Your health

Report of the Chief Health Officer Victoria, 2016

Part 2: Victoria's health indicators

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A message from the Chief Health Officer

This is the sixth biennial report published by the Chief Health Officer of Victoria, and the first since I commenced in this role last year. These reports provide an overview of the health and wellbeing of Victorians and are developed to meet the requirements of the *Public Health and Wellbeing Act 2008*.

This document, however, is more than merely an exercise in meeting that requirement. It has been written to provide a wide-ranging view of the health of all Victorians, with a particular focus on the inequalities that many people face and the impact these inequalities have on their health. As Victorians, we all deserve to have the same opportunity to live a healthy and satisfying life. The 2016 Chief Health Officer report recognises this, and the first part of the report has a particular focus on health inequalities.

Overall, the health of Victorians is generally good. This is seen in high rates of self-reported good health, increasing life expectancy, decreasing rates of risk factors such as smoking and excellent access to key disease prevention activities such as immunisation.

There are, however, areas in which we can still improve and gaps in health outcomes that can be bridged. The health of Aboriginal Victorians is still below that of non-Aboriginal Victorians; those who are more disadvantaged in terms of income and education are still displaying poorer health outcomes; and there have been increases in some non-communicable and communicable diseases.

This report recognises some of the challenges we face as we strive to keep improving the health of all Victorians and to protect Victoria from the hazards that we may face in the future. It also considers where there may be opportunities to tackle some of these challenges and reflects on some of the work the Victorian Government has initiated in this endeavour.

The 2016 Chief Health Officer report has been prepared with support and guidance from colleagues across the Department of Health and Human Services. I would like to take this opportunity to particularly thank the Health Intelligence Unit, the Health Protection Branch and the Prevention, Population Health and Place Branch. I would also like to thank the support of a number of external stakeholders and everyone else who has contributed to preparing this report.

Charles Guest
Chief Health Officer

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Key messages

- The air quality in Melbourne is generally good.
- Monitoring for fine particles as PM_{10} (those that are less than 10µm in diameter) and photochemical oxidants (measured as ozone) indicates that levels of both indicators of ambient air quality have remained below air quality objectives and goals since 2010.
- In recent years (2010–15) objectives have not been met in Melbourne between one and six days of each year for PM_{10} and up to four days of each year for ozone.
- Increased concentrations of PM_{10} are typically associated with bushfire events, windblown dust and, to a lesser, extent urban pollution.
- Increased concentrations of ozone in the air environment is generally due to urban pollution between late spring and early autumn when temperatures and sunlight are the highest.
- Approximately 95 per cent of Victoria's population is supplied with reticulated drinking water. Close to 100 per cent of reticulated supplies comply with the *Escherichia coli (E. coli)* water quality standard
- Ninety per cent of Victorians have access to fluoridated water.

Description

Three measures or indicators for ambient air quality or drinking water quality are included here:

1. Particulate matter (or fine particles) measured as PM_{10}

   The number of days where the air quality objective for PM_{10} was not met in Melbourne, over a year of monitoring. For PM_{10} this is a value of 50 micrograms per metre cubed ($\mu g/m^3$) over a 24-hour averaging period with a goal or no more than five days where this level is exceeded in a year.

2. Ozone

   The number of days where the air quality objective for ozone was not met in Melbourne, over a year of monitoring. For ozone this is no more than one day a year exceeding 0.10 parts per million (ppm) for a one-hour averaging period or 0.08 ppm for a four-hour averaging period.

3. Drinking water quality

   The proportion of the population supplied with reticulated drinking water who received water that complied with the water quality standard, over time. The drinking water regulations refer to drinking water quality standards for a range of parameters including metals, toxins, chemicals and pathogenic bacteria. The presence of the microbiological parameter, *E. coli* is a measure or indicator of drinking water contamination.

Introduction

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 the following factors relating to both air quality and drinking water quality.

Air

In Australia, ambient or outdoor air quality is assessed against the National Environment Protection Measure for Ambient Air Quality (NEPM Ambient Air Quality) and the national standards for key air pollutants to which most Australians are exposed. They are fine particles: carbon monoxide, sulfur dioxide, nitrogen dioxide, photochemical oxidants as ozone and lead.

In Victoria the Environment Protection Authority (EPA) monitors and reports on air quality and NEPM national ambient air quality standards are called environmental quality objectives.[1] The environmental quality objectives used to describe Melbourne's air quality include the amount of particulate matter measured in two size fractions; PM_{10} or $PM_{2.5}$ (micrograms of fine particles per cubic metre or $\mu g/m^3$) and the amount of ozone (parts per million or ppm) in outdoor air.

PM_{10} are particles that are smaller than 10 micrometres (less than one-tenth the width of human hair). $PM_{2.5}$ is even smaller and called the fine particle fraction, and these are particles of less than 2.5 micrometres, which can be breathed deeper into the lungs compared with PM_{10}.

Breathing in particles (PM_{10} or $PM_{2.5}$) can potentially exacerbate existing respiratory and cardiovascular conditions. Population exposure is associated with an increase in hospitalisations and premature mortality. The major sources of fine particles in an urban environment are emissions from motor vehicles (particularly diesel-powered), industry and wood combustion for heating. Smoke from bushfires or planned burning, and occasional dust storms, also contribute to fine particles in the air environment.

Ozone is a naturally occurring gas that is common in the lower atmosphere (the air we breathe). Higher concentrations of ozone are formed when, in the presence of sunlight, chemical reactions take place between pollutants including nitrogen dioxide and hydrocarbons. Ozone is also a pollutant and 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.

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 and if 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; most ozone events are a result of pollution generated in the urban area.

For this report the most recent year of NEPM-related air quality reporting is 2015.[2] The relevant Victorian environmental quality objectives for this year of monitoring include:

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1 In Victoria reference to 'pollutant' and 'standard' under the NEPM (Ambient Air Quality) is the same as reference to an 'environmental indicator' and 'environmental quality objective' respectively in the State Environment Protection Policy (Ambient Air Quality).

2 In February 2016, the NEPM Ambient Air Quality was varied. For PM_{10}, the 24-hour reporting standard of 50 $\mu g/m^3$ remains with a new annual average standard of 25 $\mu g/m^3$. The varied NEPM has removed the number of allowable daily exceedances of PM_{10} and replaced this with an exceptional event rule (due to bushfire, hazard-reduction burn or continental scale windblown dust). For $PM_{2.5}$, the 24-hour advisory reporting value of 25 $\mu g/m^3$ and the annual average advisory reporting value of 8 $\mu g/m^3$ are now reporting standards, with no allowable exceedances other than circumstances of the exceptional rule. In July 2016 these changes were adopted in Victoria with a more conservative annual average value for PM_{10} of 20 $\mu g/m^3$.

- For PM_{10}, the objective is a 24-hour average of 50 µg/m^3 or less, with no more than five days per year of allowable exceedances, and an annual average of 20 µg/m3.
- For $PM_{2.5}$ fine particles, the advisory reporting values [3] are a 24-hour average of 25 µg/m^3 or less, and an annual average of 8 µg/m^3 or less.
- For ozone, the objectives are 0.10 ppm for a one-hour average and 0.08 ppm for a four-hour average, with no more than one day per year of allowable exceedances (as measured at each monitoring site).

Water

E. coli is a bacterium that can occur in water supplies as a result of 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 ingress of untreated water into the drinking water supply system.

The quality of drinking water in Victoria is regulated by the *Safe Drinking Water Act 2003*. Regulations under this Act set a water quality standard for *E. coli*, requiring that all drinking water samples contain no *E. coli* per 100 mL of drinking water.

Under the Act, the state's water agencies are required to collect drinking water samples from each water sampling locality, as documented in their risk management plans. Water agencies are required to report to the Department of Health and Human Services' Water Program on an exception basis when *E. coli* is detected in any drinking water sample.

A 'water sampling locality' is defined as an area that is supplied with drinking water that is 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 of water distribution systems. At 30 June 2015 there were 25 water agencies regulated by the department under the safe drinking water regulatory framework, which cover a geographic area divided into 477 water sampling localities.

Air quality

PM_{10}

The PM_{10} air monitoring for Melbourne (Figure 4.1) highlights the number of days where the 24-hour objective is not met. This is highly dependent on weather conditions and other factors such as bushfires, windblown dust and urban pollution.

In summary, the PM_{10} environmental quality objective has been met on almost all days from 2010 to 2015, indicating that Melbourne's air quality is generally good.

From 2002 to 2009, Melbourne was adversely impacted by drought-related factors (particles from dust storms and bushfires). Spikes in PM_{10} concentrations in the air environment for both 2003 and 2006 were attributed to bushfires. In 2009 the PM_{10} objective was exceeded as a result of bushfires, planned burning, windborne dust and urban sources.

From 2010 to 2013, the NEPM Ambient Air Quality PM_{10} goal of no more than five days a year above the objective value was met. This was most likely due to increased rainfall resulting in less raised dust in the air and wetter conditions limiting bushfire activity.

3 The NEPM (Ambient Air Quality) goal for $PM_{2.5}$ at this time was to gather sufficient air monitoring data to facilitate review of advisory reporting standards for consideration as national reporting standards (adopted in 2016).

In 2014, PM_{10} exceedance days in Melbourne were attributed to bushfires, local dust and urban emissions. The 24-hour objective for PM_{10} was exceeded on two to six days depending on the monitoring site. The NEPM goal of no more than five days per year of allowable exceedances was met at all sites except one. The six days were attributed to localised dust on one hot, dry day and bushfire smoke for the rest. In early 2014, smoke from large bushfires in regional Victoria and a major open cut brown coal mine fire at the Hazelwood power station in the Latrobe Valley produced significant smoke impacts.

In 2015, the 24-hour PM_{10} objective was exceeded in Melbourne on three days at two monitoring sites, with two days attributed to bushfire smoke, planned burns smoke and general dust. The other exceedance day was on the same date and attributed to general dust. The annual average PM_{10} objective was not exceeded in Melbourne.[4]

$PM_{2.5}$

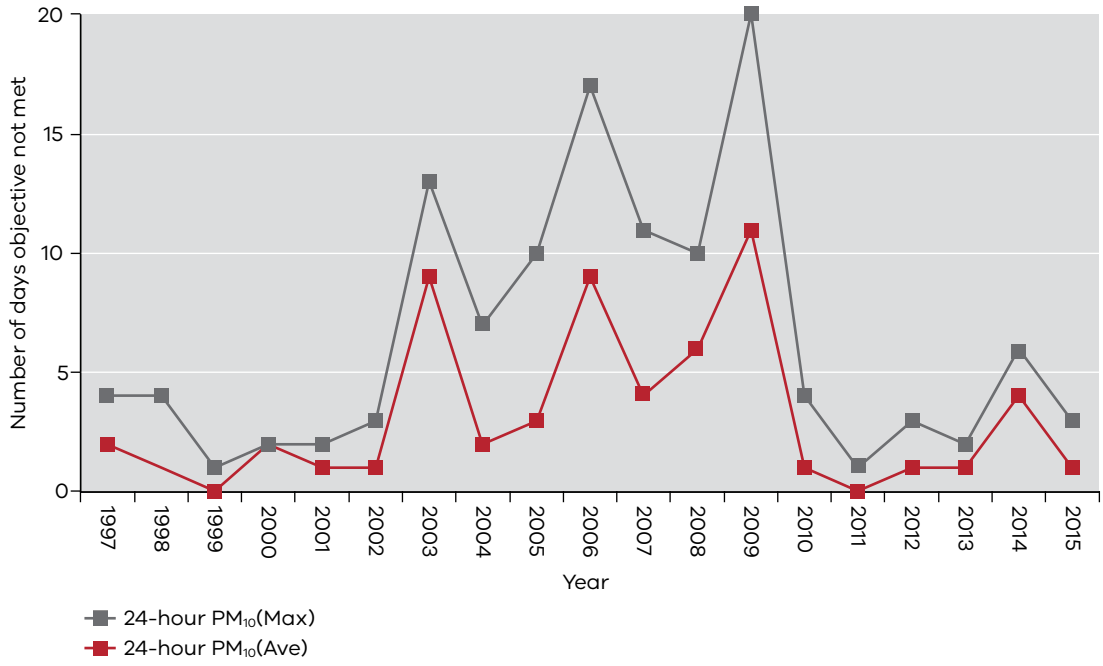
$PM_{2.5}$ is monitored according to NEPM air quality reporting at Footscray and Alphington.

In 2014, the 24-hour $PM_{2.5}$ advisory reporting value was exceeded at Alphington and Footscray. Two exceedance days at both Alphington and Footscray were attributed to bushfire activity near Melbourne. A third exceedance day at Alphington was attributed to an increased contribution of pollution from domestic wood heaters in the colder months. The $PM_{2.5}$ annual average advisory value was met at both sites.

In 2015, the 24-hour $PM_{2.5}$ advisory reporting value was exceeded at Alphington. The two exceedance days were attributed to an increased contribution of pollution from domestic wood heaters in the colder months.

The $PM_{2.5}$ annual average advisory value was met at Footscray and just exceeded at Alphington. This is attributed to a combination of summer bushfires, autumn planned burns and winter wood smoke.

Figure 4.1: Number of days per year the 24-hour PM_{10} objective was not met in Melbourne on average and at the worst performing station for that year (1997–2015)



Data source: EPA Victoria 2016

4 In addition to ambient air monitoring, the EPA undertakes monitoring for site-specific, local area impacts that require targeted management.

Ozone

Ozone air monitoring data (Figure 4.2) indicate that the objectives were met on almost all days up to 2015. Progressive improvements in vehicle emission standards over time have resulted in a reduction in the number of days where the objectives for ozone were not met.

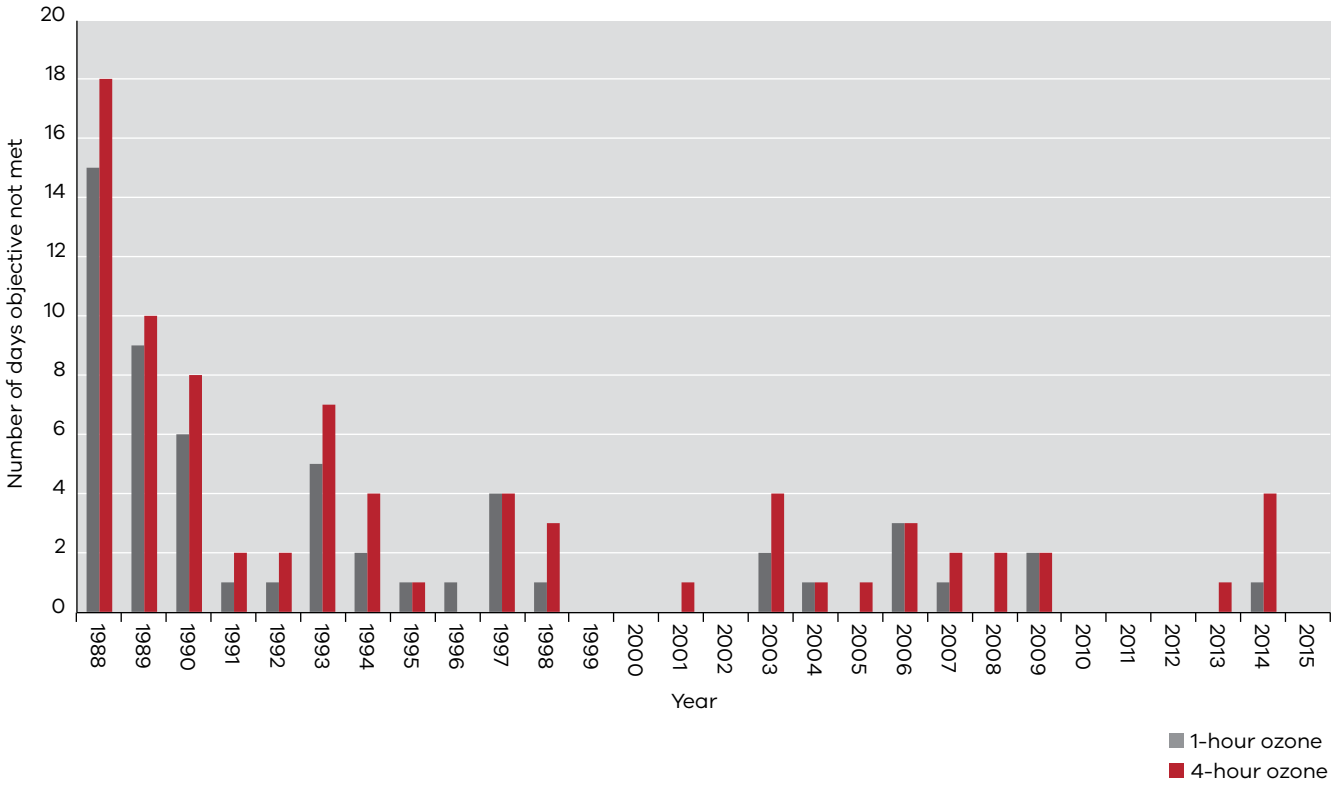
In Melbourne, ozone objectives are generally exceeded on days that are warm to hot with poor dispersion (low winds), typically conducive to formation of photochemical oxidants. In regional Victoria, major bushfires also contribute to ozone exceedances in some years (2003, 2006, 2007 and 2014).

During 2012 and 2013, the one-hour ozone objective was met at all air monitoring stations. There were no exceedances of the four-hour ozone objective in 2012; however, in 2013 the four-hour ozone objective was met on all but one day (at four separate stations) in Melbourne.

During 2014, the one-hour objective was met on all but one day at one station and attributed to bushfires near Melbourne. The four-hour objective was exceeded on four separate days (each at a different station) with three exceedance days attributed to bushfires near Melbourne and one to photochemical oxidant formation.

One-hour and four-hour objectives were both met during 2015.

Figure 4.2: Number of days per year where the ozone objective was not met in Melbourne (worst monitoring station) for one-hour and four-hour ozone measures (1997–2015)



Data source: EPA Victoria 2016

Quality of drinking water

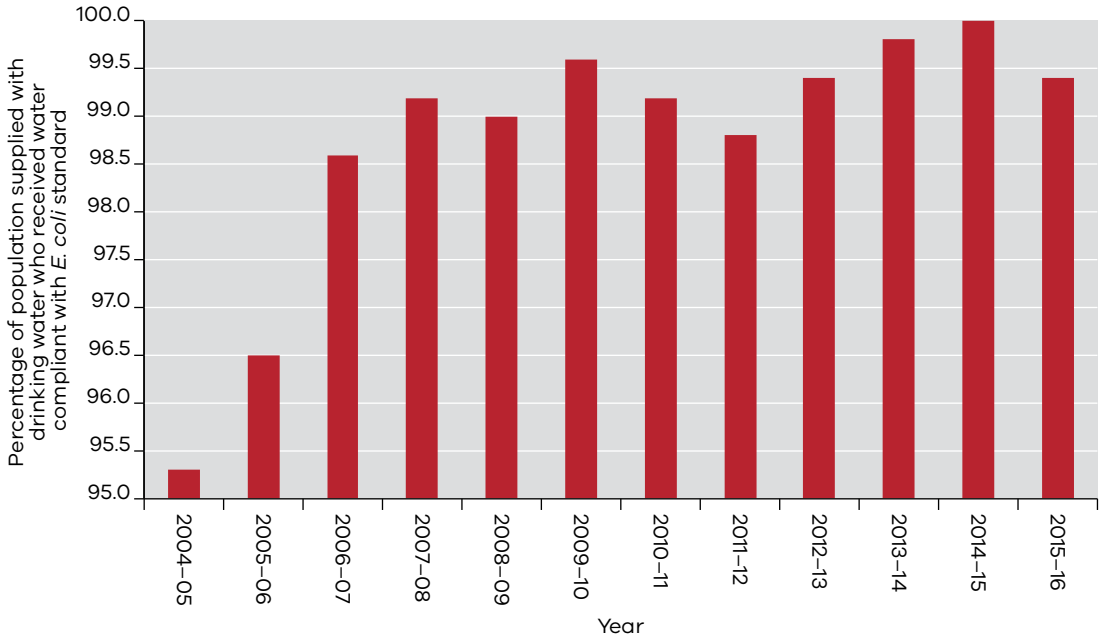
Drinking water quality is assessed from July of one year to June of the next year. In the period 2004–05 to 2015–16, close to 100 per cent of the population was supplied with reticulated drinking water that complied with the *E. coli* water quality standard (Figure 4.3). The water sampling localities that were found to be noncompliant with the water quality standard were noncompliant for a short duration and in typically small, rural localities, which had little impact on the overall percentage of the population supplied with noncompliant water.

In the period 2015–16, 99.4 per cent of the population were supplied with reticulated drinking water that complied with the *E. coli* water quality standard at all times. This slight decline since 2014–15 is related to amended E. coli regulatory requirements introduced with the updated Safe Drinking Water Regulations 2015.

Ninety per cent of Victorians have access to fluoridated water. However, there are many communities in rural areas of Victoria receiving non-fluoridated reticulated drinking water. There is a gap in oral health outcomes between people living in fluoridated areas in metropolitan areas and people living in non-fluoridated rural/regional areas. Tooth decay remains a considerable public health issue with children in non-fluoridated rural areas experiencing higher rates of hospital admissions for tooth decay.

In accordance with the Victorian Government's *Health 2040: Advancing health, access and care*, the government continues to work to increase access to fluoridated drinking water. Construction of the Ararat Fluoride Plant was completed in 2015-16, which will provide fluoridated drinking water and the associated health benefits to 7,000 residents.

Figure 4.3: Percentage of the population supplied with reticulated drinking water who received water that complied with the E. coli water quality standard, Victoria, 2004–05 to 2015–16



Challenges and opportunities

Ambient air quality is highly dependent on localised weather conditions as well as contributing sources of air pollutants. Within Victoria, the years with the most number of days with elevated PM_{10} are those during which drought-related factors affected local air quality. Bushfire events and other occurrences such as hazard-reduction planned burns are also key sources of PM_{10} to the air environment at levels that can result in daily exceedances of the national NEPM standard (or environment quality objective).

From 2016, $PM_{2.5}$ national 24-hour and annual reporting standards were adopted under the NEPM (Ambient Air Quality). In Victoria reporting on pollution exposures against these environmental quality objectives commences for the 2017 air monitoring year.

From 2016, the five allowable exceedance days for PM_{10} will be removed and an 'exceptional event' rule applied to monitoring data. An exceptional event means a fire or dust occurrence (bushfire, authorised planned burns or continental scale windblown dust) that adversely affects air quality at a particular location that causes an exceedance of the daily standard above normal historical fluctuations and background levels.

In addition to ambient air quality monitoring, local or regional air quality and community health may be impacted by large-scale, significant and prolonged events that generate smoke or other emissions. Beyond extended bushfires and large-scale planned hazard reduction burns, this may include peat fires, landfill or transfer station fires, open-cut coal mine fires, tyre fires and hazardous material fires, or emissions from chemical fires or major chemical spills.

In this context, and building on learnings from a major open cut brown coal mine fire at the Hazelwood power station in the Latrobe Valley in 2014, the *State Smoke Framework* was developed by the Chief Health Officer and Emergency Management Victoria (2016) with multiagency assistance and endorsement.[5] The framework supports a collaborative and coordinated approach across government departments, industries and communities in identifying and managing events that produce large-scale impacts to air quality and community health from smoke or other emissions.

References

Department of Health and Human Services 2016, *Annual report on drinking water quality in Victoria 2014–15*, State of Victoria, Melbourne, viewed 25 January 2017, <https://www2.health.vic.gov.au/Api/downloadmedia/%7BACEABBEE-86E1-4D64-83CD-7CB4B14D2896%7D>.

Emergency Management Victoria (EMV) 2016, *State Smoke Framework*, State of Victoria, Melbourne.

Environment Protection Authority (EPA) Victoria 2002, *Ambient air quality NEPM monitoring plan Victoria*, Publication 763, EPA, Melbourne.

Environment Protection Authority (EPA) Victoria 2015, *Air monitoring report 2014 – compliance with the National Environment Protection (Ambient Air Quality) Measure*, Publication 1604 (June 2015), EPA, Melbourne.

Environment Protection Authority (EPA) Victoria 2016, *Air monitoring report 2015 – compliance with the National Environment Protection (Ambient Air Quality) Measure*, Publication 1632.1 (October 2016), EPA, Melbourne.

5 Produced by the Department of Health and Human Services and Emergency Management Victoria with the EPA, the Country Fire Authority, the Metropolitan Fire Brigade, Department of Environment, Land, Water and Planning, Victoria Police and WorkSafe.

Concepts

The ozone in the air we breathe in the lower atmosphere or troposphere (up to 10 km above the earth's surface) should be distinguished from ozone in the much higher stratosphere (above 10 km to 50 km above the earth's surface – the ozone layer), which has the beneficial effect of absorbing harmful radiation.

'Supplied population' is the population who were supplied with reticulated drinking water from localities managed by the state's water corporations. It was estimated in 2013–14 that about 5,554,450 Victorians were supplied with reticulated drinking water in 477 water sampling localities across Victoria.

Provenance

Air quality is assessed against the National Environment Protection Measure for Ambient Air Quality (NEPM Ambient Air Quality), which sets national standards for the six key air pollutants to which most Australians are exposed. They are particles measured as PM_{10} and $PM_{2.5}$ (from 2016), carbon monoxide, sulfur dioxide, nitrogen dioxide, photochemical oxidants (as ozone) and lead.

Environmental indicators for Melbourne's air quality

EPA Victoria measures air pollutants as part of its ambient air monitoring program, ozone as a measure of photochemical oxidants and particulate matter (PM_{10} the mass of airborne particles with diameter of equal or less than 10 micrometers or 0.010 millimetre), including dust in the air.

Ozone is measured at six Melbourne sites, one in Geelong South and two in the Latrobe Valley (Traralgon and Morwell South). PM_{10} fine particles are measured at five Melbourne sites, one in Geelong South and one site in the Latrobe Valley (Traralgon).

$PM_{2.5}$ (the mass of airborne particles with a diameter of equal or less than 2.5 micrometers or 0.025 millimetres) is measured at two Melbourne sites to gather monitoring data in support of national reporting standards, adopted in 2016.

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

Water Unit, Health Protection Branch
https://www2.health.vic.gov.au/public-health/water

Department of Health and Human Services, *Annual report on drinking water quality in Victoria 2014–15*
https://www2.health.vic.gov.au/Api/downloadmedia/%7BACEABBEE-86E1-4D64-83CD-7CB4B14D2896%7D

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Chapter 5: Social determinants

Key messages

- In 2014, approximately 80 per cent of Victorian adults reported that they could definitely get help from family and friends when needed, while only half of Victorian adults reported that they could definitely get help from their neighbours when needed.
- Community engagement in the form of volunteering does not appear to be a regular aspect of most Victorians lives, with only 23 per cent of all Victorians reporting they participate in volunteering. However, older Victorians (aged 65 years or older) are significantly more likely to report that they volunteer at a local group compared with all other age groups.
- One in nine people report they do not feel valued by society.
- Approximately 38 per cent of adults in Victoria believe that most people can be trusted, although one in six people do not believe that most people can be trusted.
- Young people (age groups 18–24 and 25–34) are less likely to believe that most people can be trusted compared with older age groups (age 35 years or older).
- Overall, in 2014, 9 per cent Victorians experienced racism in the preceding 12 months. There was no difference between the sexes; however, experiences of racism did vary by age, with younger adults more likely to experience racism.
- In addition, Victorians who were born overseas were more than twice as likely to have experienced racism in the past 12 months compared with Australian-born Victorians.

Description

There are five measures included in this chapter:

1. The proportion of adults aged 18 years or older who report an ability to get help from family, friends or neighbours when needed
2. The proportion of adults aged 18 years or older who help out a local group as a volunteer
3. The proportion of adults aged 18 years or older who felt or did not feel valued by society
4. The proportion of adults aged 18 years or older who agree that most people can be trusted
5. The proportion of adults aged 18 years or older who report experiencing racism in the past 12 months

Introduction

The World Health Organization describes the social determinants of health as 'the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life'. Feeding into social determinants are economic policies and systems, development agendas, social norms, social policies and political systems. Chapter 2 – Victoria's population, reports on a number of indicators that would be considered as social determinants of health. This chapter focuses therefore on social capital as a component of social determinants of health.

Social connectedness, a social capital 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 relationship may be as important to health as risk factors such as tobacco smoking, physical inactivity, poor nutrition and high blood pressure (Wilkinson & Marmot 2003).

Ways of expressing community 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. Volunteer-based organisations can provide a vehicle for individuals or groups to address human, environmental and social needs. Volunteering can help individuals form interpersonal ties, develop their social networks and provide a sense of purpose and connectedness within a group or community.

Social and civic trust are important indicators of social capital that enable cooperative and altruistic behaviours to enhance the collective wellbeing and the attainment of collective goals. Social trust refers to trust among casual acquaintances or strangers in everyday social interaction, while civic trust refers to trust in public institutions and the people who run them (for example, the healthcare system) (Kramer 1999).

While there is no universally agreed definition of social capital, the 'social cohesion approach' defines social capital by its function: the trustworthiness of the social environment makes possible reciprocity exchanges, norms and sanctions (Bird et al. 2010). Deficits in social capital have been shown to impact negatively on health and wellbeing (Wilkinson & Marmot 2003). For example, a lack of adequate social support and connectedness has consistently been linked to depressive symptoms (Kawachi & Berkman 2001). In turn, depressive symptoms have been consistently linked with poorer health outcomes (Clark & Currie 2009).

Trust may be the one measure that comes closest to being a single measure of social capital. Countries with very high social capital are more equitable, have less social problems and often economically outperform countries with low social capital (Helliwell 2005).

Victoria is a diverse community. In 2016 the Census showed that 35 per cent of Victorians were born overseas and 49 per cent had a parent who was born overseas. Victorians come from more than 200 countries, speak 260 languages and dialects and follow 135 religious faiths. Therefore, Victoria is a multicultural place, and its social cohesion is highly dependent on the acceptance of 'multiculturalism' and different cultural beliefs and norms. Racism is defined as 'that which maintains or exacerbates inequality of opportunity among ethno racial groups' (Berman & Paradies 2010).

In this chapter, we present data on social connectedness, community engagement, social and civic trust, and racism reported by Victorian adults, by age and sex, and over time. This data is derived from the 2014 Victorian Population Health Survey.

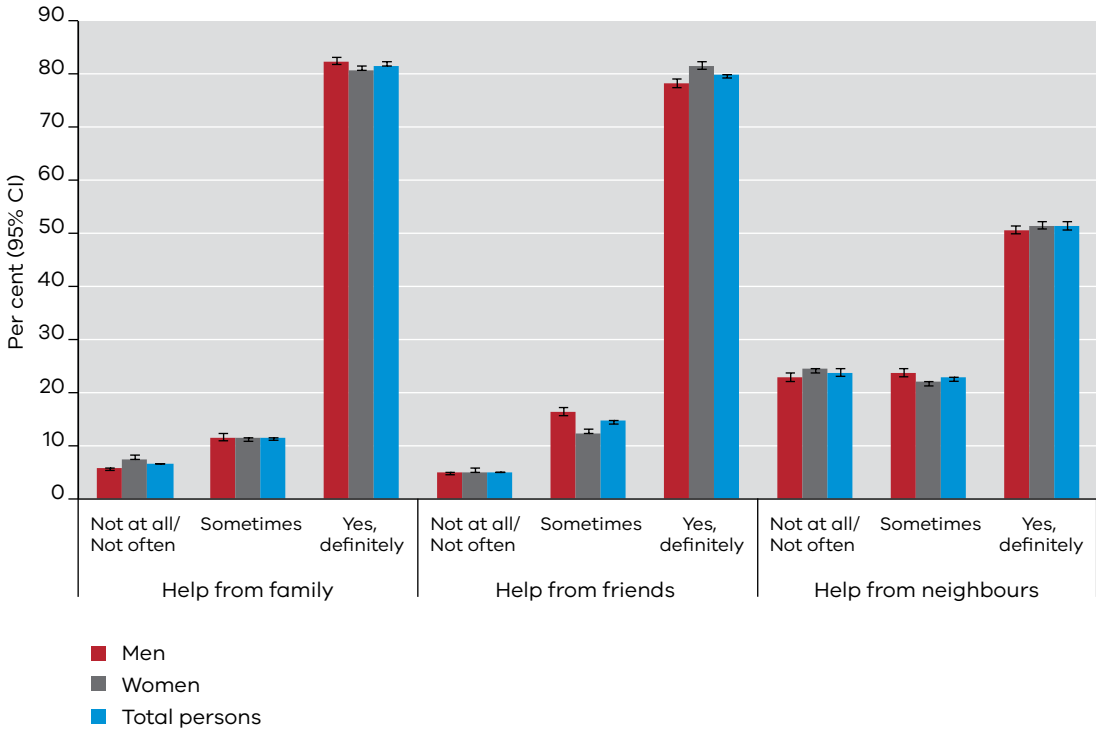
Further information on these domains can be found in the full report of the 2014 survey: *Inequalities in the social determinants of health and what it means for the health of Victorians: findings from the 2014 Victorian Population Health Survey* (Department of Health and Human Services 2017a).

Support networks

Help from family, friends or neighbours when needed

In 2014, 81.6, 79.7 and 51.2 per cent of Victorians adults reported they could 'definitely' get help from family, friends or neighbours when needed, respectively (Figure 5.1 and Table 5.1). Women were more likely to report definitely being able to get help from friends compared with men.

Figure 5.1: The proportion of Victorian adults who reported an ability to get help from family, friends or neighbours when needed, by sex, 2014



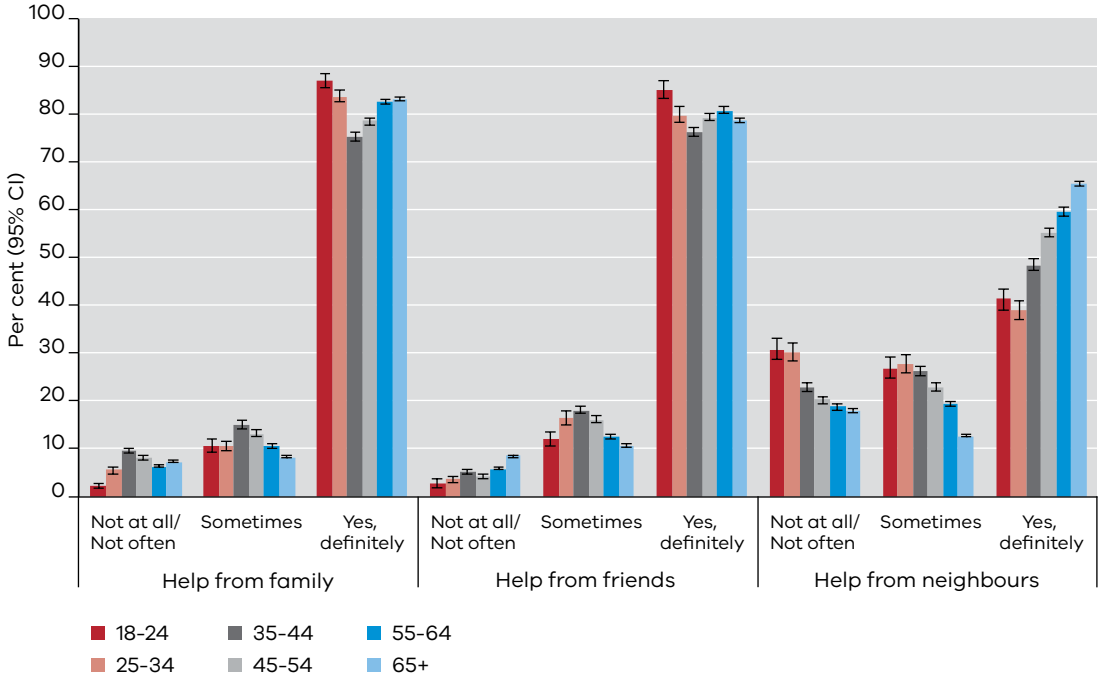
Data are age-standardised to the 2011 Victorian population.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

In 2014 fewer Victorian adults aged 35–44 and 45–54 years reported that they could definitely get help from family if needed compared with all other age groups (Figure 5.2 and Table 5.2). In fact, 9.5 and 8 per cent, respectively, reported they could not at all, or not often, get help from family if needed. A higher proportion of younger adult age groups (particularly 18–24 years) reported they could definitely get help from friends when compared with older adults (aged 65 years or older), while a higher proportion of older adults reported they could definitely get help from neighbours.

Figure 5.2: The proportion of Victorian adults who reported an ability to get help from family, friends or neighbours when needed, by age group, 2014



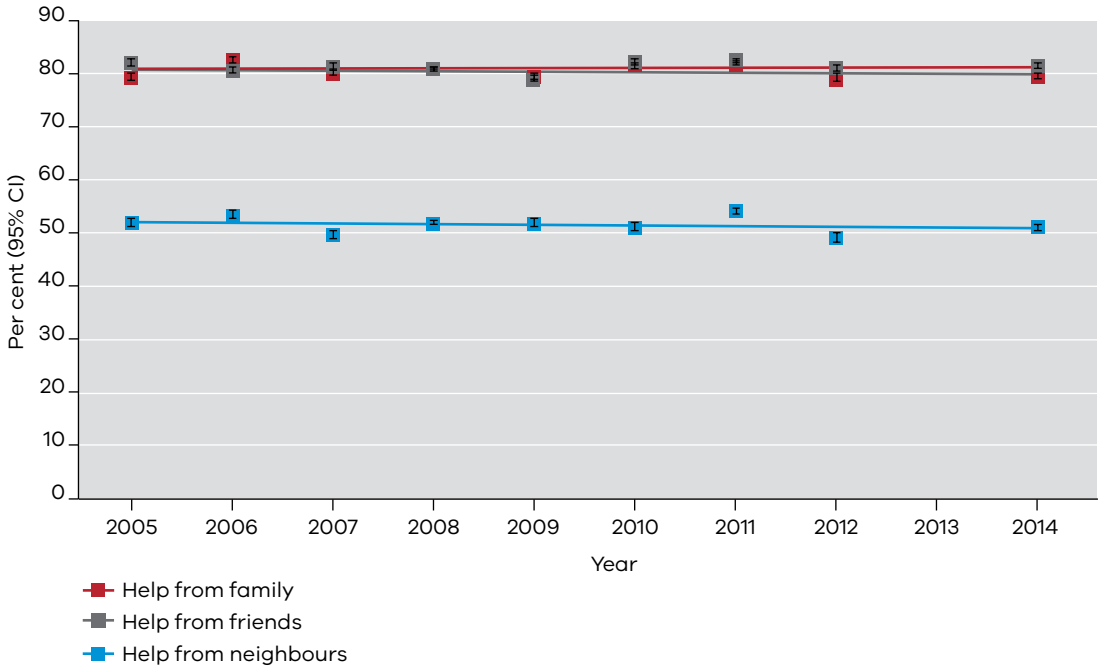
Data are age-specific estimates.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

The proportion of Victorian adults reporting their ability to get help from family, friends or neighbours, regardless of category, remained similar between 2005 and 2014 (Figure 5.3 and Table 5.3). Figure 5.3 depicts the proportion of Victorian adults who reported they could definitely get help from family, friends or neighbours if needed between 2005 and 2014.

Figure 5.3: The proportion of Victorian adults who reported an ability to get help from family, friends or neighbours when needed, 2005–14



Data are age-standardised to the 2011 Victorian population.

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

Data was not collected in 2013.

Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

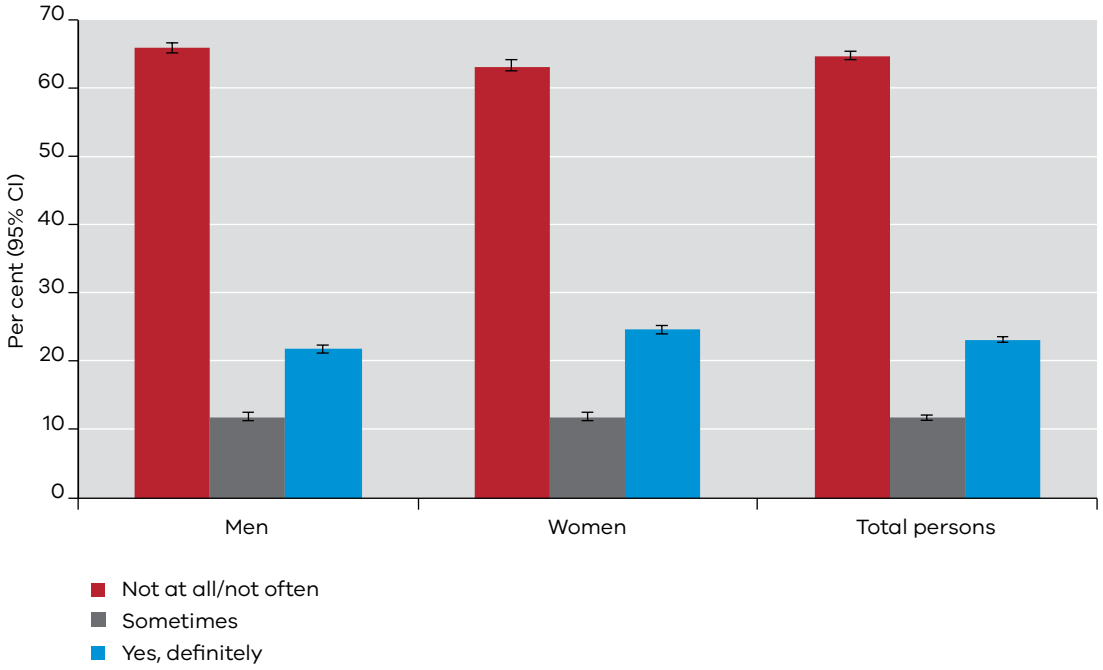
Data source: Victorian Population Health Surveys 2005–2014

Community engagement

Volunteer with a local group

In 2014, 23.2 per cent of Victorians adults reported they 'definitely' volunteered at a local group, 11.8 per cent reported that they 'sometimes' volunteered at a local group, while 64.6 per cent reported that they 'not at all or not often' volunteered at a local group (Figure 5.4 and Table 5.4). There were no differences in the proportion of adults reporting they volunteered between men and women.

Figure 5.4: The proportion of Victorian adults who volunteer at a local group, by sex, 2014



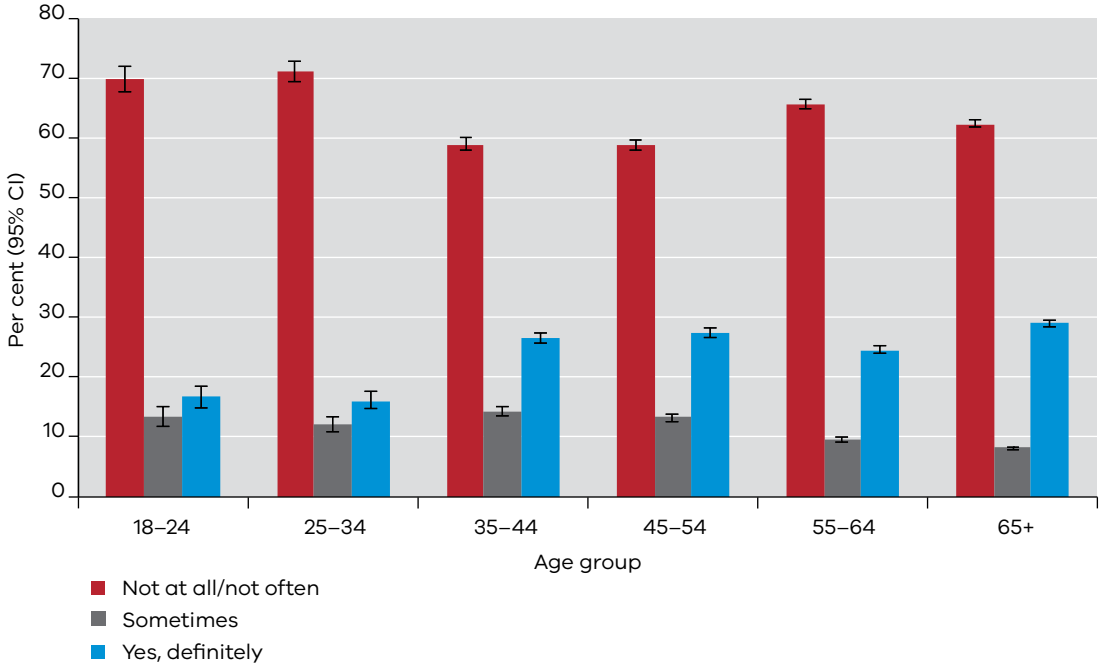
Data are age-standardised to the 2011 Victorian population.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Older Victorians (aged 65 years or older) were significantly more likely to report that they definitely volunteer at a local group compared with all other age groups, while younger age groups (aged 18–24 and 25–34) were more likely to report that they not at all or not often volunteer at a local group (Figure 5.5 and Table 5.5).

Figure 5.5: The proportion of Victorian adults who volunteer at a local group, by age group, 2014



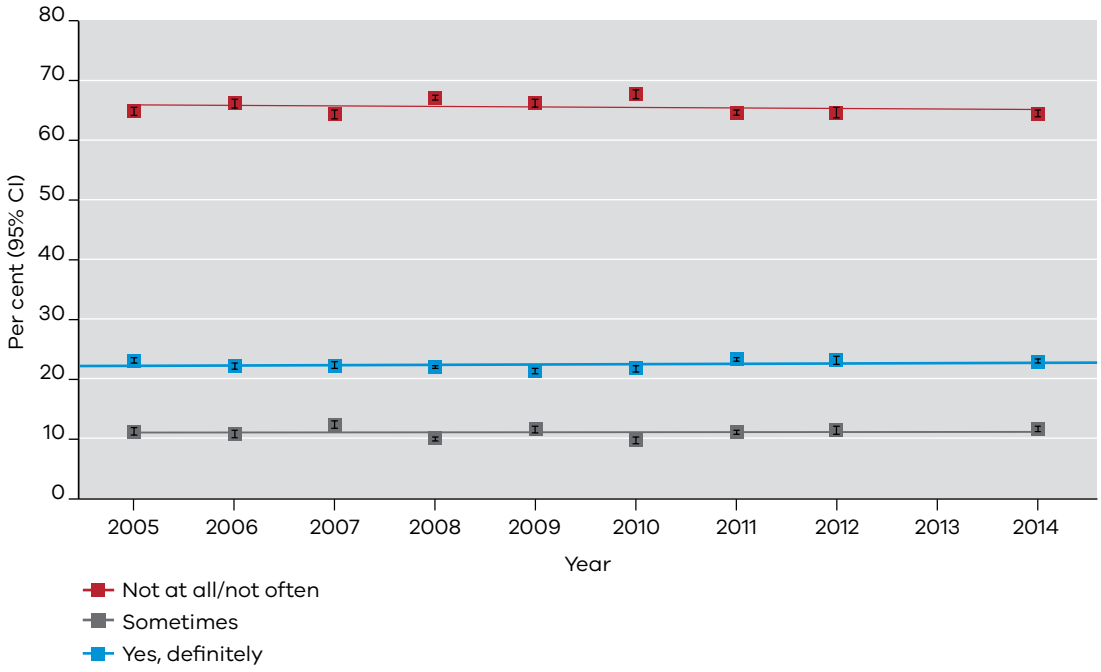
Data are age-specific estimates.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

The proportion of Victorian adults reporting whether or not they volunteer at a local group remained similar from 2005 to 2014 in all categories (Figure 5.6 and Table 5.6).

Figure 5.6: The proportion of Victorian adults who volunteer at a local group, 2005–14



Data are age-standardised to the 2011 Victorian population.

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

Data was not collected in 2013.

Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

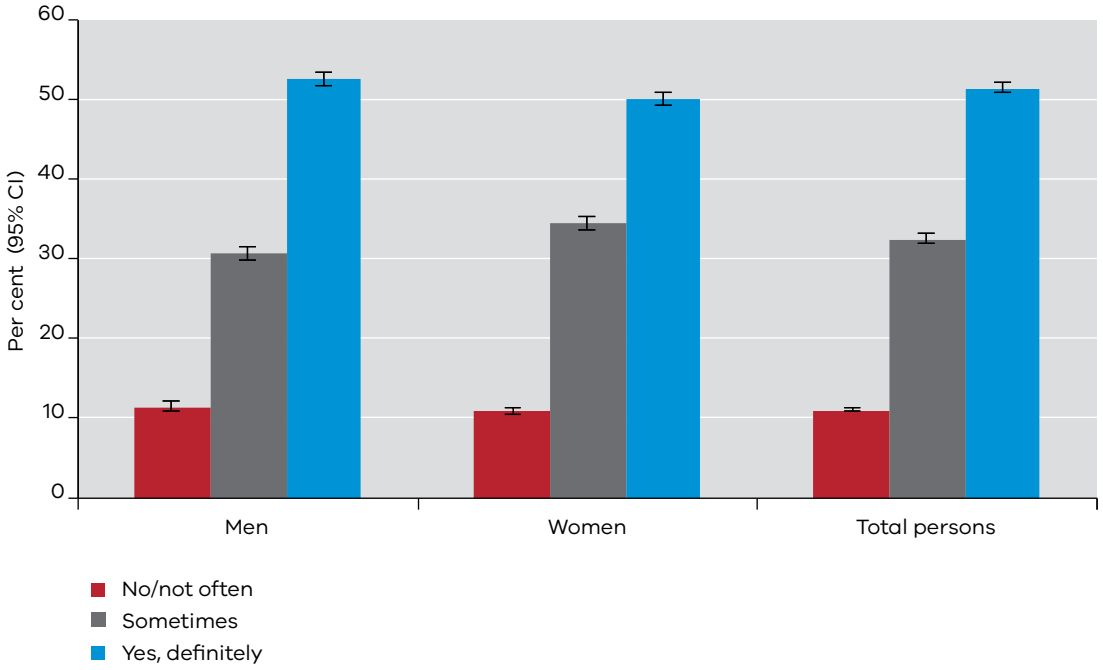
Data source: Victorian Population Health Surveys 2005–2014.

Civic trust

Feeling valued by society

In 2014, 51.4 per cent of Victorians adults reported they 'definitely' feel valued by society, a further 32.5 per cent 'sometimes' feel valued, while 11.1 per cent reported that they do not feel valued (Figure 5.7 and Table 5.7). There were no differences between men and women in terms of how valued they felt by society.

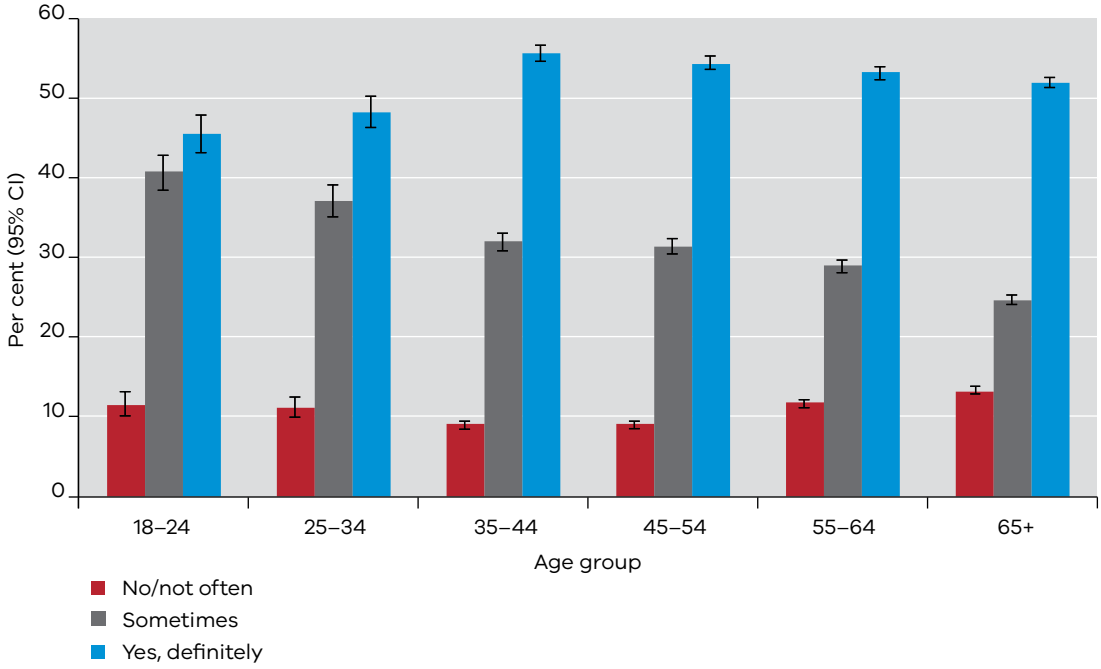
Figure 5.7: The proportion of Victorian adults who feel valued by society, by sex, 2014



Data are age-standardised to the 2011 Victorian population.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

Young people (aged 18–24) were significantly less likely to report feeling 'definitely' valued by society compared with older people (aged 35 years or older). And 13.4 per cent of people aged 65 years or older reported that they did not (or not often) feel valued by society, and this was significantly greater than those aged 35–44 and 45–54 years (Figure 5.8 and Table 5.8).

Figure 5.8: The proportion of Victorian adults who feel valued by society, by age group, 2014



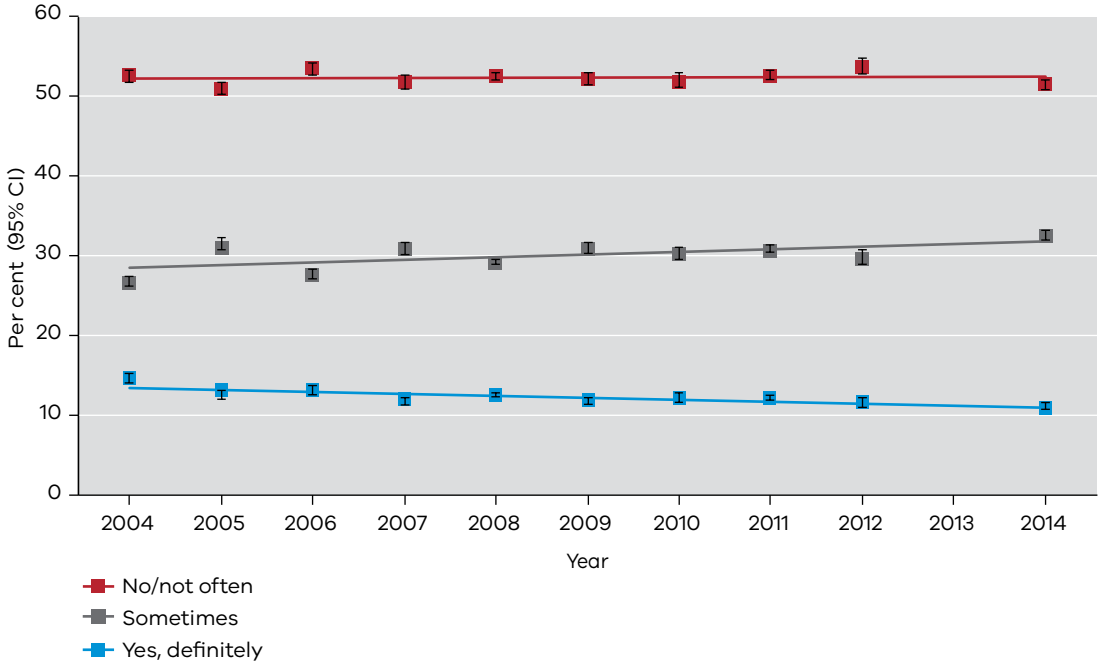
Data are age-specific estimates.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

The proportion of Victorian adults who reported they 'do not' feel valued by society decreased between 2004 and 2014. The proportion of people reporting they 'sometimes' or 'yes, definitely' feel valued by society did not change between 2004 and 2014 (Figure 5.9 and Table 5.9).

Figure 5.9: The proportion of Victorian adults who feel valued by society, 2004–14



Data are age-standardised to the 2011 Victorian population.

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

Data was not collected in 2013.

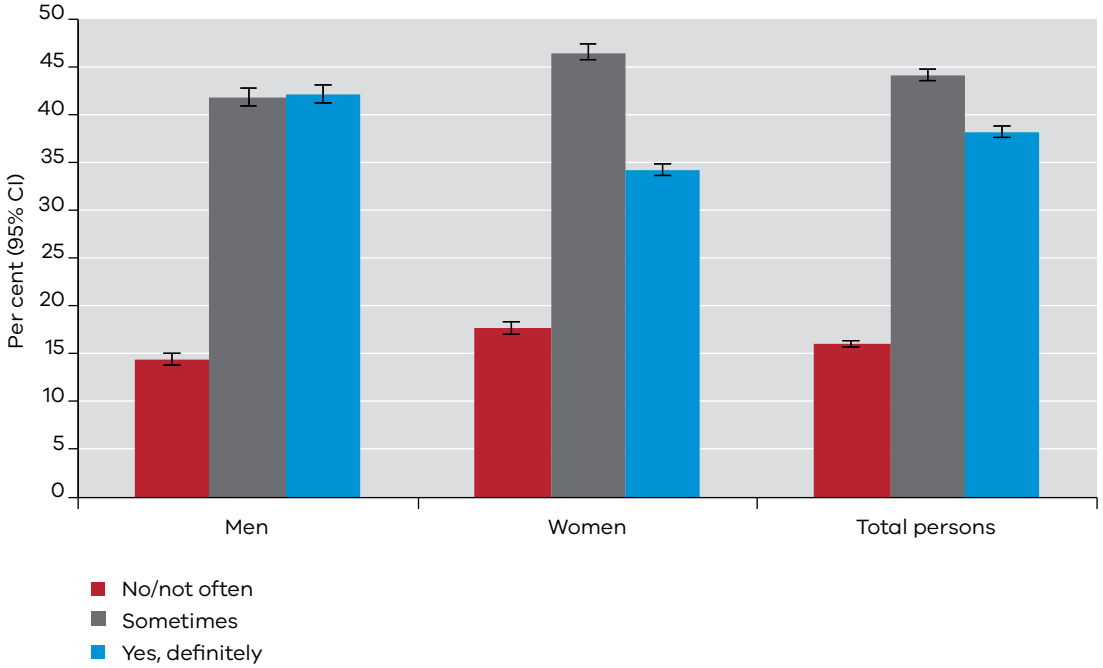
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2004–2014

Social trust

Can most people be trusted?

In 2014, only 38.2 per cent of Victorians adults reported they 'definitely' agreed that 'most people can be trusted', 44.2 per cent agreed that people can 'sometimes' be trusted, while 16.1 per cent reported that it is either 'no or not often' that people can be trusted (Figure 5.10 and Table 5.10). Men were more likely to agree that most people could be trusted (both 'definitely' or 'sometimes') compared with women.

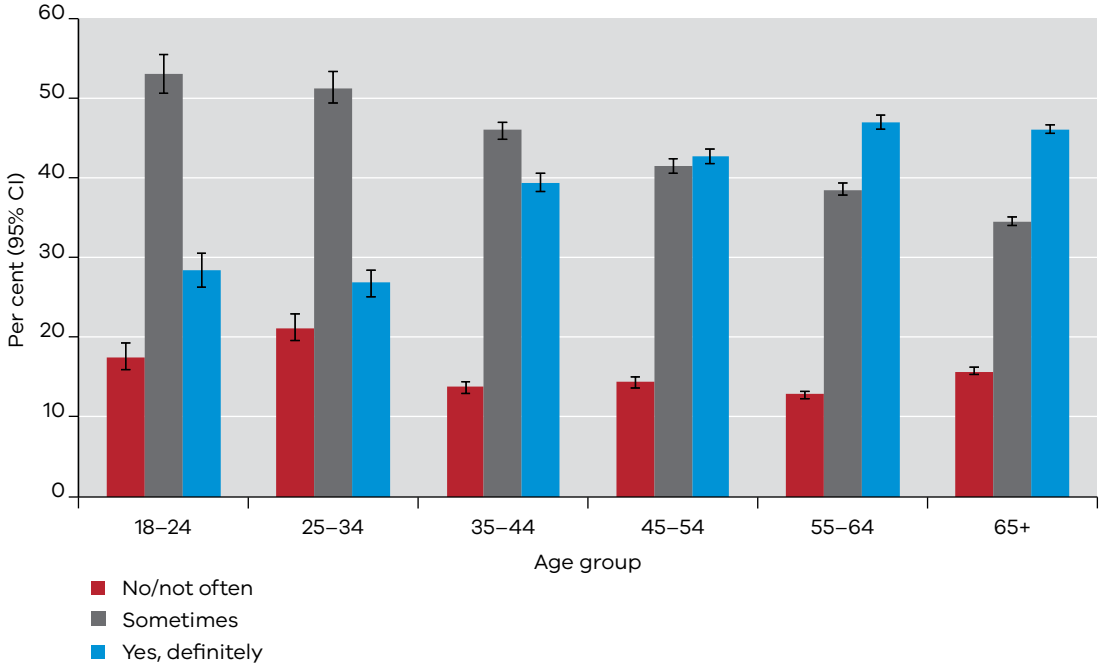
Figure 5.10: The proportion of Victorian adults who believe that most people can be trusted, by sex, 2014



Data are age-standardised to the 2011 Victorian population.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

Among Victorian adults in 2014, only 28.5 per cent of 18–24 year olds reported that they definitely agreed that 'most people can be trusted' compared with 46.2 per cent of adults aged 65 years or older (Figure 5.11 and Table 5.11). It can be seen that, in general, as age increases the proportion of people who agree that most people can 'definitely' be trusted also increases.

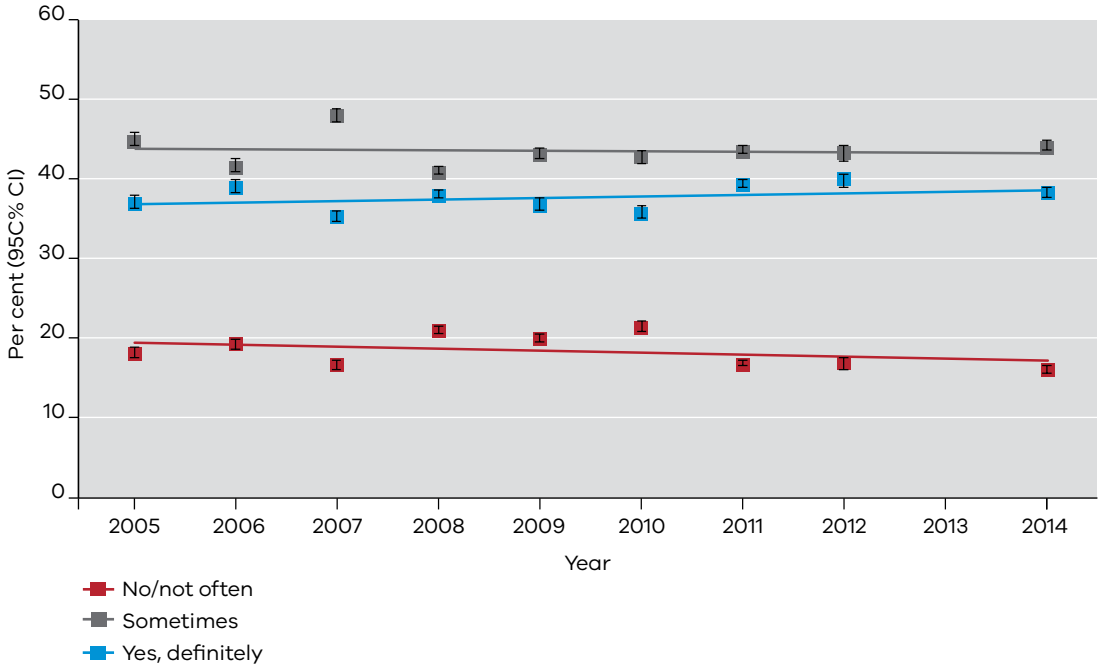
Figure 5.11: The proportion of Victorian adults who believe that most people can be trusted, by age group, 2014



Data are age-specific estimates.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

The proportion of Victorian adults reporting whether or not they agree that most people can be trusted did not change between 2005 and 2014 in all categories (Figure 5.12 and Table 5.12).

Figure 5.12: The proportion of Victorian adults who believe that most people can be trusted, 2005–14

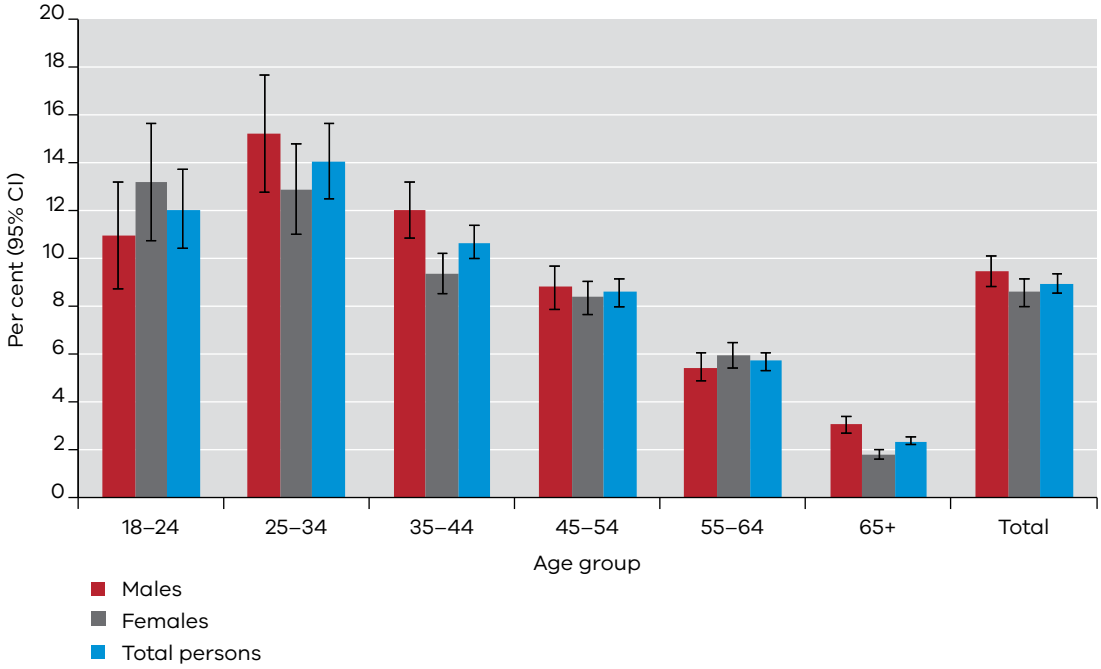


Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Data was not collected in 2013.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2005–2014

Racism

Overall, 8 per cent of women and 9 per cent of men in Victoria reported that they had experienced discrimination or been treated unfairly because of their racial, ethnic, cultural or religious background in the last 12 months. There is no difference between the sexes; however, experiences of racism do vary by age. Compared with all adults in Victoria, women (13 per cent) and men (15 per cent) 25–34 years of age were more likely to report experiences of racism, while adults aged 55 years or older were less likely (Figure 5.13 and Table 5.13). It is important to note that experiences of racism are typically under-reported, in part due to coping styles that seek to downplay or deny the experience (Department of Health and Human Services 2017b).

Figure 5.13: Proportion of Victorians who have experienced racism or been treated unfairly because of their racial, ethnic or cultural background in the last year, by age and sex, 2014



Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).

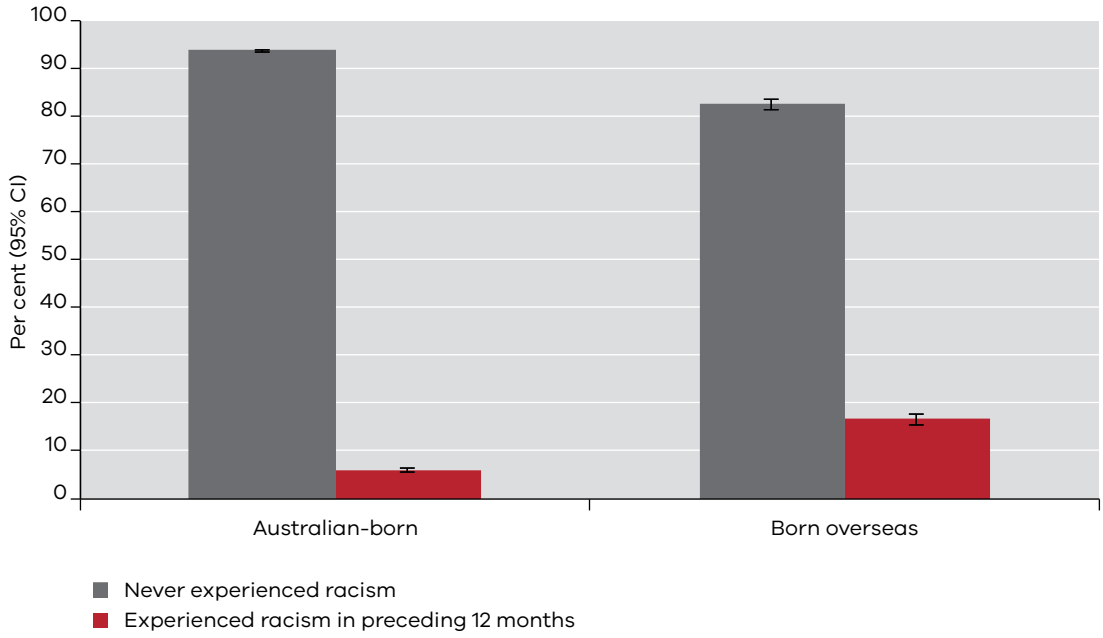
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

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

Data source: 2014 Victorian Population Health Survey

Victorians who were born overseas were more than twice as likely to have experienced racism in the past 12 months compared with Australian-born Victorians (Figure 5.14 and Table 5.14).

Figure 5.14: Proportion of Victorians who experienced racism in the last year, by country of birth, 2014



Data are age-standardised to the 2011 Victorian population.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Figures may not add up to 100 per cent due to a proportion of 'don't know' or 'refused' responses.
Data source: 2014 Victorian Population Health Survey

Challenges and opportunities

While the majority of Victorian adults have networks with family and friends that can be drawn upon when needed, fewer people appear to have strong networks with neighbours; however, these factors differ with age, gender, location and socioeconomic status (Department of Health and Human Services 2017a). Older people are, for example, particularly affected by experiences of social isolation and loneliness. Initiatives that promote the inclusion of older people, and support volunteering, community resilience and positive social connections, such as Age-Friendly Victoria, help to build good health, social and economic participation, and personal security.

Feeling valued by society and high levels of social trust are important elements of social capital, support networks and relationships. Our levels of trust in others and in our civic institutions – including our healthcare, educational and welfare systems – have a significant impact on health and wellbeing. Given that only half of Victorians report that they feel valued by society, and that young people are less likely to feel valued and agree that most people can be trusted, policy and program responses should include supporting respectful relationships and promoting avenues for involvement and empowerment, particularly for young people.

The harmful effects of racism on mental health have been shown to include conditions such as psychological distress, depression, anxiety, post-traumatic stress disorder, psychosis and substance abuse disorders (Berger & Sarnyai 2015; Paradies et al. 2015). The harmful effects of racism on physical health include diseases and conditions such as cardiovascular disease (Lewis et al. 2014), hypertension (Dolezsar et al. 2014), poor self-reported health (Paradies & Cunningham 2012), obesity (Cozier et al. 2014), adult-onset asthma (Coogan et al. 2014) and cancer (Taylor et al. 2007).

The Victorian Government's *Anti-racism action plan* includes a range of initiatives:

- ensuring every Victorian has the same legal protections under the law
- empowering members of the community to respond to racism – with a focus on women, bystanders, young people and children
- developing school and early childhood curriculum materials to tackle discrimination
- working with public transport providers to ensure all commuters can safely use public transport free from discrimination
- targeting race-based discrimination in rental and other accommodation
- reporting racism through a comprehensive review of how racism is reported and recorded
- developing new curriculum materials for Respectful Relationships education that focuses on mutual respect and challenging negative attitudes, prejudice, discrimination and harassment.

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Concepts

Civic trust was measured by asking survey respondents: 'Do you feel valued by society?' Social trust was measured by asking survey respondents: 'Do you agree that most people can be trusted?'

Racism was measured by asking survey respondents to report their experiences of racism in response to the question: 'In the last 12 months, have you experienced discrimination or been treated unfairly because of your racial, ethnic, cultural or religious background?'

Provenance

Support networks, community engagement, social and civic trust, and racism are included as indicators in the Victorian Population Health Survey.

For more information

Department of Health and Human Services, Victorian Population Health Survey:

https://www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/survey-data-and-reports/victorian-population-health-survey/victorian-population-health-survey-2014

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Chapter 6: Behavioural factors

Key messages

- In 2014, only 4.4 per cent of Victorian adults met the recommend minimum daily intake for both fruit and vegetables. For vegetables, only 6.4 per cent of the population met the recommended minimum, and for fruit it was 47.1 per cent (48.6 per cent did not meet one of fruit or vegetable guidelines).
- In 2014, 11.2 per cent of Victorian adults consumed sugar-sweetened beverages every day.
- Men were more likely to consume sugar-sweetened beverages daily compared with women.
- In 2014, 59.2 per cent of Victorians were at increased lifetime risk of alcohol-related harm.
- In 2014, 42.5 per cent of Victorians were at increased risk of alcohol-related harm from a single occasion.
- Males were more likely to be at increased lifetime risk of alcohol-related harm and alcohol-related harm from a single occasion when compared with females; 69.3 versus 49.7 per cent, respectively.
- In 2014, 13.1 per cent of Victorian adults were current smokers.
- The proportion of current smokers decreased by 40 per cent between 2003 and 2014.
- In 2014, 41.4 per cent of Victorian adults undertook adequate physical activity to meet the national guidelines.
- In 2014, 23.8 per cent of Victorian adults spent eight hours or more sitting on an average weekday.
- Females were significantly less likely to undertake adequate physical activity than males, although males were more likely than females to report sitting for eight hours or more on an average weekday; 27.5 versus 20.3 per cent.

Description

There are seven measures included in this chapter:

1. The proportion of adults aged 18 years or older who met the recommended intake of fruit and vegetables
2. The proportion of adults aged 18 years or older who reported consuming sugar-sweetened soft drinks daily
3. The proportion of adults aged 18 years or older at long-term risk of harm from alcohol consumption
4. The proportion of adults aged 18 years or older at short-term risk of harm from alcohol consumption
5. The proportion of adults aged 18 years or older who smoke
6. The proportion of adults aged 18 years or older who engage in sufficient time and sessions of physical activity to meet the national guidelines
7. The time spent sitting on an average weekday of adults aged 18 years or older

Introduction

Behavioural factors have a significant impact on many health outcomes. This chapter reflects on a number of these factors.

Fruit and vegetables

Daily intake of fruit and vegetables is used as a proxy measure for the quality of a person's diet in Australia and internationally. Further, low fruit and vegetable consumption contributes to chronic conditions, including coronary heart disease, stroke, weight gain and a range of cancers (NHMRC 2013).

The 2013 Australian guidelines recommend a minimum adult daily vegetable intake of five to six serves, depending on age and sex, where a serve is defined as half a cup of cooked vegetables or a cup of green leafy or raw salad vegetables (NHMRC 2013). The recommended minimum daily fruit intake is two serves for people of all ages, where a serve is defined as one medium piece of two small pieces of fruit or one cup of diced pieces (NHMRC 2013). Analysis of the 2014 Victorian Population Health Survey data has been undertaken using the 2013 Australian guidelines.

Sugar-sweetened soft drinks

Recent public health interest has focused on the association between consumption of added sugars and adverse health outcomes. Epidemiological evidence shows that consumption of sugar-sweetened soft drinks has contributed significantly to the obesity epidemic (Malik, Schulze & Hu 2006; Vartanian Schwartz & Brownell 2007; Woodward-Lopez, Kao & Ritchis 2011). Sugar-sweetened soft drinks are not only associated with weight gain but also with increased risk of other health problems such as tooth decay, high blood pressure, type 2 diabetes and cardiovascular disease (Shulze, Manson & Ludwig 2004; Yoo et al. 2004).

The term 'sugar-sweetened soft drinks' refers to any beverage with added sugar and includes carbonated drinks, flavoured mineral water, cordial, fruit drinks, sports drinks and energy drinks. Ready-to-drink alcoholic beverages are also included as sugar-sweetened beverages because they are mixed with other flavours such as fruit juice or soft drink. All clear, non-flavoured mineral water and soda water are excluded.

Alcohol

Regular, excessive consumption of alcohol over time places people at increased risk of chronic ill health and premature death, and episodes of heavy drinking may place the drinker (and others) at risk of injury or death. The consequences of heavy, regular use of alcohol may include cirrhosis of the liver, cognitive impairment, heart and blood disorders, ulcers, cancers and damage to the pancreas. The consequences of excess alcohol consumption on a single occasion include death or injury due to road traffic accidents, falls, drowning, suicide and acute alcohol toxicity.

In 2009, the National Health and Medical Research Council (NHMRC) published new Australian guidelines to reduce health risks from drinking alcohol, replacing the previous guidelines issued in 2001 (NHMRC 2009). Guidelines 1 and 2, listed in Box 6.1, apply to respondents of the 2014 Victorian Population Health Survey. Guideline 1 refers to lifetime or long-term harm because lifetime risk of harm from drinking alcohol increases with the amount consumed. Guideline 2 refers to immediate harm, or harm in the short-term, because on a single occasion of drinking the risk of alcohol-related injury increases with the amount consumed.

Box 6.1: NHMRC guidelines (2009) to reduce health risks from drinking alcohol

Guideline 1	For healthy men and women, drinking no more than TWO standard drinks on any day reduces the lifetime risk of harm from alcohol-related disease or injury
Guideline 2	For healthy men and women, drinking no more than FOUR standard drinks on a single occasion reduces the risk of alcohol-related injury arising from that occasion

Smoking

Smoking is one of the leading preventable causes of death and disease in Australia, responsible for about 15,000 deaths annually (Begg et al. 2007; Collins & Lapsley 2008). In 2003 tobacco caused more than one in every 10 deaths in Australia and caused more disease and injury in Australia than any other single risk factor, including sickness and disability (Begg et al. 2007).

Smoking harms nearly every organ of the body, causing many diseases and reducing the health of smokers in general (Winstanley & Greenhalgh 2015). Smoking is a key risk factor for three diseases that cause the most deaths in Australia: heart disease, stroke and cancer, in particular lung cancer where smoking is responsible for 80 per cent of all lung cancer deaths (Scollo & Winstannley 2016).

Quitting smoking has immediate as well as long-term benefits for men and women of all ages, reducing risks for diseases caused by smoking and improving health in general. Quitting smoking is associated with an increase in life expectancy of up to 10 years, if it occurs early enough. For example, quitting at age 50 halves the risk of smoking-related death, but cessation by age 30 avoids almost all of the excess risk (Greenhalgh, Stillman & Ford 2016).

Physical activity and sedentary behaviour

Physical inactivity is a major modifiable risk factor for a range of conditions, including cardiovascular disease, type 2 diabetes, some cancers, osteoporosis, depression and anxiety, as well as falls among the elderly. Moreover, physical activity improves cognitive function in the elderly, prevents weight gain and, in conjunction with a low-calorie diet, promotes weight loss. The evidence suggests that health benefits accrue with increasing levels of physical activity and that this protective effect occurs even if adopted in middle and later life. Therefore, physical activity is an obvious target for health promotion.

Sedentary behaviours are defined as activities that we do while sitting or lying down (with the exception of sleeping). You can be sedentary at work, at school, at home, when travelling or during leisure time. Sedentary behaviour requires little energy expenditure. Examples of sedentary behaviour include sitting or lying down while watching television or playing electronic games, sitting down while driving a vehicle or while travelling, and sitting or lying down to read, study, write or work at a desk or computer (Department of Health 2014).

There is a difference between a person who is sedentary and a person who is physically inactive. Being 'physically inactive' means not doing enough physical activity (in other words, not meeting the physical activity guidelines). However, being 'sedentary' means sitting or lying down for long periods. So, a person can do enough physical activity to meet the guidelines and still be considered sedentary if they spend a large amount of their day sitting or lying down at work, at home, for study, for travel or during their leisure time.

Sedentary behaviour has been shown to be associated with poorer health outcomes, independent of a person's physical activity levels. Evidence shows that prolonged sitting time is associated with an increased risk of obesity, type 2 diabetes and all-cause mortality, independent of physical activity levels (Koster et al. 2012; Matthews et al. 2012; Wijndaela et al. 2014),

Australia's physical activity and sedentary behaviour guidelines

The level of health benefit achieved from physical activity partly depends on the intensity of the activity. In general, to obtain a health benefit from physical activity requires participation in moderate-intensity activities (at least). Accruing 150 or more minutes of moderate-intensity physical activity (such as walking) or 75 or more minutes of vigorous physical activity and doing muscle-strengthening activities on at least two days on a regular basis over one week is believed to be 'sufficient' for health benefits and is the recommended threshold of physical activity for adults between 18 and 64 years of age, according to Australia's physical activity and sedentary behaviour guidelines (Department of Health 2014). People 65 years of age or older should accumulate at least 30 minutes of moderate-intensity physical activity on most days. These national guidelines also recommend minimising the amount of time spent in prolonged sitting and to break up long periods of sitting as often as possible. Box 6.2 (on page 88) outlines the definitions of sufficient physical activity, by age group, as applied to the 2014 Victorian Population Health Survey.

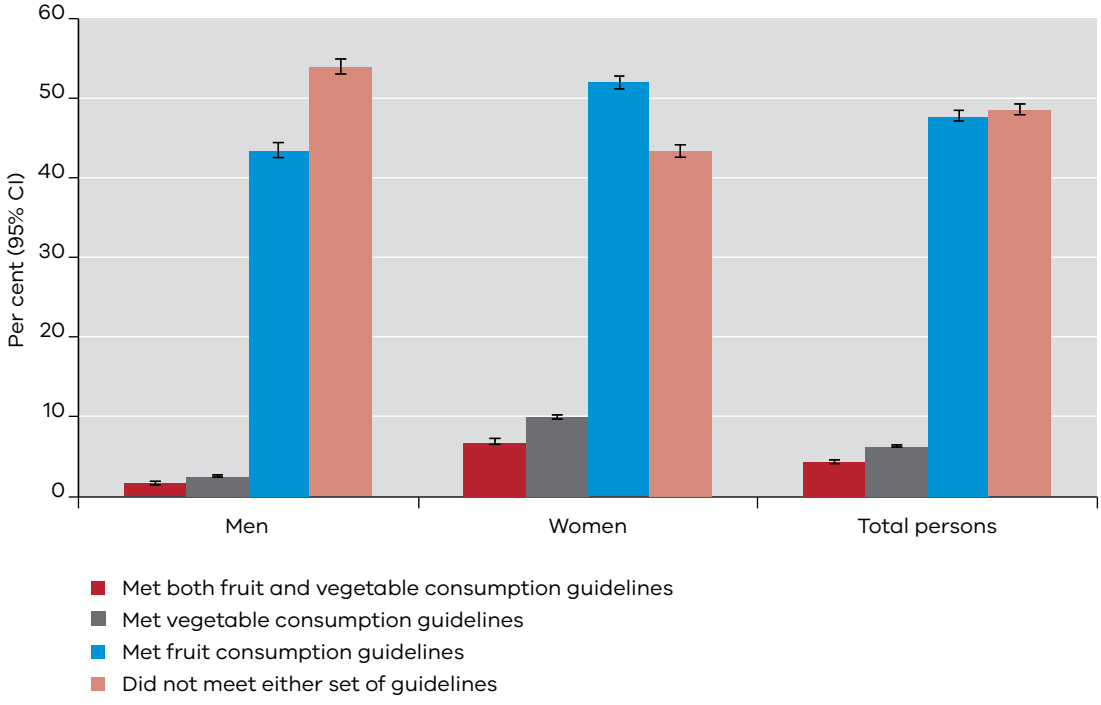
In this chapter, we present data on fruit and vegetable consumption, daily sugar-sweetened soft drink consumption, excessive alcohol consumption, smoking behaviour, physical activity and sedentary behaviour among Victorian adults, by age and sex. Where possible, we also present data over time. These data are derived from the 2014 Victorian Population Health Survey. Further information is available in the full report of the *Victorian Population Health Survey 2014: Modifiable risk factors contributing to chronic disease* (Department of Health and Human Services 2016b).

Fruit and vegetables

Fruit and vegetable consumption

In 2014 only 4.4 per cent of adults met the recommended minimum daily intake for both vegetables and fruit; 6.4 per cent of the population met vegetable guidelines; 47.1 per cent met fruit guidelines; and almost half of the population (48.6 per cent) did not meet either set of guidelines. Women were significantly more likely to meet both fruit and vegetable guidelines compared with men (Figure 6.1 and Table 6.1).

Figure 6.1: Proportion of Victorian adults meeting fruit and vegetable consumption guidelines, by sex, 2014



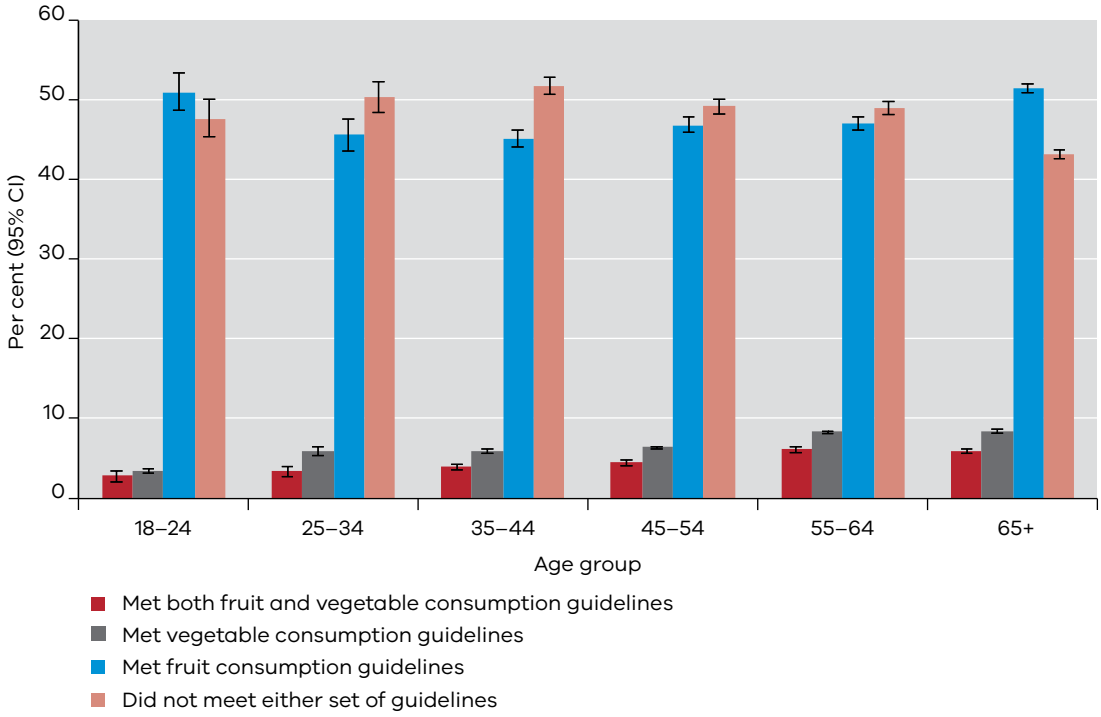
Data are age-standardised to the 2011 Victorian population.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Categories are not mutually exclusive: participants who met fruit or vegetable guidelines may also appear in the category 'met both fruit and vegetable consumption guidelines'.

Older adults (55–64 and 65 years or older) were more likely to meet fruit and vegetable intake guidelines compared with younger age groups (Figure 6.2 and Table 6.2).

Figure 6.2: Proportion of Victorian adults meeting fruit and vegetable consumption guidelines, by age group, 2014



Data are age-specific estimates.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Categories are not mutually exclusive: participants who met fruit or vegetable guidelines may also appear in the category 'met both fruit and vegetable consumption guidelines'.

Sugar-sweetened soft drinks

Consumption of sugar-sweetened soft drinks

In 2014, 11.2 per cent of Victorian adults consumed sugar-sweetened soft drinks every day. Males were significantly more likely to consume sugar-sweetened soft drinks daily compared with females; 15.3 per cent versus 7.2 per cent, respectively (Figure 6.3 and Table 6.3).

Figure 6.3: Proportion of Victorian adults who consumed, or did not consume, sugar-sweetened soft drinks daily, by sex, 2014

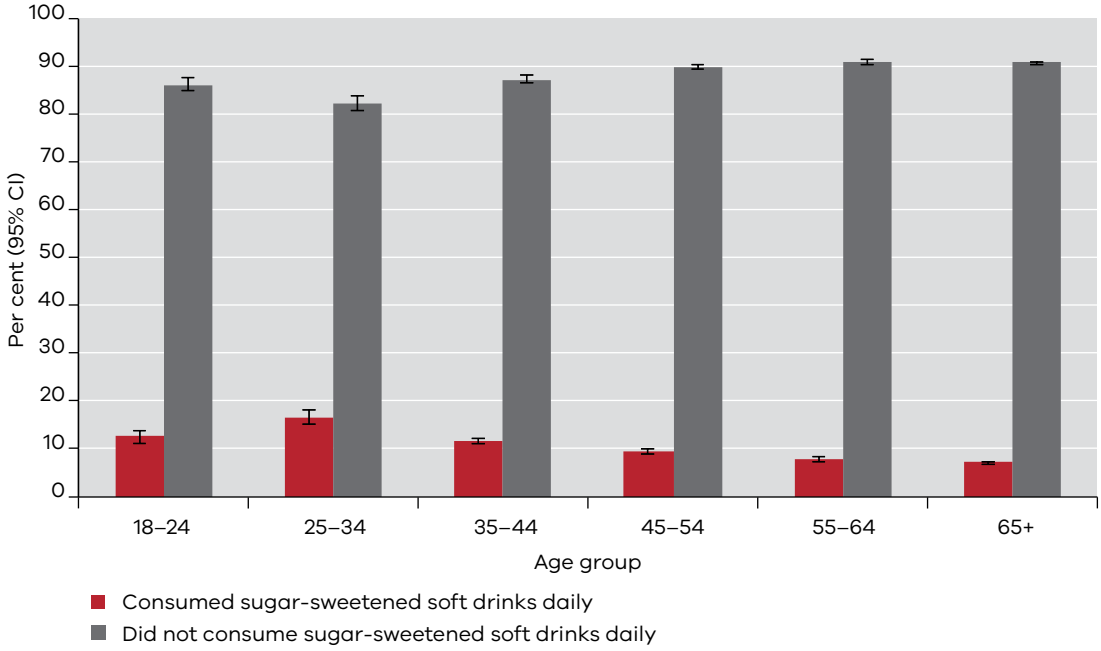
Data are age-standardised to the 2011 Victorian population.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Younger age groups (18–24, 25–34 and 35–44) were significantly more likely to report consuming sugar-sweetened soft drinks daily compared with older age groups (55–64 and 65 years or older) (Figure 6.4 and Table 6.4). Age group 25–34 reported the highest proportion, with 16.8 per cent of people reporting they consumed sugar-sweetened soft drinks daily.

Figure 6.4: Proportion of Victorian adults who consumed, or did not consume, sugar-sweetened soft drinks daily, by age group, 2014



Data are age-specific estimates.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

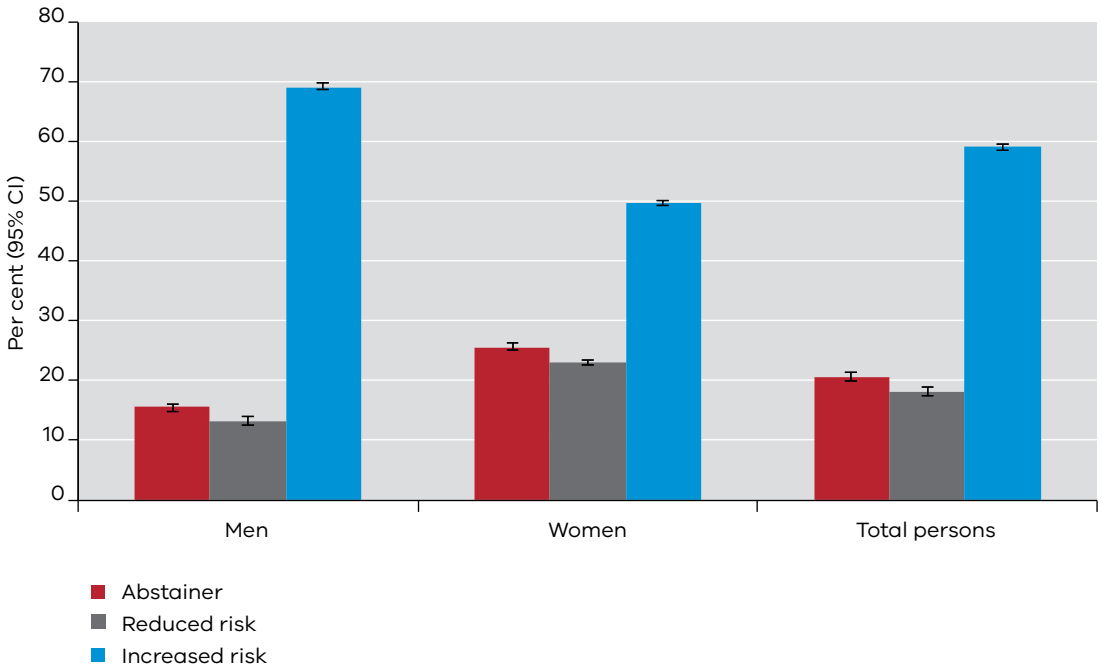
Data source: 2014 Victorian Population Health Survey

Risk of harm from alcohol consumption

Lifetime risk of harm from alcohol consumption

In 2014, 59.2 per cent of Victorians adults were at increased lifetime risk of alcohol-related harm based on NHMRC 2009 guidelines (Figure 6.5 and Table 6.5). There was a significantly higher proportion of males at increased lifetime risk of alcohol-related harm compared with Victorian females at 69.3 per cent versus 49.7 per cent, respectively.

Figure 6.5: Proportion of Victorian adults at lifetime risk from alcohol consumption, by sex, 2014



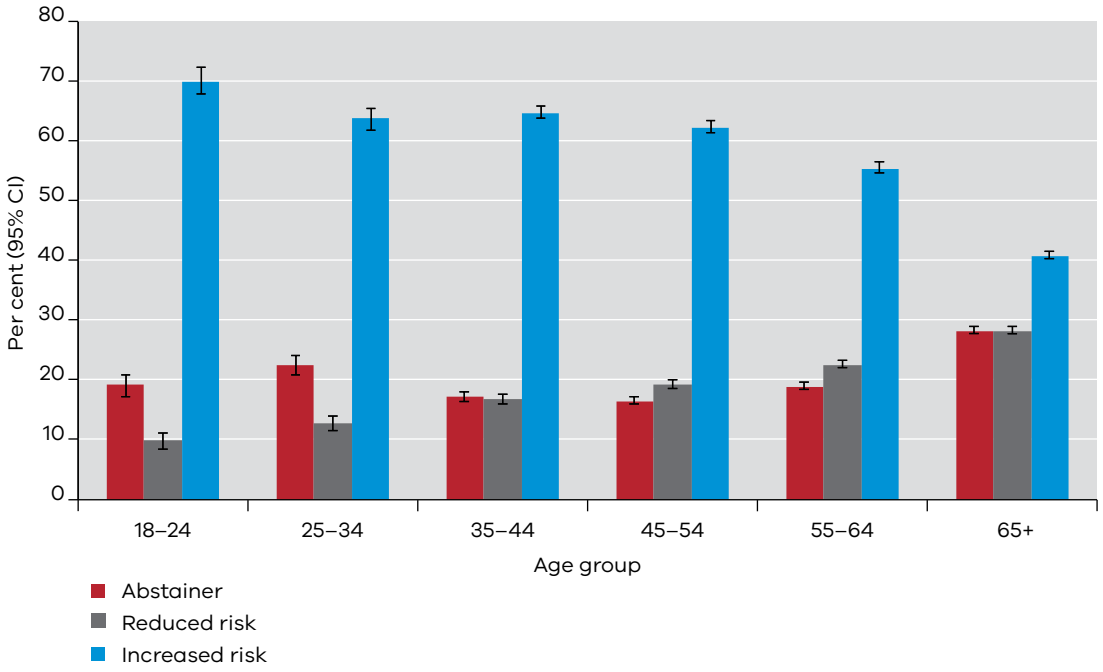
Data are age-standardised to the 2011 Victorian population.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Younger adults were significantly more likely to be at increased risk of alcohol-related harm (Figure 6.6 and Table 6.6). Over 70 per cent of young adults aged 18–24 reported consuming alcohol at levels that put them at an increased lifetime risk of alcohol-related harm.

Figure 6.6: Proportion of Victorian adults at lifetime risk from alcohol consumption, by age group, 2014



Data are age-specific estimates.

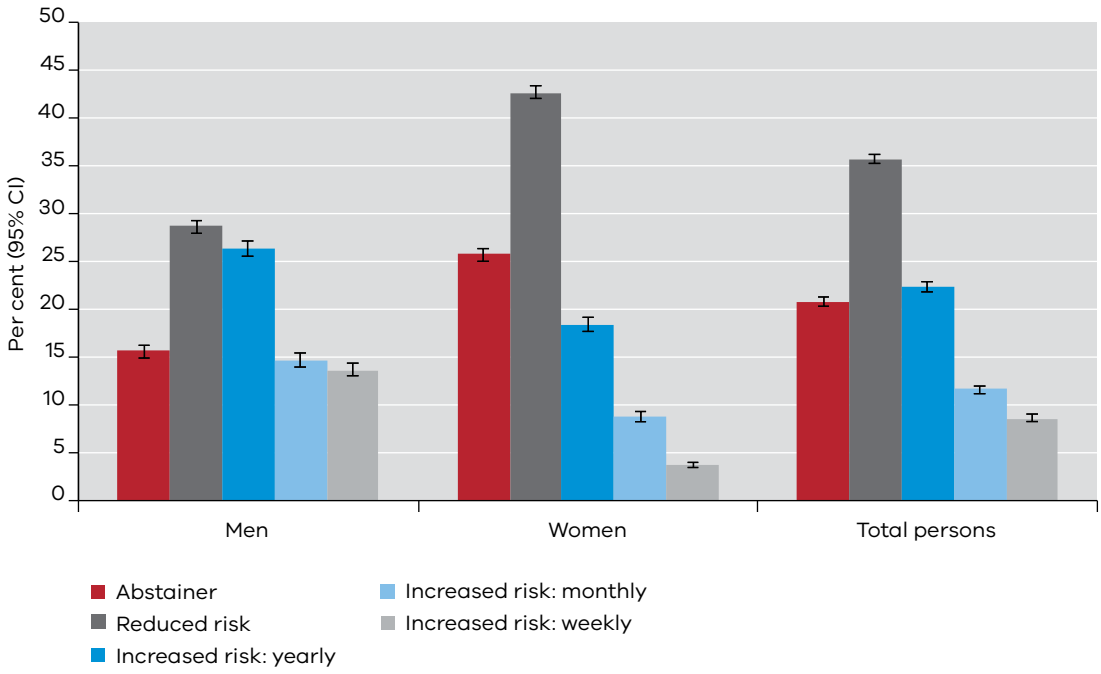
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Short-term risk of harm from alcohol consumption

In 2014, 42.5 per cent of Victorians adults were at increased risk of alcohol-related harm from a single occasion based on NHMRC 2009 guidelines (Figure 6.7 and Table 6.7). Among the 42.5 per cent at increased risk, 22.3 per cent had a yearly increased risk, 11.6 per cent had a monthly increased risk and 8.6 per cent had a weekly increased risk. There was a significantly higher proportion of males at increased short-term risk (yearly, monthly and weekly combined) of alcohol-related harm compared with Victorian females at 54.8 per cent versus 30.9 per cent, respectively.

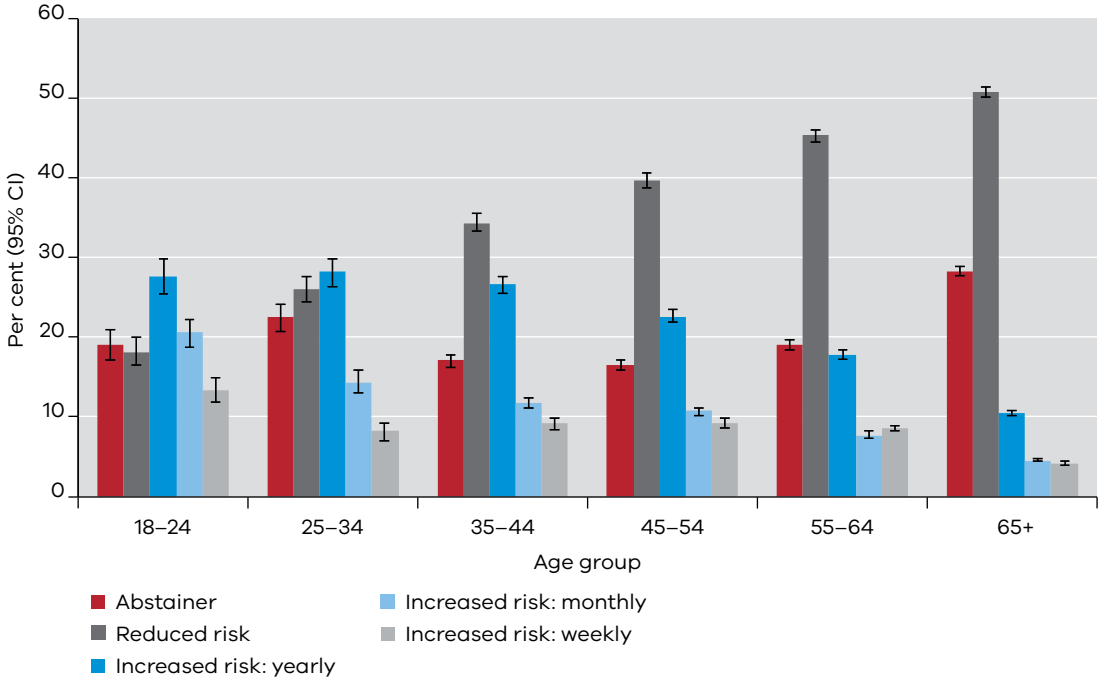
Figure 6.7: Proportion of Victorian adults at short-term risk of harm from alcohol consumption, by sex, 2014



Data are age-standardised to the 2011 Victorian population.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Survey 2014.

Younger adults were significantly more likely to be at increased risk of alcohol-related harm (Figure 6.8 and Table 6.8). Over 60 per cent of young adults aged 18–24 reported alcohol levels that put them at an increased short-term risk (yearly, monthly and weekly combined) of alcohol-related harm.

Figure 6.8: Proportion of Victorian adults at short-term risk of harm from alcohol consumption, by age group, 2014



Data are age-specific estimates.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

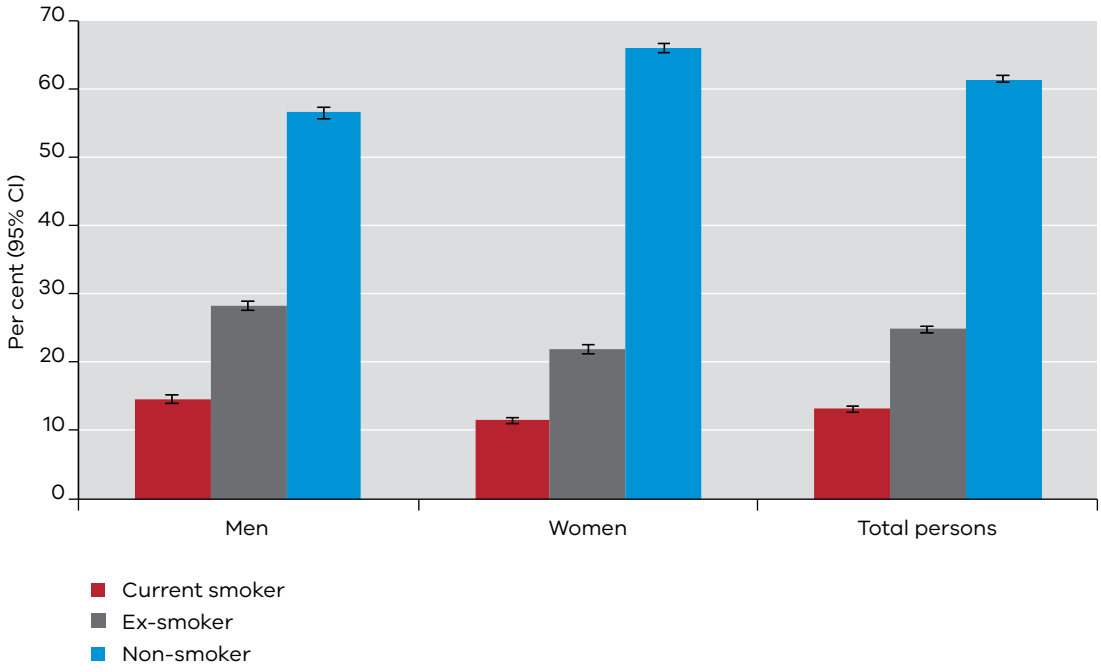
Data source: 2014 Victorian Population Health Survey

Smoking status

Smoking status

In 2014, 13.1 per cent of Victorians adults were current smokers, 24.8 per cent were ex-smokers and 61.5 per cent were non-smokers (Figure 6.9 and Table 6.9). Males were significantly more likely to report being current smokers compared with females.

Figure 6.9: Smoking status, by sex, Victoria, 2014



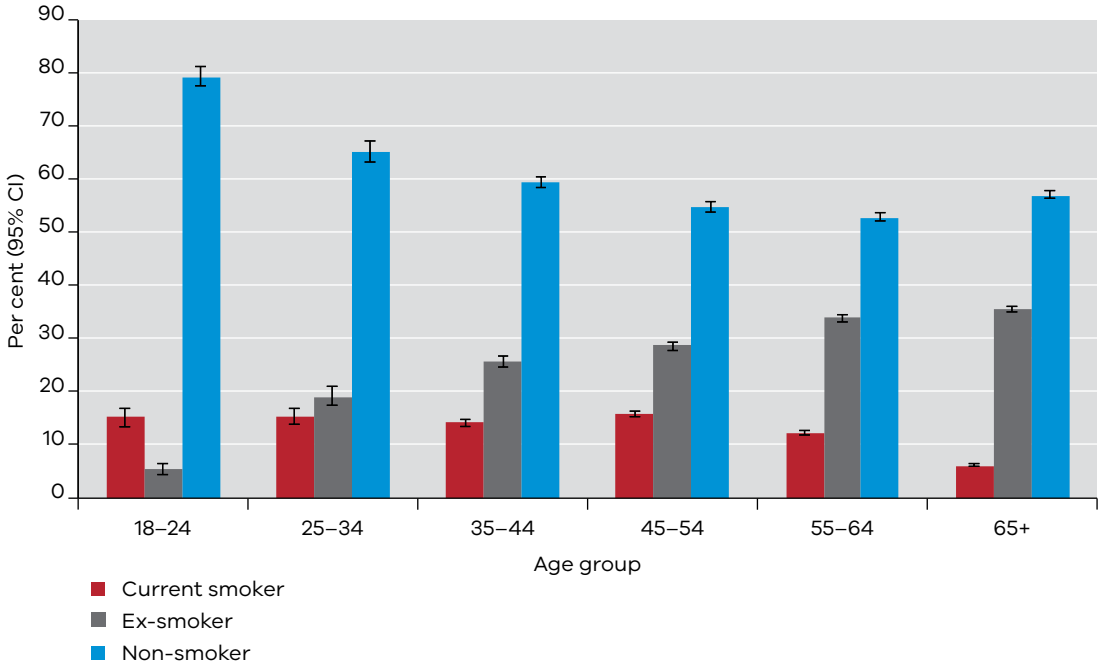
Data are age-standardised to the 2011 Victorian population.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Younger adults, including the 15–84-year age groups, were significantly more likely to report being current smokers compared with older age groups (age groups 55–64 and 65 or older) (Figure 6.10 and Table 6.10). Young adults aged 18–24 were significantly less likely to report being ex-smokers and more likely to report being non-smokers compared with all other age groups.

Figure 6.10: Smoking status, by age group, Victoria, 2014



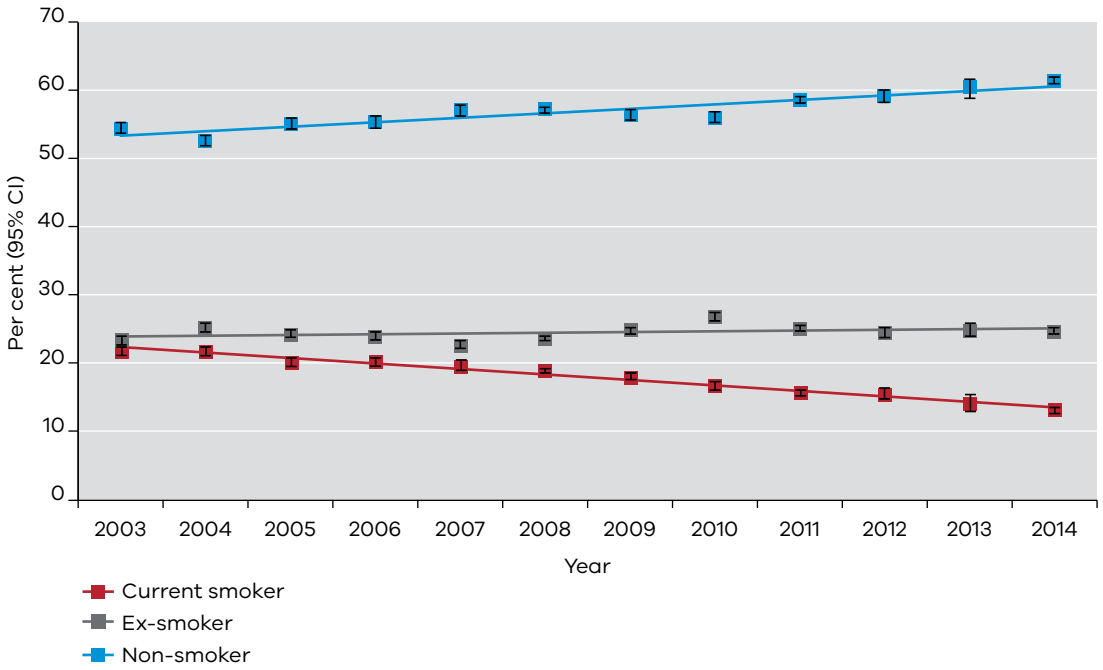
Data are age-specific estimates.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

The proportion of Victorian adults reporting that they were current smokers decreased by 40.2 per cent between 2003 and 2014 (Figure 6.11 and Table 6.11). Similarly, the proportion of non-smokers increased by 13.1 per cent, while the proportion of ex-smokers remained steady between 2003 and 2014.

Figure 6.11: Smoking status, Victoria, 2003–14



Data are age-standardised to the 2011 Victorian population.

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

Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: Victorian Population Health Surveys 2003–2014

Physical activity and sedentary behaviour

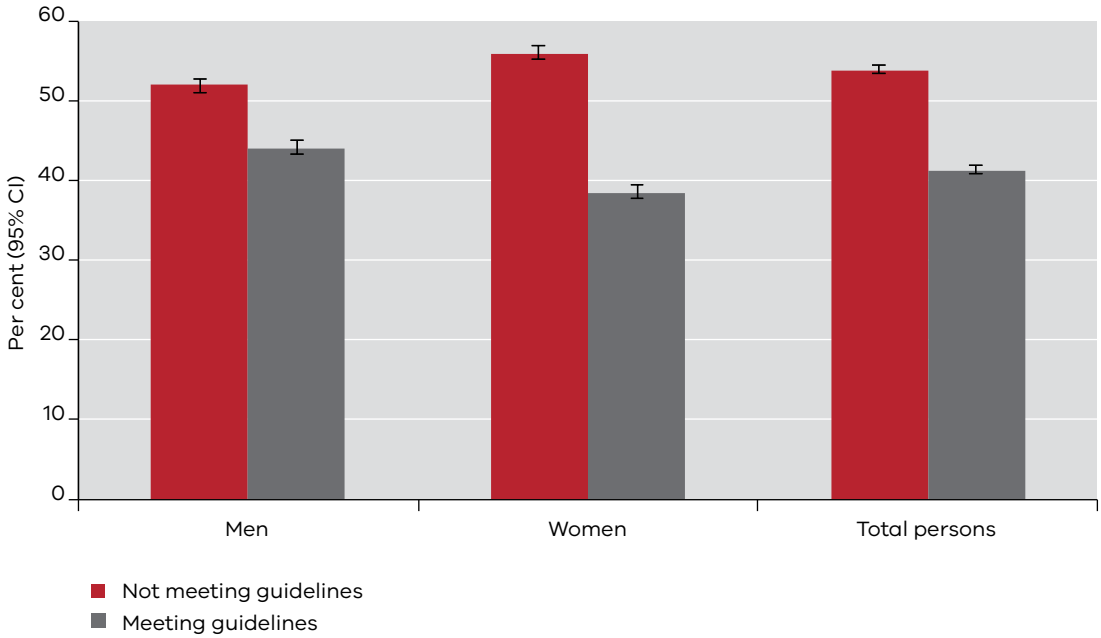
Box 6.2: Definition of Victorian adults meeting or not meeting physical activity guidelines

Physical activity category	Age group (years)	
	18–64	65 or older
Not meeting guidelines	Less than 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity, or an equivalent combination of both moderate and vigorous activities and/or less than 2 days of muscle-strengthening activities each week	Less than 30 minutes of moderate-intensity physical activity everyday
Meeting guidelines	150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity, or an equivalent combination of both moderate and vigorous activities and muscle-strengthening activities on at least 2 days each week	30 minutes of moderate-intensity physical activity every day

Physical activity

In 2014, 41.4 per cent of Victorian adults were meeting current physical activity guidelines and 54.0 per cent were not (Figure 6.12 and Table 6.12). Males were significantly more likely to meet physical activity guidelines compared with females.

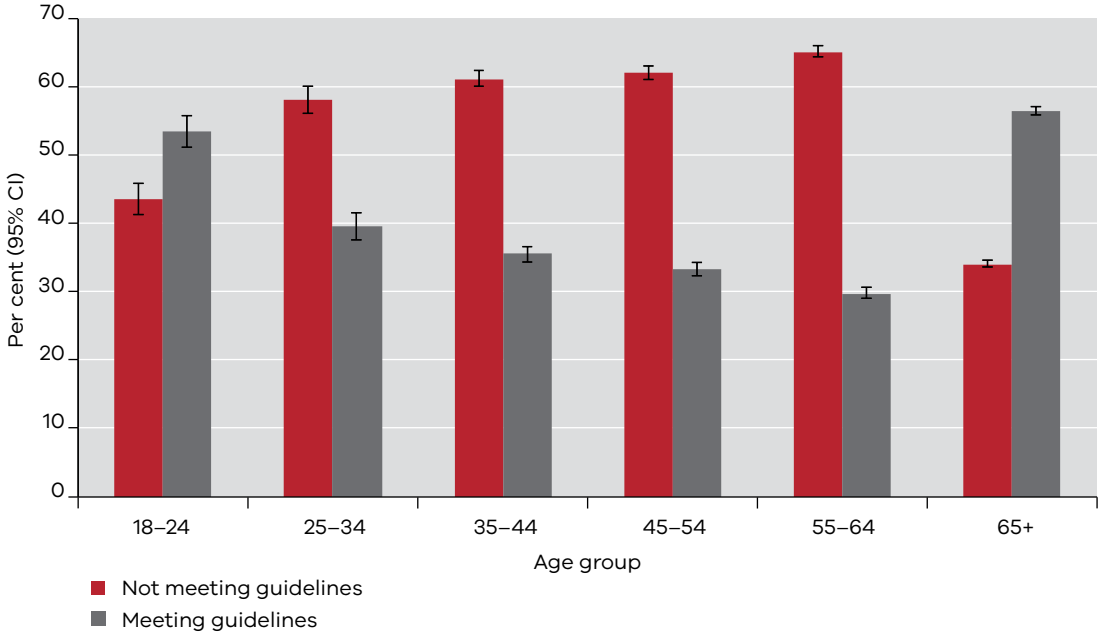
Figure 6.12: Proportion of Victorian adults meeting physical activity guidelines, by sex, 2014



Data are age-standardised to the 2011 Victorian population.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

Young adults aged 18–24 and older adults aged 65 years or older reported significantly higher proportions of people meeting physical activity guidelines compared with all other age groups and the Victoria average of 41.4 per cent (Figure 6.13 and Table 6.13).

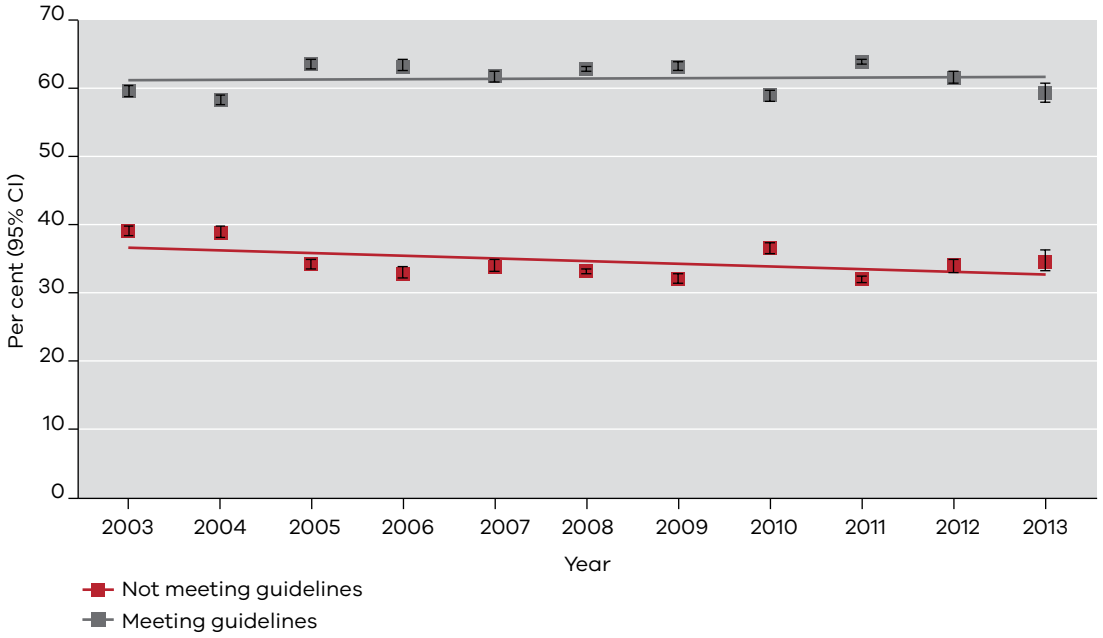
Figure 6.13: Proportion of Victorian adults meeting physical activity guidelines, by age group, 2014



Data are age-specific estimates
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

The proportion of Victorian adults meeting physical activity guidelines remained similar from 2003 to 2013 (Figure 6.14 and Table 6.14). Please note that 2014 data has not been included in this analysis because in 2014 new physical activity guidelines were introduced that incorporated gardening and muscle-strengthening exercises. Data from 2003 to 2013 uses the 1999 national physical activity guidelines (Department of Health and Ageing 1999).

Figure 6.14: Proportion of Victorian adults meeting physical activity guidelines, 2003–14

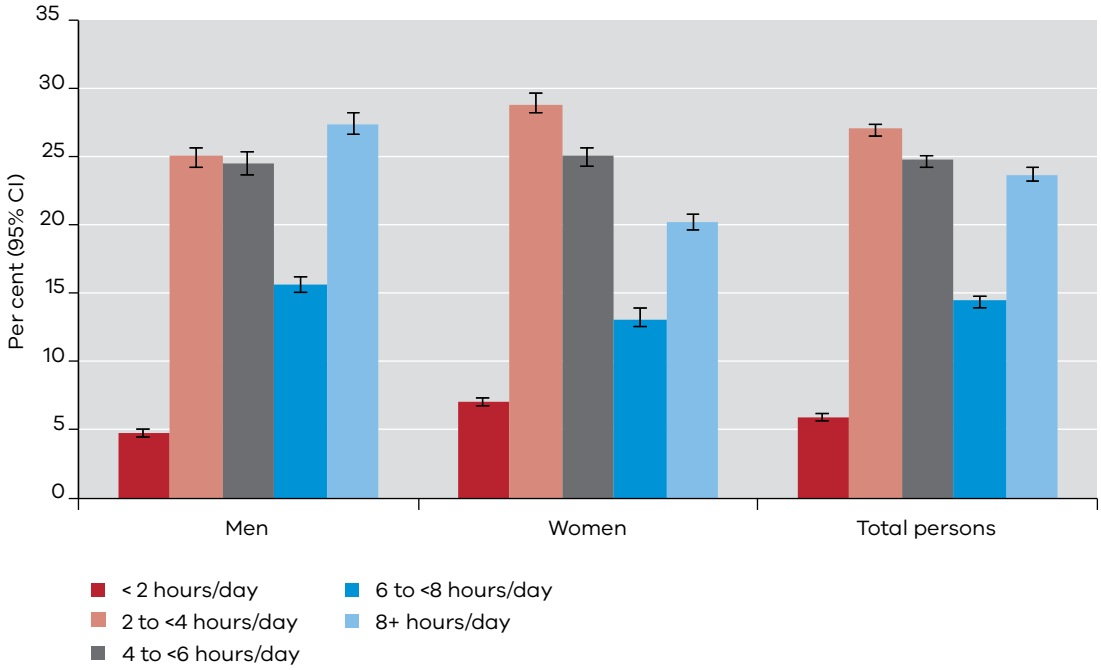


Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2003–2013

Time spent sitting

In 2014, 23.8 per cent of Victorian adults spent eight hours or more sitting on average weekday during the preceding week. Males were more likely than females to report sitting for eight hours or more on an average weekday; 27.5 versus 20.3 per cent (Figure 6.15 and Table 6.15).

Figure 6.15: Proportion of Victorian adults sitting on an average weekday, by duration and sex, 2014



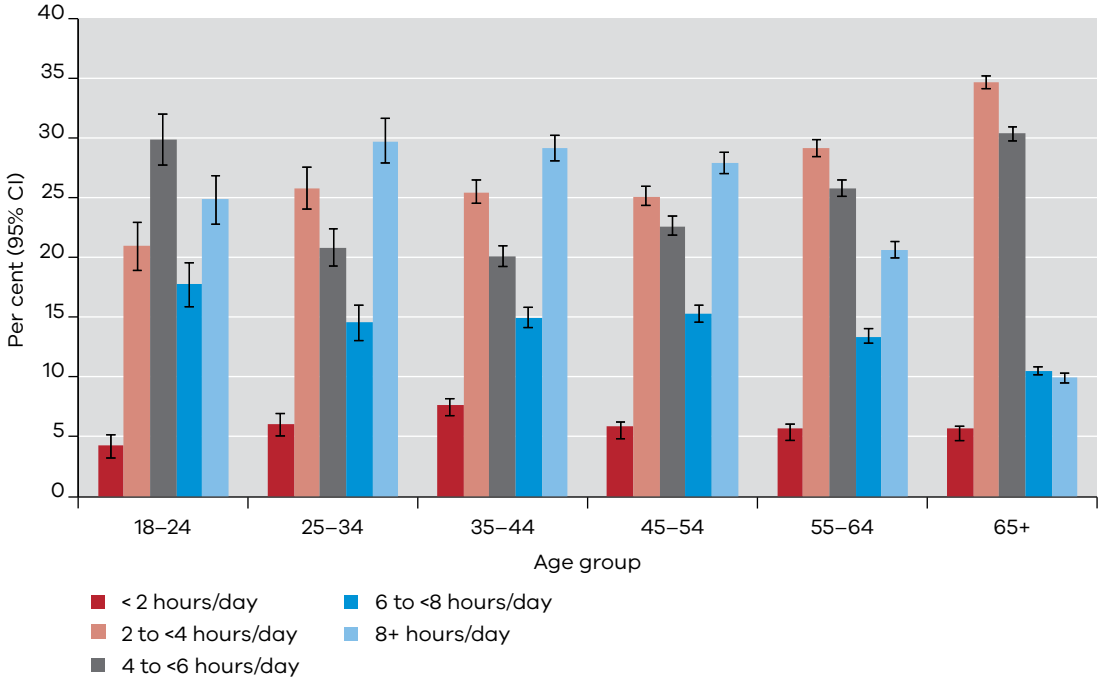
Data are age-standardised to the 2011 Victorian population.

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Older adults (aged 65 years or older) were significantly less likely to report spending eight hours of more sitting on average weekday (Figure 6.16 and Table 6.16).

Figure 6.16: Proportion of Victorian adults sitting on an average weekday, by duration and age group, 2014



Data are age-specific estimates.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

Challenges and opportunities

Healthy Choices

Consumption of fruit and vegetables is associated with a reduced risk of coronary heart disease, stroke, weight gain and a range of cancers (NHMRC 2013). Research has demonstrated that for each additional serving of fruit or vegetables there is an associated 4 per cent lower risk of heart disease (Dauchet et al. 2006). There is also strong evidence of an association between soft drink consumption and increased weight gain in adults and children, as well as tooth decay (Shulze, Manson & Ludwig 2004; Yoo et al. 2004). Improving fruit and vegetable intake and reducing the consumption of sugary drinks requires more than addressing individual knowledge and attitudes. Healthy, sustainable and safe food needs to be promoted across a range of systems and made accessible in everyday settings.

Victorian government actions include implementing the Victorian Healthy Choices policy guidelines (Department of Health and Human Services 2016a) that support an increase in healthy food options, including fruit and vegetables, and a reduction in sugary drinks in health services, workplaces, early childhood services, parks and sport and recreation centres. Local governments are also holding sugary-drink-free community events and encouraging water consumption by providing public drinking fountains.

Alcohol

Alcohol continues to disproportionately cause harm to young people, and men, in Victoria. Supporting these groups and the general population to minimise harm, monitoring alcohol use and harm patterns, and considering alcohol in a broader context are important mechanisms for improving alcohol-related harm.

To achieve this, the Victorian Government supports a combination of education and primary prevention strategies. Targeted prevention initiatives for young people include the Prevent Alcohol and Risk Related Trauma in Youth (P.A.R.T.Y.) program, which is an education initiative that aims to help secondary school students understand the trauma, injury and poor health that can result from risk taking behaviour and poor decision making, including alcohol and drug use. Other resources aimed at the general public include the Alcohol and Drug Foundation's Drug Facts service, which provides easy access to information about alcohol and other drugs, including the prevention of harm via a website, SMS service and telephone information line. In addition, the government funds VicHealth, which has a core focus on preventing harm from alcohol by de-normalising risky drinking in high-risk groups, settings and subcultures, better understanding how to reduce harm from alcohol in vulnerable groups, and increasing support for evidence-based alcohol control policies and practices.

Smoking

One of the six priorities of the *Victorian public health and wellbeing plan 2015–2019* is to continue to further reduce smoking rates, with the ultimate aim of achieving a tobacco-free Victoria. The Victorian Government is committed to supporting health professionals and health services, particularly in the primary health sector, to help people quit smoking and to ensure that the number of young people who take up smoking continues to decline (Department of Health and Human Services 2015).

To continue progress in reducing smoking, the Victorian Government is working with health services to embed interventions for smoking cessation into routine care system-wide, and to build the capacity of health professionals to offer effective support to quit smoking. This means that all people accessing the healthcare system will routinely be asked about their smoking status, and all smokers will be provided with brief advice regarding quitting smoking and offered a referral to further support such as the Quitline.

Active lives

Low levels of physical activity and increased sedentary behaviour are risk factors for ill health and mortality from all causes. Over half of the Victorian adult population does not meet the current physical activity guidelines, and over 20 per cent of Victorian adults report spending eight hours or more sitting on an average weekday, indicative of a shift in the general population predominantly leading sedentary lifestyles. There is also evidence that the overall rate of participation in organised sport in Australia has not grown since 2000 (Hajkowicz et al. 2013).

The Victorian Government is working with a broad range of sport and active recreation stakeholders to increase the range of safe, accessible and high-quality physical activity opportunities available to a wide cross-section of the community. Actions include:

- supporting opportunities that build a foundation for participation in physical activity and assist the development of basic physical literacy, especially in the early years
- supporting the Victorian sport and active recreation sector to reduce barriers to access and inclusion by developing new, and redeveloping older, facilities and promoting female- and family-friendly environments
- promoting opportunities for engagement in nature-based settings
- encouraging healthy neighbourhood design.

To combat increasingly sedentary lifestyles, the Victorian Government is: encouraging active transport such as walking or cycling to work; supporting neighbourhood design that promotes activity and social connectedness; and supporting the implementation of targeted initiatives such as the health promoting framework (Achievement Program) aimed at workplaces.

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Concepts

Sugar-sweetened drinks

The Victorian Population Health Survey asked respondents how often they consumed cordial, soft drinks, flavoured mineral water, energy drinks or sports drinks.

Alcohol consumption

Lifetime and short-term risk of alcohol-related harm was determined from the following questions in the 2014 Victorian Population Health Survey:

- whether the person had an alcohol drink of any kind in the previous 12 months
- frequency of having an alcohol drink of any kind
- amount of standard drinks consumed when drinking
- level of frequency of high-risk drinking.

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').

Smoking

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 smoker 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 having never smoking 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' .

Physical activity

Walking for a minimum of 10 minutes is categorised as a moderate-intensity physical activity. Vigorous activity includes household chores (including gardening) and vigorous 'other' activities (for example, tennis, jogging, cycling and 'keeping-fit' exercise).

The sufficient time and sessions measure of physical activity is regarded as the preferred indicator of the adequacy of physical activity for health benefit because it takes into consideration both physical activity time (150 minutes or more of moderate-intensity or 75 minutes or more of vigorous-intensity physical activity) and muscle-strengthening sessions (two sessions). The number of minutes spent on physical activity was calculated by adding the minutes of moderate-intensity activity to two times the minutes of vigorous activity (that is, the minutes of vigorous-intensity activity are weighted by a factor of two).

Sedentary behaviour

The Victorian Population Health Survey asked respondents about the time they spent sitting while at work, while at home, while doing study and during leisure time in the preceding week. This included time spent sitting at a desk, in the car, reading or sitting or lying down to watch television.

Limitations

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

Since the introduction of the NHMRC fruit and vegetable guidelines in 2013, the Victorian Population Health Survey has only collected relevant data in the 2014 survey. Questions on sugar-sweetened soft drinks have only been included in the 2011, 2012 and 2014 Victorian Population Health Surveys. Since the introduction of the NHMRC alcohol guidelines in 2009, the Victorian Population Health Survey has only collected relevant data in the 2012 and 2014 surveys. Questions on time spent sitting have only been included in the 2014 survey. For these reasons a number of time series analyses were not possible for this report.

Provenance

The risk of harm from alcohol consumption is reported by the Australian Institute of Health and Welfare in the *National Drugs Strategy Household Survey (NDSHS) report*. Smoking status is reported by the Australian Bureau of Statistics and the Australian Institute of Health and Welfare. 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 and Human Services, *Victorian Population Health Survey 2014: Modifiable risk factors contributing to chronic disease*
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Chapter 7: Constitutional factors

Key messages

- Overall, in 2014, 31.2 per cent of Victorian adults were categorised as overweight, and a further 18.8 per cent were categorised as obese, according to their self-reported body mass index (BMI).
- Males were more likely to be overweight or obese when compared with females.
- The proportion of Victorian adults classified as obese significantly increased by 36.2 per cent between 2003 and 2014 but appears to have steadied since 2010.
- In 2011–12, 4.4 per cent of Victorians aged 12 years or older were identified as having diabetes based on fasting plasma glucose (FPG) testing and 4.6 per cent based on haemoglobin A1c (HbA1c) testing. A further 3.1 per cent were identified as being at high risk of diabetes based on FPG testing and 4.9 per cent based on HbA1c testing.
- In 2011–12, 3.7 per cent of Victorian adults had an abnormal estimated glomerular filtration rate (eGFR) and 7.1 per cent of people aged five years or older had an abnormal albumin creatinine ratio (ACR), indicative of kidney disease or damage.
- In 2011–12, around one in three Victorians (33.1 per cent) aged 12 years or older had high levels of total cholesterol; 31.9 per cent had high levels of low-density lipoprotein (LDL) 'bad' cholesterol; and 22.1 per cent had lower than normal levels of high-density lipoprotein (HDL) 'good' cholesterol.

Description

This chapter reports on four measures:

1. The proportion of adults aged 18 years or older who are underweight, normal weight, overweight or obese according to their BMI
2. The proportion of people aged 12 years or older with abnormal fasting glucose or HbA1c biomarkers for diabetes or high risk of diabetes
3. The proportion of people aged 18 years or older with abnormal eGFR or aged five years or older with albumin creatinine ratio biomarkers for kidney disease or damage
4. The proportion of people aged 12 years or older with abnormal total cholesterol, HDL cholesterol, LD cholesterol or triglyceride biomarkers for cardiovascular disease

Introduction

Cardiovascular disease is a leading cause of morbidity and mortality in Australia. An individual's absolute cardiovascular disease risk relates to their smoking status, blood pressure, blood lipid levels, diabetes status, age and sex (Banks et al. 2016).

Obesity, an excess accumulation of body fat, is also linked to cardiovascular diseases, as well as hypertension, type 2 diabetes, gallbladder disease, musculoskeletal disorders (especially osteoarthritis), some cancers (endometrial, breast and colon), psychosocial disorders and breathing difficulties (World Health Organization 2013). Ultimately, being obese can lead to disability and/or premature death. Box 7.1 shows the World Health Organization classifications for adult body weight status based on BMI scores. In this chapter, we report on the proportion of adults who are overweight or obese based on self-reported height and weight data in the 2014 Victorian Population Health Survey.

It is important to note that 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 overall underestimation of their BMI (Elgar & Stewart 2008).

Box 7.1: World Health Organization classifications for adult body weight

Weight category	BMI status
Underweight	< 18.5
Normal	18.5–24.9
Overweight	25.0–29.9
Obese class I	30.0–34.9
Obese class II	35.0–39.9
Obese class III	≥ 40

Source: World Health Organization 2000; 2013

In addition to BMI, other biomedical markers are risk factors for heart diseases and can be measured through blood and urine tests. This chapter includes biomedical markers of diabetes status, blood lipid levels and kidney function.

Diabetes is a chronic condition where the body cannot maintain healthy levels of glucose in the blood because insulin hormone is no longer produced or produced in insufficient amounts by the body. Complications of diabetes can include heart attack, stroke, kidney disease, limb amputation, depression, anxiety and blindness (Diabetes Australia 2015). A person aged 12 years or older is considered to have diabetes if they have one or more of the following blood test results: fasting plasma glucose (FPG) greater than or equal to 7.0 mmol/L, or a haemoglobin A1c (HbA1c) greater than or equal to 6.5 per cent. A person is considered to be at high risk of diabetes if they had an FPG level ranging from 6.1 mmol/L to less than 7.0 mmol/L, or an HbA1c of 6.0 per cent to less than 6.5 per cent. Data on self-reported diabetes status is presented in Chapter 10: Health conditions, of this report.

Chronic kidney disease is the occurrence of kidney damage or reduced kidney function lasting for three months or more. Chronic kidney disease can lead to kidney failure and is a strong risk factor for coronary events such as acute myocardial infarction (Kidney Health Australia 2015). A person is considered to have kidney disease if they are aged 18 years or older and have a blood test showing an estimated glomerular filtration rate (eGFR) of less than 60 mL/min/1.73m^2, or are aged five years or older and have a urine test showing an albumin to creatinine ratio (ACR) of 2.5 mg/mmol or greater for males and 3.5 mg/mmol or greater for females.

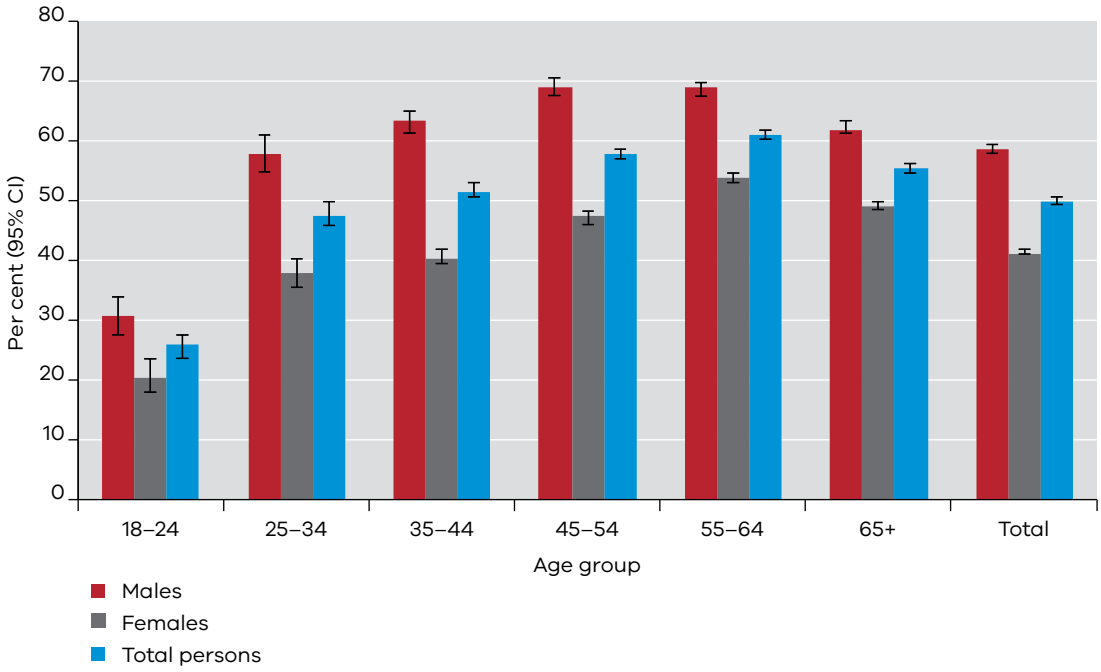
A person aged 12 years or older is considered to have abnormal blood lipid levels (dyslipidaemia) if they have one or more of the following blood test results: total cholesterol greater than or equal to 5.5 mmol/L, or HDL cholesterol less than 1.0 mmol/L for men and less than 1.3 mmol/L for women, or LDL cholesterol greater than or equal to 3.5 mmol/L, or triglycerides greater than or equal to 2.0 mmol/L.

Overweight and obesity

Table 7.1 and Figure 7.1 show the proportion of the adult population by self-reported BMI category, age group and sex in the 2014 Victorian Population Health Survey. In 2014, 38.4 per cent of Victorian men and 24.3 per cent of women were overweight, while 20.4 per cent of men and 17.2 per cent of women were obese. There was a significantly higher proportion of men who were overweight and obese compared with their female counterparts.

A significantly lower proportion of 18–24-year old men, women and total persons were overweight and obese compared with all other age groups (Figure 7.1 and Table 7.2).
A significantly higher proportion of men aged 55 years or older, women and total persons were overweight compared with all men, women and total persons, respectively.
A significantly higher proportion of 45–54-year-old men were obese compared with all Victorian men. A significantly higher proportion of 55–64-year-old women were obese compared with all Victorian women.

Figure 7.1: Proportion of overweight and obese adults, by age group and sex, Victoria, 2014



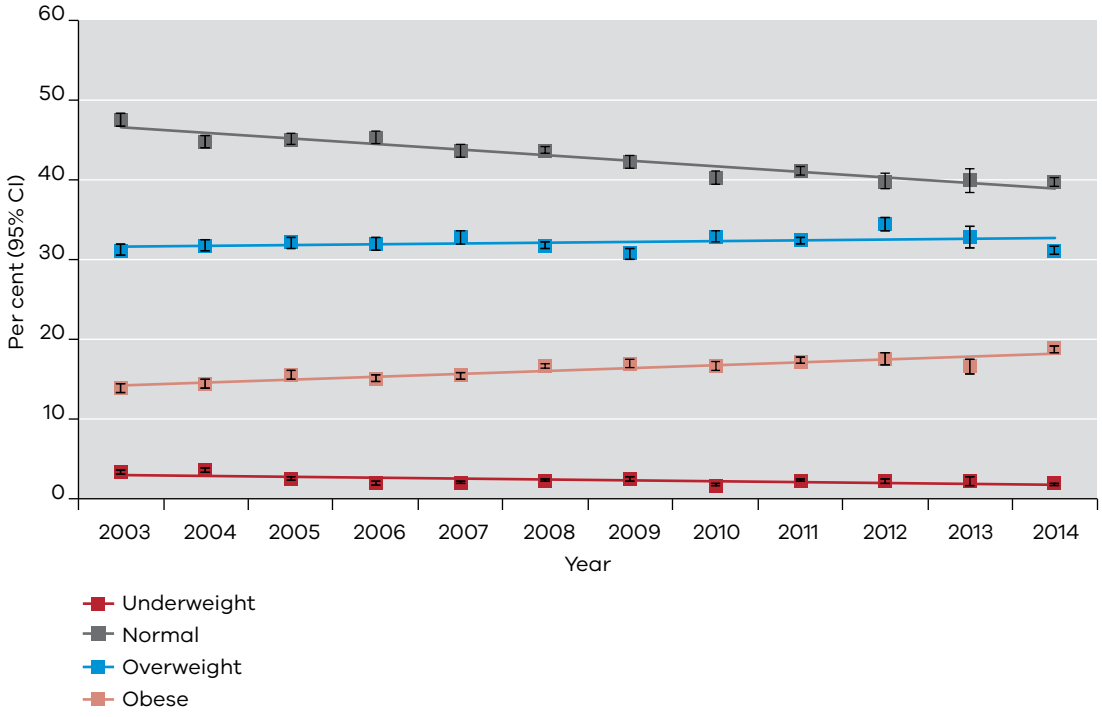
Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

The proportion of underweight and normal weight Victorians significantly declined between 2003 and 2014 (Table 7.3 and Figure 7.2), while the proportion of overweight people remained unchanged. In contrast, the proportion of obese persons significantly increased by 36.2 per cent between 2003 and 2014; however, there appears to have been a steadying in the proportion of obese adults since 2010.

Figure 7.2: Proportion of Victorian adults, by BMI category, 2003–14



Data are age-standardised to the 2011 Victorian population.

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

Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

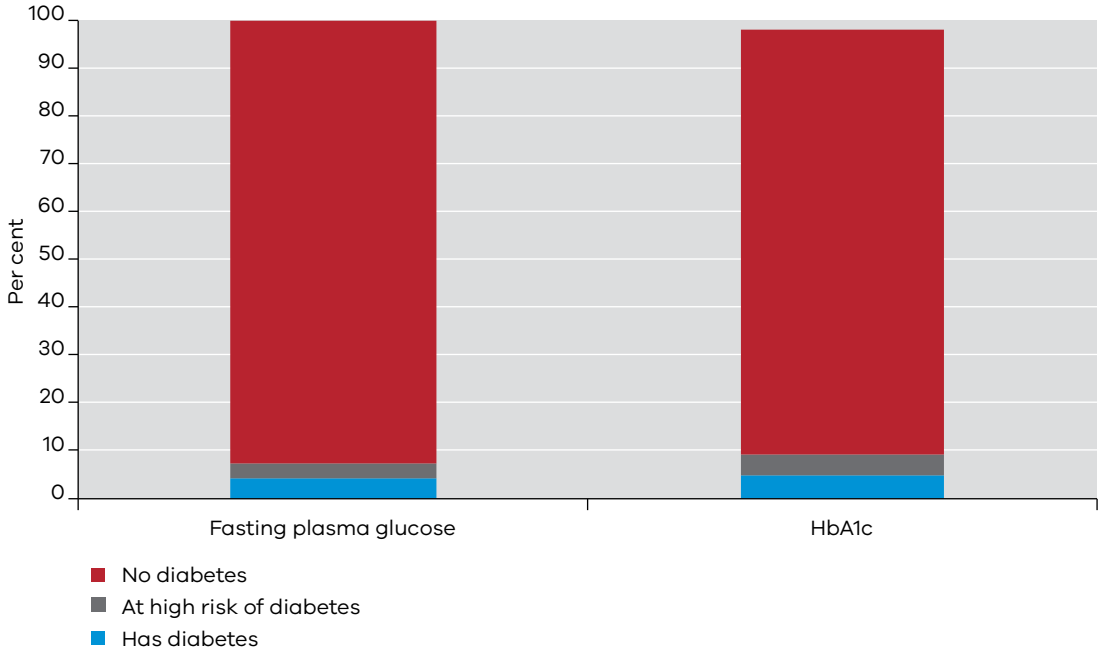
Data source: Victorian Population Health Surveys 2003–2014

Chronic disease biomarkers

Diabetes biomarkers

Among Victorians aged 12 years or older in 2011–12, 4.4 per cent had diabetes based on FPG criteria and 4.6 per cent had diabetes based on HbA1c criteria. In addition, a further 3.1 per cent were at high risk of diabetes based on FPG criteria, and 4.9 per cent based on HbA1c criteria (Figure 7.3 and Table 7.4). It should be noted that measured blood sugar may not reflect diabetes diagnoses because many people diagnosed will have their blood sugars under control through appropriate management.

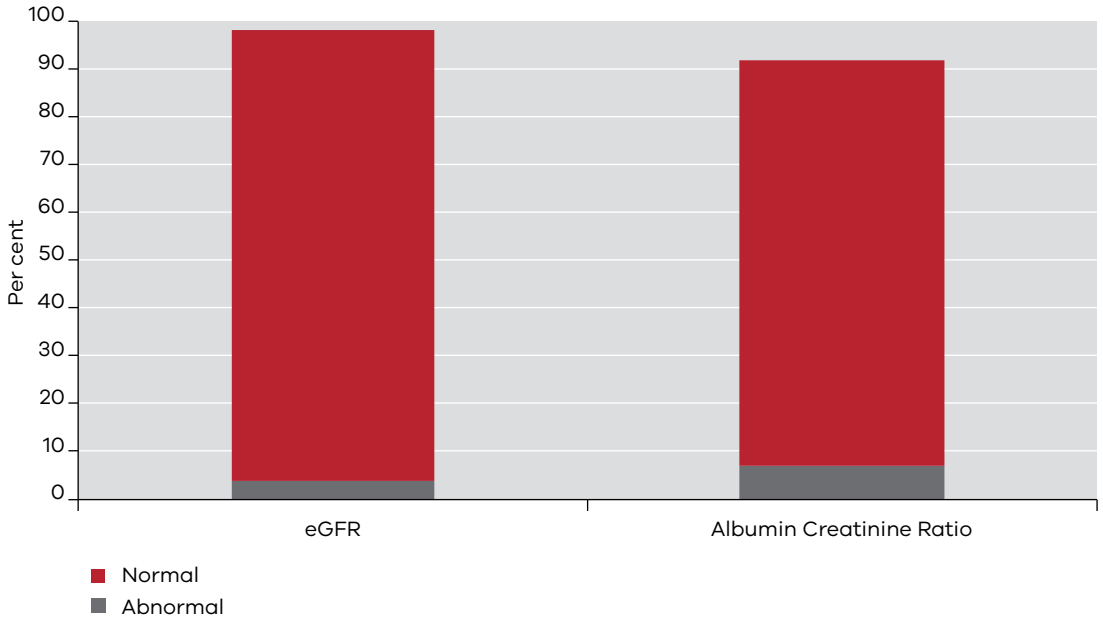
Figure 7.3: Diabetes biomarkers, Victoria, 2011–12



Kidney disease biomarkers

Among Victorians in 2011–12, 3.7 per cent of people aged 18 years or older had abnormal eGFR and 7.1 per cent of people aged five years or older had an abnormal albumin:creatinine ratio, which is indicative of kidney disease or damage (Figure 7.4 and Table 7.5).

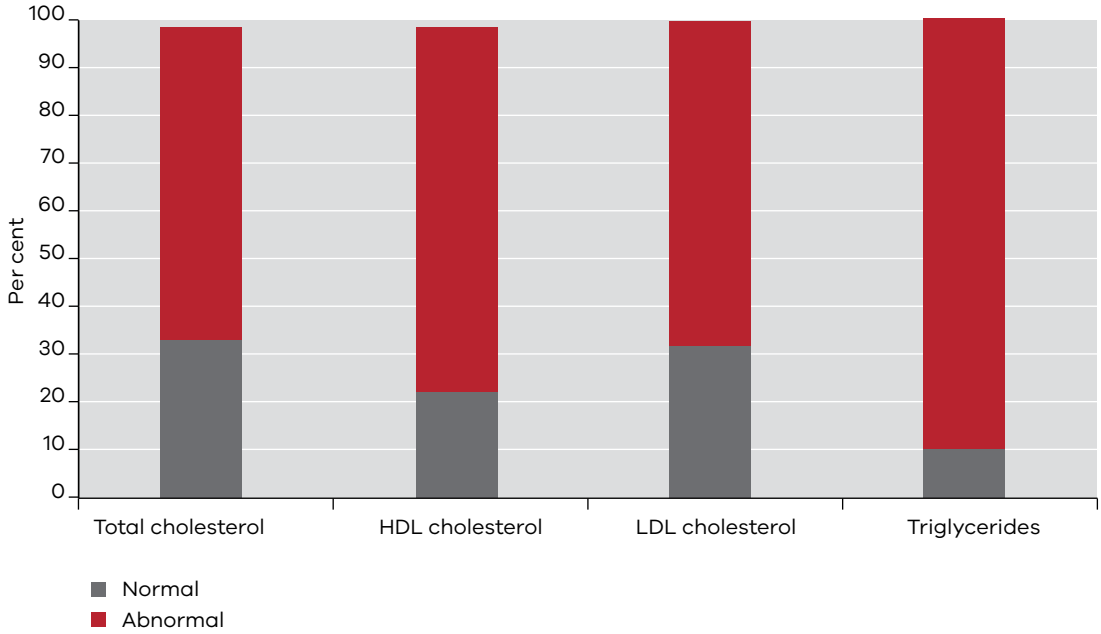
Figure 7.4: Kidney disease biomarkers, Victoria, 2011–12



Cardiovascular disease biomarkers

Among Victorians aged 12 years or older in 2011–12, 33.1 per cent had abnormal total cholesterol levels, 22.1 per cent abnormal HDL cholesterol, 31.9 per cent abnormal LDL cholesterol and 10.0 per cent abnormal triglycerides, indicative of higher absolute cardiovascular disease risk (Figure 7.5 and Table 7.6).

Figure 7.5: Cardiovascular disease biomarkers, Victoria, 2011–12



Challenges and opportunities

The data show that obesity continues to be a major health challenge in Victoria, as is the case across Australia and internationally. Australia has the fifth highest rate of adult obesity among selected OECD countries (Organisation for Economic Co-operation and Development 2014). The impacts of obesity are experienced by individuals, families, workplaces, the health system and the economy. There are a range of measures that Victoria is implementing, as described in Chapter 6, to address poor diet, physical inactivity (important mediators of obesity) and obesogenic environments. Given the extent of the health issue across the population, this is an area where there will be a continued need to focus efforts.

In addition, clinicians need to continue to review and monitor cardiovascular disease risk factors, such as blood glucose and lipid levels, focusing on absolute cardiovascular risk as a way to guide management of care (Banks et al. 2016).

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Concepts

Biomedical markers are measured characteristics that may be used to indicate a health risk or condition. In the Australian Health Survey these were measured through blood and urine tests.

Survey respondents of the 2014 Victorian Population Health Survey reported their height (m) and weight (kg). Body mass index (BMI) was calculated as weight/height2. Weight status was determined using BMI cut-offs listed in Table 7.1.

Limitations

Estimates of BMI in this report are based on self-report from survey participants. BMI as a marker of obesity does not capture fat distribution and muscle mass. It is well known that people underestimate their weight and overestimate their height. Therefore, estimates reported here are likely to be an underestimates.

Provenance

Biomedical markers are included as an indicator in the Australian Bureau of Statistics (2013) *Australian Health Survey*.

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 and Human Services, *Victorian Population Health Survey 2014: modifiable risk factors contributing to chronic disease*

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Section 2
Health status

Chapter 8: Wellbeing

Key messages

- Overall, the proportion of Victorians who report excellent or very good health is 40.2 per cent.
- There is no significant difference between males and females in self-reported health status.
- Overall, 92.4 per cent of Victorians report being very satisfied or satisfied with life, and the proportion who report being dissatisfied or very dissatisfied is 6.6 per cent.
- Overall, 12.6 per cent of Victorian adults report high or very high levels of psychological distress, as determined by the Kessler 10 scale.
- The proportion of Victorian adults with high or very high levels of psychological distress is significantly higher in women than men; 15.1 versus 10.3 per cent.
- More than 20 per cent of 18–24 year olds report high or very high levels of psychological distress, and this is significantly higher than any other age group.

Description

This chapter includes three measures:

1. The proportion of adults aged 18 years or older who rank their current health status as excellent, very good, good, fair or poor, by sex, age group and year. In this report, 'excellent' and 'very good' health status have been combined, as have 'fair' or 'poor' health status
2. The proportion of adults aged 18 years or older who report their overall satisfaction with life as very satisfied or satisfied, and dissatisfied or very dissatisfied
3. Psychological distress is reported as the proportion of adults aged 18 years or older experiencing low, moderate, high and very high levels of distress, as measured using the Kessler 10 Psychological Distress Scale, by sex, age group and year. In this report, 'high' and 'very high' categories have been combined as 'high or very high'

Introduction

Self-reported health status is a commonly used measure of overall health that reflects a person's perception of his or her own health at a given point in time. It has been shown to be a reliable predictor of future ill health, future healthcare use and premature mortality, independent of other medical, behavioural or psychosocial risk factors (Burstrom & Fredlund 2001; Idler & Benyami 1997; Miilunpalo, Vuori & Oja 1997).

Wellbeing is not just the absence of disease or illness. It is a complex combination of a person's physical, mental, emotional and social health. Wellbeing is linked to how you feel about yourself and your life. People with high subjective wellbeing are mentally and physically healthier, more productive, more cooperative, more prosocial and charitable, have greater coping abilities, and live four to 10 years longer than people with low subjective wellbeing (Department of Health 2015). Therefore, understanding the factors that influence health and wellbeing is essential for developing new and effective policies to improve the health and wellbeing of societies.

Psychological distress is an important risk factor for a number of diseases and conditions including fatigue, migraine, heart disease, chronic obstructive pulmonary disease, cerebrovascular disease, injury, obesity, depression and anxiety (Hamer et al. 2012; Holden et al. 2010; Stansfeld et al. 2002). It is also a significant risk factor for risky drinking, smoking and drug use (Holden et al. 2010).

The Kessler 10 Psychological Distress Scale (K10) is a set of 10 questions designed to categorise the level of psychological distress over a four-week period. It has been validated as a screening tool for detecting affective disorders such as depression and anxiety, and is currently in use in general practice in Australia (Andrews & Slade 2001; Furukawa et al. 2003; Kessler et al. 2003). 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 (10–15), moderate (16–21), high (22–29) and very high (30–50) (Andrews & Slade 2001).

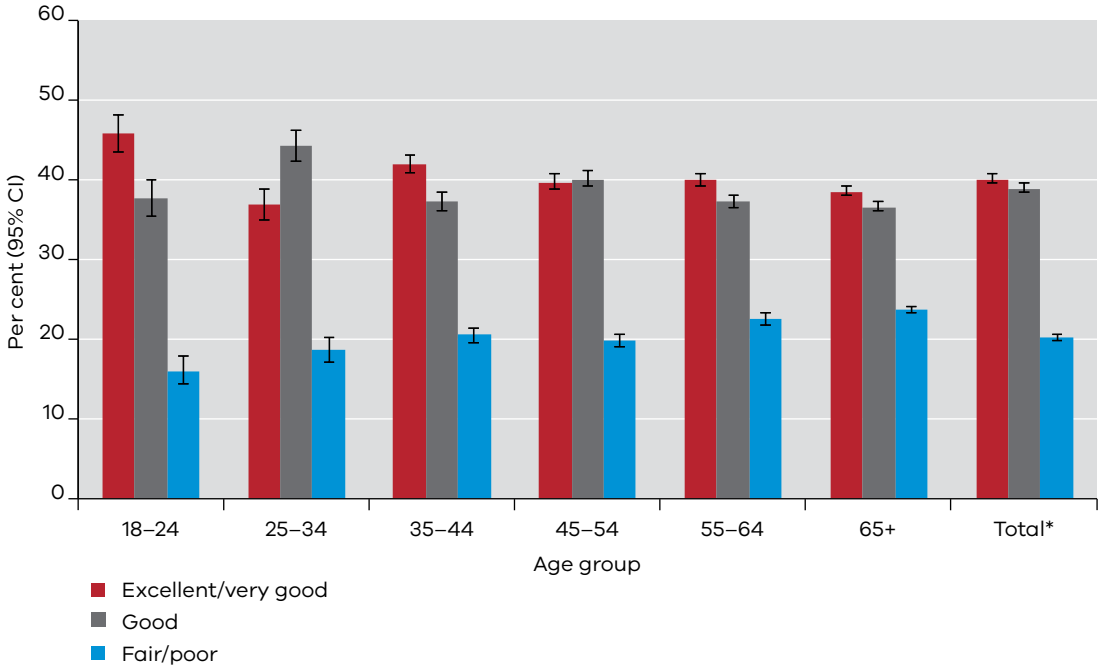
In this chapter, we present data on self-reported health, overall life satisfaction and psychological distress among Victorian adults, by age and sex, and over time. This data is derived from the 2014 Victorian Population Health Survey. More information is available in the full report of the *Victorian Population Health Survey 2014: health and wellbeing, chronic conditions, screening and eye health* (Department of Health and Human Services 2016).

Self-reported health

In 2014, 40.2 per cent of Victorian adults reported their health as excellent or very good, 39.1 per cent as good and 20.3 per cent as fair or poor (Figure 8.1 and Table 8.1). There were no differences in self-reported health status between males and females.

Among Victorian adults in 2014, 45.8 per cent of 18–24 year olds reported excellent or very good self-reported health (Figure 8.1 and Table 8.1). This was significantly higher than 25–34 and 85 years or older age groups of whom only 36.9 per cent and 38.7 per cent reported excellent or very good health, respectively. There was no difference across age groups in the proportion of people reporting good health; however, the proportion of people reporting fair or poor health significantly increased with increasing age (Figure 8.1 and Table 8.1).

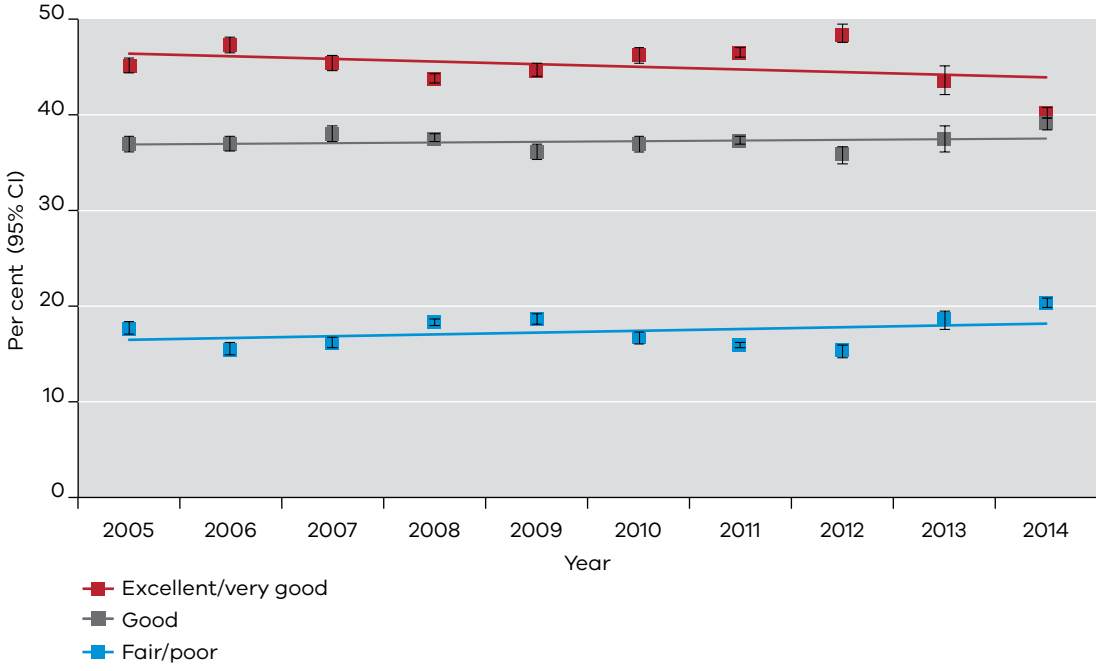
Figure 8.1: Self-reported health status, by age group, Victoria, 2014



Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

Self-reported health, regardless of health status category, remained similar in Victoria from 2005 to 2014 (Figure 8.2 and Table 8.2).

Figure 8.2: Self-reported health status, Victoria, 2005–14

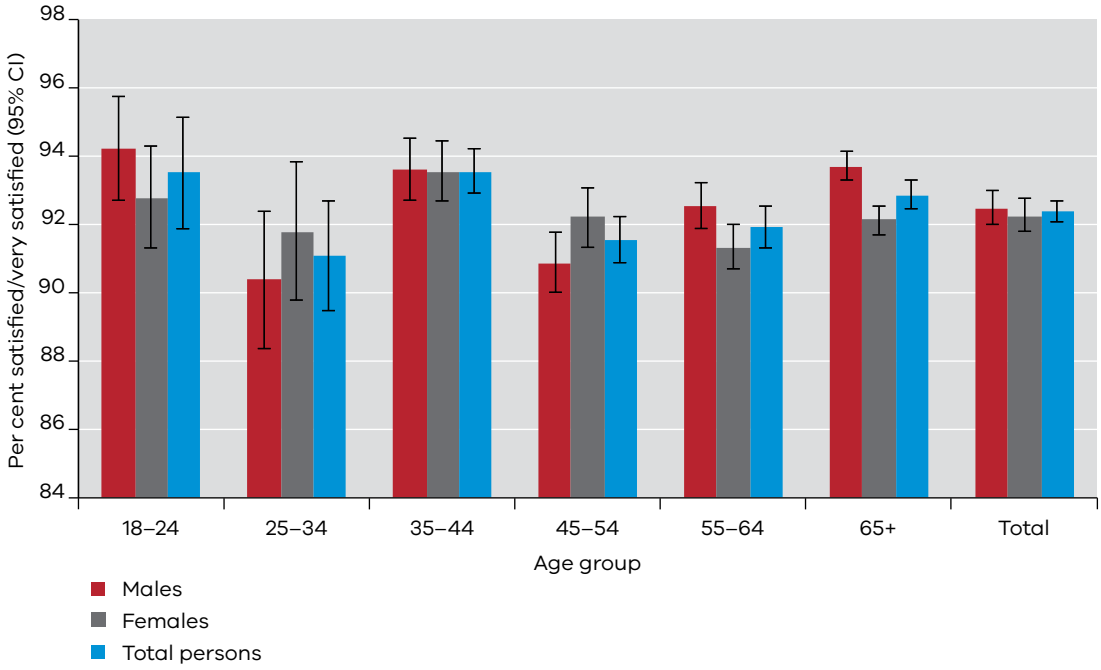


Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2005–2014

Life satisfaction

Overall, in 2014, the proportion of Victorians who reported being very satisfied or satisfied with life was 92.4 per cent, and the proportion who reported being dissatisfied or very dissatisfied was 6.6 per cent. There was no difference between the sexes or between age groups (Figure 8.3 and Table 8.3).

Figure 8.3: Proportion of people who are satisfied or very satisfied with their life, by sex and age group, Victoria, 2014



Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).

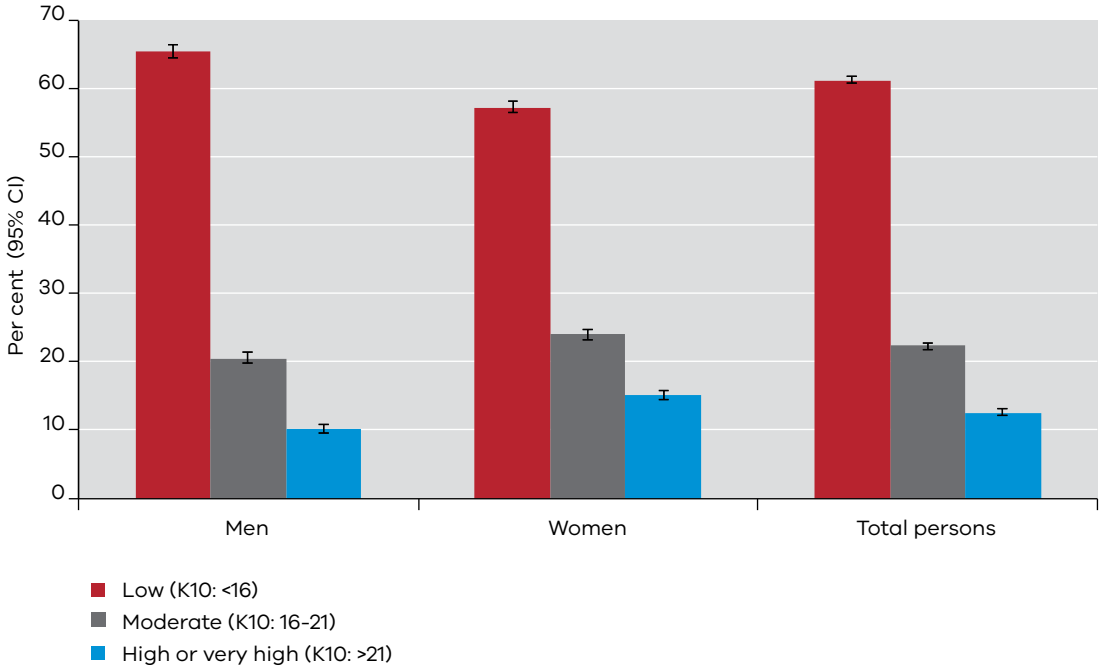
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Psychological distress (Kessler 10 scale)

In 2014 the proportion of Victorian adults with low, moderate and high or very levels of psychological distress was 61.3, 22.4 and 12.6 per cent, respectively (Figure 8.4 and Table 8.4). The proportion of Victorian adults with high or very high levels of psychological distress was significantly higher in women than men – 15.1 versus 10.3 per cent, respectively.

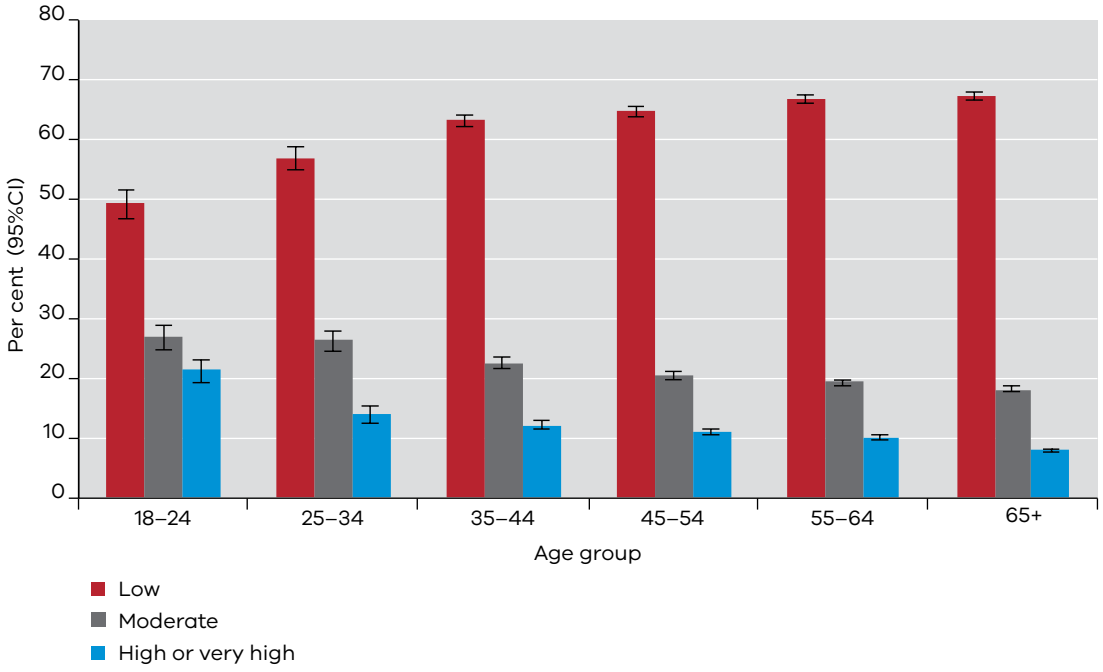
Figure 8.4: Psychological distress, by sex, Victoria, 2014



Data are age-standardised to the 2011 Victorian population.
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

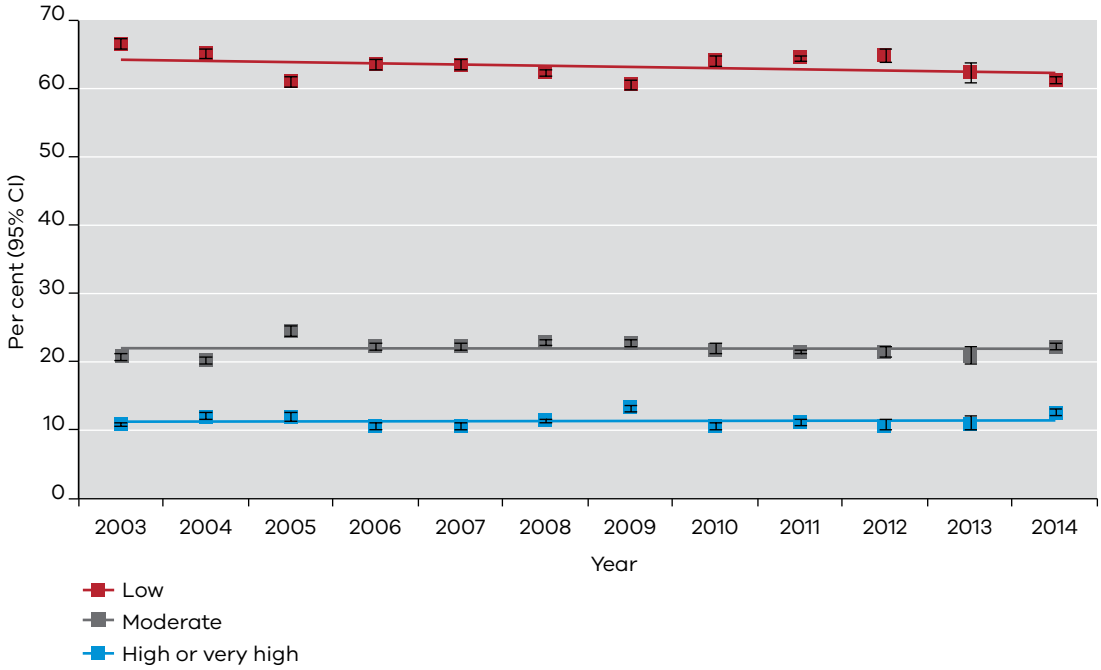
The proportion of 18–24 year olds reporting high or very high psychological distress was significantly higher than all other age groups (Figure 8.5 and Table 8.5). The lowest proportion of high or very high psychological stress was seen among the 65 years and older age group.

Figure 8.5: Psychological distress, by age group, Victoria, 2014



The proportion of Victorian adults with high or very high levels of psychological distress remained unchanged from 2003 to 2014 (Figure 8.6 and Table 8.6).

Figure 8.6: Psychological distress, by category, Victoria, 2003–14



Data are age-standardised to the 2011 Victorian population.

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

Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: Victorian Population Health Surveys 2003–2014

Challenges and opportunities

The Kessler 10 (K10) Psychological Distress Scale is a proxy measure for the overall mental health and wellbeing of the population. Very high levels of psychological distress may signify a need for professional help and provide an estimate of the need for mental health services (Australian Bureau of Statistics 2012).

The proportions of men and women with high or very high psychological distress have remained unchanged from 2003 to 2014; however, women are reporting significantly higher levels of psychological distress than men, and the proportion of young people with high or very high psychological distress is significantly higher than all other age groups.

Psychological wellbeing is affected by a range of individual, family, community and societal factors. Mental health promotion activities aim to maximise mental health and wellbeing in populations and individuals. They include universal programs, such as school-based interventions to promote resilience in children, and more targeted approaches. Risk factors for mental and substance use disorders include alcohol use, drug use, childhood sexual abuse and intimate partner violence (Australian Institute of Health and Welfare 2016). More targeted programs seek to address specific risk factors, and also populations that may be more vulnerable to experiencing psychological distress including Aboriginal Victorians, people from refugee backgrounds, lesbian, gay, bisexual, trans and intersex (LGBTI) Victorians, people with a disability or people experiencing a mental illness. There are a broad range of settings and services that have a role in mental health promotion, including community settings, primary, secondary and tertiary health services and services providing support to children and families more generally.

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Concepts

Life satisfaction

Respondents were asked to summarise their perceptions of their overall life satisfaction by indicating whether, in general, they would say they were 'very satisfied', 'satisfied', 'dissatisfied', 'very dissatisfied' or 'do not know'. In this report, 'very satisfied' and 'satisfied' have been combined, as have 'dissatisfied' and 'very dissatisfied'.

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.

Psychological distress

The Kessler 10 Psychological Distress Scale was designed to monitor population prevalence and trends in non-specific psychological distress (Kessler et al. 2003). 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). In this chapter, high or very high are collapsed into one category (22–50).

Provenance

The question on life satisfaction was originally sourced from the Behavioural Risk Factor Surveillance System, an annual survey conducted across the United States by the Center for Disease Control and Prevention.

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

The K10 Psychological Distress Scale is used in population health surveys internationally and throughout Australia, including by the Australian Bureau of Statistics (Slade, Grove & Burgess 2011)

For more information

Australian Bureau of Statistics, *Australian Health Survey 2011–13*
http://www.abs.gov.au/websitedbs/d3310114.nsf/home/australian+health+survey

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Chapter 9: Deaths

Key messages

- Life expectancy at birth has continued to increase in Victoria to reach 84.7 years for women and 81.1 years for men.
- Standardised death rates vary across local government areas, with rural regions fairing worse than metropolitan areas.
- Cardiovascular disease remains the leading cause of death in Victoria.
- During 2015, 654 people died in Victoria due to intentional self-harm injury (suicide).
- Men were more likely than women to die from intentional self-harm (suicide) in Victoria during 2015.

Description

There are five measures included in this chapter:

1. Life expectancy: 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
2. Comparing age-standardised death rates, per 100,000 persons, between local government areas (LGA) in Victoria
3. Ten selected causes of death by two-character ICD-codes according to the largest number of deaths in Victoria
4. Perinatal mortality rates (PMR) describe late fetal death and early infant (neonatal) death (up to 28 days) among all births (per 1,000 births)
5. The number and rate (per 100,000 persons) of deaths in Victoria due to intentional self-harm (suicide)

Introduction

This chapter incorporates age- and/or condition-specific deaths and life expectancy measures. Mortality (death) 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.

Intentional self-harm mortality (suicide) refers to injury and poisoning cases where the injury causing death is purposefully self-inflicted. Intentional self-harm is a leading cause of death in Australia, with 3,027 deaths from suicide registered in 2015 (Australian Bureau of Statistics 2015a). This represents an age-standardised rate of 12.6 per 100,000 Australians, the highest recorded rate in the past 10 years (Australian Bureau of Statistics 2015a). Deaths in Australia due to suicide increase from the age of 15 years and are more common among males (Department of Health 2014).

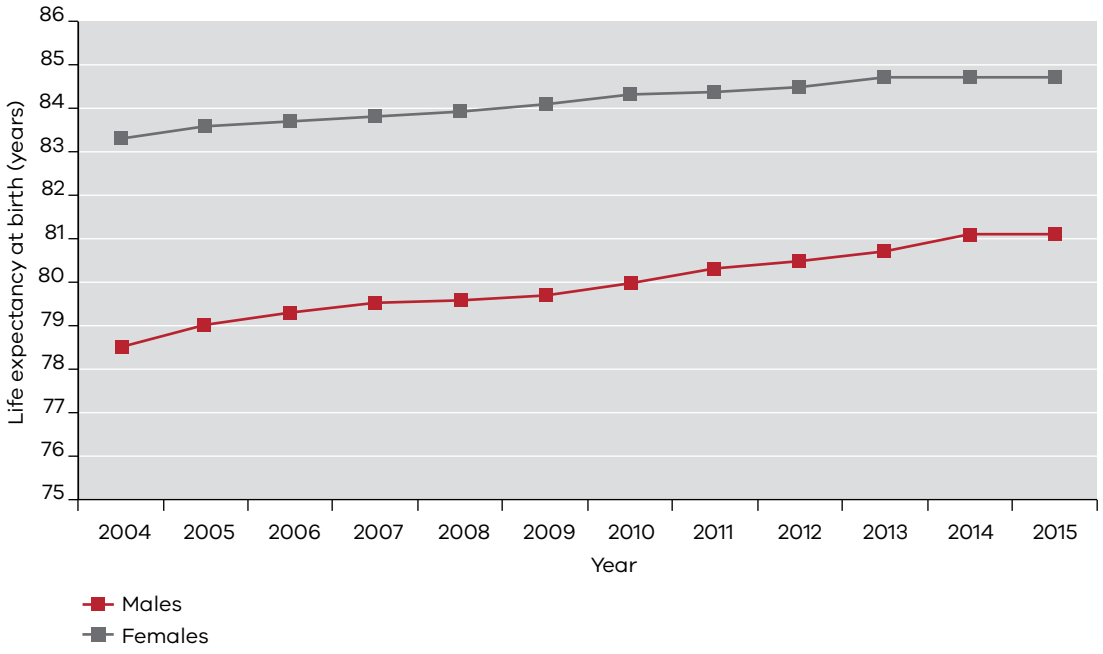
This chapter provides an overview of life expectancy, death rates, cause of death, perinatal mortality and suicide deaths in Victoria between 2006 and 2015. Data was sourced from the Australian Bureau of Statistics Catalogue No. 3303.0 'Causes of Death Australia', 2015.

Life expectancy

Life expectancy at birth

Life expectancy at birth in males and females has progressively increased over time (Figure 9.1, Table 9.1). The most recent estimate for Victoria (2013–15) is 84.7 years for women and 81.1 years for men. The difference in life expectancy at birth between males and females has progressively decreased to 3.6 years in 2015 (Australian Bureau of Statistics 2015b).

Figure 9.1: Life expectancy at birth, Victoria, 2004–15



Deaths by local government area

The average Victorian age-standardised death rate (ASDR) is 530 per 100,000 persons. Figure 9.2 and 9.3 show age-standardised death rates in Victoria in 2015, by local government area (LGA). The highest death rate was seen in Hindmarsh and Central Goldfields, with an ASDR of 700 per 100,000 persons. Both Hindmarsh and Central Goldfields are classified as rural Victoria (see classification page x of Victoria's population chapter). Manningham, an LGA classified as metropolitan Victoria, had the lowest ASDR, with 430 deaths per 100,000 persons observed in 2015. No data were available for Queenscliffe because there were too few deaths to produce a reliable ASDR estimate.

Figure 9.2: Age-standardised death rates in metropolitan Melbourne in 2015, by LGA

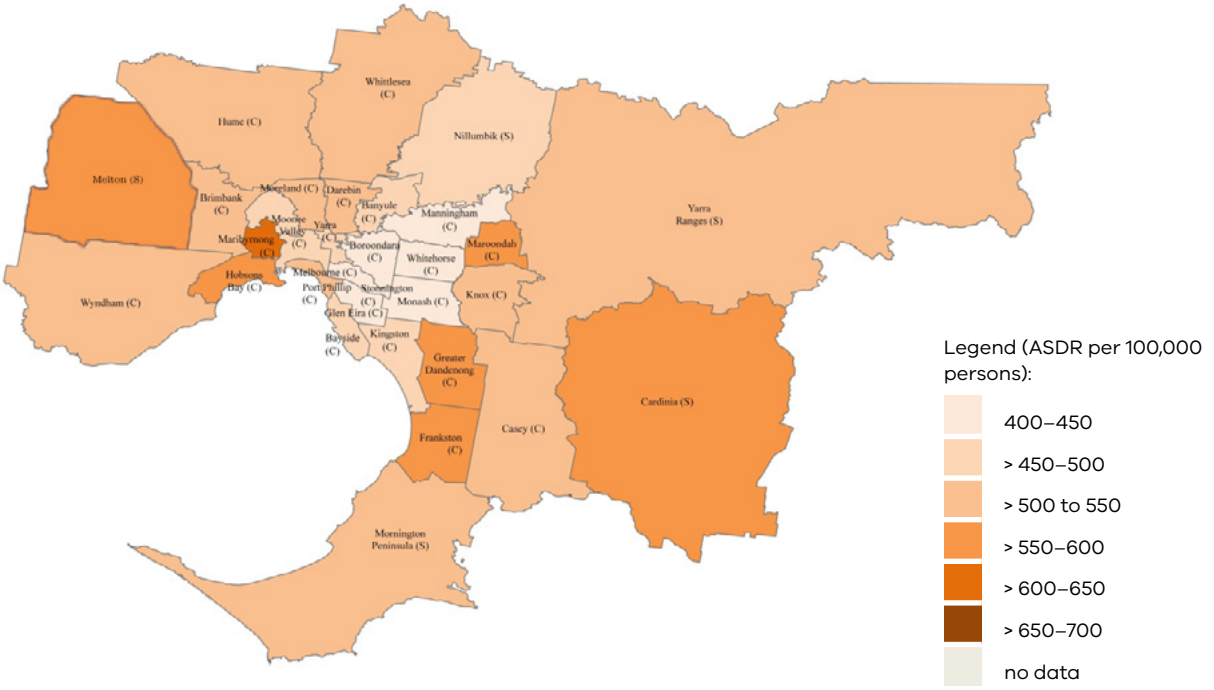
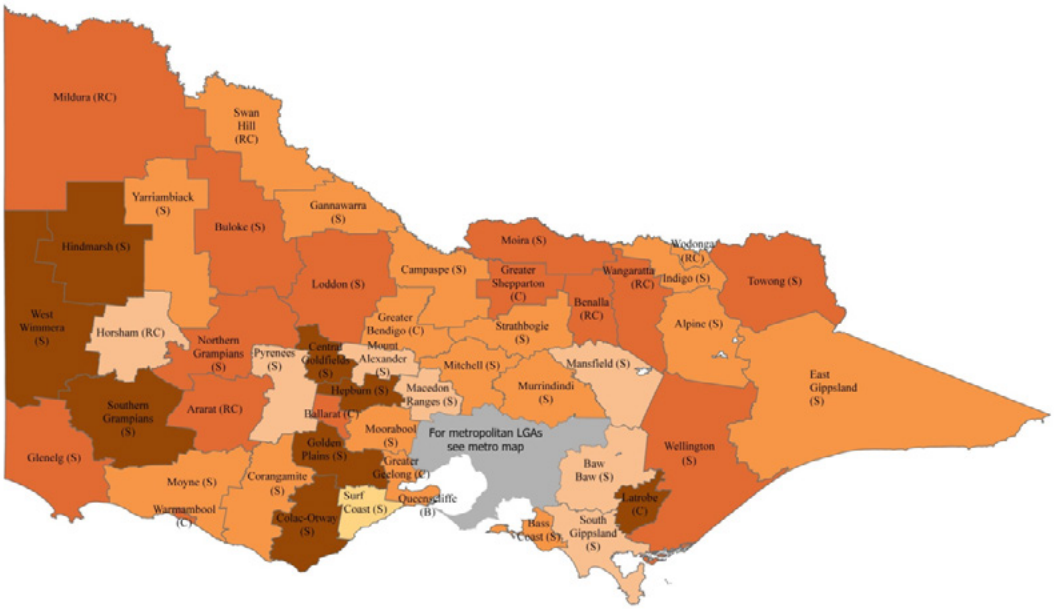


Figure 9.3: Age-standardised death rates in rural Victoria in 2015, by LGA



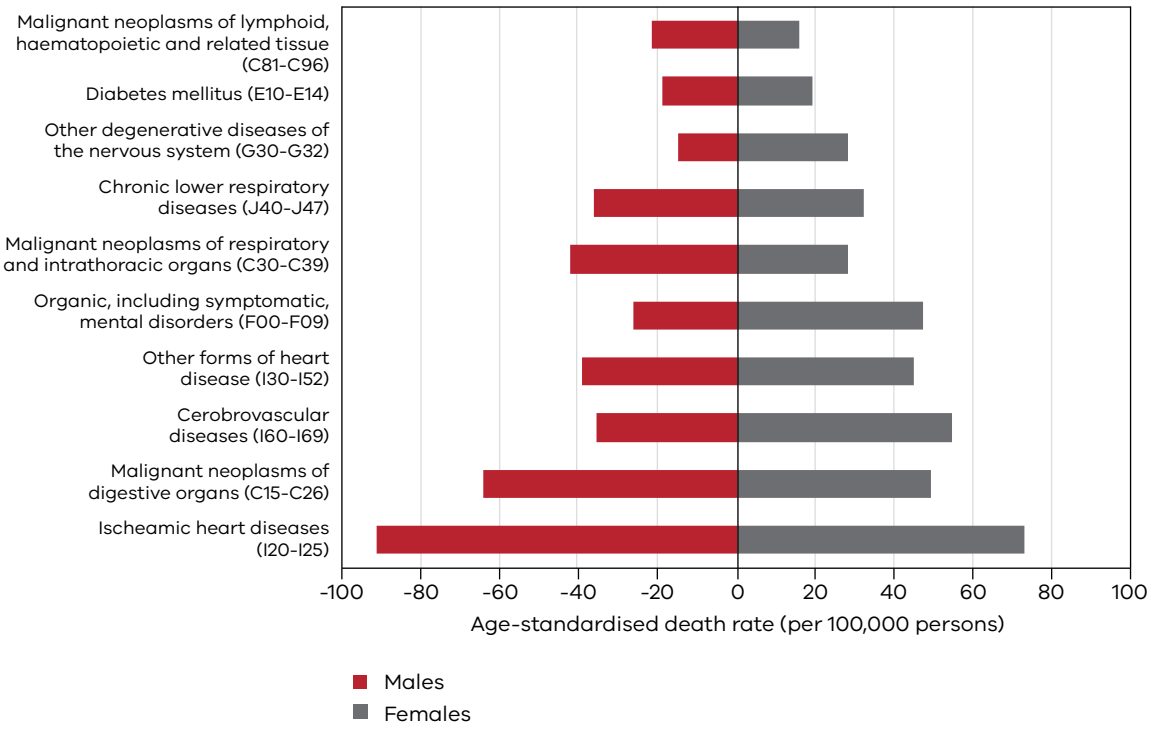
Leading causes of death

Leading causes of death are tabulated based on the underlying cause of death. The underlying cause of death is defined by the World Health Organization as the disease or external event that initiated the train of morbid events leading to death. In this chapter, we tabulate the top 10 leading causes of death as indicated by two-character International Classification of Disease (ICD) codes with the largest total number of deaths in Victoria.

There were 39,904 deaths in Victoria in 2015 (20,304 male and 19,870 female). The leading cause of death among males and females was ischaemic heart disease, accounting for 12.2 per cent of all deaths, with an age-standardised rate of 82 deaths per 100,000 persons (Table 9.2 and Figure 9.4). Ischaemic heart disease has remained Australia's leading cause of death over the past decade, although the standardised death rate has decreased over this period (Australian Bureau of Statistics 2015c).

Malignant neoplasms (cancer) of digestive organs were the second leading cause of death in 2015, with 3,372 deaths. This includes cancers of the oesophagus, stomach, bowel, gallbladder and pancreas and accounts for 8.5 per cent of all deaths in Victoria in 2015. Cerebrovascular diseases (stroke) (6.7 per cent), other forms of heart disease (6.3 per cent) and mental disorders (5.5 per cent) complete the top five leading causes of death and, in total, these causes accounted for more than one-third (39.1 per cent) of all deaths registered in 2015.

Figure 9.4: Top 10 leading causes of death, Victoria, 2015



Data source: Australian Bureau of Statistics 2015a

Perinatal mortality

The perinatal mortality rate (PMR) is an important health status indicator that addresses the two related issues of late stillbirth and early infant (neonatal) death. Many cases of perinatal mortality may have contributing factors, some of which may be avoidable (Figure 9.5). Victoria's perinatal mortality rates are 9.6 per 1,000 births (2014) and 9.0 per 1,000 births (2015). These are the lowest reported for Victoria in 15 years (CCOPMM 2017).

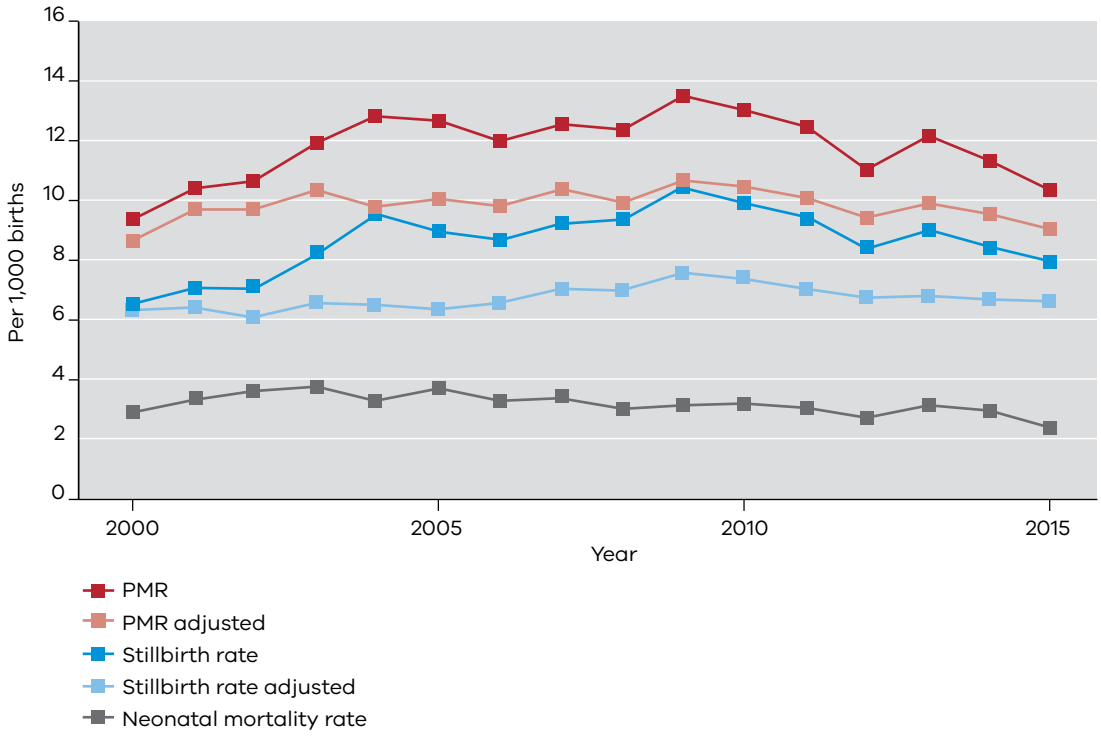
The rate of perinatal death is higher for:

- babies of Aboriginal women – the fall in the perinatal mortality rates for women of Aboriginal and Torres Strait Island status continued in 2014 and 2015 (down from 23.6 per 1,000 births in 2008–10 to 13.6 per 1,000 in 2013–15), but still remains higher than for women of non-Aboriginal and Torres Strait Island status (9.4 per 1,000 births). The risk of perinatal mortality in babies of Aboriginal women was 1.4 times greater than for babies of non-Aboriginal women)
- babies of women born in Sub-Saharan Africa, Oceania, southern and eastern Europe and southern and central Asia (1.5 times higher than the lowest rate, according to maternal place of birth) (data not shown)
- multiple pregnancies (three to five times higher) (data not shown)
- born preterm or with fetal growth restriction (data not shown).

The most common contributing factors for perinatal death between 2012 and 2015 were (CCOPMM 2017):

- inadequate intrapartum care, including inadequate fetal monitoring
- factors relating to the woman's pregnancy, family and social situation
- inadequate antenatal care.

Figure 9.5: Perinatal mortality rates, Victoria, 2000–15 (crude and adjusted)

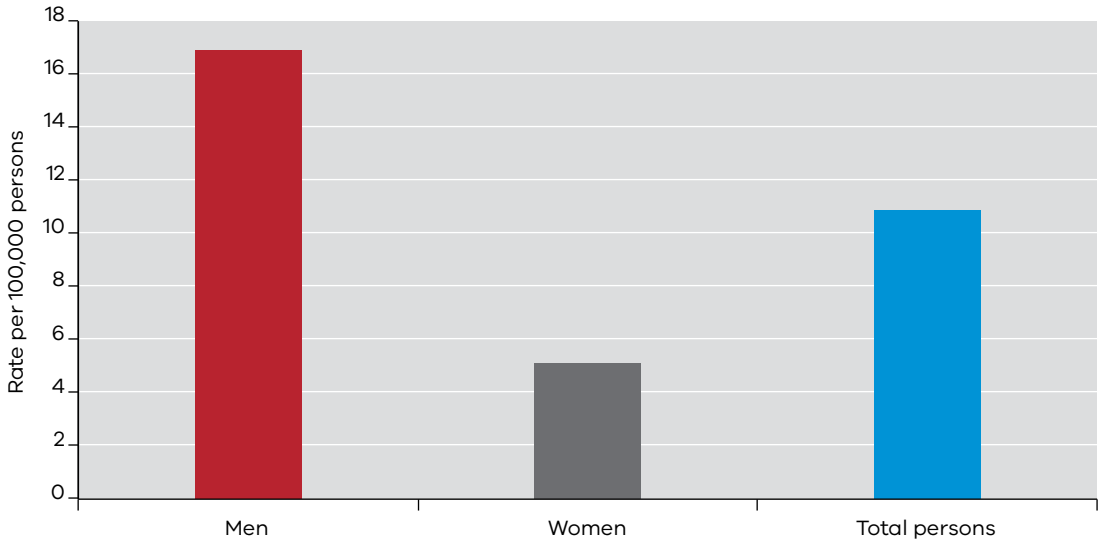


Data source: CCOPMM 2016

Intentional self-harm mortality (suicides)

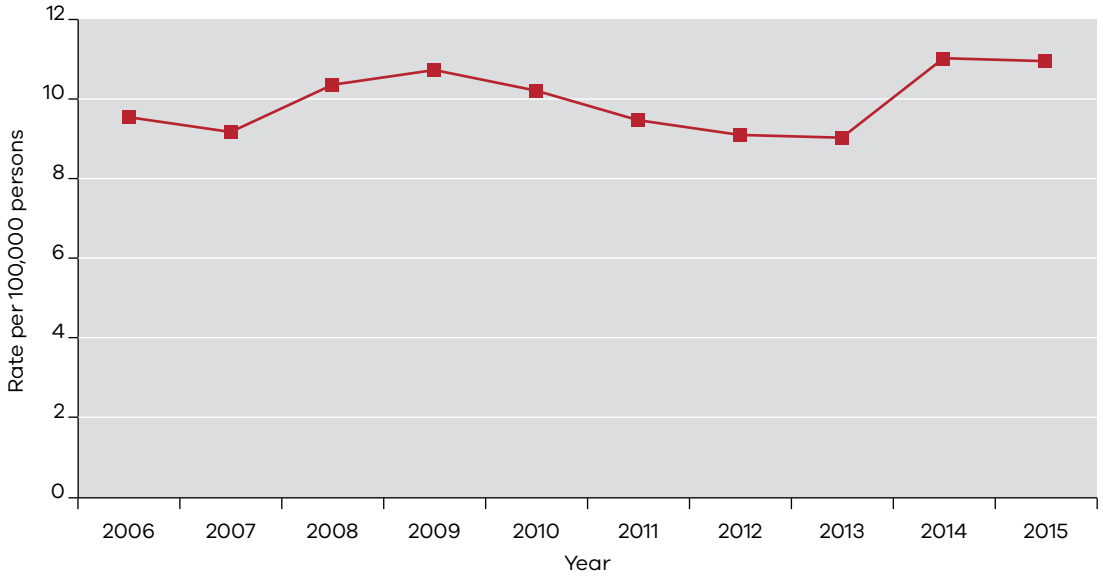
During 2015 there were 654 deaths in Victoria due to intentional self-harm (suicide). This represents a rate of 11.0 deaths per 100,000 persons. Deaths due to suicide were more common among males in Victoria during 2015. For males the death rate from suicide was 17.0 per 100,000 persons in 2015 compared with a rate of 5.1 deaths per 100,000 persons for females (Table 9.3 and Figure 9.6).

Figure 9.6: Rate of deaths due to intentional self-harm (suicide), Victoria, by sex, 2015



There was an increase over time in the number of deaths due to intentional self-harm (suicide) in Victoria from 485 deaths in 2006 to 654 deaths in 2015 (Figure 9.7 and Table 9.4). During this period there was an increase in the rate of deaths due to suicide from 9.6 per 100,000 people in 2006 to 11.0 per 100,000 people in 2015. This increase in the rate of suicide deaths is not statistically significant because death rates fluctuated during the 10-year period.

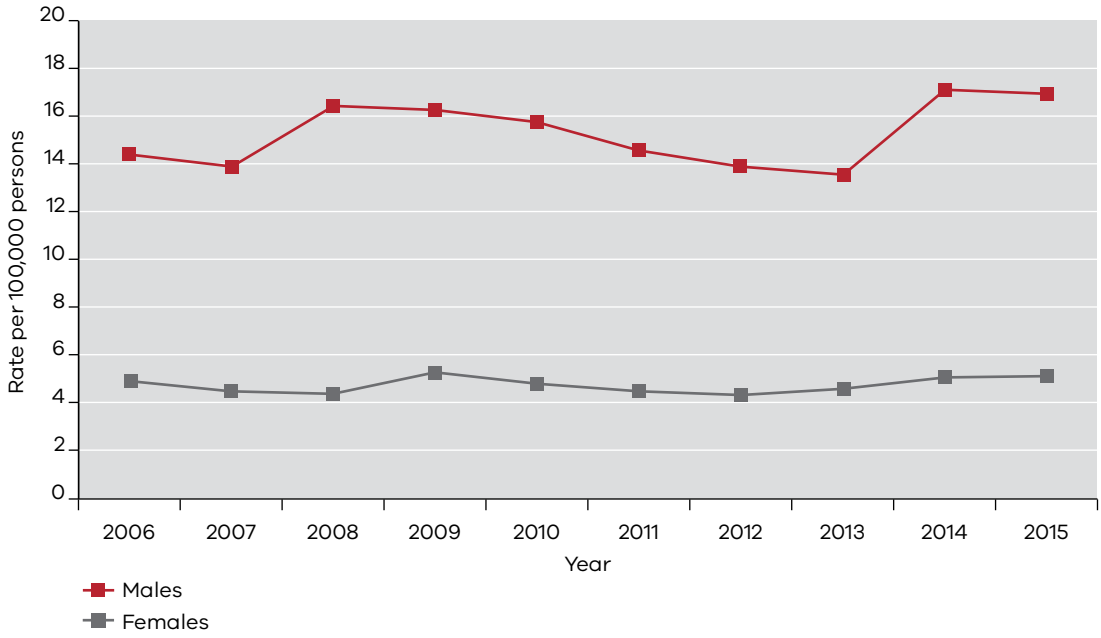
Figure 9.7: Rate of deaths due to intentional self-harm (suicide), Victoria, 2006–15



Between 2006 and 2015 the rate of deaths from intentional self-harm (suicide) showed a larger increase among males than females (Figure 9.8 and Table 9.5).

Between 2006 and 2015 the rate of suicide deaths among males in Victoria fluctuated between 14.4 per 100,000 persons (95% CI 12.9–15.9) and 17.0 (95% CI 15.6–18.6) per 100,000 persons. Suicide death rates for females have shown smaller changes over time, fluctuating between 4.3 (95% CI 4.1–5.8) per 100,000 persons and 5.2 (95% CI 3.8–5.4) per 100,000 persons for the 10-year period 2006–15 (Figure 9.8, Table 9.5).

Figure 9.8: Rate of deaths among males and females due to intentional self-harm (suicide), Victoria, 2006–15



Data are not age-standardised due to the lack of available unit record data.
Data source: Data obtained from 3303.0 *Causes of Death Australia, 2015,* Australian Bureau of Statistics.
Causes of death data for 2014 and 2015 are preliminary and subject to a revisions process.

Challenges and opportunities

There remain significant differences in mortality data across rural and metropolitan LGAs, with rural LGAs having significantly higher mortality rates than metropolitan LGAs.

Ischaemic heart disease continues to be the leading cause of death in Victoria. Many of the factors described in Chapter 6 of this report have a bearing on premature death, and continued efforts are underway to address these.

Importantly, there has been an increase in the number of deaths from intentional self-harm (suicide) among Victorian males since 2013. Although the overall rate of deaths did not increase incrementally during the 10 years from 2006 to 2015, suicide death rates in 2014 and 2015 were the highest recorded in the 10-year period, both among males and in the general population. Concerted efforts are needed to prevent further deaths from intentional self-harm (suicide) in Victoria, particularly among males.

The *National suicide prevention strategy* aims to reduce suicide and suicidal behaviour by taking a whole-of-community approach to suicide prevention to extend and enhance public understanding of suicide and its causes. The strategy also funds and evaluates initiatives aimed at enhancing support systems available to people, families and communities affected by suicide or suicidal behaviour (Department of Health 2014).

In addition, the *Victorian suicide prevention framework 2016–2025* commits to halving the suicide rate over the next ten years. Under this framework the Victorian Government will trial two different suicide prevention initiatives involving health services and local communities.

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Australian Bureau of Statistics 2015b, *Life tables, states, territories and Australia, 2013–2015*. Cat no. 3302.0.55.001 ABS Canberra, viewed 20 March 2017, <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3302.0.55.001>.

Australian Bureau of Statistics 2015c, *Life tables, states, territories and Australia, 2015*. Cat no. 3303.0. ABS, Canberra, viewed 23 March 2017 http://www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0

Department of Health 2014, *Evaluation of suicide prevention activities*, Australian Government, viewed 20 March 2017, <http://www.health.gov.au/internet/publications/publishing.nsf/Content/suicide-prevention-activities-evaluation>.

Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) 2017, *Victoria's mothers, babies and children 2014 and 2015*, State Government of Victoria, viewed 11 October 2017, <https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/consultative-councils/council-obstetric-paediatric-mortality/mothers-babies-children-report>.

Department of Health and Human Services 2016, Victorian suicide prevention framework 2016–25 State Government of Victoria, Melbourne.

Concepts

Age-standardised death rates enable the comparison of death rates over time between populations, particularly populations that have different age structures. The Australian Bureau of Statistics uses the direct method of age-standardisation because it allows for valid comparisons of mortality rates between different study populations and across time. This method was agreed to by the Australian Bureau of Statistics , Australian Institute of Health and Welfare and other stakeholders. For further information see:

Australian Institute of Health and Welfare (2011) *Principles on the use of direct age-standardisation in administrative data collections: for measuring the gap between Indigenous and non-Indigenous Australians*. Cat. no. CSI 12, AIHW, Canberra.

Death rates represent the number of deaths per 100,000 of estimated mid-year population for each year from 2006 to 2015, adjusted for age, where reported.

Provenance

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

Data sources

The number of deaths due to intentional self-harm (suicide) for each year was sourced from the Australian Bureau of Statistics, Catalogue No. 3303.0, *Causes of Death, Australia, 2015*, Table 11.6: Intentional self-harm by state and territory of usual residence and sex, 2006–15.

Case selection of suicide deaths by the Australian Bureau of Statistics includes deaths defined as having an underlying cause of death with an ICD-10-AM (International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification) code in the range X60–X84 and Y87.0. These are detailed in Chapter XX (External causes of morbidity and mortality) of the ICD-10-AM. Case selection is based on Victoria as the state of usual residence. Cases of undetermined intent are excluded.

Population data for the calculation of death rates were obtained from the Australian Bureau of Statistics, Catalogue No. 3101.0, Australian Demographic Statistics, Table 52: Estimated resident population by single year of age, Victoria.

Limitations

All causes of death data from 2006 onwards are subject to a revisions process – once data for a reference year are 'final', they are no longer revised. Affected data in this report are 2006–12 (final), 2013 (revised) and 2014–15 (preliminary). See Explanatory Notes 52–55 and 'A more timely annual collection: changes to ABS processes (technical note)' in *Causes of death, Australia, 2015* (Cat. no. 3303.0). See also 'Causes of death revisions, 2012 and 2013 (technical note)' in *Causes of death, Australia, 2014* (Cat. no. 3303.0).

Care needs to be taken in interpreting figures relating to suicide due to limitations of data. See *Technical note: ABS coding of suicide deaths* for further information: http://www.abs.gov.au/ausstats/abs@.nsf/Products/3303.0~2007~Technical+Note~ABS+Coding+of+Suicide+Deaths+(Technical+Note)

For more information

Australian Bureau of Statistics 2015, *Life tables, states, territories and Australia, 2013–2015*
http://www.abs.gov.au/ausstats/abs@.nsf/mf/3302.0.55.001

Australian Bureau of Statistics 2015, *Life tables, states, territories and Australia*
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http://www.aihw.gov.au/mortality/life_expectancy/index.cfm

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https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/consultative-councils/council-obstetric-paediatric-mortality/mothers-babies-children-report

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Department of Health, *Evaluation of suicide prevention activities* http://www.health.gov.au/internet/publications/publishing.nsf/Content/suicide-prevention-activities-evaluation

Department of Health and Human Services, *Victorian suicide prevention framework 2016–25*
www.mentalhealthplan.vic.gov.au

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Chapter 10: Health conditions

This chapter is divided into three sections. Chapter 10.1 describes a number of important non-communicable diseases and reflects on key government policies to tackle them. Chapter 10.2 focuses on communicable diseases and the work of the Victorian Government to prevent and control the spread of infection. Finally, Chapter 10.3 addresses oral health, with a particular focus on oral health in childhood.

10.1: Non-communicable diseases

Key messages

- In 2015, 31,628 Victorians were diagnosed with cancer.
- At least one in three men and one in four women will develop a cancer by the age of 75.
- The three most common cancers in Victoria are prostate, breast and bowel, collectively accounting for almost 40 per cent of all new cancers.
- In 2014 the lifetime prevalence of heart disease in Victorians was 7.2 per cent, with a higher prevalence observed in males compared with females at 8.9 versus 5.6 per cent, respectively
- In 2014 the lifetime prevalence of stroke in Victorians was 2.4 per cent.
- The prevalence of stroke increases with increasing age.
- In 2014 the prevalence of doctor-diagnosed diabetes among Victorian adults aged 18 years or older was 6.1 per cent, which was a significant increase from 4.0 per cent in 2003.
- In 2014, 19.8 and 5.2 per cent of Victorian adults reported that they were living with arthritis and osteoporosis, respectively.
- Females were more likely to report having arthritis and osteoporosis compared with males.
- In 2014, 24.2 per cent of Victorian adults reported ever being diagnosed with depression or anxiety by a doctor. This was significantly higher in females than in males at 30.1 versus 18.1 per cent, respectively.
- The prevalence of self-reported doctor-diagnosed depression or anxiety increased significantly for both males and females between 2003 and 2014.

Description

Chapter 10.1 (non-communicable diseases) reports on measures in six areas:

1. Cancer incidence – the number of new cancer diagnoses in a defined population over a specific time period, expressed as a rate per 100,000 people – for five leading cancers.
2. The proportion of adults aged 18 years or older who have ever been diagnosed with heart disease by a doctor.
3. The proportion of adults aged 18 years or older who have ever been diagnosed with stroke by a doctor
4. The proportion of adults aged 18 years or older who have ever been diagnosed with diabetes by a doctor
5. The proportion of adults aged 18 years or older who have ever been diagnosed with arthritis and osteoporosis by a doctor
6. The proportion of adults aged 18 years or older who have ever been diagnosed with depression or anxiety by a doctor

Introduction

Cancer

Cancer is a leading burden of disease in Victoria, with 87 new diagnoses per day in 2015 (Thursfield & Farrugia 2016). It is estimated that at least one-third of cancer cases are preventable, and that potentially more than half of all cancers could be avoided through a combination of healthy lifestyle and regular screening (Cancer Australia 2015).

Cancer is a generic term for a large group of diseases characterised by the growth of abnormal cells beyond their usual boundaries that can then invade adjoining parts of the body and/or spread to other organs (World Health Organization 2016). Cancers are commonly classified by the location in the body in which the disease began.

Heart disease

Heart disease remains one of the leading causes of death worldwide. In 2011 ischaemic heart disease, which includes angina, blocked arteries of the heart and heart attacks, was the leading cause of death for all Australians, representing 14.6 per cent of all deaths registered in 2011 (Australian Bureau of Statistics 2013). Prevalence increases with age, and the major risk factors associated with the disease include tobacco smoking, poor nutrition, overweight/obesity, insufficient physical activity, diabetes, high blood pressure and high cholesterol (AIHW 2014). The prevalence of heart disease provides insights into the level of resources required for prevention, health promotion and management of cardiovascular disease in the population.

Stroke

Stroke occurs when an artery supplying blood to the brain suddenly becomes blocked (ischaemic stroke) or bleeds (haemorrhagic stroke). Often, this causes paralysis of the body normally controlled by that area of the brain, speech problems and other symptoms (AIHW 2014). Stroke is a major contributor to the burden of disease in Australia (AIHW 2014). In many, but not all cases, stroke is preventable because many of its risks factors, including high blood pressure, physical inactivity, poor nutrition including low vegetable intake, overweight or obesity and tobacco smoking, are modifiable (AIHW 2014). The prevalence of stroke provides insights into the level of resources required for prevention, health promotion and management of cardiovascular disease in the population.

Diabetes

Diabetes mellitus, referred to here as diabetes, is a common chronic condition characterised by high blood glucose (sugar) levels. The two main types of diabetes are type 1 (insulin-dependent) and type 2 diabetes (non-insulin dependent).

Type 1 diabetes is an autoimmune disease in which the body's immune system destroys the insulin-producing cells of the pancreas. People with type 1 diabetes require replacement insulin therapy for life. Type 1 diabetes accounts for approximately 10–15 per cent of all diabetes cases (Diabetes Australia 2017).

Type 2 diabetes is the most common form of diabetes, accounting for 85–90 per cent of all cases of diabetes (Diabetes Australia 2017). Type 2 diabetes is caused by insufficient production of insulin and/or the body becoming resistant to insulin being produced by the pancreas. In many cases, lifestyle modifications including appropriate diet and exercise can help prevent and control type 2 diabetes. More severe cases require treatment with blood glucose-lowering medication, insulin injections or a combination of both. Left untreated, diabetes can cause kidney disease, eye and nerve damage, heart disease, stroke, limb amputation and impotence.

Musculoskeletal conditions

Arthritis is a musculoskeletal condition in which a person's joints become inflamed, which may result in pain, stiffness, disability and deformity. The symptoms often have a significant impact on everyday life and the ability to carry out basic daily tasks such as walking, driving a car and preparing food (Arthritis Australia 2014). While there are about 100 forms of arthritis, the three most significant – osteoarthritis, rheumatoid arthritis and gout – account for more than 95 per cent of cases in Australia (Arthritis Australia 2014).

Osteoporosis is a condition of the musculoskeletal system in which a person's bones become fragile and brittle, leading to an increased risk of fractures. Fractures can lead to chronic pain, disability and loss of independence (Australian Bureau of Statistics 2013).

Mental health

Mental health includes emotional, psychological and social wellbeing, and it affects how we think, feel and act. It also helps determine how we handle stress, relate to others and make choices. Wellbeing, or positive mental health, improves our quality of life in many ways, including: better physical health; faster recovery from illness; fewer limitations in daily life; higher educational attainment; greater likelihood of employment and earnings; and better relationships.

The Victorian Population Health Survey collects selected data on mental disorders and primarily focuses on the affective or mood disorders of depression and anxiety. These are the most common mental disorders, with depression being the leading cause of disability in both males and females worldwide and is a risk factor for suicide (World Health Organization 2017) .

Depression is associated with poorer health outcomes in those with physical disease, as well as significant healthcare needs, school problems, loss of work and earlier mortality. Victoria has the highest age-standardised rate of non-fatal burden of disease for mental and substance use disorders in Australia (AIHW 2016). Females experience higher rates of anxiety and depression than males but are also more likely to seek assistance, and have a significantly lower rate of suicide. While depression and anxiety are, for the most part, highly treatable disorders, continuing social stigma about mental illness often prevents people from seeking the help they need.

In this report we present data on the prevalence of heart disease, stroke, diabetes, arthritis, depression and anxiety among Victorian adults, by age and sex, and over time. These data are derived from the 2014 Victorian Population Health Survey (Department of Health and Human Services 2016). Data on the incidence of cancer(s) are derived from the Cancer Council Victoria report *Cancer in Victoria, statistics and trends 2015* (Thursfield & Farrugia 2016), supplemented with additional data provided by the Victorian Cancer Registry.

Cancer

Cancer primarily affects the older population – the average age at diagnosis is 67, with almost 60 per cent of tumours occurring in those older than 65 years. So as our population grows and ages, the burden of cancer will continue to grow. Less than 1 per cent of tumours occur in people younger than 15 years. In 2015, more men than women developed cancer: 116 males for every 100 females. The leading cancer types in males are prostate, bowel, melanoma and lung, whereas the leading cancer types in females are breast, bowel, melanoma and lung. Cancer incidence in males was predominantly associated with prostate and tobacco-related cancers (Thursfield & Farrugia 2016).

Prostate cancer

Prostate cancer is the most common cancer in Victoria, representing 26 per cent of all cancers diagnosed in Victorian men and 14 per cent of all cancers (Figure 10.1, Figure 10.2 and Table 10.1). The causes of prostate cancer are not fully understood, and there is currently no clear prevention strategy. Risk factors include increasing age, family history of prostate cancer, certain dietary factors and ethnicity.

Figure 10.1: Incidence rate of prostate cancer per 100,000 Victorian men in 2014

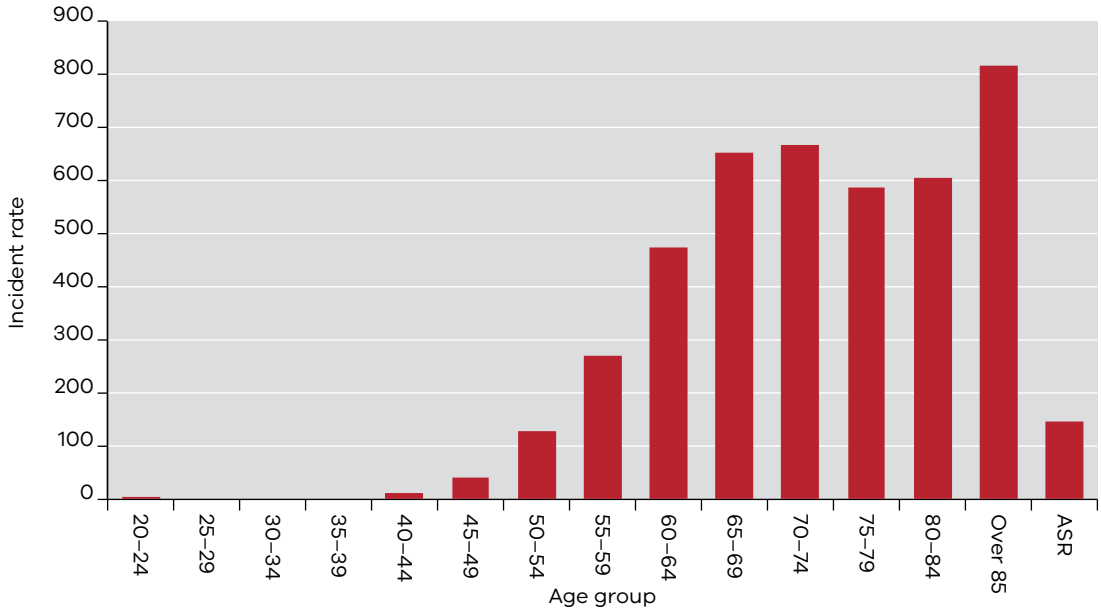
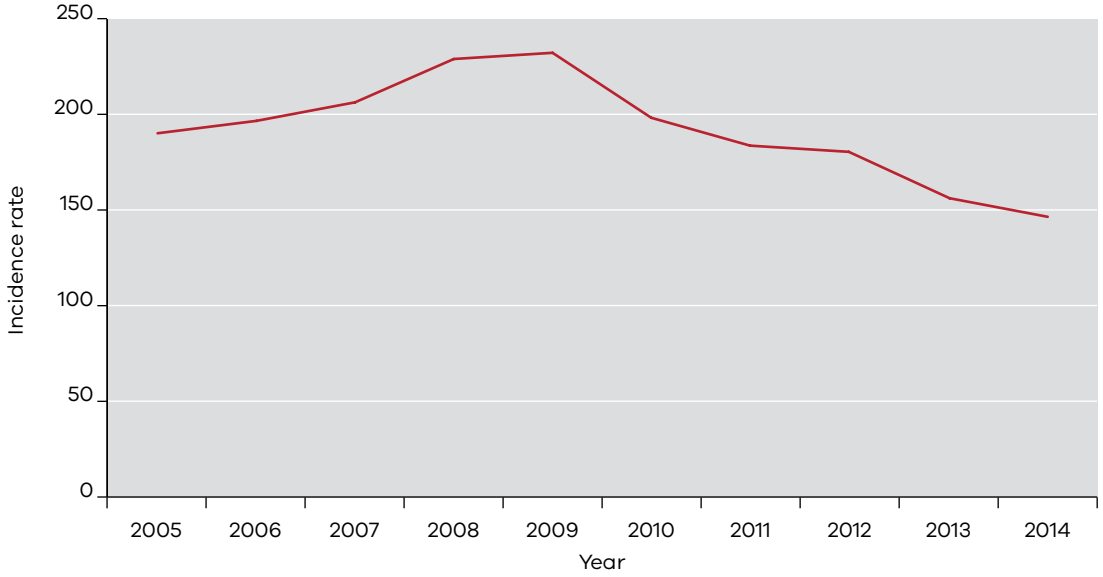


Figure 10.2: Age-standardised incidence rate of prostate cancer per 100,000 Victorian men, 2005–14



Breast cancer

Breast cancer is the second most common cancer in Victoria, representing 29 per cent of all cancers diagnosed in women and 13.7 per cent of all cancers (Figure 10.3 and Table 10.2). Breast cancer is uncommon in males, with less than one in 100 cases of breast cancer occurring in men (AIHW 2014). Risk factors in women include increasing age, family history of breast cancer, obesity and high alcohol consumption. The main risk factors associated with breast cancer in men are genetic factors and conditions involving high levels of oestrogen (AIHW 2014). Breast cancer incidence rates continue to increase slowly (Figure 10.4 and Table 10.2), after a period of more rapid increase (1990–1995), largely due to mammographic screening (Thursfield & Farrugia 2016). In the 20 years since 1994, the age-standardised rate of invasive breast cancer in Victorian women only increased by 0.1 per cent per annum (Thursfield & Farrugia 2016).

Figure 10.3: Incidence rate of breast cancer per 100,000 Victorian women in 2014

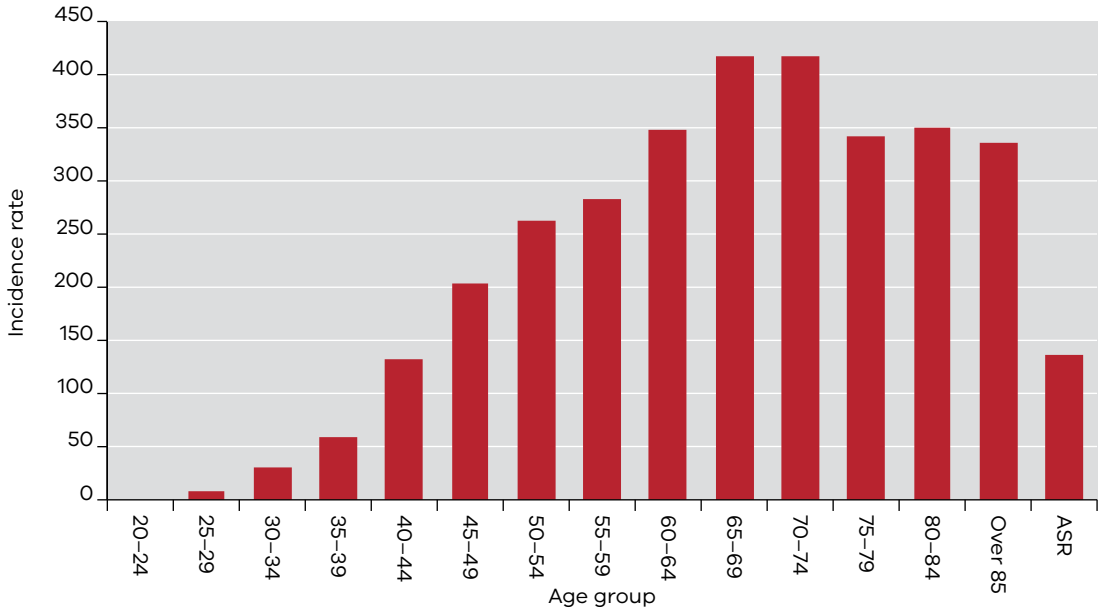
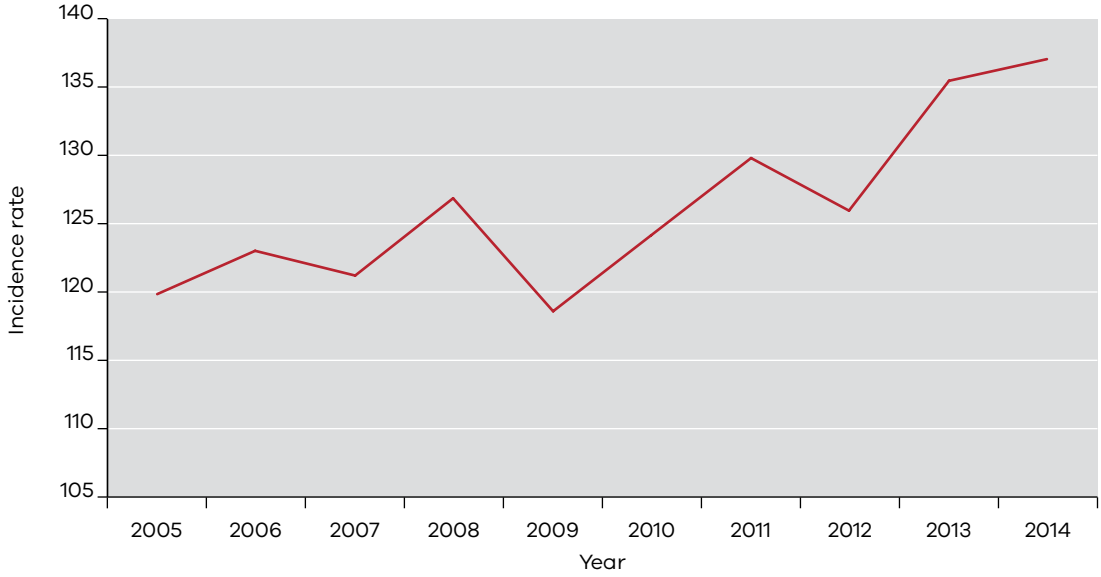


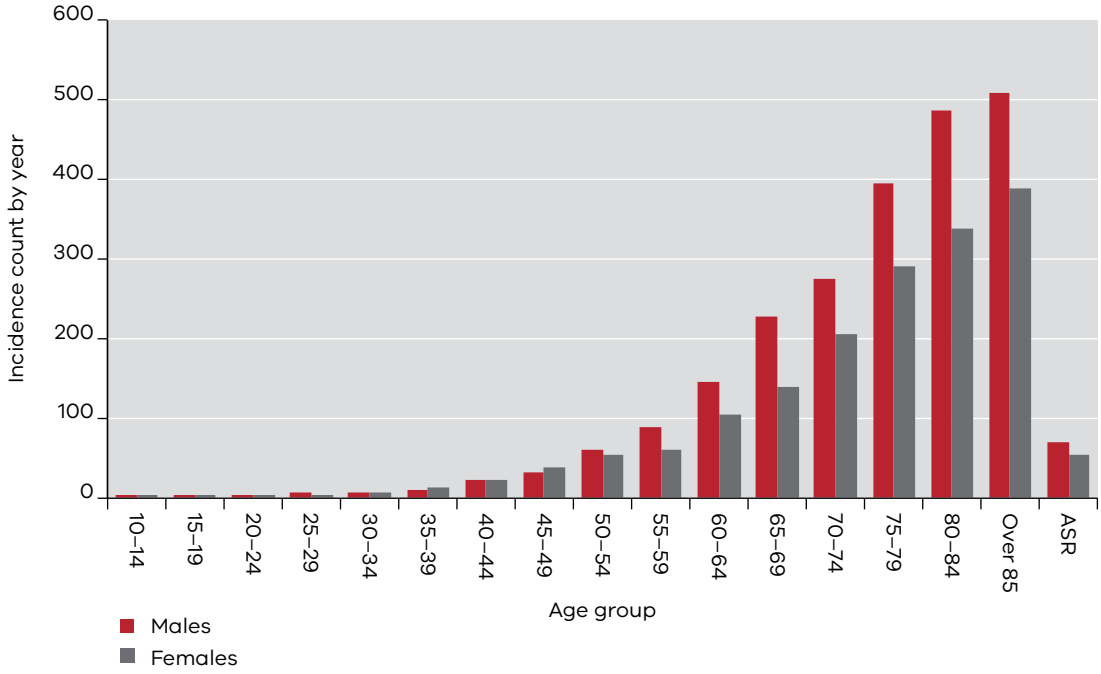
Figure 10.4: Age-standardised incidence rate of breast cancer per 100,000 Victorian women, 2005–14



Bowel cancer

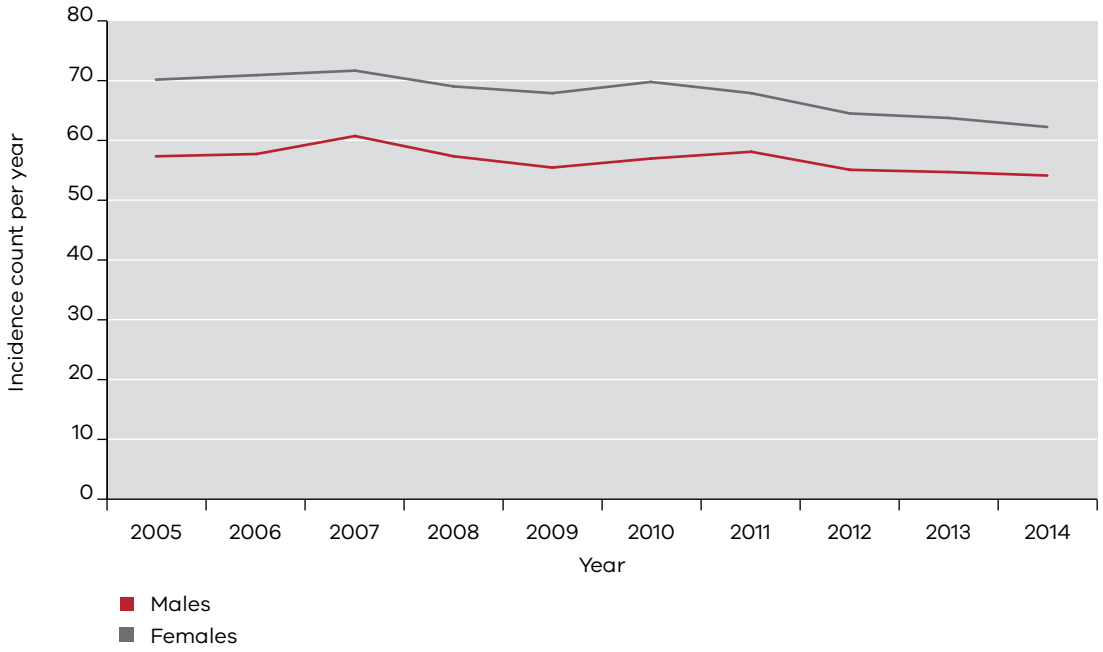
Bowel cancer (also referred to as colorectal cancer) accounted for 12 per cent of all cancers diagnosed in Victoria in 2015. Bowel cancer is most common in the population from age 50 years, but it can occur at any age (Figure 10.5, Table 10.3 and Table 10.4). The exact cause of bowel cancer is not known; however, some factors increase the chance of developing it. Risk factors include increasing age, family history, poor diet and lifestyle factors. The incidence of bowel cancer is higher in males than females from age 50 years; 55 per cent of Victorians diagnosed with bowel cancer in 2015 were men (Thursfield & Farrugia 2016).

Figure 10.5: Incidence rate of bowel cancer per 100,000 Victorians in 2014



Overall, bowel cancer incidence rates have been declining over the past 10 years or more as shown in Figure 10.6. However, incidence in those aged under 50 years has been increasing in recent years (Tables 10.3 and 10.4.) This is partly due to the increasing incidental diagnosis of carcinoid tumours of the appendix, which are the eighth most common cancer in those aged 10–29 years (Thursfield & Farrugia 2016).

Figure 10.6: Age-standardised incidence rate of bowel cancer per 100,000 Victorians, 2005–14



Lung cancer

Lung cancer is an aggressive form of cancer originating in the trachea, windpipe and lung. Lung cancer was the fifth most common cancer diagnosed in Victoria in 2015 (2,680 new cases) and remains the leading cause of cancer death (Figure 10.7). Tobacco smoking is the major cause of lung cancer, although some people diagnosed with lung cancer have never smoked. Occupational exposure to tobacco smoke, asbestos, radon, hydrocarbons and metals (such as chromium and nickel) are also associated with lung cancer.

Incidence rates continue to decline for males, and rates for females appear to have reached a plateau as shown in Figure 10.8, Table 10.5 and Table 10.6 (Thursfield & Farrugia 2016). The trend in incidence in females suggests a similar pattern to trends observed in lung cancer in males where rapid decreases in incidence rates followed a peak in the early 1980s, 40 years after smoking prevalence in males peaked. With smoking prevalence among women peaking in the early 1980s, it is possible that a decline in female lung cancer rates may follow the observed plateau (Thursfield, Giles & Farrugia 2014).

Figure 10.7: Incidence rate of lung cancer per 100,000 Victorians in 2014

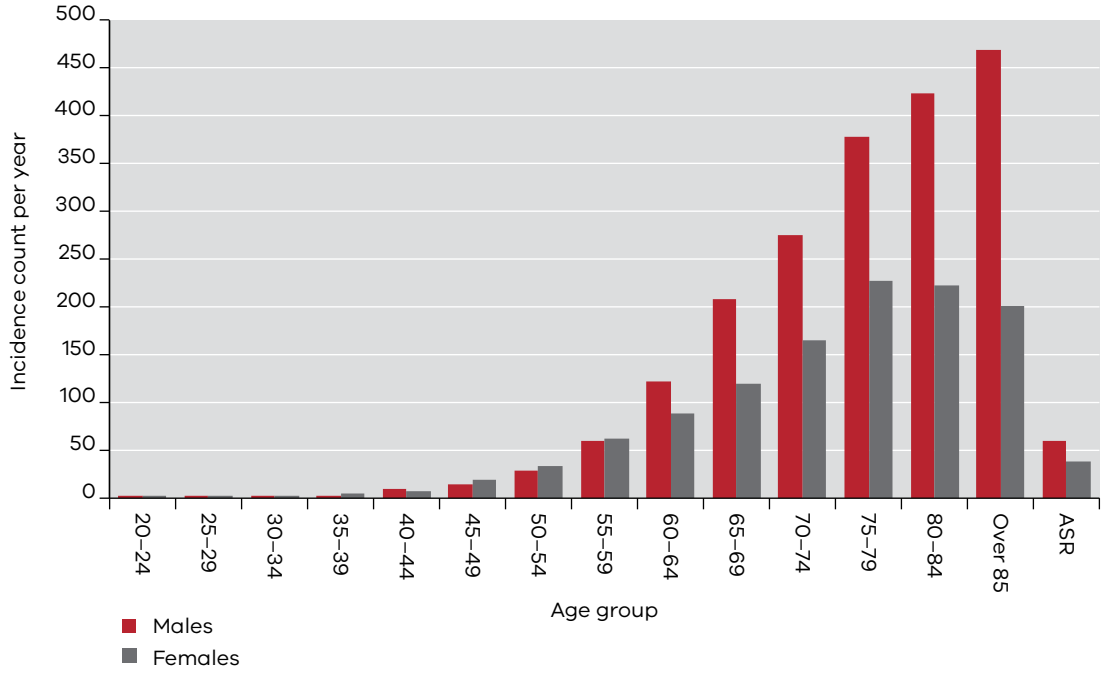
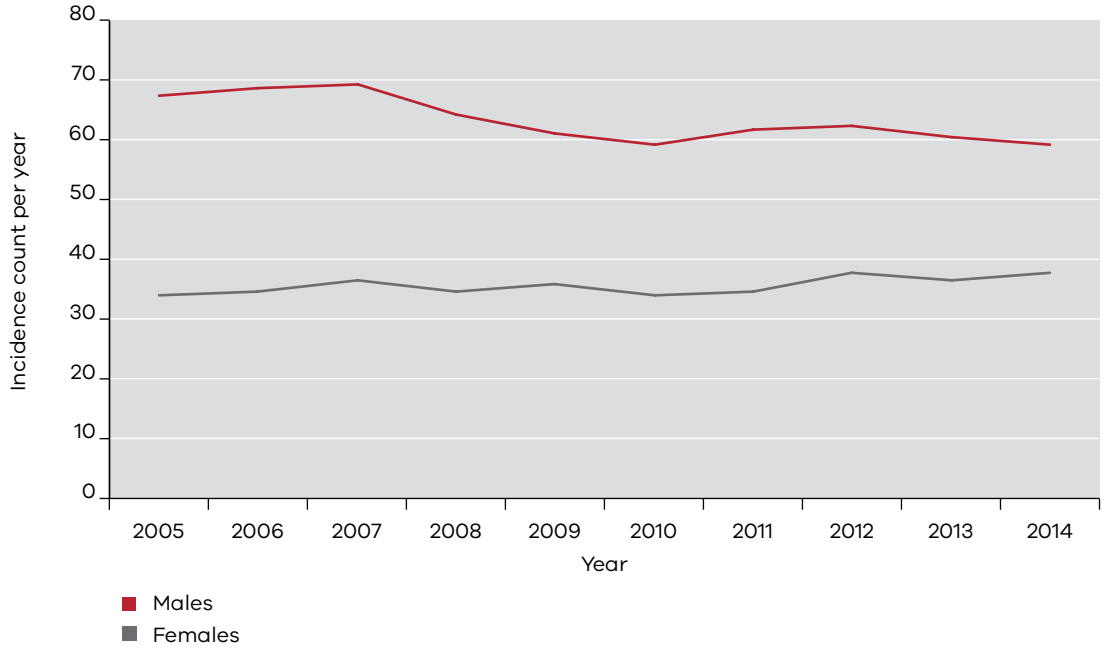


Figure 10.8: Age-standardised incidence rate of lung cancer per 100,000 Victorians, 2005–14



Cervical cancer

Cervical cancer accounts for approximately 1.5 per cent of all cancers diagnosed in women, with 177 new cases diagnosed in Victoria in 2015 (Figure 10.9 and Figure 10.10). Most cases of cervical cancer are caused by an infection called human papillomavirus (HPV). The National HPV Vaccination Program was introduced in 2007 in response to extensive evidence that vaccinating young women with the HPV vaccination was likely to significantly reduce cervical cancer diagnoses and deaths from the disease. The HPV vaccine provides protection against two strains of HPV that are known to cause 70–80 per cent of cervical cancers. As cervical cancer usually develops over 10 or more years, the role of the vaccine in reducing cervical cancer will become more evident over time.

The incidence of cervical cancer in Australia has decreased significantly since a national screening program was introduced in the 1990s (Table 10.7).

Figure 10.9: Incidence rate of cervical cancer per 100,000 Victorian women in 2014

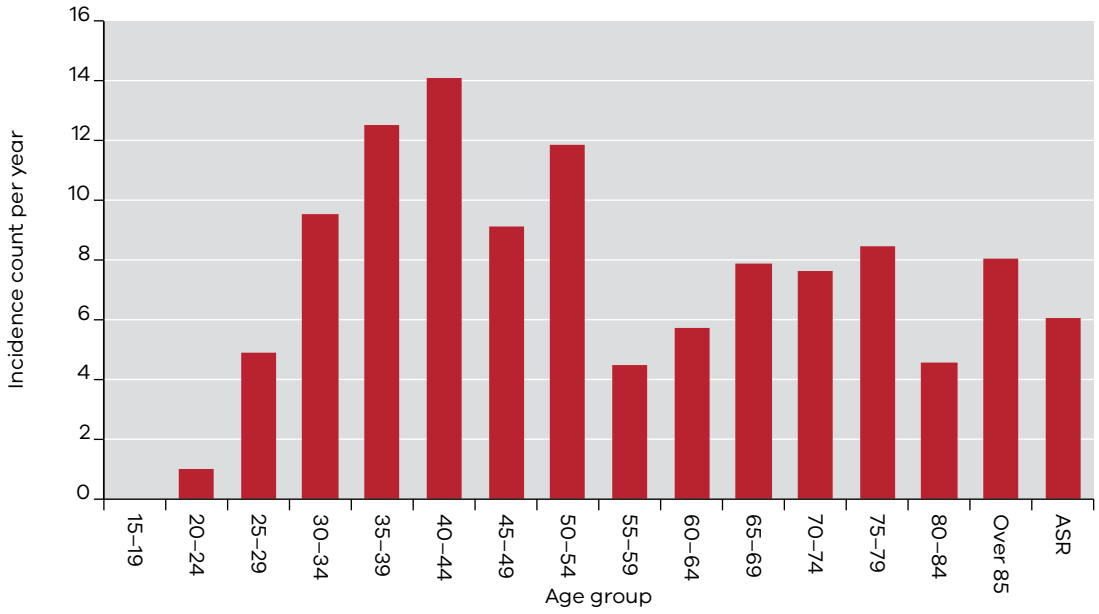
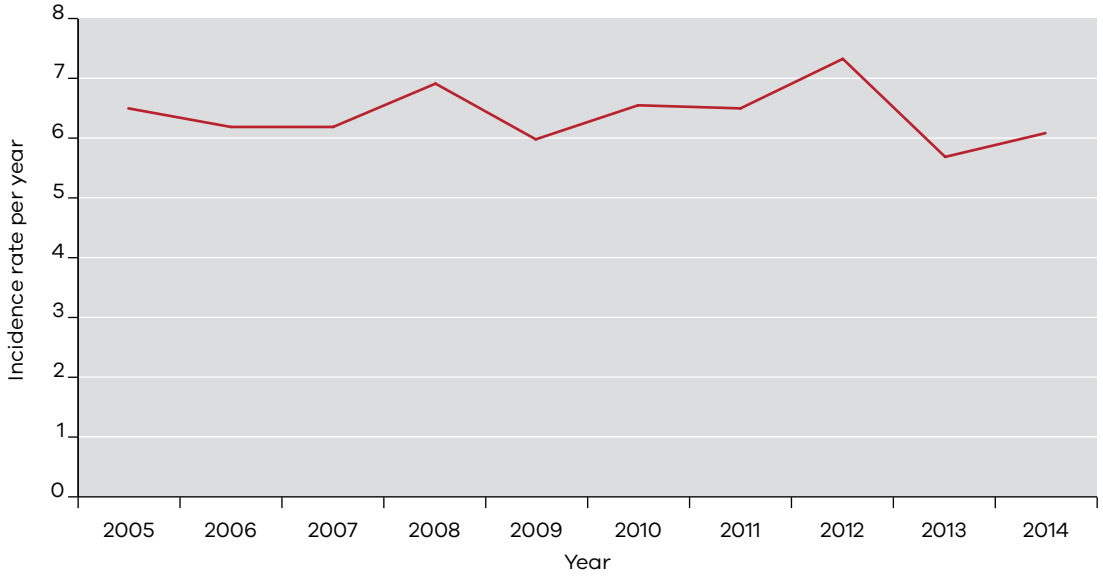


Figure 10.10: Age-standardised incidence rate of cervical cancer per 100,000 Victorian women, 2005–14

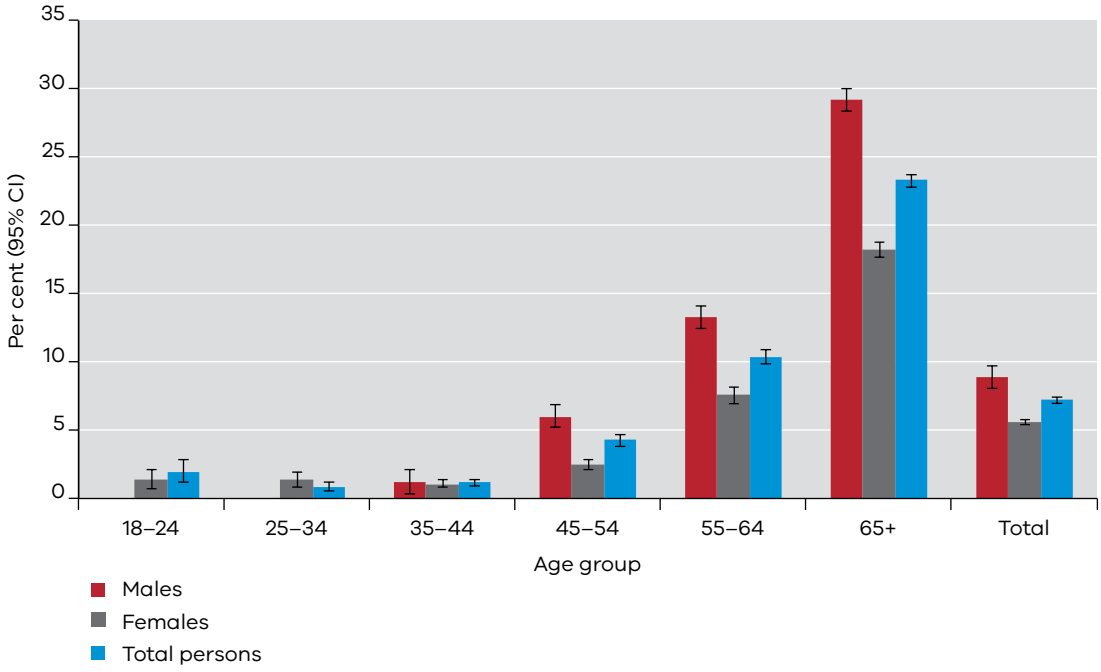


Heart disease

Overall, in 2014, the lifetime prevalence of heart disease in Victorians was 7.2 per cent. A significantly higher prevalence was observed in men compared with women at 8.9 versus 5.6 per cent, respectively.

There was also an age-related increase in the prevalence of heart disease, with men and women 55 years or older having significantly higher prevalence compared with all Victorian men and women (Figure 10.11 and Table 10.8).

Figure 10.11: Prevalence of doctor-diagnosed heart disease, by sex and age group, Victoria, 2014



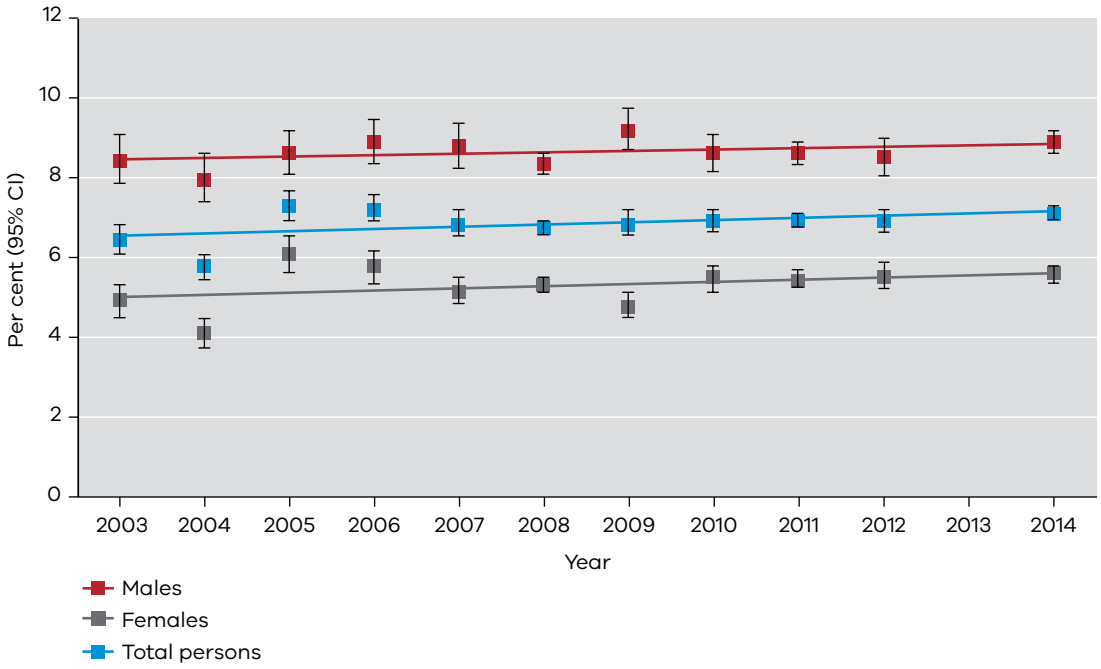
Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

The prevalence of doctor-diagnosed heart disease remained similar in Victoria from 2003 to 2014 in men, women and the total population (Figure 10.12 and Table 10.9).

Figure 10.12: Prevalence of doctor-diagnosed heart disease in Victorian adults, 2003–14



Data are age-standardised to the 2011 Victorian population.

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

Data was not collected in 2013.

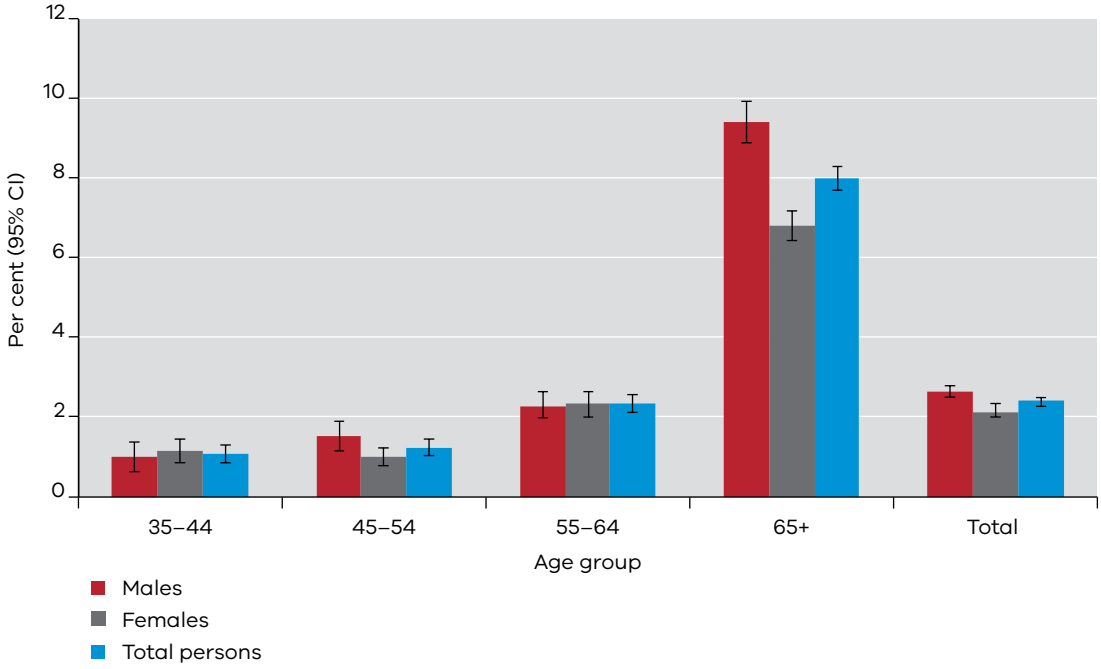
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: Victorian Population Health Surveys 2003–2014

Stroke

Overall, the lifetime prevalence of stroke in Victorians was 2.4 per cent in 2014. The prevalence of stroke increased with age. Stroke was rarely reported in adults aged 18–34 (data not shown), while adults aged 65 years or older were more likely than those in younger age groups to report having ever had a stroke. Overall, the prevalence of stroke was not different between the sexes. However, among adults aged 65 years or older there was a higher prevalence of stroke in males compared with females (Figure 10.13 and Table 10.10).

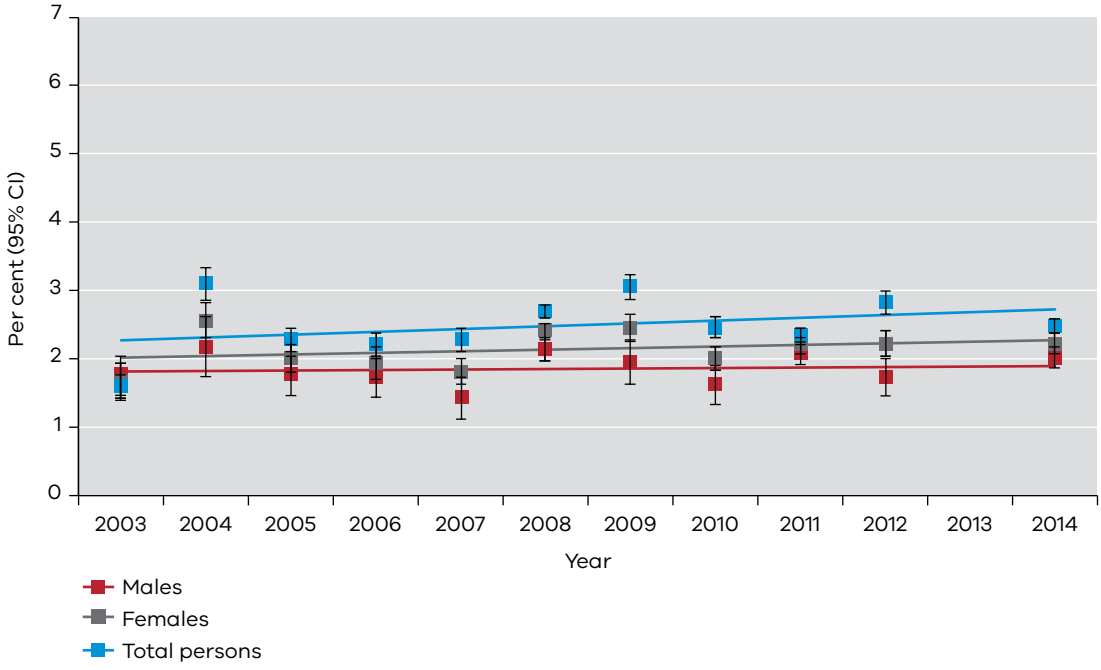
Figure 10.13: Prevalence of doctor-diagnosed stroke, by sex and age group, Victoria, 2014



Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

The prevalence of doctor-diagnosed stroke remained similar in Victoria from 2003 to 2014 in males, females and the total population (Figure 10.14 and Table 10.11).

Figure 10.14: Prevalence of doctor-diagnosed stroke in Victorian adults, 2003–14

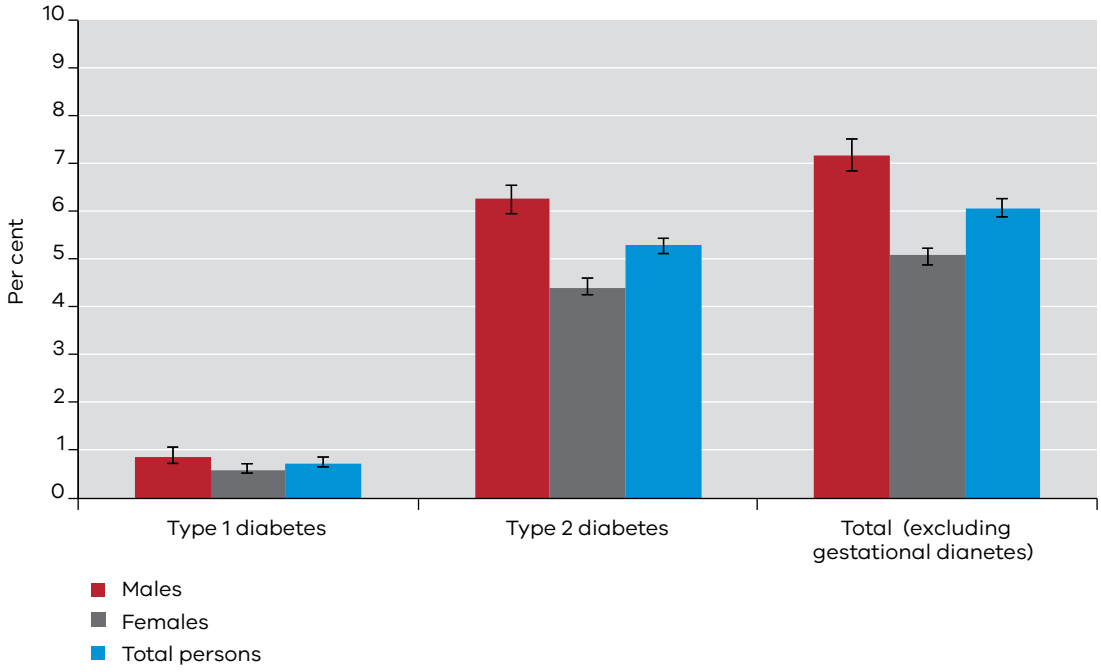


Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Data was not collected in 2013.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2003–2014

Diabetes

In 2014 the prevalence of doctor-diagnosed diabetes among Victorian adults aged 18 years or older was 6.1 per cent (Figure 10.15 and Table 10.12). The prevalence of type 1 and type 2 diabetes in Victorian adults was 0.8 and 5.2 per cent, respectively. Type 1 diabetes accounted for 9.2 per cent of all diagnosed diabetes cases, and type 2 diabetes accounted for 90.1 per cent of all diagnosed diabetes cases. The prevalence of type 1 diabetes was similar between males (0.9 per cent) and females (0.6 per cent). In contrast, the prevalence of type 2 diabetes was significantly higher for males (6.2 per cent) compared with females (4.4 per cent).

Figure 10.15: Prevalence of diabetes, by diabetes type and sex, Victoria, 2014



Data are age-standardised to the 2011 Victorian population.

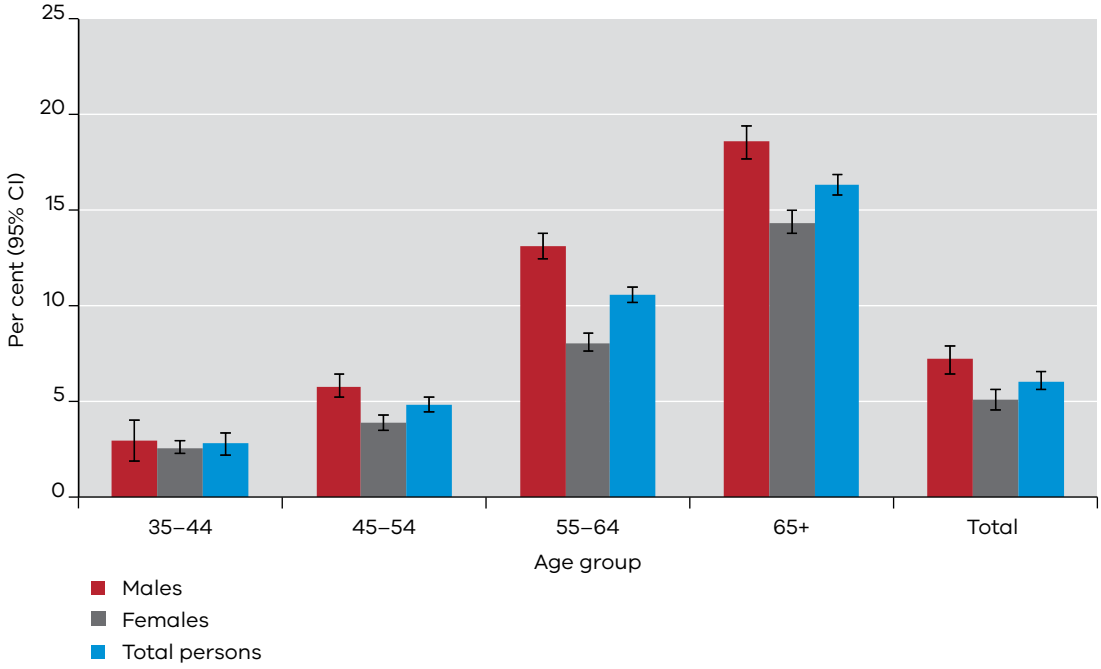
Total diabetes includes type 1 diabetes, type 2 diabetes and 'other' forms of diabetes. 'Other' forms of diabetes are broadly classified into genetic defects in insulin action, diseases of the pancreas, infections, drug- or chemical-induced, immune-mediated diabetes and other genetic syndromes sometimes associated with diabetes. Total diabetes does not include women diagnosed with gestational diabetes (abnormally high glucose levels diagnosed during pregnancy).

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

Respondents who had been diagnosed with type 2 diabetes were asked about their age when they were diagnosed. The median age at diagnosis in 2014 was 53 years in males and 56 years in females. The median age at diagnosis decreased significantly in males, but not females, between 2003 and 2014. The prevalence of diabetes increases with increasing age; adults aged 65 years or older were more likely than those in younger age groups to report having ever been diagnosed with diabetes (Figure 10.16 and Table 10.13). Males were more likely to have diabetes than females from age 55 years or older.

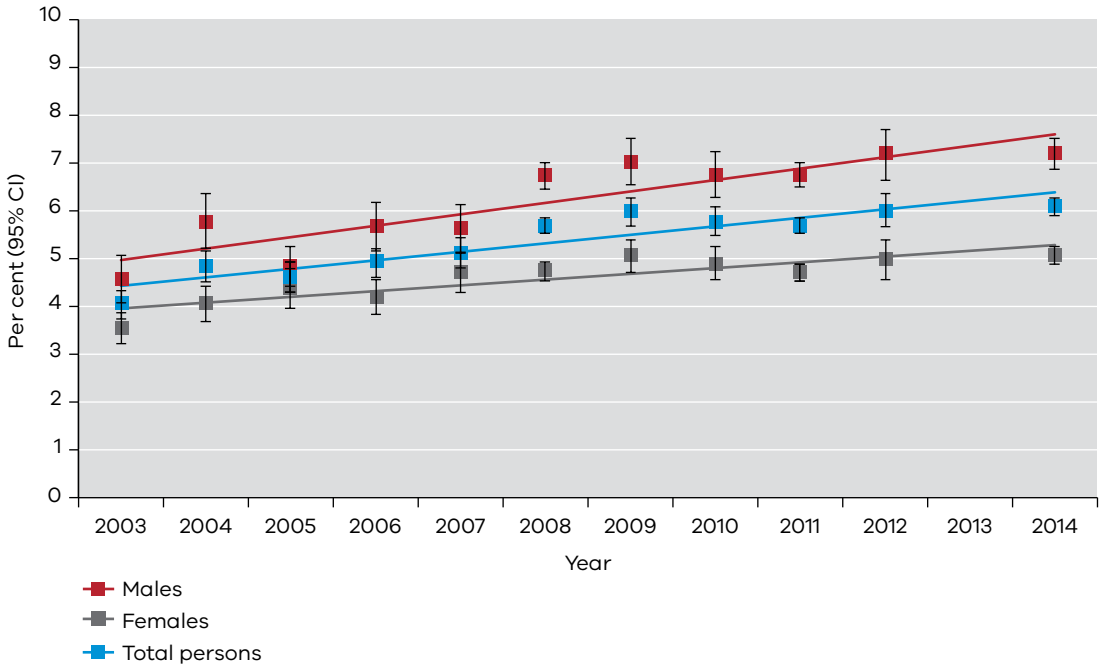
Figure 10.16: Prevalence of doctor-diagnosed diabetes, by sex and age group, Victoria, 2014



Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

The prevalence of doctor-diagnosed diabetes significantly increased from 4.0 to 6.1 per cent between 2003 and 2014 among all Victorian adults. Significant increases were seen in both males and females between 2003 and 2014 (Figure 10.17 and Table 10.14).

Figure 10.17: Prevalence of doctor-diagnosed diabetes in Victorian adults, 2003–14



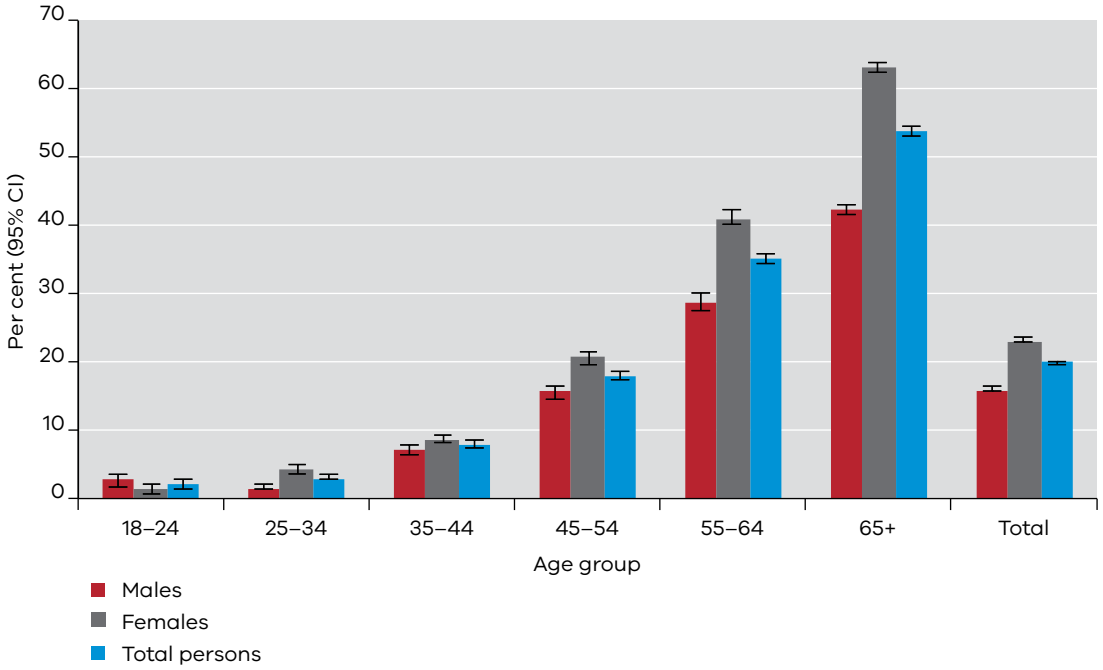
Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Data was not collected in 2013.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2003–2014

Musculoskeletal conditions

Arthritis

Overall, in 2014, almost 20 per cent of Victorian adults reported that they were living with arthritis, as diagnosed by a doctor (Figure 10.18 and Table 10.15). Females were more likely to report doctor-diagnosed arthritis compared with males at 23.2 versus 16.1 per cent. The proportion of people living with arthritis increased with increasing age: over half of all Victorians aged 65 years or older reported having been diagnosed with arthritis.

Figure 10.18: Prevalence of doctor-diagnosed arthritis, by sex and age group, Victoria, 2014



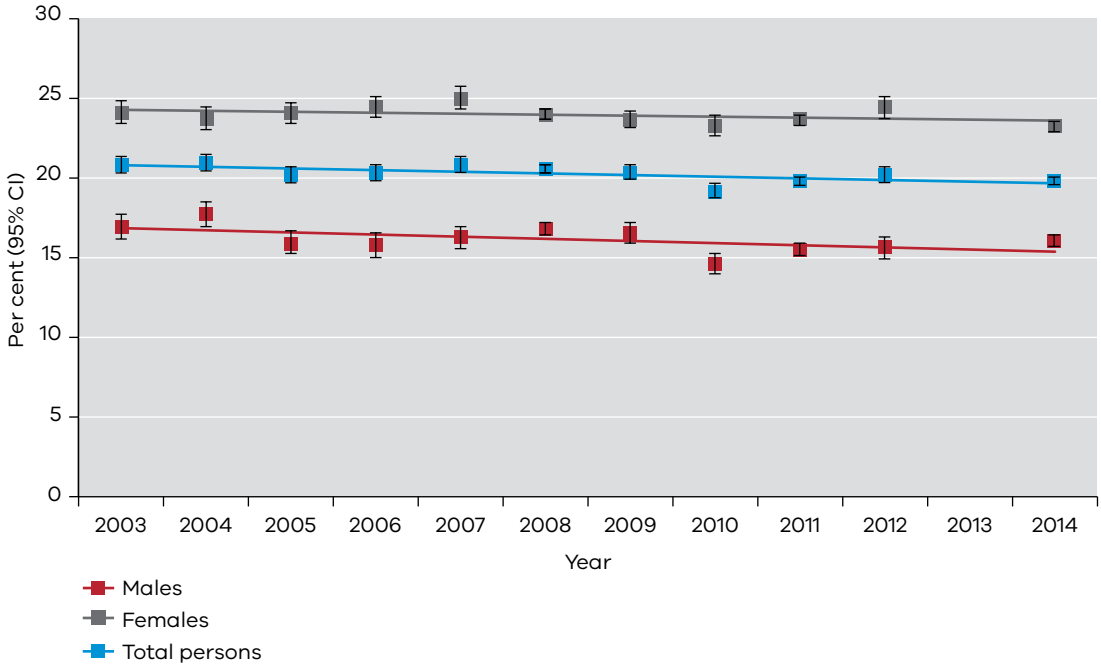
Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Healthy Survey

The proportion of Victorian adults reporting they had been diagnosed with arthritis by a doctor significantly decreased from 20.8 to 19.8 per cent between 2003 and 2014 (Figure 10.19 and Table 10.16). There was a significant decline in doctor-diagnosed arthritis among males, from 17 per cent to 16.1 per cent between 2003 and 2014, but the proportion of doctor-diagnosed arthritis remained unchanged in females for the same time period.

Figure 10.19: Prevalence of doctor-diagnosed arthritis in Victorian adults, 2003–14

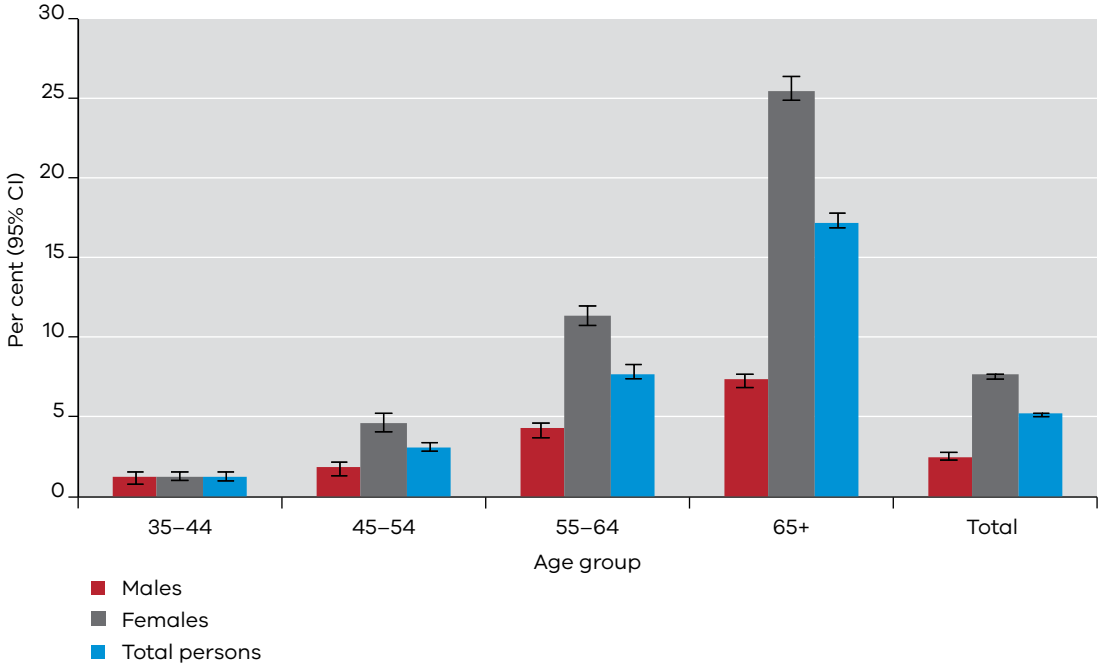


Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Data was not collected in 2013.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2003–2014

Osteoporosis

Overall, in 2014, 5.2 per cent of Victorian adults reported that they were living with osteoporosis, as diagnosed by a doctor (Figure 10.20 and Table 10.17). Females were more likely to report doctor-diagnosed arthritis compared with males at 7.6 versus 2.5 per cent. There was an age-related increase in the prevalence of osteoporosis in both males and females, with a significantly higher prevalence observed in males and females 55 years or older compared with all Victorian males and females.

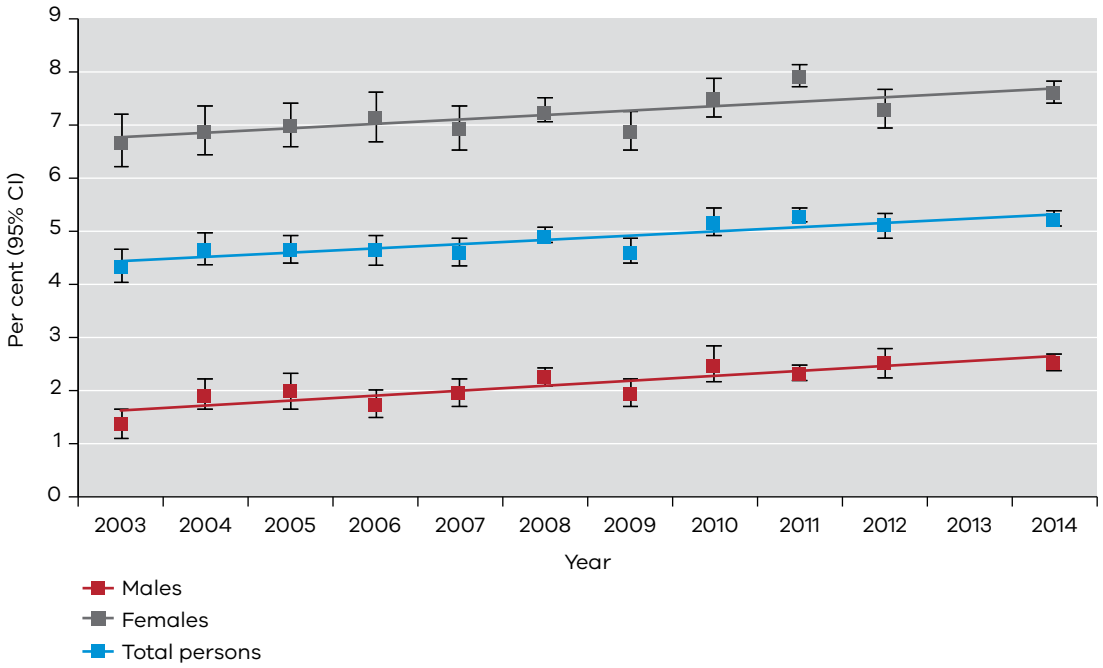
Figure 10.20: Prevalence of doctor-diagnosed osteoporosis, by sex and age group, Victoria, 2014



Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).
Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: 2014 Victorian Population Health Survey

The prevalence of doctor-diagnosed osteoporosis increased in Victoria from 4.3 per cent in 2003 to 5.2 per cent in 2014 (Figure 10.21 and Table 10.18)

Figure 10.21: Prevalence of doctor-diagnosed osteoporosis in Victoria adults, 2003–14

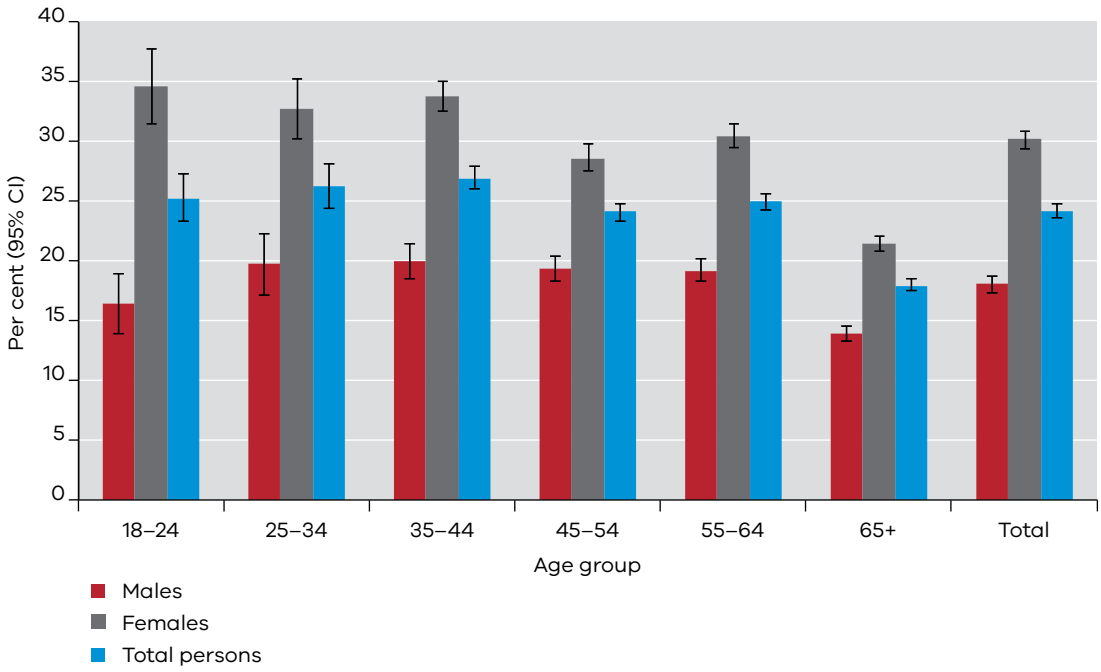


Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Data was not collected in 2013.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2003–2014

Depression and anxiety

Overall, in 2014, 24.2 per cent of Victorian adults reported ever being diagnosed with depression or anxiety by a doctor. This was significantly higher in females than in males at 30.1 versus 18.1 per cent, respectively (Figure 10.22 and Table 10.19). The proportion of adults reporting a diagnosis of depression or anxiety was similar across age groups 18 through to 64, however, males and females aged 65 years or older were less likely to report ever having being diagnosed compared with all other age groups.

Figure 10.22: Prevalence of doctor-diagnosed depression or anxiety, by sex and age group, Victoria, 2014



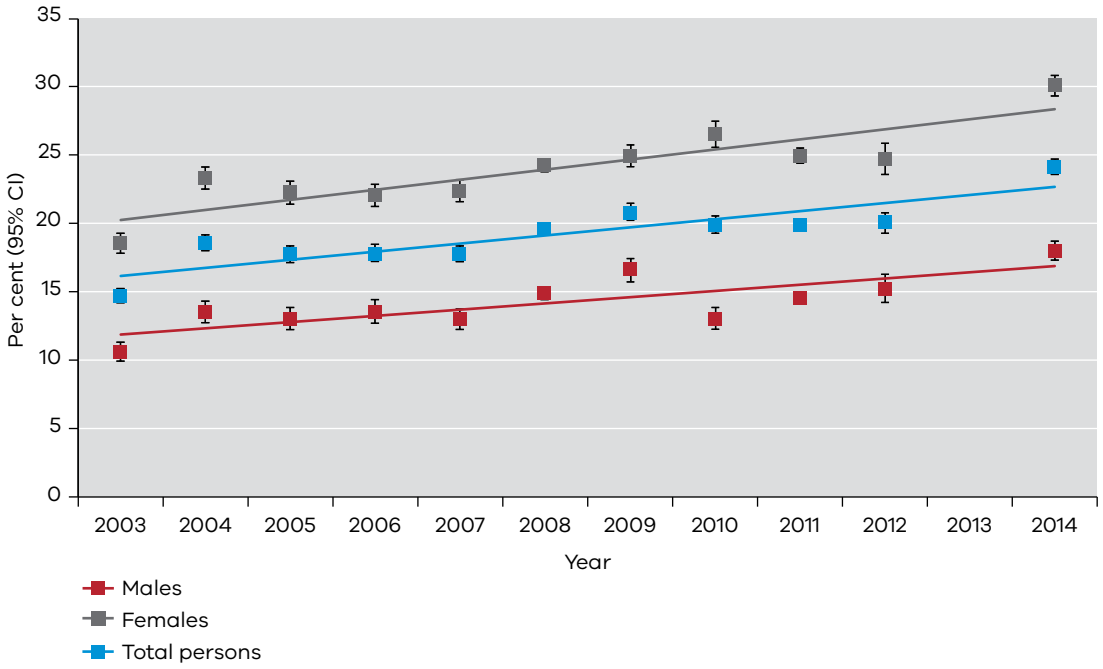
Data are crude estimates, except for the totals, which represent the age-standardised estimate for Victoria (age-standardised to the 2011 Victorian population).

Differences between groups are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.

Data source: 2014 Victorian Population Health Survey

The lifetime prevalence of self-reported doctor-diagnosed depression or anxiety increased significantly for both males and females between 2003 and 2014 (Figure 10.23 and Table 10.20).

Figure 10.23: Prevalence of doctor-diagnosed depression or anxiety in Victorian adults, 2003–14



Data are age-standardised to the 2011 Victorian population.
Ordinary least squares regression was used to test for trends over time.
Data was not collected in 2013.
Differences between years are considered statistically significant where the 95 per cent confidence intervals (95% CI) for point estimates do not overlap.
Data source: Victorian Population Health Surveys 2003–2014

Challenges and opportunities

Cancer

Cancer is a significant and growing health burden to patients and their families, the health system and the community as a whole. The *Victorian cancer plan 2016–20* provides a framework to improve cancer outcomes for all Victorians through preventing cancers, detecting cancers earlier, improving treatment and reducing unwarranted variations in outcomes. Progress towards these goals will continue to be monitored through incidence, mortality, screening participation and survival data.

Since 2001 there has been a clear relationship between prostate specific antigen (PSA) testing and incidence of prostate cancer, with peak incidence observed in 2009 (Figure 10.2). The PSA test is a commonly used blood test to detect potential prostate cancer, but elevated PSA levels do not necessarily mean that prostate cancer is present. A proportion of prostate cancers detected as a result of PSA tests would have remained asymptomatic for life (National Health and Medical Research Council 2014). Early detection of cancer through PSA testing also corresponds to a shift towards increased incidence of prostate cancer at an earlier age as shown in Table 10.1. Current guidelines recommend against the use of PSA testing as a routine screening test for early prostate cancer in men without symptoms. A recent decline in PSA testing rates in Australia (as reported in the Medicare Benefits Schedule data) is closely aligned with falling prostate cancer incidence rates. For men aged 75 years or older, incidence rates have now fallen below those observed in the peak PSA testing era (Thursfield & Farrugia 2014).

For other cancers discussed here, formal population screening programs play an important role in detection and managemernt. This is discussed further in Chapter 13.

Cardiovascular disease

Cardiovascular diseases, including heart disease and stroke, are strongly influenced by a number of behavioural and biomedical risk factors. Improving health outcomes from these conditions relies, in large part, on promoting change in these health determinants. This is addressed in more detail in Chapters 6 and 7 of this report. It should be noted, however, that overall cardiovascular risk depends on a combination of factors and improvement in absolute cardiovascular risk assessment in a primary healthcare setting is an important step in prevent cardiovascular disease and death from cardiovascular disease.

Diabetes

The findings of the Australian Health Survey (2011–12) suggests that diabetes may be under diagnosed in Australia – for every four adults with diagnosed diabetes, there is estimated to be one with undiagnosed diabetes (Australian Bureau of Statistics 2013). Thus, prevalence of doctor-diagnosed diabetes may be an underestimate of the true prevalence. Further monitoring and surveillance of diabetes is crucial for guiding preventive measures, determining clinical care and informing health policy and service planning.

It would be expected that rates of type 2 diabetes will continue to increase over time if the rates of underlying risk factors such as overweight/obesity continue to rise. This will make it challenging to meet the World Health Organization's target to halt the rise in diabetes prevalence by 2025.

Addressing type 2 diabetes incidence requires both strategies to address risk factors in the general population and targeted interventions to support high-risk individuals to make lifestyle changes.

Depression and anxiety

A self-reported increase in doctor-diagnosed depression and anxiety may reflect both an increasing recognition of these conditions among health professionals and an increase in help-seeking behaviour in the community. Responses to depression and anxiety need to incorporate a range of support options, including a continuum of low-intensity support through to the provision of specialist services. Continued education to increase awareness for health professionals and the community on early recognition and earlier interventions is also required.

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Concepts

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 (up to the time of assessment).

Limitations

Prevalence estimates for heart disease, stroke, diabetes, arthritis, osteoporosis, and depression are derived from survey data obtained through self-report and should be interpreted with caution.

Provenance

The Australian Bureau of Statistics Australian Health Survey collects information about cardiovascular disease prevalence. Prevalence estimates for cerebrovascular disease (stroke) are presented in reports profiling survey results, by age group and sex (Australian Bureau of Statistics 2013).

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

For more information

Department of Health and Human Services, *Victorian Population Health Survey 2014: health and wellbeing, chronic conditions, screening and eye health*
https://www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/survey-data-and-reports/victorian-population-health-survey/victorian-population-health-survey-2014

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http://www.abs.gov.au/ausstats/abs@.nsf/mf/4364.0.55.001

National Stroke Foundation
https://strokefoundation.org.au/

Diabetes Australia
https://www.diabetesaustralia.com.au/

Arthritis Australia
http://www.arthritisaustralia.com.au/

Osteoporosis Australia
http://www.osteoporosis.org.au/

Contact

Health Intelligence Unit, System Intelligence and Analytics
Department of Health and Human Services
Phone: (03) 9096 1089
Email: health.intelligence@dhhs.vic.gov.au

10.2: Communicable diseases

Key messages

- There has been a consistent increase in notified cases of laboratory-confirmed influenza over 15 years, suggesting more Victorians are being tested for influenza.
- Between 2014–15, notifications of invasive meningococcal disease have increased in Victoria, with an increase in cases due to serogroup W since 2013.
- There has been a gradual increase in the number and rate of tuberculosis (TB) notifications in Victoria since the early 2000s, with 350–450 cases notified each year (rate: 6–8 per 100,000) in the past decade from 2006 to 2015.
- The number of drug-resistant TB cases continues to be small but is slowly increasing.
- The incidence of Buruli ulcer, caused by the environment pathogen *Mycobacterium ulcerans,* is increasing in Victoria, with 182 cases notified in 2016 (rate: 3.0 per 100,000).
- Victorian HIV notifications have increased from an average of 256 cases per year between the five years 2006–10 to an average of 287 cases per year between the five years 2011–15, although the rate has remained stable.
- The number of gay and bisexual men (GBM) tested for HIV has been increasing in high GBM case load clinics in Melbourne since 2012. The annual increase in 2016 was 22 per cent compared with an average of 7 per cent in previous years.
- Consistently, three-quarters of all reported cases of HIV were among men who have sex with men.
- Newly acquired hepatitis B cases have decreased over the past decade, while unspecified hepatitis B cases have remained stable during the period.
- The number of cases of hepatitis C has been decreasing over the past decade; however, there are still more than 2,000 Victorians diagnosed with hepatitis C each year.
- The number of infectious syphilis cases reported in 2015 is at its highest since it became notifiable in 1991. There has been a 70-fold increase since 2000, with cases predominantly among men who have sex with men.
- Rates of blood-borne viruses and sexually transmissible infections are significantly higher among Aboriginal and Torres Strait Islander peoples when compared with non-Aboriginal and Torres Strait Islander Victorians.
- Overall, notifications of legionellosis have declined since the introduction of the *Legionella reform strategy* in 2001.

Description

Chapter 10.2 reports on 11 conditions:

1. Notified cases of laboratory-confirmed influenza and rates of influenza-like illness from sentinel general practice surveillance
2. The number and notification rate of cases of pertussis and the age-specific notification rates of pertussis
3. The number and notification rate of cases of meningococcal disease and the age-specific notification rates of meningococcal disease
4. The number and notification rate of cases of tuberculosis over time
5. The number and notification rate of Buruli ulcer over time
6. The number of cases and rate of notification of HIV and the sex, sex of sexual partner and age-specific notification rates
7. The number and notification rate of hepatitis B cases and the sex and age-specific notification rates
8. The number and notification rate of hepatitis C cases and the sex and age-specific notification rates
9. The number of cases and rate of notification of syphilis and the sex, sex of sexual partner and age-specific notification rates
10. The number and notification rate of cases of legionellosis over time
11. The number of notified cases of salmonellosis, expressed as a rate per 100,000 population, by age group, over time

Introduction

Communicable diseases can cause significant morbidity and mortality, particularly affecting vulnerable groups in the population such as the very young, chronically unwell or elderly. Part 2 of this chapter considers some of the key communicable diseases of particular community or policy concern at present for Victoria. The diseases included here are all notifiable to the Department of Health and Human Services and should be notified by both clinicians and laboratories.

Influenza

Infection with seasonal influenza virus can cause a wide spectrum of illness, from no symptoms to chest infections, including secondary bacterial pneumonia. Influenza viruses are highly contagious, transmitted primarily through respiratory droplets expelled during coughing and sneezing, particularly in enclosed spaces. They affect all age groups, can recur in any individual, and result in localised seasonal epidemics. Seasonal vaccine is the most important prevention measure against influenza, and is funded under the National Immunisation Program for people who face a high risk from influenza and its complications (Department of Health 2017a).

Laboratory-confirmed influenza became a notifiable condition in Victoria in 2001, with medical practitioners and pathology services required to notify the department. The department also funds the Victorian Sentinel Practice Influenza Network (VicSPIN), which operates annually from May to October, when the influenza season usually occurs, and consists of approximately 100 general practitioners throughout Victoria. Participating general practitioners make weekly reports on the total number of consultations and patients presenting with an influenza-like illness. This is used as a proxy for influenza activity because it is less subject to changes in testing and more comparable over time.

Pertussis

Pertussis (whooping cough) is an acute respiratory illness caused by the *Bordetella pertussis* bacterium. The illness begins with an irritating cough that becomes paroxysmal (with a characteristic inspiratory 'whoop') and often lasts for one to two months or longer. A patient is infectious just prior to and, if untreated, for up to 21 days after cough onset. Deaths due to pertussis are rare; however, death can occur in those who are most vulnerable to infection, particularly infants aged less than two months prior to their scheduled primary course of vaccine.

Meningococcal disease

Meningococcal disease is caused by a Gram-negative bacterium, *Neisseria meningitidis*. Globally, serogroups A, B, C, W and Y most commonly cause disease. The bacterium can cause invasive meningococcal disease (IMD), which includes clinical manifestations such as meningitis and septicaemia, and less commonly, pneumonia, septic arthritis and conjunctivitis. Onset of disease is often non-specific and can be sudden and rapidly progressive. The overall mortality risk for IMD is high at 5–10 per cent.

IMD in Victoria occurs most commonly as sporadic cases; however, occasionally there are small case clusters. Cases occur seasonally, in winter and early spring. While there are vaccines available for serogroups A, C, W, Y and B, there is no single vaccine that offers protection against all meningococcal serogroups.

Tuberculosis

Tuberculosis (TB) is an infectious disease caused by the *Mycobacterium tuberculosis* complex. The main mode of transmission is through inhalation of infectious droplets produced when those with pulmonary TB expel the bacterium into the air – for example, by coughing. Once infected, the infection can remain dormant in the body without signs and symptoms of disease (latent TB infection). Only a small proportion of healthy people will go on to develop active disease; however, the risk is increased significantly in those with impaired immune systems, the most important of which is co-infection with HIV. Disease commonly manifests as pulmonary TB, but it can also be spread to other organs to cause extrapulmonary disease. Symptoms will vary according to site of infection.

The population at increased risk of exposure and infection include household or close contacts of a case of TB, migrants from countries with high incidence of TB and people living in overcrowded conditions or in institutions. Once infected, the population at increased risk of developing disease include children under five years of age, adolescents and the elderly, those with compromised immune systems due to disease (such as HIV or diabetes), those on immune-modulating therapies or those who are malnourished (Department of Health 2017b).

The Victorian Tuberculosis Program follows up all cases of TB notified to the Department of Health and Human Services, and is the statewide provider of public health services relating to TB. This includes providing case management for all Victorians notified with active TB for the duration of their treatment and contact tracing.

Buruli ulcer

Buruli ulcer is a skin and soft tissue infection caused by the environmental pathogen *Mycobacterium ulcerans (M. ulcerans)*. The first sign of infection is usually a painless, non-tender nodule or papule before slowly progressing to an ulcer occurring anywhere on the body but most commonly on exposed areas of limbs. Occasionally, the disease may present in non-ulcerative forms as a firm, painless elevated plaque or an indurated area or limb.

A geographically restricted disease, Buruli ulcer occurs in localised and well-defined endemic areas. The main risk factor for infection is contact with an endemic area. The exact reservoir and mode of transmission remains unclear, although insect vectors such as mosquitoes have been proposed to have a role in Victoria (Johnson et al. 2007; Johnson & Lavender 2009; Lavender et al. 2011; Quek et al. 2007). Although cases are diagnosed all year round, peak diagnoses occur between June and November each year. Taking into account a long incubation period of approximately 4.5 months (range: 1–8.8 months) and delay to diagnosis estimated at a month, the most likely time of peak transmission is in mid-summer (Trubiano et al. 2013).

In Victoria, Buruli ulcer endemic areas include the Bairnsdale area of East Gippsland, Tooradin/Warneet on Westernport Bay, Philip Island, Frankston-Langwarrin, the Bellarine Peninsula and, more recently, the Mornington Peninsula (particularly Rye and surrounding townships of Sorrento, Blairgowrie and Tootgarook), as well as potentially several suburbs in the south-eastern bayside area of Melbourne such as Beaumaris.

HIV

Infection with human immunodeficiency virus (HIV) weakens the immune system and can cause acquired immune deficiency syndrome (AIDS). When the immune system is weakened, various infections and cancers are able to take hold.

In Australia, HIV is most commonly spread by sexual intercourse without a condom among men who have sex with men. A much smaller percentage is spread through blood-to-blood contact. Many symptoms of HIV are the same as those experienced in a number of other illnesses including flu-like symptoms. Notifications received by the department are classified as confirmed and probable cases of newly acquired (infection acquired in the last 12 months) or unspecified (infection acquired more than 12 months ago or unknown duration) as per a nationally agreed case definition.

Hepatitis B

Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus. Major modes of transmission include unprotected sexual contact, needle-sharing with an infected person, and mother-to-child transmission. Symptoms of acute infection include abdominal pain, nausea and vomiting progressing to jaundice. Outcomes vary inversely with age; infected infants are more likely to progress to chronic infection, whereas people who are infected as adults often clear the virus. Chronic infection can lead to a number of liver complications including cirrhosis, cancer and liver failure (Heyman 2008).

Hepatitis B is defined as ‘newly acquired’ (evidence that infection was acquired within the 24 months prior to diagnosis) or ‘unspecified’ (infection acquired more than 24 months prior to diagnosis or not able to be specified).

Hepatitis C

Infection with the hepatitis C virus causes inflammation of the liver. In more than 90 per cent of cases, initial infection with the hepatitis C virus is asymptomatic or mildly symptomatic. Approximately 50–80 per cent of cases go on to develop a chronic infection. Of those who develop a chronic infection, half will eventually develop cirrhosis or cancer of the liver (Heyman 2008). There is no current vaccine to prevent hepatitis C infection; however, chronic hepatitis C can now be cured with 8–24 weeks of treatment, with oral therapies now available.

Hepatitis C is defined as ‘newly acquired’ (evidence that infection was acquired within the 24 months prior to diagnosis) or ‘unspecified’ (infection acquired more than 24 months prior to diagnosis or not able to be specified).

Syphilis

Syphilis is a sexually transmissible infection caused by the organism *Treponema pallidum*. Syphilis is spread from person to person through unprotected sexual activity or via spread from mother to infant at birth. The infection often begins with an ulcer ('primary syphilis'), which progresses to a flu-like illness and a rash ('secondary syphilis'), before entering a 'latent' phase where symptoms disappear but the infection remains inside the body. This latent phase can last for many years before progressing to late syphilis ('tertiary syphilis').

Syphilis is defined as: congenital; infectious syphilis of less than two years' duration (primary, secondary or early latent); and syphilis of more than two years or unknown duration. This report will focus on infectious syphilis of less than two years' duration. There have been no cases of congenital syphilis reported in Victoria since 2004.

Legionellosis

Legionnaires' disease (legionellosis) is a serious and sometimes fatal form of pneumonia caused by the bacterium *Legionella*. It particularly affects the elderly, smokers, those with chronic conditions and the immunocompromised. Although not all cases of legionnaires' disease are severe, up to 10 per cent of cases can be fatal. There are more than 50 species of *Legionella* bacteria, but only a few cause disease in humans. The species that are most commonly associated with human disease are *Legionella pneumophila* and *Legionella longbeachae* (Heyman 2015).

Transmission is via inhalation of *Legionella* bacteria in very fine droplets of water. No human-to-human transmission has been recorded. *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, gardening mulch and soil. Potting mix is also often found to contain *Legionella* species, particularly *Legionella longbeachae*. Man-made water systems sometimes provide environments that enable *Legionella* bacteria to thrive, especially if the water temperature is maintained at 20–43°C. These man-made systems include showers, spa pools, fountains and cooling towers associated with air-conditioning and industrial cooling processes (Department of Health and Human Services 2017).

Salmonellosis

Salmonellosis is an acute bacterial disease that 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.

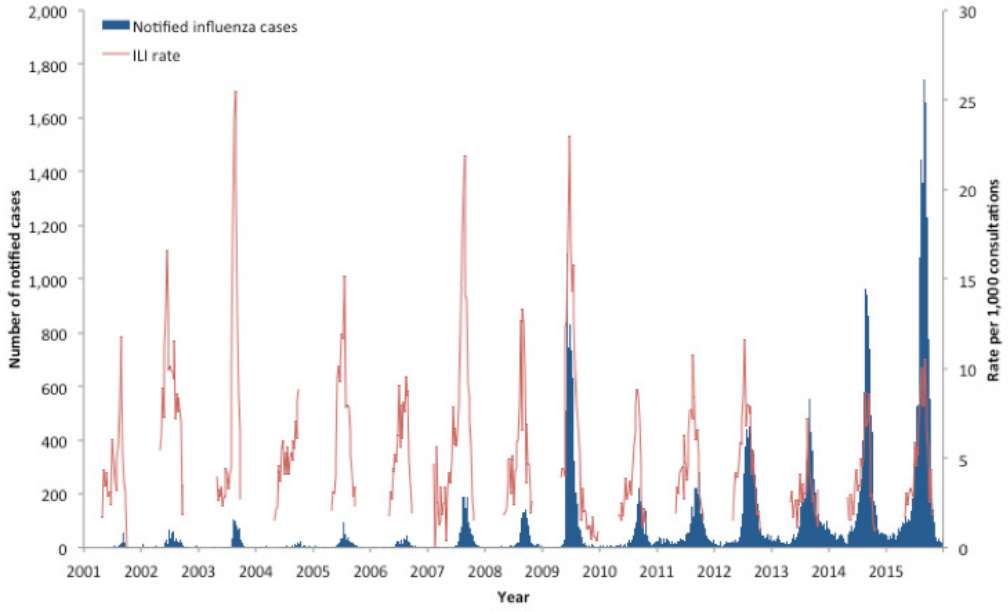
Transmission is via the faecal–oral route and most commonly through ingestion of the organism in food derived from infected animals or food contaminated by faeces of infected animals or humans. Person-to-person and animal-to-person faecal–oral modes of transmission are uncommon but do occur.

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 Typhimurium causing more than 50 per cent of infections annually in Victoria.

Influenza

The number of notified laboratory-confirmed influenza cases has generally increased over time. Fewer than 1,000 cases were notified annually prior to 2007, but there was more than a 400 per cent increase in cases in 2009 compared with 2007 and 2008 due to the pandemic caused by the influenza A(H1N1)pdm09 virus (Figure 10.24, Table 10.21). After dropping in 2010, the number of notified cases increased by an annual average of 57 per cent from 2010 to 2015. Cases of laboratory-confirmed influenza have been notified every week since 2010.

Figure 10.24: Notified cases of laboratory-confirmed influenza and influenza-like illness consultation rate, by week, Victoria, 2001–15



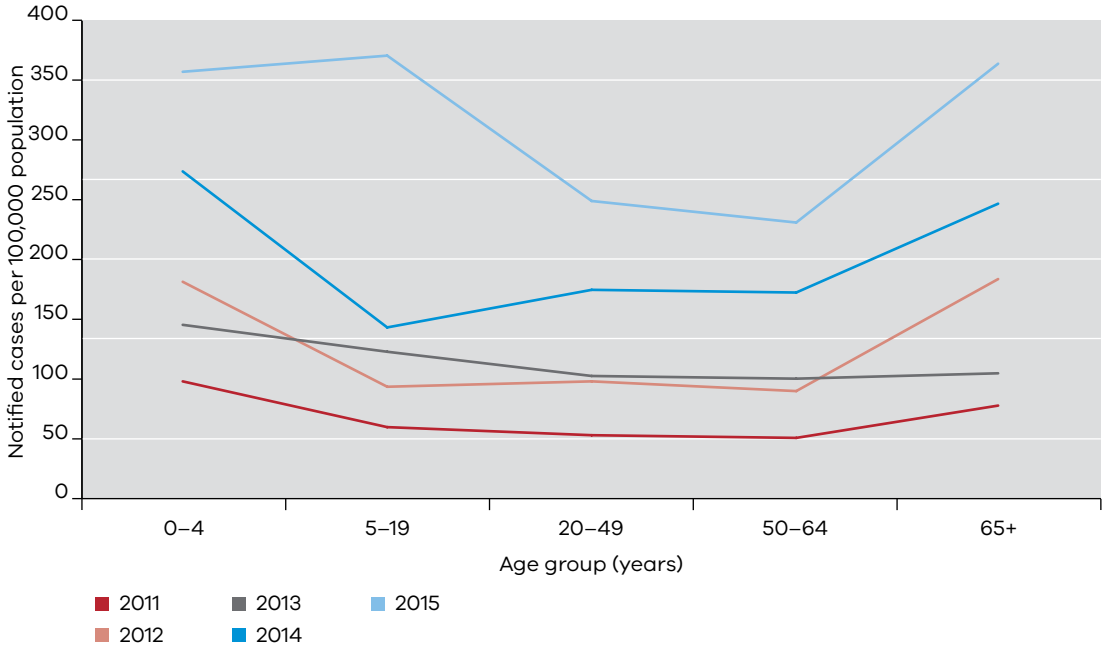
Data source: Public Health Event Surveillance System 2016

For 12 of the 15 years from 2001 to 2015, the peak of the influenza season, as measured by the number of notified cases of laboratory-confirmed influenza and the rate of influenza-like illness, occurred in August or September (Table 10.21), while the peak of the 2009 pandemic occurred in June. Detections of type A influenza virus were more common than type B in 13 of the 15 influenza seasons from 2001 to 2015, ranging from 56 per cent to 100 per cent of notified cases (Table 10.21). Respiratory outbreaks due to influenza have been systematically reported to the department since 2012. The focus of the reporting is on outbreaks occurring in closed settings such as aged care facilities, cruise ships and other institutional settings such as boarding schools where provision of antiviral prophylaxis and treatment, and other outbreak control measures, might be of some value. In 2014, 51 outbreaks occurred in an aged care setting, three outbreaks in a hospital setting and one outbreak each in a boarding school and a correctional facility.

Overall, a slight majority of notified cases (52 per cent) were female but ranged from 44 per cent to 54 per cent annually from 2001 to 2015. Only 132 notified cases of influenza (0.2 per cent) were reported to have died; however, this is likely to be greatly underestimated. A similar increase over time in the number of notified laboratory-confirmed influenza cases has been observed elsewhere in Australia (NNDS 2017). Much of this increase in notified cases has been attributed to increased testing for influenza by medical practitioners. Data from other sentinel syndromic and laboratory surveillance systems support this suggestion (Fielding et al. 2016).

Age-group-specific notification rates of laboratory-confirmed influenza in the past five years have increased in line with the increase in overall notified cases. In general, rates were highest among those aged 0–4 years and those aged 65 years or older (Figure 10.25). The 2009 pandemic was characterised by a very high proportion of cases among children aged 5–19 years compared with other age groups.

Figure 10.25: Notification rate (per 100,000 population) of laboratory-confirmed influenza, by age group, Victoria, 2011–15

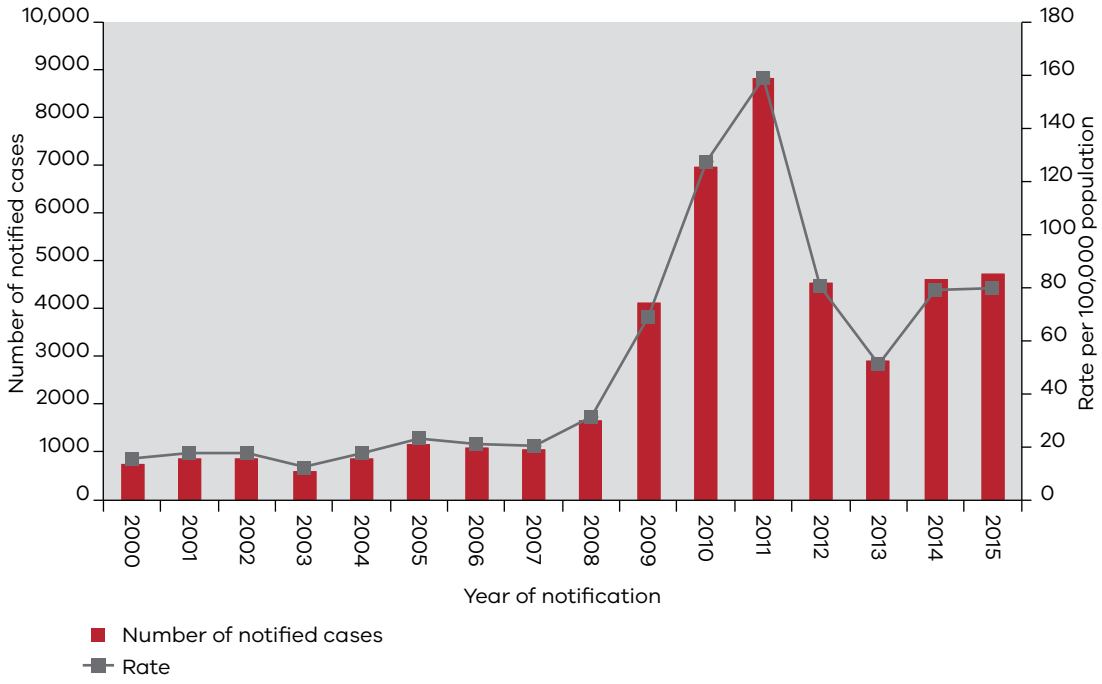


Data source: Public Health Event Surveillance System 2016

Pertussis

Between 2014 and 2015, notification rates for pertussis were at inter-epidemic levels, with 79 and 79.5 cases per 100,000 population respectively (Figure 10.26). At the height of the most recent epidemic in Victoria that occurred between 2008 and 2012, notification rates were at 127.4 cases per 100,000 population (in 2010). Despite the decrease, notifications are unlikely to ever return to pre-2008 levels due to increased awareness and testing practices, with PCR testing now the most common method of diagnosis. Following the most recent epidemic, notifications across all age groups decreased markedly. In 2015, the highest notification rate was seen in the five to < 15 years age group, with 140.8 cases per 100,000 population.

Figure 10.26: Pertussis notifications and notification rates, by year, Victoria, 2000–15

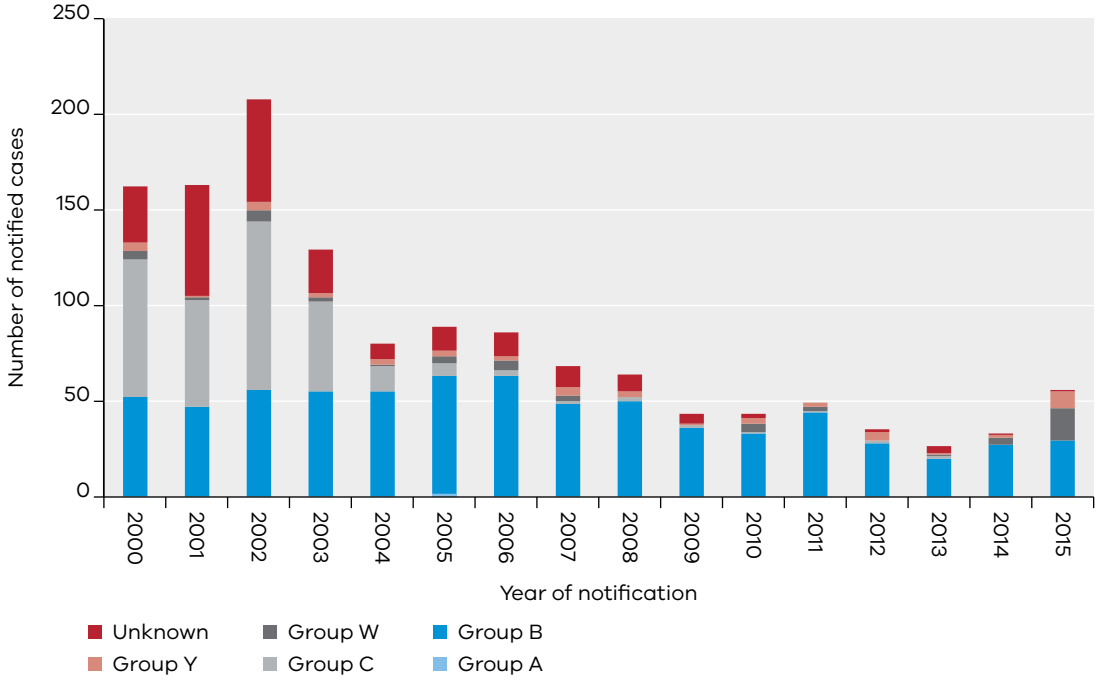


Invasive meningococcal disease

Between 2014 and 2015, notification rates for IMD increased, with 0.57 and 0.94 cases per 100,000 population respectively. The rate in 2015 was the highest since 2008 when it was 1.22 cases per 100,000 population.

The introduction of the meningococcal serogroup C conjugate vaccine to the childhood immunisation schedule from January 2002 coincided with a peak in IMD notifications. In subsequent years, there was a dramatic decline in cases due to serogroup C. Serogroup B became the predominant disease-causing serogroup in Victoria until 2016, when serogroup W predominated. The upward trend in the notification rate occurred due to an increase in serogroups W and Y, which were relatively rare in Victoria until an increase was observed in 2014 (Figure 10.27).

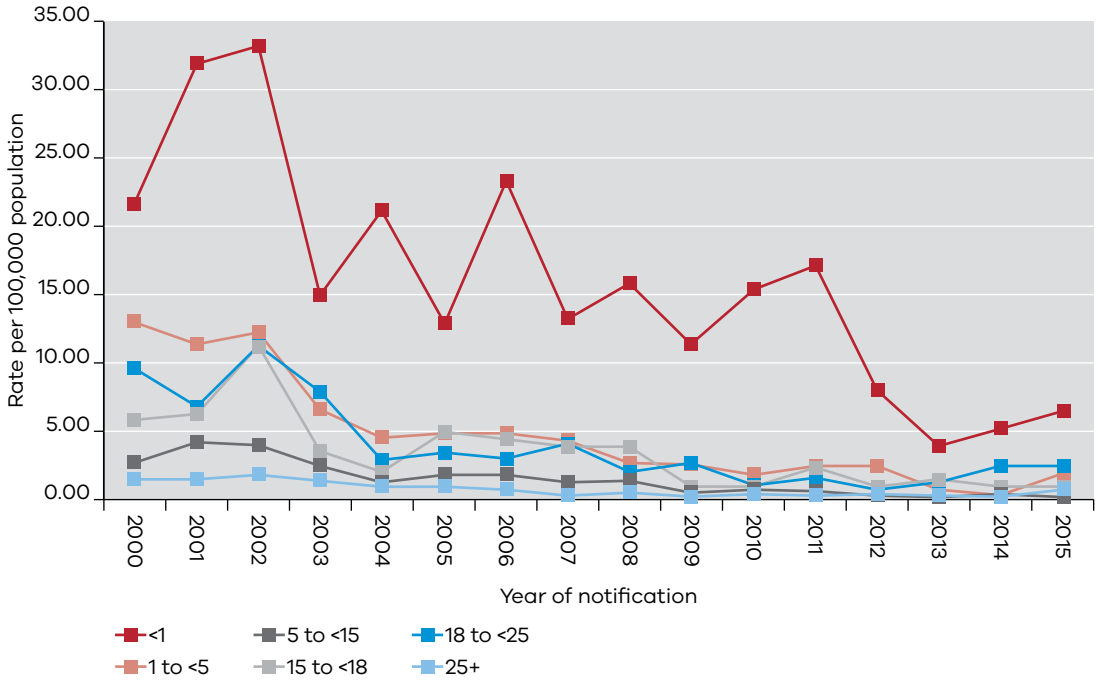
Figure 10.27: Invasive meningococcal disease notifications, by serogroup and year, Victoria, 2000–15



Data source: Public Health Event Surveillance System 2017

While rates across most age groups have generally declined over time, rates are consistently highest in the under 12 months age group. Since 2013 rates across several age groups have increased. In particular, the rate increased sixfold in the one- to less than five-year age group between 2014 and 2015, with 0.33 cases and 1.96 cases per 100,000 population, respectively (Figure 10.28).

Figure 10.28: Rate (per 100,000 population) of invasive meningococcal disease, by age group, Victoria, 2000–15

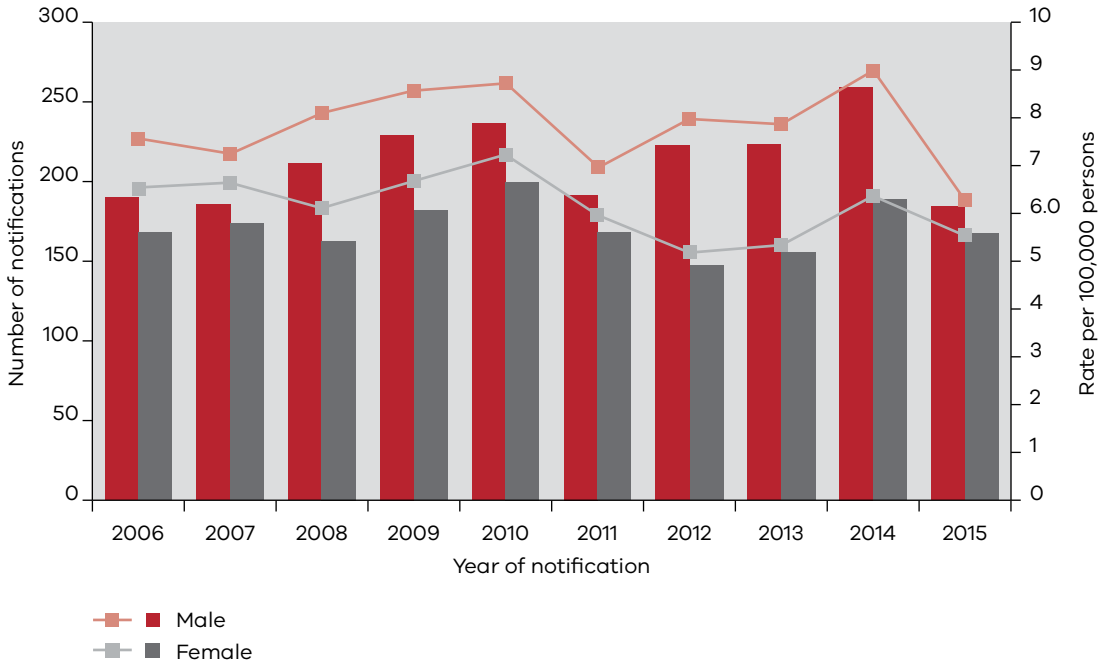


Data source: Public Health Event Surveillance System 2017

Tuberculosis

Between 2006 and 2015, there were more cases of TB notified in males than females each year (male-to-female rate ratio of 1.24; Figure 10.29).

Figure 10.29: Number and notification rate (per 100,000 population) of TB cases, by sex and year, Victoria, 2006–15

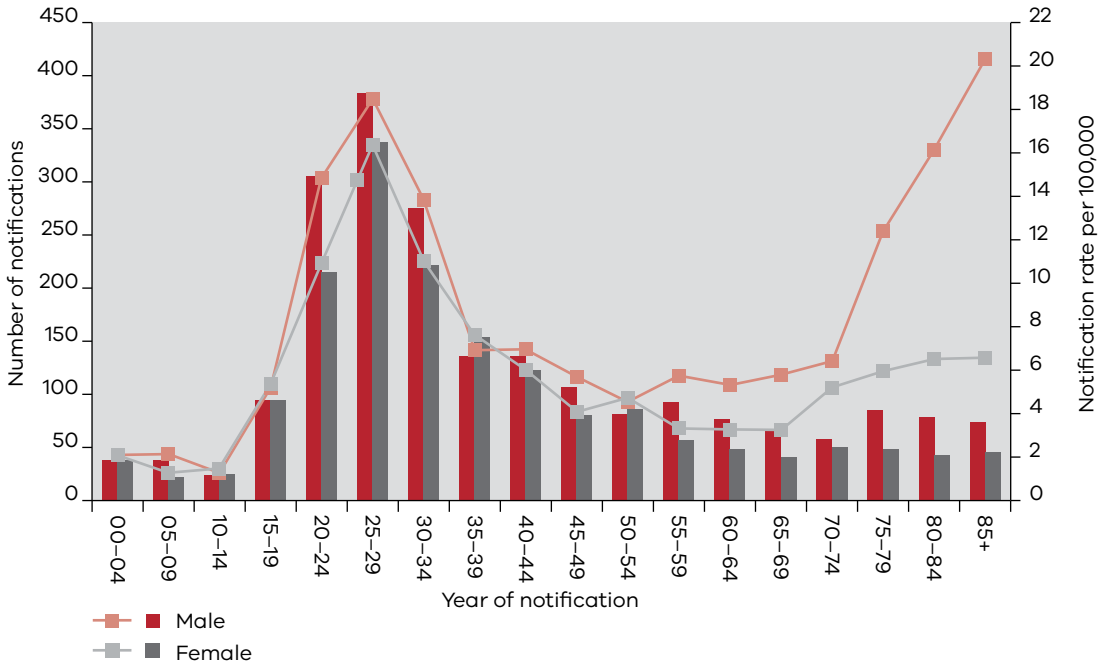


Sex-specific notification rates were determined using the Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (2006–2015).

Data source: Public Health Event Surveillance System 2016

Between 2006 and 2015, the median age of cases was 32 years (range: 0–98 years), and young adults aged 20–34 years contributed to nearly half (42.5 per cent) of total notifications. A bimodal distribution of age was observed, with the highest rates found in age groups 20–34 years and 65 years and older (Figure 10.30). With 178 cases, paediatric cases aged under 15 years contributed to 4.6 per cent of total notifications and, of these, 74 (41.6 per cent) were under five years of age. Over time, notification rates declined in adults aged 65 years or older, remained stable in adults aged 45–64 years and fluctuated in all other age groups (Figure 10.31).

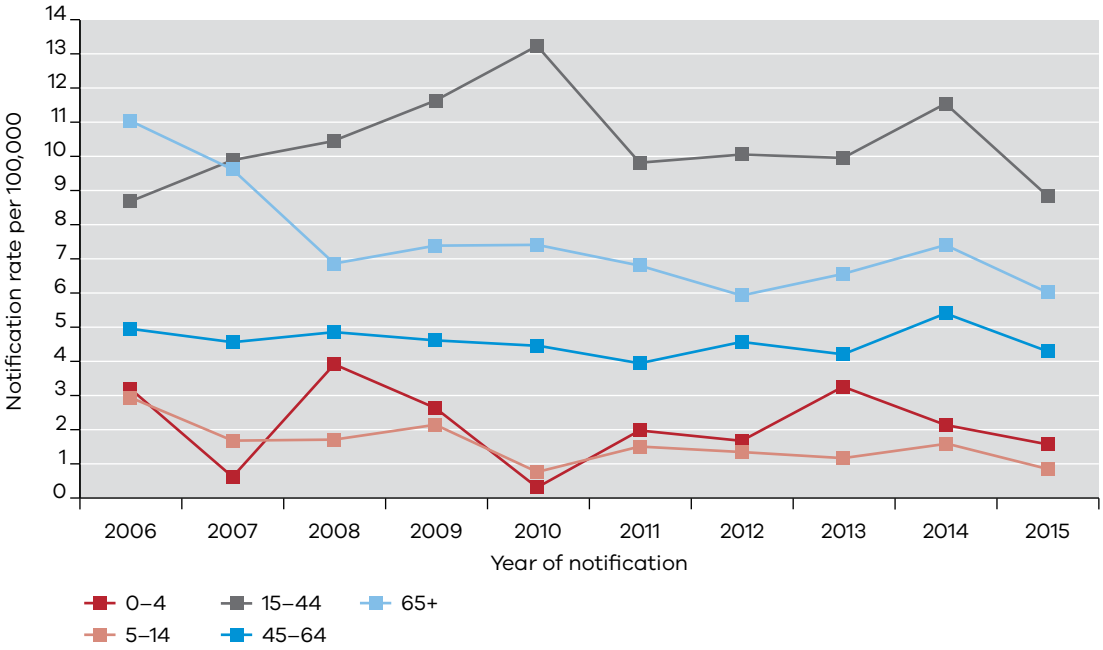
Figure 10.30: Number and notification rate (per 100,000 population) of TB cases, by sex and five-year age groups, Victoria, 2006–15



Age-specific notification rates were determined using Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (2006–2015).

Data source: Public Health Event Surveillance System 2016

Figure 10.31: Number and notification rate (per 100,000 population) of TB cases, by age groups and year, Victoria, 2006–15



Age-specific notification rates were determined using Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (2006–2015).

Data source: Public Health Event Surveillance System 2016

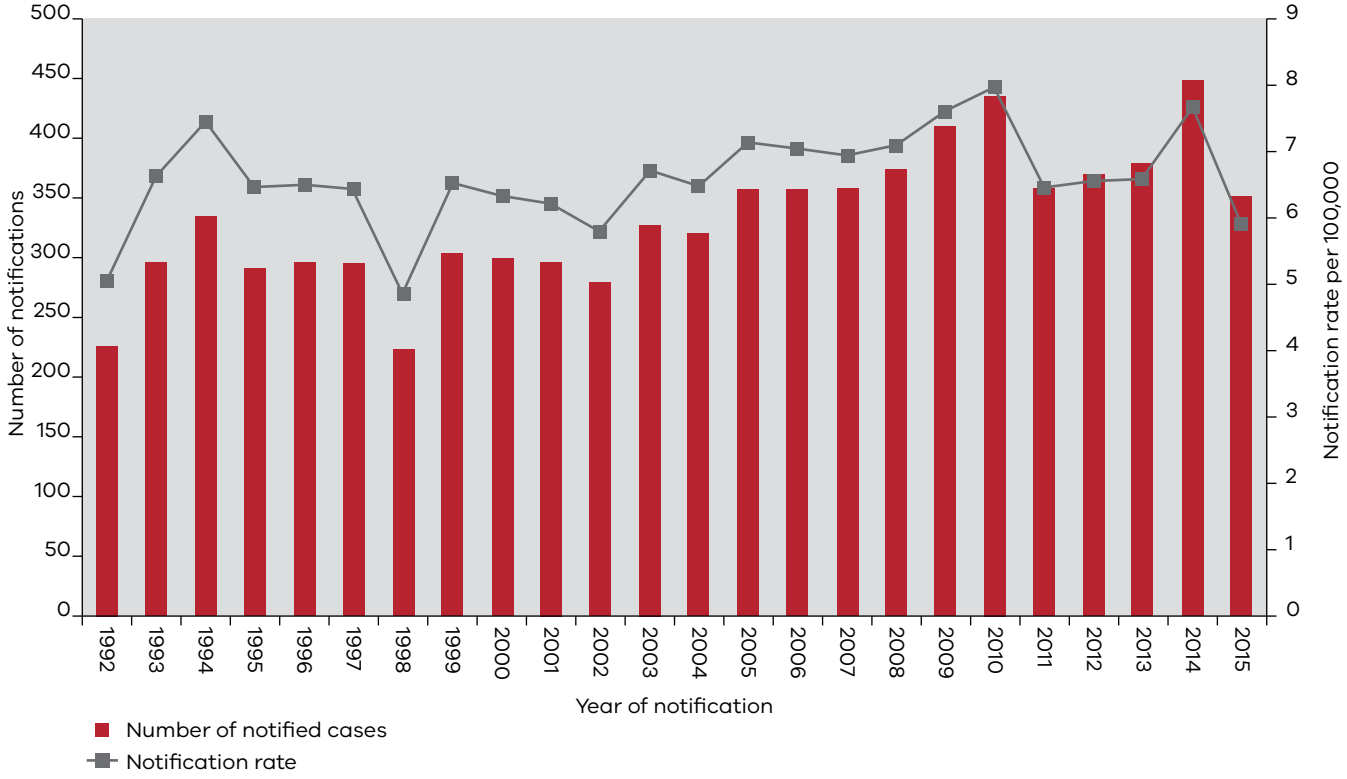
There has been a gradual but steady increase in the number of notifications since the early 2000s (Figure 10.32), although the rate has remained relatively unchanged. In the past decade from 2006 to 2015, there were around 350 to 450 cases of TB notified each year in Victoria (rate: 6–8 per 100,000 each year). The vast majority (87.0–95.6 per cent each year) were notified in overseas-born people, most from countries with a TB incidence of ≥ 40 per 100,000 (data not shown). The distribution of countries of birth broadly corresponds to migration patterns to Victoria, with 75.8 per cent of cases from Asia, 8.8 per cent from Sub-Saharan Africa, 5.7 per cent from North Africa and the Middle East, and the remaining 9.6 per cent from all other regions. The number of Australian-born cases fluctuated each year (average 38 cases per year; range: 19–58 cases), and most (98.2 per cent) were notified in non-Indigenous Victorians. There were seven notifications in Indigenous Victorians over the same period (range: 0–2 cases each year).

Largely a reflection of the settlement trend in migrants, there were disproportionately more notifications in metropolitan Melbourne compared with rural Victoria (93.4 per cent and 6.1 per cent of total notifications; rate of 8.8 and 1.7 per 100,000 in 2006–15, respectively).

In 2006–15, over half (56.1 per cent) of cases were notified with pulmonary involvement. The majority (95.3 per cent) were new cases, and TB relapse rates were low (Dale et al. submitted). A high proportion of cases were laboratory-confirmed with either culture (75.5 per cent) or PCR (6.8 per cent). Of 2,972 culture-confirmed cases where drug susceptibility was able to be performed, most (89.1 per cent) had a fully sensitive strain, a further 7.9 per cent were resistant to at least one firstline drug and 2.0 per cent had multidrug resistant TB (MDR-TB, *n* = 57) or extensively drug resistant TB (XDR-TB; *n* = 2). Data on HIV from 2009–15 shows low rates of TB-HIV co-infection (1.5 per cent of total notifications, *n* = 40).

Of 92.4 per cent of cases in 2006–13 with assessable treatment outcomes (Toms et al. 2015) treatment success (completed treatment or were cured of TB) remained at high levels each year (95.0–97.9 per cent). Mortality from TB in Victoria is among the lowest reported globally, with a TB-related case fatality rate of 3.4 per cent in 2002–13 and steadily declining over time (Dale et al. 2016)

Figure 10.32: Number and notification rate (per 100,000 population) of TB cases, Victoria, 1992–2015



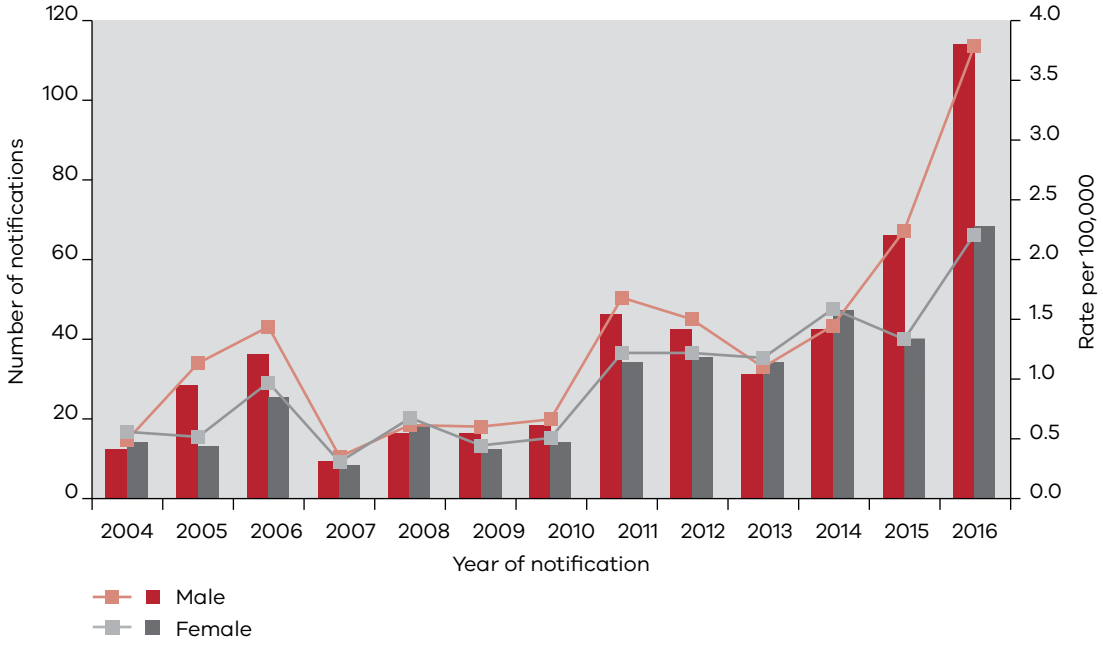
Notification rates were determined using Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (2006–2015).

Data source: Public Health Event Surveillance System 2016

Buruli ulcer (*Mycobacterium ulcerans* infection)

Cases of Buruli ulcer in males contributed to 56.8 per cent of total notifications in 2004–16. There were more notifications in males for most years (Figure 10.34).

Figure 10.34: Number and notification rate (per 100,000 population) of Buruli ulcer cases, by sex and year, Victoria, 2006–15

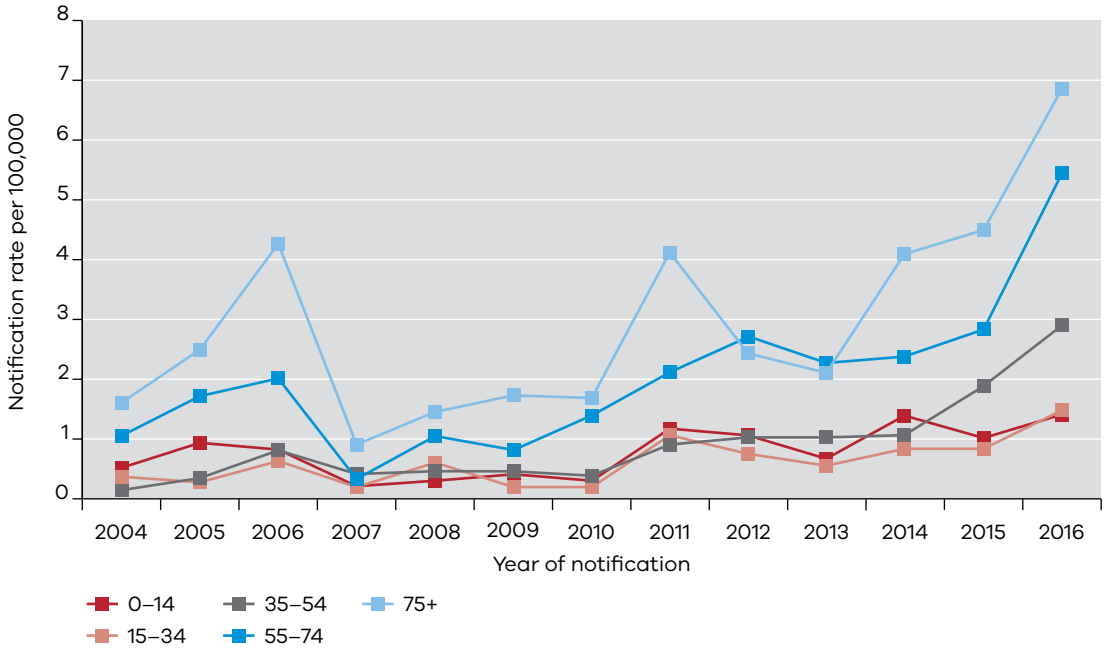


Sex-specific notification rates were determined using the Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (2006–2015).

Data source: Public Health Event Surveillance System 2016

Older and elderly adults are disproportionately affected by Buruli ulcer. The median age of cases was 54.5 years (range: 1–96 years) and cases aged 55–75 years contributed to 33.2 per cent of total notifications. As shown in Figure 10.35, notification rates fluctuated over time, but an increasing trend was noted in all age groups, particularly in older adults aged over 55.

Figure 10.35: Notification rate (per 100,000 population) of Buruli ulcer cases, by age group and year, Victoria, 2006–15

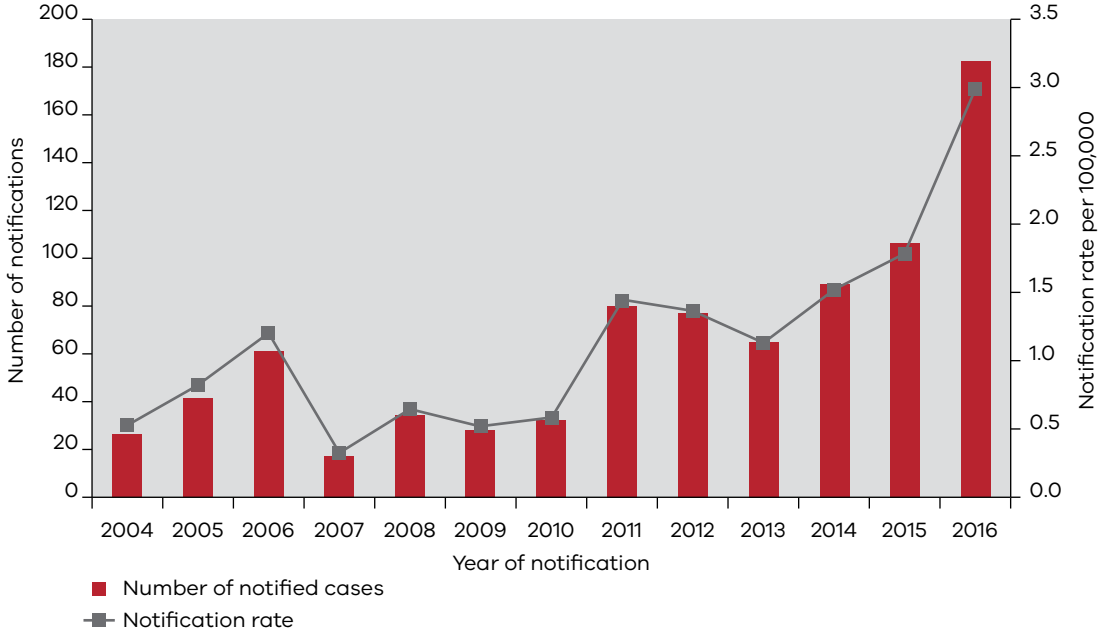


Age-specific notification rates were determined using Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (2006–2015).
Data source: Public Health Event Surveillance System 2016

Since becoming notifiable in 2004, the number of notifications fluctuated initially from 2004–10 (average 34 cases per year; range: 17–61 years). This has increased significantly from 2011 onwards, and numbers nearly doubled between 2015 and 2016. In 2016 there were 182 cases (rate: 3.0 per 100,000), with notification rates much higher in endemic areas (Figure 10.36).

As shown in Figure 10.37, the number of notifications from 2004 to 2012 were predominantly driven by cases linked to the Bellarine Peninsula in both residents and visitors, in particularly Point Lonsdale, Barwon Heads, Ocean Grove and Queenscliff. From 2012–13 onwards, the epidemiology has gradually shifted from the Bellarine Peninsula to the Mornington Peninsula, with current disease hotspots in Rye and the surrounding townships of Blairgowrie, Sorrento and Tootgarook. In 2016, over two-thirds (69.2 per cent) of cases were linked to the Mornington Peninsula compared with 12.1 per cent for the Bellarine Peninsula. There has also been an increase in cases in residents of the Frankston/Seaford/Langwarrin area from an average of four cases per year (range: 1–8 cases) in 2004–13 to 11 cases in 2015–16.

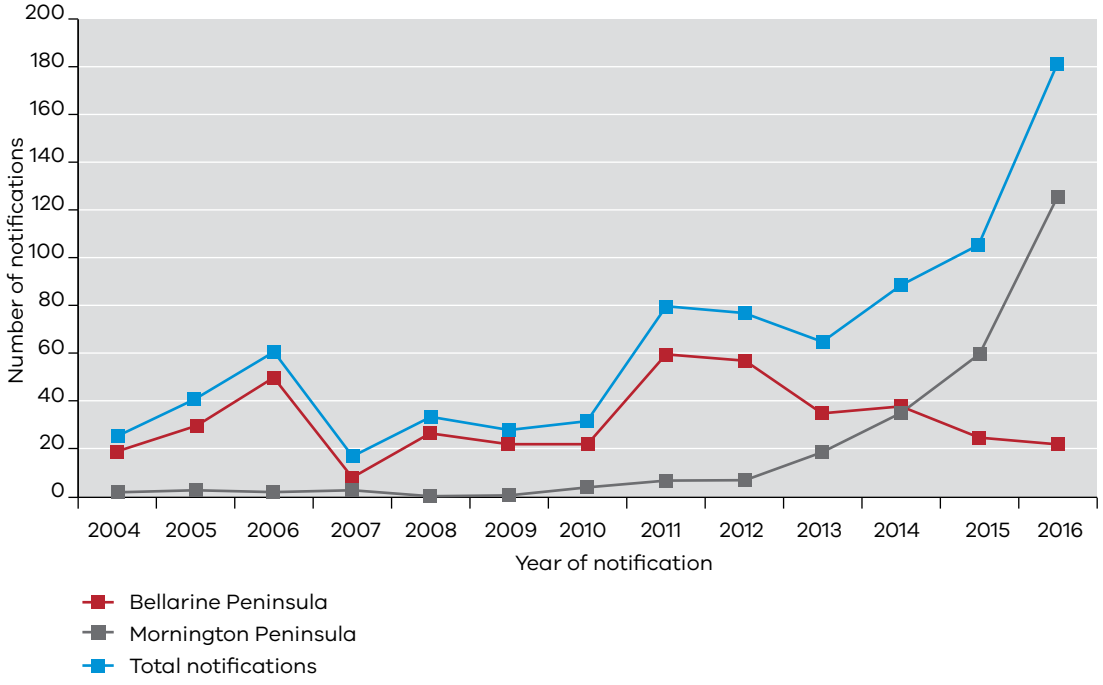
Figure 10.36: Number and notification rate (per 100,000 population) of Buruli ulcer cases, Victoria, 2006–15



Notification rates were determined using Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (2006–2015).

Data source: Public Health Event Surveillance System 2016

Figure 10.37: Number and notification rate (per 100,000 population) of Buruli ulcer cases, Victoria, 2006–15

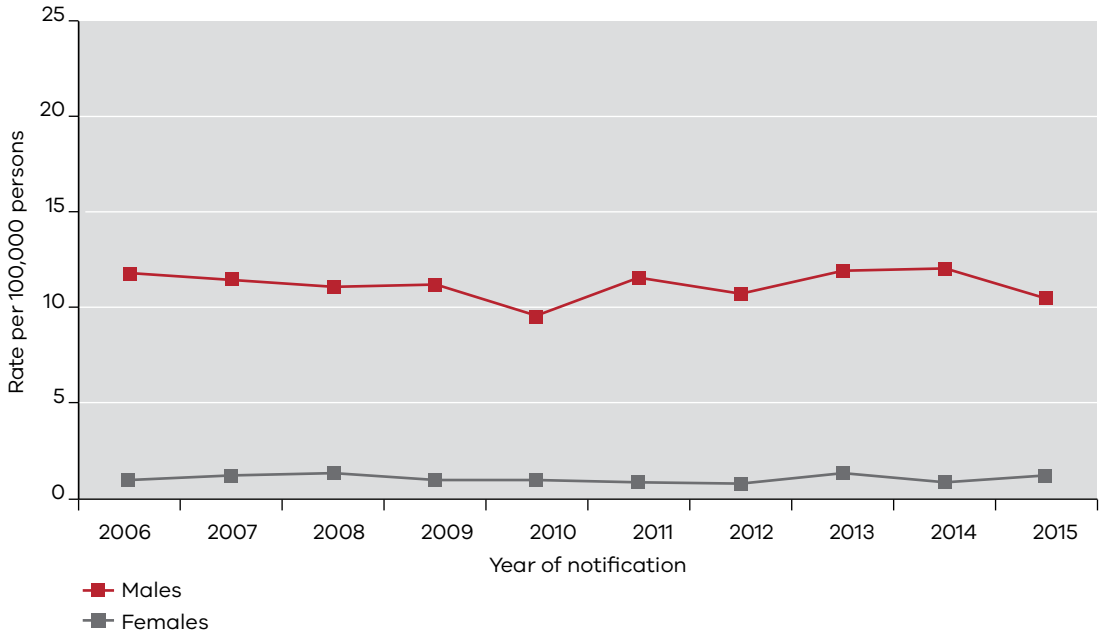


Data source: Public Health Event Surveillance System 2016

HIV

Since 2006, approximately 90 per cent of all cases of HIV each year have been in males. The rate per 100,000 persons has increased over time among males while remaining stable among females (Figure 10.38). Among females there have been an average of 24 cases per year between 2006 and 2015, with the highest number in 2013 (*n* = 33) and the lowest in 2012 (*n* = 19).

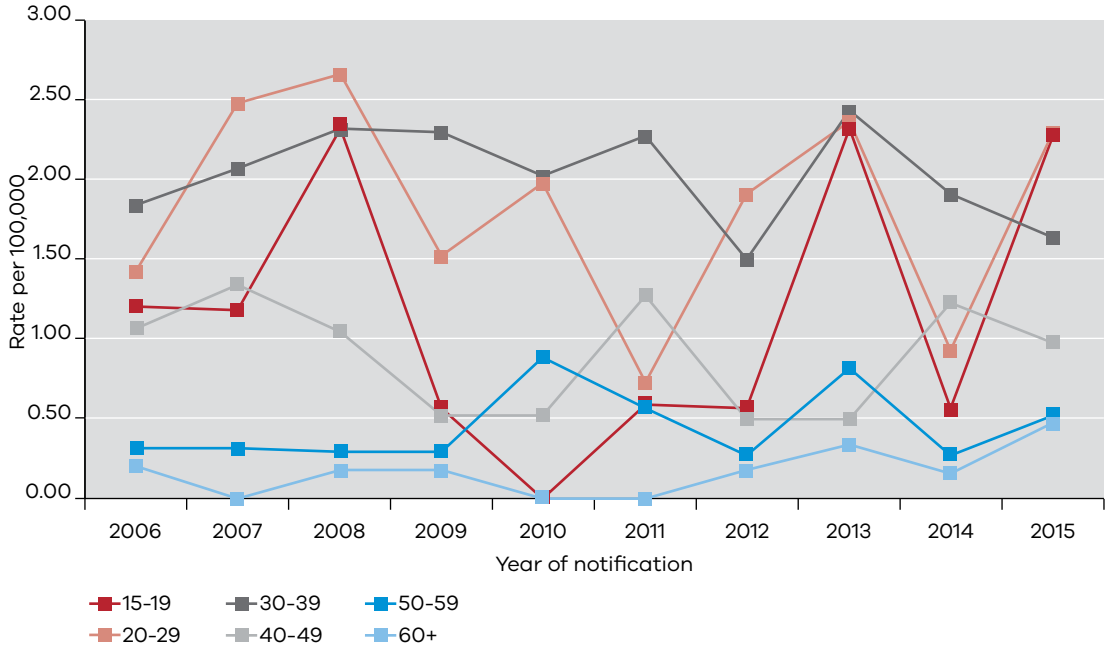
Figure 10.38: Notification rate for HIV (per 100,000), by year and sex, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016
ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

The rate of infections in both males and females has been highest in the 20–29-year and 30–39-year age groups each year (Figure 10.39 and 10.40). Due to small numbers of cases among females the population rates by age groups fluctuate (Figure 10.39). There has been a decline in the population rate for males aged 40–49 years and an increase among males aged 15–29 years (Figure 10.40).

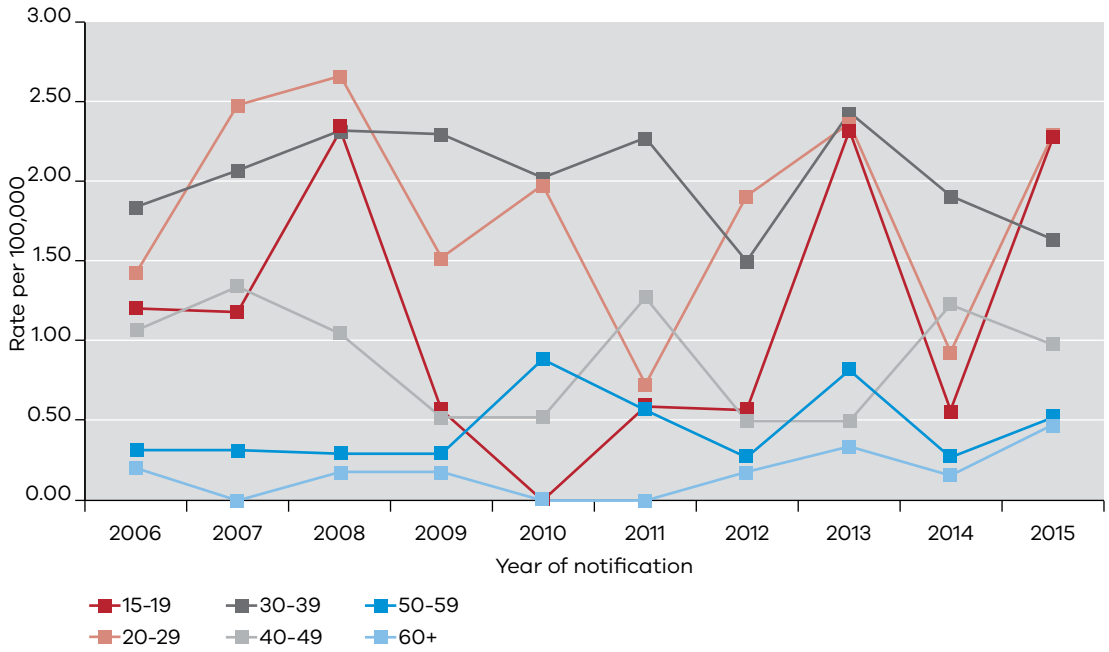
Figure 10.39: Rate (per 100,000) of HIV, by age group among females, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

Figure 10.40: Rate (per 100,000) of HIV, by age group among males, Victoria, 2006–15

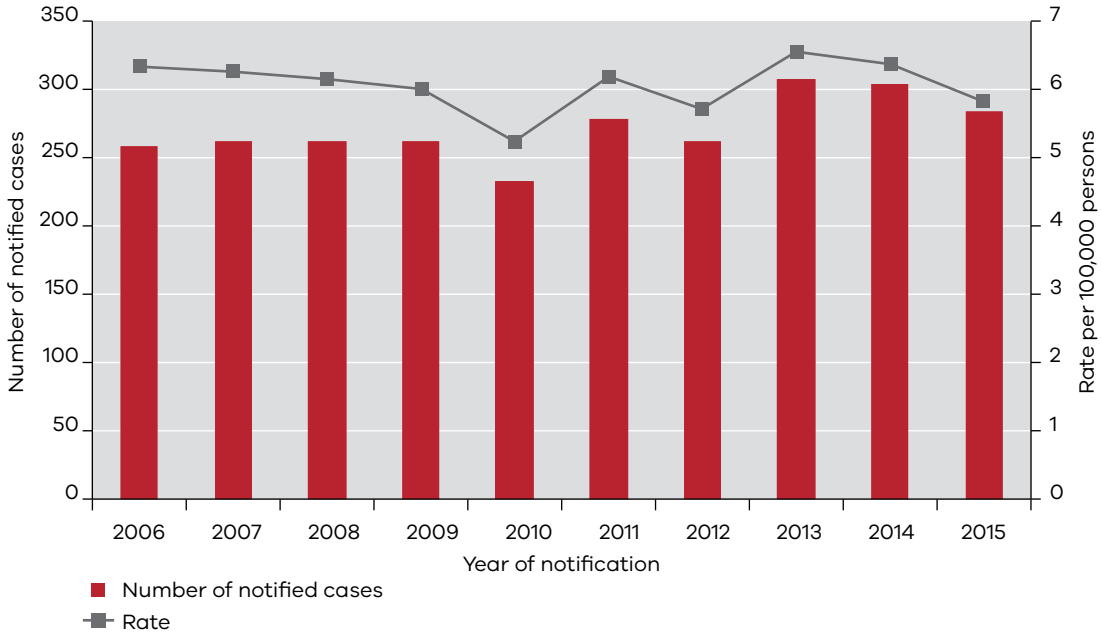


Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria

HIV notifications in Victoria rose from an average of 256 cases per year in the years 2006–10 to 287 cases per year in the years 2011–15 (Figure 10.41). After a peak in the number of HIV notifications in 2013 (*n* = 307), the number of notifications declined to 283 in 2015.

Figure 10.41: Notified cases and notification rate for HIV, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

In the 10 years between 2006 and 2015 inclusive there were 2,712 cases of HIV, the majority among men who have sex with men (77 per cent , *n* = 2,079). On average, each year 9 per cent of HIV cases were among women. The majority of all women in this 10-year period reported heterosexual sex as their exposure to HIV (54 per cent, *n* = 133) and 35 per cent (*n* = 87) were born in a high prevalence country.[6] Among men not reporting male-to-male sex, 9 per cent reported heterosexual sex as their exposure to HIV (*n* = 227).

There were 32 notified cases of HIV among Aboriginal and Torres Straight Islanders in the past 10 years; 97 per cent among males (*n* = 31). Half of all Aboriginal and Torres Strait Islander cases reported male-to-male sex (*n* = 17, 53 per cent) and 44 per cent reported injecting drug use (*n* = 14). Place of infection data show that 68 per cent of cases in the 10-year period acquired HIV in Victoria (*n* = 1,810).

Overall the number of new diagnoses of HIV in Australia has remained stable over the five-year period of 2011–15, with 1,025 cases notified in 2015 compared with 1,082 and 1,030 cases in 2014 and 2013 respectively (The Kirby Institute 2016).

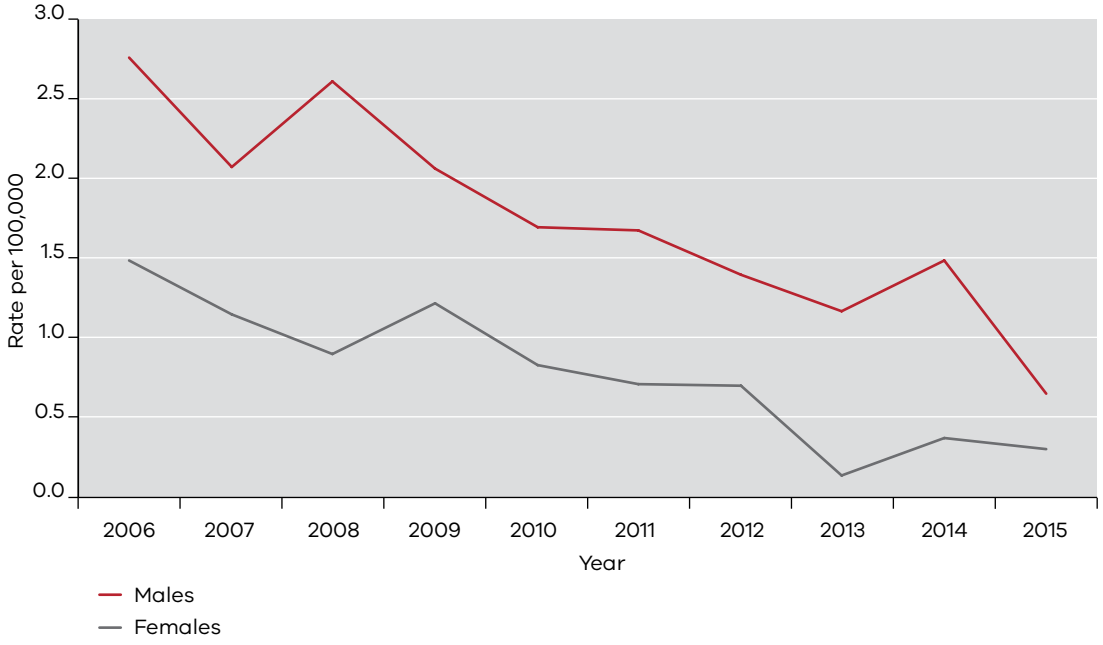
It is important to recognise that there are several factors that can impact on the increase in notifications of HIV cases. These could include high-risk unprotected sexual practices and increased testing. Testing data available through the Australian Collaboration for Enhanced Sentinel Surveillance of Sexually Transmissible Infections and Blood-borne Viruses, a system that was established in 2013, show the testing rate among men at participating clinics increased from 36 per cent in 2012 to 42 per cent in 2015 (ACCESS 2015).

6 High prevalence country: where the adult HIV prevalence is greater than one per cent.

Hepatitis B

Since 2006 the majority (70 per cent) of cases of newly acquired hepatitis B were in males (Figure 10.42). For unspecified hepatitis B cases, slightly more than half (53 per cent) were in males (Figure 10.43).

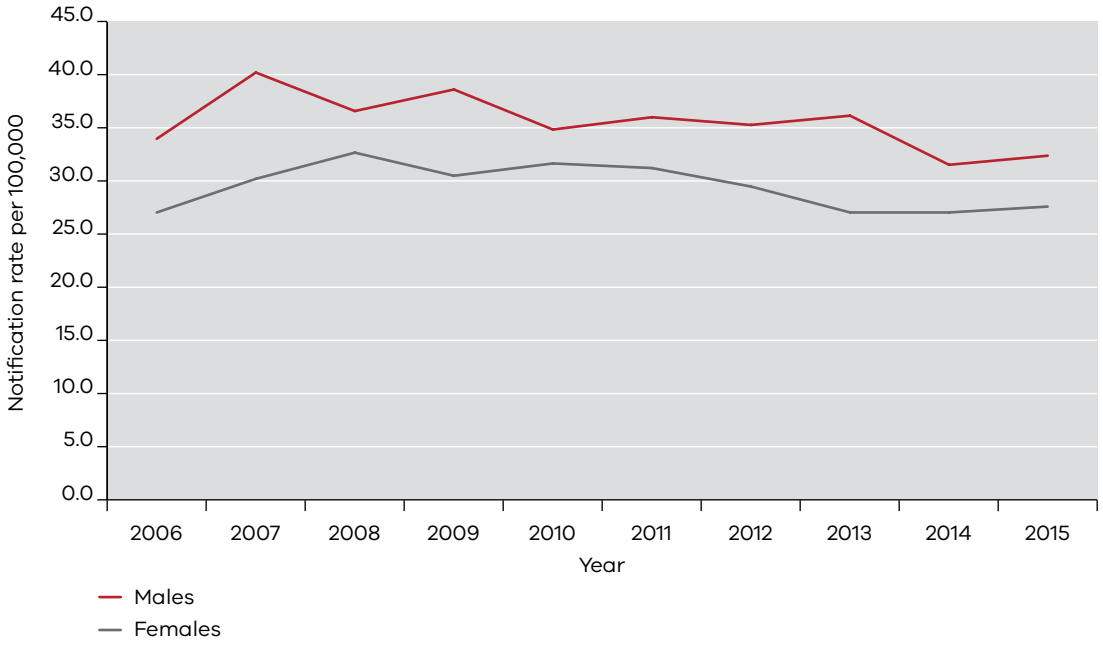
Figure 10.42: Notification rate for newly acquired hepatitis B, by year and sex, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

Figure 10.43: Notification rate for unspecified hepatitis B, by year and sex, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016

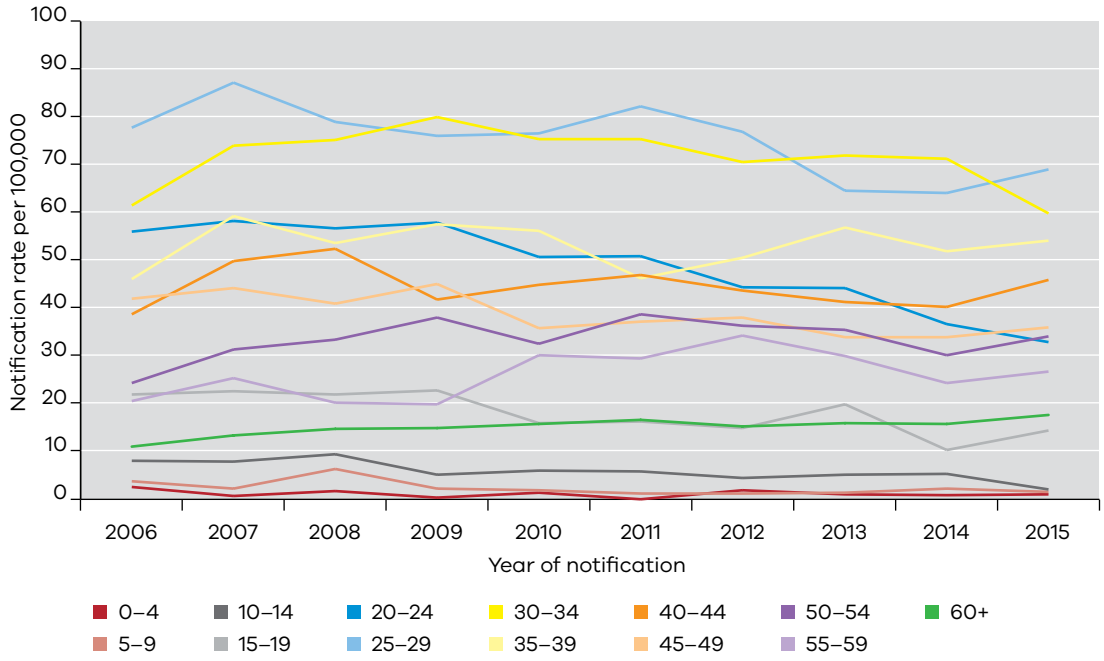
ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

The newly acquired hepatitis B notification rate was highest in both men and women in those aged 30–34, and more common in men aged 35–44 and women aged 20–29.

For unspecified hepatitis B, rates were highest among both men and women in the 25–34-year age group (Figure 10.44). Although the overall notification rate was higher among men, in those 20–29 years old the rate was higher among women, likely due to the systematic screening of pregnant women in these age groups leading to higher levels of diagnosed infection.

The age distribution of unspecified hepatitis B notifications has increased over time, with the median age of those notified increasing from 31 in 2006 to 35 in 2015.

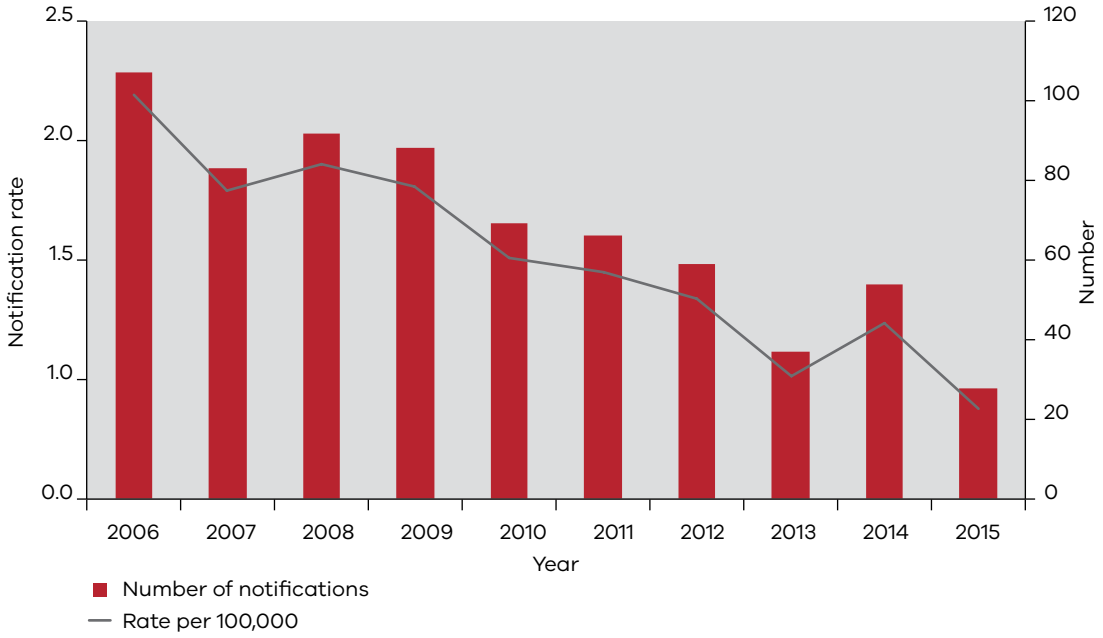
Figure 10.44: Notification rate for unspecified hepatitis B, by age group, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016
ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

Newly acquired hepatitis B cases have declined significantly in the past decade, from more than 100 in 2006 to 28 in 2015 (Figure 10.45), the lowest number since it became notifiable in 1991.

Figure 10.45: Notified cases and notification rate for newly acquired hepatitis B, Victoria, 2006–15

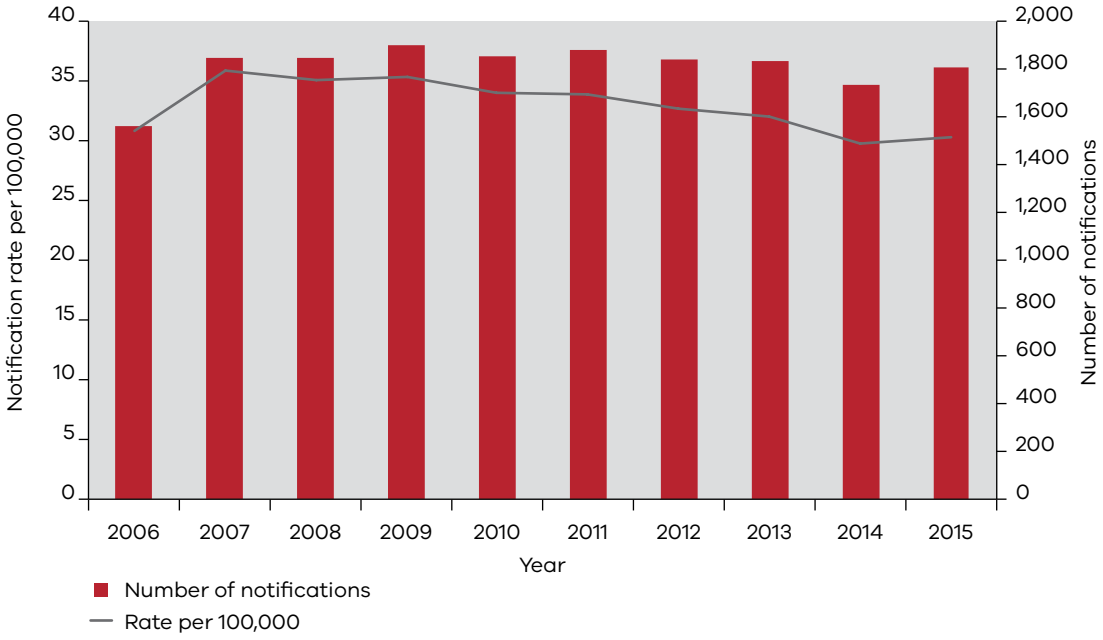


Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

The number of cases for unspecified hepatitis B has remained relatively stable over time, with the rate fluctuating between 30 and 35 cases per 100,000 per year and appearing to decline slightly between 2007 and 2015 (Figure 10.46).

Figure 10.46: Notified cases and notification rate for unspecified hepatitis B, Victoria, 2006–15



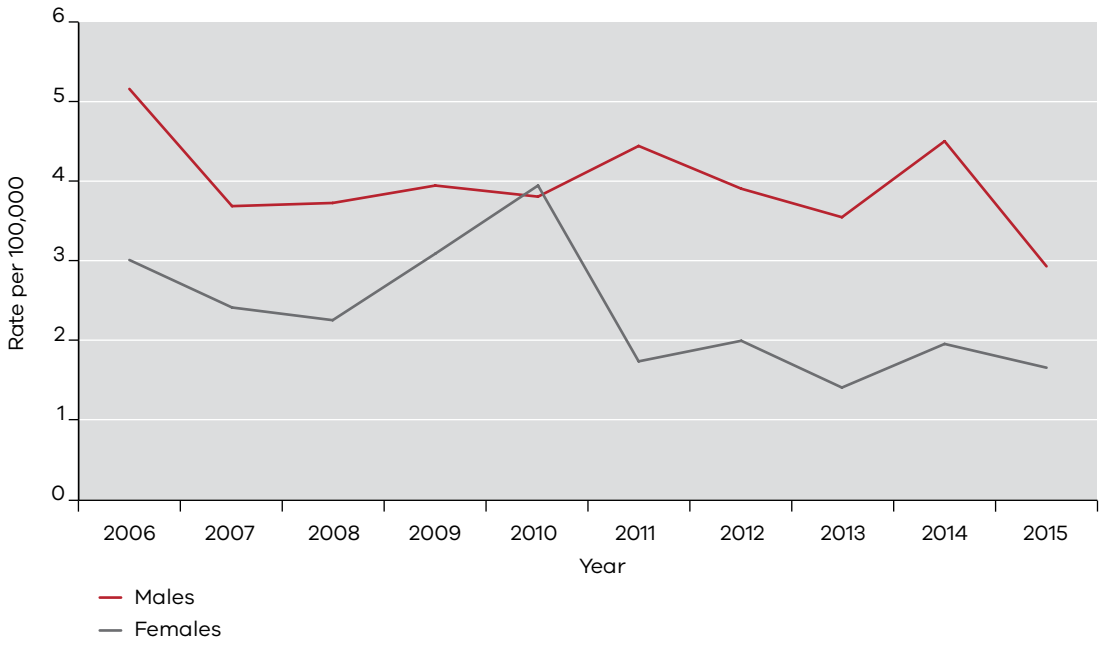
The most commonly reported risk factor for newly acquired hepatitis B during 2006–15 was injecting drug use (45 per cent of those with reporting), followed by heterosexual contact (14 per cent), tattoos (7 per cent), surgical procedures (6 per cent) and body piercing (4 per cent). The majority of those notified with newly acquired hepatitis B were born in Australia (72 per cent) and lived in the metropolitan area of Melbourne (70 per cent). Aboriginal and Torres Strait Islander people made up 3 per cent of the cases notified.

Although data regarding demographic characteristics and risk factors among those notified with unspecified hepatitis B are limited, the overwhelming majority of those with information available were born overseas (91 per cent) and 0.6 per cent were among Aboriginal and Torres Strait Islander peoples. Notified cases were more common in metropolitan Melbourne, making up 93 per cent of the total.

Hepatitis C

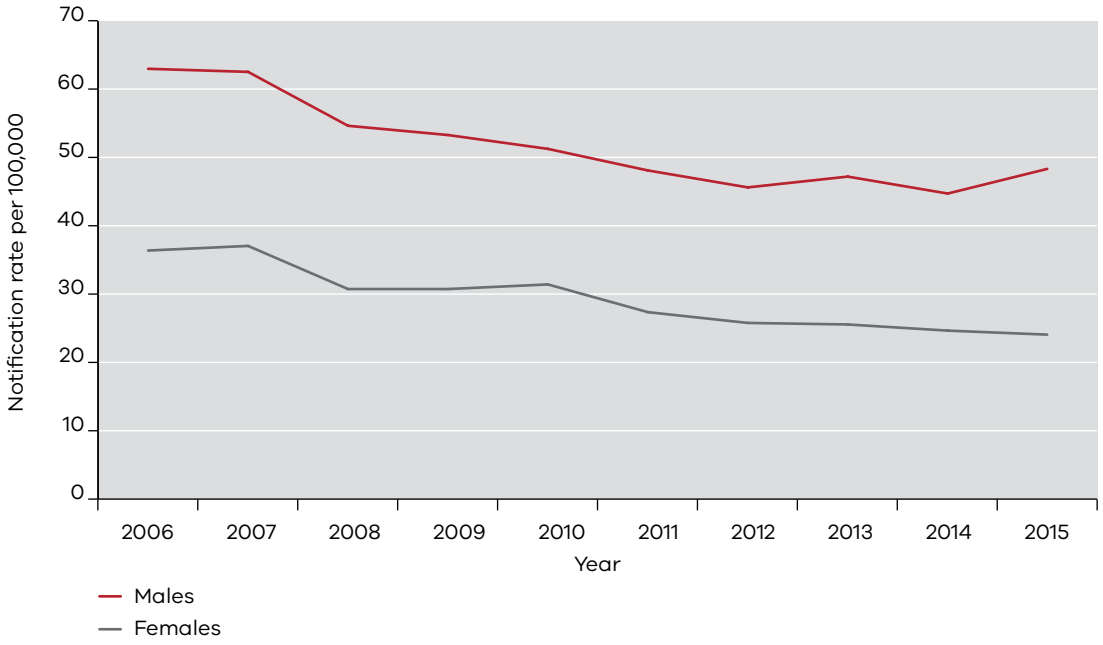
Between 2006 and 2015, the majority of cases for hepatitis C were among males, both newly acquired (62 per cent, Figure 10.47) and unspecified (63 per cent, Figure 10.48).

Figure 10.47: Notification rate for newly acquired hepatitis C, by year and sex, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016
ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

Figure 10.48: Notification rate for unspecified hepatitis C, by year and sex, Victoria, 2006–15

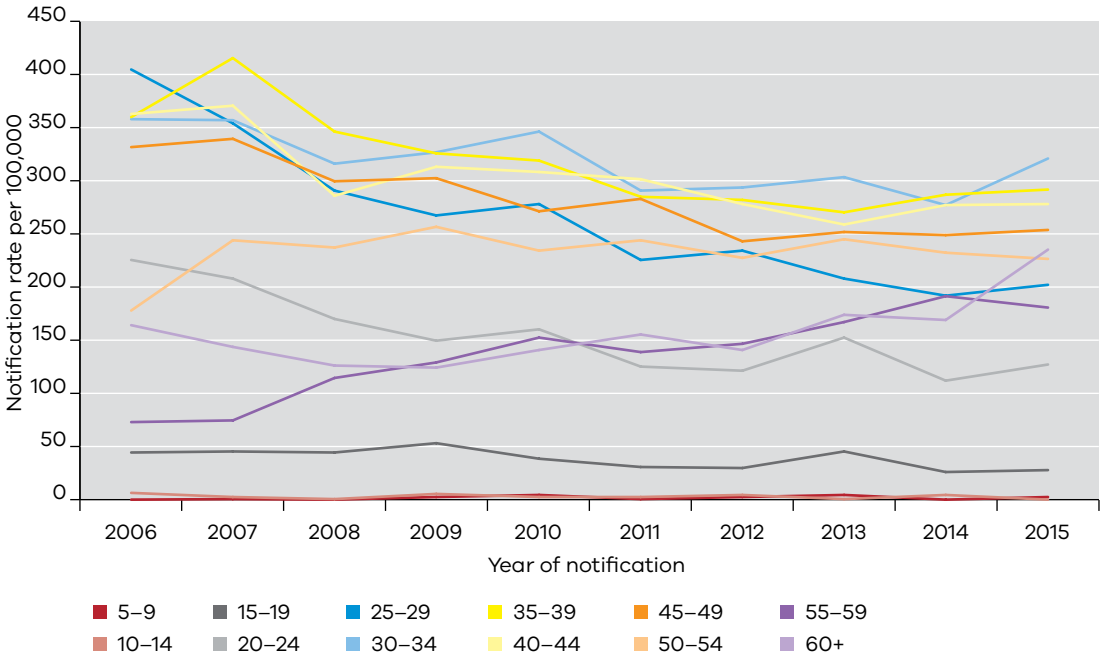


Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

The rate of newly acquired hepatitis C cases was highest in those aged 20–29 in both men and women (Figure 10.49). For unspecified hepatitis C, the most common age groups in men were those aged 30–49 years, while in women cases were predominantly in those aged 25–44 years.

Figure 10.49: Notification rate for unspecified hepatitis C, by age, Victoria, 2006–15

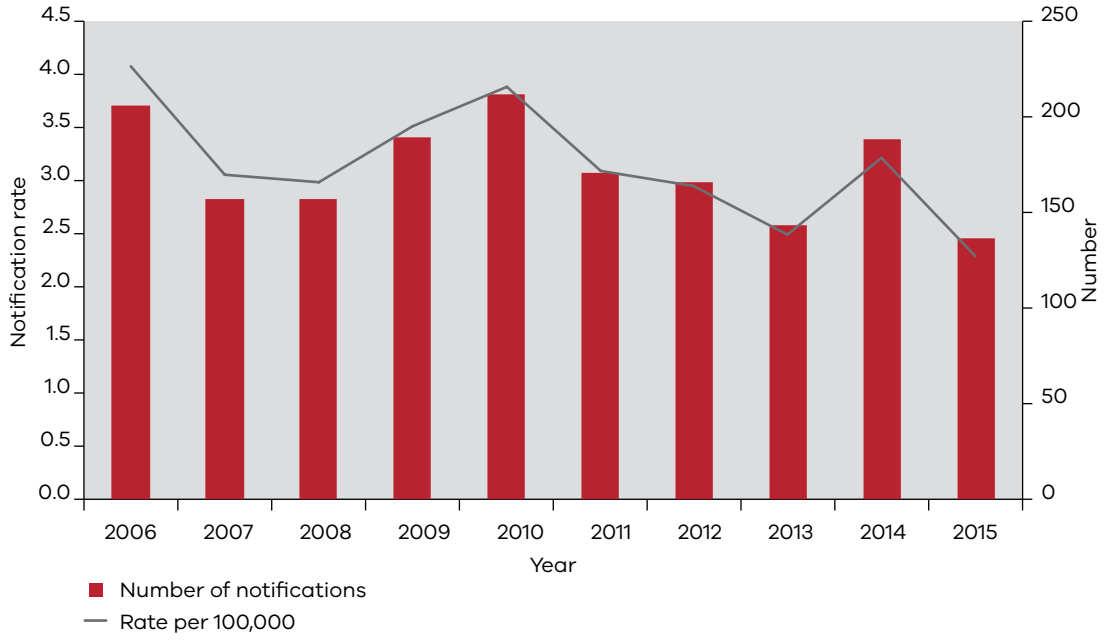


Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

Both newly acquired (Figure 10.50) and unspecified (Figure 10.51) cases of hepatitis C fluctuated year-to-year but have declined slightly in the past decade.

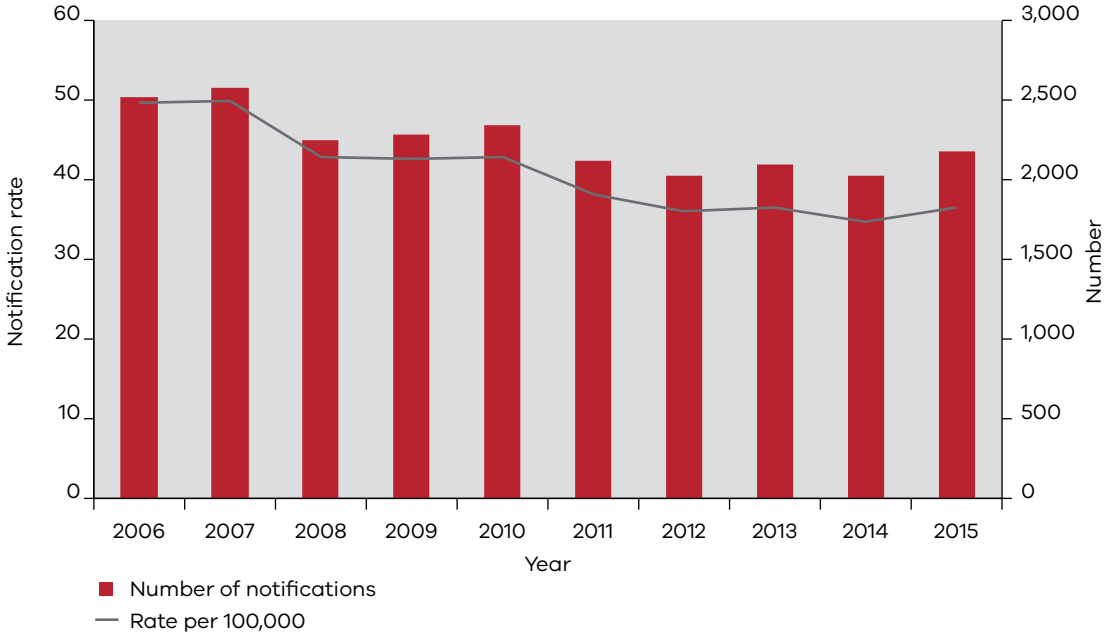
Figure 10.50: Notified cases and notification rate for newly acquired hepatitis C, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

Figure 10.51: Notified cases and notification rate of unspecified hepatitis C, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016

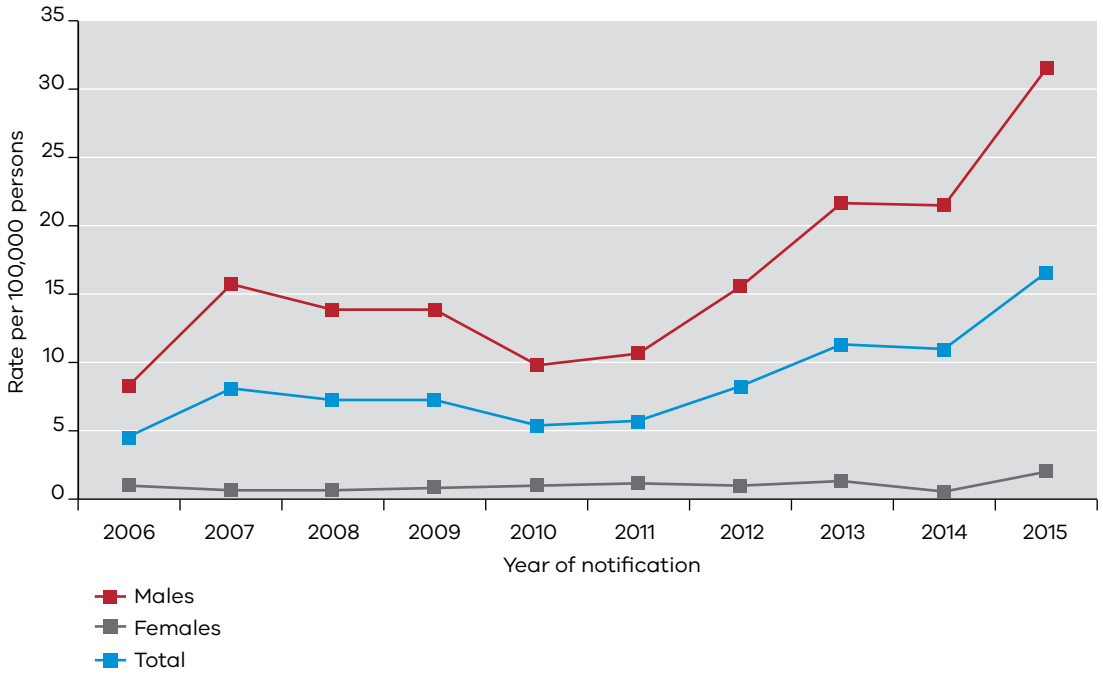
ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

The most common risk factor reported for newly acquired hepatitis C during 2006–15 was injecting drug use, present in the vast majority of notifications (87 per cent of those with reporting). The majority of those notified with newly acquired hepatitis C were born in Australia (89 per cent) and lived in the metropolitan area of Melbourne (70 per cent). Aboriginal and Torres Strait Islander people made up 6 per cent of the total cases notified – an almost 10-fold higher rate compared with non-indigenous Victorians.

Infectious syphilis

Since 2004, 90 per cent or more of cases of syphilis have been in males (Figure 10.52).

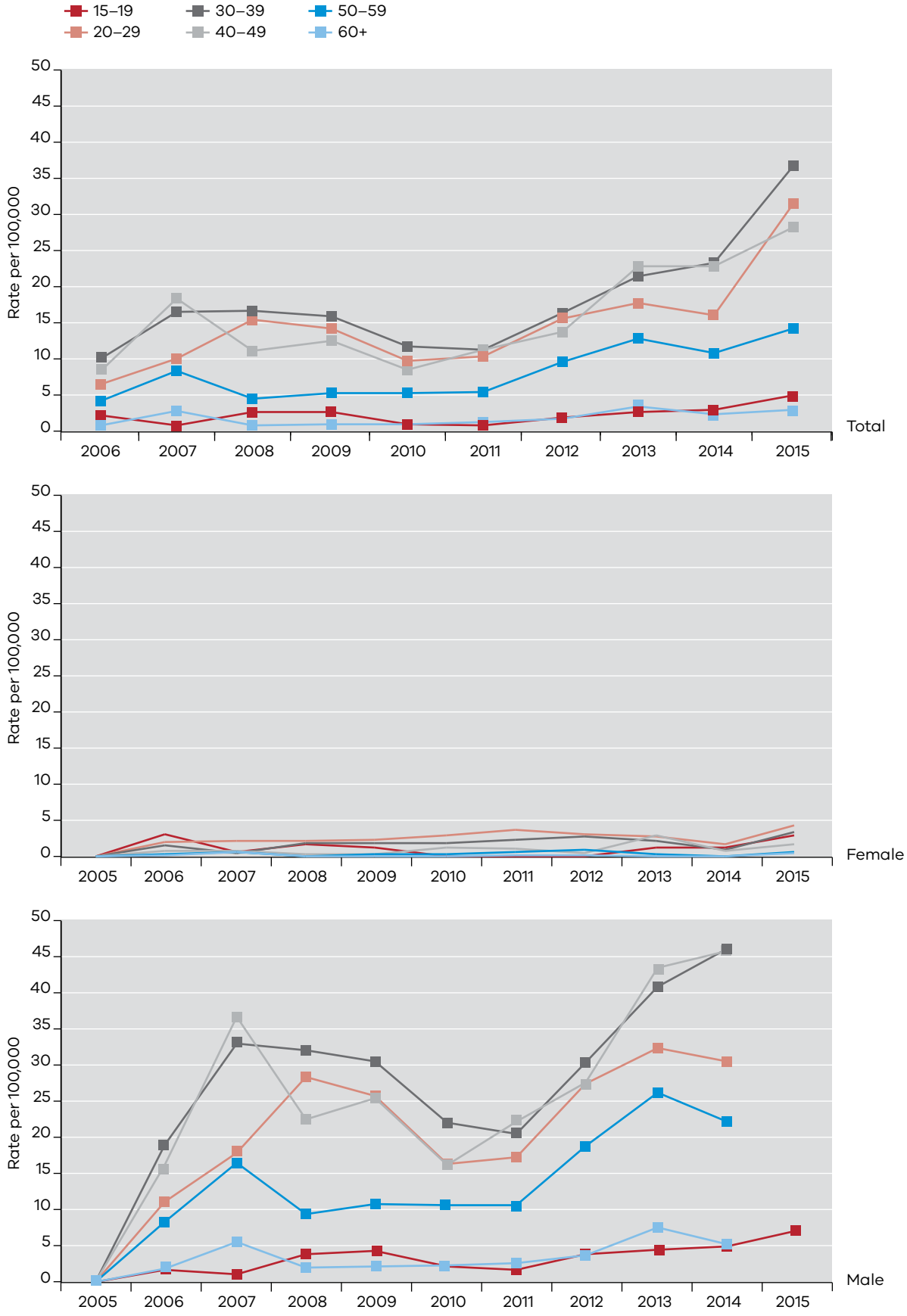
Figure 10.52: Notification rate for infectious syphilis, by year and sex, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016
ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

The rate of infections in men has been highest in the 20–29, 30–39 and 40–49-year age groups. Among women the infection rates were highest in the 20–29-year and 30–39-year age groups (Figure 10.53).

Figure 10.53: Rate (per 100,000) of infectious syphilis, by sex and age group, Victoria, 2006–15

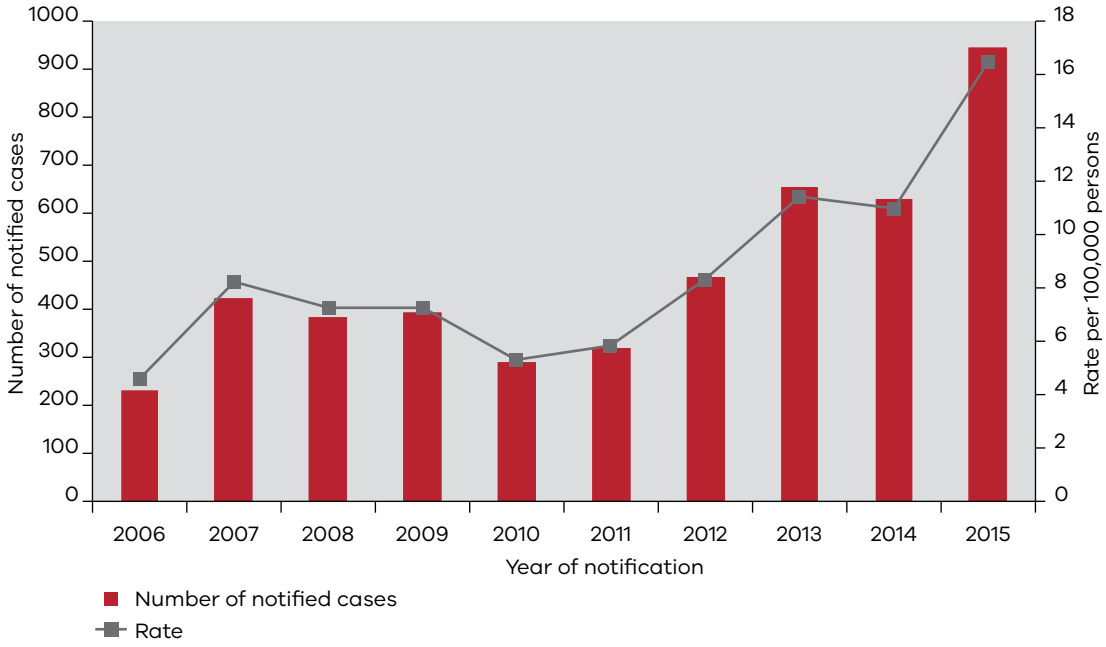


Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

Infectious syphilis notifications in Victoria rose 70-fold from nine cases in 2000 to 946 cases in 2015. Syphilis notifications are at its highest records since it became notifiable in 1991 (Figure 10.54).

Figure 10.54: Notified cases and notification rate of infectious syphilis, Victoria, 2006–15



Data source: Public Health Event Surveillance System 2016

ABS file 3101.0 *Australian Demographic Statistics, Table 52: Estimated Resident Population by Single Year of Age, Victoria*

A total of 946 cases of infectious syphilis were notified in 2015 compared with 629 cases in 2014, representing a 50 per cent increase compared with the number of cases notified in 2014.

Since 2004 the notified cases of infectious syphilis were almost all confined to men who have sex with men (average 81 per cent for the period 2006–15). In 2015, 40 per cent of the reported cases (*n* = 347) were among people living with HIV, of whom 90 per cent (*n* = 312) were among men who have sex with men.

The increase in syphilis cases in the past decade was also seen elsewhere in Australia. According to the National Notifiable Disease Surveillance System, 2,726 cases were notified in 2015 compared with 2,037 and 1,766 cases in 2014 and 2013, respectively.

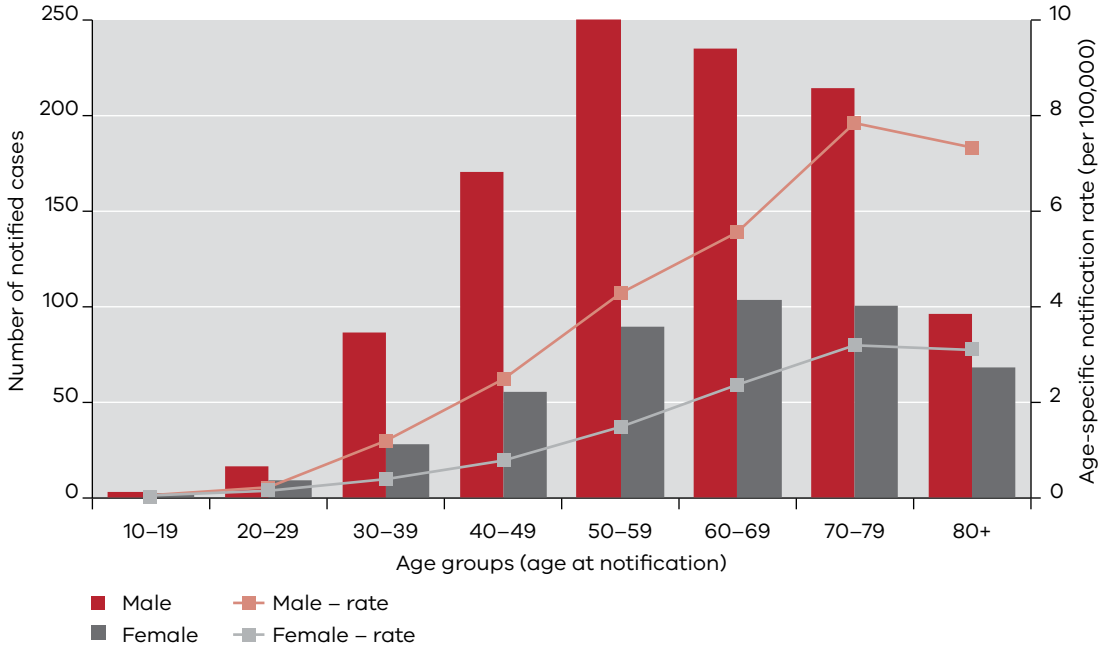
Several factors can impact on the increase in notifications of infectious syphilis cases, including high-risk unprotected sexual practices and increased testing. Testing data available through the Victorian Primary Care Network for Sentinel Surveillance show that the number of syphilis tests conducted at participating clinics increased between 2008 and 2013 by 56 per cent (Victorian Primary Care Network for Sentinel Surveillance 2013) accounting for a relatively small proportion of the increase over that time.

Legionellosis

Males and older adults are disproportionately affected by legionellosis. Between 1997 and 2015, 70 per cent of cases of legionellosis were male. The median age of cases was 61 years (range: 15–99 years), with 75 per cent of cases aged 50 years or older (Figure 10.54). Age-specific notification rates for legionellosis were also higher in males than females, and were highest in those aged over 70 years.

Among all cases of legionellosis notified between 1997 and 2015 for whom risk history information was obtained, 39 per cent reported that they were current smokers, 54 per cent reported that they had a pre-existing/chronic health condition and 22 per cent reported having weakened immune systems (immunocompromised).

Figure 10.54: Number and notification rate (per 100,000 population) of cases of legionellosis, by sex and age group, Victoria, 1997–2015



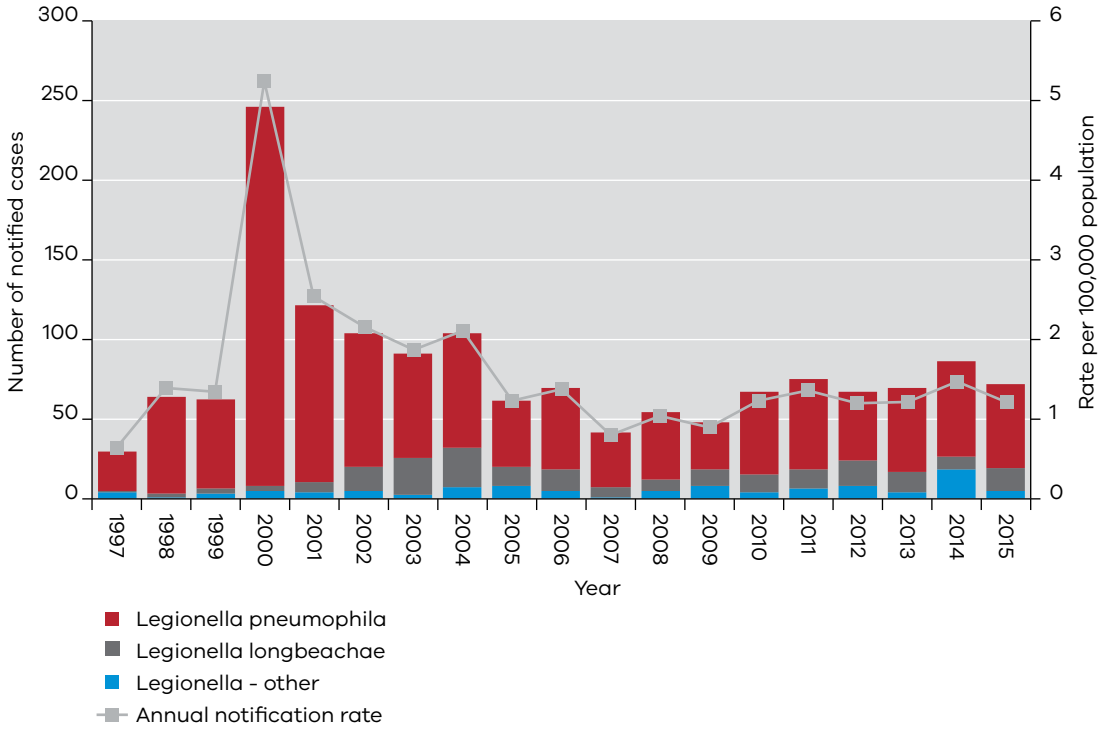
Age- and sex-specific notification rates were determined using the Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (1997–2015).

Data source: Public Health Event Surveillance System 2016

The largest annual number of notifications between 1997 and 2015 occurred in 2000, coinciding with a large outbreak at the Melbourne Aquarium where the source was identified as a poorly disinfected cooling tower (Greig et al. 2004). Overall, the annual notification rate for cases of legionellosis declined following the outbreak year and has been relatively stable between 2005 and 2015, with an average of 1.2 cases per 100,000 persons per year (Figure 10.55).

The majority of legionellosis cases each year were due to infection with *L. pneumophila* (between 63 per cent in 2009 to 97 per cent in 2000). *L. longbeachae* infections comprised between 1.2 and 25 per cent of cases. The remainder of cases were due to infection with other *Legionella* species (Figure 10.55).

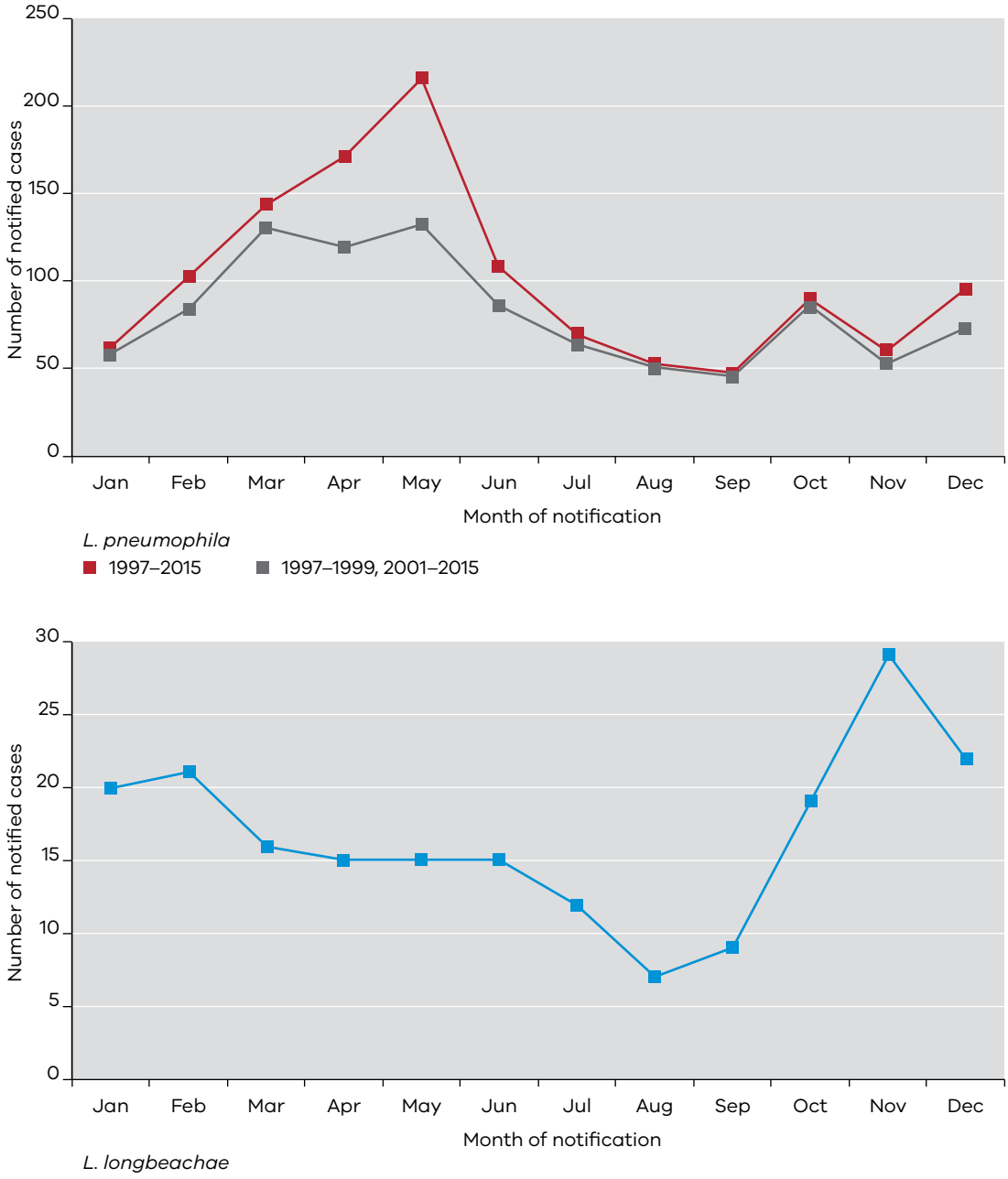
Figure 10.55: Number of notified cases of legionellosis, by species and annual notification rate of legionellosis, Victoria, 1997–2015



Crude annual rates were determined using the Australian Bureau of Statistics (ABS) Estimated Residential Population (ERP) for each year (1997–2015).
Data source: Public Health Event Surveillance System 2016

There was a seasonal pattern of legionellosis notifications between 1997 and 2015, which varied depending on the species of *Legionella* identified as the cause of infection. Notifications of cases of legionellosis due to infection with *L. pneumophila* were highest in autumn (March to May), including when data from the Melbourne Aquarium outbreak in April 2000 were excluded (Figure 10.56). Conversely, notifications of cases of legionellosis due to infection with *L. longbeachae* declined in winter months (July and August) and peaked in late spring (November) (Figure 10.56).

Figure 10.56: Seasonal trends in legionellosis, by species, Victoria, 1997–2015



Data source: Public Health Event Surveillance System 2016

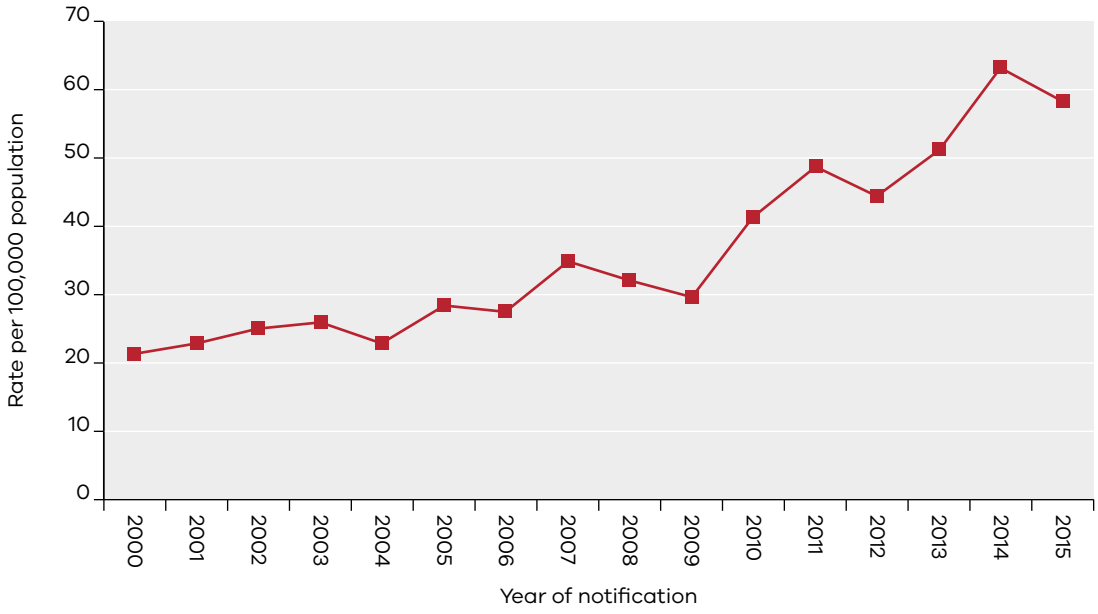
Smoking is known to increase susceptibility to respiratory tract infections, including legionellosis. *L. pneumophila* has been associated with outbreaks of legionellosis where exposure to cooling towers has been implicated. Autumnal peaks in *L. pneumophila* cases may be due in part to temperature and humidity fluctuations resulting in intermittent cooling tower activity, which has been suggested to affect *Legionella* growth.

Many cases of legionellosis due to *L. longbeachae* report engaging in gardening activities or using potting mix prior to becoming unwell. The higher number of cases of *L. longbeachae* in the spring months may reflect an increase in gardening activities being undertaken at this time.

Salmonellosis (non-typhoidal)

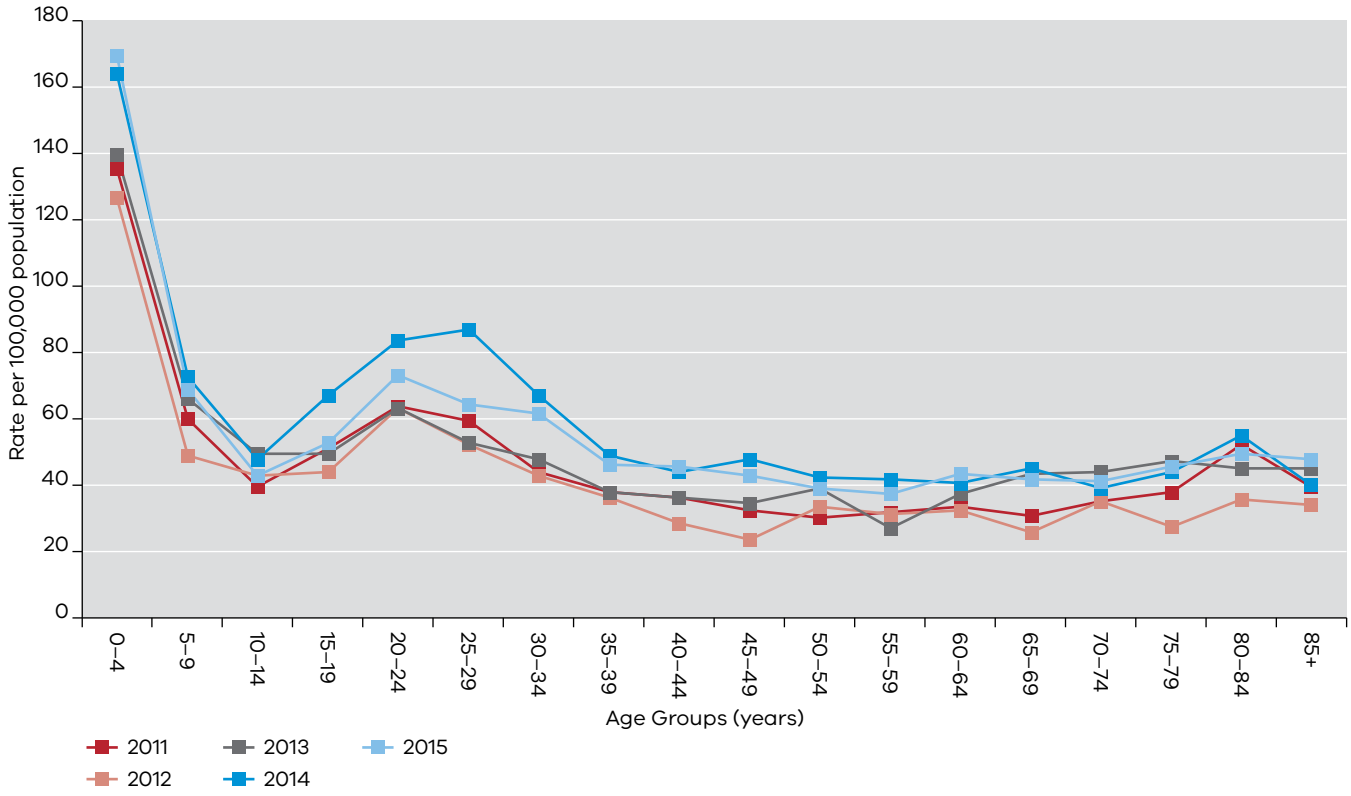
The number of notified cases and the notification rate of salmonellosis have increased steadily in Victoria between 2000 and 2015 (Figure 10.57). Notification rates of salmonellosis have been consistently high in the 0–4-year age group, with secondary peaks occurring in the 20–24 and 25–29-year age groups (Figure 10.58). The number of point source outbreaks of salmonellosis has fluctuated over the past five years. Eggs (predominantly ready-to-eat foods containing raw or lightly cooked eggs) were identified as the source for 78 per cent of the outbreaks notified between 2009 and 2015, where a food source was able to be identified (Table 10.22).

Figure 10.57: Notification rate of laboratory-confirmed salmonellosis, per 100,000 population, Victoria, 2000–15



Data source: Department of Health and Human Services, Communicable Disease Epidemiology and Surveillance 2014

Figure 10.58: Notification rate of laboratory-confirmed salmonellosis, by age group, Victoria, 2011–15



Data source: Department of Health, Communicable Disease Epidemiology and Surveillance

Challenges and opportunities

Vaccine-preventable diseases

Despite the availability of pertussis vaccines for more than 50 years, pertussis remains a challenging disease to control because immunity, whether from immunisation or natural infection, tends to wane over time (Australian Technical Advisory Group on Immunisation 2017). Pertussis is always circulating in the community and, as a result, epidemics tend to occur every three to four years, with the most recent epidemic occurring in Victoria between 2009 and 2011 (Franklin & Cowie 2012).

The most effective means of preventing the spread of pertussis is by achieving high vaccination coverage throughout a population. Other than the childhood vaccine schedule provided by the National Immunisation Program, a number of time-limited vaccination programs have been provided in Victoria over the past decade, including a parental pertussis (cocoon) program, which ran between 15 June 2009 and 30 June 2012, and the maternal vaccination program, which was introduced on 1 June 2015. While this most recent program is primarily aimed at pregnant women from 28 weeks' gestation, partners of pregnant women or parents/guardians of infants aged under six months of age who have not had a booster in the past 10 years are also eligible for funded vaccine.

Following the introduction of routine meningococcal C vaccination in 2003, notifications of invasive meningococcal disease declined markedly in Victoria and nationally. In 2013, while serogroup B was considered the predominant serogroup, case numbers were at an all-time low. Since this time, there has been an increase in cases due to serogroup W, closely followed by serogroup Y. Serogroup B also increased in 2014 and 2015; however, there is some evidence of serogroup replacement occurring (Martin et al. 2016).

Meningococcal C vaccine is available through the National Immunisation Program for all children at 12 months of age. A vaccine that protects against serogroup B disease also became available on the private market in Australia in 2013; however, it is not currently funded under the National Immunisation Program. Several quadrivalent conjugate meningococcal vaccines (covering serogroups A, C, W and Y) are registered for use in Australia. The Australian Immunisation Handbook recommends their use in individuals of any age who have predisposing medical conditions or who are planning travel to parts of the world where epidemics of group A, C, W or Y meningococcal disease occur (Australian Technical Advisory Group on Immunisation 2017; Martin et al. 2016). The Victorian Government has introduced a targeted vaccination program for school children aged 15–19 years to combat the rise in meningococcal W.

Tuberculosis

While Victoria has a highly effective TB program and among the world's lowest mortality and TB incidence, several key challenges exist in relation to local tuberculosis trends. First, patterns of migration influence TB case burden and distribution significantly, and planning of services requires active monitoring of geographic and social trends. While the bulk of Victorian TB cases occur in metropolitan Melbourne, cases in rural areas contribute substantially to the burden of TB in Victoria. Specific challenges in responding appropriately include some factors that are common to many rural health services, particularly the difficulty in accessing specialist outpatient services in key regional areas and ensuring all services are provided without charge.

Second, case complexity in Victoria continues to increase. Drug-resistant TB cases, particularly MDR/XDR TB, are significantly more challenging and expensive to manage and have occurred with increasing frequency in recent years, reflective of global patterns. Case complexity is also associated with factors such as illicit drug use, housing and financial insecurity, indicating a need for engagement with a broad range of support services and skills.

Finally, Australia's commitment to the global targets for eliminating TB as a public health issue will mean a need for expanded focus on latent TB infection. Increased capacity for the diagnosis and treatment of latent TB infection forms a cornerstone of future strategies for prevention of TB and will require a greater emphasis on ensuring that those at risk of latent TB are able to access timely diagnosis and effective management.

Buruli ulcer

The cause of the recent increase in case numbers of Buruli ulcer is unclear. Much remains poorly understood about the disease in terms of disease transmission, environmental reservoir(s) and what influences the emergence and endemicity of Buruli ulcer in an area, making it challenging to direct appropriate public health control measures. There is evidence to suggest that vector mosquitoes could transmit, and contact with contaminated soil may also play a role. Therefore, preventive strategies include use of appropriate protective clothing and insect repellents, avoidance of biting insects, minimisation of mosquito breeding sites at home and cleaning of cuts and abrasions after exposure to environment contaminants such as soil or water. To minimise morbidity and long-term disability, early diagnosis and treatment is essential. The disease is curable, with a combination of antibiotics being the current mainstay of treatment. Surgery may be used alone, or in combination with antibiotic therapy where indicated (O'Brien et al. 2014). The Victorian Government is developing a targeted education program for primary health care to improve diagnosis and treatment of Buruli ulcer.

Blood-borne viruses and sexually transmissible infections

The past five years have seen significant advances in treatment and prevention science for the screening and management of HIV, hepatitis B and hepatitis C. Major improvements in therapies for HIV and viral hepatitis have meant that many affected people are enjoying better health and living much more 'normal' lives than in the past.

Victoria is now recording its highest ever level of HIV treatment among people living with HIV, a dramatic uptake of pre-exposure prophylaxis (PrEP) among HIV negative men, annually increasing levels of HIV and STI testing, and a rapid uptake of direct acting antivirals to cure hepatitis C. Significantly improved biomedical treatment and prevention strategies, refreshed approaches to increasing testing and access to treatments make the virtual elimination of new domestic transmissions of HIV, hepatitis B and hepatitis C a public health reality.

An ongoing challenge, however, is reducing the impact of stigma and discrimination on individuals and communities. Stigma and discrimination in the context of blood-borne viruses and STIs can substantially reduce the effectiveness of public health control measures by creating an environment in which individuals are fearful of knowing and/or disclosing their status and seeking the treatment, care and support they require.

At the same time, population growth, long-term trend increases in STI such as syphilis and gonorrhoea, evolving risk reduction behaviours, increasing use of biomedical prevention tools, decreasing consistent condom use, the rise of social networking technologies, travel, migration and mobility patterns between Victoria and high prevalence countries present new primary prevention challenges. In addition, the emergence of multidrug-resistant bacteria such as *Neisseria gonorrhoea* are of great public health concern.

These factors will make STI control more complex and challenging into the future. Innovative approaches are required at the community, workforce and service system levels. A combination prevention strategy for BBV/STI prevention and treatment will be required that includes community mobilisation, biomedical approaches such as undetectable viral load and PrEP, increased frequency and coverage of testing, workforce development, condoms and clean injecting equipment. Additionally, whole genomic sequencing, enhanced surveillance and contact tracing will enable a targeted public health response to ensure rapid implementation of control measures.

Legionellosis

The large cooling tower-associated outbreak at the Melbourne Aquarium in 2000 led to the development of the *Victorian Legionella reform strategy* and the introduction of legislation to ensure cooling towers are appropriately maintained and monitored. Under this strategy, the Department of Health and Human Services' Legionella team undertakes targeted sampling of the recirculating water of cooling tower systems throughout Victoria.

Continued notifications of cases of legionellosis due to *L. longbeachae* highlight the need to remind Victorian gardeners about protective behaviours when using potting mix and soil products including wetting down potting mix, wearing gloves and a face mask, and hand washing after use.

Salmonellosis

Frequent outbreaks of salmonellosis continue occur in Victoria, with a large multijurisdictional outbreak associated with the consumption of bagged salad occurring in early 2016. The department continues to work with partners across government and industry as part of its *Salmonella reduction strategy*, with the aim of reducing the burden of disease attributable to salmonellosis.

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Concepts

Notified cases

The *Public Health and Wellbeing Act 2008* (Vic) requires that a number of prescribed conditions are notified to the Department of Health and Human Services by pathology services (laboratories) and medical practitioners (doctors). The legislative requirement for notification of cases exists to monitor the occurrence of infectious diseases and other specified conditions, and allows for public health action to manage these diseases and to help prevent further illness. The aim is to protect the health and safety of the community.

Notification rates

The term 'notification' means that a disease is diagnosed in a patient and is reported to Department of Health and Human Services. A notification rate refers to the number of cases of disease that are notified per 100,000 population. This allows for a better understanding and comparison of the burden of disease within a population as a whole, and for specific subgroups (such as those defined by age or sex).

Influenza-like illness

'Influenza-like illness' is defined as cough, fever and fatigue. It is used as a syndromic proxy to laboratory testing for influenza activity.

Provenance

Department of Health and Human Services Public Health Events Surveillance System

Limitations

Notified cases of laboratory-confirmed conditions will under-represent the true incidence of disease in the community. This is because a number of cases do not present to a doctor. Cases notified to the department are biased towards those that are more likely to seek medical attention, which includes those with more severe symptoms.

For more information

Infectious Diseases: Disease information and advice
https://www2.health.vic.gov.au/public-health/infectious-diseases/disease-information-advice/

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/

Better Health Channel, *Gastroenteritis – salmonellosis*
http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Gastroenteritis_salmonellosis

Nationally agreed case definitions
http://www.health.gov.au/casedefinitions

Victorian Tuberculosis Program
https://www.thermh.org.au/health-professionals/clinical-services/victorian-tuberculosis-program

The Kirby Institute, Annual surveillance report of HIV, viral hepatitis and STIs
http://kirby.unsw.edu.au/surveillance/Annual-Surveillance-Reports

Department of Health and Human Services, *Legionella risk management*
https://www2.health.vic.gov.au/public-health/water/legionella-risk-management-guidelines

Contact

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10.3: Oral health

Key messages

- Overall, in 2012, 44.7 per cent of Victorians rated their dental health as 'excellent' or 'very good', while 30.4 per cent rated their oral health as 'good' and a further 19.1 per cent as being 'fair or poor'.
- The proportion of people who reported having no natural teeth was 5.4 per cent overall, with 23.4 per cent among those aged 65 years or older.
- Dental conditions are the highest cause of all potentially preventable hospitalisations for Victorians under 10 years of age and the third highest for all Victorians.
- The predominant cause of these potentially preventable dental hospitalisations or dental ambulatory care sensitive conditions in children is tooth decay.

Description

This chapter reports on two indicators:

1. The proportion of adults aged 18 years or older who reported having excellent, very good, good, fair or poor dental health and those with no natural teeth
2. Standardised hospital admission rates (per 1,000 people) for potentially preventable dental hospitalisations for children aged 0–9 years

Introduction

Oral health is important for overall health and wellbeing. Oral diseases place a considerable burden on individuals, families and the community. The impact of oral disease comes from the four main conditions of tooth decay, gum disease, oral cancer and oral trauma. About 90 per cent of all tooth loss can be attributed to tooth decay and gum disease health problems (Australian Institute of Health and Welfare 2011). Tooth decay is amenable to prevention by addressing the upstream social determinants and the downstream factors of good nutrition, exposure to fluoride (such as in water, toothpaste and varnish), maintenance of adequate oral hygiene and access to preventively focused dental care.

Oral health is linked to overall health and wellbeing in a number of ways. The ability to chew and swallow our food is essential for obtaining the nutrients we need for good health. Other adverse impacts of poor oral health include effects on general health and problems with speech and low self-esteem, which can affect employability.

In this report we present data on the proportion of Victorian adults aged 18 years or older who reported having excellent, very good, good, fair or poor dental health (by age and sex) and those with no natural teeth. These data are derived from the 2012 Victorian Population Health Survey. We also present data on potentially preventable dental hospitalisations (PPDHs) in children, which are admissions for which hospitalisation is considered to be avoidable through prevention and early disease management.

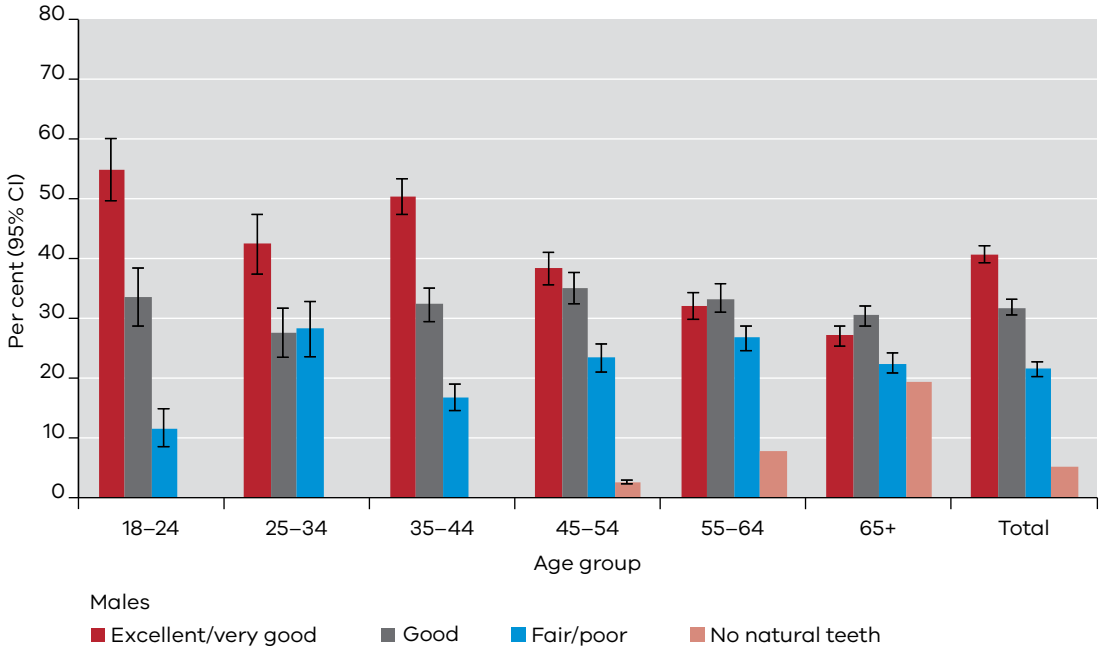
Oral health status

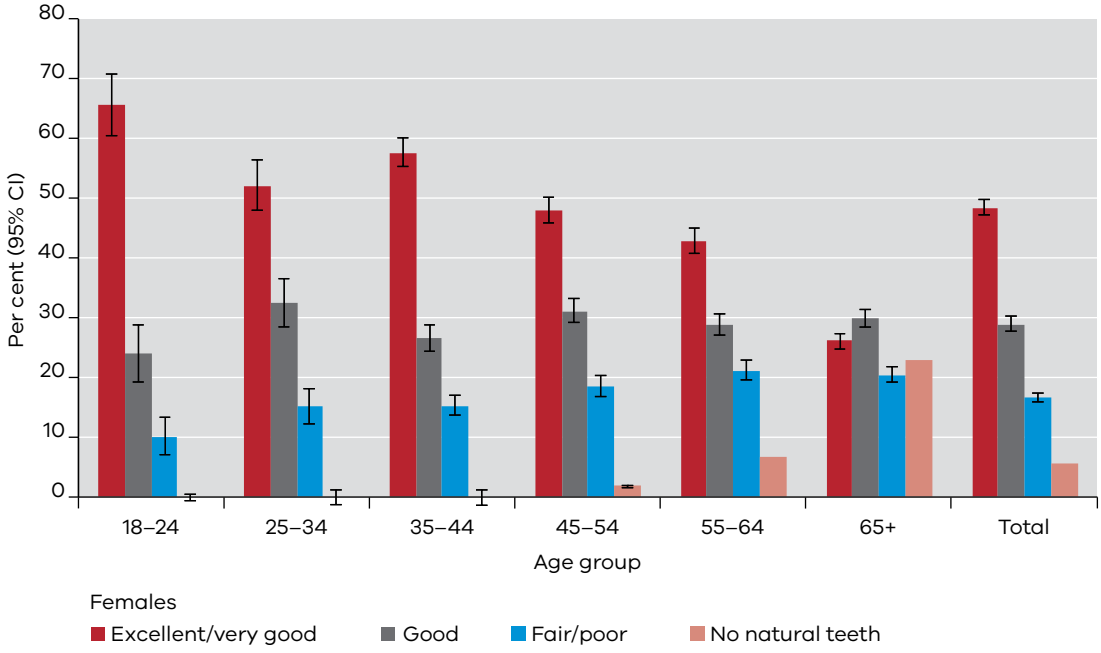
Self-reported oral health status by age group and sex is presented in Figure 10.59 and Table 10.23. Overall, 44.7 per cent of people rated their oral health as 'excellent' or 'very good', while 30.4 per cent rated their oral health as 'good' and a further 19.1 per cent as being 'fair or poor'. The proportion of people who reported having no natural teeth was 5.4 per cent.

A significantly lower proportion of males (40.8 per cent) rated their oral health as excellent or very good compared with females (48.5 per cent). In addition, a significantly lower proportion of people aged 65 years or older rated their oral health as excellent or very good compared with the total proportion of all Victorians. In contrast, a significantly higher proportion aged 18–24 and 35–44 year olds rated their oral health as excellent or very good compared with all Victorians, respectively.

The proportion of males aged 55 years or older, and people aged 65 years or older with dentures or no natural teeth, was significantly higher compared with the proportion in all Victorians. More than two in five people aged 65 years or older reported that their dental health was fair or poor (21.5 per cent), or that they had no natural teeth (21.4 per cent).

Figure 10.59: Self-rated oral health status, by age group and sex, Victoria, 2012





Hospital dental admissions – children

Over the period 2005–06 to 2014–15, PPDH rates in children aged 0–4 years have decreased, particularly in rural areas (Figure 10.60, Table 10.24). This is likely to be due to an increase in the number of preschool children accessing dental care and a decrease in tooth decay prevalence. The decrease in tooth decay rates appears to be greater in rural than in metropolitan areas, most likely because of the extension of community water fluoridation in rural areas from 2006. While admission rates are still higher in rural areas than metropolitan areas, the gap has narrowed since 2005–06. The remaining gap may be because not all rural children have access to optimally fluoridated water and the relatively lower socioeconomic status of rural families (Department of Human Services 2007). Victorian research has found that access to community water fluoridation, access to dental health professionals, and higher socioeconomic status are each independently associated with lower PPDH rates in 0–4 year olds (Rogers et al. 2016).

The PPDH rates in children aged 5–9 years have not changed significantly between 2005–06 and 2014–15 (Figure 10.61, Table 10.25). Admission rates have remained higher in rural areas compared with metropolitan areas over this period.

Figure 10.60: Standardised hospital admission rates (per 1,000 people) for dental conditions for children aged 0–4 years, Victoria, 2005–06 to 2014–15

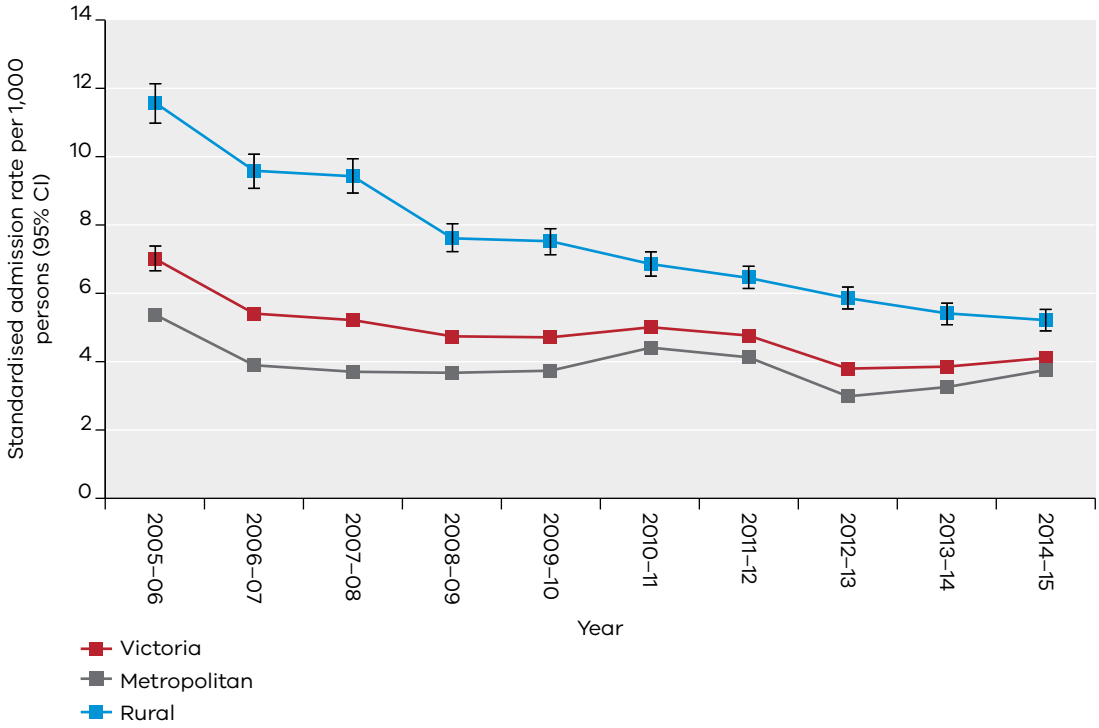
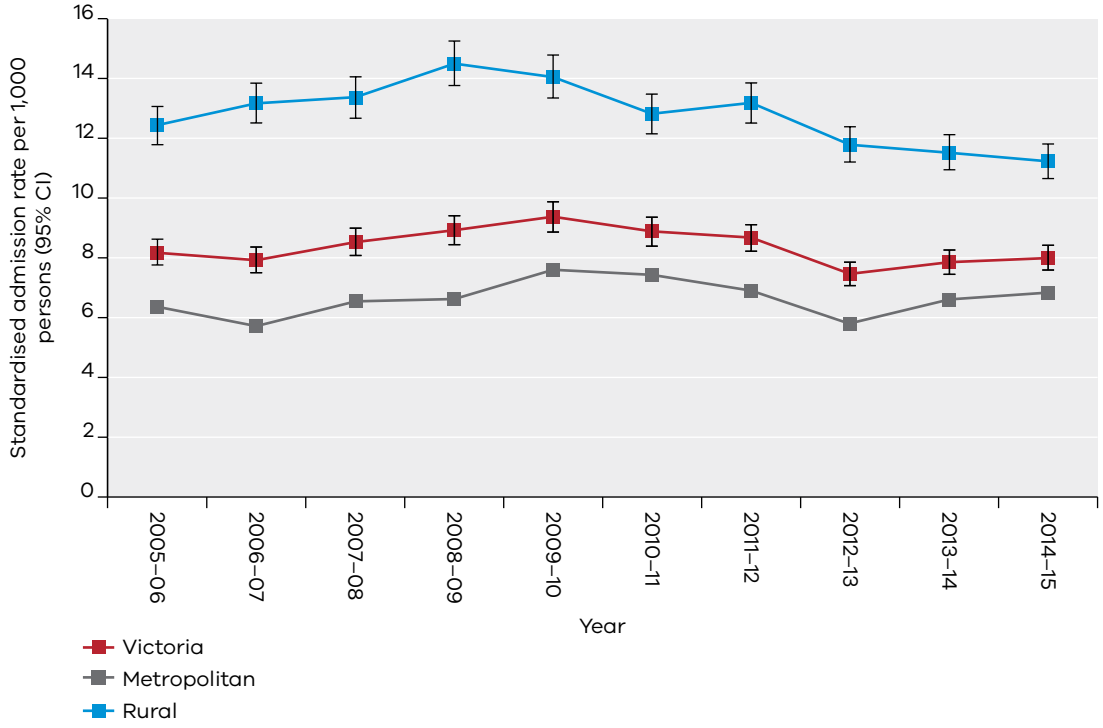


Figure 10.61: Standardised hospital admission rates (per 1,000 people) for dental conditions for children aged 5–9 years, Victoria, 2005–06 to 2014–15



Challenges and opportunities

While the oral health of the majority of Victorians is good, there is a significant group (19.1 per cent) who report fair or poor oral health. This group is generally more socioeconomically disadvantaged. Continued population and targeted programs are required to address the inequalities in oral health. Progress is being made in five key areas: building partnerships and environments that support good oral health; improving oral health literacy; strengthening prevention and early intervention programs; improving oral health promotion skills within the health, education and welfare workforce; and improving population data on oral health status and enhancing oral health promotion research (Department of Health 2013).

While improvements in oral health for children have been seen due to the impact of community water fluoridation extension, particularly from 2006, and the increase in preschool children accessing dental care, this may have been offset somewhat by an increased use of the model of care that preferences dental hospitalisation over treatment in a dental clinic. Dental hospitalisations of children have changed as a result of societal, technical and dental provider influences. Factors likely to decrease dental hospitalisations include programs that prevent tooth decay, training in alternatives and changes in workforce mix (Rogers et al. 2016).

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Rogers J, Morgan M, Wright F, Roberts-Thomson K, Adams G 2016, 'Impact of socioeconomic status, access to community water fluoridation, and access to dental health professionals on potentially preventable dental hospitalisations of young children', Journal of Dental Research, vol. 95, Special Issue B, abstract 955.

Concepts

Self-rated dental health

Questions were included in the Victorian Population Health Survey to measure self-rated oral health. Respondents were asked: 'How would you rate your dental health?'.

Potentially preventable dental hospitalisations

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

Provenance

The National Survey of Adult Oral Health (NSAOH) 2004–06 includes similar questions to the Victorian Population Health Survey; however, the NSAOH surveyed a nationally representative sample of Australians aged 15 years and older.

The child oral health data presented are based on analysis of PPDHs or ambulatory care sensitive conditions (ACSCs) from the Victorian Admitted Episodes Dataset. Further information is available at <https://www2.health.vic.gov.au/public-health/population-health-systems/healthstatus-of-victorians>.

For more information

Department of Health and Human Services 2016, *Victorian Population Health Survey 2012: selected survey findings*
https://www2.health.vic.gov.au/about/publications/researchandreports/population-health-survey-2012

Department of Health, *Improving oral health – local government action guide* https://www2.health.vic.gov.au/public-health/preventive-health/oral-health-promotion/oral-health-planning

Department of Health and Human Services, *Victorian Health Information Surveillance System (VHISS)*
https://www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/interactive-data-on-the-health-of-victorians/victorian-health-information-surveillance-system

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Prevention, Population Health and Place
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Chapter 11: Human function

Key messages

- Major congenital anomalies affected 320 per 10,000 reported pregnancies in 2013 and 314 per 10,000 reported pregnancies in 2014.
- In Victoria, one in 32 reported pregnancies resulted in the development of a congenital anomaly in the baby in 2013 and 2014.
- In 2015, 1.2 per cent babies in Victoria were born with very low birthweight (< 1,500 grams), and 6.7 per cent of babies were born with low birthweight (< 2,500 grams).
- The proportion of low-birthweight babies born to Indigenous women was almost twice as much (12.2 per cent in 2014 and 11.4 per cent in 2015) as to non-Indigenous women (6.7 per cent and 6.6 per cent in 2014 and 2015, respectively).
- Overall, there were 3,808 Victorians aged 75 years or older admitted to hospital with injury-related hip fractures during the period July 2014 to June 2015.
- In the age group of 75 years or older, females were more likely than males to be admitted to hospital with a hip fracture injury (2014–15).
- From 2005–06 to 2014–15 there was a significant decrease in the age-standardised rate of hospital admissions for injury-related hip fractures among Victorians aged 75 years or older.
- In 2015, one in six Victorians reported living with disability (17.2 per cent).
- The proportion of people reporting disability increased significantly with increasing age, to one in every three 65–69 year olds (35.6 per cent) and one in every two 75–79 year olds (55.6 per cent).

Description

This chapter reports on four key indicators:

1. Rates for major congenital anomalies (anomalies having significant medical, social or cosmetic consequences that require medical intervention and are responsible for morbidity and mortality) are provided for all reported pregnancies including termination of pregnancy
2. The proportion of babies born in Victoria with very low birthweight
3. The number of admissions to public and private hospitals in Victoria due to unintentional injury-related hip fracture among people aged 75 years or older (and rate per 100,000 people)
4. The proportion of people who reported having a limitation, restriction or impairment that has lasted, or is likely to last, for at least six months and restricts everyday activities

Introduction

Human function can be affected from cradle to grave, beginning with congenital anomalies through to hip fractures in the elderly. Impairment of human function will lead to disability.

A 'congenital anomaly', also called a 'birth defect', 'congenital malformation' or 'congenital disorder', is any abnormality of prenatal origin, either present after conception or occurring before the end of pregnancy. This includes structural, functional,

genetic, chromosomal and biochemical abnormalities that can be detected before birth, at birth or in later years of life (World Health Organization 2015).

One of the key determinants of a baby's health status is birthweight. Low birthweight is defined as a birthweight less than 2,500 grams, and very low birthweight is a birthweight less than 1,500 grams. Low birthweight is associated with a number of poor health outcomes including being admitted to a special care nursery or neonatal intensive care unit. In the long term, low-birthweight babies are at risk of developing cardiovascular disease and diabetes (Calkins & Devaskar 2011).

At the other end of the life course, hip fractures represent a substantial issue for the Australian health system. As this type of injury is more common in older people, the ageing of the Australian population means that, over time, more people will be at risk of experiencing a hip fracture (Australian Institute of Health and Welfare 2010). Hip fractures are often the result of a fall. Among older people, hip fractures can result in medical complications, functional decline and even death (Fisher et al. 2006; Folbert et al. 2012). Studies show that around one-third of those who experience a hip fracture will not return to their pre-fracture level of functioning within a year of the injury, and that those who do recover can take approximately six months to return to their pre-fracture levels of functioning (Bertram et al. 2011; LeBlanc et al. 2011).

In the context of reported health experience, 'disability' is an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environment and personal factors) (World Health Organization 2001). There are many different kinds of disability, which can result from injury, illness or genetic disorders. Disability may affect a person's mobility, communication or learning. It can also affect their income and participation in education, social activities and the labour force. Collecting information about people with disabilities is important for many reasons including to provide appropriate services and support (Australian Bureau of Statistics 2016).

In this report the incidence (new cases) of major congenital anomalies are reported for 2013 and 2014, taking into consideration baby's gender and maternal age. As almost all major congenital anomalies are diagnosed by the age of six years (Bower et al. 2010), the report focuses on major anomalies in children from before birth up to six years of age. Data are sourced from the Victorian Congenital Anomalies Register (VCAR), which is an ongoing health surveillance of major congenital anomalies in Victoria.

We also report on hip fractures, with data sourced from the Victorian Admitted Episode Dataset, and disability, with data sourced from the Australian Bureau of Statistics.

Congenital anomalies

Of all reported pregnancies, 3.0 per cent were affected by at least one congenital anomaly in 2013 and 3.1 per cent in 2014. This translates to an incidence of 320 per 10,000 pregnancies in 2013 and 314 per 10,000 pregnancies in 2014.

Hypospadias were the most common congenital anomaly reported by diagnostic category, followed by obstructive defects of the renal pelvis, developmental dysplasia of the hip and ventricular septal defect in 2013–2014 (Table 11.1).

Eight per cent (n = 404) of all reported pregnancies with congenital anomalies are terminated before 20 weeks' gestation, and 5 per cent (n = 255) are terminated at 20 weeks or more. Of babies born with a congenital anomaly, 5.6 per cent (n = 281, 70.4 per cent terminations) were stillbirths, 2.3 per cent (n = 117, 53.8 per cent terminations) were neonatal deaths and 0.2 per cent (n = 10) were infant deaths.

In 2013 and 2014, among all congenital anomaly cases, 57.7 per cent were males and 37.7 per cent were females; sex was indeterminate in 0.5 per cent and unknown for 4.2 per cent. The rate of congenital anomalies was 357 per 10,000 pregnancies for male babies and 246 per 10,000 pregnancies for female babies. Male babies were 45.0 per cent more likely to have a congenital anomaly than female babies (RR 1.45, 95 per cent CI 1.37–1.53, *p*-value < 0.0001).

In 2013 and 2014, the rate of congenital anomalies was highest in women aged 40–44 years, followed by those younger than 20 years of age (Table 11.2). Women aged 35 years or older were 9 per cent more likely to have a baby with a congenital anomaly than those younger than 35 years of age (RR 1.09, 95 per cent CI 1.02–1.16, *p*-value 0.007).

The reported incidence of major congenital anomalies has decreased from 4.3 per cent between 2007 and 2009 to 3.2 per cent between 2013 and 2014. This likely reflects a decline in the voluntary notifications to the VCAR rather than a true decline in rates.

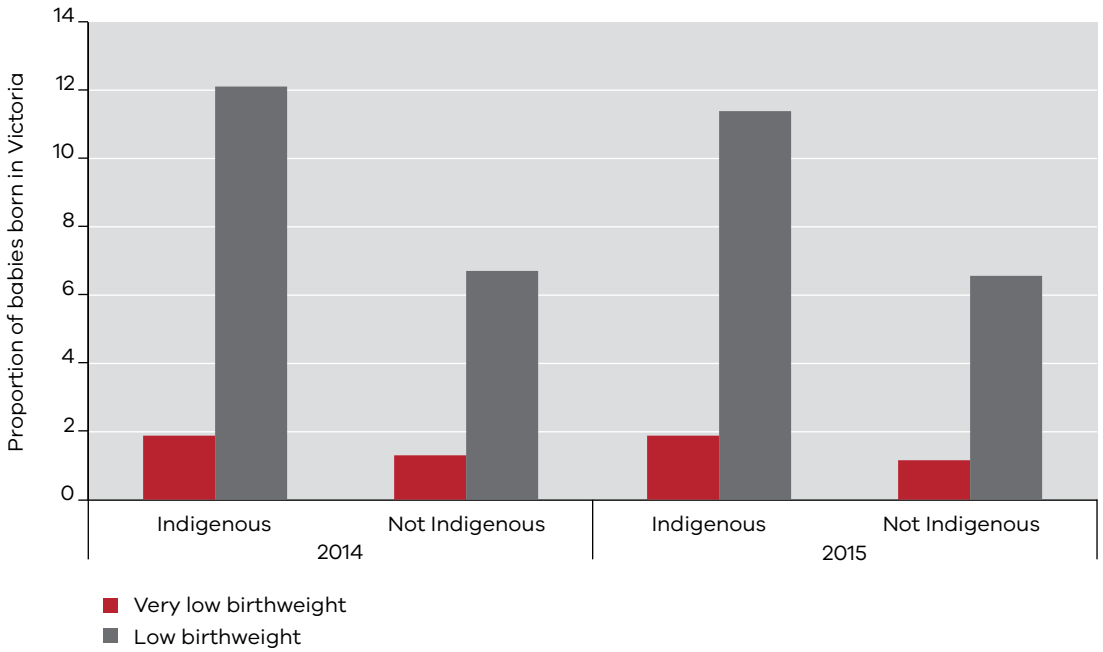
Low birthweight

In 2014, 1.3 per cent babies in Victoria had very low birthweight, which decreased slightly (1.2 per cent) in 2015. Similarly the proportion of babies having low birthweight slightly decreased from 2014 (6.8 per cent) to 2015 (6.7 per cent). Details are shown in Table 11.3.

The proportion of babies having very low birthweight reduced as the gestational weeks increased (Table 11.4). The proportion of babies having low birthweight was highest for 32–36 gestational weeks.

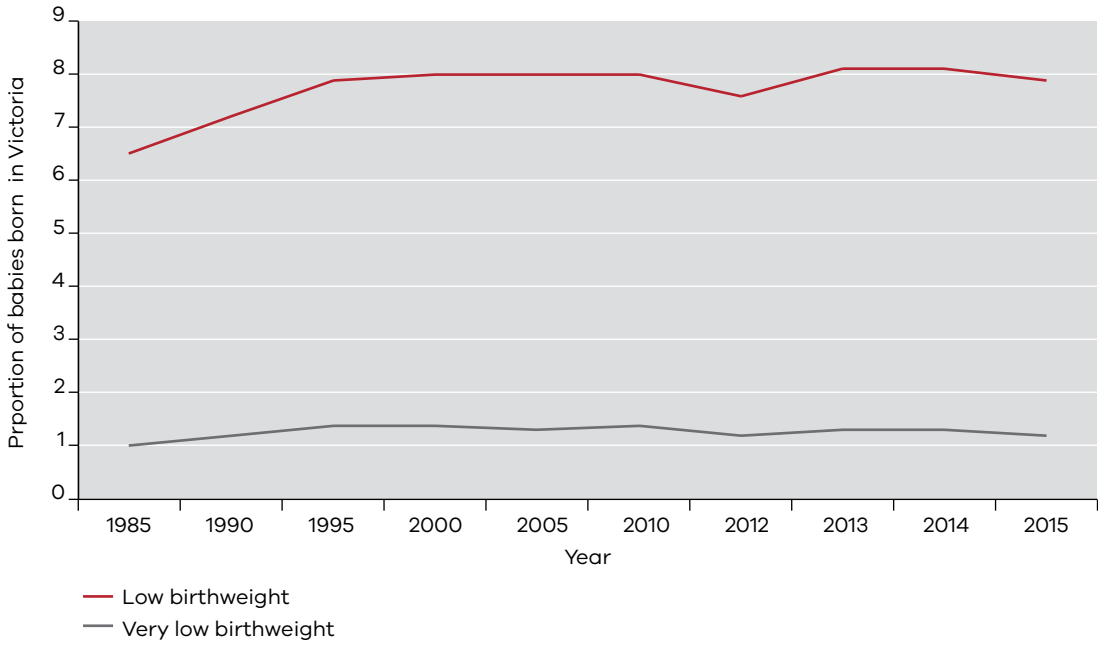
In 2014 and 2015, 12.2 per cent and 11.4 per cent babies born to Indigenous women had low birthweight compared with 6.7 per cent and 6.6 per cent low-birthweight babies born to non-Indigenous women, respectively. The proportion of very low birthweight babies was also higher (1.9 per cent for each 2014 and 2015) for Indigenous mothers than non-Indigenous mothers (Figure 11.1).

Figure 11.1: Low birthweight and very low birthweight in Victoria, by Indigenous status of the mother, 2014 and 2015



Fewer babies were born with a very low birthweight (1.2 per cent) in 2015 compared with 2010 (1.4 per cent). The proportion of low-birthweight babies has changed little in the past five years (Figure 11.2).

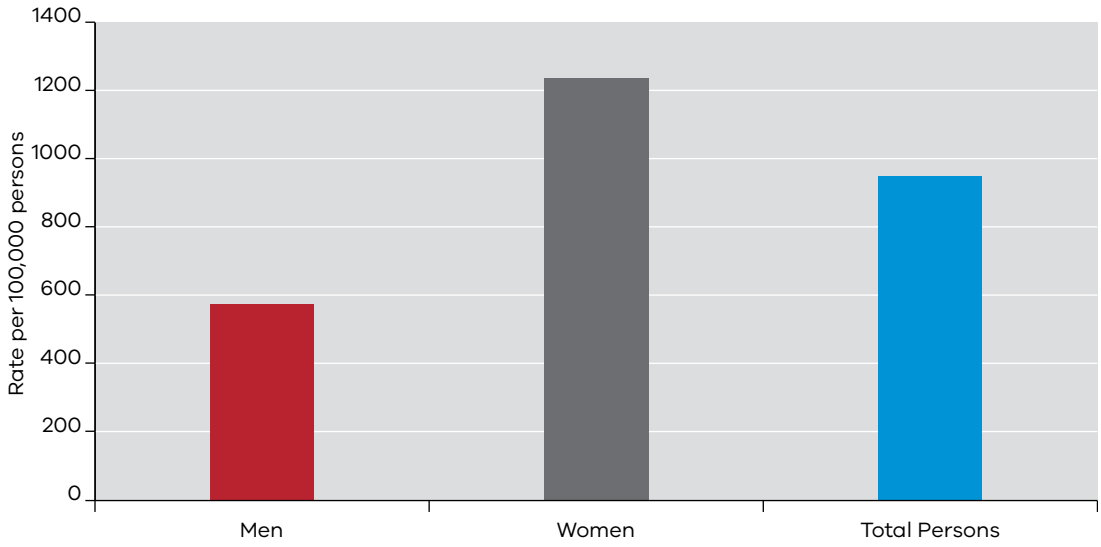
Figure 11.2: Trends of low birthweight and very low birthweight babies in Victoria, 1985–2015



Unintentional injury-related hip fracture

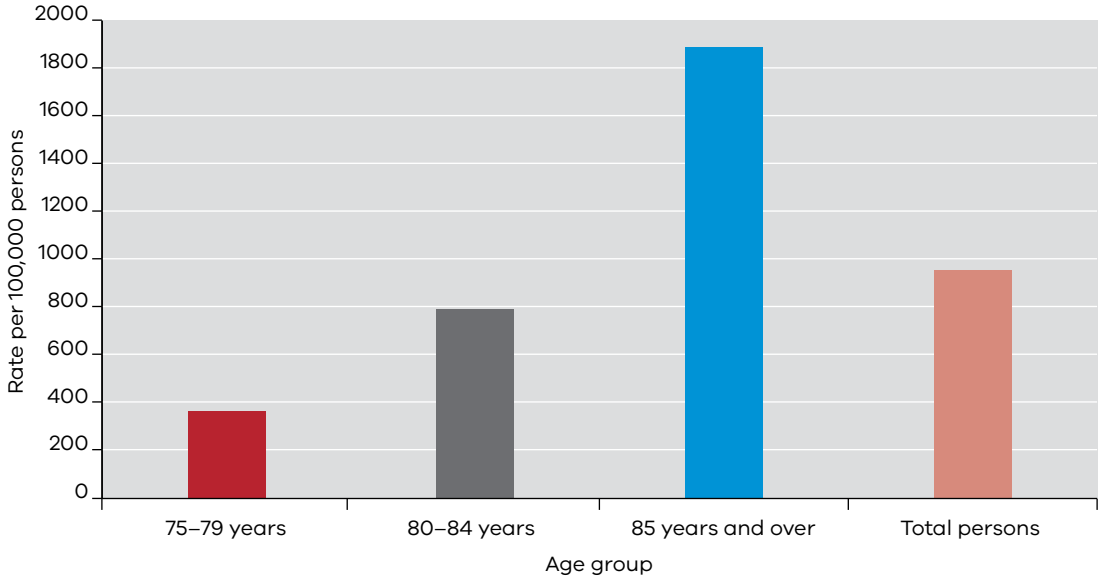
From July 2014 to June 2015, 3,808 Victorians aged 75 years or older were admitted to hospital with a injury-related hip fracture. The admission rate was higher for females at 1241.1 per 100,000 persons compared with 575.1 admissions per 100,000 persons for males during this period (Table 11.5 and Figure 11.3).

Figure 11.3: Unintentional injury-related hip fracture hospital admissions among people aged 75 years or older, by sex, Victoria, 2014–15



During the period July 2014 to June 2015, hospital admissions for injury-related hip fracture increased with age. In the 75–79-year age group, the admission rate was 364.0 per 100,000 persons compared with an admission rate of 790.2 per 100,000 persons for those in the 80–84-year age group. Admission rates were highest among Victorians aged 85 years or older, with an admission rate of 1,891.7 per 100,000 persons during 2014–15 (Figure 11.4 and Table 11.6).

Figure 11.4: Unintentional injury-related hip fracture hospital admissions among people aged 75 years or older, by age group, Victoria, 2014–15



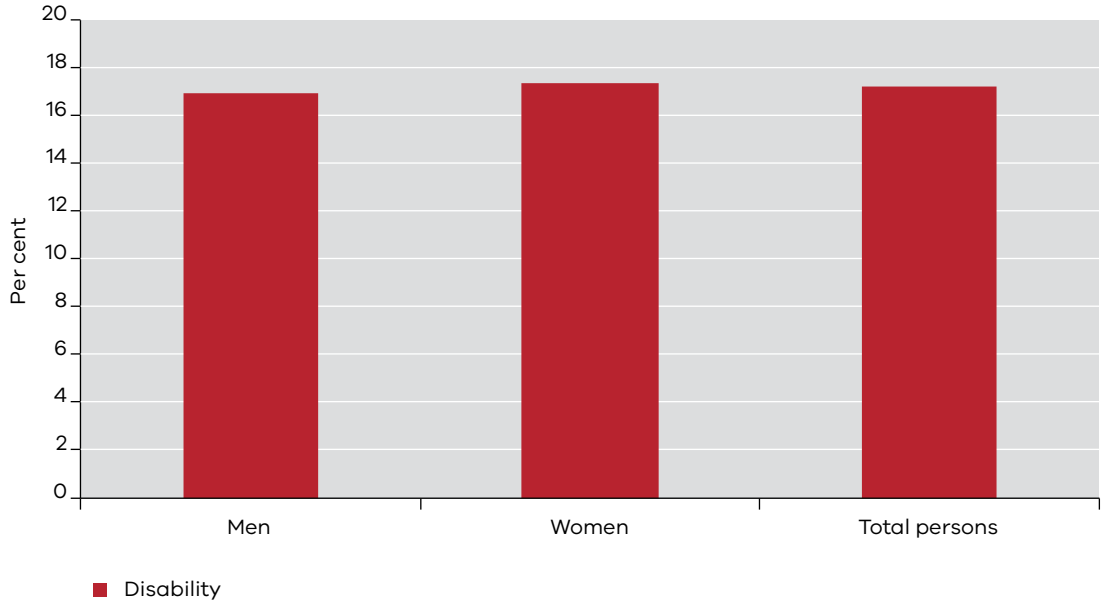
There was an increase in the annual number of injury-related hip fracture admissions among people aged 75 years or older from 3,226 in 2005–06 to 3,808 in 2014–15; however, the figures show a decrease over time in the annual admission rate per 100,000 persons (Figure 11.5 and Table 11.7). The results of a Poisson regression analysis found a small but significant decrease over time in the injury-related hip fracture admission rate from 987.1 per 100,000 persons in 2005–06 to 955.0 per 100,000 persons in 2014–15. This represents an estimated annual decrease of 1.14 per cent (95% CI 0.7–1.6) and an overall decrease of 3.25 per cent (95% CI 2.22–4.58).

Figure 11.5: Unintentional injury-related hip fracture hospital admissions among people aged 75 years or older, Victoria, 2005–06 to 2014–15

Physical disability

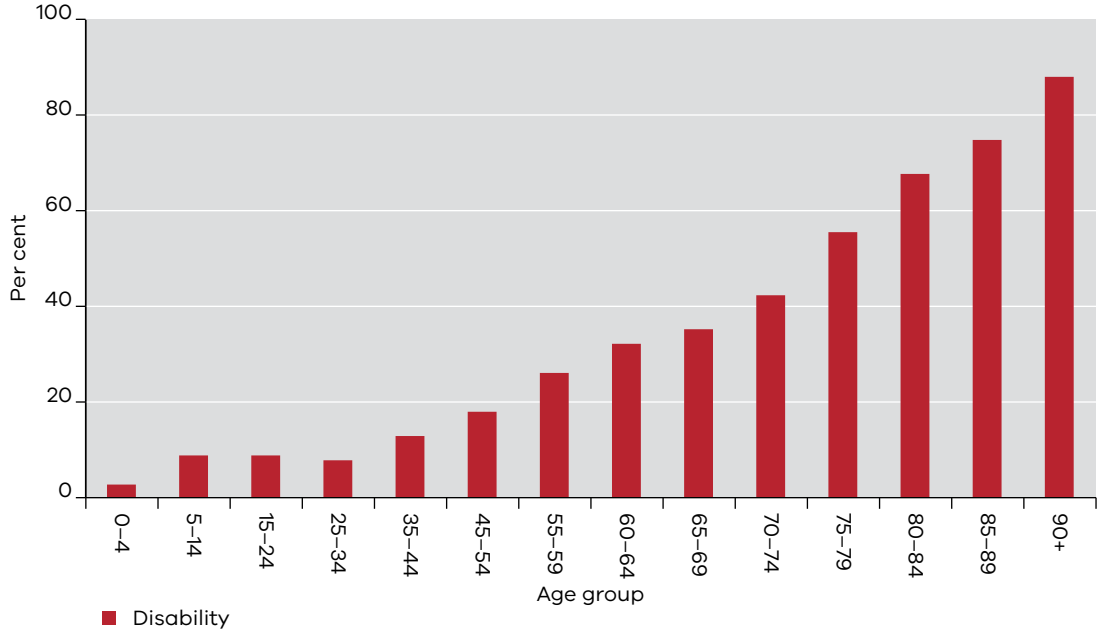
Among Victorians in 2015, 17.2 per cent reported having a disability (Figure 11.6 and Table 11.8). The proportion of men and women with a disability was similar.

Figure 11.6: Self- or carer-reported disability, by sex, Victoria, 2015



Among Victorian adults in 2015, 35.6 per cent of 65–69 year olds and 55.6 per cent of 75–79 year olds reported having a disability (Figure 11.7 and Table 11.9). The proportion of people reporting a disability increases significantly with increasing age.

Figure 11.7: Self- or carer-reported disability, by age, Victoria, 2015



Among Victorians, the proportion with self- or carer-reported disability remained similar from 2012 to 2015 (Table 11.10).

Challenges and opportunities

The decline in the age-standardised admission rates from 2005–06 to 2014–15 described in this report are encouraging as they indicate a lower risk over time for injury-related hip fractures among older Victorians. Nonetheless, the high frequency of hip-fracture admissions each year represents a significant demand on surgical and rehabilitation resources within Victorian hospitals. In particular, the large proportion of hip fracture admissions for females and among those aged 85 years or older has important health implications for the ageing Victorian population. Continued efforts in falls prevention programs are warranted for these population subgroups to avoid the onset of functional decline associated with hip-fracture injuries.

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Folbert EC, Smit RD, van der Velde D, Regtuijt EM, Klaren MH, Hegeman JH 2012, 'Geriatric Fracture Centre: A multidisciplinary treatment approach for older patients with a hip fracture improved quality of clinical care and short-term treatment outcomes', *Geriatric Orthopaedic Surgery & Rehabilitation*, vol. 3, no. 2, pp. 59–67.

LeBlanc ES, Hillier TA, Pedula KL, Rizzo JH, Cawthon PM, Fink HA, Cauley JA, Bauer DC, Black DM, Cummings SR, Browner WS 2011, 'Hip fracture and increased short-term but not long-term mortality in healthy older women', *Archives of Internal Medicine*, vol. 171, pp. 1831–1837.

World Health Organization 2015, *Congenital anomalies*, viewed 29 February 2016, <http://www.who.int/mediacentre/factsheets/fs370/en/>.

World Health Organization 2001, *International Classification of Functioning, Disability and Health (ICF)*, WHO, Geneva.

Concepts

Data selection

Cases were selected if the financial year of admission was 2005–06 to 2014–15 and age was greater than or equal to 75 years. VAED records were extracted if the cause of injury was unintentional and the ICD-10-AM injury code was in the range of S72.0-S72. Non-Victorian residents were excluded. Admission as a result of transfer from another hospital or due to a statistical separation from the same hospital have been excluded.

Age standardisation

Age-standardisation was calculated using the direct method and the standardised rate is expressed as per 100,000 population. Direct standardisation takes the age-specific rates (in this case the number of hospital admissions for people aged 75 years or older in a given year divided by the population of people aged 75 years or older in that year) and calculates the rate of hospitalisations among that group of people that we would expect if that group had the same percentages of people in that age group as some 'standard population'. In this case the standard population was the 2011 Victorian population of people aged 75 years or older. Age standardisation allows comparisons between the rate of hospital admissions in different years, even though the population may have been older in one particular year (HealthStatsNSW, available at http://www.healthstats.nsw.gov.au/Resources/Age-standardisation.pdf)

Hip fracture

Fracture of neck of femur, or pertrochanteric fracture. Femur shaft fracture was not included.

Unintentional injury

Excludes injury cases that were documented as being 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, JA, 1985 'Injury control: A guide to the causes and prevention of trauma'. Lexington Books: Maryland, USA). Injury case selection was based on the ICD-10-AM diagnostic codes in Chapter 19 'Injury, Poisoning and Certain Other Consequences of External Causes'.

Disability

Respondents were asked whether they have a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities.

Limitations

In July 2012 the Victorian hospital admission policy changed significantly so that episodes of care delivered entirely within a designated emergency department or urgent care centre could no longer be categorised as an admission, regardless of the amount of time spent in the hospital. Previously, these types of episodes could be categorised as an admission if the length of time in the hospital was four hours or more. This has had the effect of reducing the number of admissions recorded on the VAED for the 2012–13 financial year. For this reason VISU suggests caution should be exercised when interpreting potential changes in the number of hospital admissions in 2012–13 compared with previous years.

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.

Disability is included as an indicator in the Australian Bureau of Statistics *Survey of Disability, Ageing and Carers (SDAC)*, 2015.

Data sources

Hospital admissions for the period 2005–06 to 2014–15 were sourced via the Victorian Admitted Episodes Dataset (VAED). The VAED is a statewide collection of data on all admissions to Victorian hospitals (public and private). Data are coded to the International Classification of Diseases, Australian Modification (ICD-10-AM).

For more information

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

Department of Health, *Falls prevention*
https://www2.health.vic.gov.au/ageing-and-aged-care/wellbeing-and-participation/healthy-ageing/falls-prevention

Department of Health and Ageing, *Don't fall for it. Falls can be prevented!*
http://www.health.gov.au/internet/main/publishing.nsf/Content/phd-pub-injury-dontfall-cnt.htm

Victorian Congenital Anomalies Register
https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/consultative-councils/council-obstetric-paediatric-mortality/congenital-anomalies-register

Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM), *Victoria's mothers, babies and children report*
https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/consultative-councils/council-obstetric-paediatric-mortality/mothers-babies-children-report

Australian Bureau of Statistics, *Survey of Disability, Ageing and Carers (SDAC), 2015*
http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4430.0Main+Features452015?OpenDocument

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Unintentional injury-related hip fracture hospital admissions contact

Victorian Injury Surveillance Unit
Monash Accident Research Centre
Building 70, Monash University
Phone: (03) 9905 1805
Email: visu.enquire@monash.edu

Physical disability contact

Health Intelligence Unit, System Intelligence and Analytics
Department of Health and Human Services
Phone: (03) 9096 1089
Email: health.intelligence@dhhs.vic.gov.au

Section 3
Healthcare utilisation

Chapter 12: Immunisation

Description

The proportion of children aged 24 months or older, but less than 27 months, and children aged 60 months or older, but less than 63 months, who have received scheduled vaccines processed and calculated quarterly by the Australian Childhood Immunisation Register.

Introduction

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 also one of the most cost-effective public health interventions by which to maintain and protect the health of the population through reducing, eliminating and eradicating 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. 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 (Department of Health 2013; Department of Human Services 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 in order to monitor immunisation coverage and service delivery.

The National Immunisation Program schedule specifies vaccines for children at different age milestones. Thirteen diseases are covered by the routine childhood vaccination schedule: hepatitis B, rotavirus, diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, *Haemophilus influenzae* type b (Hib), pneumococcal, meningococcal C, measles, mumps, rubella and varicella (chickenpox). Vaccine coverage data are presented for Victorian children aged 24 to less than 27 months and children aged 60 to less than 63 months.

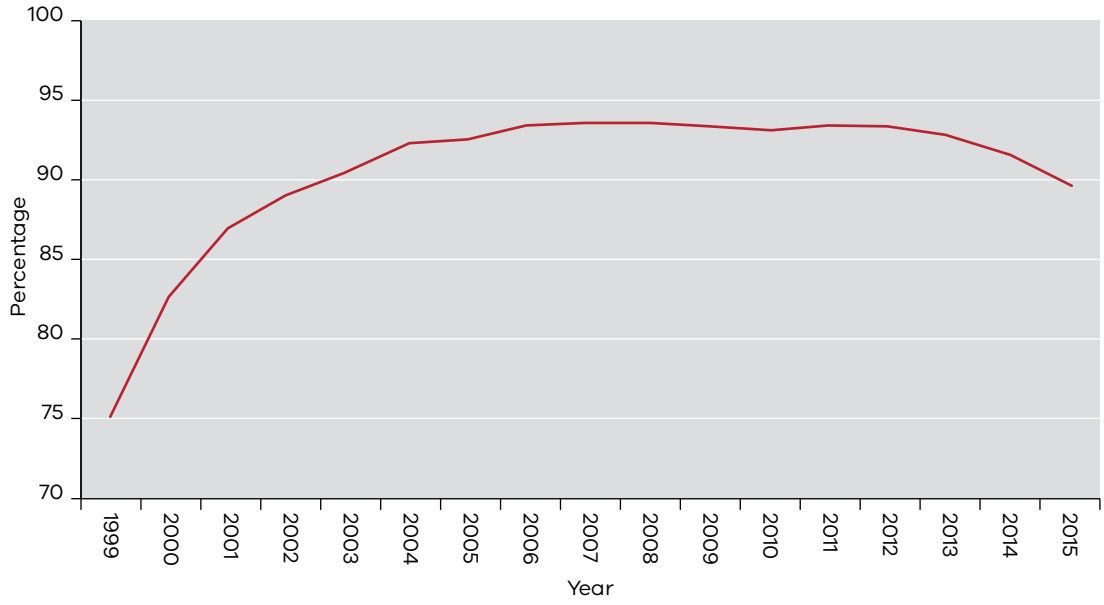
The National Immunisation Program schedule is available from <http://www.health.vic.gov.au/immunisation/factsheets/schedule-victoria.htm>.

Immunisation coverage

The proportion of children aged between 24 and less than 27 months who received all scheduled vaccinations in Victoria was 90.90 per cent (Figure 12.1), the third highest among all jurisdictions in Australia with age calculated at 31 December 2015 (Table 12.1, Table 12.3). The proportion of children aged between 60 and less than 63 months who received all scheduled vaccinations in Victoria was 93.0 per cent, the fourth highest

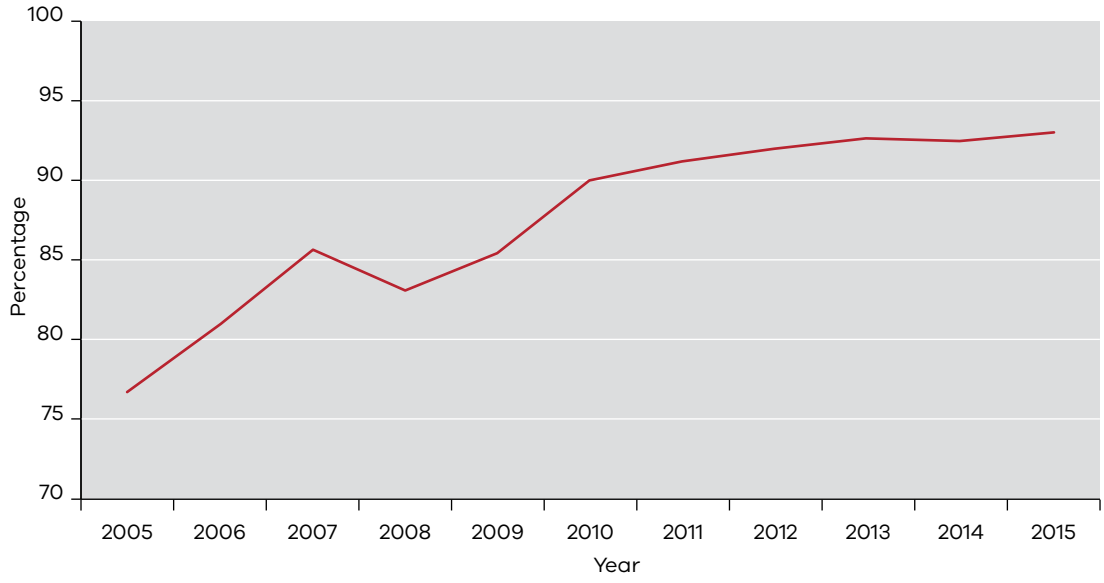
among all jurisdictions in Australia with age calculated at 31 December 2015 (Table 12.2), and this proportion has been consistent over recent years (Figure 12.2, Table 12.4).

Figure 12.1: Percentage of children 24–27 months of age assessed as fully immunised in Victoria, 1999–2015



Data sources: Department of Health and Human Services Immunisation Section and Medicare Australia 2015

Figure 12.2: Percentage of children 60–63 months of age assessed as fully immunised in Victoria, 2005–15



Data sources: Department of Health and Human Services Immunisation Section and Medicare Australia 2015

At 31 December 2015, 15 per cent (12 of 79) of Victorian local government areas achieved immunisation coverage greater than or equal to 95 per cent for children aged between 24 and less than 27 months. Twenty-eight per cent (22 of 79) of Victorian local government areas achieved immunisation coverage greater than or equal to 95 per cent for children aged between 60 and less than 63 months.

Challenges and opportunities

Emerging vaccine-preventable diseases present a challenge in Victoria, as elsewhere. The emergence of the meningococcal W strain in Australia, with higher than average rates in Victoria, required a timely response and an effective procurement and distribution process, a communication campaign, vaccine safety monitoring and an evaluation structure. This program began in June 2017 and will continue until 31 December 2017.

Victoria's introduction of its 'No jab, No play' legislation on 1 January 2016 marked an important commitment to increasing immunisation coverage in children. It requires that, before enrolling a child, early childhood services must first obtain evidence that the child is fully immunised for age, on a recognised vaccination catch-up program, or unable to be immunised for defined medical reasons. No conscientious objection is allowed. The law has very likely contributed to an acceleration of improved immunisation coverage since 2016 and will continue to be a driver to improved coverage as children move through early childhood services. Balancing educational needs for children not enrolling against the very significant benefits of immunisation for individuals and the community will be a continued area of focus.

Since 1 June 2015, free pertussis (whooping cough) vaccine has been available to pregnant women from 28 weeks' gestation, to partners of women at least 28 weeks pregnant (if partners not immunised in the previous 10 years) and to parents/guardians of babies under six months of age and born after 1 June 2015 (if not immunised in the previous 10 years). This 'cocooning strategy' has served to increase the protection of newborns most at risk of hospitalisation from whooping cough, especially in the first month of life before receiving their first pertussis-containing vaccine. The increasing evidence of significant effectiveness of maternal immunisation in protecting newborns presents opportunities for greater strengthening of this program.

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Department of Health 2016, *Immunisation newsletter*, issue 72, State Government of Victoria, viewed 4 December 2014, <http://docs.health.vic.gov.au/docs/doc/89F6D6357FB808D4CA257DA100721030/$FILE/1411017_Immunisation%20newsletter_December%202014_Web.pdf>.

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

Medicare Australia 2014, *Australian Childhood Immunisation Register statistics*, viewed 10 April 2016, <http://www.humanservices.gov.au/corporate/statistical-information-and-data/australian-childhood-immunisation-register-statistics/?utm_id=9>.

Concepts

The Australian Childhood Immunisation Register (ACIR) provides quarterly vaccination coverage data for Victorian children aged between 12 to less than 15 months (cohort one), 24 to less than 27 months (cohort two) and 60 to less than 63 months (cohort three). 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 receiving a later vaccine dose implies receipt of earlier doses, even if no earlier vaccination is recorded (third dose assumption). ACIR coverage reports show the percentage of children vaccinated with the highest level appropriate for their age group.

Percentage fully immunised = [no. children vaccinated / no. children in register] × 100

Only vaccines administered before 60 months are included in the coverage calculation. A child is defined as 'fully vaccinated' at age 60–63 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 that 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 the national, state/territory and local levels
- provide information for incentive payments and feedback reports to eligible immunisation providers.

Limitations

Several limitations exist regarding data available from the ACIR that 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. Participation in the ACIR is opt-out so it constitutes a nearly complete population register, as approximately 99 per cent of children are registered with Medicare by 12 months of age (Hull et al. 2014).

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.humanservices.gov.au/customer/services/medicare/australian-childhood-immunisation-register?utm_id=9

http://www.humanservices.gov.au/health-professionals/services/australian-childhood-immunisation-register/?utm_id=9

Department of Health, *Understanding childhood immunisation*
http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/IMM52-cnt

Department of Health, *Immunisation myths and realities: responding to arguments against vaccination*, 5th edition
http://www.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/nips

Better Health Channel, *Childhood immunisation*https://www.betterhealth.vic.gov.au/health/healthyliving/immunisation-childhood

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Chapter 13: Screening

Key messages

- In 2015 the two-year (2014–2015) Victorian cervical cancer screening participation rate for women in the target population of 20–69 years was 59.9 per cent.
- The number of Victorian women screened in the National Cervical Screening Program in 2014–15 was 1,020,926.
- The two-year (2014–15) Victorian BreastScreen Australia Program participation rate for women in the target age group of 50–74 years was 52.2 per cent.
- In 2014–15 women aged 70–74 years were not participating in screening at the same rate as women aged 50–69, although more recent preliminary data indicate that the gap is narrowing.
- For the period 1 January 2014 to 31 December 2015, the Victorian participation rate for the eligible population invited to screen aged 50–74 was 39.9 per cent.
- In Victoria females participated at a greater rate than males (42.6 per cent compared with 37.1 per cent).
- A diagnosis from newborn bloodspot screening is made in around one in 1,000 babies, allowing early intervention and prevention of illness or disability.
- In 2015–16 approximately 80,000 babies underwent newborn bloodspot screening in Victoria, with 72 babies diagnosed with one of the screened conditions.

Description

There are four indicators in this chapter:

1. The proportion of Victorian women aged 20–69 years who participated in the National Cervical Screening Program within a two-year period, over time
2. The proportion of Victorian women in the target age group who participated in the BreastScreen Australia Program within a two-year period, over time
3. The percentage of Victorians invited to screen through the National Bowel Cancer Screening Program between 1 January 2014 and 31 December 2015 who returned a completed screening test within that period or by 30 June 2016, by age and sex
4. The number of babies born in Victoria who have had a newborn screening test, over time

Introduction

The three national cancer screening programs aim to reduce the incidence of illness and mortality through an organised approach to detecting and treating cancers in their earliest stages.

The National Cervical Screening Program recommends that all sexually active women aged between 18 and 69 have two-yearly Pap tests, including women who have been vaccinated against HPV (Australian Institute of Health and Welfare 2016). The primary cause of cervical cancer is human papillomavirus (HPV). The National HPV Vaccination Program began in April 2007 and is having a substantial impact on the prevalence of HPV infection and cervical lesions in vaccinated cohorts (Australian Institute of Health and Welfare 2016).

The BreastScreen Australia Program invites women in the target age group to have free breast x-ray screening (mammography) at two-yearly intervals. From 1 July 2013, the BreastScreen Australia Program target age expanded from women aged 50–69 years to those aged 50–74 years. While mammography has been found to be most effective for women in the target age group, women aged 40–49 and 75 years or older are also eligible, but not actively invited, to participate in the program.

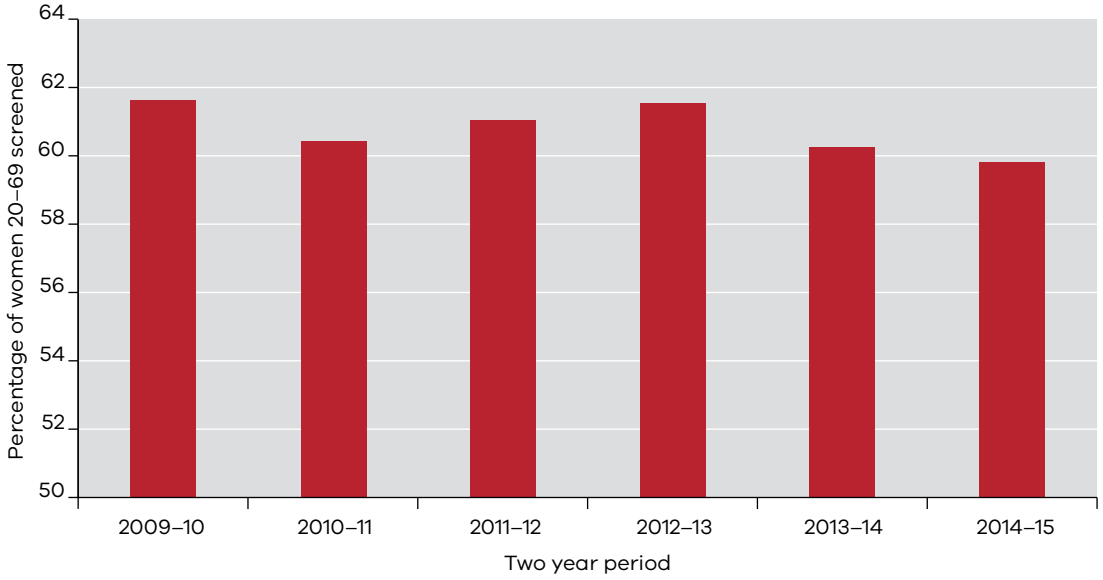
In 2006 the Australian Government began the staged roll out of the National Bowel Cancer Screening Program in partnership with the state and territory governments to address the rise in incidence and mortality from bowel cancer. From 2017 the National Bowel Cancer Screening Program is inviting Australians aged 50, 54, 55, 58, 60, 64, 68, 70, 72, 74 to participate in population screening through immunochemical faecal occult blood testing (FOBT). The program will be expanded to offer screening every two years to all eligible Australians aged 50–74 by 2020. In 2015 bowel (colon and rectum) cancer was the third most common new cancer (12 per cent of all cancers) in Victorians (Thursfield et al. 2015). 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 50 per cent of bowel cancers are detected early.

The aim of newborn bloodspot screening is to identify babies affected by one of 25 serious but treatable conditions, including cystic fibrosis, congenital hypothyroidism, phenylketonuria and a number of rare metabolic conditions. Spots of blood from a heel-prick are collected onto a specially designed card and tested at a central laboratory. Early identification of these conditions allows early treatment and management, which can prevent developmental problems, physical and intellectual disability and, in some cases, death. Screening is voluntary and is offered free of charge to all newborns in Victoria (Department of Health 2011). Newborn bloodspot screening is also carried out on babies who were stillborn or miscarried, with the aim of providing information for families about why the baby's death might have occurred.

Cervical cancer

The proportion of women screened for cervical cancer has been reasonably stable since 2009, ranging between 60 and 70 per cent. This figure dipped below 60 per cent; however, for the 2014–15 data (Figure 13.1).

Figure 13.1: Percentage of Victorian women screened for cervical cancer in two-year periods, 2009–10 to 2014–15

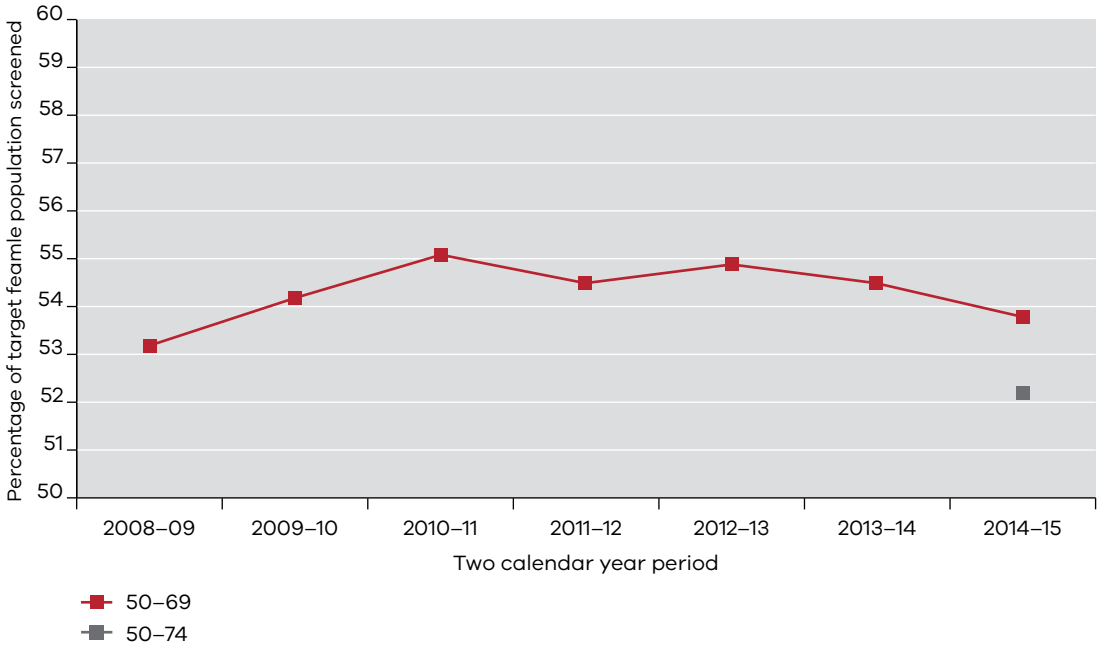


Source: Australian Institute of Health and Welfare 2017

Breast cancer

Breast cancer screening among the target group showed a steady increase from 2008–09 to 2010–11, peaking at 55 per cent. Over recent years, however, there has been a slight drop-off to just below 54 per cent (Figure 13.2).

Figure 13.2 Percentage of Victorian women screened for breast cancer in two-year periods, 2008–09 to 2014–15

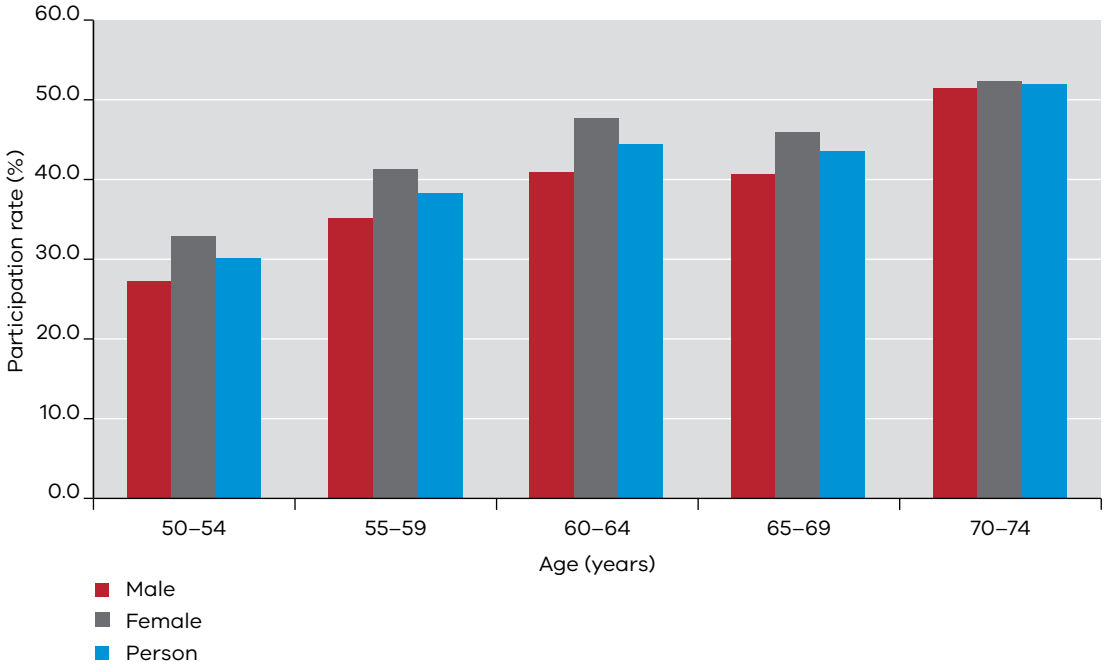


Please note: From 1 July 2013, the target age range was expanded to include women aged 50–74. The first full two-year period that included this age range is 2014–15.

Bowel cancer

In the two-year period from January 2014 to December 2015 participation in the National Bowel Cancer Screening Program increased with age for both men and women. For 50–54 year olds, participation was at 27.3 per cent for men and 32.9 per cent for women. This increased to 51.5 and 52.5 per cent respectively for the 70–74-year age group (Figure 13.3).

Figure 13.3: Victorian participation in the National Bowel Cancer Screening Program, by age and sex, 1 January 2014 to 31 December 2015



Newborn bloodspot screening

In 2015–16 approximately 80,000 babies underwent newborn bloodspot screening in Victoria, with 72 babies diagnosed with one of the screened conditions. The most common were congenital hypothyroidism, cystic fibrosis and phenylketonuria (PKU)

Challenges and opportunities

Since the introduction of the National Cervical Screening Program in 1991, new technology and evidence to assist with the detection of cervical cancer and optimal screening age range and interval has emerged, and the HPV vaccine has become available. In response, and to ensure women have access to a cervical screening program that is safe, effective and efficient, a range of changes to the program were implemented on 1 December 2017 including:

- the Pap test will be replaced with the more accurate 'cervical screening test', which tests for HPV
- the time between tests will increase from two to five years
- the age at which screening starts will increase from 18 to 25 years
- women aged 70–74 years will be invited to have an exit test
- women will be invited when they are due to participate.

HPV-vaccinated women still require cervical screening because the vaccine does not protect against all the types of HPV that cause cervical cancer (Department of Health 2016).

Despite a record number of breast screens being delivered in 2014–15, Victoria's participation rate has been falling. This is because the growth in the number of women screened is not keeping pace with population growth in the target age group. Of late, additional funding has been provided to deliver additional screens to arrest the declining participation rate.

Based on available data, it is considered that national participation rates in the National Bowel Cancer Screening Program were lower among Aboriginal and Torres Strait Islander communities and people with severe or profound activity limitation. Participation rates remain lower for people living in areas with the lowest socioeconomic status and decrease with increasing remoteness of area of residence (Australian Institute of Health and Welfare 2016).

Victoria's Under-screened Program, which began in 2009, is aimed at increasing the participation in cancer screening of Aboriginal and Torres Strait Islander communities, culturally and linguistically diverse communities and communities affected by socioeconomic disadvantage. Improving bowel cancer screening is a key part of this work.

The Australian Government is establishing a new National Cancer Screening Register to support the National Cervical Screening Program and National Bowel Cancer Screening Program.

In the area of newborn screening, over the past two years Victoria has contributed to the development of a *Newborn bloodspot screening national policy framework*, which will increase consistency between the operation of state and territory screening programs, as well as providing a pathway for national decision making about which conditions screening will aim to identify. The framework is expected to be presented to the Australian Health Ministers' Advisory Council for endorsement during 2017.

References

Australian Institute of Health and Welfare 2014a, *Analysis of bowel cancer outcomes for the National Bowel Cancer Screening Program*. Cat. no. CAN 87, AIHW, Canberra.

Australian Institute of Health and Welfare 2014b, *National Bowel Cancer Screening Program monitoring report: 2012–13*, Cancer series No. 84. Cat. no. CAN 81, AIHW, Canberra.

Australian Institute of Health and Welfare 2016, *National Bowel Cancer Screening Program: monitoring report 2016*, Cancer series no. 98. Cat. no. CAN 97, AIHW, Canberra.

Australian Institute of Health and Welfare 2017b, *Cervical screening*, viewed 9 October 2017, publications.http://www.aihw.gov.au/publications/cervical-screening/>.

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

Department of Health 2016, *National Cervical Screening Program, 2016*, Australian Government, viewed 9 October 2017, <http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/future-changes-cervical

Thursfield V, Farrugia H 2016, *Cancer in Victoria: Statistics and trends 2015*, Cancer Council Victoria, Melbourne.

Concepts

Population screening refers to a test that is offered to all individuals in a target group, usually defined by age, as part of an organised program. Screening involves simple tests to look for particular changes, or early signs of a disease, before a disease has developed or in its early stages before any symptoms develop.

Some data are presented as age-standardised rates. Age-standardised rates are the number of women screened as a proportion of the eligible female population and age-standardised to the Australian population at 30 June 2001. Number of women screened includes those women resident in Victoria (and in some cases some immediate border residents). These data exclude women who have opted off the cervical cytology register. The period covers 1 January 2014 to 31 December 2015.

Some 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 National Bowel Cancer Screening Program. 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 has not yet done so. They will be counted in the denominator of the crude participation but not in the numerator (Australian Institute of Health and Welfare 2014b).

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 Program Register. Data are collected on forms completed by participants, primary health care providers, colonoscopists, pathologists, nurses, medical administrative staff and/or other specialists involved in the screening pathway. Submission of these forms is not mandatory and, consequently, there is the possibility of inconsistent reporting (Australian Institute of Health and Welfare 2014b). There is potential for measurement error in the 'eligible' population for cervical screening due to uncertainty about the hysterectomy rate, which excludes women from eligibility. The Victorian Cervical Cytology Registry is a voluntary 'opt-off' registry; however, the proportion of women who are part of the screening program but decide to opt-off the Victorian Cervical Cytology Registry is estimated to be less than 1 per cent.

Provenance

The Australian Institute of Health and Welfare provides monitoring and technical reports on the national cancer screening programs (breast, bowel, cervical) programs.

Data on this indicator are sourced from Victorian Clinical Genetics Services' reports to the Department of Health and Human Services.

For more information

Human papillomavirus (HPV) and the HPV Vaccination Program
http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/immunise-hpv

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

Renewal of the National Cervical Screening Program
http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/content/renewal-ncsp-pres

Australian Institute of Health and Welfare, *Cervical screening*
http://www.aihw.gov.au/cancer/screening/cervical/

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

BreastScreen Australia
http://cancerscreening.gov.au/internet/screening/publishing.nsf/Content/breast-screening-1

Australian Institute of Health and Welfare, *Breast screening*
http://www.aihw.gov.au/cancer/screening/breast/

National Bowel Cancer Screening Program
http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/bowel-screening-1

The National Bowel Cancer Screening Program in Victoria
https://www2.health.vic.gov.au/public-health/population-screening/cancer-screening/bowel-cancer-screening

Australian Institute of Health and Welfare, *Bowel cancer screening*
http://www.aihw.gov.au/cancer/screening/bowel/

Victorian Clinical Genetics Services
https://www.vcgs.org.au/tests/newborn-screening

Better Health Channel, *Newborn screening*
https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/newborn-screening

Cancer screening contact

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Chapter 14: Biomedical checks

Key messages

- 79.9 per cent of Victorians had had their blood pressure checked in the previous two years.
- 61.4 per cent of adults reported having had a blood cholesterol test in the previous two years.
- 53.1 per cent of adults reported having had a blood glucose test in the previous two years.
- The percentage of Victorians who reported having a blood pressure, cholesterol or blood glucose check increased significantly between 2005 and 2014.

Description

The proportion of adults aged 18 years or older who report having had a blood pressure, cholesterol or blood glucose check in the preceding two years

Introduction

Health professionals can conduct a variety of tests during a routine physical examination, depending on the patient's age, family history of disease and state of health. Some of the these tests may be performed each time the patient visits the doctor, and some are necessary only when specific complaints or concerns are raised, or when a person reaches a certain age or risk category. Participants in the Victorian Population Health Survey are asked whether, in the two years before the survey, they had had a blood pressure check, a blood test for cholesterol or a test for diabetes or high glucose (blood sugar) levels.

High blood pressure (hypertension), high cholesterol and high blood glucose are all major risk factors for type 2 diabetes, ischaemic heart disease and stroke. The risk of disease increases with increasing levels of each risk factor. The modifiable causes of high blood pressure, cholesterol and blood glucose include having a poor diet, being overweight or obese, having high levels of alcohol consumption and insufficient levels of physical activity. Information about biomedical checks for high blood pressure, high cholesterol and high glucose levels can provide insight into the status of cardiovascular prevention and management in Victoria.

In this report we present data on the proportion of Victorian adults reporting they have received a biomedical check (blood pressure, cholesterol or blood glucose check) in the previous two years, by age and sex, and over time. These data are derived from the Victorian Population Health Survey. More information is available in the full report of the *Victorian Population Health Survey 2014: health and wellbeing, chronic conditions, screening and eye health* (Department of Health and Human Services 2016).

Biomedical checks

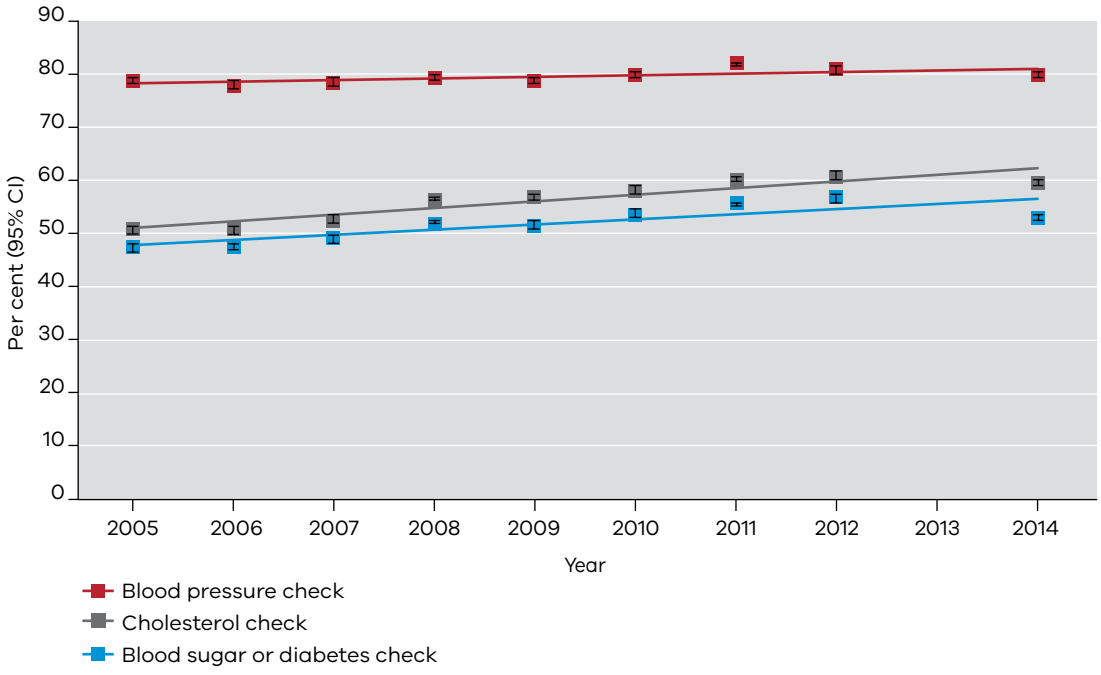
Table 14.1 shows the proportion of males and females who reported having had a blood pressure, cholesterol or blood glucose check in the previous two years, by age group and sex. In 2014, 79.9 per cent of Victorians had had their blood pressure checked in the previous two years, and this was significantly higher for females (82.7 per cent) compared with males (77.3 per cent). There was a significantly higher proportion of males, females and those aged 45 years or older who had had their blood pressure checked compared with all males, females and Victorians, respectively. By contrast the proportion was significantly lower in males and persons 18–34 years and females 18–44 years of age.

In 2014, 59.5 per cent of Victorians had had their cholesterol checked in the previous two years, and there was no difference between all males and all females. There was a significantly higher proportion of males, females and persons 45 years or older who had had their cholesterol checked compared with all males, females and Victorians, respectively. By contrast the proportion was significantly lower in males 18–34 years and females and persons 18–44 years of age.

Overall, 53.1 per cent of Victorians had had their blood glucose checked in the previous two years and there was no difference between all males and all females. There was a significantly higher proportion of males, females and persons 45 years or older who had had their blood glucose checked compared with all Victorian males, females and persons, respectively. By contrast, the proportion was significantly lower in males, females and persons aged 18–44 years.

The proportion of Victorians who reported having a blood pressure, cholesterol or blood glucose check increased significantly between 2005 and 2014 (Figure 14.1 and Table 14.2).

Figure 14.1: Biomedical checks, by year, Victoria, 2005–14



Challenges and opportunities

Regular measurement of biomedical markers for chronic disease provides an excellent opportunity to monitor cardiovascular disease risk and to educate Victorians about lifestyle factors that may impact on these markers. By encouraging health practitioners to routinely monitor these markers in at-risk populations it is possible to determine absolute cardiovascular risk for individuals, better tailor management options and reduce the burden of chronic disease at a population level (Banks et al. 2016).

References

Banks E, Crouch SR, Korda, RJ, Stavreski B, Page K, Thurber KA, Grenfell R 2016, 'Absolute risk of cardiovascular disease events, and blood pressure- and lipid-lowering therapy in Australia', *Medical Journal of Australia*, vol. 204, no. 8, pp. 320.

Department of Health and Human Services 2016, *Victorian Population Health Survey 2014: health and wellbeing, chronic conditions, screening and eye health*, State Government of Victoria, Melbourne.

National Heart Foundation of Australia (National Blood Pressure and Vascular Disease Advisory Committee) 2010, *Guide to management of hypertension 2008 – updated December 2010*, viewed 22 February 2017, <http://www.heartfoundation.org.au/information-for-professionals/Clinical-Information/Pages/hypertension.aspx>.

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 and Human Services, *Victorian Population Health Survey 2014: health and wellbeing, chronic conditions, screening and eye health*
https://www2.health.vic.gov.au/public-health/population-health-systems/health-status-of-victorians/survey-data-and-reports/victorian-population-health-survey/victorian-population-health-survey-2014

National Heart Foundation
https://www.heartfoundation.org.au

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

Diabetes Australia
http://www.diabetesaustralia.com.au/

Contact

Health Intelligence Unit, System Intelligence and Analytics
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Phone: (03) 9096 1089
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