	3.6	6.0
55–64	18.2	16.0	20.7	77.1	74.4	79.5	4.1	3.0	5.5
65+	29.6	27.3	32.1	67.0	64.5	69.4	2.5	1.8	3.5
All persons	**18.9**	**17.6**	**20.1**	**77.0**	**75.6**	**78.3**	**3.1**	**2.6**	**3.7**

a. Long-term risk of alcohol-related harm refers to the increased risk of developing various cancers, cirrhosis of the liver, cognitive problems and dementia, and alcohol dependence.

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

Totals represent the estimates for Victoria and have been age-standardised to the 2006 Victorian population.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

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

** Estimate has an RSE greater than 50 per cent and is not reported as it is unreliable for general use.

Source: *Victorian Population Health Survey 2010*

Short term risk[a] of harm from alcohol consumption, by age group and sex, Victoria, 2010

Age group (years)	Low risk	95% CI		Risky or high risk: At least yearly	95% CI		At least monthly	95% CI		At least weekly	95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL	%	LL	UL
Males												
18–24	12.2*	7.0	20.3	20.6	13.6	29.9	28.5	20.3	38.4	17.4	11.3	25.9
25–34	23.0	17.3	30.0	31.6	25.1	38.9	15.2	10.9	20.9	17.6	12.8	23.8
35–44	27.1	22.6	32.1	31.3	26.5	36.5	19.6	15.8	24.1	12.0	9.2	15.5
45–54	33.1	28.9	37.6	22.8	19.2	26.9	11.2	8.8	14.2	15.2	12.3	18.6
55–64	44.3	39.5	49.1	19.9	16.4	23.9	12.3	9.5	15.9	11.7	9.0	15.1
65+	56.0	51.8	60.1	12.9	10.3	15.9	5.4	3.8	7.7	4.5	3.2	6.4
All males	**32.9**	**30.8**	**35.0**	**23.4**	**21.3**	**25.6**	**15.3**	**13.5**	**17.3**	**13.2**	**11.6**	**15.1**
Females												
18–24	14.3	9.3	21.4	24.6	17.9	32.9	29.4	21.9	38.2	18.1	12.5	25.4
25–34	32.8	27.5	38.7	27.0	22.1	32.5	12.5	9.0	17.0	6.5	4.2	10.1
35–44	40.1	36.2	44.1	26.8	23.5	30.5	10.3	8.1	12.8	6.0	4.4	8.2
45–54	38.8	35.2	42.6	22.1	19.1	25.3	10.7	8.6	13.2	6.3	4.8	8.3
55–64	51.9	48.0	55.7	12.2	9.9	14.9	6.3	4.7	8.4	4.1	2.9	5.9
65+	51.8	48.4	55.1	6.3	4.9	8.2	1.9	1.2	3.0	1.4*	0.8	2.5
All females	**38.6**	**36.8**	**40.5**	**20.3**	**18.6**	**22.1**	**11.4**	**10.0**	**13.0**	**6.5**	**5.5**	**7.7**
Persons												
18–24	13.2	9.4	18.3	22.6	17.5	28.6	28.9	23.2	35.4	17.7	13.4	23.1
25–34	27.9	23.8	32.4	29.3	25.1	33.8	13.8	11.0	17.3	12.1	9.3	15.6
35–44	33.7	30.6	36.9	29.0	26.1	32.2	14.9	12.6	17.4	9.0	7.3	11.0
45–54	36.0	33.2	38.9	22.5	20.1	25.0	10.9	9.3	12.8	10.7	9.0	12.7
55–64	48.1	45.1	51.2	16.0	13.8	18.4	9.3	7.6	11.3	7.9	6.3	9.7
65+	53.7	51.0	56.3	9.3	7.8	10.9	3.5	2.6	4.6	2.8	2.1	3.8
All persons	**35.7**	**34.3**	**37.1**	**21.8**	**20.4**	**23.2**	**13.3**	**12.1**	**14.5**	**9.8**	**8.8**	**10.9**

a. Based on national guidelines (NHMRC 2001).

Note that the figures may not add up 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.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval.

*Estimate has an RSE of between 25 and 50 per cent and should be interpreted with caution.

Source: *Victorian Population Health Survey 2010*

Approximately 3.0 per cent of males and females aged 18 years or over reported consuming alcohol at levels that were 'risky' or 'high risk'. The majority of men (81.0 per cent) and women (73.3 per cent) who participated in the *Victorian Population Health Survey 2010* were at low risk of long-term harm from alcohol consumption. The proportion of people who reported consuming alcohol at levels that were 'risky' or 'high risk' was similar across age groups. However, younger people were more likely to be at low risk of harm than older people. Among those aged 65 years or over, a higher proportion of males (75.6 per cent) than females (60.0 per cent) were at low risk of long-term harm. Overall, a higher proportion of females (22.6 per cent) than males (14.7 per cent) reported abstaining from alcohol consumption.

More than one in seven males (13.2 per cent) and 6.5 per cent of females reported consuming alcohol at least weekly at levels that put them at short-term risk of alcohol-related harm. Almost one-quarter (23.4 per cent) of males and more than one in five females (20.3 per cent) reported consuming alcohol at least once a year at levels that put them at short-term risk of alcohol-related harm. Being at short-term risk of alcohol-related harm was inversely related to age with the highest proportion occurring in those aged 18–24 years. Of note is that the sex difference was observed in all ages with the exception of males and females aged 18–24 years where females were just as likely as males to engage in levels of weekly alcohol consumption that put them at short-term risk of alcohol-related harm.

References

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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*, Commonwealth of Australia, Canberra.

Concepts

The *2001 Australian alcohol guidelines: health risks and benefits* (NHMRC 2001) emphasise patterns of drinking as opposed to levels of consumption (the average amount consumed). The concept of drinking patterns refers to aspects of drinking behaviour other than the level of drinking, and includes when, where and with whom drinking behaviour occurs, the type of drinks consumed, the number of heavy drinking occasions undertaken and the norms associated with drinking behaviour. The 2001 guidelines identified two main patterns of drinking behaviour as creating a risk to an individual's health: excessive alcohol intake on a particular occasion, and consistent high-level intake over months and years.

Based on the 2001 guidelines, 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. Short-term risk of harm due to alcohol consumption is associated with drinking levels on a single occasion.

		Long term risk of harm			Short term risk of harm		
		Low risk	Risky	High risk		Low risk	Risky/ High risk
Males	On an average day	Up to four per day	Five to six per day	Seven or more per day	On a single occasion	Not more than six	More than six
	Overall weekly levels	Up to 28 per week	29–42 per week	43 or more per week			
Females	On an average day	Up to two a day	Three to four per day	Five or more per day	On a single occasion	Not more than four	More than four
	Overall weekly levels	Up to 14 per week	15–28 per week	29 or more per week			

Based on a standard drink containing 10g or 12.5mL of alcohol. Source: NHMRC 2001

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

In March 2009, the NHMRC introduced a new set of guidelines for alcohol, based on the best current evidence available. Due to the questionnaire design used for the 2010 Victorian Population Health Survey, it is not possible to report risk of harm due to alcohol consumption based on the 2009 NHMRC guidelines.

Limitations

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

Provenance

The risk of harm from alcohol consumption is reported by the Australian Institute of Health and Welfare in the *National Drug Strategy Household Survey report*.

For more information

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

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

National Health and Medical Research Council (NHMRC) 2009, *Australian guidelines to reduce health risks from drinking alcohol*, Commonwealth of Australia, Canberra:
http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/ds10-alcohol.pdf

Australian Institute of Health and Welfare (AIHW), *National Drug Strategy Household Survey report*:
http://www.aihw.gov.au/national-drugs-strategy-household-surveys/

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Blood pressure checks

Description

The proportion of adults aged 18 years or over who report having a blood pressure check in the preceding 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 increases in blood pressure. The modifiable causes of high blood pressure include having a poor diet (especially a high salt intake), being overweight or obese, having high levels of alcohol consumption and insufficient levels of physical activity.

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 prevention and management in Victoria.

Blood pressure checks in the preceding two years, by age group and sex, Victoria, 2010

Age group (years)	Males			Females			Persons		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
18–24	44.9	35.3	55.0	61.7	52.8	69.9	53.1	46.4	59.7
25–34	65.2	57.9	71.9	77.1	71.7	81.7	71.1	66.6	75.3
35–44	75.9	71.1	80.2	82.6	79.4	85.4	79.3	76.5	81.9
45–54	85.0	81.4	88.1	87.0	84.1	89.4	86.0	83.8	88.0
55–64	90.3	86.9	92.8	93.9	91.8	95.5	92.1	90.2	93.7
65+	97.4	95.7	98.4	96.0	94.4	97.1	96.6	95.5	97.4
Total	**77.3**	**75.1**	**79.5**	**83.5**	**81.7**	**85.1**	**80.4**	**79.0**	**81.8**

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

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Source: *Victorian Population Health Survey 2010*

The results of the *Victorian Population Health Survey 2010* show that a greater proportion of females (83.5 per cent) than males (77.3 per cent) report having had their blood pressure checked in the past 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 people who reported having their blood pressure checked increased with age group, from 53.1 per cent of people aged 18–24 years to 96.6 per cent of people aged 75 years or over.

References

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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/survey/vphs.htm

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

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

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

Heart Foundation of Australia and National Stroke Foundation 2008. *Time for Action – A national plan to reduce the burden of cardiovascular disease*:
http://www.strokefoundation.com.au/index2.php?option=com_docman&task=doc_view&gid=172&Itemid=39

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Cholesterol checks

Description

The proportion of adults aged 45 years or over who report having a cholesterol check in the preceding 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 cardiovascular disease prevention and management in Victoria. While there is no established cholesterol screening program across Australia, current clinical guidelines recommend opportunistic total and high density lipoprotein (HDL) cholesterol assessment as part of an assessment of absolute cardiovascular risk, in adults aged 45 years or over or in Aboriginal and Torres Strait Islander peoples aged 35 years or over (RACGP 2012).

Cholesterol checks in the preceding two years, by sex and age group, Victoria, 2010

Age group (years)	Males			Females			Persons		
		95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL
45–54	75.6	71.4	79.3	71.1	67.6	74.4	73.3	70.6	75.8
55–64	83.7	79.9	87.0	81.5	78.4	84.3	82.6	80.2	84.8
65+	89.1	86.4	91.4	82.6	79.9	85.0	85.5	83.6	87.2
Total (45+)[a]	**82.5**	**80.4**	**84.4**	**78.3**	**76.5**	**80.0**	**80.3**	**79.0**	**81.6**

a. Totals reported in the *Victorian Population Health Survey 2010* are for Victorians aged 18 years or over, this total represents a subset of that data.

Totals are estimates for Victoria and have been age-standardised to the 2006 Victorian population.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Source: *Victorian Population Health Survey 2010*

The results of the *Victorian Population Health Survey 2010* show that in people aged 45 years or over, a higher proportion of males than females reported that they had had a blood cholesterol test in the previous two years (82.5 per cent and 78.3 per cent respectively). For both males and females, the proportions of those who had had their blood cholesterol checked increased with age. Although there is a high proportion of adults aged 45 years or over who reported that they have had a blood cholesterol check, in the absence of a structured screening programme it is difficult to ascertain the contribution of these tests to population health.

References

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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

Royal Australian College of General Practitioners (RACGP) 2012, *Guidelines for preventive activities in general practice*, 8th edn, RACGP, Melbourne, viewed 7 January 2013, <http://www.racgp.org.au/download/Documents/Guidelines/Redbook8/redbook8.pdf>

Limitations

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

There are a range of individuals under 45 years of age, including those with cardiovascular disease or those at especially high risk, for whom targeted cholesterol testing is an important management tool. Although the Victorian Population Health Survey also collects information about cholesterol checks in adults aged 18–44 years, it is not possible to distinguish the clinical reasons for testing in these groups.

For more information

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

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

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

National Heart Foundation:
http://www.heartfoundation.org.au/healthy-eating/fats/Pages/cholesterol.aspx
http://www.heartfoundation.org.au/Pages/default.aspx

Heart Foundation of Australia and National Stroke Foundation 2008. *Time for Action – A national plan to reduce the burden of cardiovascular disease*:
http://www.strokefoundation.com.au/index2.php?option=com_docman&task=doc_view&gid=172&Itemid=39

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Chlamydia notifications

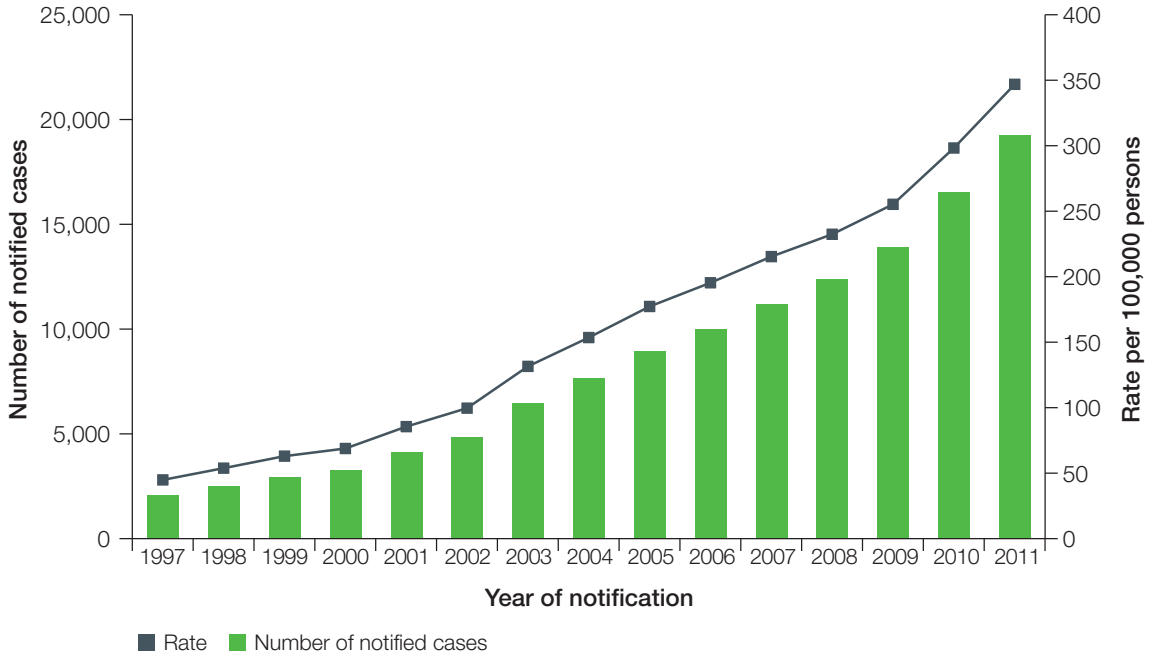
Description

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

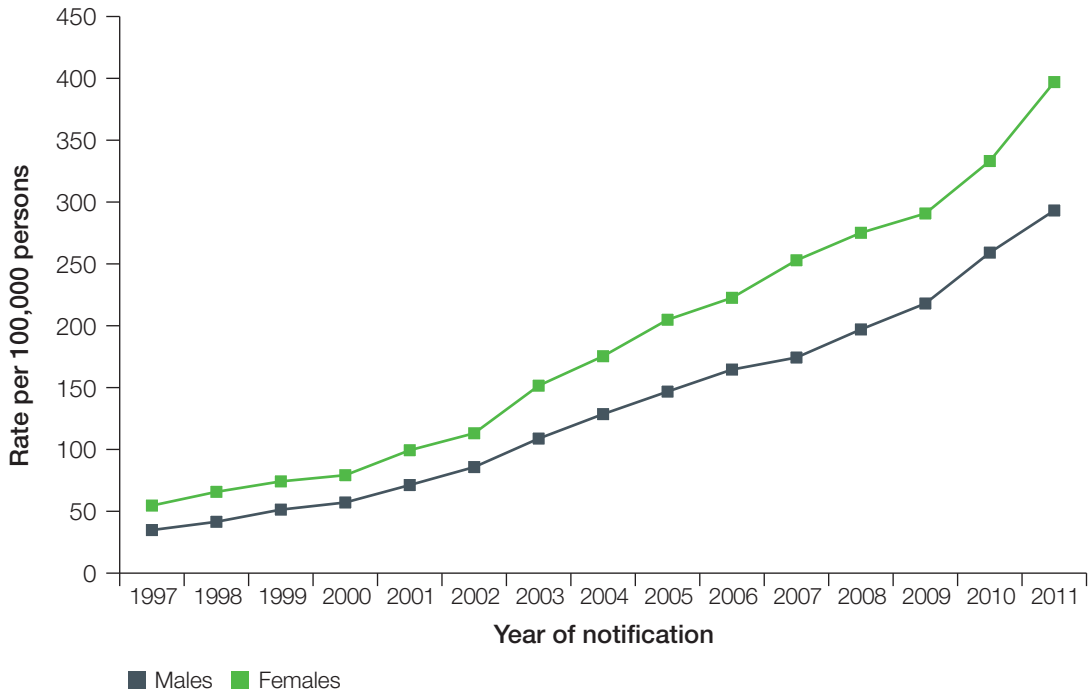
Chlamydia is a sexually transmissible infection (caused by the organism *Chlamydia trachomatis*) that became notifiable in Victoria in 1990. Chlamydial infections are predominantly asymptomatic and clinical presentation varies with sex and age. Chlamydia can cause urethritis, cervicitis and pelvic inflammatory disease. 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 infection.

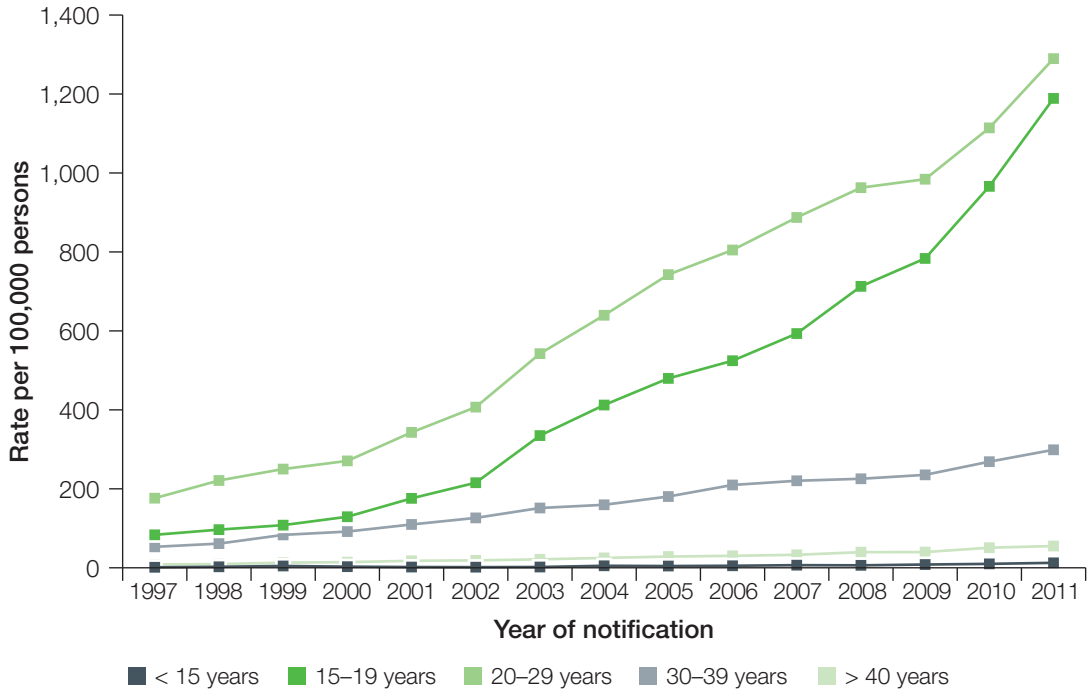
Notified cases and notification rate for chlamydia, Victoria, 1997–2011



Notification rate for chlamydia, by year and sex, Victoria, 1997–2011



Notification rate for chlamydia, by year and age group, Victoria, 1997–2011



Source: Department of Health, Communicable Disease Epidemiology and Surveillance

Chlamydia is the most frequently notified infectious disease, since it became notifiable in 1990 with 19,238 cases reported in 2011. The population rate of reported cases more than tripled in both males and females in the past decade. For males this has increased from 85.7 cases per 100,000 in 2002 to 293.2 in 2011, and for females this has increased from 113.1 cases per 100,000 in 2002 to 397 in 2011.

Notification rates for chlamydia peaked in people aged 15–19 and 20–29 years in 2011 and accounted for 79 per cent of the total cases notified.

Risk factor data collected through the surveillance system in 2011 showed that chlamydia transmission occurred primarily through heterosexual sex. Among men, the infection was mostly reported as acquired through sexual contact with casual partners, whereas among women, it was mostly reported as acquired through sexual contact with regular partners. Age- and sex-specific patterns of cases may have been influenced by differential testing.

Testing data available through the Victorian Primary Care Network for Sentinel Surveillance for blood-borne viruses and sexually transmissible infections, a system that was established in 2006, show that the number of chlamydia tests conducted at participating clinics increased between 2007 and 2011 by 49 per cent. The average proportion of positive tests over this time was 5.7 per cent; however, this differs by age, sex and exposure.

Among females there has been a recent increase in the proportion of positive tests, from a stable 3.6 per cent between 2007 and 2010 to 4.3 per cent in 2011, with the highest proportion of positive tests in people aged 16–19 years.

Among heterosexual males, the proportion of positive tests increased gradually from 7.4 per cent in 2007 to 8.2 per cent in 2011. The proportion of positive tests in 2011 was highest among those aged 16–19 years (13.4 per cent) followed by those aged 20–29 years (9.6 per cent). Among men who have sex with men, the average proportion of positive tests over the five-year period was 7.3 per cent and ranged from 6.0 per cent in 2007 to 8.7 per cent in 2010. The highest proportion of positive tests were among men who have sex with men aged 20–29 years (7.4 per cent) in 2011.

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.

Provenance

Chlamydia became a notifiable infectious disease in 1990. Notifiable conditions are included in Schedule 4 of the Public Health and Wellbeing Regulations 2009.

For more information

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

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

Department of Human Services (DHS) 2006, V*ictorian sexually transmissible infections strategy 2006–2009*, DHS, Melbourne:
http://www.health.vic.gov.au/ideas/diseases/sti_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

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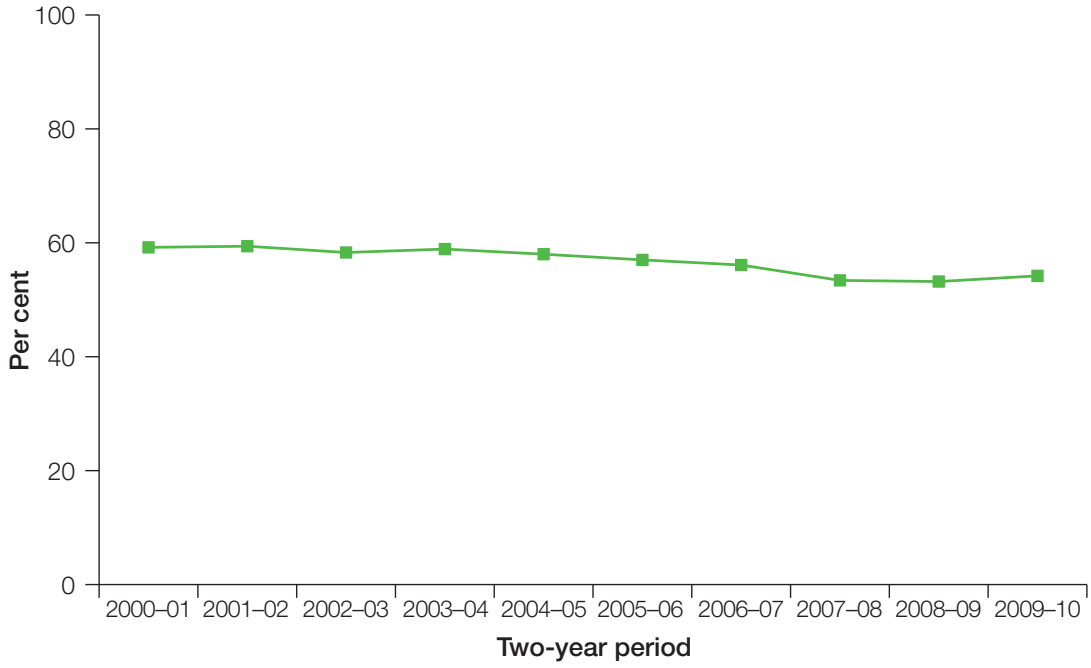
Breast cancer screening participation

Description

The proportion of women aged 50–69 years who 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. Women aged 50–69 are invited to have free screening mammograms at two-yearly intervals. Breast x-ray screening (mammography) has been found to be the most effective with women in this age group. Women aged 40–49 and 70 years or over are also eligible to participate.

BreastScreen Victoria participation rates for the two-year screening cycle, 2000–2001 to 2009–2010



Source: Australian Institute of Health and Welfare, BreastScreen Australia annual monitoring reports

During the two-year period 2009–2010, 54.2 per cent of eligible Victorian women participated in the BreastScreen Victoria Program. Participation was relatively steady between 2000–2001 and 2003–04 at around 59 per cent. Participation rates have declined in recent years to just over 54 per cent. As the population ages, the number of women in the target age group (50–69 years) has been increasing. To maintain breast screen participation rates, the number of women being screened will need to increase over time to match this population growth in the target age group.

References

Australian Institute of Health and Welfare (AIHW) 2012, *BreastScreen Australia monitoring report 2009–2010*, Cancer series no. 72, cat. no. CAN 68, AIHW, Canberra, viewed 13 November 2012, <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737423102>

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 Aboriginal and Torres Strait Islander women and women from culturally and linguistically diverse backgrounds are under-screened.

These data do not include women screened by BreastScreen Victoria aged 40–49 years and 70 years or over who are not within the target population, nor women who choose to have regular mammography outside of the BreastScreen Victoria Program.

Provenance

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

For more information

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

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

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

AIHW breast cancer screening trends:
http://www.aihw.gov.au/breast-cancer-screening/
http://www.aihw.gov.au/publications/breast-cancer/

Contact

Screening and Cancer Prevention, Prevention and Population Health
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Bowel cancer screening participation

Description

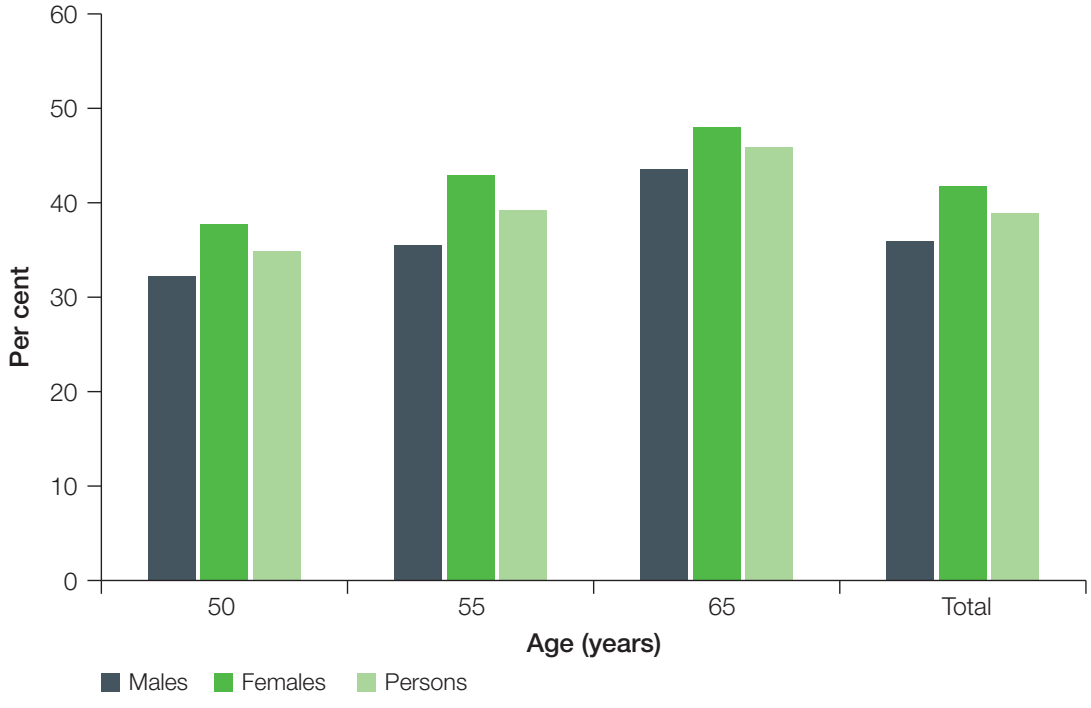
The proportion of eligible people who participated in the Bowel Cancer Screening Program, by sex and age.

The National Bowel Cancer Screening Program (NBCSP) aims to reduce incidence and mortality from bowel cancer through screening to detect signs of bowel cancer through the faecal occult blood test (FOBT). In 2010, bowel (colon and rectum) cancer was the second most common new cancer in Victorians (Cancer Council Victoria 2011). Bowel cancer can be treated successfully if detected in the early stages when it is still localised within the bowel. It is estimated that less than 40 per cent of bowel cancers are detected early. As part of the NBCSP eligible invitees are sent a FOBT kit to complete and send back to a pathology lab for analysis.

During Phase 1 of the NBCSP, Victorians aged 55 and 65 years were invited to participate in the program between January 2007 and June 2008. 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. The program will expand to invite 60 year olds from July 2013 and 70 year olds from July 2015, with further expansion planned from 2017–18 when two yearly screening will be phased in for all Australians aged 50 to 74.

Over 233,000 Victorians were invited in Phase 1 and the overall participation rate for Phase 1, excluding those who had suspended their participation or opted off, was estimated to be 40.8 per cent (95% CI: 40.6–41.0) in Victoria (AIHW 2008).

Participation rate in Phase 2 of the NBCSP, by age and sex, Victoria, July 2008–June 2011



Source: AIHW 2012

There were 513,842 people, aged 50, 55 and 65 years, who were invited to participate in Victoria, of which 199,410 (38.9 per cent) agreed to participate (91,125 males and 108,285 females). The overall participation rate for Phase 2 (July 2008–June 2011) of the NBCSP was estimated to be 38.9 per cent (95% CI: 38.7–39.0) in Victoria.

Participation was highest among people aged 65 years (45.9 per cent), followed by people aged 55 years (39.2 per cent), and lowest in people aged 50 years (34.9 per cent). Despite having a higher bowel cancer incidence and mortality rate, the participation rate for males (35.9 per cent; 95%CI: 35.7–36.1) was lower than the rate for females (41.8 per cent; 95% CI: 41.6–42.0) (AIHW 2012).

References

Australian Institute of Health and Welfare (AIHW) 2008, *National Bowel Cancer Screening Program monitoring report 2008*, Cancer series 44, cat. no. 40, AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2012, *National Bowel Cancer Screening Program monitoring report: phase 2, July 2008–June 2011*, Cancer series, no. 65 CAN 61, AIHW, Canberra.

Cancer Council Victoria 2011, *Cancer in Victoria: Statistics and Trends 2010*, Cancer Council Victoria, 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.

Evidence from clinical trials has shown that regular (biennial) screening using faecal occult blood testing, which can detect evidence of blood in the stool (faeces) not visible to the naked eye, can reduce mortality from bowel cancer by 15–33 per cent (AIHW 2012).

Participation: Data are based on invitations and responses recorded in the National Bowel Cancer Screening Register between 1 July 2008 and 30 June 2011. A person is counted only once in the reporting period, even if they were screened more than once. Those who are unlikely to require screening, such as those who have a previous diagnosis of bowel cancer, those who have had a colonoscopy in the past five years, or those who have completed any FOBT kit within the past two years, could not be reliably identified; therefore all people invited to participate are included in the calculations. For Phase 2, participation was calculated as the percentage of eligible invitees who returned a completed FOBT kit, regardless of whether they later suspended their participation or opted off.

Data are presented as crude participation rates. A crude rate is defined as the number of events over a specified period divided by the total population. Crude proportions (expressed as percentages) will generally underestimate the true proportions of the population who participated in the NBCSP. This is because at any point in time there are members of the population who are eligible to proceed to the next point on the screening pathway, but who have not yet had time to do so. For example, a person who has just received an invitation to screen may intend to participate in screening but may not have had time to do so. They will be counted in the denominator of the crude participation but not in the numerator (AIHW 2012).

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, proctologists, and other health professionals involved in the screening pathway. Submission of these forms is not mandatory and, consequently, there are time lags in reporting as well as under-reporting 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 under-reporting is likely to be constant across populations.

Provenance

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

For more information

National Bowel Cancer Screening Program:
http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/bowel-about

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

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.

Australian Institute of Health and Welfare (AIHW) 2012, *National Bowel Cancer Screening Program monitoring report: phase 2, July 2008–June 2011*, Cancer series no. 65 CAN 61, AIHW, Canberra:
http://www.aihw.gov.au/publication-detail/?id=10737421408

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

Cancer Council Australia, Bowel Cancer:
http://www.cancer.org.au/about-cancer/types-of-cancer/bowel-cancer/

Contact

Screening and Cancer Prevention, Prevention and Population Health
Wellbeing, Integrated Care and Ageing Division
Department of Health

Telephone: (61 3) 9096 9000

Cervical cancer screening participation

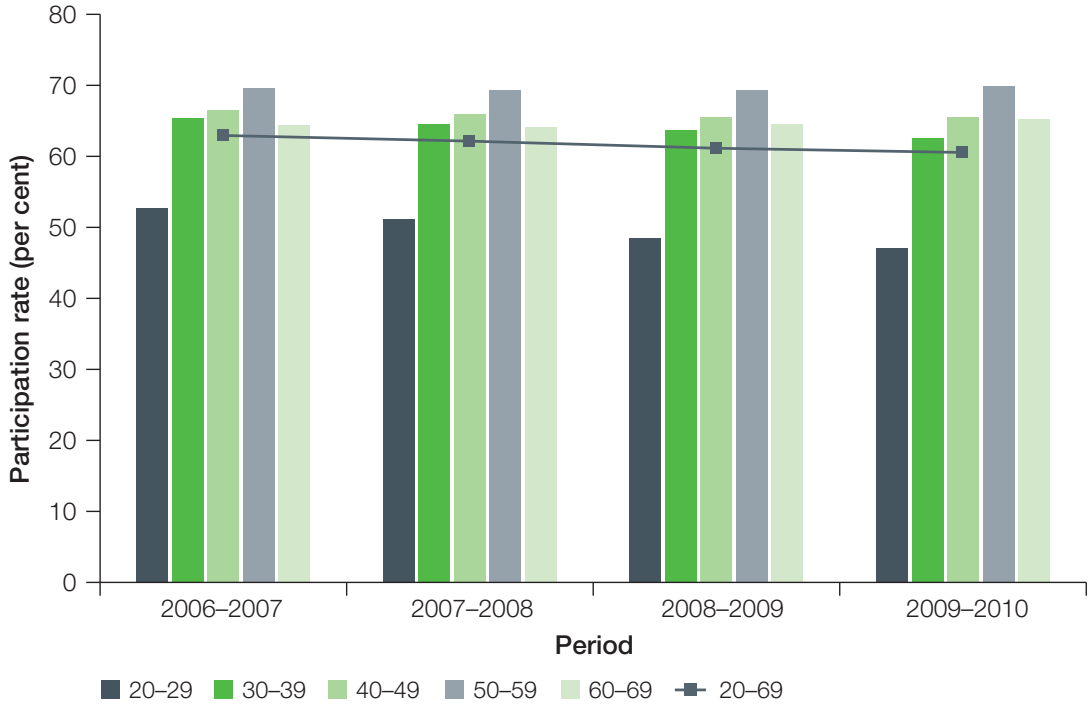
Description

The proportion of women aged 20–69 years who 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. The test used in the screening program is the Papanicolaou test (Pap test or 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 future. Early detection of the disease increases the chance of successful treatment.

Over the past 20 years, there has been a significant decline in the incidence and mortality of cervical cancer in Victorian women. In 2010, the standard incidence rate of cervical cancer in Victoria was 5.0 per 100,000 women and the mortality rate was 1.3 per 100,000 women (Cancer Council Victoria 2011).

Biennial cervical screening participation rates, by age group, Victoria, 2006–2010



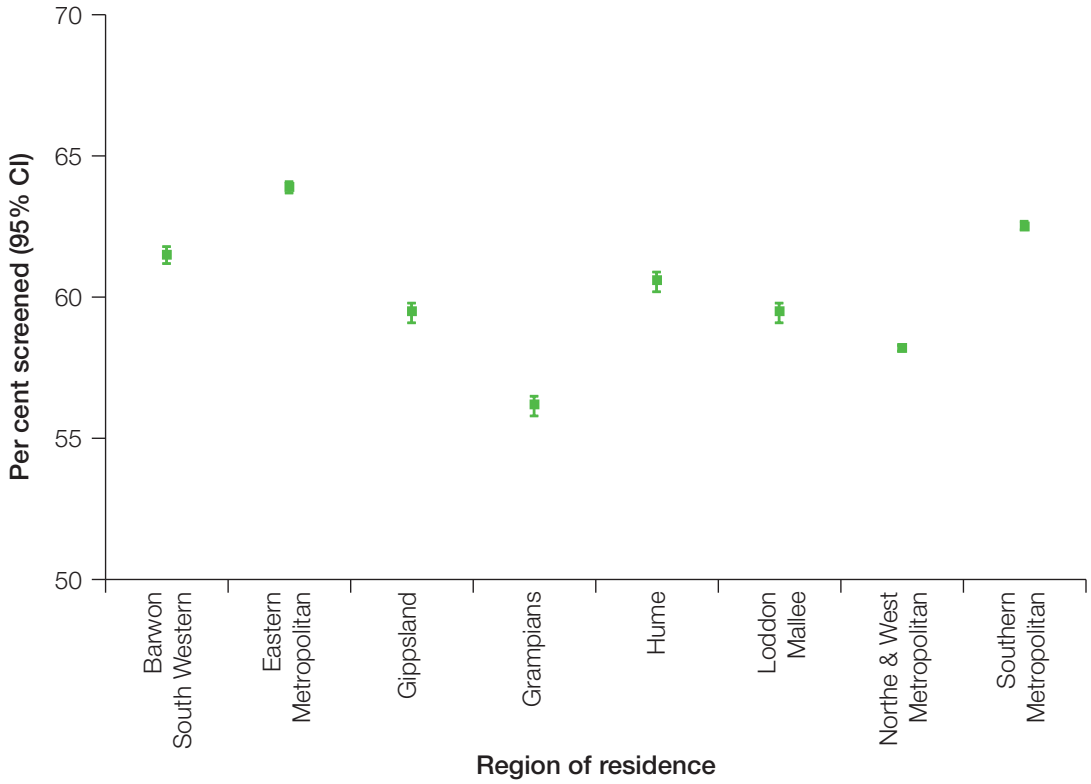
Source: Victorian Cervical Cytology Registry 2011

Biennial cervical screening participation rates, by age group, Victoria, 2006–2010

Age group (years)	2006–2007	2007–2008	2008–2009	2009–2010
20–29	52.7	51.2	48.5	47.1
30–39	65.4	64.5	63.7	62.6
40–49	66.5	65.9	65.5	65.5
50–59	69.6	69.3	69.4	69.9
60–69	64.4	64.1	64.6	65.3
Total (20–69)	**63.1**	**62.3**	**61.3**	**60.7**

Source: Victorian Cervical Cytology Registry 2011

Biennial cervical screening rates by Department of Health region of residence, Victoria, 2009–2010



Source: Victorian Cervical Cytology Registry 2011

In 2010, approximately 573,800 Pap tests were registered by the Victorian Cervical Cytology Registry (VCCR), representing almost 547,400 women. The estimated two-year (2009–2010) participation rate for women in the target population of 20–69 years in Victoria was 60.7 per cent. Participation varied by age group, with women aged 50–59 years having the highest two-year screening rate and women aged 20–29 years having the lowest rate. As in previous years, participation rates in Victoria in 2009–2010 also varied by Department of Health region of residence. These ranged from 56.2 per cent in the Grampians Region to 63.9 per cent in the Eastern Metropolitan Region (VCCR 2011).

The participation in cervical screening has remained relatively stable over time for each age group since 2006–2007; however a slight decline in the estimated two-year participation can be seen overall. The 50–59 and 60–69 age groups were the only groups to show any increase. Women aged 20–29 years (which includes 20–24-year-olds vaccinated in the Human Papillomavirus (HPV) Vaccine Catch-up Program) have the lowest screening rate of the 10-year age groups, which has declined over the past five years. This trend towards decreasing participation in young women has also been seen nationally and internationally (VCCR 2011).

Since April 2007, as part of the National Immunisation Program, the Australian Government has been providing the HPV vaccine Gardasil® on an ongoing basis through schools for 12- and 13-year-old girls. From 2013, vaccination will be extended to 12- and 13-year-old boys, with year 9 boys also vaccinated under a catch-up program for the next two years.

Data published in June 2011 by the VCCR (Brotherton et al. 2011) report a decline in the incidence of histologically confirmed high-grade abnormalities in young women, suggesting an early impact of the HPV vaccine. The importance of continuing regular Pap tests for vaccinated women is emphasised as part of the National HPV Vaccination Program (DoHA 2012).

The proportion of Pap test results with a squamous cell abnormality in 2010 was 6.4 per cent. A definite high-grade abnormality was reported in 0.8 per cent of Pap tests in 2010 (VCCR 2011).

Of the 181 women who were diagnosed with cervical cancer in 2008, 74 per cent had either never screened (52 per cent) or were lapsed screeners (22 per cent) (VCCR 2011).

References

Brotherton JML, Fridman M, May CL, Chappell G, Saville AM, Gertig DM, 2011, 'Early effect of the HPV Vaccination Programme on cervical abnormalities in Victoria, Australia: an ecological study', *The Lancet*, vol. 377, pp.2085–2092.

Cancer Council Victoria 2011, *Cancer in Victoria: Statistics and trends 2010*, Cancer Council Victoria, Melbourne.

Department of Health and Ageing 2012, *Human Papillomavirus (HPV)*, viewed 7 November 2012, <http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/immunise-hpv>

Victorian Cervical Cytology Registry (VCCR) 2011, *Statistical report 2010*, 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.

Participation rates provided have been adjusted using the Australian Bureau of Statistics *National Health Survey 2004–05* hysterectomy fractions (VCCR 2011).

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.

Women over 70 years with a negative screening history are outside the eligible range for the screening program (National Cervical Screening Program factsheet).

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

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

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

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

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

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

Cancer Council Australia:
http://www.cervicalcancervaccine.org.au/

Contact

Victorian Cervical Cytology Registry

Telephone: (61 3) 8417 6816
Website: www.vccr.org

Children fully immunised at age 60 to < 63 months

Description

The proportion of children, aged 60 months or 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.

Immunisation is one of the most cost-effective public health interventions by which to maintain and protect the health of the population via the reduction, elimination and eradication of preventable communicable diseases. Immunisation not only protects the individual, but also protects the wider community from the spread of infection by decreasing the number of susceptible people in the population. In Victoria, improvements in childhood vaccination coverage need to be maintained and gaps and inequities in coverage addressed in order to achieve the lowest possible incidence of vaccine preventable diseases in the population (DHS 2008).

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.

The National Immunisation Program schedule is 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 (varicella), hepatitis B, diphtheria, *Haemophilus influenzae type b* (HIB) disease, measles, meningococcal C, mumps, pertussis (whooping cough), pneumococcal, polio, rotavirus, rubella and tetanus.

The National Immunisation Program schedule is available from:
http://www.health.vic.gov.au/immunisation/factsheets/schedule-victoria.htm

Percentage of children 60 to < 63 months of age (age calculated at 31 December 2011) assessed as fully immunised, date of processing 31 March 2012.

State	No. of Children	% DTP	% Polio	% HIB	% Hep B	% MMR	% Fully Immunised
ACT	1,190	91.6	91.5	0	0	91.5	91.2
NSW	24,154	90.8	90.7	0	0	90.7	90.3
VIC	**18,332**	**91.9**	**91.9**	**0**	**0**	**91.7**	**91.4**
QLD	15,014	91.2	91.1	0	0	91.0	90.6
SA	4,868	87.6	87.5	0	0	87.3	86.9
WA	7,784	88.0	87.9	0	0	87.7	87.2
TAS	1,641	91.3	91.3	0	0	91.5	91.0
NT	878	91.2	91.2	0	0	91.1	90.8
AUS	**73,861**	**90.7**	**90.6**	**0**	**0**	**90.5**	**90.1**

DTP (diphtheria/tetanus/pertussis), HIB (Haemophilus influenzae type b), Hep B (hepatitis B), MMR (measles/mumps/rubella)

Source: Medicare Australia, Australian Childhood Immunisation Register statistics

The proportion of children aged between 60 and less than 63 months who received all scheduled vaccinations in Victoria was 91.4 per cent, the highest among all jurisdictions in Australia at 31 March 2012.

References

Medicare Australia 2012, Australian Childhood Immunisation Register statistics, viewed 30 May 2012, <http://www.medicareaustralia.gov.au/provider/patients/acir/statistics.jsp>

Hull B, Dey A, Mahajan D, Menzies R, McIntyre P 2011, 'Immunisation coverage annual report 2009', *Communicable Diseases Intelligence*, vol. 35, no. 2, pp.132-148.

Department of Human Services (DHS) 2008, *Victorian Immunisation Strategy 2009–2012*, Public Health Branch, Victorian Government Department of Human Services, Melbourne Victoria, viewed 30 May 2012, <http://docs.health.vic.gov.au/docs/doc/FAF88C782BDBD5FFCA2579100028CB87/$FILE/vic_imm_2009-12_2.pdf>

Concepts

The vaccination status of each cohort is assessed at the three key milestones of 12 months, 24 months and five years (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 and is administered before the second birthday. The five-year milestone includes vaccinations due at four years of age and 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).

Per cent fully immunised = [No. children vaccinated/No. children in register] x 100
Only vaccines administered before 60 months are included in the coverage calculation. 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 vaccine, and the second dose of measles, mumps and rubella vaccine (MMR).

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 a measure of coverage at a national, State/Territory and local level
- provide information for the delivery of incentive payments and feedback reports to eligible immunisation providers.

Limitations

Several limitations exist regarding data available from the ACIR which must be considered when they are used to estimate vaccination coverage, including under-reporting, the fact that records are held only for children up to seven years of age and that coverage is calculated only for children registered with Medicare. However, it is estimated that by the age of 12 months, over 99 per cent of Australian children were registered with Medicare (Hull et al. 2011).

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
http://www.medicareaustralia.gov.au/provider/patients/acir/

Department of Health and Ageing (DoHA) 2010, *Understanding childhood immunisation,* DoHA, Canberra:
http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/IMM52-cnt

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

Department of Health, Immunisation:
http://www.health.vic.gov.au/immunisation

National Immunisation Program schedule:
http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/nips2

Contact

Immunisation Program
Department of Health

Telephone: 1300 882 008
Email: immunisation@health.vic.gov.au

Biomedical factors

This dimension incorporates genetic-related susceptibility to disease and other 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 or 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.

Body weight status

Description

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

Overweight and obesity, or excess weight, is a major contributor 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 and sex, Victoria, 2010

Age group (years)	Underweight (< 18.5 kg/m²)			Normal weight (18.5–24.9 kg/m²)			Overweight (25.0–29.9 kg/m²)			Obese (≥ 30.0 kg/m²)		
		95% CI			95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL	%	LL	UL
Males												
18–24	0.0	0.0	0.0	57.7	47.6	67.2	22.0	14.8	31.4	8.4*	4.3	15.8
25–34	0.0	0.0	0.0	37.2	30.3	44.6	40.9	33.8	48.3	19.1	13.9	25.6
35–44	**			32.3	27.5	37.5	43.6	38.4	49.0	18.4	14.6	22.9
45–54	**			27.2	23.4	31.5	43.8	39.3	48.4	23.4	19.7	27.5
55–64	**			25.7	21.7	30.2	46.9	42.1	51.7	22.0	18.2	26.2
65+	1.4*	0.6	3.1	26.5	23.0	30.4	47.3	43.1	51.4	18.2	15.2	21.7
All males	**0.6***	**0.3**	**1.0**	**34.2**	**31.8**	**36.7**	**41.0**	**38.6**	**43.4**	**18.5**	**16.7**	**20.5**
Females												
18–24	5.2*	2.5	10.7	68.7	60.5	75.8	11.7	7.1	18.7	5.5*	3.3	9.0
25–34	3.0*	1.5	5.7	48.3	42.4	54.2	24.2	19.4	29.7	12.3	9.0	16.7
35–44	2.0*	1.2	3.5	45.4	41.4	49.4	27.1	23.7	30.7	15.7	13.0	18.8
45–54	2.4*	1.4	4.1	45.2	41.4	49.0	26.7	23.5	30.2	16.3	13.8	19.2
55–64	3.1	2.0	4.9	34.7	31.1	38.5	31.7	28.2	35.5	20.8	17.9	24.1
65+	2.0	1.3	3.2	33.4	30.3	36.6	30.4	27.4	33.6	19.1	16.6	21.9
All females	**2.8**	**2.2**	**3.7**	**45.3**	**43.3**	**47.3**	**25.7**	**24.1**	**27.5**	**15.2**	**14.0**	**16.5**
Persons												
18–24	2.5*	1.2	5.3	63.1	56.5	69.2	17.0	12.4	22.7	7.0	4.4	10.9
25–34	1.5*	0.8	2.9	42.7	38.1	47.5	32.6	28.2	37.2	15.7	12.5	19.6
35–44	1.4*	0.8	2.3	38.9	35.7	42.2	35.3	32.1	38.5	17.0	14.6	19.7
45–54	1.5*	0.9	2.5	36.3	33.5	39.2	35.1	32.3	38.1	19.8	17.5	22.3
55–64	1.9	1.2	2.8	30.3	27.5	33.2	39.2	36.2	42.2	21.4	19.0	24.0
65+	1.7	1.2	2.6	30.3	28.0	32.8	38.0	35.4	40.6	18.7	16.7	20.8
All persons	**1.7**	**1.4**	**2.2**	**39.8**	**38.2**	**41.3**	**33.2**	**31.8**	**34.7**	**16.9**	**15.8**	**18.0**

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 up 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 total 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.

**Estimate has a relative standard error of greater than 50 per cent and is not reported as it is unreliable for general use.

Source: *Victorian Population Health Survey 2010*

The results of the *Victorian Population Health Survey 2010* show that half (50.1 per cent) of all people aged 18 years or over were overweight or obese (33.2 per cent were overweight and 16.9 per cent were obese). More than half (59.5 per cent) of all males in Victoria were overweight or obese, compared with 41.0 per cent of females. A higher proportion of males were overweight (41.0 per cent), compared with females (25.7 per cent), similarly there was a higher proportion of obese males than females (18.5 per cent and 15.2 per cent, respectively).

The prevalence of overweight increased with age and was greatest in people aged 55 years or over, while the prevalence of obesity also increased with age but peaked in people aged 55–64 years. By contrast, the prevalence of overweight and obesity was lowest in people aged 18–24 years.

The 2008 Victorian Population Health Survey reported that while there were no statistically significant differences between Aboriginal and non-Aboriginal Victorians in body weight status, there was a substantially lower prevalence of overweight and higher prevalence of obesity in Aboriginal men compared with their non-Aboriginal counterparts, and a higher prevalence of obesity in Aboriginal women compared with their non-Aboriginal counterparts (Department of Health 2011).

References

Department of Health 2011, *The health and wellbeing of Aboriginal Victorians: Victorian Population Health Survey 2008 supplementary report*, State Government of Victoria, Melbourne.

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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 (m^2). The World Health Organization (WHO 2000) classifies adult body weight status based on the following BMI scores:

Obese:	30.0 and greater
Overweight:	25.0 to less than 30.0
Normal range:	18.5 to less than 25.0
Underweight:	Less than 18.5

Limitations

Studies comparing self-reported height and weight with actual physical measurements have shown that people tend to underestimate their weight and overestimate their height, resulting in an underestimation of their BMI. Therefore, estimates of the prevalence of overweight and obesity in a population that are based on self-reported data are likely to be slightly lower than actual values. A further cautionary note is that BMI cannot distinguish between body fat and muscle. Therefore, an individual who is very muscular with low body fat could have a high BMI estimate and be classified as obese.

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/survey/vphs.htm

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

Australian Institute of Health and Welfare (AIHW), Overweight and Obesity:
http://www.aihw.gov.au/overweight-and-obesity/

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Newborn screening

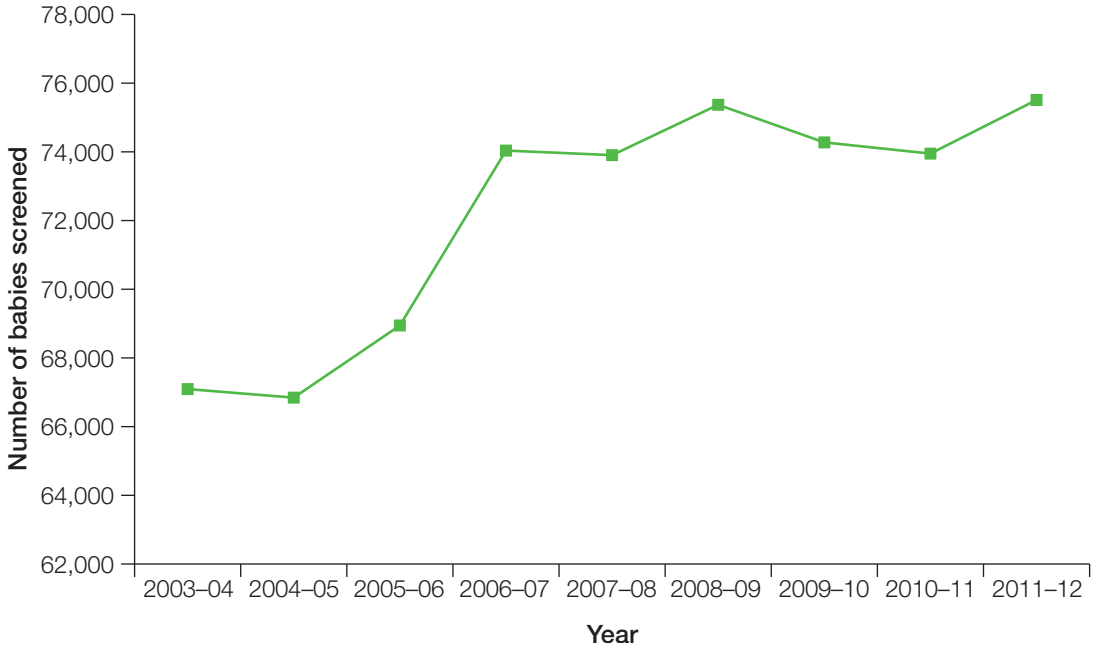
Description

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 twenty five rare, but serious, congenital and metabolic disorders, including phenylketonuria, cystic fibrosis, congenital hypothyroidism and a number of other disorders that affect protein and fat metabolism. Early detection, through screening, ensures that the condition can be treated, or managed, as soon as possible and prevent lifelong disability, developmental problems and, in some cases, mortality.

Screening has been available in Victoria since the mid 1960s. The screening test is offered free of charge to all newborns in Victoria. While newborn screening is strongly recommended for all babies, it is a voluntary program in Australia (Department of Health 2011).

Number of babies screened in Victoria 2003–04 to 2011–12



Source: Victorian Clinical Genetic Services quarterly reporting data, November, 2012

In 2011–12, 75,510 newborns were tested and 76 were identified as having one of the conditions screened for as part of the Newborn Screening Program.

Until recently, the proportion of babies in Victoria having newborn screening had not been formally assessed. A 2008 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 20 weeks or 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 were not screened.

In August 2011, a new written consent process for newborn screening was introduced across all public and private maternity hospitals in Victoria. This provides an opportunity for discussion between parents and healthcare providers about newborn screening to increase parents' knowledge and to support informed choice.

References

Department of Health 2011, *Newborn screening policy and guidelines*, Victorian Government Department of Health, Melbourne.

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):
www.vcgspathology.com.au/nbs
http://www.vcgs.org.au/pathology/downloads/newborn/Disorder_list.pdf

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Community and socioeconomic factors

This dimension includes community factors relating to social capital such as support networks and community engagement, 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 composition of the estimated resident population (ERP) of Victoria at the beginning of a given period, including 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.

Social connectedness: There are two measures included in this indicator:

1. *Support networks*: The proportion of adults aged 18 years or over who report an ability to get help from family, friends or neighbours when needed, by sex.
2. *Community engagement*: The proportion of adults aged 18 years or over who help out a local group as a volunteer, over time.

Population

Description

The composition of the estimated resident population (ERP) of Victoria at the beginning of a given period, including 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, 1998–2011

		Composition														
		Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1	Total population[a]	'000	4,637.8	4,686.4	4,741.3	4,804.7	4,863.1	4,923.5	4,981.5	5,048.6	5,126.5	r5,204.6	r5,293.1	r5,395.1	r5,468.4	5,534.5
2	Male population[a]	'000	2,287.0	2,309.4	2,335.5	2,366.3	2,396.7	2,428.6	2,458.9	2,494.0	2,535.1	r2,575.7	r2,620.7	r2,672.8	r2,706.4	2,736.8
3	Female population[a]	'000	2,350.8	2,377.0	2,405.8	2,438.4	2,466.4	2,494.9	2,522.6	2,554.6	2,591.5	r2,628.9	r2,672.4	r2,722.4	r2,762.0	2,797.8
4	Aboriginal and Torres Strait Islander population[b]	'000	27.8	28.5	29.3	30.0	30.7	31.4	32.1	32.8	33.5	34.3	35.1	35.9	36.8	37.6
5	Born overseas[c]	%	n.a.	n.a.	n.a.	24.6	n.a.	n.a.	n.a.	n.a.	26.3	n.a.	n.a.	n.a.	n.a.	n.y.a.
6	Born in United Kingdom	%	n.a.	n.a.	n.a.	4.7	n.a.	n.a.	n.a.	n.a.	4.4	n.a.	n.a.	n.a.	n.a.	n.y.a.
7	Born in Europe	%	n.a.	n.a.	n.a.	13.7	n.a.	n.a.	n.a.	n.a.	12.8	n.a.	n.a.	n.a.	n.a.	n.y.a.
8	Born in East, Central or Southern Asia	%	n.a.	n.a.	n.a.	6.3	n.a.	n.a.	n.a.	n.a.	8.2	n.a.	n.a.	n.a.	n.a.	n.y.a.
9	Population living in capital cities[d]	%	72.1	72.1	72.2	72.3	72.5	72.7	72.8	72.9	73.0	73.1	73.3	73.4	73.5	73.6
10	Population aged 0–14 years[a]	%	20.5	20.3	20.2	20.0	19.8	19.6	19.4	19.2	19.0	18.8	r18.6	18.5	18.3	18.2
11	Population aged 15–64 years[a]	%	66.8	66.8	66.9	67.0	67.1	67.3	67.4	67.5	67.6	67.7	67.8	r67.9	r67.9	67.8
12	Population aged 65 years or over[a]	%	12.7	12.8	12.9	13.0	13.1	13.1	13.2	13.3	13.4	13.5	13.5	r13.6	r13.8	14.0
13	Population aged 85 years or over[a]	%	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.8	r1.8	1.9
14	Median age of total population[a]	years	35.0	35.3	35.6	35.8	36.0	36.2	36.4	36.6	36.7	36.9	36.9	r37.0	37.1	37.3
15	Median age of Aboriginal and Torres Strait Islander population[b]	years	20.3	20.3	20.2	20.3	20.4	20.6	20.9	21.0	21.2	21.4	21.5	21.7	21.9	22.1
16	Sex ratio[e] of population aged 0–64 years[a]	ratio	100.7	100.5	100.4	100.3	100.4	100.5	100.6	100.7	100.8	r100.9	r100.9	r101.0	r100.7	100.5
17	Sex ratio[e] of population aged 65 years or over[a]	ratio	76.4	76.9	77.2	77.6	78.2	78.6	79.1	79.7	80.5	r81.1	r81.5	r81.9	r82.3	82.9

Population composition, growth and migration, Victoria, 1998–2011 (continued)

		Population growth													
		Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	r2010	p2011
18	Total population growth[f]	'000	40.6	48.6	54.9	63.4	58.4	60.4	58.0	67.1	77.9	94.8	105.7	119.6	90.4	84.2
19	Births[g]	'000	60.1	59.4	59.7	58.7	60.4	60.2	61.4	62.3	63.8	68.9	70.1	71.4	69.3	72.0
20	Deaths[g]	'000	32.4	32.3	32.0	32.3	32.6	33.1	33.1	32.4	33.1	34.2	35.2	36.0	35.1	37.3
21	Natural increase[g]	'000	27.7	27.1	27.7	26.4	27.8	27.1	28.3	29.9	30.7	34.7	34.9	35.4	34.3	34.6
22	Net overseas migration[h]	'000	19.3	24.7	27.0	35.3	20.3	26.8	25.0	32.3	39.6	62.5	73.5	83.5	53.6	45.7
23	Net interstate migration	'000	-0.3	2.5	5.2	5.2	3.6	-0.7	-3.1	-3.1	-1.8	p-2.4	p-2.7	p0.7	p2.6	3.8
24	Population growth rate[i]	%	0.88	1.05	1.17	1.34	1.21	1.24	1.18	1.35	1.54	r1.52	r1.70	r1.93	1.36	1.21
25	Contribution of net overseas migration to total growth	%	47.5	50.8	49.1	55.7	34.7	44.3	43.2	48.1	50.8	65.9	69.5	69.8	59.3	54.4
26	Net interstate migration rate	%	-0.01	0.05	0.11	0.11	0.08	-0.02	-0.06	-0.06	-0.04	p-0.05	p-0.05	p0.01	p0.05	0.07

Population composition, growth and migration, Victoria, 1998–2011 (continued)

		Migration													
		Units	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
22	Net overseas migration[h]	'000	19.3	24.7	27.0	35.3	20.3	26.8	25.0	32.3	39.6	62.5	73.5	83.5	r53.6	p45.7
27	Temporary visas[j]	%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	64.4	68.7	66.2	55.7	n.y.a
28	Permanent visas[j]	%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	37.1	33.0	29.3	41.0	n.y.a
29	New Zealand citizens[j]	%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8.8	8.4	6.7	9.1	n.y.a
30	Australian citizens[j]	%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-7.7	-7.2	-0.6	-1.7	n.y.a

a. Population from September 2006 onwards have a status of 'preliminary rebased', based on the results of the 2011 Census.

b. Data for 1998–2006 are experimental estimates of the Aboriginal and Torres Strait Islander population, based on the 2006 Census. Data for 2007–2011 are experimental projections of the Aboriginal and Torres Strait Islander population (Series B), based on the 2006 Census.

c. Includes country of birth not stated

d. Data for 1998–2000 are based on 2006 Australian Standard Geographical Classification (ASGC) boundaries. Data for 2001–2011 are based on 2010 Australian Standard Geographical Classification (ASGC) boundaries. Data for 2010 and 2011 are based on data released by the Australian Bureau of Statistics on 30 March 2012.

e. The sex ratio relates to the number of males per 100 females in a population or sub population. Above age 65, the sex ratio reduces markedly due to the impact of higher male mortality on this population group.

f. Differences between total growth and the sum of the components of population change are due to intercensal discrepancy/error.

g. Data are based on year of occurrence up to 2010. Data for 2011 are based on year of registration.

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

i. Population growth rates from September 2006 onwards are determined by adding together the components of growth (that is, births, deaths and migration), rather than the difference in population levels.

j. The percentages of visas might not add up to 100% due to the 'Other' visa category, consisting of residents returning, onshore visas and visas unknown.

Reference periods: Data for indicators 1–17 and 31–37 are at 30 June. Data for indicators 18–30 are for the year ending 30 June.

n.a: not available; n.y.a.: not yet available; p: preliminary data; r: figures or series revised since previous publication,
-: figures are nil or rounded to zero

Source: ABS 2012

In 2011 there were 5,534,500 people usually resident in Victoria. Just under half (49.6 per cent) were males and 50.4 per cent were females (2,736,800 males and 2,797,800 females). Of the total population in Victoria, 0.7 per cent identify as Aboriginal and/or Torres Strait Islander people.

Children aged 0–14 years made up 18.2 per cent of the Victorian population, 67.8 per cent were aged 15–64 years and 14.0 per cent were aged 65 years or over. The median age of people in Victoria was 37.3 years, which was equal to the median age for all people in Australia.

The Department of Planning and Community Development report Victoria in Future 2012 projects that Victoria's population will grow to 7.3 million over the next twenty years (DPCD 2012). Overseas migration is expected to be the greatest driver of population growth during this period. Victoria's age profile will become progressively older and household size will gradually decrease, with a lower proportion of families with children and more lone person and couple-only households.

References

Australian Bureau of Statistics (ABS) September 2012, *Australian Social Trends, Table 2.2 Population Victoria Summary 1998–2011*, cat. no. 4102.0, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2012, *Australian demographic statistics*, *March 2012*, cat. no. 3101.0, ABS, Canberra.

Department of Planning and Community Development (DPCD) 2012, *Victoria in Future 2012: Population and Household Projections for Victoria and its Regions 2011–2031*, DPCD, Melbourne, viewed 24 May 2012, <http://www.dpcd.vic.gov.au/home/publications-and-research/urban-and-regional-research/census-2011/victoria-in-future-2012>.

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) September 2012, *Australian Social Trends*, cat. no. 4102.0, ABS, Canberra: http://www.abs.gov.au/ausstats/abs@.nsf/mf/4102.0

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Socioeconomic factors

Description

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

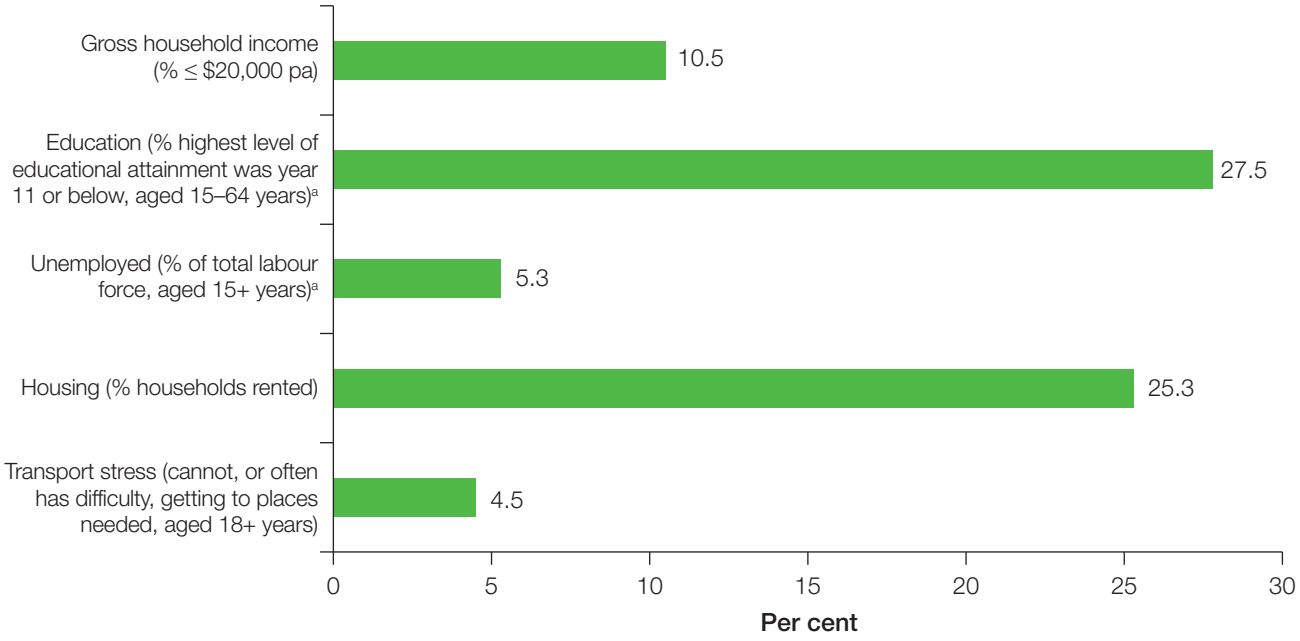
The health and wellbeing of individuals and populations are influenced by, and determined as the result of, the interactions among human biology, lifestyle and environmental (including social) factors, modified by health and other interventions. Socioeconomic characteristics are key determinants of health and wellbeing, and contribute to differences in health or 'health inequality' across the population (AIHW 2012; Wilkinson & Marmot 2003).

Despite significant achievements in public health in Victoria over the past century, the evidence on socioeconomic status and health in Australia is unequivocal: people lower in the socioeconomic hierarchy fare significantly worse in terms of their health. Specifically, those classified as having low socioeconomic status have higher mortality rates for most major causes of death. Their morbidity profile indicates they experience more ill health (both physiological and psychosocial), and their use of healthcare services suggests they are less likely, or may have less opportunity, to act to prevent disease or detect it at an early stage.

As those with the highest socioeconomic status are those who have the most resources, opportunities and power to make choices, this forms a 'social gradient', with overall health and wellbeing tending to improve at each step up the socioeconomic ladder (Marmot et al. 1984). 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).

Socioeconomic status is typically measured by attributes that include educational attainment, occupational status and income. Greater levels of educational attainment are associated with higher levels of knowledge and other non-material resources likely to promote a healthy lifestyle. Education also provides formal qualifications that affect occupational status and associated income level. Occupational status reflects social status and power, and material conditions related to paid work. Income provides individuals and families with necessary material resources (including housing and access to transport) and determines their purchasing power for accessing goods and services needed to maintain good health (Lahelma et al. 2004).

Selected socioeconomic factors, Victoria, 2010–2011



a. Estimate is for 2011.

Source: ABS 2011a, ABS 2012, ABS 2011c, ABS 2011d, *Victorian Population Health Survey 2010*

In addition to health information, the Victorian Population Health Survey collects information about socioeconomic status (Department of Health 2012). In 2010, the survey showed that 10.5 per cent of households had a gross income less than $20,000 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 5.3 per cent of the Victorian labour force, aged 15 years or over, were unemployed for December 2011. The *Education and Work* component of the survey, which is conducted in May each year, shows that 27.8 per cent of adults, aged 15–64 years reported their level of highest educational attainment as Year 11 or below in 2011.

The results of the A*BS Household Income and Income Distribution Survey 2009–2010* show that approximately one quarter (25.3 per cent) of homes in Victoria were rented and the results of the *General Social Survey 2010* show that 4.5 per cent of Victorians aged 18 years or over experienced difficulties with transport in getting to the places they needed to go in 2010.

References

Australian Bureau of Statistics (ABS) 2011a, *General Social Survey: summary results, Australia, 2010*, cat. no. 4159.0, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2011b, *Education and work Australia, May 2011*, cat. no. 6227, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2011c, *Household income and income distribution*, Australia, 2009–10, cat. no. 6523, ABS, Canberra.

Australian Bureau of Statistics (ABS) 2012, *Labour force, Australia, October 2012*, cat. no. 6202, ABS, Canberra.

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

Australian Institute of Health and Welfare (AIHW) 2012, *Australia's health 2012*, cat. no. AUS 156, AIHW, Canberra.

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

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

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

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) 2012, *Australia's health 2012*, Australia's health series no. 13, cat. No. AUS 156, 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/survey/vphs.htm

Cannon R 2008, *The Social Determinants of Health SACOSS Information Paper*, South Australian Council of Social Service, Adelaide:
http://www.sacoss.org.au/online_docs/081210%20Social%20Determinants%20of%20Health%20Report.pdf

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

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Social connectedness

Description

There are two measures included in this indicator

1. Support networks: The proportion of adults aged 18 years or over who report an ability to get help from family, friends or neighbours when needed, by sex.
2. Community engagement: The proportion of adults aged 18 years or over who help out a local group as a volunteer, over time.

Social connectedness, a measure of how people come together and interact, is a key determinant of mental and physical health and wellbeing. Social connections that matter are considered to be those with family, friends, schools, work, sporting clubs, religious organisations, youth organisations and art organisations and in various forms of civic engagement (Keleher & Armstrong 2005). Increased social contact and stronger support networks are associated with better health and some studies conclude that the benefits of strong social relationships may be as important to health as health risks such as tobacco smoking, physical inactivity, poor nutrition and high blood pressure (Wilkinson & Marmot 2003).

Social and support networks refer to informal relationships that individuals have with family, friends, neighbours and other members of their community. These networks often serve as a valuable resource, providing information or emotional, practical and financial support in times of need.

Ways of expressing community and civic engagement include being involved in the community through volunteering, being on a committee or decision-making body, or taking local action on behalf of an organised group. Volunteering helps individuals form interpersonal ties and develop their social networks. It provides a sense of purpose and connectedness within a group or community.

Proportion of adults aged 18 years or over who reported an ability to get help from family, friends or neighbours when needed, by sex, 2010

Age group (years)	No, not at all			Not often			Sometimes			Yes, definitely		
		95% CI			95% CI			95% CI			95% CI	
	%	LL	UL	%	LL	UL	%	LL	UL	%	LL	UL
Help from family												
Males	4.1	3.2	5.2	2.0	1.5	2.6	11.1	9.6	12.8	82.4	80.4	84.2
Females	4.5	3.7	5.4	2.9	2.3	3.6	11.0	9.8	12.4	81.0	79.4	82.5
Persons	4.3	3.7	5.0	2.4	2.0	2.9	11.1	10.1	12.1	81.7	80.4	82.9
Help from friends												
Males	2.6	1.9	3.5	2.5	1.8	3.4	14.4	12.7	16.2	80.2	78.1	82.1
Females	2.6	2.1	3.2	1.9	1.4	2.5	12.9	11.6	14.3	82.0	80.4	83.5
Persons	2.6	2.1	3.1	2.2	1.7	2.7	13.7	12.6	14.8	81.1	79.8	82.3
Help from neighbours												
Males	14.8	13.0	16.9	8.3	6.8	10.0	25.3	23.1	27.7	49.2	46.8	51.6
Females	15.9	14.3	17.5	8.0	6.9	9.3	22.8	19.2	26.9	49.8	45.3	54.3
Persons	15.3	14.1	16.6	8.2	7.2	9.2	24.2	22.8	25.7	49.9	48.3	51.5

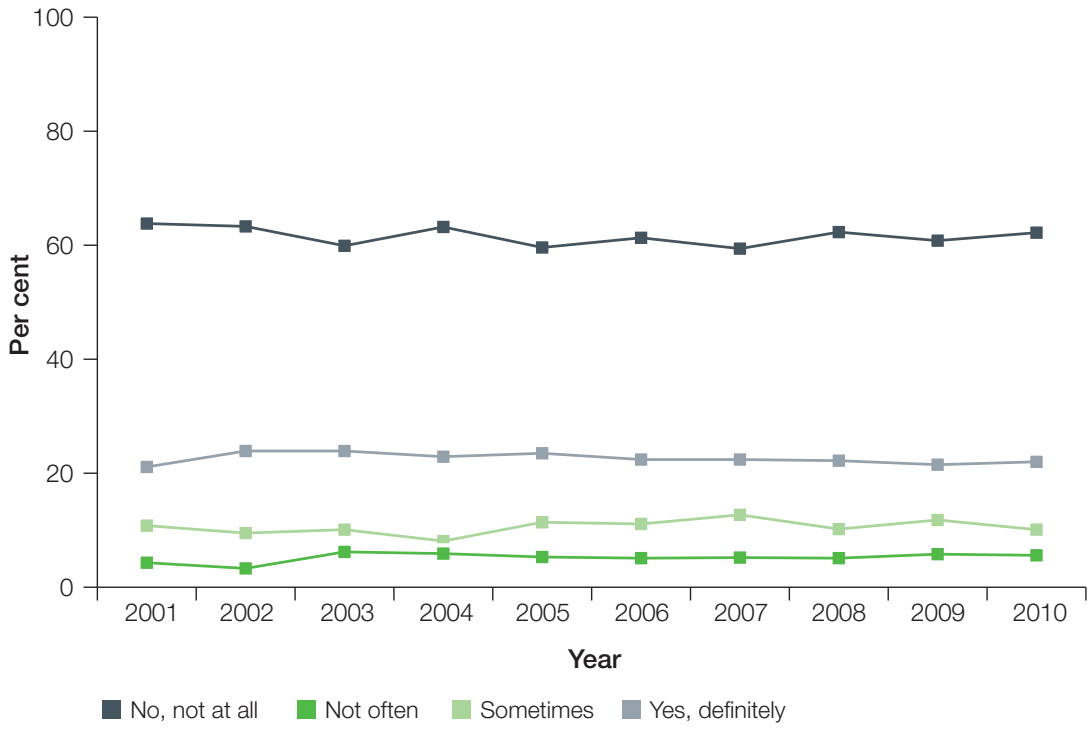
Note that the figures may not add up to 100 per cent due to a proportion of 'don't know' or 'refused' responses.

Data are age-standardised to the 2006 Victorian population.

LL/UL 95% CI = lower/upper limit of 95 per cent confidence interval

Source: *Victorian Population Health Survey 2010*

Proportion of adults aged 18 years or over who help out a local group as a volunteer, Victoria, 2001–2010



Note that the figures may not add up 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 2001–2010

The Victorian Population Health Survey asks respondents whether they were able to get help from family, friends and neighbours if they needed it. In 2010, almost eight in 10 people reported that they could definitely get help from family or friends if needed. A further 11.1 per cent felt they could 'sometimes' get help from family, while 13.7 per cent felt they could 'sometimes' get help from friends if needed. There were no significant differences between the sexes.

Slightly less than half (49.9 per cent) of people reported that they could definitely get help from neighbours if needed, and a further 24.2 per cent of people felt they could 'sometimes' get help. Being able to get help from neighbours was related to age, with a higher proportion of males and females aged 55 years or over reporting that they were able to get help from neighbours when needed (Department of Health 2012).

The Victorian Population Health Survey measures the amount of voluntary effort undertaken by individuals in their local community. In 2010, more than one-fifth (22.0 per cent) of people reported they had definitely helped out a local group as a volunteer, and a further 10.1 per cent sometimes did so. Males and females were similarly disposed to volunteer. The proportion of all people who volunteered did not significantly change between 2001 and 2010.

References

Department of Health 2012, *Victorian Population Health Survey 2010*, State Government of Victoria, Melbourne.

Keleher H & Armstrong R 2005, *Evidence-based mental health promotion resource, Chapter 3: Promoting social inclusion and connectedness*, Report for the Department of Human Services and VicHealth, Melbourne.

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

For more information

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

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

Keleher H & Armstrong R 2005, *Evidence-based mental health promotion resource, Chapter 3: Promoting social inclusion and connectedness*, report for the Department of Human Services and VicHealth, Melbourne:
http://www.health.vic.gov.au/healthpromotion/downloads/mental_health_resource.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. *PM_{10}*: The number of days where the national objective for PM_{10} was not met in Melbourne, over time (the national objective for $PM_{10}$is a 24-hour average of 50µg/m^3 with no more than five days where this level is exceeded).
2. *Ozone:* The number of days where the national objective for ozone was not met in Melbourne, over time (the national objective for ozone is to have no more than one day a year exceeding 0.10 parts per million for a one-hour average or 0.08 parts per million for a four-hour average).

Quality of drinking water: The proportion of the population supplied with drinking water who received water that complied with the *Escherichia coli (E. coli)* water quality standard, over time.

Cooling tower water quality (Legionella): There are two measures included in this indicator:

1. The proportion of Legionella detections in cooling tower water samples, over time.
2. The number of notified cases of Legionellosis, over time.

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 for this indicator:

1. PM_{10}: The number of days where the national objective for PM_{10} was not met in Melbourne, over time (the national objective for PM_{10} is a 24-hour average of 50µg/m^3 or below with no more than five days where this level is exceeded).
2. Ozone: The number of days where the national objective for ozone was not met in Melbourne, over time (the national objective for ozone is to have no more than one day a year exceeding 0.10 parts per million for a one-hour average or 0.08 parts per million for a four-hour average).

Airborne particulate matter smaller than 10 micrometres (PM_{10}; less than one-tenth the width of human hair) can exacerbate existing respiratory and cardiovascular disease, which can lead to increases in hospitalisations and premature mortality. The major sources of particles in an urban environment are motor vehicles (particularly diesel powered), industry and wood combustion for heating.

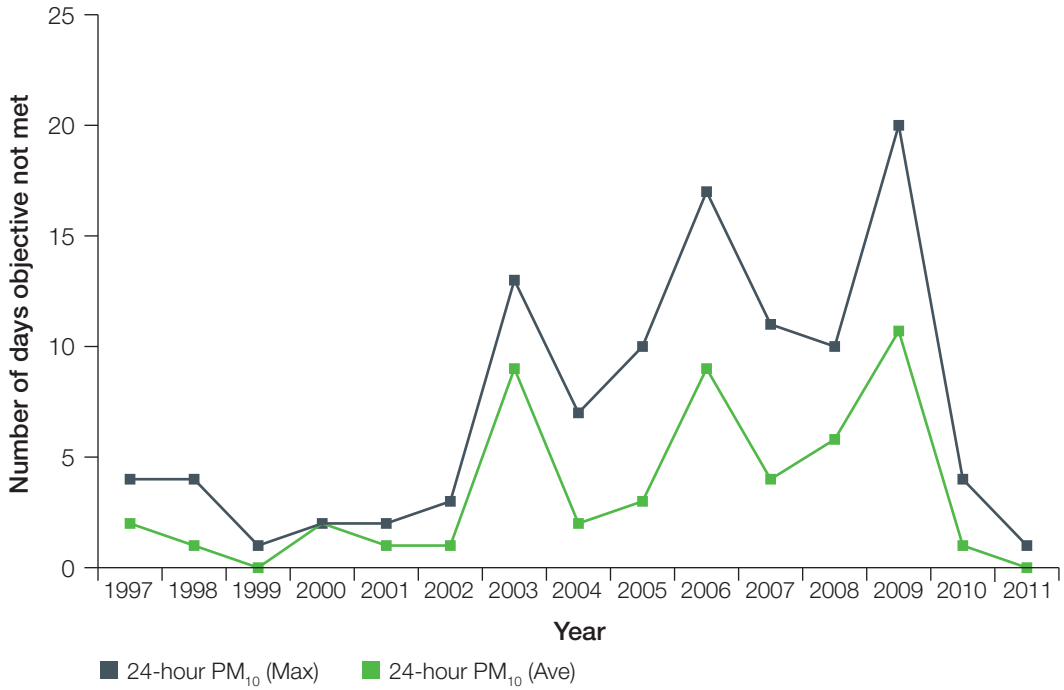
The national objective is a 24-hour average of 50µg/m^3 or below for PM_{10}, with the National Environment Protection Measure for Ambient Air Quality (Air NEPM) goal being that by 2008 the objective is exceeded on no more than five days per year.

Ozone is a naturally occurring gas that is common in the lower atmosphere. Ozone is generated by chemical reactions in strong sunlight as precursor chemicals are transported from the point of emission. 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 hospitalisations for heart and lung conditions. In the lower atmosphere (the air we breathe), ozone is found naturally in low concentrations. Higher concentrations of ozone are formed when, in the presence of sunlight, chemical reactions take place between pollutants including nitrogen dioxide and hydrocarbons.

High ozone levels typically occur in Melbourne when air masses are recirculated within the metropolitan area. Ozone is only a potential problem between late spring and early autumn, when there is enough warmth and sunlight for the chemical reactions to occur. Exceptional ozone events may occur if bushfire smoke is blown towards the city; however, most ozone events are a result of pollution generated in the urban area. Progressive improvements in vehicle emission standards have resulted in a reduction in the number of days where the national objective for ozone was not met.

The national objective 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 Air NEPM goal is, by 2008, to have no more than one day a year where these objectives are not met (as measured at each monitoring site).

Number of days where the 24-hour PM_{10} objective was not met in Melbourne, 1997–2011



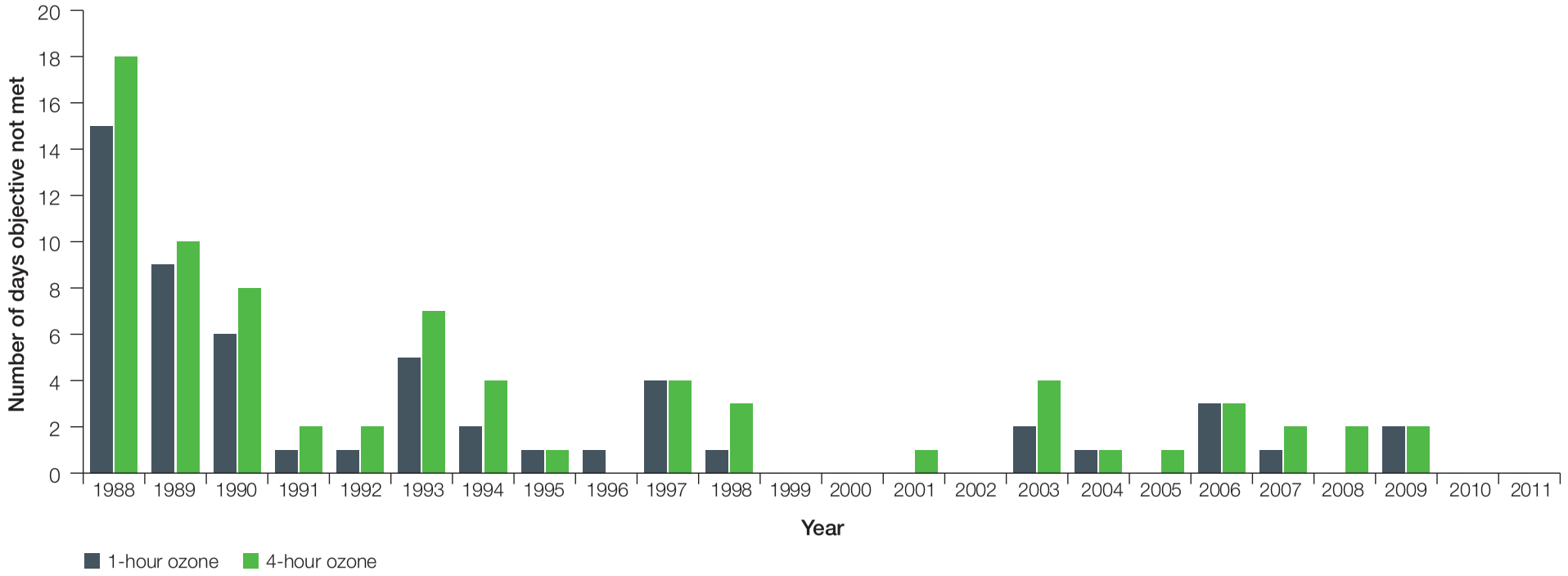
Year	24-hour PM_{10} Maximum number of days	24-hour PM_{10} Average number of days
1997	4	2
1998	4	1
1999	1	0
2000	2	2
2001	2	1
2002	3	1
2003	13	9
2004	7	2
2005	10	3
2006	17	9
2007	11	4
2008	10	6
2009	20	11
2010	4	1
2011	1	0

24 hour PM_{10} (average): involves averaging of the number of days where the objective is not met at each station within Melbourne.

24 hour PM_{10} (maximum): the value for the monitoring station recording the highest number of days not meeting the air quality objective each year (that is the worst performing station for that year).

Source: Environment Protection Authority Victoria

Number of days where the ozone objective was not met in Melbourne (worst monitoring station), by one-hour and four-hour ozone measures, 1988–2011



Source: Environment Protection Authority Victoria

Number of days where the ozone objective was not met in Melbourne (worst monitoring station), by one-hour and four-hour ozone measures, 1988–2011

	Number of days objective not met	
Year	1–hour ozone	4–hour ozone
1988	15	18
1989	9	10
1990	6	8
1991	1	2
1992	1	2
1993	5	7
1994	2	4
1995	1	1
1996	1	0
1997	4	4
1998	1	3
1999	0	0
2000	0	0
2001	0	1
2002	0	0
2003	2	4
2004	1	1
2005	0	1
2006	3	3
2007	1	2
2008	0	2
2009	2	2
2010	0	0
2011	0	0

Source: Environment Protection Authority Victoria

The PM_{10} monitoring for Melbourne highlights that the days where this national objective is not met is highly dependent on weather conditions and other factors. In some of the years between 2002 and 2010, Melbourne was adversely impacted by drought-related factors (particles from dust storms and bushfires). The spikes for both 2003 and 2006 can be attributed to bushfires. In 2009, the PM_{10} objective was exceeded at all stations as a result of bushfires, planned burning, windborne dust and urban sources.

For 2010 and 2011 the Air NEPM PM_{10} goal of no more than five days a year above the objective value was met. This was most likely due to the increased rainfall resulting in less raised dust in the air, and wetter conditions limiting bushfire activity.

The PM_{10} air quality monitoring is representative of the general air quality in Melbourne. The PM_{10} air quality objective was met on almost all days in 2011, indicating that Melbourne's air quality is generally good. These reports do not include the monitoring of site-specific local area impacts that require targeted management.

During 2009, the one-hour ozone objective and four-hour ozone objective were met on all but two days (at one station) in Melbourne. The ozone objectives were exceeded on typical days conducive to formation of photochemical oxidants. At all stations operating during 2010 and 2011, the goals for the one- and four-hour objectives were met.

References

Environment Protection Authority (EPA) 2010a, *Victoria's air quality 2009, air monitoring data*, EPA, Melbourne.

Environment Protection Authority (EPA) 2010b, *Air monitoring report 2009 – compliance with the National Environment Protection (ambient air quality) Measure*, Publication 1331, EPA, Melbourne.

Environment Protection Authority (EPA) 2011a, *Victoria's air quality 2010, air monitoring data*, EPA, Melbourne.

Environment Protection Authority (EPA) 2011b, *Air monitoring report 2010 – compliance with the National Environment Protection (ambient air quality) Measure*, Publication 1390, EPA, Melbourne.

Environment Protection Authority (EPA) 2012a, *Victoria's air quality 2011, air monitoring data*, EPA, Melbourne.

Environment Protection Authority (EPA) 2012b, *Air monitoring report 2011 – compliance with the National Environment Protection (ambient air quality) Measure*, Publication 1483, EPA, Melbourne.

Concepts

The 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

Air quality is assessed against the National Environment Protection Measure for Ambient Air Quality (Air NEPM) which sets national standards for the six key air pollutants to which most Australians are exposed.

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/

National Environment Protection Measure for Ambient Air Quality, National standards for criteria air pollutants in Australia:
http://www.environment.gov.au/atmosphere/airquality/publications/standards.html

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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Quality of drinking water

Description

The proportion of the population supplied with reticulated drinking water who received water that complied with the *Escherichia coli (E. coli)* water quality standard, over time.

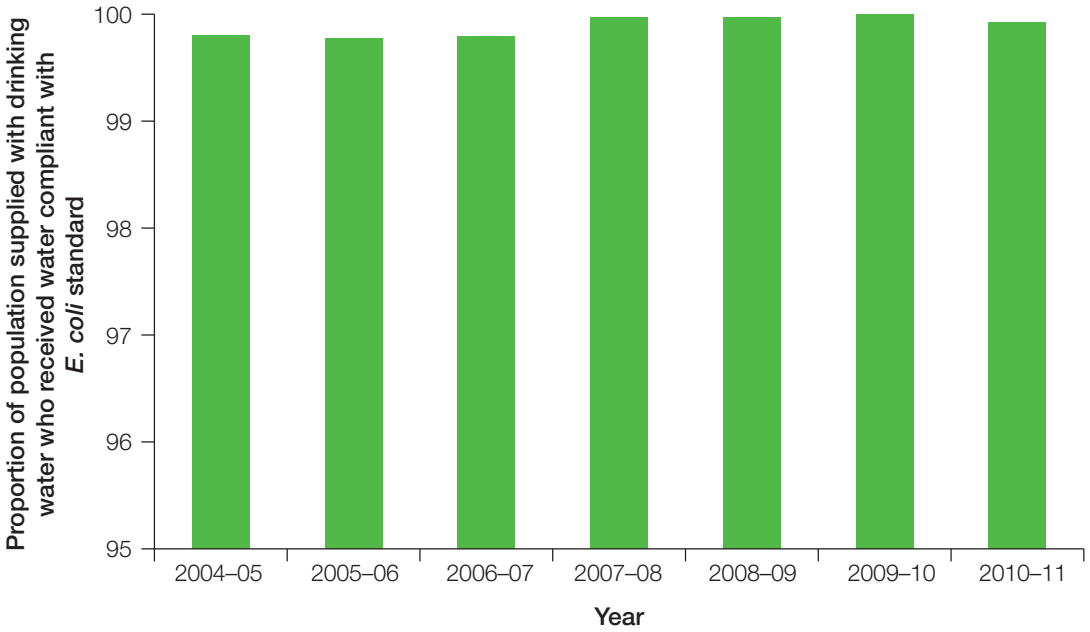
Escherichia coli (E. coli) is a bacterium that can occur in water supplies as a result of recent faecal contamination from humans or animals. Detecting *E. coli* in treated drinking water supplies can indicate that the disinfection process is inadequate or has failed, or there has been intrusion of untreated water into the water supply system.

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 100ml of drinking water.

Under the Act, the state's water corporations collect and report on this indicator on a monthly basis to the Water Program of the Department of Health for each water sampling locality. A water sampling locality is defined as an area of similar water quality. This is usually based on the area receiving reticulated 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 486 water sampling localities across Victoria in 2010–11.

Proportion of the population supplied with reticulated drinking water who received water that complied with the *Escherichia coli (E. coli)* water quality standard, Victoria, 2004–05 to 2010–11



Source: Department of Health, Health Protection Branch

In the period from 2004–05 to 2010–11, close to 100 per cent of the population was supplied with reticulated drinking water that complied with the *E. coli* water quality standard. The water sampling localities which were found to be non-compliant with the water quality standard were typically small, rural localities, which had little impact on the overall percentage of the population supplied with non-compliant water.

In 2009–10, 100 per cent of the population were supplied with reticulated drinking water that complied with the *E. coli* water quality standard.

Concepts

Supplied population: This is the population who were supplied with reticulated drinking water from localities managed by the state's water corporations. In 2010–11 it was estimated that 5,089,650 Victorians were supplied with reticulated drinking water in 486 water sampling localities across Victoria.

For more information

Water Program – Health Protection Branch:
http://www.health.vic.gov.au/environment/water/drinking.htm

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Cooling tower water quality (Legionella)

Description

There are two measures included in this indicator:

1. The proportion of *Legionella* detections in cooling tower water samples, over time.
2. The number of notified cases of legionellosis, over time.

Legionnaires' disease (legionellosis) is a serious and sometimes fatal form of pneumonia caused by the bacteria Legionella. Although not all cases of Legionnaires' disease are severe, up to 10 per cent of cases can be fatal. There are over 50 species of Legionella bacteria but only a few cause disease in humans. The species that are most commonly associated with human disease are *L. pneumophila* and *L. longbeachae* (Heymann 2008).

Transmission is via inhalation of Legionella bacteria in very fine droplets of water called aerosols. Legionella bacteria are found naturally in the environment and thrive in warm water and warm, damp conditions. They are commonly found in bodies of water, soil and potting mix. Man-made water systems sometimes provide environments that enable *Legionella* bacteria to thrive. These man-made systems include showers, spa pools, fountains, and also cooling towers associated with air conditioning and industrial cooling processes (DHS 2005).

The proportion of cooling tower water samples in which Legionella is detected 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.

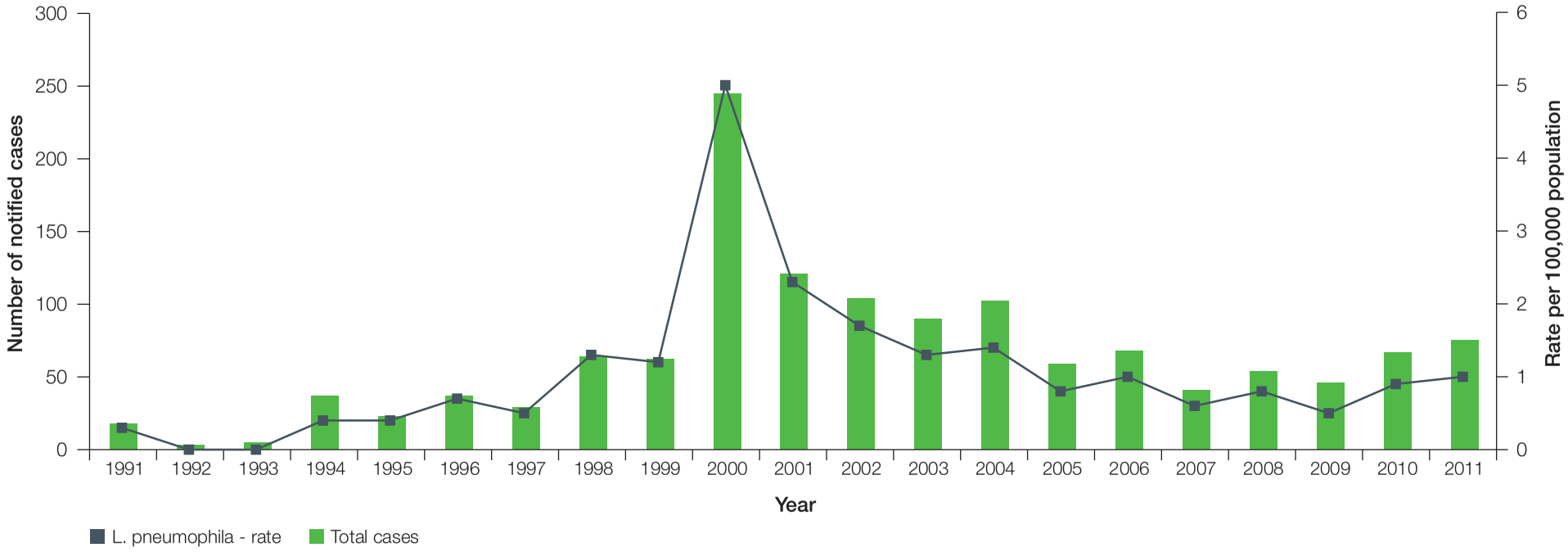
Under the strategy, the Department of Health targets sites where there is a report of a possible contravention of the legislation, to check for general compliance with the legislation or as part of an investigation into a single case or a cluster or outbreak of Legionnaires' disease. The *Public Health and Wellbeing Regulations 2009 (Vic)* require remedial action to be conducted on a cooling tower system if Legionella is detected.

Proportion of Legionella detections in cooling tower water samples, Victoria, 2003–2011

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of registered cooling tower systems	5,859	5,390	5,091	4,852	4,630	4,475	4,300	4,091	3,870
Number of samples collected	263	2,748	795	1,113	554	522	824	1,743	1,197
Proportion of samples where Legionella was detected (%)	5.32	5.42	4.03	2.79	2.89	5.75	4.98	4.53	3.59

Source: Department of Health, 2012

Number of notified cases of legionellosis and rate of L. pneumophila per 100,000 population, Victoria, 1991–2011



Source: Infectious Diseases Epidemiology and Surveillance, <http://ideas.health.vic.gov.au>

The number of Legionella detections in cooling tower samples in the period 2003–2011 was consistently low. A steady decrease in the number of cooling towers operating in Victoria has occurred over this time.

Overall, notifications of legionellosis have been on a downward trend since the introduction of the *Legionella Reform Strategy* in 2000.

References

Department of Human Services (DHS) 2000, *Legionella Reform Strategy*, DHS, Melbourne.

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.

Infectious Diseases Epidemiology and Surveillance, viewed 27 September 2012, <http://ideas.health.vic.gov.au/>

Public Health and Wellbeing Regulations 2009 (Vic) (Part 7 - cooling tower systems and Legionella risks in certain premises), viewed 28 September 2012, <http://www.austlii.edu.au/au/legis/vic/num_reg/phawr2009n178o2009412/>

Limitations

Cooling tower sampling: During the initial phase of the implementation of Legionella Reform Strategy (2000), the samples from cooling tower systems were collected on a fairly random basis. Over the past few years, the Inspection and Sampling Program has focused on those cooling tower systems that have been identified as a higher potential risk.

There is no similar cooling tower system regulation dataset available in other jurisdictions with which these data can be compared.

Samples of water are collected from cooling tower systems by officers in the Legionella team in the Health Protection Branch of the Department of Health and sent to the Melbourne Diagnostic Unit for testing. The test results are entered into the EMERALD (Efficient Management of Electronic Registration And Licensing Data) database.

Legionellosis notifications: Notified cases of laboratory-confirmed legionellosis are an under-representation of the true incidence of the condition in the community. It has been estimated that anywhere up to 16 per cent of community-acquired pneumonia cases are likely to be undiagnosed cases of legionellosis. Cases notified to the department are biased towards those who are more likely to seek medical attention and have a respiratory specimen collected, which is then tested specifically for Legionella; this includes those with more severe symptoms, cases with a longer duration of symptoms and, in particular, the elderly.

For more information

Department of Health - Environmental Health – Legionella:
http://www.health.vic.gov.au/environment/legionella/index.htm

Infectious Diseases Epidemiology and Surveillance:
http://ideas.health.vic.gov.au/diseases/legionnaires-disease-facts.asp

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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.

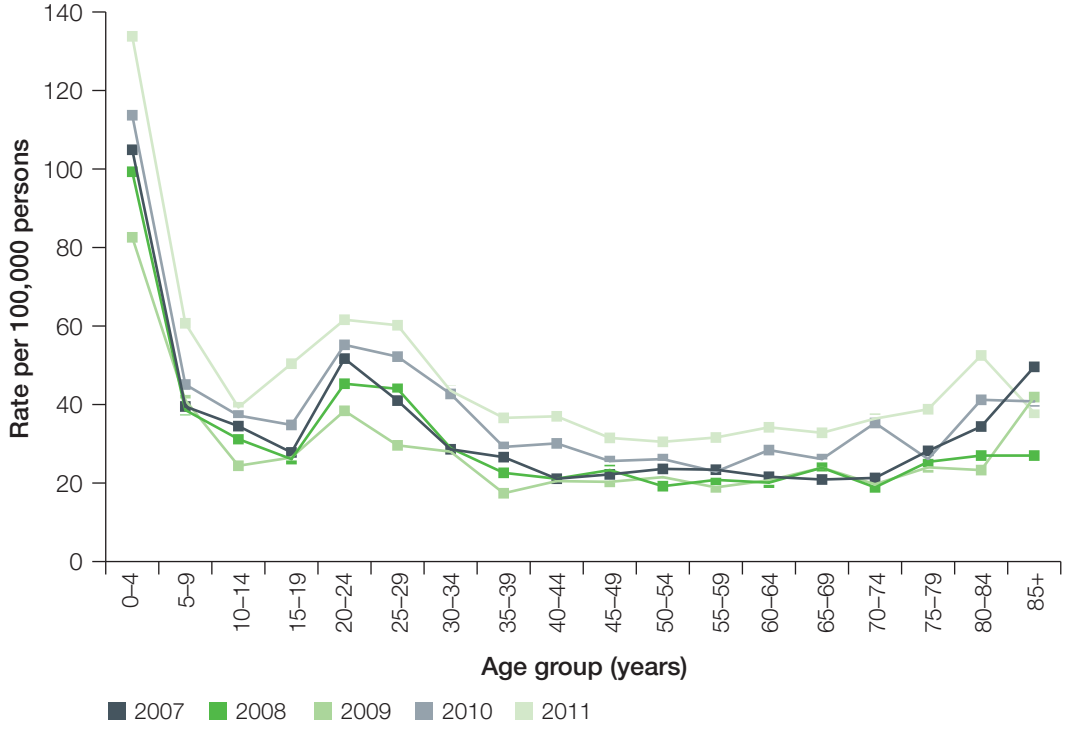
Salmonellosis is an acute bacterial disease which most commonly presents as acute gastroenteritis with a sudden onset of headache, abdominal pain, diarrhoea, nausea and vomiting. Dehydration may occur, especially among infants and the elderly. Infection may also present as septicaemia and may occasionally be localised in other body tissues resulting in endocarditis, pneumonia, septic arthritis, cholecystitis and abscesses. Deaths are uncommon, but may occur in the very young, the very old, the debilitated and the immunosuppressed. However, morbidity and 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 is uncommon but does occur.

Salmonellosis occurs as outbreaks and sporadic cases. In Victoria, 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 more than 2,000 serotypes of Salmonella, with *S. 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, eggs and meat dishes and to avoid recontamination from raw food after cooking.

Notification rate of laboratory confirmed salmonellosis, by age group, Victoria, 2007–2011



Source: Department of Health, Communicable Disease Epidemiology and Surveillance

Notified cases, notification rate and foodborne outbreaks of salmonellosis, Victoria, 2000–2011

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Cases	1,005	1,089	1,208	1,263	1,131	1,421	1,390	1,809	1,689	1,594	2,261	2,695
Rate per 100,000 population	21.2	22.7	24.9	25.7	22.8	28.3	27.3	34.8	32.5	29.3	40.8	48.6
Foodborne outbreaks	6	5	7	4	8	7	8	15	11	8	13	19

Outbreaks of salmonellosis by food source, Victoria, 2007–2011

Food source/Vehicle	2007	2008	2009	2010	2011
Eggs	8	6	1	5	12
Chicken	0	0	0	0	2
BBQ food	0	1	0	0	0
Pork	0	1	0	0	1
Pork rolls	1	0	0	0	0
Water	1	0	0	0	0
Vitamised food	0	1	0	0	0
Specialty dish	0	0	0	1	1
Multiple foods	0	0	0	2	0
Salad	0	0	0	1	0
Unknown	5	2	7	4	3
Total	**15**	**11**	**8**	**13**	**19**

Source: Department of Health, Communicable Disease Epidemiology and Surveillance

The number of notified cases and the notification rate of salmonellosis have increased in Victoria over the past twelve 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 past five years, with eggs (predominantly ready-to-eat foods containing raw eggs), identified as the source for 71 per cent of the outbreaks notified between 2007–2011, 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 have a faecal specimen collected. Cases notified to the department 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 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

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

OzFoodNet:
http://www.ozfoodnet.gov.au/

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

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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.*

Revised indicators

Several indicators have been revised in this edition to expand the information they provide. The oral health status of adults and children have been combined as a single indicator in the health conditions domain; an indicator in the wellbeing domain, reporting on the mental health status of Victorians, now includes information on depression in addition to psychological distress; risk of harm from alcohol consumption now encompasses short-term and long-term risk of harm; and social connectedness is included in the community and socioeconomic factors domain, and encompasses both support networks and community engagement. Several indicators have also been refined for clarity.

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

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 more than 50 per cent were not considered reliable estimates and have not been presented. A double asterisk (**) has been included in certain 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

A confidence interval is a computed interval with a given probability (for example, 95%) that a 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 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 ordinary least squares linear regression, 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;*

.

Abbreviations

95% CI	95 per cent confidence interval
95% CI LL	lower limit of 95 per cent confidence interval
95% CI UL	upper limit of 95 per cent confidence interval

ABS	Australian Bureau of Statistics
ACIR	Australian Childhood Immunisation Register
ACSC	ambulatory care sensitive conditions
AIHW	Australian Institute of Health and Welfare
AM	avoidable mortality
ARCPOH	Australian Research Centre for Population Oral Health
BMI	body mass index
CCOPMM	Consultative Council on Obstetric and Paediatric Mortality and Morbidity
COAG	Council of Australian Government
DEECD	Department of Education and Early Childhood Development
DHS	Department of Human Services
DoHA	Department of Health and Ageing
DPCD	Department of Planning and Community Development
DTP	diphtheria/tetanus/pertussis
EPA	Environment Protection Authority
ERP	estimated resident population
FOBT	faecal occult blood test
HALE	health-adjusted life expectancy
Hep B	hepatitis B
HIB	haemophilus influenzae type b
HPV	human papillomavirus
ICD-10	International Classification of Diseases – 10th revision
MMR	measles/mumps/rubella
NBCSP	National Bowel Cancer Screening Program
NEPM	National Environment Protection Measure
NHISSC	National Health Information Standards and Statistics Committee
NHMRC	National Health and Medical Research Council
NHPA	National Health Performance Agency
NHPAC	National Health Priority Action Council

NHPC	National Health Performance Committee
NPAPH	National Partnership Agreement on Preventive Health
PM_{10}	particles smaller than 10 micrometres
PMR	perinatal mortality rate
RACGP	Royal Australian College of General Practitioners
RSE	relative standard error
VAED	Victorian Admitted Episodes Dataset
VBDR	Victorian Birth Defects Register
VCCR	Victorian Cervical Cytology Registry
VHISS	Victorian Health Information Surveillance System
VHPF	Victorian Health Priorities Framework
VISU	Victorian Injury Surveillance Unit
WCRF/AICR	World Cancer Research Fund and the American Institute for Cancer Research
WHO	World Health Organization

Notes